

## **APPENDIX H**

# **OMWD Environmental Impact Report for the Unit AA Pipeline Project**

Final



## Environmental Impact Report

# UNIT AA RAW WATER PIPELINE PROJECT

**AECOM**

September 2010

Submitted to:  
Olivenhain Municipal  
Water District Offices  
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Encinitas, CA 92024  
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Municipal Water District



**FINAL ENVIRONMENTAL IMPACT REPORT  
OLIVENHAIN MUNICIPAL WATER DISTRICT  
UNIT AA RAW WATER PIPELINE PROJECT**

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## EXECUTIVE SUMMARY

The Olivenhain Municipal Water District (District) is the lead agency for the preparation of this Final Environmental Impact Report (EIR) in accordance with the California Environmental Quality Act (CEQA) and State CEQA Guidelines (California Code of Regulations [CCR] Title 14, §15082(a), 15103, and 15375). The Final EIR addresses the impacts to the natural resources and the human environment from construction and operation of a 48-inch-diameter raw water pipeline (Unit AA pipeline) over a distance of approximately 3 miles in San Diego County between the Second San Diego Aqueduct and the David C. McCollom Water Treatment Plant (DCMWTP) at the Olivenhain Reservoir. The purpose of this pipeline is to provide an alternate source of raw water for the DCMWTP. This project would also involve the relocation of approximately 0.5 mile of an existing 10-inch-diameter treated water pipeline that will parallel the Unit AA pipeline.

The current main source of water for the DCMWTP is the Olivenhain Reservoir, which is fed by an existing raw water pipeline from the Second San Diego Aqueduct (the reservoir also receives a small amount of runoff). An agreement between the City of San Diego and the San Diego County Water Authority (SDCWA) will allow SDCWA to transfer water from Lake Hodges to the Olivenhain Reservoir. With this transfer, the water quality in the Olivenhain Reservoir may deteriorate below acceptable levels for the efficient operation of the DCMWTP. The Unit AA pipeline is intended to mitigate that risk, and to ensure the District's ability to meet its customer's need for high-quality municipal water.

According to the terms of a September 2009 settlement agreement between the District and SDCWA, the District will assign its existing storage rights in the Olivenhain Reservoir to SDCWA, and SDCWA will provide "deemed" storage rights in the SDCWA system to the District.

The proposed relocation of the District's 10-inch-diameter treated water distribution pipeline would allow the District to co-locate pipelines within a single easement, reduce the cost of maintenance, and facilitate better access to the pipeline for maintenance and emergency situations.

An EIR was determined to be the appropriate environmental document for this project, consistent with CEQA Guidelines Section 15064. In light of the anticipated physical changes to the environment as a result of the proposed project, and after consideration of the potential effects to members of the public, the District determined that the project may have a significant impact on the environment. An Initial Study (IS) was completed to focus the EIR analysis and to identify effects found not to be significant. The IS checklist is attached to this EIR as Appendix A.

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The environmental analysis of potentially significant environmental effects in Chapter 3 of this Final EIR evaluates the following issues: Land Use and Planning (Section 3.1), Traffic and Circulation (Section 3.2), Air Quality (Section 3.3), Noise (Section 3.4), Hydrology and Water Quality (Section 3.5), Biological Resources (Section 3.6), Cultural and Paleontological Resources (Section 3.7), Geology and Soils (Section 3.8), Public Safety and Hazardous Materials (Section 3.9), and Public Services and Utilities (Section 3.10). Impacts to biological resources, specifically natural vegetation communities and foraging habitat, were determined to be significant. Mitigation measures would be incorporated into the project to reduce these impacts to below a level of significance. Table ES-1 provides a summary of the proposed project's potential impacts and mitigation measures.

Four alternatives were considered and are evaluated in this report: the Preferred Alternative, the Southern Alternative, the Flow Control Facility at Aqueduct Connection Alternative, and the Escondido Creek Restoration Alternative. In addition, a No Project Alternative was considered. The alternatives are summarized below.

- The Preferred Alternative begins where the Second San Diego Aqueduct crosses Elfin Forest Road. An underground connection would join the Unit AA pipeline to the Second San Diego Aqueduct. The Unit AA pipeline would be placed within public right-of-way following Elfin Forest Road to the southeast. The public road right-of-way would be used in coordination with the County of San Diego. At the intersection where Elfin Forest Road transitions to Harmony Grove Road, the 10-inch distribution pipeline would begin its parallel trench with the Unit AA pipeline. The portion of the 10-inch pipeline extending south of the intersection would be abandoned. Approximately 300 feet northeast of the intersection, the two pipeline trenches would turn southeast and continue through a disturbed paved area. The pipelines would follow a dirt roadway for approximately 200 feet where the trenches would transition to a single tunnel passing underneath Escondido Creek for approximately 160 feet. After surfacing southeast of Escondido Creek, the pipelines would transition back to parallel trenches, and would pass under the City of Escondido's sewer outfall. The trenches would accommodate the pipelines along an existing easement and dirt road until intersecting Via Ambiente. Along Via Ambiente, the 10-inch pipeline would reconnect to the existing 10-inch distribution line, and the Unit AA pipeline would continue in a trench to the DCMWTP. A flow control facility (FCF) would be constructed near the Unit AA pipeline's connection with the DCMWTP.
- The Southern Alternative would begin just east of Suerte Del Este Road, near the District's maintenance entrance just north of the point where the Second San Diego Aqueduct crosses Escondido Creek. This pipeline would roughly parallel two existing pipelines to the east,

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located in a District easement adjacent to the maintenance road, which it would follow to the DCMWTP. This alternative would use a combination of trench and tunnel construction methods to install the pipeline. In addition, the Southern Alternative would require blasting through many portions of the rocky slopes along the alignment. This alternative would include an FCF near the pipeline's connection with the DCMWTP.

- The FCF for the Aqueduct Connection Alternative would follow the same alignment as the Preferred Alternative, but would include construction of an above-ground structure near the Unit AA pipeline connection to the Second San Diego Aqueduct adjacent to Elfin Forest Road. The FCF housing and associated improvements would require an approximately 0.7-acre permanent footprint.
- The Escondido Creek Restoration Alternative would follow the same alignment as the Preferred Alternative, but would require, instead of a tunnel under the creek, an open trench pipeline installation following the removal of an existing degraded culvert crossing. The culvert crossing would be replaced with a smaller culvert crossing that would allow approximately 0.10 acre of restoration within the adjacent creek bed. Although this project would result in a net benefit to the creek area, temporary construction impacts to wetlands, potential water quality impacts, and permitting agency input result in this alternative not being environmentally preferred. This alternative is consistent with placement of an FCF at the DCMWTP or at the pipeline's connection with the aqueduct.
- The No Project Alternative would require the use of the existing water transmission system infrastructure to import and treat raw water. The Second San Diego Aqueduct would continue to transmit raw water to the Olivenhain Reservoir via a, SDCWA 78-inch-diameter pipeline located near the Southern Alternative described above. Per the terms of the September 2009 settlement agreement between the District and SDCWA, the DCMWTP will not receive water from the reservoir. The No Project Alternative, therefore, would leave the DCMWTP idle when the SDCWA is moving water from the reservoir to the aqueduct via the SDCWA 78-inch pipeline. In this situation, the District would purchase treated water for distribution to its customers.

**Table ES-1  
Summary of Impacts and Mitigation Measures**

| <b>Potential Environmental Impacts</b>   | <b>Significance Determination</b> | <b>Mitigation Measures</b>  | <b>Level of Significance after Mitigation</b> |
|--|-----------------------------------|---|---|
| <b>LAND USE AND PLANNING</b>   |                                   |   |   |
| <b>LU-1</b> The proposed project would not physically divide an established community. No impact would occur.  | No impact                         | No mitigation measures are required.  | No impact                                     |
| <b>LU-2</b> The proposed project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect. No impact would occur. | No impact                         | No mitigation measures are required.  | No impact                                     |
| <b>LU-3</b> The proposed project would not conflict with any applicable habitat conservation plan or natural community conservation plan. Impacts would be less than significant.  | Less than significant             | Mitigation measures for impacts pursuant to the Natural Communities Conservation Plan (NCCP) process are contained in Section 3.6, Biological Resources, of this EIR. No mitigation measures for land use and planning are required.  | Less than significant                         |
| <b>TRAFFIC AND CIRCULATION</b>   |                                   |   |   |
| The proposed project would have no significant impacts associated with the study area intersections.   | Less than significant             | Even though there are no calculated significant impacts, the District would implement the following traffic control measures to minimize the interruption of traffic due to the proposed project: <ul style="list-style-type: none"> <li>All construction that directly affects movement of traffic along any public street as a result of lane closures, realignments, detours, narrowing, or erection of barriers or other traffic control devices would be detailed in a traffic control plan in accordance with the Manual of Uniform for Traffic Control Devices (MUTCD) and County Standard Drawings and Department Instructions. The traffic control plan would be approved by the County of San Diego Public Works Division and would include appropriate signs and other warning devices in</li> </ul> | Less than significant                         |

| Potential Environmental Impacts  | Significance Determination | Mitigation Measures  | Level of Significance after Mitigation |
|--|----------------------------|--|--|
|  |                            | <p>advance of construction zones, as well as posted notices prior to commencement of construction.</p> <ul style="list-style-type: none"> <li>• Along Elfin Forest Road and Harmony Grove Road, a single lane of traffic would always be maintained and traffic would alternate on a single-lane road controlled by a flagger. Hand-signaling devices, such as STOP/SLOW paddles, lights, and red flags, would be used to control road users through temporary traffic control zones.</li> <li>• Flagger stations would be located far enough in advance of the work space so that approaching road users would have sufficient distance to stop before entering the work space. Based on MUTCD standards, 50 mph on Elfin Forest Road requires 425 feet.</li> <li>• During times when construction activity is not occurring, these roadways would be restored to their normal operating conditions.</li> <li>• Signs, notices, and other warning devices shall be posted to direct bikes and pedestrians to safe crossing locations in advance of the construction zones.</li> <li>• Access to residences, businesses, and institutions shall be maintained at all times during construction.</li> </ul> |  |
| The proposed project would have no significant impacts associated with the study area roadway segments.  | Less than significant      | See traffic control measures above.  | Less than significant                  |
| <b>AIR QUALITY</b>   |                            |  |  |
| <b>AQ-1</b> The proposed project would not result in a cumulatively considerable net increase of emissions of any criteria pollutant for which the project region is in nonattainment under applicable federal or state ambient air quality standards. Impacts would be less than significant. | Less than significant      | No mitigation measures are required.   | Less than significant                  |
| <b>AQ-2:</b> The project would not violate an air quality standard or contribute substantially to an existing or projected air quality violation. Impacts would be   | Less than significant      | No mitigation measures are required.   | Less than significant                  |

| Potential Environmental Impacts  | Significance Determination | Mitigation Measures  | Level of Significance after Mitigation |
|--|----------------------------|--|--|
| less than significant.   |                            |  |  |
| <b>AQ-3:</b> The project would not conflict with or obstruct implementation of the applicable air quality plan. No impact would occur.   | No impact                  | No mitigation measures are required.   | No impact                              |
| <b>AQ-4:</b> The project would not expose sensitive receptors to substantial pollutant concentrations. Impacts would be less than significant.   | Less than significant      | No mitigation measures are required.   | Less than significant                  |
| <b>AQ-5:</b> The project would not create objectionable odors affecting a substantial number of people. Impacts would be less than significant.  | Less than significant      | No mitigation measures are required.   | Less than significant                  |
| <b>NOISE</b>   |                            |  |  |
| <b>N-1:</b> The project would not expose persons to, or generate, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Impacts would be less than significant.   | Less than significant      | No mitigation measures are required.   | Less than significant                  |
| <b>N-2:</b> The project would not result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Impacts would be less than significant.  | Less than significant      | No mitigation measures are required.   | Less than significant                  |
| <b>N-3:</b> The project would not expose persons to, or generate, excessive groundborne vibration or groundborne noise levels. Impacts would be less than significant.   | Less than significant      | No mitigation measures are required.   | Less than significant                  |
| <b>HYDROLOGY AND WATER QUALITY</b>   |                            |  |  |
| <b>WQ-1:</b> Potential significant impacts could result from inadequate containment of sediment from grading, trenching, tunneling, or other construction operations. Impacts could also result from fuels associated with construction equipment, such as from leaks or during maintenance and fueling. In addition, equipment storage areas and trash receptacles could pose potential significant impacts to water quality if they are not properly managed | Significant                | <b>WQ-A:</b> To reduce potential water quality impacts during construction to a less-than-significant level, the District would implement water quality protection measures as detailed below, and would comply with the National Pollutant Discharge Elimination System (NPDES) General Construction Permit.<br>1. Prior to commencement of grading, and to obtain coverage under an NPDES General Permit for Construction Activity, the District (or its construction contractor) shall submit a Notice of Intent (NOI) to | Less than significant                  |

| <b>Potential Environmental Impacts</b> | <b>Significance Determination</b> | <b>Mitigation Measures</b>   | <b>Level of Significance after Mitigation</b> |
|--|-----------------------------------|--|---|
| and maintained.                        |                                   | <p>prepare a Storm Water Pollution Prevention Plan (SWPPP) that incorporates all conditions of the permit.</p> <ol style="list-style-type: none"> <li>2. Prior to commencement of grading, the SWPPP shall be completed, and shall detail proposed methods to preclude runoff and contaminants from leaving the construction site. The SWPPP shall include forms and maps for the documentation of all compliance and noncompliance of construction activities, and shall remain on-site for 3 years after the Regional Water Quality Control Board (RWQCB) acceptance of the Notice of Termination (NOT).</li> <li>3. The manager for the construction contractor shall be responsible for implementing and maintaining the SWPPP.</li> <li>4. Prior to commencement of grading and as part of the SWPPP, the District shall cause the preparation of an erosion control plan for the construction phase. The plan shall ensure that all erosion and runoff control measures are in place prior to major grading activities, and that exposed slopes and graded areas are protected throughout construction. Best management practices (BMPs) shall include the short-term use of silt fences, gravel bags, fiber rolls, erosion control blankets, and/or similar devices. Any erosion and runoff control measures proposed within Sage Hill Preserve shall be coordinated with the Department of Parks and Recreation (DPR) District Park Manager.</li> <li>5. All soils to be stockpiled shall be protected from erosion and sediment runoff at all times. Stockpiles shall be protected through the use of gravel bags or similar mechanisms near the base of the piles and covered with secured tarps or tackifiers.</li> <li>6. Stockpiles, refueling activities, and storage areas of hazardous materials (e.g., fuels, lubricants, solvents, and other potential contaminants) shall be located only at</li> </ol> |   |

| Potential Environmental Impacts  | Significance Determination                   | Mitigation Measures   | Level of Significance after Mitigation |
|--|--|---|--|
|  |  | <p>predesignated sites with adequate pollution control. Pre-designated sites for stockpiles, refueling activities, and storage areas of hazardous materials shall be located outside of Sage Hill Preserve.</p> <p>7. Prior to commencement of grading, and as a part of the SWPPP, the District (or its construction contractor) shall prepare a construction spill contingency plan in accordance with County Department of Environmental Health regulations.</p> <p>8. Exposed slopes shall be appropriately stabilized according to the SWPPP after completion of site grading. Stabilization of any exposed slopes within Sage Hill Preserve shall be coordinated with the DPR District Park Manager.</p> <p>9. Native vegetation shall be preserved, wherever feasible, for immediate replacement on disturbed areas following grading. Native topsoil shall be stockpiled and reapplied as part of site reclamation.</p> |  |
| <p><b>WQ-2:</b> The normal operation of the proposed pipeline would result in less-than-significant impacts to water quality. The portions of the pipeline located beneath paved roadway would not result in any increase of impervious surfaces that could contribute to storm water runoff. The portions of pipeline outside of the paved roadway would require removal of vegetation, resulting in increased soil exposure. However, the cleared areas would be revegetated after completion of construction.</p> | <p>Less than significant</p>                 | <p>No mitigation measures are required.</p>   | <p>Less than significant</p>           |
| <p><b>BIOLOGICAL RESOURCES</b></p>   |  |   |  |
| <p><b>BIO-1:</b> The proposed project would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species. Impacts would be less than significant with mitigation.</p>   | <p>Less than significant with mitigation</p> | <p>The following design features and mitigation measures would reduce temporary biological impacts from the proposed project.</p> <p><b>BIO-A:</b> A project biologist will review grading plans, oversee all aspects of construction monitoring that pertain to biological resource protection, and ensure compliance</p>  | <p>Less than significant</p>           |

| Potential Environmental Impacts | Significance Determination | Mitigation Measures   | Level of Significance after Mitigation |
|---------------------------------|----------------------------|---|--|
|                                 |                            | <p>with both the general and specific mitigation measures for the Raw Water Pipeline Project.</p> <p><b>BIO-B:</b> All sensitive habitat areas or occurrences of sensitive species to be avoided will be clearly marked on project maps. These areas will be designated as “no construction” or “limited construction” zones. These areas will be flagged by the project biologist and reviewed with the project engineer prior to the onset of construction activities. If needed, resources will be fenced or otherwise protected from direct and indirect impacts.</p> <p><b>BIO-C:</b> Construction will occur during the dry season, when feasible, using silt fences, sandbags, detention basins, and any other appropriate measures to avoid direct and indirect impacts to wetlands.</p> <p><b>BIO-D:</b> A contractor education program will be implemented to ensure that contractors and all construction personnel are fully informed of the biological sensitivities associated with the project.</p> <p><b>BIO-E:</b> Fueling areas will be designated on construction maps and will be situated a minimum of 50 feet from all drainages. All fueling areas shall be located outside of the Sage Hill Preserve.</p> <p><b>BIO-F:</b> To the extent possible, construction through sensitive areas will be appropriately scheduled to minimize potential impacts to biological resources. Construction adjacent to drainages will occur during periods of minimum flow (i.e., summer through the first significant rain of fall) to avoid excessive sedimentation and erosion, and to avoid impacts to</p> |  |

| Potential Environmental Impacts | Significance Determination | Mitigation Measures   | Level of Significance after Mitigation |
|---------------------------------|----------------------------|---|--|
|                                 |                            | <p>drainage-dependent species. Construction near riparian or other wetland areas will also be scheduled to avoid potential impacts to sensitive riparian bird species.</p> <p><b>BIO-G:</b> Setback limitations from all habitat, trees, and sensitive plant locations meant to be preserved will be established by a qualified biologist prior to construction. Construction corridor widths will be minimized to the extent feasible in sensitive areas (e.g., oak woodlands, coastal sage scrub, and wetlands). Setback limitations within Sage Hill Preserve shall be coordinated with the DPR Resource Management Division.</p> <p><b>BIO-H:</b> Pipeline installation, as proposed, requires no trenching across watercourses. Instead, by tunneling under creeks and culverts, pipeline construction will avoid impacts to jurisdictional waters as defined by the U.S. Army Corps of Engineers (USACE), the California Department of Fish and Game (CDFG), and the County.</p> <p><b>BIO-I:</b> The project will incorporate the following design features to minimize noise generated from construction activities:</p> <ul style="list-style-type: none"> <li>• Noise analyses will be performed during construction activities adjacent to sensitive habitats or potential active nests. If necessary, temporary noise attenuation barriers will be erected to reduce construction-related noise to below 60 A-weighted decibels (dBA) hourly <math>L_{eq}</math>. Any proposed noise attenuation barriers within Sage Hill Preserve shall be coordinated with the DPR District Park Manager.</li> </ul> |  |

| Potential Environmental Impacts | Significance Determination | Mitigation Measures  | Level of Significance after Mitigation |
|---------------------------------|----------------------------|--|--|
|                                 |                            | <ul style="list-style-type: none"> <li>• Heavy equipment will be repaired as far as practical from habitats where nesting birds may be present. No heavy equipment shall be repaired within Sage Hill Preserve.</li> <li>• Construction equipment, including generators and compressors, will be equipped with manufacturers' standard noise control devices or better (e.g., mufflers, acoustical lagging, and/or engine enclosures).</li> <li>• The construction contractor will maintain all construction vehicles and equipment in proper operating condition and provide mufflers on all equipment.</li> </ul> <p><b>BIO-J:</b> The project design will incorporate features to minimize the potential for pests and exotic species establishment by installing fencing between the proposed project site and adjacent open space areas to restrict encroachment into biologically sensitive areas. Any proposed fencing within Sage Hill Preserve shall be temporary and coordinated with the DPR District Park Manager.</p> <p><b>BIO-K:</b> Several general construction BMPs will be implemented to avoid and minimize impacts to natural communities of special concern, special-status plants, and special-status animals:</p> <ol style="list-style-type: none"> <li>1. Construction limits – The contractor(s) will be informed, prior to the bidding process, about the biological constraints of this project. The construction limits will be clearly marked on project maps provided to the contractor(s) and areas outside of the construction limits will be designated as “no construction” zones.</li> <li>2. Equipment staging/Storage/Fueling restrictions –</li> </ol> |  |

| <b>Potential Environmental Impacts</b> | <b>Significance Determination</b> | <b>Mitigation Measures</b>  | <b>Level of Significance after Mitigation</b> |
|--|-----------------------------------|---|---|
|  |                                   | <p>No equipment staging and refueling areas will be located at the construction site outside of designated staging areas. Moreover, staging/storage areas for construction equipment and materials will be located away from sensitive biological resources that are not approved for project impact, and no equipment maintenance will be performed near drainages to minimize the potential for pollution runoff. Staging/storage areas shall be located outside the Sage Hill Preserve. Additionally, no heavy equipment maintenance shall be performed in the Sage Hill Preserve.</p> <p>3. Soil stockpiles – Soils from construction grading will be stockpiled either on portions of the proposed project site where direct impacts are approved or at an off-site location approved by the County and the resource agencies. Stockpiled soils must be located and piled in a manner that will avoid potential erosion and sedimentation into downstream drainages, swales, or vernal pool habitat. Any soil stockpiles proposed within the Sage Hill Preserve shall be coordinated with the DPR District Park Manager.</p> <p>4. Construction debris – Project construction areas will be kept as clean of debris as possible to avoid attracting predators of native wildlife. Spoils, trash, or any debris will be removed off-site to an approved disposal facility.</p> <p>5. Fugitive dust – Construction-related fugitive dust will be minimized by incorporating appropriate reasonably available control measures to minimize fugitive dust emissions, as outlined in an approved dust control plan specific to the proposed construction activities. The dust control plan will</p> |   |

| Potential Environmental Impacts | Significance Determination | Mitigation Measures   | Level of Significance after Mitigation |
|---------------------------------|----------------------------|---|--|
|                                 |                            | <p>consider and/or incorporate the application of water, use of wind screens, and other applicable methods appropriate to the site, and in consideration of the sensitive biological resources that exist adjacent to and downstream of the site.</p> <p>6. Construction fencing – To prevent accidental egress by construction equipment or workers onto preserved lands adjacent the proposed project site, construction fencing will be installed along the entire northern boundary of the County-owned portion of the proposed project site, the northern boundary of the western private parcel, and the portion of the County-owned parcel’s eastern boundary that connects these two northern borders. Any proposed construction fencing within Sage Hill Preserve shall be temporary and coordinated with the DPR District Park Manager.</p> <p><b>BIO-L:</b> To provide the District with the latitude in the future for impacts within the right-of-way without future mitigation requirements, all temporary impacts will be mitigated as though they were permanent impacts consistent with applicable mitigation ratios. Where project impacts occur outside approved Multiple Species Conservation Program (MSCP) plan areas, mitigation ratios will be consistent with ratios presented in the County guidelines. Where project impacts occur within the South County MSCP Plan area, mitigation ratios will be consistent with the MSCP Biological Mitigation Ordinance (BMO) mitigation requirements. The 0.21-acre of Diegan coastal sage scrub that would be permanently impacted within the Preferred Alternative at the Sage Hill Preserve if the access road for the flow control facility is located at the Second San Diego Aqueduct</p> |  |

| Potential Environmental Impacts   | Significance Determination                   | Mitigation Measures   | Level of Significance after Mitigation |
|---|--|---|--|
|   |  | <p>will be mitigated per the County guidelines. Mitigation will include a 1:1 ratio of revegetation on-site according to the County guidelines and the MSCP BMO. The remainder of the required mitigation will be accomplished through off-site habitat acquisition or preservation. Any proposed revegetation work within Sage Hill Preserve or adjacent to the Mendocino property shall use native plants and the planting palette shall be pre-approved by the DPR Resource Management Division.</p> <p><b>BIO-M:</b> Construction activities will occur outside of the nesting season when feasible. If construction is to occur during the nesting season, a nesting bird survey will be completed by a qualified biologist no more than 30 days prior to construction.</p> <p><b>BIO-N:</b> Construction activities will take place during daylight hours to prevent impacts to wildlife species due to night lighting.</p> |  |
| <p><b>BIO-2:</b> The proposed project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFG or the U.S. Fish and Wildlife Service (USFWS). Impacts would be less than significant with mitigation.</p> | <p>Less than significant with mitigation</p> | <p>See mitigation measures BIO-A through BIO-N above.</p>   | <p>Less than significant</p>           |
| <p><b>BIO-3:</b> The proposed project would not have a substantial adverse effect on federally protected wetlands through direct removal, filling, hydrological interruption, or other means. No impact would occur as a result of the proposed project.</p>  | <p>No impact</p>                             | <p>No mitigation measures are required.</p>   | <p>No impact</p>                       |
| <p><b>BIO-4:</b> The proposed project would not interfere substantially with the movement of any native</p>   | <p>Less than significant</p>                 | <p>See mitigation measures BIO-A through BIO-K above.</p>   | <p>Less than significant</p>           |

| <b>Potential Environmental Impacts</b>   | <b>Significance Determination</b>     | <b>Mitigation Measures</b>   | <b>Level of Significance after Mitigation</b> |
|--|---------------------------------------|--|---|
| resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. Impacts would be less than significant with mitigation.  |                                       |  |   |
| <b>BIO-5:</b> The proposed project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. No impact would occur.   | No impact                             | No mitigation measures are required.   | No impact                                     |
| <b>BIO-6:</b> The proposed project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Program (NCCP), or other approved local, regional, or state habitat conservation plan. Impacts would be less than significant with mitigation.   | Less than significant with mitigation | See mitigation measures BIO-A through BIO-N above.   | Less than significant                         |
| <b>CULTURAL AND PALEONTOLOGICAL RESOURCES</b>  |                                       |  |   |
| <b>CUL-1:</b> The proposed project would not cause a substantial adverse change in the significance of a historical, archaeological, paleontological, or geologic resource. The proposed project would not disturb any human remains, including those interred outside of formal cemeteries. Impacts would be less than significant.   | Less than significant                 | No mitigation measures are required. However, if construction activities reveal buried cultural resources, all construction work would be stopped and diverted a safe distance from the location, and a qualified archaeologist would be contacted to evaluate the significance of the resource. | Less than significant                         |
| <b>GEOLOGY AND SOILS</b>   |                                       |  |   |
| <b>GEO-1:</b> The proposed project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving the rupture of a known earthquake fault, strong seismic ground shaking, or seismic-related ground failure, including liquefaction and landslides. The proposed project is also not located on expansive soils or a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off- | Less than significant                 | No mitigation measures are required.   | Less than significant                         |

| <b>Potential Environmental Impacts</b>  | <b>Significance Determination</b> | <b>Mitigation Measures</b>           | <b>Level of Significance after Mitigation</b> |
|---|-----------------------------------|--------------------------------------|---|
| site landslide, lateral spreading, subsidence, liquefaction, or collapse. Impacts would be less than significant.   |                                   |                                      |   |
| <b>GEO-2:</b> The proposed project would not result in substantial soil erosion, loss of topsoil, or changes in topography or unstable soil conditions from excavation, grading, or fill. Impacts would be less than significant.   | Less than significant             | No mitigation measures are required. | Less than significant                         |
| <b>GEO-3:</b> The proposed project would not have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater. No impacts would occur.  | No impact                         | No mitigation measures are required. | No impact                                     |
| <b>PUBLIC SAFETY AND HAZARDOUS MATERIALS</b>  |                                   |                                      |   |
| <b>HAZ-1:</b> The proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, nor would it create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. The impacts would be less than significant. | Less than significant             | No mitigation measures are required. | Less than significant                         |
| <b>HAZ-2:</b> The proposed project would not emit or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school. No impact would occur.   | No impact                         | No mitigation measures are required. | No impact                                     |
| <b>HAZ-3:</b> The proposed project would not be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65965.5 and would not create a significant hazard to the public or the environment. No impact would occur.   | No impact                         | No mitigation measures are required. | No impact                                     |
| <b>HAZ-4:</b> If the proposed project is located within an airport land use plan or within 2 miles of a public  | No impact                         | No mitigation measures are required. | No impact                                     |

| <b>Potential Environmental Impacts</b>  | <b>Significance Determination</b> | <b>Mitigation Measures</b>           | <b>Level of Significance after Mitigation</b> |
|---|-----------------------------------|--------------------------------------|---|
| airport or private airstrip, the proposed project would not result in a safety hazard for people residing or working in the project area. No impact would occur.  |                                   |                                      |   |
| <b>HAZ-5:</b> The proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. No impact would occur.  | No impact                         | No mitigation measures are required. | No impact                                     |
| <b>HAZ-6:</b> The proposed project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. The impact would be less than significant.  | Less than significant             | No mitigation measures are required. | No impact                                     |
| <b>PUBLIC SERVICES AND UTILITIES</b>  |                                   |                                      |   |
| <b>PSU-1:</b> The proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered fire or police protection facilities in order to maintain acceptable service ratios, response times, or other performance objectives. Impacts would be less than significant.  | Less than significant             | No mitigation measures are required. | Less than significant                         |
| <b>PSU-2:</b> The proposed project would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board (RWQCB), require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects, or result in a determination by the wastewater treatment provider that serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments. No impact would occur. | No impact                         | No mitigation measures are required. | No impact                                     |

| <b>Potential Environmental Impacts</b>   | <b>Significance Determination</b> | <b>Mitigation Measures</b>           | <b>Level of Significance after Mitigation</b> |
|--|-----------------------------------|--------------------------------------|---|
| <b>PSU-3:</b> The proposed project would not require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. Impacts would be less than significant.  | Less than significant             | No mitigation measures are required. | Less than significant                         |
| <b>PSU-4:</b> The proposed project would have sufficient water supplies available to serve the project from existing entitlements and resources. Impacts would be less than significant.   | Less than significant             | No mitigation measures are required. | Less than significant                         |
| <b>PSU-5:</b> The proposed project would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs and comply with federal, state, and local statutes and regulations related to solid waste. Impacts would be less than significant.   | Less than significant             | No mitigation measures are required. | Less than significant                         |
| <b>PSU-6:</b> The proposed project would not require or result in the construction of new electricity, natural gas, or telecommunication facilities, or expansion of existing facilities, and would have sufficient electricity, natural gas, or telecommunication supplies available from the local provider to serve the project from existing entitlements and resources. Impacts would be less than significant. | Less than significant             | No mitigation measures are required. | Less than significant                         |

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## **CHAPTER 1.0 INTRODUCTION**

### **1.1 SCOPE AND INTENT OF THE EIR**

This Environmental Impact Report (EIR) has been prepared in compliance with the California Environmental Quality Act (CEQA) to evaluate the environmental effects of implementation of the Unit AA Raw Water Pipeline Project, proposed for construction by the Olivenhain Municipal Water District (District).

### **1.2 THE CEQA PROCESS**

Under CEQA, the consultation and coordination process begins with issuance of a Notice of Preparation (NOP). The NOP is designed to provide a means for trustee and responsible agencies to officially provide input to the lead agency (the District) regarding known areas of environmental concern; to recommend certain courses of action; and to identify applicable laws, codes, rules, regulations, and approvals that may apply to the project.

An NOP for the “Environmental Impact Report for the Olivenhain Municipal Water District’s Raw Water Pipeline Project from the Second San Diego Aqueduct to the David C. McCollom Water Treatment Plant” was prepared and sent to the State Clearinghouse on January 7, 2010. Notices were also sent to local neighborhood councils, responsible state and federal agencies, and local agencies with potential stake in the project. The NOP and comment letters received during the comment period are included as Appendix B of this EIR. Two agencies submitted comment letters during the public comment period: the Native American Heritage Commission (NAHC) and the California Department of Fish and Game (CDFG). The letter dated January 25, 2010, from the NAHC recommended early consultation with Native American tribes that may have knowledge of the presence of culturally significant historic properties in the area. As discussed further in Section 3.7 of this document, the District consulted with several tribal representatives regarding the proposed project. The letter dated February 8, 2010, from CDFG supported the District’s strategy to tunnel under Escondido Creek. The letter also recommended avoidance and mitigation measures regarding habitat for the California gnatcatcher and other sensitive biological resources. These issues are addressed in Section 3.6 of this document.

This Final EIR was prepared with input from environmental investigations conducted along the proposed pipeline alignments and in surrounding areas. It was available for public review and comment for 45 days from the date the Notice of Availability was published on July 30, 2010, to

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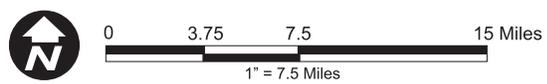
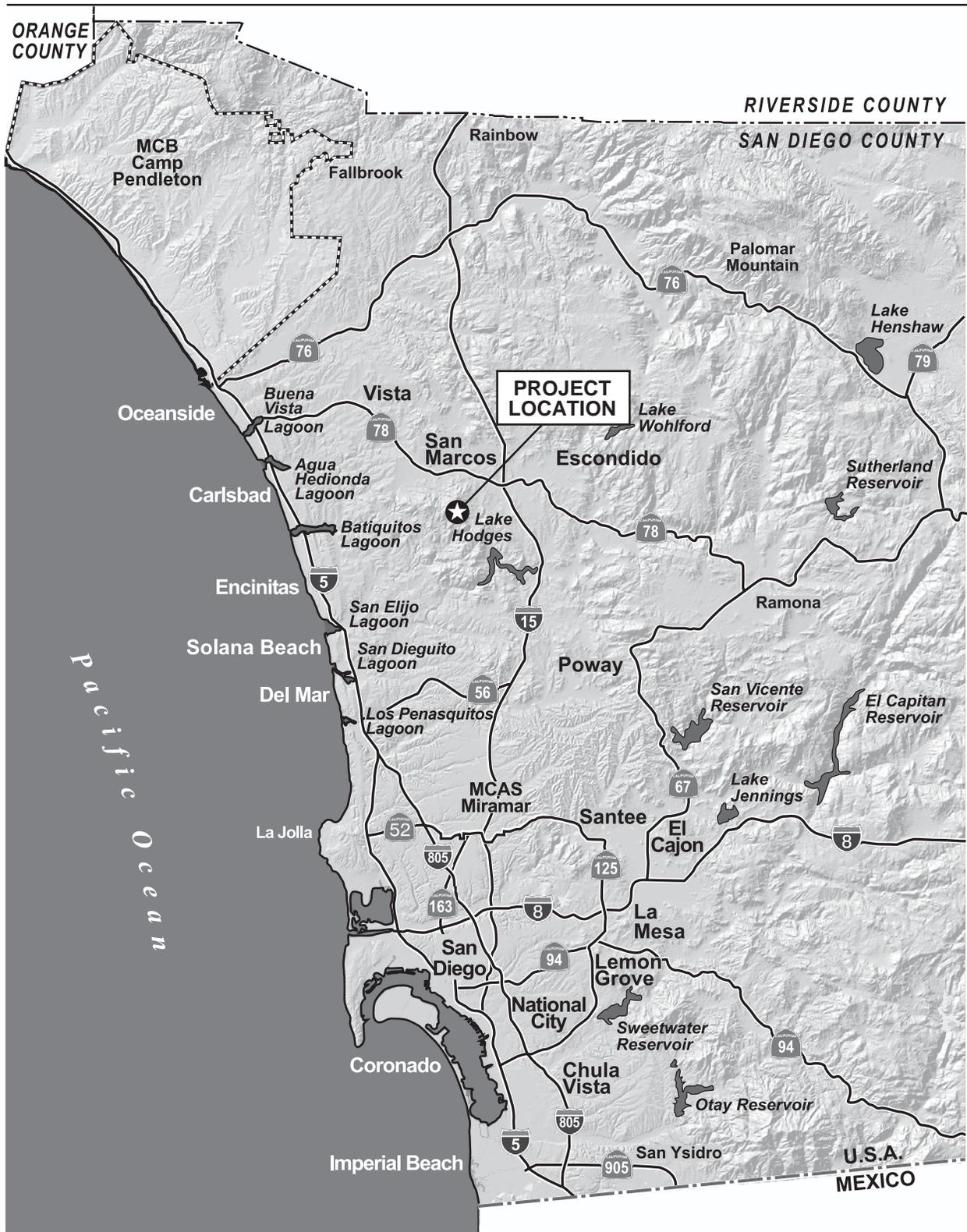
September 13, 2010. Within this period, the public was offered an opportunity to attend a public meeting and to submit written and verbal comments to the District. A meeting of the District's Board of Directors was open to the public and occurred at 8:30 a.m. on August 25, 2010. Those in attendance had an opportunity to comment on the adequacy and accuracy of the Draft EIR. After receiving and reviewing comments on the Draft EIR, the District prepared formal responses to comments and revised the Draft EIR, as appropriate, to fully address all comments in this Final EIR (CEQA Guidelines Section 15088). Comment letters were submitted during the public comment period by four agencies (NAHC, the California Department of Toxic Substances Control, the County of San Diego Department of Planning and Land Use, and CDFG), two Native American tribes (San Luis Rey Band of Luiseno Tribe and the Pala Band of Mission Indians), the Elfin Forest/Harmony Grove Town Council, and two individuals. The comments and responses to comments are presented in Chapter 7, Response to Comments on the Draft EIR. Revisions and clarifications made in response to comments and information received on the Draft EIR are listed in Chapter 8, Clarifications and Modifications. The District's Board of Directors will consider the EIR and any comments received, and, if the EIR is determined adequate, will then approve and certify the Final EIR.

### **1.3 PROJECT BACKGROUND AND OBJECTIVES**

The District serves residential, industrial, and commercial customers in northern San Diego County (County). The District is a publicly owned water service agency currently serving the needs of approximately 68,000 people in a 48-square-mile area of North San Diego County that includes portions of the cities of Encinitas, Carlsbad, San Diego, Solana Beach, and San Marcos, and the communities of Olivenhain, Leucadia, Elfin Forest, Rancho Santa Fe, Fairbanks Ranch, Santa Fe Valley, and 4S Ranch. The District is a member agency of the San Diego County Water Authority (SDCWA) and the regional Metropolitan Water District (MWD) of Southern California. Figure 1-1 shows the regional location of the project.

Currently, the District purchases and imports most of its raw water from the SDCWA Second San Diego Aqueduct. Raw water is transmitted to the Olivenhain Reservoir and the David C. McCollom Water Treatment Plant (DCMWTP) via a 78-inch-diameter pipeline owned by SDCWA. This pipeline connects to the Second San Diego Aqueduct, approximately 2.5 miles east of the DCMWTP, just north of Escondido Creek. The Olivenhain Reservoir collects limited amounts of rainfall due to its relatively small watershed.

An agreement between the City of San Diego and SDCWA will allow SDCWA to transfer water between Lake Hodges and the Olivenhain Reservoir via a SDCWA pump station and pipeline. With



**Figure 1-1**  
Project Vicinity

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the transfer of water from Lake Hodges to the Olivenhain Reservoir, the water quality in the Reservoir may deteriorate below acceptable levels for the efficient and effective operation of the DCMWTP. To reliably deliver high-quality potable water service to its customers, the District has explored options for new infrastructure that would maintain the raw water supply to the DCMWTP.

Project objectives are as follows:

1. Maintain a supply of high-quality raw water for treatment and distribution via the DCMWTP.
2. Minimize the impact on the District's customers from transferring water from Lake Hodges to the Olivenhain Reservoir.
3. Limit the transfer of costs for infrastructure improvements to customers.
4. Minimize the project's impact on the human environment and natural resources.

A new pipeline connecting the SDCWA Second San Diego Aqueduct would achieve the objectives above. The pipeline would retrieve raw water from the SDCWA Second San Diego Aqueduct and deliver it directly to the DCMWTP. This transmission line would bypass the Olivenhain Reservoir, eliminating the risk of allowing Lake Hodges–Olivenhain Reservoir mixed water into the DCMWTP. This pipeline is necessary for the District to avoid costly upgrades (estimated to exceed \$100 million) to the treatment capability of the DCMWTP, and to ensure the District's ability to meet its customers' needs for a reliable source of high-quality municipal water. No development growth would occur as a result of this project.

The proposed project includes the relocation of a 10-inch-diameter potable water distribution pipeline that would be co-located with the proposed Unit AA raw water pipeline where it crosses Escondido Creek. Relocating the 10-inch distribution pipeline would meet objectives #1 and #3 above. This action would allow the District better access to the 10-inch pipeline, which would reduce the cost of periodic maintenance. Co-locating this pipeline with the proposed Unit AA raw water pipeline would eliminate the need for the District to relocate the 10-inch distribution line as part of a separate project requiring additional funding.

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## **CHAPTER 2.0**

### **PROJECT DESCRIPTION**

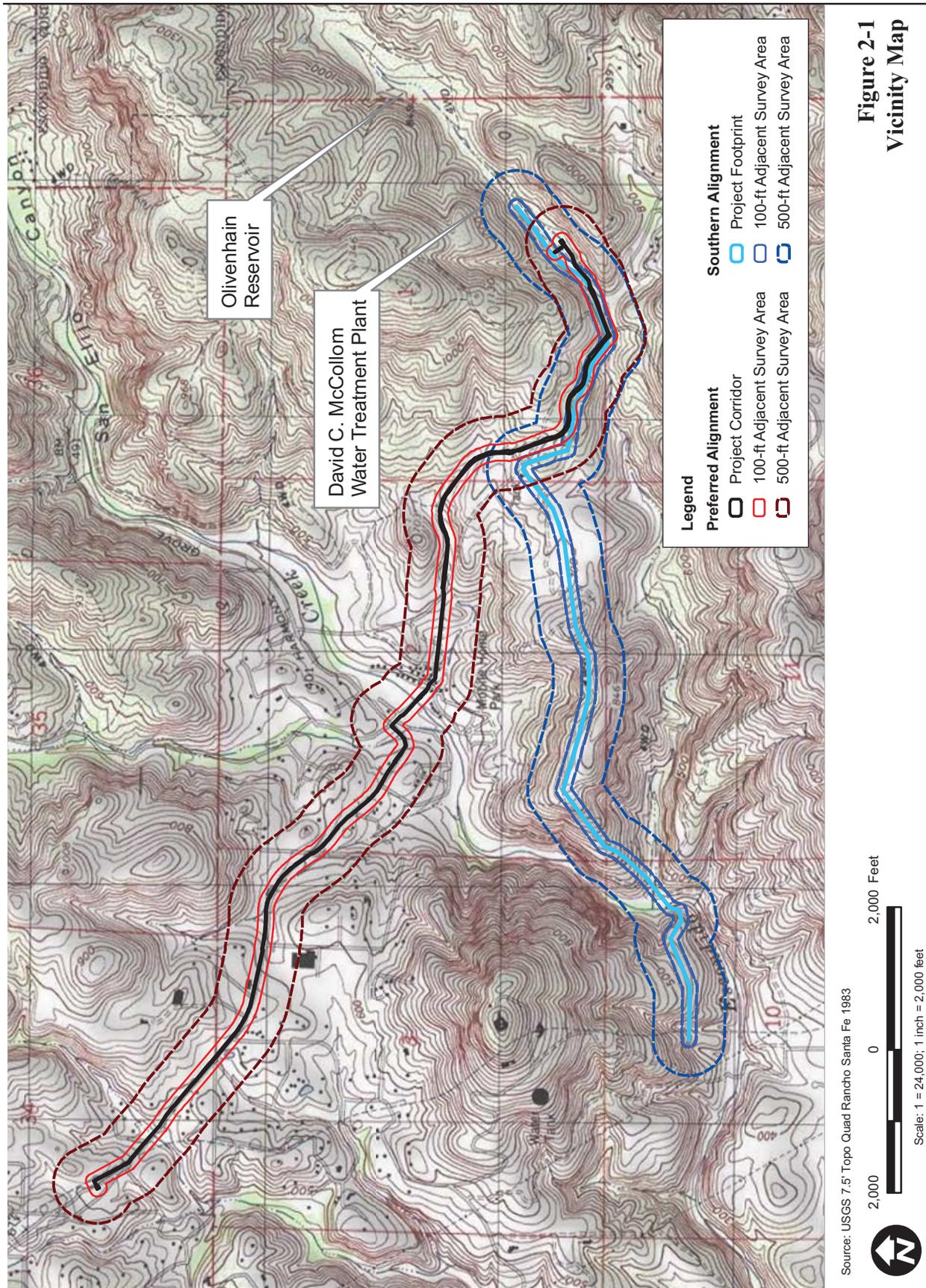
#### **2.1 PROJECT LOCATION AND ENVIRONMENTAL SETTING**

The proposed project is situated in central San Diego County, approximately 25 miles northeast of downtown San Diego, 8 miles southwest of the Pacific Ocean, 4 miles southwest of the center of the City of San Marcos, and 6 miles southwest of the City of Escondido, California (Figure 2-1). The communities of San Elijo Hills and Elfin Forest are located near the northern terminus of the project area. The community of Harmony Grove is located to the east of the project area. The proposed project area occurs at an elevation of approximately 650 feet above mean sea level (AMSL) and is within Section 34, Township 12 S, Range 3 W; and Sections 1, 2, 3, 10, and 11 of Township 13 S, Range 3 W, of the San Bernardino U.S. Geological Survey (USGS) Quadrangle (CaSIL 2009) (Figure 2-2). The proposed project area is bounded by Fortuna del Sur to the northwest, the Olivenhain Reservoir to the east, Calle Mesina to the south, and Suerte del Este to the west.

The southern and western portions of the project area are generally undeveloped, and are characterized by steep slopes, dense native vegetation, and the converging Misha and Escondido creeks. The limited development that has occurred here includes the DCMWTP and adjacent Olivenhain Dam. Also in this area are several District and SDCWA controlled maintenance/access roads, and their associated gates, structures, and facilities. The northeastern portion of the project area is more densely developed; it maintains a rural residential character with large lots and generally large structure setbacks along the main thoroughfares, Harmony Grove Road and Elfin Forest Road. Escondido Creek generally forms the southern limit of the development in this area as it flows south and west.

Within the project area, the District identified two alternative routes for the new raw water pipeline. The Preferred Alternative would begin northwest of the DCMWTP where the Second San Diego Aqueduct crosses Elfin Forest Road, and would generally follow a southeastward direction along Elfin Forest Road, tunnel under Escondido Creek, and continue along Via Ambiente to the DCMWTP. The 10-inch-diameter pipeline relocation would be completed within the Preferred Alternative route.

An alternative route (Southern Alternative) would begin where an existing 78-inch-diameter SDCWA pipeline connects to the Second San Diego Aqueduct, due east-southeast of the DCMWTP, and would generally follow the District maintenance road eastward. The Southern Alternative is addressed in Chapter 5 – Alternatives.



**Figure 2-1**  
Vicinity Map

Unit AA Raw Water Pipeline - Final EIR  
Olivenhain Municipal Water District



Source: OMWD 2009



**Figure 2-2**  
Olivenhain Municipal Water District System Map

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Along the Preferred Alternative route, the District has considered various construction methods and project features that result in additional alternatives. The Escondido Creek Restoration Alternative would employ an open trench installation through the Escondido Creek bed and associated riparian area subsequent to the removal of an existing degraded culvert crossing; the culvert crossing would be replaced with a smaller crossing that allows for improved flow of Escondido Creek and the restoration of the adjacent creek bed. A second alternative, the Flow Control Facility at Aqueduct Connection Alternative, would include construction of an above-ground structure near the Unit AA pipeline connection to the Second San Diego Aqueduct, adjacent to Elfin Forest Road. These alternatives, along with the No Project Alternative, are addressed in detail in Chapter 5.

Figure 2-3 shows the general Preferred Alternative alignment and the Southern Alternative alignment. The Preferred Alternative is discussed below in Section 2.2.

## **2.2 PROJECT DESCRIPTION**

The District proposes to construct a new underground 48-inch-diameter pipeline extending approximately 3 miles from the Second San Diego Aqueduct to the DCMWTP. The Preferred Alternative would also involve the relocation of approximately 0.5 mile of an existing 10-inch-diameter pipeline that would parallel the Unit AA pipeline. The Preferred Alternative would be constructed using a combination of trenching and tunneling construction methods.

### **2.2.1 Project Components**

The Preferred Alternative begins on the north side of Elfin Forest Road in a portion of the Sage Hill Preserve where the road crosses the Second San Diego Aqueduct. An underground connection would join the Unit AA pipeline to the Second San Diego Aqueduct. The Unit AA pipeline would be placed within public right-of-way following Elfin Forest Road to the southeast. The public road right-of-way would be used in coordination with the County of San Diego. At the intersection where Elfin Forest Road transitions to Harmony Grove Road, the relocated 10-inch distribution pipeline would be constructed parallel with the Unit AA pipeline. The portion of the 10-inch pipeline extending south of the intersection would be abandoned. Approximately 300 feet northeast of the intersection, the two pipelines would turn southeast and continue through a disturbed paved area. The pipelines would follow a dirt roadway for approximately 200 feet where the pipelines would transition to a single tunnel passing underneath Escondido Creek for approximately 160 feet. After surfacing southeast of Escondido Creek, the pipelines would transition back to parallel trenches, and would pass under the City of Escondido's sewer outfall. Pipeline installation under the sewer outfall may also be completed using tunnel construction; trenches would be constructed east of the sewer

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outfall. The trenches would accommodate the pipelines along an existing easement and dirt road until intersecting Via Ambiente. Along Via Ambiente, the 10-inch pipeline would reconnect to the existing 10-inch distribution line, and the Unit AA pipeline would continue in a trench to the DCMWTP. All work is anticipated to be conducted within the County right-of-way.

### **Tunnel Construction**

Within the riparian forested area near Escondido Creek, the pipelines would be constructed using a jack and bore tunneling method. This approach would leave vegetation and structures near the ground surface undisturbed. A bentonite slurry is anticipated to be used to bore through the subsurface soils. Figure 2-4 depicts typical tunnel construction for pipelines.

### **Trench Construction within Paved Roadways**

An encroachment permit would be processed with the County to install the pipeline within a County right-of-way. During the installation of the pipelines within roadway segments, portions of Elfin Forest Road, Harmony Grove Road, and Via Ambiente may be reduced to one lane during construction. The final alignment of the pipelines would determine the type and direction of lane closures; the closed lanes would alternate between east- and west-bound travel directions.

### **Trench Construction Outside Paved Roadways**

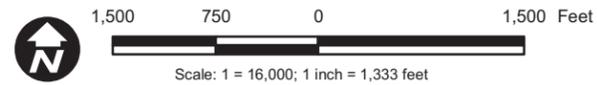
Pipeline installation near the Escondido Creek area would require trenching through non-paved areas. Some of these areas would need to be cleared and graded to allow heavy machinery access to the construction site, and to construct the trench. Figure 2-5 depicts typical trench construction for pipelines.

### **Roadway Reconstruction**

During the pipeline construction period, portions of the existing rubberized asphalt roadway along Elfin Forest Road would be temporarily removed. Since Elfin Forest Road and Harmony Grove Road have been paved within the last 3 years, the County would likely require a 1.5-inch grind and overlay over the entire road width to fully restore the road surface. After the pipelines are completely installed within the roadway, the contractor would grind and install a 1.5-inch rubberized asphalt overlay along the full roadway width of Elfin Forest Road and Harmony Grove Road in accordance with County of San Diego requirements.



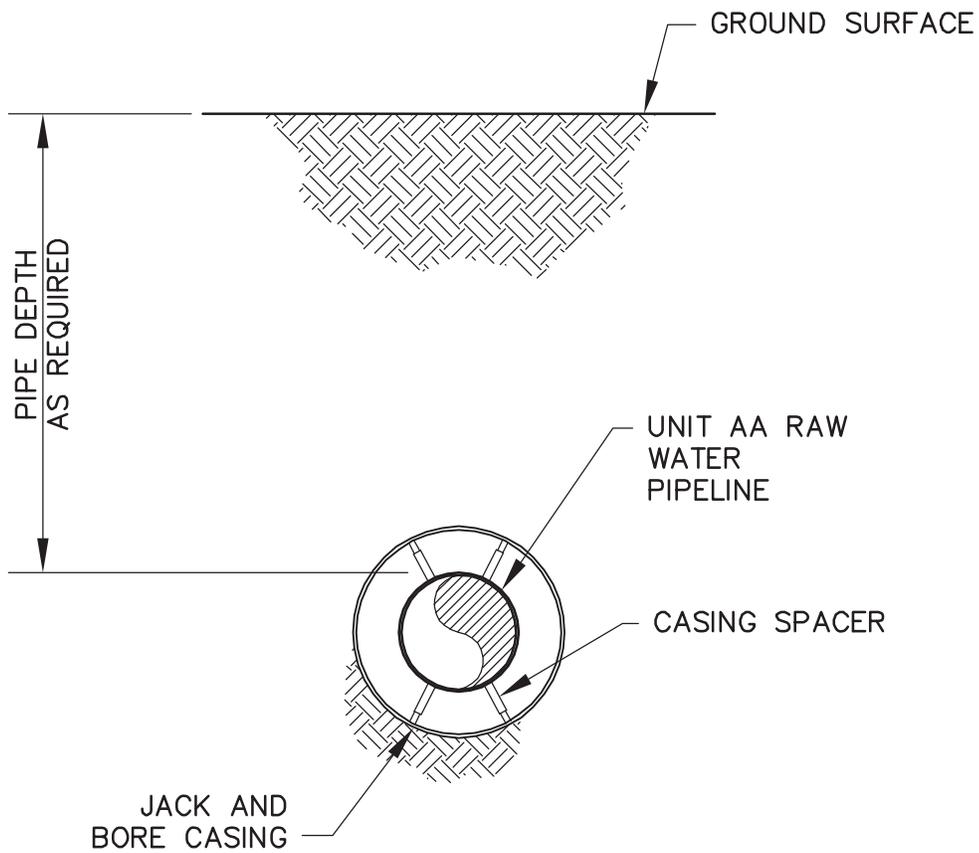
Source: DigitalGlobe 2008; Nolte 2009; AECOM 2009



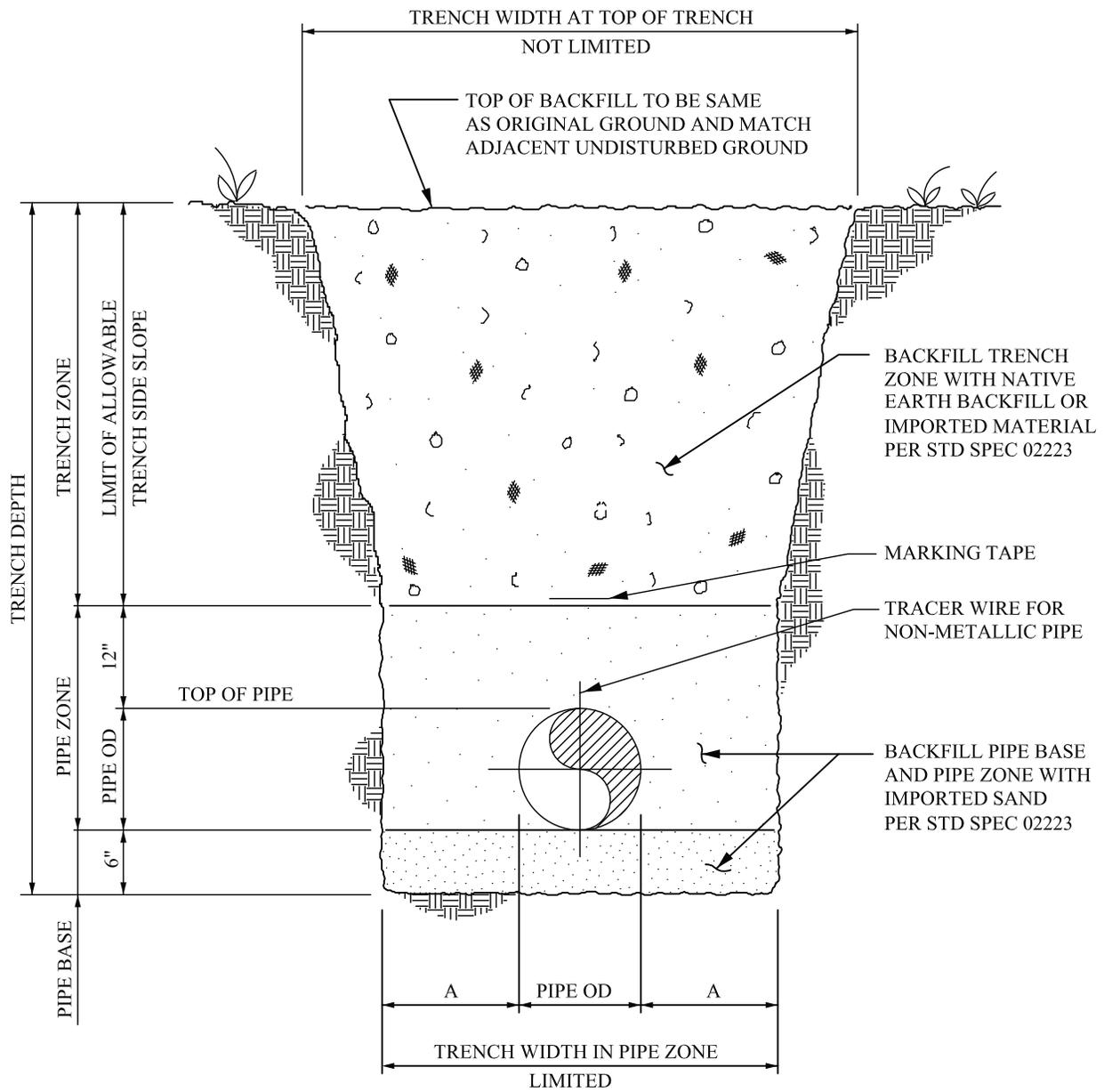
**Figure 2-3**  
Aerial View of Project Area

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**Figure 2-4**  
**Typical Section Tunnel**



|   | PIPE DIAMETER   | MIN | MAX |
|---|-----------------|-----|-----|
| A | 1" THROUGH 8"   | 6"  | 9"  |
|   | 10" THROUGH 16" | 8"  | 12" |
|   | 18" THROUGH 24" | 10" | 18" |
|   | 27" THROUGH 48" | 12" | 48" |

**Figure 2-5**  
**Typical Section Trench**

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The size of the construction crew required to complete the installation would vary depending on the timing and location of construction. At a maximum, three construction fronts may install pipeline simultaneously in three separate areas. This could result in three distinct areas along Harmony Grove Road and/or Elfin Forest Road that would experience traffic control with only one lane operating.

### **2.2.2 Project Schedule**

Project construction is expected to begin in late fall of 2010 with construction expected to occur over a 9- to 12-month period. Work would be conducted on weekdays between 7:00 a.m. and 5:00 p.m. Slope revegetation and other habitat mitigation activities would likely occur in the fall of 2011, and could occur coincidentally with pipeline construction. Mitigation monitoring is anticipated to continue for up to 5 years after pipeline construction is complete.

### **2.2.3 Staging Areas**

Project materials would be transported by truck via Harmony Grove Road or Elfin Forest Road, and would be staged primarily at the DCMWTP. As trucks heavier than 7 tons are currently prohibited on Elfin Forest Road between San Elijo Road and Harmony Grove Road, the District would coordinate with the County on allowing temporary construction traffic access along this route. Limited amounts of materials and equipment staging would occur within the roadway during construction to limit the length of the lane closure required. No materials or equipment would be left obstructing traffic after daily construction hours end.

### **2.2.4 Access Routes**

Trucks are anticipated to use Interstate 15 (I-15) and Harmony Grove Road from the east as the primary access route to the project site. Truck traffic may also arrive at the project site using State Route 78 (SR-78), Twin Oaks Valley Road, and Elfin Forest Road. Employee trips, using personal vehicles, are anticipated to be equally distributed to both Elfin Forest Road and Harmony Grove Road.

Reestablished roads within the District's existing pipeline easement would be required to access the trench and tunnel construction areas near the Escondido Creek area. To the extent feasible, existing unimproved routes in this area would be used to avoid impacts to existing vegetation. Construction site best management practices would be incorporated to further reduce construction impacts in this sensitive area.

## 2.3 DISCRETIONARY APPROVALS AND PERMITS

The following permits and approvals would be needed prior to the start of this project (Table 2-1).

**Table 2-1  
Permits and Approvals**

| <b>Agency</b>  | <b>Permit</b>   | <b>Activity/Action</b>   | <b>Timeline</b>   |
|--|---|--|---|
| County of San Diego (in coordination with California Department of Fish and Game and the U.S. Fish and Wildlife Service) | Habitat Loss Permit   | Removal of coastal sage scrub (CSS) for off-road trench construction. CSS is habitat for the federally threatened CAGN | Permit approval expected summer 2010. Permit valid for 1 year from date of issue. |
| California Air Resources Board   | General Construction Permit   | Temporary air emissions due to construction  | Contractor applies for and maintains.   |
| State Water Resources Control Board (Regional Water Quality Control Board, Region 9)                                     | <ul style="list-style-type: none"> <li>• Dewatering Permit (if applicable)</li> <li>• Storm Water Pollution Prevention Program (if applicable)</li> <li>• National Pollutant Discharge Elimination System (NPDES) permit</li> </ul> | Construction has potential to discharge sediment into storm water collection systems or waters of the U.S.             | Contractor applies for and maintains.   |

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## **CHAPTER 3.0**

### **ENVIRONMENTAL SETTING**

#### **3.1 LAND USE AND PLANNING**

##### **3.1.1 Existing Conditions**

###### **Existing Land Uses**

The project area is located within the San Dieguito Community Plan Area of the San Diego County General Plan (County of San Diego 2009a) and is designated as Estate Residential, Multiple Rural Use, and Impact Sensitive. The project would also be located within the Rancho Cielo Specific Plan Area.

###### **Surrounding Land Uses**

The San Dieguito Community Plan Area, which encompasses approximately 30,000 acres, is primarily a low-density, estate residential area consisting of properties measuring 2 to 4 acres. The project area is mainly surrounded by the estate residential communities of Elfin Forest and Harmony Grove, and the Questhaven Retreat. The cities of Encinitas and Solana Beach border the project area to the west, Carlsbad and San Marcos to the north, Escondido to the east, and the City of San Diego to the south. The San Dieguito Community Plan Area includes the communities of Elfin Forest, Del Dios, Mt. Israel, Rancho Santa Fe, Whispering Palms, and Fairbanks Ranch, and the Ecker Agricultural Preserve. The Community Plan Area also includes Sage Hill Preserve and the Mendocino property. Sage Hill Preserve (Preserve) is a 235-acre area located in the Elfin Forest community that is managed by the County of San Diego's Parks and Recreation Department. The Preserve was acquired in 2009 for inclusion in the North County Multiple Species Conservation Program (NCMSCP) preserve system (County of San Diego 2010). The Mendocino property is a 39-acre area that has been identified by the County for addition to the Escondido Creek Preserve.

Elfin Forest Road and Harmony Grove Road serve as the main access roads through the area. There are several undeveloped hillsides in the general vicinity of the project alignment. Farmland is located to the north of the Community Plan Area and is divided into small agricultural fields, orchards, pasture land, and commercial nursery operations. Approximately 1.5 miles northwest of the project area is a landfill that was operated by the City of San Marcos, but has been closed. The major transportation arteries serving the area are Del Dios County Highway S6 to the southeast,

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I-15 to the east, State Route 78 (SR-78) to the north, and Interstate 5 (I-5) to the west. Figure 3.1-1 shows the project area land use.

### **3.1.2 Regulatory Setting**

#### **San Diego County General Plan – San Dieguito Community Planning Area**

The San Dieguito Community Planning Area (amended January 2005) is a low-density estate residential area surrounded by rapidly urbanizing areas. The San Dieguito Community Plan aims to maintain the rural elements that are distinctive of the area. The County is currently conducting a comprehensive update of its entire General Plan, a study known as General Plan 2020, and will include updates to each of the County's community plans.

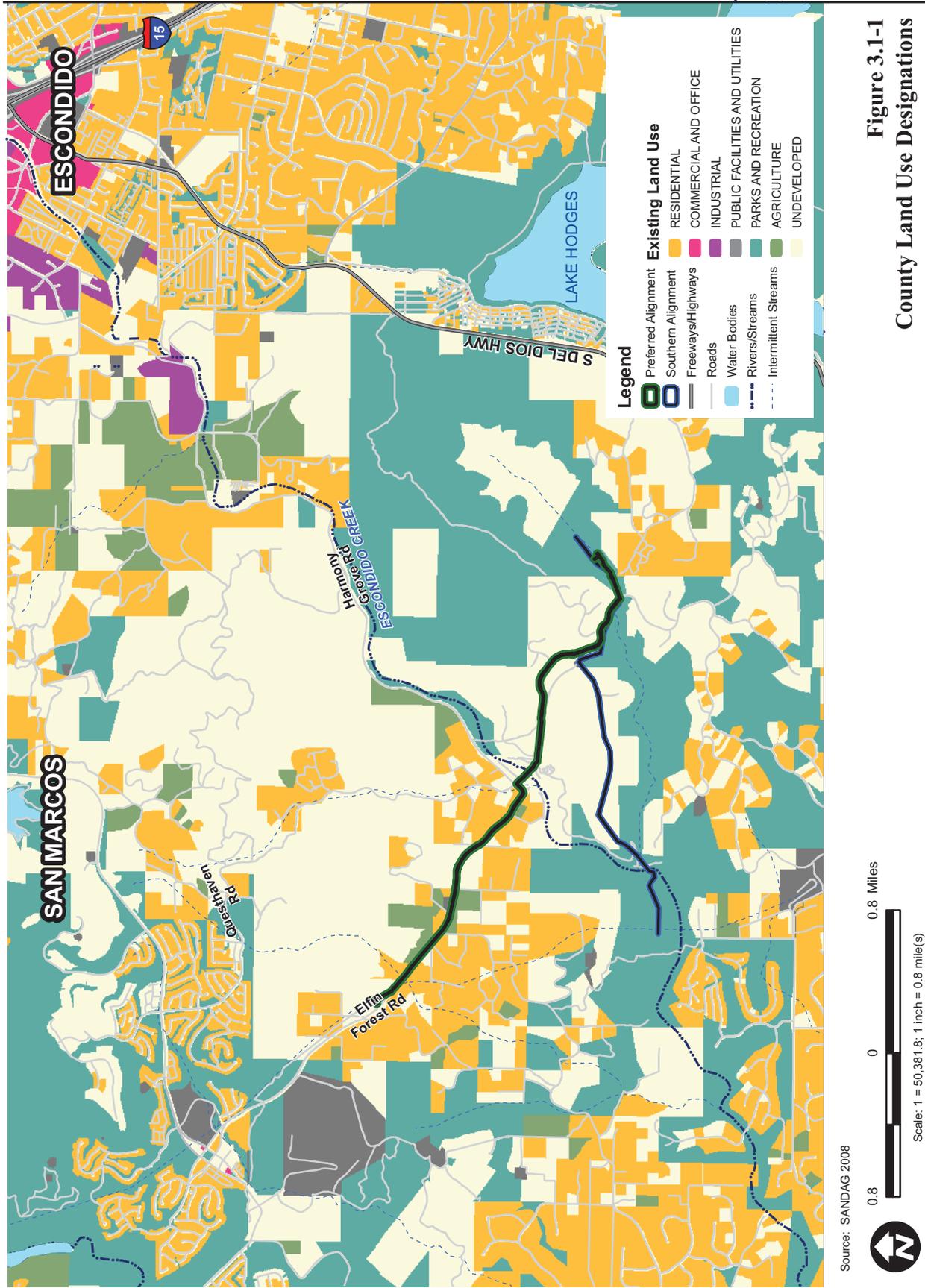
#### **California Natural Community Conservation Plan Act of 1991**

The California Natural Community Conservation Plan (NCCP) Program of the CDFG primarily identifies and provides for the regional or area-wide protection of plants and animals and their habitats, while allowing compatible economic development and land use. In 1996, CDFG approved the San Diego Multiple Species Conservation Plan (MSCP), a comprehensive habitat conservation program that encompasses 582,000 acres and establishes a 172,000-acre preserve system in southwestern San Diego County (CDFG 2009). This plan covers 85 species of plants and animals and 23 vegetation types. Project-specific permits under the NCCP are not issued; however, proposed County-authorized projects must comply with the MSCP.

#### **San Diego County Multiple Species Conservation Program**

The MSCP is a long-term regional conservation plan designed to establish a connected preserve system that protects the County's sensitive species and habitats. The MSCP covers 582,243 acres over 12 jurisdictions. Each jurisdiction will have its own subarea plan to be implemented separately.

The subarea plan for the southwestern portion of unincorporated lands within the County's jurisdiction, the South County Multiple Species Conservation Program (SCMSCP), covers 252,132 acres. The County's MSCP Subarea Plan is regulated by the Biological Mitigation Ordinance (BMO), which outlines the specific criteria and requirements for projects within the MSCP boundaries. The County's MSCP Subarea Plan (adopted October 1997), the BMO (adopted March 1998), the Final MSCP Plan (dated August 1998), and the Implementation Agreement (signed March 1998) between the County and the wildlife agencies are the documents used to implement



**Figure 3.1-1**  
**County Land Use Designations**

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the MSCP. All projects within the MSCP boundaries must conform to both the MSCP requirements and the County's policies under CEQA.

The subarea plan for the northwestern portion of unincorporated lands within the County's jurisdiction, the North County Multiple Species Conservation Program (NCMSCP), is not yet approved. When the Final NCMSCP is approved, an Implementation Agreement between the County and the wildlife agencies, specific to this area of unincorporated lands within the County's jurisdiction, will be signed. If the NCMSCP is in place prior to project approval, the portions of the proposed project within the boundaries of the NCMSCP will have to conform to the NCMSCP requirements. Until these documents are finalized, however, projects must continue to meet the conditions of the County's Resource Protection Ordinance.

### **3.1.3 Thresholds of Significance**

The impact of the proposed project related to land use would be considered significant if it would exceed the following Standards of Significance, in accordance with Appendix G of the CEQA Guidelines:

- Physically divide an established community;
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect;
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

### **3.1.4 Impact Analysis**

**LU-1**      *The proposed project would not physically divide an established community. No impact would occur.*

The proposed project would be located along either the existing right-of-way of Elfin Forest Road or Via Ambiente, or within a District easement adjacent to a maintenance road. The pipelines would be buried underground within a cut and cover trench or would be installed using tunneling. No road closures are anticipated during construction. As such, no community would be physically divided and no land use impacts would occur.

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**LU-2**      *The proposed project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect. No impact would occur.*

The project area is located within the San Dieguito Community Plan Area of the San Diego County General Plan and is designated as Estate Residential, Impact Sensitive, Multiple Rural Use, and Public/Semi-Public Lands. The proposed project is also located within the Rancho Cielo Specific Plan Area. The San Diego County zoning for the project area is Rural Residential, Residential Mobile Home, Residential – Variable, Agriculture, Open Space, and Specific Plan Area. There would be no conflicts with any land use plan, policy, or regulation of an agency because the proposed project would be buried underground and along existing roadways or within District easements.

Based on these determinations, the temporary nature of the construction project, and the absence of other potential significant impacts on adjacent residential land uses from the proposed project improvements, there would be no potential land use impacts.

**LU-3**      *The proposed project would not conflict with any applicable habitat conservation plan or natural community conservation plan. Impacts would be less than significant.*

The proposed project is located within the proposed North County Multiple Species Conservation Program (NCMSCP) Subarea Plan for San Diego County (County of San Diego 2009b), a subarea plan that is not yet approved. Until the Final NCMSCP and associated BMO are approved, projects must meet the conditions of the County’s Resource Protection Ordinance. The District would comply with the procedures and terms established by state and federal agencies to minimize impacts on sensitive species and habitats in a manner that also accommodates the needs for urban development and economic growth in the service area. See Section 3.6, Biological Resources, for further discussion of the MSCP.

### **3.1.5 Mitigation Measures**

Mitigation measures for impacts pursuant to the NCCP process are contained in Section 3.6, Biological Resources, of this EIR. No mitigation measures for land use and planning are required.

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## 3.2 TRAFFIC AND CIRCULATION

Construction of the Preferred Alternative would affect local traffic operations within the Elfin Forest and Harmony Grove neighborhoods. This section describes the traffic environment within the project area and the potential impacts related to project construction and operation.

### 3.2.1 Existing Conditions

The transportation system in Elfin Forest is generally characterized as a collection of residential roadway spurs and driveways connected by a two-lane rural road. Harmony Grove Road transitions to Elfin Forest Road, forming the continuous rural connector. This route has a maximum posted speed of 50 miles per hour (mph); portions of this system act as a rural highway. At the ends of this rural connector are the communities of San Elijo Hills and Harmony Grove. These communities are more densely developed than the residential neighborhoods along Harmony Grove Road and Elfin Forest Road through the project area.

Roadways that may be temporarily affected by the proposed project include San Elijo Road, Elfin Forest Road, Harmony Grove Road, and Via Ambiente.

#### San Elijo Road

San Elijo Road is currently built as a four-lane divided roadway that connects the City of Carlsbad to the City of San Marcos and San Elijo Hills. The posted speed limit on San Elijo Road is 45 mph east of Rancho Santa Fe Road and 30 mph east of Elfin Forest Road. At the intersection of Elfin Forest Road, San Elijo Road splits into two one-way streets: San Elijo Road North and San Elijo Road South. Bike lanes are provided on San Elijo Road and adjacent land uses are mainly residential.

#### Elfin Forest Road

Elfin Forest Road is currently built and classified as a two-lane Rural Light Collector between San Elijo Road and Harmony Grove Road. At the intersection of San Elijo Road, Elfin Forest Road splits into two one-way streets: Elfin Road East and Elfin Forest Road West. The adjacent land uses are mainly residential. The posted speed limit on Elfin Forest Road is 50 mph. Trucks heavier than 7 tons are currently prohibited on Elfin Forest Road between San Elijo Road and Harmony Grove Road. Parking is also prohibited on Elfin Forest Road.

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### Harmony Grove Road

Harmony Grove Road is currently built and classified as a two-lane Rural Light Collector that connects the San Elijo Hills community to the City of Escondido. The posted speed limit on Harmony Grove Road varies between 30 and 45 mph. Parking is also prohibited on Harmony Grove Road.

### Via Ambiente

Via Ambiente is currently built as a two-lane gated roadway. Based on field observations, only District personnel, patrolling law enforcement, and construction traffic use Via Ambiente south of Harmony Grove Road. Via Ambiente also serves as the access point for the Olivenhain Dam and the DCMWTP.

Existing traffic movement along the roadway segments and at the intersections analyzed operates at a Level of Service (LOS) B or better during the AM and PM peak hour traffic conditions. This indicates that current traffic levels result in minimal travel delays during peak travel times in the project area.

## **3.2.2 Thresholds of Significance**

The following criteria were used to evaluate potential significant impacts to road segments and intersections, based on the County's published Guidelines for Determining Significance (June 30, 2009).

### **Roadway Segments**

Pursuant to the County's General Plan Public Facilities Element (PFE), new development must provide improvements or other measures to mitigate traffic impacts to avoid the following:

- a. Reduction in LOS below "C" for on-site Circulation Element roads;
- b. Reduction in LOS below "D" for off-site and on-site abutting Circulation Element roads; and
- c. "Significantly impacting congestion" on roads that operate at LOS "E" or "F." If impacts cannot be mitigated, the project will be denied unless a statement of overriding findings is made pursuant to the State CEQA Guidelines. The PFE, however, does not include specific guidelines/thresholds for determining the amount of additional traffic that would "significantly impact congestion" on such roads, as that phrase is used in item "c," above.

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## **Intersections**

For signalized intersections, increases in traffic volumes resulting from public or private projects that will significantly increase congestion on a signalized intersection currently operating at LOS E or F, or will cause a signalized intersection to operate at a LOS E or F, will have a significant traffic volume or LOS traffic impact.

For unsignalized intersections, very small volume increases on one section or turn and/or through movement can substantially affect the calculated delay for the entire intersection. Significance criteria for unsignalized intersections are based on a minimum number of trips added to a critical movement at an unsignalized intersection.

A significant traffic volume or LOS traffic impact on an unsignalized intersection would occur if one or more of the following occur:

1. Traffic volume increases from public or private projects (a) result in the addition of 20 or more peak hour trips to a critical movement of an unsignalized intersection, and (b) cause an unsignalized intersection to operate below LOS D; or
2. Traffic volume increases from public or private projects result in the addition of 20 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS E; or
3. Traffic volume increases from public or private projects result in the addition five or more peak hour trips to a critical movement of an unsignalized intersection, and cause the unsignalized intersection to operate at LOS F; or
4. The additional or redistributed average daily trips generated by the proposed project will add five or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS F; or
5. Based on an evaluation of existing accident rates, the signal priority list, intersection geometries, proximity of adjacent driveways, sight distance, or other factors, it is found that the generation rate is less than those specified above, and would significantly impact the operations of the intersection.

### **3.2.3 Impact Analysis**

The traffic study (LLG 2010) used the following methodology to analyze traffic conditions at intersections and along street segments.

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### Intersection Analysis Methodology

Signalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay was determined using standard methodology found in the 2000 Highway Capacity Manual (HCM), with the assistance of the Synchro (version 7.0) computer software. The delay values (in seconds) were translated to the corresponding intersection LOS. Unsignalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay and LOS was determined based on the procedures found in the HCM, with the assistance of Synchro (version 7.0).

### Street Segment Analysis Methodology

Street segment analysis is based on the comparison of daily traffic volumes (average daily trips [ADTs]) to the County of San Diego's Roadway Classification, LOS, and ADT table. This table provides segment capacities for different street classifications, based on traffic volumes and roadway characteristics.

The traffic study analyzed the effect of the Preferred Alternative over the existing conditions. Trip generation and distribution factors were discussed with the District. As the construction details will be the responsibility of the construction contractor, some assumptions were made based on previous pipeline projects.

The project would generate traffic that would be a mix of daily employee trips in personal vehicles and truck traffic delivering materials and equipment. A typical day during the peak of the construction period would include a 12-person pipeline crew and three trucks per construction front. Assuming a maximum of three construction fronts, up to 36 employees may be simultaneously installing pipeline, supported by nine trucks. Several administrative staff members are assumed to be present, as well. Most employee trips are assumed to occur during normal commuter peak hours. Truck traffic was assumed to be spread evenly throughout the work day. Table 3.2-1 shows the total project traffic generation. The project is calculated to generate 180 ADTs under these conditions. A typical day would likely have less than three fronts under construction and, therefore, would generate less than 180 ADTs. It is the intent of the District to have only one area of construction-impacted traffic on Elfin Forest Road at any one time. If more than one area of construction is deemed necessary, the District will work with the community to minimize impacts.

**Table 3.2-1**  
**Estimated Construction Project Trip Generation**

| Type                                  | Number    | PCE      | Daily Trips  |                 | AM Peak Hour    |           | PM Peak Hour |           |
|---------------------------------------|-----------|----------|--------------|-----------------|-----------------|-----------|--------------|-----------|
|                                       |           |          | Rate         | Volume (ADT)    | Volume          |           | Volume       |           |
|                                       |           |          |              |                 | In              | Out       | In           | Out       |
| Pipeline Crew                         | 36        | 1.0      | 2.0/employee | 72              | 26 <sup>1</sup> | 3         | 3            | 26        |
| Administrative Staff                  | 4         | 1.0      | 2.0/employee | 8               | 2               | 0         | 0            | 2         |
| Miscellaneous                         | 5         | 1.0      | 2.0/type     | 10 <sup>2</sup> | 1               | 0         | 0            | 1         |
| <i>Subtotal Employee Trips</i>        | <i>45</i> | <i>-</i> | <i>-</i>     | <i>90</i>       | <i>29</i>       | <i>3</i>  | <i>3</i>     | <i>29</i> |
| Trucks                                | 9         | 2.5      | 4.0/truck    | 90              | 7 <sup>3</sup>  | 7         | 7            | 7         |
| <b>Total (Employee + Truck Trips)</b> | <b>54</b> | <b>-</b> | <b>-</b>     | <b>180</b>      | <b>36</b>       | <b>10</b> | <b>10</b>    | <b>36</b> |

<sup>1</sup> To estimate employee traffic, it is assumed that 80 percent of the employee traffic (approximately 29 employees) would access the work area during the normal commuter peak hours. The assumed in/out splits are 90:10 during AM peak hour and 10:90 during the PM peak hour.

<sup>2</sup> A miscellaneous line item for other potential trips that may occur is included to be conservative.

<sup>3</sup> The assumed percentage of truck traffic to occur during the peak hour is 15 percent (14 trips), as the trucks are anticipated to be relatively equally spread throughout the day, with a little more -in the peak hours. The in/out splits assumed are 50:50 during the AM/PM peak hours. The trip rate of 4.0 per truck assumes two round trips for each truck, as the frequency of trucks is anticipated to be high during the day. The remainder of the truck trips (90 daily trips – 28 peak hour trips = 62 trips) is expected to occur during the remainder of the day.

Note: The trip generation table assumes three fronts or stations during the construction period.

In addition, a separate project traffic distribution analysis for employee trips and truck trips was prepared using three truck traffic distribution scenarios:

- Scenario A: 100 percent of truck traffic distributed to/from Harmony Grove Road
- Scenario B: 100 percent of truck traffic distributed to/from Elfin Forest Road
- Scenario C: 50 percent of truck traffic distributed to/from Harmony Grove Road and 50 percent distributed to/from Elfin Forest Road

Since trucks heavier than 7 tons are currently prohibited on Elfin Forest Road, the District, or the District’s contractors, shall obtain special permits to allow trucks over 7 tons on Elfin Forest for the temporary construction period in Scenarios B and C. Once construction is complete, the restriction shall be reinforced and normal roadway operations shall exist. Additionally, 50 percent of the trucks were distributed to/from the Via Ambiente staging area and 50 percent were distributed to/from the proposed pipeline alignment on Elfin Forest Road. Employee trips were distributed to both Elfin Forest Road and Harmony Grove Road to/from the staging area on Via Ambiente. Tables 3.2-2 and 3.2-3 summarize the existing and project intersection and roadway segment levels of service for the three scenarios.

**Table 3.2-2  
Existing and Project Intersection Operations**

| Intersection                              | Type              | Minor Street <sup>4</sup> | Peak Hour | Existing + Project |                  |  |     |     |                   |   |     |     |      |  |     |     |      |
|---|-------------------|---------------------------|-----------|--------------------|------------------|--|-----|-----|-------------------|---|-----|-----|------|--|-----|-----|------|
|   |                   |                           |           | Existing           |                  | Scenario A<br>(100% to Harmony Grove Road) |     |     |                   | Scenario B<br>(100% to Elfin Forest Road) |     |     |      | Scenario C<br>(50% to Harmony Grove Road and 50% to Elfin Forest Road) |     |     |      |
|   |                   |                           |           | Delay <sup>1</sup> | LOS <sup>2</sup> | Delay                                      | LOS | Δ   | Sig? <sup>5</sup> | Delay                                     | LOS | Δ   | Sig? | Delay  | LOS | Δ   | Sig? |
| 1. San Elijo Road N./Elfin Forest Road E. | Signal            | NA                        | AM        | 12.0               | B                | 12.1                                       | B   | 0.1 | N                 | 12.1                                      | B   | 0.1 | N    | 12.1   | B   | 0.1 | N    |
|   |                   |                           | PM        | 6.9                | A                | 7.0  | A   | 0.1 | N                 | 7.0                                       | A   | 0.1 | N    | 7.0  | A   | 0.1 | N    |
| 2. San Elijo Road S./Elfin Forest Road W. | Signal            | NA                        | AM        | 9.8                | A                | 9.9  | A   | 0.1 | N                 | 10.0                                      | A   | 0.2 | N    | 10.0   | A   | 0.2 | N    |
|   |                   |                           | PM        | 5.4                | A                | 5.4  | A   | 0.0 | N                 | 5.5                                       | A   | 0.1 | N    | 5.4  | A   | 0.0 | N    |
| 3. San Elijo Road S./Elfin Forest Road E. | Signal            | NA                        | AM        | 11.8               | B                | 11.9                                       | B   | 0.1 | N                 | 11.9                                      | B   | 0.1 | N    | 11.9   | B   | 0.1 | N    |
|   |                   |                           | PM        | 6.5                | A                | 6.7  | A   | 0.2 | N                 | 6.7                                       | A   | 0.2 | N    | 6.7  | A   | 0.2 | N    |
| 4. Questhaven Road/Harmony Grove Road     | TWSC <sup>3</sup> | SB                        | AM        | 9.6                | A                | 9.7  | A   | 0.1 | N                 | 9.7                                       | A   | 0.1 | N    | 9.7  | A   | 0.1 | N    |
|   |                   |                           | PM        | 9.6                | A                | 9.7  | A   | 0.1 | N                 | 9.7                                       | A   | 0.1 | N    | 9.7  | A   | 0.1 | N    |
| 5. Via Ambiente/Harmony Grove Road        | TWSC              | NB                        | AM        | 9.0                | A                | 9.5  | A   | 0.5 | N                 | 10.2                                      | B   | 1.2 | N    | 9.5  | A   | 0.5 | N    |
|   |                   |                           | PM        | 10.9               | B                | 11.1                                       | B   | 0.2 | N                 | 11.2                                      | B   | 0.3 | N    | 11.1   | B   | 0.2 | N    |

<sup>1</sup> Average delay expressed in seconds per vehicle.

<sup>2</sup> Level of Service.

<sup>3</sup> TWSC – Two-Way Stop Controlled Intersection.

<sup>4</sup> Worst minor street approach delay reported.

<sup>5</sup> Sig? = Does the project results in a significant impact. (For County Significance criteria, refer to *Section 1.3* of Traffic Study.)

Notes: Since acceptable LOS D or better operations are calculated, no “critical movement” is identified.

NA – Not applicable for signalized intersections.

**Table 3.2-3  
Existing and Project Street Segment Operations**

| Roadway Segment                     | Lanes | Functional Classification | Capacity (LOS E) <sup>1</sup> | Existing         |                  | Scenario A<br>(100% to Harmony Grove Road) |                    |     |                   | Scenario B<br>(100% to Elfin Forest Road) |                    |     |      | Scenario C<br>(50% to Harmony Grove Road and 50% to Elfin Forest Road) |                    |     |      |
|-------------------------------------|-------|---------------------------|-------------------------------|------------------|------------------|--|--------------------|-----|-------------------|---|--------------------|-----|------|--|--------------------|-----|------|
|                                     |       |                           |                               | ADT <sup>2</sup> | LOS <sup>3</sup> | Project ADT                                | Existing + Project |     |                   | Project ADT                               | Existing + Project |     |      | Project ADT  | Existing + Project |     |      |
|                                     |       |                           |                               |                  |                  |  | ADT                | LOS | Sig? <sup>4</sup> |   | ADT                | LOS | Sig? |  | ADT                | LOS | Sig? |
| <b>Elfin Forest Road</b>            |       |                           |                               |                  |                  |  |                    |     |                   |   |                    |     |      |  |                    |     |      |
| San Elijo Road to Camino Cielo Azul | 2     | Rural Collector           | 8,100 <sup>5</sup>            | 3,790            | B                | 45   | 3,835              | C   | N                 | 135                                       | 3,925              | C   | N    | 90   | 3,880              | C   | N    |
| Camino Cielo Azul to Aguilera Lane  | 2     | Rural Collector           | 8,100 <sup>5</sup>            | 3,540            | B                | 90   | 3,630              | C   | N                 | 135                                       | 3,765              | C   | N    | 90   | 3,630              | C   | N    |
| <b>Harmony Grove Road</b>           |       |                           |                               |                  |                  |  |                    |     |                   |   |                    |     |      |  |                    |     |      |
| Questhaven Road to Via Ambiente     | 2     | Rural Collector           | 16,200                        | 3,030            | B                | 90   | 3,120              | B   | N                 | 90  | 3,120              | B   | N    | 90   | 3,120              | B   | N    |
| East of Via Ambiente                | 2     | Rural Collector           | 16,200                        | 3,030            | B                | 135  | 3,165              | B   | N                 | 45  | 3,075              | B   | N    | 90   | 3,120              | B   | N    |
| <b>Via Ambiente</b>                 |       |                           |                               |                  |                  |  |                    |     |                   |   |                    |     |      |  |                    |     |      |
| South of Harmony Grove Road         | 2     | Rural Collector           | 16,200                        | 100              | A                | 135  | 235                | A   | N                 | 135                                       | 235                | A   | N    | 135  | 235                | A   | N    |

<sup>1</sup> Capacity based on *County of San Diego* roadway classification operating at LOS E.

<sup>2</sup> Average Daily Traffic.

<sup>3</sup> Level of Service.

<sup>4</sup> Sig? = Does the project result in a significant impact? Based on the County Significance criteria, refer to *Section 1.3* of Traffic Study.

<sup>5</sup> Reduced capacity (50%) is assumed for a temporary lane closure on Elfin Forest Road.

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For intersection analysis, the HCM methodology for forecasting LOS and the Synchro (version 7.0) computer software were used with the trip generation data above. With the addition of project traffic, all of the study area intersections are calculated to continue to operate at LOS B or better in the three scenarios. Since the overall intersection operations are calculated as LOS B or better, critical movements at unsignalized intersections were not analyzed.

Based on the County of San Diego's published significance criteria, the proposed project is calculated to have no significant impacts to the above study-area intersections.

For roadway segment analysis, the San Diego County methodology for calculating LOS was used with the trip generation data above. With the addition of project traffic, all the roadway segments are calculated to continue to operate at LOS C or better in the three scenarios. Based on the County of San Diego's published significance criteria, the proposed project is calculated to have no significant impacts to the study area segments. Even though there are no calculated significant impacts, the District would implement the following traffic control measures to minimize the interruption of traffic due to the project:

- All construction that directly affects movement of traffic along any public street as a result of lane closures, realignments, detours, narrowing, or erection of barriers or other traffic control devices would be detailed in a traffic control plan in accordance with the Manual of Uniform for Traffic Control Devices (MUTCD) and County Standard Drawings and Department Instructions. The traffic control plan would be approved by the County of San Diego Public Works Division and would include appropriate signs and other warning devices in advance of construction zones, as well as posted notices prior to commencement of construction. Notices will be posted at the beginning and terminus of Elfin Forest Road and Harmony Grove Road in the cities of San Marcos and Escondido.
- Along Elfin Forest Road and Harmony Grove Road, a single lane of traffic would always be maintained and traffic would alternate on a single-lane road controlled by a flagger. Hand-signaling devices, such as STOP/SLOW paddles, lights, and red flags, would be used to control road users through temporary traffic control zones.
- Flagger stations would be located far enough in advance of the work space so that approaching road users would have sufficient distance to stop before entering the work space. Based on MUTCD standards, 50 mph on Elfin Forest Road requires 425 feet.
- During times when construction activity is not occurring, these roadways would be restored to their normal operating conditions.

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- Signs, notices, and other warning devices shall be posted to direct bikes and pedestrians to safe crossing locations in advance of the construction zones.
  - Access to residences, businesses, and institutions shall be maintained at all times during construction.

### **3.2.4 Mitigation Measures**

No mitigation measures are required.

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### **3.3 AIR QUALITY**

#### **3.3.1 Existing Conditions**

##### **Climate and Meteorology**

Air quality is affected by both the rate and location of pollutant emissions, and by meteorological conditions, which influence movement and dispersal of pollutants. Atmospheric conditions, such as wind speed and direction; air temperature gradients; and local topography determine the effects of air pollutant emissions on regional and local air quality.

##### **Regional Conditions**

The proposed project is located in the San Diego Air Basin (SDAB), which is coincident with the borders of San Diego County. The climate of the SDAB is characterized by warm, dry summers and mild, wet winters. The climate is primarily determined by a semi-permanent, high-pressure system (known as the Pacific High) in the eastern Pacific Ocean. During the summer, the Pacific High is located well to the north, causing storm tracks to be directed north of California, providing clear skies in the SDAB for much of the year. During the winter, the Pacific High moves southward, and low-pressure storms are directed into the region, causing widespread precipitation. The heaviest precipitation is typically November through April, averaging approximately 9 to 14 inches annually. The average mean temperature is approximately 62 degrees Fahrenheit (°F), and the mean maximum and minimum temperatures are 76° and 48° F, respectively (WRCC 2009).

The Pacific High also influences wind patterns in the region. The predominant annual wind directions are westerly and west-southwesterly throughout the year, with average annual wind speeds of approximately 6 miles per hour.

A common atmospheric condition known as a temperature inversion affects air quality in the SDAB. During an inversion, air temperatures get warmer rather than cooler with increasing elevation in the atmosphere. During the warmer months (May through October), temperature inversions occur as descending warm air associated with the Pacific High comes into contact with cool marine air. The boundary between the layer of warm and cool air represents a temperature inversion that traps pollutants below it. During the warmer months, the inversion layer is approximately 2,000 feet AMSL. During the cooler months (November through April), the inversion layer rises to approximately 3,000 feet AMSL. Inversion layers are important elements of local air quality because they inhibit the dispersion of pollutants, thus resulting in a temporary degradation of air quality.

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## Local Conditions

The proposed project is located approximately 7.5 miles inland from the Pacific Ocean in a broad valley. The average annual temperature is approximately 65°F and the mean maximum and minimum temperatures are 76° and 47°F, respectively. The average annual rainfall is approximately 16 inches (WRCC 2009).

## **Applicable Regulations, Plans, and Policies**

### Federal and State Ambient Air Quality Standards

#### *Criteria Pollutants*

The Federal Clean Air Act (CAA) (42 U.S. Code [USC] § 7401) requires the adoption of National Ambient Air Quality Standards (NAAQS) to protect the public's health, safety, and welfare from known or anticipated effects of air pollution. The NAAQS have been updated occasionally. Current standards are set for sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), suspended particulate matter (PM<sub>10</sub>), fine particulate matter (PM<sub>2.5</sub>), and lead (Pb). These pollutants are collectively referred to as criteria pollutants. The State of California Air Resources Board (CARB) has established additional standards that are generally more restrictive than the NAAQS. Federal and California standards are shown in Table 3.3-1.

#### *Toxic Air Contaminants*

In addition to criteria pollutants, air quality regulations also focus on hazardous air pollutants, known as toxic air contaminants (TACs). In general, for TACs that may cause cancer, there is no measureable concentration level that does not present some risk, i.e., there is no threshold level below which adverse health impacts may not be expected to occur. This contrasts with the criteria air pollutants for which acceptable levels of exposure can be determined and for which the ambient standards have been established. The U.S. Environmental Protection Agency (USEPA) and CARB have ongoing programs to identify and regulate TACs. Among the many substances identified as TACs are asbestos, lead, and diesel exhaust particulates. Regulation of TACs is generally through statutes and rules that generally require the use of the maximum (MACT) or best available control technology (BACT) for toxics to limit emissions. Asbestos and lead have been identified for many years and there are established rules and procedures to prevent dispersion and inhalation of these substances.

**Table 3.3-1  
National and California Ambient Air Quality Standards**

| Pollutant   | Averaging Time                                | NAAQS <sup>1</sup>                 |                                   | CAAQS <sup>2</sup>  |
|---|---|------------------------------------|-----------------------------------|---|
|   |   | Primary <sup>3</sup>               | Secondary <sup>4</sup>            | Concentration <sup>5</sup>  |
| Ozone (O <sub>3</sub> ) <sup>6</sup>                          | 1-Hour  | -                                  | Same as                           | 0.09 ppm (180 µg/m <sup>3</sup> )   |
|   | 8-Hour  | 0.08 ppm (157 µg/m <sup>3</sup> )  | Primary Standard                  | 0.070 ppm (137 µg/m <sup>3</sup> ) <sup>9</sup>   |
| Carbon Monoxide (CO)  | 8-Hour  | 9.0 ppm (10 mg/m <sup>3</sup> )    | None                              | 9.0 ppm (10 mg/m <sup>3</sup> )   |
|   | 1-Hour  | 35 ppm (40 mg/m <sup>3</sup> )     |                                   | 20 ppm (23 mg/m <sup>3</sup> )  |
| Nitrogen Dioxide (NO <sub>2</sub> )                           | Annual Average                                | 0.053 ppm (100 µg/m <sup>3</sup> ) | Same as                           | 0.030 ppm (56 µg/m <sup>3</sup> ) <sup>10</sup>   |
|   | 1-Hour  | -                                  | Primary Standard                  | 0.18 ppm (338 µg/m <sup>3</sup> ) <sup>10</sup>   |
| Sulfur Dioxide (SO <sub>2</sub> )                             | Annual Average                                | 0.03 ppm (80 µg/m <sup>3</sup> )   | -                                 | -   |
|   | 24-Hour                                       | 0.14 ppm (365 µg/m <sup>3</sup> )  | -                                 | 0.04 ppm (105 µg/m <sup>3</sup> )   |
|   | 3-Hour  | -                                  | 0.5 ppm (1300 µg/m <sup>3</sup> ) | -   |
|   | 1-Hour  | -                                  | -                                 | 0.25 ppm (655 µg/m <sup>3</sup> )   |
| Suspended Particulate Matter (PM <sub>10</sub> ) <sup>7</sup> | 24-Hour                                       | 150 µg/m <sup>3</sup>              | Same as Primary Standard          | 50 µg/m <sup>3</sup>  |
|   | Annual Arithmetic Mean                        | Revoked                            |                                   | 20 µg/m <sup>3</sup> note 7   |
| Fine Particulate Matter (PM <sub>2.5</sub> ) <sup>8</sup>     | 24-Hour                                       | 35 µg/m <sup>3</sup>               | Same as Primary Standard          | -   |
|   | Annual Arithmetic Mean                        | 15 µg/m <sup>3</sup>               |                                   | 12 µg/m <sup>3</sup>  |
| Lead (Pb)   | 30-Day Average                                | -                                  | -                                 | 1.5 µg/m <sup>3</sup>   |
|   | Calendar Quarter                              | 1.5 µg/m <sup>3</sup>              | Same as Primary Standard          | -   |
| Hydrogen Sulfide (H <sub>2</sub> S)                           | 1-Hour  | No Federal Standards               |                                   | 0.03 ppm (42 µg/m <sup>3</sup> )  |
| Sulfates (SO <sub>4</sub> )                                   | 24-Hour                                       |                                    |                                   | 25 µg/m <sup>3</sup>  |
| Visibility Reducing Particles                                 | 8-Hour (10 am to 6 pm, Pacific Standard Time) |                                    |                                   | In sufficient amount to produce an extinction coefficient of 0.23 per km due to particles when the relative humidity is less than 70 percent. |
| Vinyl chloride <sup>9</sup>                                   | 24-Hour                                       |                                    |                                   | 0.01 ppm (26 µg/m <sup>3</sup> )  |

<sup>1</sup> NAAQS (other than O<sub>3</sub>, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O<sub>3</sub> standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM<sub>10</sub>, the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. For PM<sub>2.5</sub>, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact USEPA for further clarification and current federal policies.

<sup>2</sup> California Ambient Air Quality Standards for O<sub>3</sub>, CO (except Lake Tahoe), SO<sub>2</sub> (1- and 24-hour), NO<sub>2</sub>, PM<sub>10</sub>, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded.

<sup>3</sup> National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

<sup>4</sup> National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

<sup>5</sup> Concentration expressed first in units in which it was promulgated. Ppm in this table refers to ppm by volume or micromoles of pollutant per mole of gas.

<sup>6</sup> On June 15, 2005, the 1-hour ozone standard was revoked for all areas except the 8-hour ozone nonattainment Early Action Compact Areas (those areas do not yet have an effective date for their 8-hour designations). Additional information on federal ozone standards is available at <http://www.epa.gov/oar/oaqps/greenbk/index.html>.

<sup>7</sup> Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, USEPA revoked the annual PM<sub>10</sub> standard on December 17, 2006.

<sup>8</sup> Effective December 17, 2006, USEPA lowered the PM<sub>2.5</sub> 24-hour standard from 65 µg/m<sup>3</sup> to 35 µg/m<sup>3</sup>.

<sup>9</sup> CARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

<sup>10</sup> The nitrogen dioxide ambient air quality standard was amended to lower the 1-hour standard to 0.18 ppm and establish a new annual standard of 0.030 ppm. These changes became effective March 20, 2008.

ppm = parts per million; µg/m<sup>3</sup> = micrograms per cubic meter; mg/m<sup>3</sup> = milligrams per cubic meter; km = kilometers  
Source: ARB 2008.; USEPA 2009a

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The control of diesel particulate emissions is an immediate concern of air quality regulatory agencies. The majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being PM from diesel-fueled engines (diesel PM) (CARB 2006a). Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present.

### Regional Standards

In San Diego County, the San Diego Air Pollution Control District (SDAPCD) is the agency responsible for protecting public health and welfare through the administration of federal and state air quality laws and policies. Included in SDAPCD's tasks are the monitoring of air pollution, the preparation and implementation of its portion of the State Implementation Plan (SIP), and the promulgation of rules and regulations. The SIP for the air district includes strategies and tactics to be used to attain and maintain acceptable air quality in its jurisdiction. In the SDAB, this list of strategies is contained in the Regional Air Quality Strategy (RAQS).

The rules and regulations for SDAPCD include procedures and requirements to control the emission of pollutants and prevent significant adverse impacts. SDAPCD and its regulations require that any equipment that emits or controls air contaminants be permitted prior to construction, installation, or operation (e.g., Permit to Construct or Permit to Operate). SDAPCD is responsible for the review of applications and for the approval and issuance of these permits in their district.

### **Regional and Local Air Quality**

Specific geographic areas are classified as either "attainment" or "nonattainment" areas for each criteria pollutant based on the comparison of measured data with federal and state standards. If an area is redesignated from nonattainment to attainment, the CAA requires a revision to the SIP, called a maintenance plan, to demonstrate how the air quality standard will be maintained for at least 10 years.

The SDAB currently meets the federal standards for all criteria pollutants except O<sub>3</sub>, and meets state standards for all criteria pollutants except O<sub>3</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub>. The SDAB is classified as federal "basic" nonattainment of O<sub>3</sub>, which is the least severe of the six degrees of O<sub>3</sub> nonattainment. SDAPCD submitted a federal 8-hour O<sub>3</sub> attainment plan for San Diego County to CARB in 2007 for inclusion into the SIP; that demonstrates how the federal 8-hour O<sub>3</sub> standard will be attained by 2009. The attainment plan was approved by CARB on May 24, 2007, and subsequently submitted

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to EPA for approval. However, EPA is currently reconsidering the 2008 NAAQS for ground-level O<sub>3</sub> (ARB 2007). Thus, EPA will take no further action on the 2007 SIP (SDAPCD 2009). EPA proposed revisions to the O<sub>3</sub> standards in 2009 and will issue a final decision by August 2010. Final designations for the new standard will be issued August 2011 and new SIPs will be due December 2013 (EPA 2009c). The SDAB currently falls under a federal “maintenance plan” for CO, following its redesignation as a CO attainment area in 1998. The SDAB is currently classified as a state “serious” O<sub>3</sub> nonattainment area and a state nonattainment area for PM<sub>10</sub> and PM<sub>2.5</sub>.

Ambient air pollutant concentrations in the SDAB are measured at 10 air quality monitoring stations operated by SDAPCD. The monitoring station closest to the proposed project is the Escondido/East Valley Parkway monitoring station, located at 600 East Valley Parkway, approximately 7 miles northeast of the project site. This station monitors O<sub>3</sub>, CO, NO<sub>2</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub>, and is primarily influenced by emissions from downtown Escondido land uses. Table 3.3-2 summarizes air quality data from the station for 2004 to 2008.

No ambient diesel PM monitoring data are available because there is no routine diesel PM measurement method available. Diesel PM poses the greatest health risk among these 10 TACs mentioned. In addition to diesel PM, benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, *para*-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene pose the greatest existing ambient risks for which data are available.

CARB has made preliminary concentration estimates based on a PM exposure method. This method uses the CARB emissions inventory’s PM<sub>10</sub> database, ambient PM<sub>10</sub> monitoring data, and the results from several studies to estimate concentrations of diesel PM. Based on receptor modeling techniques, CARB estimated the diesel PM health risk in 2000 to be 420 excess cancer cases per million people in the SDAB for a 70-year exposure. While the health risk from diesel PM is lower than the estimated statewide value, it is comparable to the annual averages estimated for other urbanized areas such as the Sacramento Valley and San Joaquin Valley Air Basins. Since 1990, the diesel PM’s health risk in the SDAB has been reduced by 52 percent. Overall, levels of most TACs have gone down since 1990 except for *para*-dichlorobenzene and formaldehyde (CARB 2006a).

### **3.3.2 Thresholds of Significance**

Appendix G of the CEQA Guidelines state that a project would have a significant adverse effect on air quality if any of the following would occur as a result of a project-related component:

**Table 3.3-2  
Ambient Air Quality Data – Escondido Monitoring Station**

| Pollutant         | Averaging Time          | California Air Quality Standards | Federal Primary Standards | Maximum Concentrations <sup>1</sup> |       |       |       |       | Number of Days Exceeding Federal Standard <sup>2</sup> |      |      |      |      | Number of Days Exceeding State Standard <sup>2</sup> |      |      |      |      |
|-------------------|-------------------------|----------------------------------|---------------------------|-------------------------------------|-------|-------|-------|-------|--|------|------|------|------|--|------|------|------|------|
|                   |                         |                                  |                           | 2004                                | 2005  | 2006  | 2007  | 2008  | 2004   | 2005 | 2006 | 2007 | 2008 | 2004   | 2005 | 2006 | 2007 | 2008 |
| Ozone             | 1 hour                  | 0.09 ppm                         | none                      | 0.099                               | 0.095 | 0.108 | 0.094 | 0.116 | 0  | 0    | 0    | 0    | 0    | 2  | 1    | 3    | 0    | 9    |
|                   | 8 hour                  | 0.07 ppm                         | 0.08 ppm                  | 0.086                               | 0.079 | 0.096 | 0.077 | 0.098 | 3  | 1    | 6    | 3    | 13   | 9  | 2    | 11   | 5    | 23   |
| Carbon Monoxide   | 1 hour                  | 20 ppm                           | 35 ppm                    | 5.3                                 | 5.9   | 5.7   | 5.2   | 5.6   | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0    |
|                   | 8 hours                 | 9.0 ppm                          | 9 ppm                     | 3.61                                | 3.10  | 3.61  | 3.19  | 2.81  | 0  | 0    | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0    |
| Nitrogen Dioxide  | 1 hour                  | 0.18 ppm                         | None                      | 0.080                               | 0.076 | 0.071 | 0.072 | 0.081 | NA   | NA   | NA   | NA   | NA   | 0  | 0    | 0    | 0    | 0    |
|                   | Annual                  | 0.030 ppm                        | 0.053 ppm                 | 0.018                               | 0.016 | 0.017 | 0.016 | 0.018 | NA   | NA   | NA   | NA   | NA   | NA   | NA   | NA   | NA   | NA   |
| PM <sub>10</sub>  | 24 hours                | 50 µg/m <sup>3</sup>             | 150 µg/m <sup>3</sup>     | 57                                  | 42    | 51    | 68    | 82    | 0  | 0    | 0    | 0    | 0    | 1  | 0    | 1    | 2    | 1    |
|                   | Annual/AAM <sup>3</sup> | 20 µg/m <sup>3</sup>             | revoked                   | 27.5                                | 23.9  | 24.1  | 26.7  | 24.6  | NA   | NA   | NA   | NA   | NA   | NA   | NA   | NA   | NA   | NA   |
| PM <sub>2.5</sub> | 24 hours                | none                             | 35 µg/m <sup>3</sup>      | 67.3                                | 43.1  | 40.6  | 126.2 | 31.3  | 1  | 0    | 1    | 11   | -    | NA   | NA   | NA   | NA   | NA   |
|                   | Annual/AAM              | 12 µg/m <sup>3</sup>             | 15 µg/m <sup>3</sup>      | 14.1                                | -     | 11.5  | 13.3  | 12.4  | NA   | -    | NA   | NA   | NA   | NA   | NA   | NA   | NA   | NA   |

“-” = data not available

“NA” = not applicable

<sup>1</sup> Concentration units for O<sub>3</sub>, CO, and NO<sub>2</sub> are in parts per million (ppm). Concentration units for PM<sub>10</sub> and PM<sub>2.5</sub> are in micrograms per cubic meter (µg/m<sup>3</sup>).

<sup>2</sup> For annual standards, a value of 1 indicates that the standard has been exceeded.

<sup>3</sup> Federal standard is annual arithmetic mean (AAM).

Exceedances based on standard at the time of measurement.

Source: CARB 2009; SDAPCD 2009

- Would the project result in a cumulatively considerable net increase of emissions of any criteria pollutant for which the project region is in nonattainment under applicable federal or state ambient air quality standards? Specifically, would project emissions exceed quantitative thresholds for O<sub>3</sub>, PM<sub>2.5</sub>, or PM<sub>10</sub>?

SDAPCD has not developed quantitative thresholds for determining significance of impact under CEQA. The proposed project will be assessed against the CAA *de minimis* emission limits used to determine conformity with existing air quality plans. The *de minimis* limits for basic O<sub>3</sub> (8-hour) nonattainment are 100 tons per year for O<sub>3</sub> precursors nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOC). VOC is a term used in the NAAQS; reactive organic gases (ROG) is the term used in California. These terms are generally interchangeable and this analysis uses ROG. In recognition of state nonattainment for O<sub>3</sub> and to be conservative, thresholds of 50 tons per year for NO<sub>x</sub> and ROG are used for this project. The federal *de minimis* limit for PM<sub>10</sub> nonattainment is 100 tons per year. Although the SDAB is not a federal nonattainment area for PM<sub>2.5</sub> or PM<sub>10</sub>, it is a state nonattainment area for each pollutant. Therefore, for this analysis, the conservative threshold of 50 tons per year is used for PM<sub>2.5</sub> and PM<sub>10</sub>. For CO, as the SDAB is compliant with both state and federal standards, the federal *de minimis* limit is 100 tons per year and is used to determine significance. For impacts analysis, these emission thresholds are converted to pounds per day, which are shown in Table 3.3-3.

**Table 3.3-3  
Daily Emission Thresholds**

|                           | Pounds per Day |                 |     |                  |
|---------------------------|----------------|-----------------|-----|------------------|
|                           | ROG            | NO <sub>x</sub> | CO  | PM <sub>10</sub> |
| Construction <sup>1</sup> | 400            | 400             | 800 | 400              |
| Operation <sup>2</sup>    | 275            | 275             | 550 | 275              |

<sup>1</sup> Assumes 250 days per year

<sup>2</sup> Assumes 365 days per year

- Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?
- Would the project conflict with or obstruct implementation of the applicable air quality plan?
- Would the project expose sensitive receptors to substantial pollutant concentrations?
- Would the project create objectionable odors affecting a substantial number of people?

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### **3.3.3 Impact Analysis**

#### **Methodology**

Air quality impacts associated with the proposed project are related to emissions from short-term construction associated with the proposed project. The project does not include a substantial operation component that would generate air emissions. Thus, operations emissions are not quantitatively assessed.

Construction may affect air quality as a result of (1) construction equipment emissions, (2) fugitive dust from grading and earth moving, and (3) emissions from vehicles driven to/from the sites by construction workers.

Impact assessment is based on estimated project emissions compared to thresholds of significance for individual air pollutant emissions, as defined in Section 3.3.2. Air emissions were estimated using the computer model URBEMIS2007, version 9.2.4, which estimates project construction emissions based on the anticipated construction period and anticipated equipment use.

#### **Assumptions**

The specific inventory of construction equipment that would be used for the proposed project was specified at the time of this analysis. Construction activities were divided into separate sequential phases and analyzed separately. Consequently, project significance for daily limits is not a comparison of the sum of each construction phases to the maximum emissions threshold for construction emissions. Instead, if one phase of construction is found to have a significant impact, then the entire project is considered to have a significant air quality impact.

To estimate construction emissions, URBEMIS2007 analyzes the construction equipment to be used and the specified duration of the construction period and phases, using industry defaults where data cannot be specified. The project schedule is estimated at 9 to 12 months. For purposes of this analysis, 9 months is the assumed schedule. The primary difference between the alternatives from an air quality perspective is the preparation and deposition of the construction area. Along the Preferred Alternative, construction activities would include the removal of a portion of the road surface prior to excavation and paving of the roadway surface after installation of the pipeline. Along the Southern Alternative, the land is undeveloped and site preparation activities would include grubbing and clearing of vegetation prior to excavation with simple backfilling and revegetation of the site after pipeline installation. These activities are generally less intense activities

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than those identified along the Preferred Alternative. Excavation, pipeline installation, and other construction activities would be similar under both alternatives.

Operational activities would include limited maintenance of the new pipeline; however, these activities would be sporadic and would not represent a continuous emissions source.

**AQ-1** *The project would result in a cumulatively considerable net increase of emissions of any criteria pollutant for which the project region is in nonattainment under applicable federal or state ambient air quality standards. Impacts would be less than significant.*

### **Construction Impacts**

Construction activities for the proposed project would result in short-term impacts on ambient air quality in the project area. Temporary construction emissions would result directly from construction equipment and vehicle activities such as roadway demolition, site grading, pipeline construction, and roadway paving; and indirectly from construction worker commuting and construction material delivery. The type and quantity of construction emissions would vary from day to day, depending on the level of construction activity; type and number of equipment used; the specific activities; and the prevailing weather, primarily wind speed and direction, and precipitation. To present the potential worst case for maximum daily emissions, it was assumed that the maximum daily activity would include all construction stages. These activities would not occur in the same location but would potentially occur at different locations along the alignment. Table 3.3-4 shows the maximum emissions that would be generated from construction activities associated with the Preferred Alternative. Table 3.3-5 shows the maximum emissions that would be generated from construction activities associated with the Southern Alternative. The assumptions used in the analysis and the detailed calculation sheets are included in Appendix F (URBEMIS Modeling Inputs and Output).

As shown in Table 3.3-4, the maximum daily construction-related emissions generated by the proposed project would be below the maximum daily thresholds of significance. Therefore, construction activities associated with the proposed Preferred Alternative would not have a significant impact on air quality.

As shown in Table 3.3-5, construction-related emissions generated by the proposed project would be below the maximum daily thresholds of significance. Therefore, construction activities associated with the proposed Southern Alternative would not have a significant impact on air quality.

**Table 3.3-4  
Estimated Maximum Daily Construction Emissions, Preferred Alternative**

| Construction Activity                                     | Emissions (pounds per day) |                 |            |                  |                   |
|---|----------------------------|-----------------|------------|------------------|-------------------|
|   | ROG                        | NO <sub>x</sub> | CO         | PM <sub>10</sub> | PM <sub>2.5</sub> |
| <b>2010</b>   |                            |                 |            |                  |                   |
| Demolition  | 1.22                       | 8.37            | 5.95       | 1.25             | 0.70              |
| Trenching/Excavation                                      | 2.45                       | 19.06           | 10.58      | 21.09            | 5.18              |
| Pipeline Construction                                     | 3.30                       | 15.14           | 12.26      | 0.98             | 0.89              |
| Backfilling   | 2.85                       | 22.87           | 12.61      | 21.23            | 5.31              |
| Paving  | 2.45                       | 14.49           | 9.17       | 1.27             | 1.17              |
| Maximum Daily Emissions in 2010                           | 12.27                      | 79.93           | 50.57      | 45.82            | 13.25             |
| <b>2011</b>   |                            |                 |            |                  |                   |
| Demolition  | 1.12                       | 7.84            | 5.75       | 1.21             | 0.66              |
| Trenching/Excavation                                      | 2.29                       | 17.70           | 10.38      | 21.03            | 5.12              |
| Pipeline Construction                                     | 3.07                       | 14.28           | 11.67      | 0.94             | 0.85              |
| Backfilling   | 2.67                       | 21.43           | 12.01      | 21.15            | 5.23              |
| Paving  | 2.30                       | 13.72           | 8.99       | 1.22             | 1.12              |
| Maximum Daily Emissions in 2011                           | 11.45                      | 74.97           | 48.80      | 45.55            | 12.98             |
| <i>Average Daily Construction Thresholds (pounds/day)</i> | <i>400</i>                 | <i>400</i>      | <i>800</i> | <i>400</i>       | <i>400</i>        |
| Exceedance of Daily Thresholds (pounds/day)               | No                         | No              | No         | No               | No                |

Notes: The URBEMIS2007 model was used to estimate construction emissions, rounded to the nearest pound. Construction is assumed to last for 9 months beginning in September 2010.

Source: Rimpo Associates 2008

**Table 3.3-5  
Estimated Maximum Daily Construction Emissions, Southern Alternative**

| Construction Activity                                     | Emissions pounds per day |                 |            |                  |                   |
|---|--------------------------|-----------------|------------|------------------|-------------------|
|   | ROG                      | NO <sub>x</sub> | CO         | PM <sub>10</sub> | PM <sub>2.5</sub> |
| <b>2010</b>   |                          |                 |            |                  |                   |
| Clearing and Grubbing                                     | 2.99                     | 23.15           | 12.01      | 61.34            | 13.76             |
| Trenching/Excavation                                      | 2.63                     | 22.99           | 10.92      | 1.07             | 0.98              |
| Pipeline Construction                                     | 3.30                     | 15.14           | 12.26      | 0.98             | 0.89              |
| Backfilling and Grading                                   | 3.55                     | 28.20           | 15.77      | 21.54            | 5.59              |
| Paving  | 2.45                     | 14.49           | 9.17       | 1.27             | 1.17              |
| Maximum Daily Emissions in 2010                           | 14.92                    | 103.97          | 60.13      | 86.20            | 22.39             |
| <b>2011</b>   |                          |                 |            |                  |                   |
| Clearing and Grubbing                                     | 2.84                     | 21.74           | 11.81      | 61.27            | 13.70             |
| Trenching/Excavation                                      | 2.48                     | 21.29           | 10.61      | 1.00             | 0.92              |
| Pipeline Construction                                     | 3.07                     | 14.28           | 11.67      | 0.91             | 0.84              |
| Backfilling and Grading                                   | 3.32                     | 26.44           | 15.15      | 21.45            | 5.51              |
| Paving  | 2.30                     | 13.72           | 8.99       | 1.22             | 1.12              |
| Maximum Daily Emissions in 2011                           | 14.01                    | 97.47           | 58.23      | 85.85            | 22.09             |
| <i>Average Daily Construction Thresholds (pounds/day)</i> | <i>400</i>               | <i>400</i>      | <i>800</i> | <i>400</i>       | <i>400</i>        |
| Exceedance of Daily Thresholds (pounds/day)               | No                       | No              | No         | No               | No                |

Notes: The URBEMIS2007 model was used to estimate construction emissions, rounded up to the nearest pound. Construction is assumed to last for 9 months beginning in September 2010.

Source: Rimpo Associates 2008

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### *Toxic Air Contaminants*

Construction of the proposed project would result in short-term diesel exhaust emissions, including diesel PM, from on-site heavy-duty equipment. Particulate exhaust emissions from diesel PM were identified as TACs by CARB in 1998. Construction of the project would result in the generation of diesel PM emissions from the use of off-road diesel equipment required for grading and excavation, paving, and other construction activities, and from on-road diesel equipment used to bring materials to and from the project site.

Generation of diesel PM from construction projects typically occurs in one area for a short period. Construction of the proposed project would occur over a multi-year period, but use of diesel-powered construction equipment in any one area would likely occur for no more than a few months and would cease when construction is completed in that area. The dose to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent of exposure that person has with the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the Maximally Exposed Individual. The risks estimated for a Maximally Exposed Individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment, health-risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project. Thus, if the duration of proposed construction activities near any sensitive receptor were 9 months, the exposure would be approximately 1 percent of the total exposure period used for health-risk calculation. Therefore, diesel PM generated by project construction is not expected to create conditions where the probability is greater than 1 in 1 million of contracting cancer for the Maximally Exposed Individual, or to generate ground-level concentrations of noncarcinogenic TACs that exceed a Hazard Index greater than 1 for the Maximally Exposed Individual. Additionally, with ongoing implementation of USEPA and CARB requirements for cleaner fuels, diesel engine retrofits, and low-emission diesel engines, the diesel PM emissions of individual equipment would likely be lower than calculated. This impact would be less than significant and no mitigation is required.

### **Operational Impacts**

Operational emissions come from area sources and mobile sources. Area sources are typically small sources that contribute little individually but, when combined, may generate substantial amounts of pollutants, such as gasoline-powered landscaping and maintenance equipment. The proposed project does not include any new area sources.

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Mobile source emissions are a function of the number and type of vehicles, as well as the number of trips and miles traveled by vehicles. Based on the project traffic report, the proposed project would not generate new vehicle trips after construction activities are complete. However, it is assumed that occasional maintenance trips would occur as necessary. It is estimated that these emissions would have a negligible effect on regional and local air quality. Therefore, project operations would not have a significant impact on air quality.

### **Local Air Quality**

Procedures and guidelines for use in evaluating the potential local, project-level CO impacts of a project are contained in the Transportation Project-Level Carbon Monoxide Protocol (the Protocol) (UCD ITS 1997). The Protocol provides a methodology for determining the level of analysis, if any, required on a project. The guidelines comply with the federal CAA, federal and state conformity rules, the National Environmental Policy Act (NEPA), and CEQA, without increasing the requirements of those regulations.

The SDAB was designated as a CO attainment area subsequent to the passage of the federal 1990 CAA amendments. Continued attainment has been verified with SDAPCD. In areas meeting those conditions, in accordance with the Protocol, only projects that are likely to worsen air quality necessitate further analysis. According to the Protocol, projects may worsen air quality if they worsen traffic flow, defined for intersections as increasing average delay at signalized intersections operating at LOS E or F.

Based on a review of the project traffic study, the proposed project would not affect the operations of any intersections. Therefore, no CO hotspot analysis is required and the project would have a less than significant impact on local air quality.

**AQ-2** *The project would violate an air quality standard or contribute substantially to an existing or projected air quality violation. Impacts would be less than significant.*

Based on the air quality emissions modeling contained in this analysis, the proposed project would not result in significant short-term construction impacts or long-term operational impacts on air quality. Thus, air emissions associated with the project would be below the applicable thresholds of significance and would not contribute to the severity of existing air quality violations or create new ones.

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**AQ-3** *The project would conflict with or obstruct implementation of the applicable air quality plan. No impact would occur.*

RAQS is SDAPCD's regional air quality plan. Consistency with the RAQS is typically determined by two standards. The first standard is if the project would increase the frequency or severity of violation of existing air quality violations, contribute to new violations, or delay the timely attainment of air quality standards or interim reductions as specified in the RAQS. The second standard is whether the project would exceed assumptions contained in the RAQS.

As shown in AQ-1 and AQ-2, air emissions associated with the project would be below the applicable thresholds of significance and would not contribute to the severity of existing air quality violations or create new ones.

Forecasts used in the RAQS are developed by the San Diego Association of Governments (SANDAG). The SANDAG forecasts are based on local general plans and other related documents, such as housing elements, that are used to develop population and traffic projections. The proposed project would not change land use designations and would not provide additional housing or jobs in the San Diego region. Thus, the proposed project is considered consistent with the RAQS.

**AQ-4** *The project would expose sensitive receptors to substantial pollutant concentrations. Impacts would be less than significant.*

Based on the air quality emissions modeling contained in this analysis, the proposed project would not result in significant short-term construction impacts or long-term operational impacts on local air quality. Additionally, project construction would last only 9 to 12 months and would not be anticipated to expose any receptor to harmful concentrations of TACs. Thus, air emissions associated with the project would not expose sensitive receptors to substantial pollutant concentrations.

**AQ-5** *The project would create objectionable odors affecting a substantial number of people. Impacts would be less than significant.*

Odors are one of the most obvious forms of air pollution to the general public. Odors can present a significant problem for both the source and the surrounding community. Offensive odors seldom cause any physical harm. Sometimes offensive odors cause agitation, anger, and concern to the public about the possibility of health effects, especially in residential neighborhoods

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located near industrial sources. Public concerns are that offensive odors may cause adverse health effects, but that is not necessarily the case. For example, hydrogen sulfide (H<sub>2</sub>S) gas, which has a very unpleasant rotten egg odor, is not toxic at low concentrations.

The proposed project does not include any of these types of odor sources. Thus, the proposed project is not anticipated to expose local sensitive receptors to, or generate, significant odors.

### **3.3.4 Mitigation Measures**

As shown in the preceding analysis, project-related air quality impacts would be less than significant. Therefore, the proposed project would not have a significant impact on air quality, and no mitigation measures are required.

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## 3.4 NOISE

This section describes sound and noise in the area of the proposed project. The potential noise impacts and alternatives are also discussed.

The proposed project components that do not generate noise, i.e., operation of the proposed pipes, or would clearly not impact noise sensitive land uses, were not assessed.

### 3.4.1 Existing Conditions

#### **Noise and Vibration Terminology and Concepts**

##### Noise

Sound is a vibratory disturbance created by a moving or vibrating source, which is capable of being detected by the hearing organs. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired, and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment (Caltrans 2009).

##### Decibels and Frequency

In its most basic form, a continuous sound can be described by its frequency or wavelength (pitch) and its amplitude (loudness). Frequency is expressed in cycles per second, or Hz. Frequencies are heard as the pitch or tone of sound. High-pitched sounds produce high frequencies; low-pitched sounds produce low frequencies. Sound pressure levels are described in units called the decibel (dB).

Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; a halving of the energy would result in a 3-dB decrease.

##### Perception of Noise at the Receiver and A-Weighting

The human ear is not equally sensitive to all frequencies within the sound spectrum. To accommodate this phenomenon, the A-scale, which approximates the frequency response of the

average young ear when listening to most ordinary everyday sounds, was devised. When people make relative judgments about the loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Therefore, the “A-weighted” noise scale is used for measurements and standards involving the human perception of noise. Noise levels using A-weighted measurements are written dB(A) or dBA. Table 3.4-1 shows the relationship of various noise levels to commonly experienced noise events.

**Table 3.4-1  
Typical Noise Levels**

| Common Outdoor Activities  | Noise Level (dBA) | Common Indoor Activities                             |
|--|-------------------|--|
| Jet Fly-over at 1,000 feet   | --110--           | Rock Band  |
| Gas Lawn Mower at 3 feet   | --100--           |  |
| Diesel Truck at 50 feet, at 50 mph   | --90--            | Food Blender at 3 feet<br>Garbage Disposal at 3 feet |
| Noisy Urban Area, Daytime<br>Gas Lawn Mower at 100 feet<br>Commercial Area | --80--            | Vacuum Cleaner at 10 feet<br>Normal Speech at 3 feet |
| Heavy Traffic at 300 feet  | --60--            | Large Business Office<br>Dishwasher in Next Room     |
| Quiet Urban Daytime  | --50--            | Theater, Large Conference Room (Background)          |
| Quiet Urban Nighttime  | --40--            | Library  |
| Quiet Suburban Nighttime   | --30--            | Bedroom at Night, Concert Hall (Background)          |
| Quiet Rural Nighttime  | --20--            | Broadcast/Recording Studio                           |
|  | --10--            |  |
|  | --0--             |  |

Notes: mph = miles per hour

Source: Caltrans 2009

Human perception of noise has no simple correlation with acoustical energy. The perception of noise is not linear in terms of dBA or in terms of acoustical energy. Two noise sources do not “sound twice as loud” as one source. It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA, increase or decrease; that a change of 5 dBA is readily perceptible; and that an increase (decrease) of 10 dBA sounds twice (half) as loud (Caltrans 2009).

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## Noise Propagation

From the source to the receiver, noise changes in level and frequency. The most obvious is the decrease in noise level as the distance from the source increases. The manner in which noise reduces with distance depends on the following factors.

Geometric spreading: Sound from a localized source (approximating a “point” source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level from a point source attenuates, or drops off, at a rate of 6 dBA for each doubling of the distance (DD). The movement of vehicles appears as a line (line source) rather than a point when viewed over a certain time interval. The sound level from a line source attenuates at a rate of 3 dBA/DD (Caltrans 2009).

Ground absorption: Hard sites (i.e., sites with a reflective surface, such as parking lots or smooth bodies of water) receive no excess ground attenuation, and the changes in noise levels with distance (drop-off rate) are simply the geometric spreading of the source. Soft sites are sites that have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees and receive an excess ground attenuation value of 1.5 dBA per doubling of distance (Caltrans 2009).

Atmospheric effects: Wind speed will bend the path of sound to “focus” it on the downwind side and make a “shadow” on the upwind side of the source. At short distances, up to 165 feet, the wind has minor influence on the measured sound level. For longer distances, the wind effect becomes appreciably greater. Temperature gradients create effects similar to those of wind gradients, except that they are uniform in all directions from the source. On a sunny day with no wind, temperature decreases with altitude, giving a shadow effect for sound. On a clear night, temperature may increase with altitude, focusing sound on the ground surface (Caltrans 2009).

Shielding by natural and human-made features, noise barriers, diffraction, and reflection: A large object in the path between a noise source and a receiver can significantly attenuate noise levels at that receiver location. The amount of attenuation provided by this “shielding” depends on the size of the object and the frequencies of the noise levels. Natural terrain features such as hills and dense woods, as well as fabricated features such as buildings and walls, can significantly alter noise levels (Caltrans 2009).

## Noise Descriptors

Several rating scales (or noise “metrics”) exist to analyze adverse effects of noise on a community. These scales include the equivalent noise level ( $L_{eq}$ ), the day-night average sound

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level (DNL or  $L_{dn}$ ), and the community noise equivalent level (CNEL). Average noise levels over a period of minutes or hours are usually expressed as dBA  $L_{eq}$ , meaning the equivalent noise level for that period of time. The period of time averaging may be specified;  $L_{eq(3)}$  would be a 3-hour average. When no period is specified, a 1-hour average is assumed. It is important to understand that noise of short duration, that is, times substantially less than the averaging period, is averaged into ambient noise during the period of interest. Thus, a loud noise lasting many seconds or a few minutes may have minimal effect on the measured sound level averaged over a 1-hour period.

To evaluate community noise impacts, the DNL and CNEL were developed to account for human sensitivity to nighttime noise. The DNL represents the 24-hour average sound level with a penalty for noise occurring at night. The DNL computation divides the 24-hour day into two periods: daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.). The nighttime sound levels are assigned a 10-dBA penalty prior to averaging with daytime hourly sound levels. CNEL is similar to DNL except that it separates a 24-hour day into three periods: daytime (7:00 a.m. to 7:00 p.m.), evening (7:00 p.m. to 10:00 p.m.), and nighttime (10:00 p.m. to 7:00 a.m.). The evening nighttime sound levels are assigned a 10-dBA penalty prior to averaging with daytime hourly sound levels.

#### Perception of Vibration at the Receiver

While people have varying sensitivities to vibrations at different frequencies, in general they are most sensitive to low-frequency vibration. Vibration in buildings caused by construction activities may be perceived as motion of building surfaces or rattling of windows, items on shelves, and pictures hanging on walls. Vibration of building components can also take the form of an audible low-frequency rumbling noise, which is referred to as groundborne noise. Groundborne noise is usually only a problem when the originating vibration spectrum is dominated by frequencies in the upper end of the range (60 to 200 Hertz), or when foundations or utilities, such as sewer and water pipes, connect the structure and the construction activity.

Although groundborne vibration is sometimes noticeable in outdoor environments, groundborne vibration is almost never annoying to people who are outdoors (FTA 2006). The primary concern from vibration is the ability to be intrusive and annoying to local residents and other vibration sensitive land uses.

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## Vibration Propagation

Vibration energy spreads out as it travels through the ground, causing the vibration level to diminish with distance away from the source. High-frequency vibrations reduce much more rapidly than low frequencies, so that low frequencies tend to dominate the spectrum at large distances from the source (FTA 2006). Discontinuities in the soil strata can also cause diffractions or channeling effects that affect the propagation of vibration over long distances. When vibration encounters a building, a ground-to-foundation coupling loss will usually reduce the overall vibration level. However, under certain circumstances, the ground-to-foundation coupling may also amplify the vibration level due to structural resonances of the floors and walls.

## Vibration Descriptors

Vibration levels are usually expressed as a single-number measure of vibration magnitude in terms of velocity or acceleration, which describes the severity of the vibration without the frequency variable. The peak particle velocity (ppv) is defined as the maximum instantaneous positive or negative peak of the vibration signal, usually measured in inches per second. Since it is related to the stresses that are experienced by buildings, ppv is often used in monitoring of blasting vibration. Although ppv is appropriate for evaluating the potential of building damage, it is not suitable for evaluating human response. It takes some time for the human body to respond to vibrations. In a sense, the human body responds to an average vibration amplitude (FTA 2006). Because vibration waves are oscillatory, the net average of a vibration signal is zero. Thus, the root mean square (rms) amplitude is used to describe the “smoothed” vibration amplitude (FTA 2006). The rms of a signal is the square root of the average of the squared amplitude of the signal, usually measured in inches per second. The average is typically calculated over a 1-second period. The rms amplitude is always less than the ppv and is always positive. Decibel notation is used to compress the range of numbers required to describe vibration. The abbreviation VdB is used in this report for vibration decibels to reduce the potential for confusion with sound decibels.

## **Noise Setting**

The Preferred Alternative is located predominately in public right-of-way while the Southern Alternative is located predominately on undeveloped land. Land uses adjacent to the Preferred Alternative are at the same approximate elevation as the roadway and consist of single-family residences on lots ranging from just larger than 10,000 square feet to more than 1 acre in size,

and vacant undeveloped land. The land adjacent to the Southern Alternative is undeveloped and includes wildlife habitat.

### Noise Measurements

Six 15-minute noise level measurements were conducted along Elfin Forest Road and the surrounding residential areas on February 4, 2010 (Table 3.4-2). The weather was cool (highs of approximately 66°F) and dry with partly cloudy skies and moderate breezes from the east averaging 1 to 5 mph with occasional gusts of approximately 10 mph. The results of the field noise measurements are summarized in Table 3.4-2.

**Table 3.4-2  
Noise Measurement Summary**

| Site ID | Location   | Start Time | L <sub>eq</sub> (dBA) | L <sub>max</sub> (dBA) | L <sub>min</sub> (dBA) | Noise Sources  |
|---------|--|------------|-----------------------|------------------------|------------------------|--|
| 1       | 50 feet west of Elfin Forest Road, north of Fortuna Del Sur                                | 9:30 a.m.  | 64                    | 82                     | 32                     | Traffic on Elfin Forest Road is the primary noise source. Background noise sources include animal vocalizations, wind blowing through trees and shrubs, and occasional aircraft overflights. |
| 2       | 50 feet east of Elfin Forest Road, south of Fortuna Del Sur                                | 10:15 a.m. | 64                    | 80                     | 33                     |  |
| 3       | 50 feet south of Elfin Forest Road, across from Elfin Forest-Harmony Grove Fire Department | 11:20 a.m. | 64                    | 80                     | 33                     |  |
| 4       | 50 feet south of Elfin Forest Road, 400 feet east of Colina Encantada Way                  | 12:17 p.m. | 65                    | 84                     | 31                     |  |
| 5       | 50 feet north of Elfin Forest Road, 75 east of Elfin Glen                                  | 1:36 p.m.  | 65                    | 82                     | 33                     |  |
| 6       | 50 feet west of Via Ambiente, along proposed pipe line route                               | 2:22 p.m.  | 49                    | 63                     | 30                     |  |

### Noise Sources

The project's principal relevant noise source is vehicles on local roadways, including Elfin Forest Road, which includes limited medium and heavy trucks in addition to passenger automobiles. Sound levels generated from roadway traffic originate primarily from a vehicle's tires, engine, and exhaust. No industrial, manufacturing, or other noisy land uses such as mineral extraction or automotive body repair businesses contribute to the ambient noise levels in the project area.

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## Sensitive Noise Receptors

Noise-sensitive receptors are generally considered humans engaged in activities, or occupying land uses, that may be subject to the stress of significant interference from noise. Human activities usually associated with sensitive receptors include, but are not limited to, talking, reading, and sleeping. Land uses associated with noise sensitive human receptors include residential dwellings, mobile homes, hotels/motels, hospitals, nursing homes, educational facilities, and libraries. In addition to human receptors, protected animal species and their habitats may be considered sensitive noise receptors if located in proximity to project-related noise sources, especially during their breeding season.

Noise-sensitive residential land uses in the project area are the residences located along both sides of Elfin Forest Road that would remain following construction of the proposed project. Potentially noise-sensitive species are located along the entire proposed Southern Alternative and in the vicinity of the proposed tunneling for the Preferred Alternative.

## **Applicable Regulations**

### County of San Diego Noise Ordinance

The County Noise Ordinance (County of San Diego 2006) establishes prohibitions for disturbing, excessive, or offensive noise. Limits are specified depending on the zoning of a property.

#### *Section 36.404, General Sound Level Limits*

This section of the County Noise Ordinance includes 1-hour average-sound-level limits applicable to operation (non-construction) noise sources, including traffic noise at any location on a property that is receiving the noise or at the property line of the property on which the noise is produced. This area is zoned at RS-4 on the west side of the road and A70-1 on the east side. The applicable sound levels would be 50 dB between 7 a.m. and 10 p.m., and 45 dB between 10 p.m. and 7 a.m.

#### *Section 36.409, Sound Level Limitations on Construction Equipment*

This section of the County Noise Ordinance sets limits on the time of day and days of the week that construction is allowed to occur, and sets noise limits for construction activities. Except for

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emergency work, it is unlawful for any person to operate construction equipment or cause construction equipment to be operated, that exceeds an average sound level of 75 dB for an 8-hour period, between 7 a.m. and 7 p.m., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

*Section 36.410, Sound Level Limitations on Impulsive Noise*

This section of the County Noise Ordinance sets limits on high peak noise of short duration. Except for emergency work, it is unlawful for any person working on a public road project to produce or cause to be produced an impulsive noise that exceeds the maximum permitted sound level when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25 percent of the minutes in the measurement period. The maximum sound level is 82 dB for residential, village zoning, or civic use, and 85 dB for agricultural, commercial, or industrial use.

### **3.4.2 Thresholds of Significance**

Significance thresholds for noise impacts are based on criteria provided in Appendix G of the CEQA Guidelines and the County noise policies. The following noise impacts would be considered significant:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

### **3.4.3 Impact Analysis**

#### **Methodology**

##### Construction

For purposes of noise assessment, construction equipment can be considered to operate in two modes, stationary and mobile. Stationary equipment operates in one location for 1 or more days at a time, with either a fixed-power operation, such as, pumps, generators, and compressors, or a

variable noise operation, such as pile drivers, rock drills, and pavement breakers. Mobile equipment moves around the construction site with power applied in cyclic fashion, such as bulldozers, graders, and loaders. Typical construction noise is assessed from the center of the equipment activity or construction site. For linear construction, such as a roadway or pipeline, construction noise is assessed from the centerline of the alignment.

Variation in power imposes additional complexity in characterizing the noise source level from construction equipment. Power variation is accounted for by describing the noise at a reference distance from the equipment operating at full power and adjusting it based on the duty cycle of the activity to determine the  $L_{eq}$  of the operation. Typical duty cycles and noise levels generated by representative pieces of equipment are listed in Table 3.4-3.

**Table 3.4-3  
Typical Maximum Construction Equipment Noise Levels**

| <b>Equipment</b>                | <b>Noise Level at 50 ft dBA</b> | <b>Typical Duty Cycle</b> |
|---------------------------------|---------------------------------|---------------------------|
| Auger Drill Rig                 | 85                              | 20%                       |
| Backhoe                         | 80                              | 40%                       |
| Chain Saw                       | 85                              | 20%                       |
| Compactor (ground)              | 80                              | 20%                       |
| Compressor (air)                | 80                              | 40%                       |
| Concrete Mixer Truck            | 85                              | 40%                       |
| Concrete Pump                   | 82                              | 20%                       |
| Concrete Saw                    | 90                              | 20%                       |
| Crane (mobile or stationary)    | 85                              | 20%                       |
| Dozer                           | 85                              | 40%                       |
| Dump Truck                      | 84                              | 40%                       |
| Excavator                       | 85                              | 40%                       |
| Front End Loader                | 80                              | 40%                       |
| Generator (25 KVA or less)      | 70                              | 50%                       |
| Generator (more than 25 KVA)    | 82                              | 50%                       |
| Grader                          | 85                              | 40%                       |
| Jackhammer                      | 85                              | 20%                       |
| Mounted Impact Hammer (hoe ram) | 90                              | 20%                       |
| Paver                           | 85                              | 50%                       |
| Pneumatic Tools                 | 85                              | 50%                       |
| Pumps                           | 77                              | 50%                       |
| Rock Drill                      | 85                              | 20%                       |
| Roller                          | 80                              | 20%                       |
| Scraper                         | 85                              | 40%                       |
| Tractor                         | 84                              | 40%                       |
| Vacuum Excavator (vac-truck)    | 85                              | 40%                       |
| Vibratory Concrete Mixer        | 80                              | 20%                       |

Source: Thalheimer 2000  
KVA = kilovolt amps

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As shown in Table 3.4-3, peak noise levels measured at a distance of 50 feet from an individual piece of construction equipment can reach as high as 90 dBA  $L_{max}$  (FTA 2006). However, each phase of construction has a specific equipment mix, depending on the work to be accomplished during that phase. Each phase also has its own noise characteristics; some will have higher continuous noise levels than others, and some have high-impact noise levels. The  $L_{eq}$  of each phase is determined by combining the  $L_{eq}$  contributions from each piece of equipment used in that phase. In typical construction projects, grading and excavation activities typically generate the highest noise levels, as grading involves the largest equipment.

The Federal Highway Administration (FHWA) Highway Traffic Noise Model Look-up Tables program was used to calculate traffic noise and the influence of construction traffic on hourly noise levels.

**N-1**     *The project would expose persons to, or generate, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Impacts would be less than significant.*

#### *General Construction*

The nearest sensitive receptors to the Preferred Alternative are the single-family residences fronting Elfin Forest Road. None of these residences have walls facing the project site that would serve to reduce noise generated by construction activities. Some of these properties are as close as 50 feet from the nearest point of anticipated construction work. At this distance, unshielded short-term construction noise levels would average 75 dBA  $L_{eq(8)}$ . This calculation assumes excavation, backfilling, and paving activities would average 74 dBA  $L_{eq}$  at 50 feet, pipeline construction would average 72 dBA  $L_{eq}$  at 50 feet, and roadway surface removal using concrete saws and impact hammers would generate noise levels on the order of 80 dBA  $L_{eq}$  at 50 feet. Roadway surface removal would require the use of impact hammers and concrete saws within 50 feet of an individual receptor for no more than 90 minutes in a given day. Thus, noise generated by construction activities would comply with the County noise ordinance and would not result in significant impacts.

#### *Construction Traffic Noise*

A doubling of energy would result in a 3-dBA increase. Typically, to double energy on a roadway, a project would have to double traffic volumes. According to the project traffic report, construction of the proposed project would result in a 1 to 5 percent increase in traffic volumes along Elfin Forest Road and Harmony Grove Road. However, along Via Ambiente, traffic

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volumes would increase by approximately 135 percent. There are no sensitive receptors fronting the portion of Via Ambiente where construction would occur. Increases in traffic volume along Elfin Forest Road and Harmony Grove Road would result in minor increases in traffic noise levels, i.e., less than 0.5 dBA. The increase along Via Ambiente would result in an increase of approximately 4 dBA. A noise level change of 3 dBA is barely perceivable to the average human ear and a 5-dBA change is considered readily perceivable to the average human ear (Caltrans 2009). Additionally, these noise level increases would be temporary and would cease upon completion of the proposed project. Thus, noise generated by construction traffic would not result in significant impacts.

### *Impulsive Noise*

Impulsive noise events, identified as an action that causes a high peak noise level of short duration (1 second or less), would potentially occur during pavement breaking and removal activities. Principally, the use of an impact hammer for pavement breaking activities would generate impulsive noise levels that would be considered as a potential impulsive noise impact. The impulsive noise levels associated with use of an impact hammer are on the order of 85 to 90 dBA at 50 feet depending on whether the hammer is hand held or mounted on a backhoe. The analysis of general construction noise above used duty cycle factors for determining hourly noise levels. Based on those assumptions, shown in Table 3.4-3, an impact hammer would operate at its maximum noise level for approximately 20 percent of an hour. Therefore, the proposed project would not exceed the County's standards for impulsive noise events and would not result in significant impacts.

### *Wildlife*

The U.S. Fish and Wildlife Service (USFWS) and other resource agencies, such as the U.S. Army Corps of Engineers (USACE) and CDFG, require limitation of noise levels to the habitats of threatened and endangered noise-sensitive songbirds during their breeding seasons. However, no formal standards have been issued by these agencies. In the San Diego County area, the precedent set over many years is that noise levels generated by a proposed project shall not exceed 60 dBA  $L_{eq}$  at the designated habitat or nesting site. Where the existing ambient noise level exceeds 60 dBA  $L_{eq}$ , the project noise level would be limited to less than or equal to the ambient noise level.

The majority of potential habitat for threatened and endangered noise-sensitive species is located along the Southern Alternative and in the vicinity of the tunneling operation at Escondido Creek. Based on the previous construction-related noise levels estimates, the 60 dBA  $L_{eq}$  noise level

contour would extend approximately 250 feet from the center of construction activities associated with grading, trenching, and backfilling. Construction noise levels due to jack and bore operations and pipeline construction would be lower. The evaluation of noise impacts to threatened and endangered noise-sensitive species is included in Section 3.6, Biological Resources, of this EIR.

**N-2** *The project would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Impacts would be less than significant.*

Based on noise-level measurements taken in the project area and in the surrounding community, noise levels at the residences surrounding the project would be noticeably increased (6 to 8 dBA) over the existing noise level in the neighborhood. Temporary noise-level increases of this magnitude would not be considered substantial, as the absolute noise levels would comply with the County construction noise level limits. Therefore, the proposed project would not result in a temporary substantial increase in noise levels and temporary construction noise impacts would be considered less than significant.

**N-3** *The project would expose persons to, or generate, excessive groundborne vibration or groundborne noise levels. Impacts would be less than significant.*

Although it is possible for vibrations from construction projects to cause building damage, the vibrations from construction activities are almost never of sufficient amplitude to cause more than minor cosmetic damage to buildings (FTA 2006). Groundborne vibration generated by construction projects is usually highest during pile driving, soil compacting, jackhammering, and demolition-related activities. Table 3.4-4 shows typical vibration levels for various pieces of construction equipment (FTA 2006).

**Table 3.4-4  
Vibration Levels Measured during Construction Activities**

| Equipment        | PPV<br>at 25 ft (in/sec) | Approximate $L_v$ <sup>1</sup> VdB<br>at 25 ft |
|------------------|--------------------------|--|
| Vibratory Roller | 0.210                    | 94   |
| Hoe Ram          | 0.089                    | 87   |
| Large Bulldozer  | 0.089                    | 87   |
| Caisson Drilling | 0.089                    | 87   |
| Loaded Trucks    | 0.076                    | 86   |
| Jackhammer       | 0.035                    | 79   |
| Small Bulldozer  | 0.003                    | 58   |

<sup>1</sup> rms velocity in decibels (VdB) re 1 micro-inch/second  
Source: FTA 2006

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Using standard vibration propagation calculations, the vibration data provided in Table 3.4-4 indicate that construction equipment vibration levels would be well below the threshold of damage at distances ranging beyond 65 feet. The nearest vibration-sensitive receptors would be the residences fronting Elfin Forest Road; the nearest structure is approximately 50 feet from the nearest point of construction. At 75 feet, receptors along Elfin Forest Road would be exposed to vibration levels of approximately 79 VdB (0.04 ppv inch per second) during paving activities when a vibratory roller is used. Grading and pavement-removal activities would be expected to generate lower vibration levels (72 VdB [0.02 ppv inch per second]). According the Federal Transit Authority's (FTA's) *Transit Noise and Vibration Impact Assessment*, an acceptable threshold for impacts to residential uses is 80 VdB for infrequent events (2006). Construction activities would be considered infrequent events. Additionally, vibrations of this level are below the threshold for structural damage to buildings of 0.2 ppv inch per second (Caltrans 2004). Thus, the identified receptors would not be exposed to substantial vibration during project construction. Therefore, project impacts to noise-sensitive and vibration-sensitive land uses would be less than significant.

#### **3.4.4 Mitigation Measures**

As shown in the preceding analysis, project-related noise and vibration impacts would be less than significant. Therefore, no mitigation measures are required.

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### **3.5 HYDROLOGY AND WATER QUALITY**

This section describes water resources, hydrology, and water quality in the area of the proposed project. The potential impacts to these areas and alternatives are also discussed.

#### **3.5.1 Existing Conditions**

The proposed project is located within the Carlsbad Hydrologic Unit (subunits 904.1–904.6). This area is approximately 210 square miles, extending from the headwaters above Lake Wolhford in the east to the Pacific Ocean in the west, and from Vista and Oceanside in the north to Solana Beach, Escondido, and the community of Rancho Santa Fe to the south. The cities of Carlsbad, San Marcos, and Encinitas are entirely within this hydrologic unit, as are the communities of Elfin Forest, Harmony Grove, and San Elijo Hills. Important hydrologic features within the watershed include coastal lagoons, major creeks, and two water storage reservoirs. Along the Pacific coast, the watershed extends north from Solana Beach to Oceanside.

Major water bodies within the project area include Misha Creek and Escondido Creek. The project area is within the watersheds for Escondido Creek and Misha Creek. Escondido Creek is identified under the Clean Water Act (CWA) as a 303(d) impaired water body. It experiences impairments to beneficial uses due to excessive coliform bacteria and sediment loading from upstream sources (City of Carlsbad 2008). This creek terminates at the San Elijo Lagoon, located south of Encinitas, which is also an impaired water body per CWA Section 303(d).

#### **3.5.2 Impacts**

Impacts to water quality from the proposed project could occur from construction or operation activities.

##### **WQ-1 Construction**

Potential significant impacts could result from inadequate containment of sediment from grading, trenching, tunneling, or other construction operations. Impacts could also result from fuels associated with construction equipment, such as from leaks or during maintenance and fueling. In addition, equipment storage areas and trash receptacles could pose potential significant impacts to water quality if they are not properly managed and maintained.

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## **WQ-2 Operations**

The normal operation of the proposed pipeline would result in less-than-significant impacts to water quality. The portions of the pipeline located beneath paved roadway would not result in any increase of impervious surfaces that could contribute to storm water runoff. The portions of pipeline outside of the paved roadway would require removal of vegetation, resulting in increased soil exposure. However, the cleared areas would be revegetated after completion of construction.

Construction activities may result in soil disturbance, which could affect water quality. No increase in impermeable surfaces would occur as a result of this project, and no impacts from pipeline operation would be expected.

### **3.5.3 Mitigation**

**WQ-A** To reduce potential water quality impacts during construction to a less-than-significant level, the District would implement water quality protection measures as detailed below, and would comply with the National Pollutant Discharge Elimination System (NPDES) General Construction Permit.

1. Prior to commencement of grading, and to obtain coverage under an NPDES General Permit for Construction Activity, the District (or its construction contractor) shall submit a Notice of Intent (NOI) to prepare a Storm Water Pollution Prevention Plan (SWPPP) that incorporates all conditions of the permit.
2. Prior to commencement of grading, the SWPPP shall be completed and shall detail proposed methods to preclude runoff and contaminants from leaving the construction site. The SWPPP shall include forms and maps for the documentation of all compliance and noncompliance of construction activities, and shall remain on-site for 3 years after the RWQCB acceptance of the Notice of Termination (NOT).
3. The manager for the construction contractor shall be responsible for implementing and maintaining the SWPPP.
4. Prior to commencement of grading and as part of the SWPPP, the District shall cause the preparation of an erosion control plan for the construction phase. The plan shall ensure that all erosion and runoff control measures are in place prior to major grading activities, and that exposed slopes and graded areas are protected

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throughout construction. BMPs shall include the short-term use of silt fences, gravel bags, fiber rolls, erosion control blankets, and/or similar devices. Any erosion and runoff control measures proposed within Sage Hill Preserve shall be coordinated with the DPR District Park Manager.

5. All soils to be stockpiled shall be protected from erosion and sediment runoff at all times. Stockpiles shall be protected through the use of gravel bags or similar mechanisms near the base of the piles and covered with secured tarps or tackifiers.
6. Stockpiles, refueling activities, and storage areas of hazardous materials (e.g., fuels, lubricants, solvents, and other potential contaminants) shall be located only at predesignated sites with adequate pollution control. Predesignated sites for stockpiles, refueling activities, and storage areas of hazardous materials shall be located outside of Sage Hill Preserve.
7. Prior to commencement of grading, and as a part of the SWPPP, the District (or its construction contractor) shall prepare a construction spill contingency plan in accordance with County Department of Environmental Health regulations.
8. Exposed slopes shall be appropriately stabilized according to the SWPPP after completion of site grading. Stabilization of any exposed slopes within Sage Hill Preserve shall be coordinated with the DPR District Park Manager.
9. Native vegetation shall be preserved, wherever feasible, for immediate replacement on disturbed areas following grading. Native topsoil shall be stockpiled and reapplied as part of site reclamation.

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## 3.6 BIOLOGICAL RESOURCES

This section identifies the existing biological resources within the alternative alignments, assesses the potential impacts to these biological resources associated with the proposed project, and recommends mitigation for impacts that are considered significant under CEQA and the County of San Diego Significance Guidelines. This section describes the biological resources within the proposed project area and the potential impacts related to project construction and operation. This section is based on the *Biological Resource Report for the Proposed Olivenhain Municipal Water District Raw Water Pipeline Project from the Second San Diego Aqueduct to the David C. McCollom Water Treatment Plant* (AECOM 2010a).

### 3.6.1 Existing Conditions

The proposed project occurs at an elevation of approximately 650 feet AMSL. Topography is flat and scattered with numerous Santiago Peak metavolcanic rock outcroppings. There are two main drainages, Escondido Creek and Misha Creek, which both drain toward the southwest through the proposed project site. Misha Creek drains into Escondido Creek south of the proposed project site near Questhaven Road. The proposed project is located in an area with moderate temperatures, averaging 65°F. Average annual rainfall is approximately 16 inches.

Portions of the Preferred and Southern alternatives are located within the County's proposed North County Multiple Species Conservation Program (NCMSCP), the Multiple Habitat Conservation Program (MHCP), and also within the approved South County Multiple Species Conservation Program (SCMSCP) (Figure 3.6-1). The proposed project is within lands designated as Pre-Approved Mitigation Areas (PAMAs) within the NCMSCP, and additional preserve areas surround the proposed project site. The project is also within pre-negotiated (hardlined) Take Authorized Areas per the NCMSCP. In addition, one NCMSCP Open Space Easement exists on the northern perimeter of the proposed project site. The NCMSCP meets the northern boundary of the SCMSCP in the eastern portion of the proposed project site. This portion includes both SCMSCP Hardline Preserve and Take Authorized Areas (Figure 3.6-1). Portions of the Preferred Alternative also fall within the 235-acre Sage Hill Preserve, which is managed by the County of San Diego's Parks and Recreation Department.

Biological reconnaissance for the proposed project began in September 2009 until July 2010. Biological surveys and investigations conducted for the proposed project include a biological reconnaissance survey, vegetation mapping, focused rare plant surveys, jurisdictional wetlands delineation, protocol nonbreeding season coastal California gnatcatcher (CAGN) surveys

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(*Poliioptila californica californica*), protocol breeding season surveys for least Bell's vireo (*Vireo bellii pusillus*; LBV), and protocol breeding season surveys for the southwestern willow flycatcher (*Empidonax traillii extimus*; SWFL). Biological surveys for the proposed project were completed by AECOM from September 2009 through July 2010. Prior to field surveys, a query of the CDFG California Natural Diversity Database (CNDDDB) was conducted to determine which sensitive species have the potential to occur within the proposed project site. All surveys were conducted on foot to cover all areas of the proposed project site and in accordance with USFWS and CDFG guidelines. The biological surveys focused on specific areas within a 602.78-acre survey area that includes both alignments. A 71.01-acre overlap exists between the two alignments and is only accounted for once in the survey area total acreage. The Preferred Alternative survey area totals 414.35 acres and the Southern Alternative alignment survey area totals 330.42 acres. This includes an area extending 100 feet out from the project corridor totaling approximately 135.0 acres. The survey area also includes an area extending 500 feet beyond the project corridor totaling approximately 592.78 acres. In addition to the 100-foot and 500-foot survey areas, both alignments contain a "project corridor" varying in width from 20 to 40 feet that encompasses the actual pipeline placements where direct impacts will occur (Figure 3.6-1). The sensitive vegetation communities and species and regulated waters that were detected within and adjacent to the proposed project corridor during these surveys are summarized below.

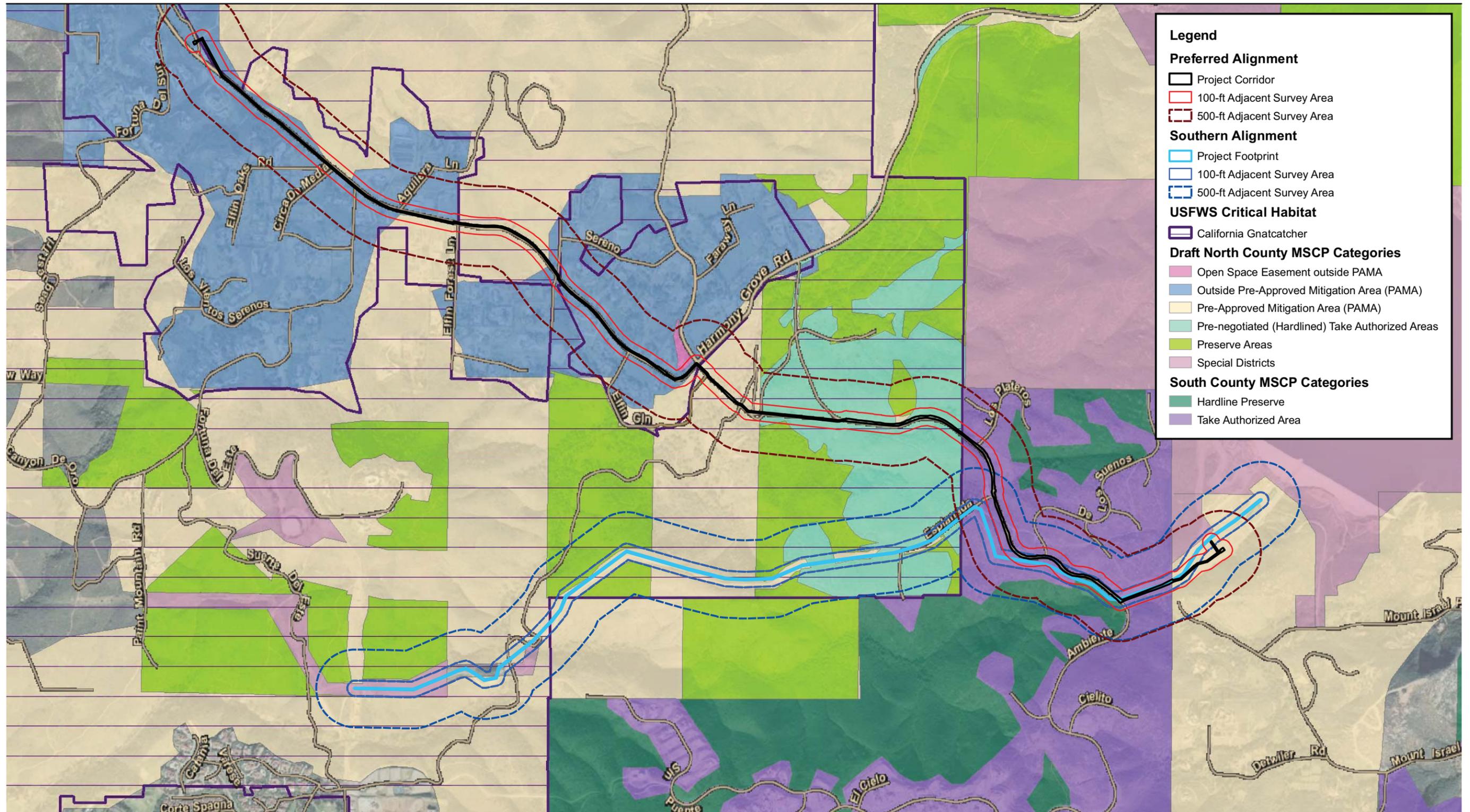
## **Vegetation Communities**

Fourteen vegetation communities and land cover types occur among the two alternative project alignments and associated 100-foot and 500-foot buffer areas, including four types of riparian and wetland vegetation communities (freshwater seep, mulefat scrub, southern arroyo willow riparian forest, and southern willow scrub), eight types of upland vegetation communities (dense coast live oak woodland, Diegan coastal sage scrub, coastal sage-chaparral transition, eucalyptus woodland, nonnative grassland, ornamental plantings, southern mixed chaparral, and valley needlegrass grassland), and two other cover types (disturbed habitat and urban/developed). Slight variations within specific community types exist. Figures 3.6-2a and 3.6-2b show the vegetation communities along the Preferred and Southern alternatives.

## ***Riparian and Wetlands***

### Freshwater Seep

Freshwater seeps are typically dominated by low-growing, perennial, herbaceous species, particularly sedges and grasses. Freshwater seeps occur in areas that are permanently moist or



**Legend**

**Preferred Alignment**

- Project Corridor
- 100-ft Adjacent Survey Area
- 500-ft Adjacent Survey Area

**Southern Alignment**

- Project Footprint
- 100-ft Adjacent Survey Area
- 500-ft Adjacent Survey Area

**USFWS Critical Habitat**

- California Gnatcatcher

**Draft North County MSCP Categories**

- Open Space Easement outside PAMA
- Outside Pre-Approved Mitigation Area (PAMA)
- Pre-Approved Mitigation Area (PAMA)
- Pre-negotiated (Hardlined) Take Authorized Areas
- Preserve Areas
- Special Districts

**South County MSCP Categories**

- Hardline Preserve
- Take Authorized Area

Source: DigitalGlobe 2008; Nolte 2009; AECOM 2009

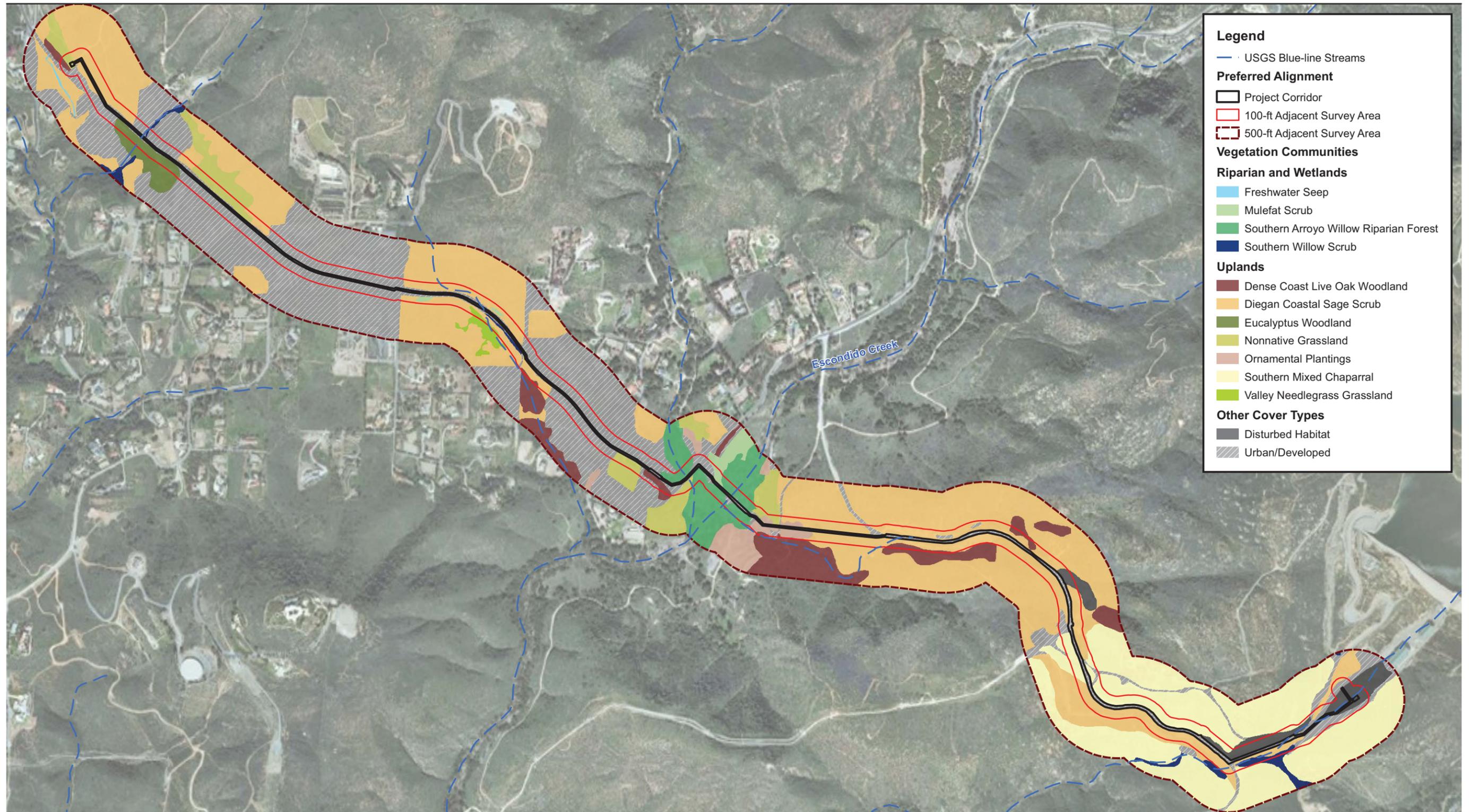
1,000 500 0 1,000 Feet

Scale: 1 = 15,000; 1 inch = 1,250 feet

**Figure 3.6-1**  
**Regional Conservation and Land Ownership**

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**Legend**

- USGS Blue-line Streams

**Preferred Alignment**

- ▭ Project Corridor
- ▭ 100-ft Adjacent Survey Area
- ▭ 500-ft Adjacent Survey Area

**Vegetation Communities**

**Riparian and Wetlands**

- ▭ Freshwater Seep
- ▭ Mulefat Scrub
- ▭ Southern Arroyo Willow Riparian Forest
- ▭ Southern Willow Scrub

**Uplands**

- ▭ Dense Coast Live Oak Woodland
- ▭ Diegan Coastal Sage Scrub
- ▭ Eucalyptus Woodland
- ▭ Nonnative Grassland
- ▭ Ornamental Plantings
- ▭ Southern Mixed Chaparral
- ▭ Valley Needlegrass Grassland

**Other Cover Types**

- ▭ Disturbed Habitat
- ▭ Urban/Developed

Source: DigitalGlobe 2008; Nolte 2009; AECOM 2009

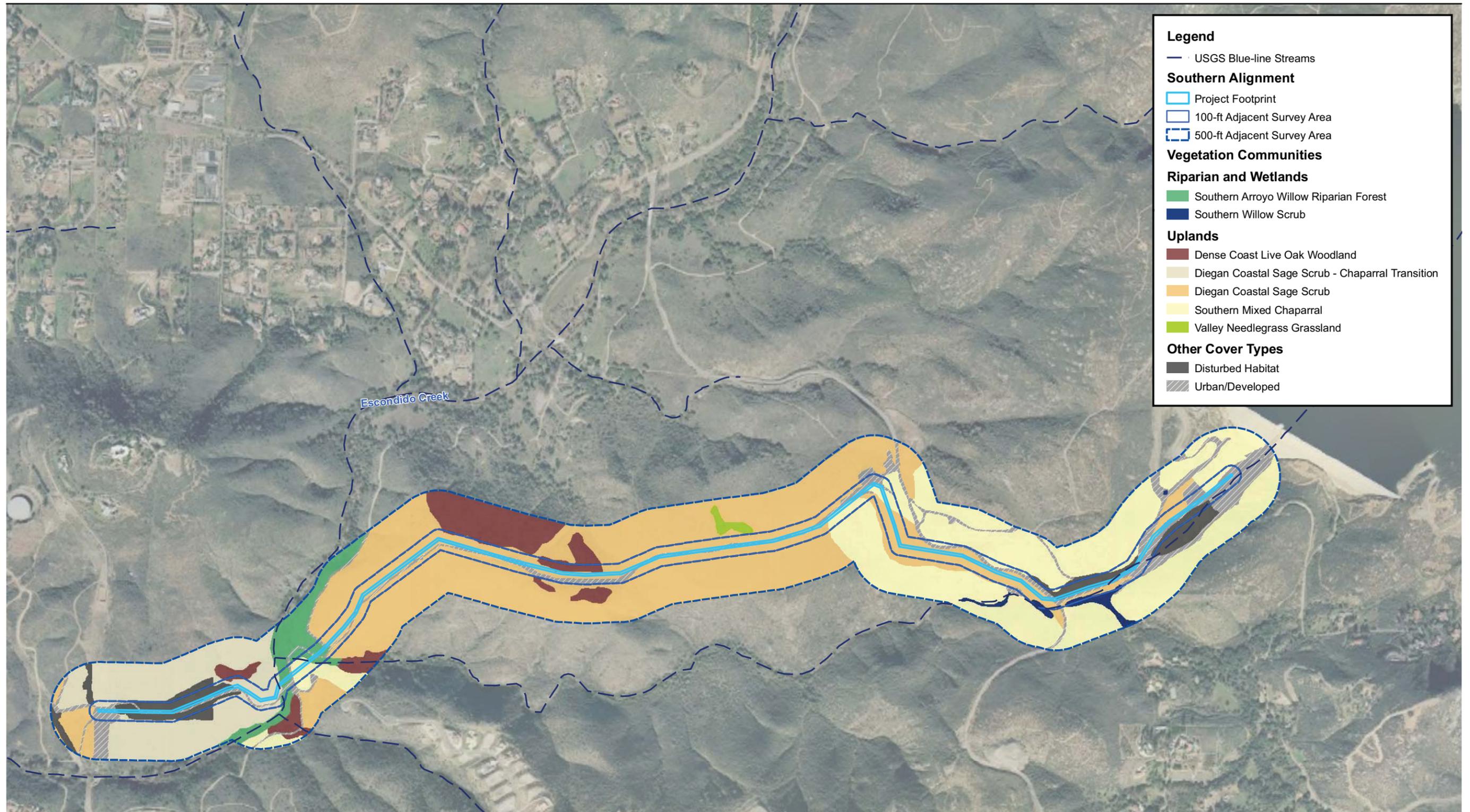
1,000 500 0 1,000 Feet

Scale: 1 = 12,000; 1 inch = 1,000 feet

**Figure 3.6-2a**  
**Vegetation Communities and Other Cover Types**  
**Preferred Alignment**

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Source: DigitalGlobe 2008; Nolte 2009; AECOM 2009

1,000 500 0 1,000 Feet

Scale: 1 = 12,000; 1 inch = 1,000 feet

**Figure 3.6-2b**  
**Vegetation Communities and Other Cover Types**  
**Southern Alignment**

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saturated and are often associated with grasslands or meadows. Wetlands are considered Tier I habitat by the County, the SCMSCP, and the NCMSCP.

Freshwater seep occurs along the Preferred Alternative. The freshwater seep within the proposed project site occurs adjacent to the southern perimeter of Elfin Forest Road within the 500-foot buffer. It is surrounded by residential development and receives water from a culvert running north/south underneath Elfin Forest Road. Due to the disturbed nature of the surrounding land and prevalence of nonnative plant species, this habitat is of relatively low habitat value.

### Mulefat Scrub

Mulefat scrub is a depauperate, tall, herbaceous riparian scrub dominated by mulefat (*Baccharis salicifolia*). This habitat type occurs in intermittent stream channels with somewhat coarse substrate, and is maintained by frequent flooding. Mulefat scrub occurs throughout California from Tehama County south to northwestern Baja California—usually below 2,000 feet. Mulefat scrub, a category of riparian scrub, is considered a Tier I habitat by the County, the SCMSCP, and the NCMSCP.

Mulefat scrub occurs along the Preferred Alternative. Three areas of mulefat scrub exist within the project area—two associated with roadside drainages along Elfin Forest Road south of Elfin Forest Lane, and one associated with Escondido Creek near the convergence of Elfin Forest Road and Harmony Grove Road. All three areas are relatively small and are bounded on at least one side by a paved road. However, they are also contiguous with adjacent habitat, including southern arroyo willow riparian forest and Diegan coastal sage scrub, and display typical mulefat scrub species and vegetative structure. These combined characteristics indicate that the mulefat scrub within the proposed project site is of relatively moderate habitat value.

### Southern Arroyo Willow Riparian Forest

Southern arroyo willow riparian forest is a winter-deciduous forest dominated by moderately tall broad-leaved trees and arroyo willows (*Salix lasiolepis*) with a shrubby understory of willows. They tend to colonize low terraces that are seasonally flooded by adjacent rivers and streams. Riparian forests are considered a Tier I habitat by the County, the SCMSCP, and the NCMSCP.

Southern arroyo willow riparian forest occurs along both alternative project corridors; however, the greater area of southern arroyo willow riparian forest occurs along the Preferred Alternative within the proposed project site. The southern arroyo willow riparian forest within the project site is characterized by richness in native species diversity and abundance and an intact

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vegetative composition. However, there is also a prevalence of nonnative species. Furthermore, there is disturbance in the form of residential and municipal development (i.e., erosion wall, flood protection maintenance, and footpaths) abutting this habitat at certain areas within the project site. These combined characteristics indicate that the southern arroyo willow riparian forest within the proposed project site is of relatively moderate habitat value.

### Southern Willow Scrub

Southern willow scrub is a thick, broad-leafed, winter-deciduous riparian habitat dominated by willows with occasional Fremont's cottonwood (*Populus fremontii*) and California sycamore. Understory development is inhibited by the thickness of these stands. Southern arroyo willow riparian scrub occurs next to stream channels with sandy to fine gravelly deposits where repeated flooding occurs. Southern willow scrub, a category of riparian scrub, is considered a Tier I habitat by the County, the SCMSCP, and the NCMSCP.

Southern willow scrub occurs along the Preferred Alternative. Southern willow scrub within the project site exists on an unnamed tributary to Escondido Creek. It is also adjacent to Elfin Forest Road, which borders its northern perimeter. It is contiguous with adjacent habitat, including Diegan coastal sage scrub, yet displays somewhat atypical southern willow scrub species diversity and vegetative structure. These combined characteristics indicate that the southern willow scrub within the proposed project site is of relatively moderate habitat value.

### ***Uplands***

#### Dense Coast Live Oak Woodland

Dense coast live oak woodland consists of a 50 to 70 percent canopy cover of coast live oak (*Quercus agrifolia*). This habitat tends to occur at the narrowest part of valley riparian floodplains on deep alluvium with high perennial groundwater tables. Dense coast live oak woodland is common on the foothills and into the mountains of San Diego County. Dense coast live oak woodland is considered a Tier I habitat by the County, the SCMSCP, and the NCMSCP.

Dense coast live oak woodland occurs along both the Preferred and Southern alternatives on close to equivalent acreages. The community is dominated by coast live oak. There are a number of patches of dense coast live oak woodland within the project site. They are associated with tributaries to Escondido and Misha creeks and are contiguous with other habitats, including Diegan coastal sage scrub and nonnative grassland. The species composition and density are

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typical of intact dense coast live oak woodland. These combined characteristics indicate that the dense coast live oak woodland within the proposed project site is of relatively high habitat value.

### Diegan Coastal Sage Scrub

Diegan coastal sage scrub is typically dominated by soft, low-growing woody shrubs. Many of the species are drought-deciduous, losing their leaves during periods of low rainfall. This community typically occurs on xeric slopes or clay soils with the capacity to store water. Diegan coastal sage scrub often intergrades with chaparral habitats at higher elevations. Diegan coastal sage scrub is considered a Tier II habitat by the County, the SCMSCP, and the NCMSCP.

Diegan coastal sage scrub occurs along both alternative project corridors; however, the greater area of Diegan coastal sage scrub occurs along the Southern Alternative. Overall, the Diegan coastal sage scrub within the project site is characterized by richness in native species diversity and abundance, lack of disturbance, and intact vegetative composition. These characteristics indicate that the Diegan coastal sage scrub within the proposed project site is of relatively high habitat value.

### Coastal Sage/Chaparral Transition

Coastal sage/chaparral transition is composed of a mix of sclerophyllous, woody chaparral species and drought-deciduous, malacophyllous sage scrub species. Coastal sage/chaparral transition often colonizes as a post-fire successional community.

Coastal sage/chaparral transition occurs along the Southern Alternative only. Overall, the coastal sage/chaparral transition within the project site displays species composition, density, and vegetative structure typical of a community, and is contiguous with other habitats such as Diegan coastal sage scrub. These combined characteristics indicate that the coastal sage/chaparral transition within the proposed project site is of relatively high habitat value.

### Eucalyptus Woodland

Eucalyptus woodland habitats range from single-species groves with little to no understory to multiple-species woodland with a well-developed shrub understory and herbaceous groundcover. Usually, however, they form dense stands with closed canopies. Eucalyptus woodland is considered a Tier IV habitat by the County, the SCMSCP, and the NCMSCP.

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Eucalyptus woodland occurs along the Preferred Alternative. The community is dominated by eucalyptus (*Eucalyptus* spp.), forming dense thickets lacking in non-eucalyptus species diversity.

### Nonnative Grassland

Nonnative grassland is a dense-to-sparse cover of annual grasses often associated with native wildflowers whose abundance is directly related to annual rainfall. Nonnative or annual grassland often occurs on fine, often clay soils that remain moist or saturated during the rainy winter months. These same areas tend to be very dry during the summer months. Nonnative grassland is often associated with oak woodland. In California, nonnative grassland dominates most valleys and foothills below 3,000 and 4,000 feet, except for northern coastal and desert areas. Nonnative grassland is considered a Tier III habitat by the County, the SCMSCP, and the NCMSCP.

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Nonnative grassland occurs along the Preferred Alternative. It is evident that coastal sage scrub species are recolonizing some of the nonnative grassland areas within the project site. It is likely that these areas were Diegan coastal sage scrub prior to disturbance (i.e., cleared, grazed, and/or previously burned areas). Although nonnative grassland supports a small percentage of native species, the habitat is contiguous with other habitats such as Diegan coastal sage scrub and dense coast live oak woodland. Furthermore, most of the areas of nonnative grassland are of significant acreage, and not just disjointed, urbanized habitat. These combined characteristics indicate that the nonnative grassland within the proposed project site is of relatively high habitat value.

### Ornamental Plantings

The Holland classification system does not include ornamental plantings as a specific vegetation community, but, rather, describes some disturbed habitat (Holland Code 11300) as being dominated by ornamental species. Disturbed habitat is considered a Tier IV habitat by the County, the MSCP, and the NCMSCP.

Ornamental plantings occur along the Preferred Alternative (Table 3.6-1 and Figure 5a). The community is dominated by olive trees (*Olea europea*).

### Southern Mixed Chaparral

Southern mixed chaparral consists of broad-leaved sclerophyllous shrubs on either mafic or granitic substrates. In San Diego, this habitat is distinguished from other chaparral communities by the presence of blue-flowered lilacs such as Ramona lilac (*Ceanothus tomentosus* var.

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*olivaceus*). Southern mixed chaparral tends to occur on dry, rocky, and often steep, north-facing slopes with thin soils. Southern mixed chaparral is considered a Tier III habitat by the County, the SCMSCP, and the NCMSCP.

Southern mixed chaparral occurs along both the Preferred and Southern alternatives, with close to equivalent acreages. Overall, the southern mixed chaparral within the project site is extensive; displays species composition, density, and vegetative structure typical of an intact southern mixed chaparral community; and is contiguous with other habitats including Diegan coastal sage scrub and dense coast live oak woodland. These combined characteristics indicate that the southern mixed chaparral within the proposed project site is of relatively high habitat value.

### Valley Needlegrass Grassland

Valley needlegrass grassland is dominated by perennial bunchgrasses such as purple needlegrass. Native and nonnative annual forbs and grasses frequently colonize open areas and tend to exceed bunchgrass cover densities. Valley needlegrass grassland usually occurs on fine-textured and typically clay soils that remain moist or saturated during the rainy season yet are arid in the summer. This habitat is often associated with oak woodlands. Valley needlegrass grassland is considered a Tier I habitat by the County, the SCMSCP, and the NCMSCP.

Valley needlegrass grassland only occurs within the adjacent survey areas associated with both the Preferred and Southern alternatives. The valley needlegrass grassland within the project site exists as an inclusion within Diegan coastal sage scrub. It is also contiguous with southern willow scrub and displays typical valley needlegrass grassland species diversity and vegetative structure. However, the area it encompasses is small, dominated by nonnative annual brome, and slightly disturbed by footpaths with easy accessibility via Elfin Forest Road. These combined characteristics indicate that the valley needlegrass grassland within the proposed project site is of relatively moderate habitat value.

### ***Other Cover Types***

#### Disturbed Habitat

Disturbed habitat is generally defined as any land on which the native vegetation has been significantly altered by agriculture, grazing, construction, or other land-clearing activities, resulting in species composition and site conditions that favor invasive species. Such land typically is found in vacant lots, dirt roads, roadsides, construction staging areas, or abandoned fields, and is dominated by bare ground and/or nonnative annual species and perennial broad-

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leafed species. The level of soil disturbance is such that only the most ruderal plant species would be expected such as Russian thistle, sweet fennel (*Foeniculum vulgare*), horseweed (*Conyza* spp.), black mustard, lamb's quarters (*Chenopodium album*), fountain grass (*Pennisetum setaceum*), and/or castor bean (*Ricinus communis*).

Within the project survey area, disturbed habitat occurs along both the Preferred and Southern alternatives. These disturbed areas are composed of dirt trails and roads, and areas altered by land-clearing activities that are now dominated by nonnative plant species and bare or disturbed ground.

### Urban/Developed Land

Urban/developed land supports no native vegetation and may be additionally characterized by the presence of human-made structures such as buildings or roads, and ornamental vegetation associated with these human-made structures. The level of soil disturbance is such that only the most ruderal or ornamental plant species would be expected.

Urban/developed land occurs along both the Preferred and Southern alternatives, with the greater acreage occurring within the Preferred Alternative. The developed land within the proposed project site is composed of paved roads, residential and commercial development, horse corrals, and other human-made structures.

### **Sensitive Plant Species**

A total of 114 plant species were recorded within the entire Biological Survey Area (BSA) (both alignments), with 96 species (84 percent) encountered considered native and the remaining 18 species (16 percent) considered nonnative and/or naturalized into the area. Sensitive vegetation communities are vegetation assemblages, associations, or subassociations that support or potentially support sensitive plant or wildlife species; have significant cumulative losses throughout the region; have relatively limited distribution; or have particular value to wildlife. Typically, sensitive vegetation communities are considered sensitive whether or not they have been disturbed. Sensitive vegetation communities are regulated by various local, state, and federal resource agencies.

Approximately 255 acres composed of nine sensitive vegetation communities occur within the Preferred Alternative survey area and approximately 289 acres composed of eight sensitive vegetation communities occur within the Southern Alternative survey area. Of these, the Diegan

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coastal sage scrub and valley needlegrass grassland are considered “very threatened” natural plant communities, freshwater seep is considered a “threatened” natural plant community, and southern arroyo willow riparian forest and southern willow scrub are considered “very threatened” natural plant communities.

Most wetlands and riparian oak woodlands are considered Tier I vegetation communities per the County, the draft NCMSCP, and the SCMSCP. Therefore, five wetland habitats within the project area are considered Tier I communities: freshwater seep, southern arroyo willow riparian forest, mulefat scrub, southern willow scrub, and dense coast live oak woodland. In addition, the upland valley needlegrass grassland habitat is also considered a Tier I community by the County, the draft NCMSCP, and the SCMSCP. Diegan coastal sage scrub is considered a Tier II nonnative grassland; southern mixed chaparral is considered Tier III; and eucalyptus woodland and ornamental plantings are considered Tier IV communities per the County, the draft NCMSCP, and the SCMSCP. Lastly, urban/developed lands are considered a Tier IV community per the draft NCMSCP. The southern willow scrub, freshwater seep, southern arroyo willow riparian forest, and mulefat scrub are regulated by USACE, the Regional Water Quality Control Board (RWQCB), and CDFG. Only impacts to habitats within Tiers I through III warrant mitigation.

Focused surveys for sensitive plants were conducted for the proposed project on September 14 and 15, and November 12, 2009. Six sensitive plant species were detected during the sensitive plant survey within the Preferred and Southern Alternatives: San Diego sagewort (*Artemisia palmeri*), wart-stemmed ceanothus (*Ceanothus verrucosus*), summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*), San Diego marsh-elder (*Iva hayesiana*), Southwestern spiny rush (*Juncus acutus* spp. *leopoldii*), and California adolphia (*Adolphia californica*). Figure 3.6-3 shows the location of the sensitive plant species observed during the focused surveys.

For the botanical surveys described above, time of year was a limiting factor based on the bloom periods of annual plant species. The following species had potential to occur within the proposed project site, yet were indiscernible at the time of surveys: San Diego goldenstar (*Bloomeria clevelandii*), thread-leaved brodiaea (*Brodiaea filifolia*), Orcutt’s brodiaea (*Brodiaea orcuttii*), delicate clarkia (*Clarkia delicata*), variegated dudleya (*Dudleya variegata*), Robinson’s peppergrass (*Lepidium virginicum* var. *robinsii*), and chaparral ragwort (*Senecio aphanactis*).

### **Sensitive Wildlife Species**

The majority of the proposed project site (both alignments) is of moderate to high value for wildlife species, excluding the disturbed and developed lands. Because much of the Preferred

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Alternative follows existing roadbed, the associated direct impact areas for this alignment are of low habitat quality. However, moderate to high quality habitat lies immediately adjacent to this pipeline corridor within the 500-foot adjoining survey area. A large amount of the habitat found within this 500-foot adjoining survey area is Diegan coastal sage scrub, which is suitable for many wildlife species.

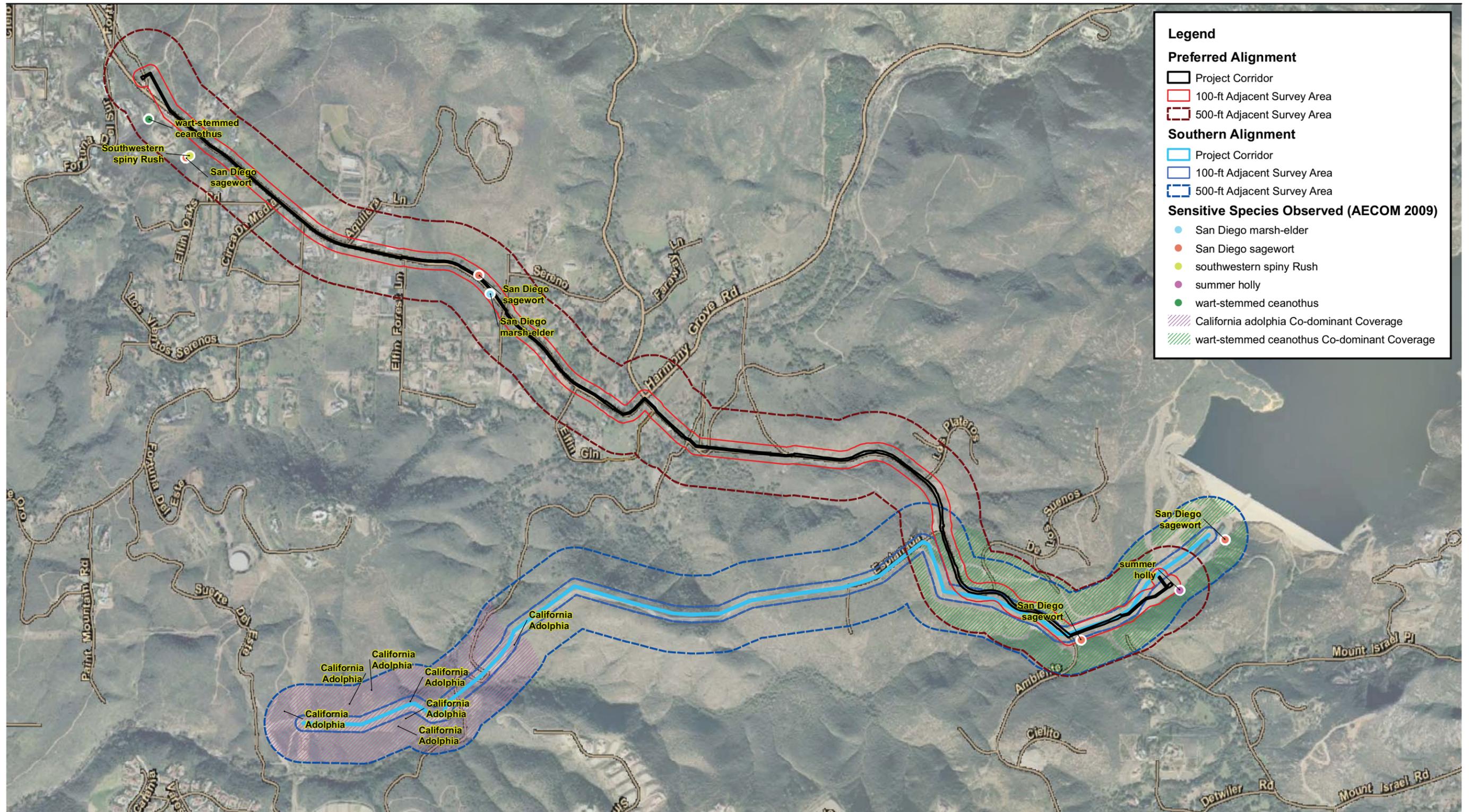
Common birds observed within and adjacent to the proposed project site include western meadowlark (*Sturnella neglecta*), American crow (*Corvus brachyrhynchos hesperis*), mourning dove (*Zenaida macroura marginella*), house finch (*Carpodacus mexicanus frontalis*), Anna's hummingbird (*Calypte anna*), California towhee (*Pipilo crissalis*), bushtit (*Psaltriparus minimus*), white-crowned sparrow (*Zonotrichia leucophrys*), California thrasher (*Toxostoma redivivum*), wrentit (*Chamaea fasciata*), and Bewick's wren (*Thryomanes bewickii*). Several sensitive bird species were observed foraging within the proposed project site, including the Southern California rufous-crowned sparrow (*Aimophila ruficeps*), Bell's sage sparrow (*Amphispiza belli belli*), Cooper's hawk (*Accipiter cooperii*), northern harrier (*Circus cyaneus*), white-tailed kite (*Elanus leucurus*), LBV, yellow warbler (*Dendroica petechia brewsteri*), yellow-breasted chat (*Icteria virens*), SWFL, and CAGN. Figure 3.6-4 shows the location of the sensitive wildlife species observed during the focused surveys.

Cottontail rabbit (*Sylvilagus audubonii*), Botta's pocket gopher (*Thomomys bottae*), raccoon (*Procyon lotor*), southern mule deer (*Odocoileus hemionus*), and woodrat (*Neotoma* sp.) were observed or detected during surveys in 2009. Several sensitive wildlife species, including southern mule deer (*Odocoileus hemionus*), Belding's orangethroated whiptail (*Aspidoscelis hyperythrus beldingi*), and coastal western whiptail (*Aspidoscelis tigris stejnegeri*), were observed within the proposed project site.

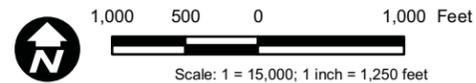
Additionally, according to CNDDDB occurrence records, the closest occurrences of the Hermes copper butterfly were recorded in 2003 and are approximately 16 miles south and more than 50 miles north of the project site (see Figure 3.6-5). However, according to a paper published by Daniel A. Marschalek and Michael W. Klein Sr. in the *Journal of Insect Conservation* (2010), there are two extant occurrences near Escondido and Cielo creeks.

## **Wetlands and Jurisdictional Waters**

There are 0.18 acre of potential jurisdictional waters that occur within the proposed project site and the associated 100-foot adjoining survey areas (see Figure 3.6-6). The proposed project site and associated 100-foot adjoining survey area support five types of potential federal and/or state regulated waters: coastal and valley freshwater marsh; southern arroyo willow riparian forest;



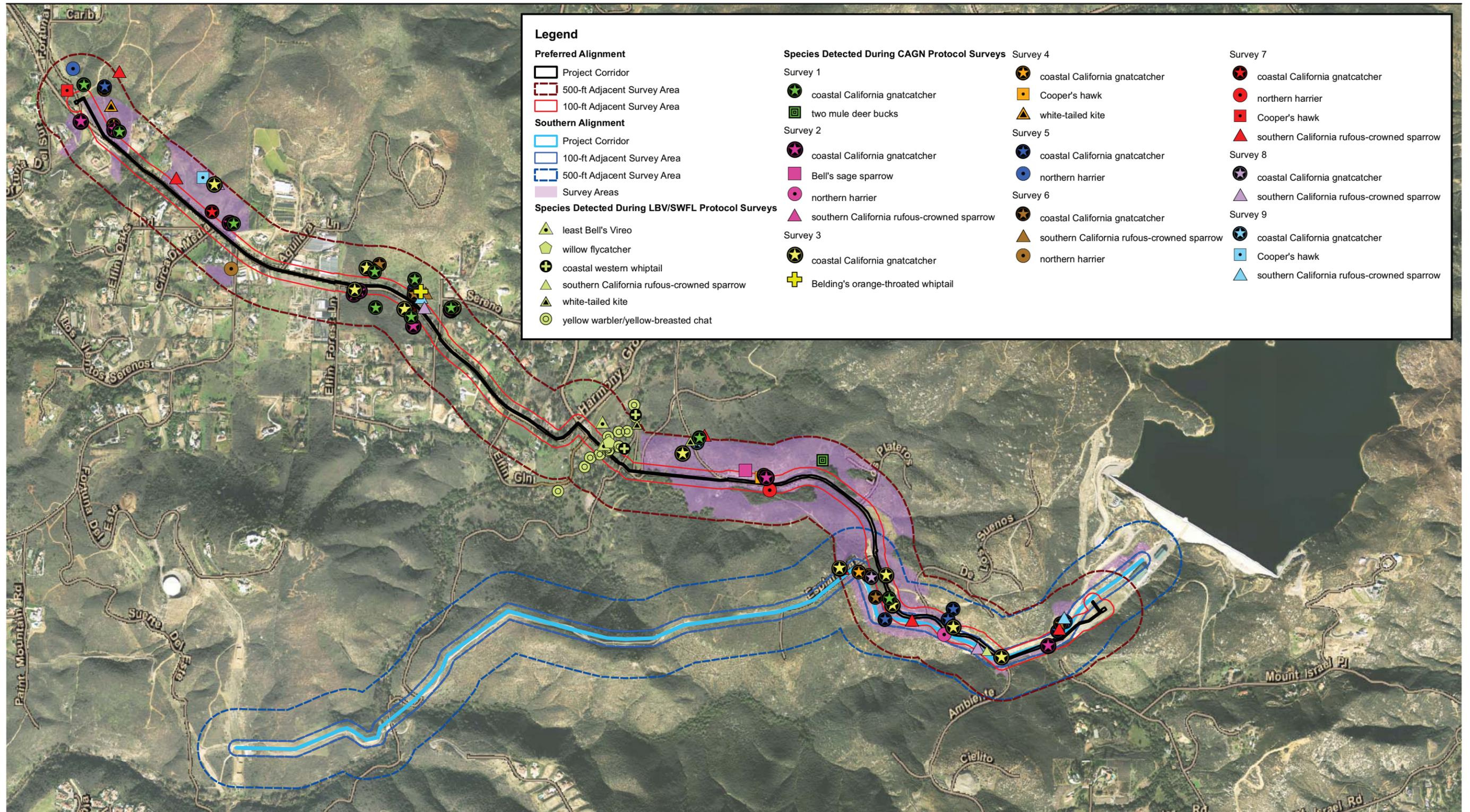
Source: DigitalGlobe 2008; NHD 2007; Nolte 2009; AECOM 2009



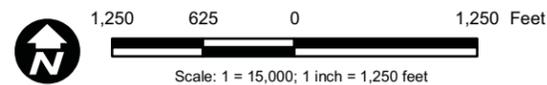
**Figure 3.6-3**  
**Sensitive Plants**

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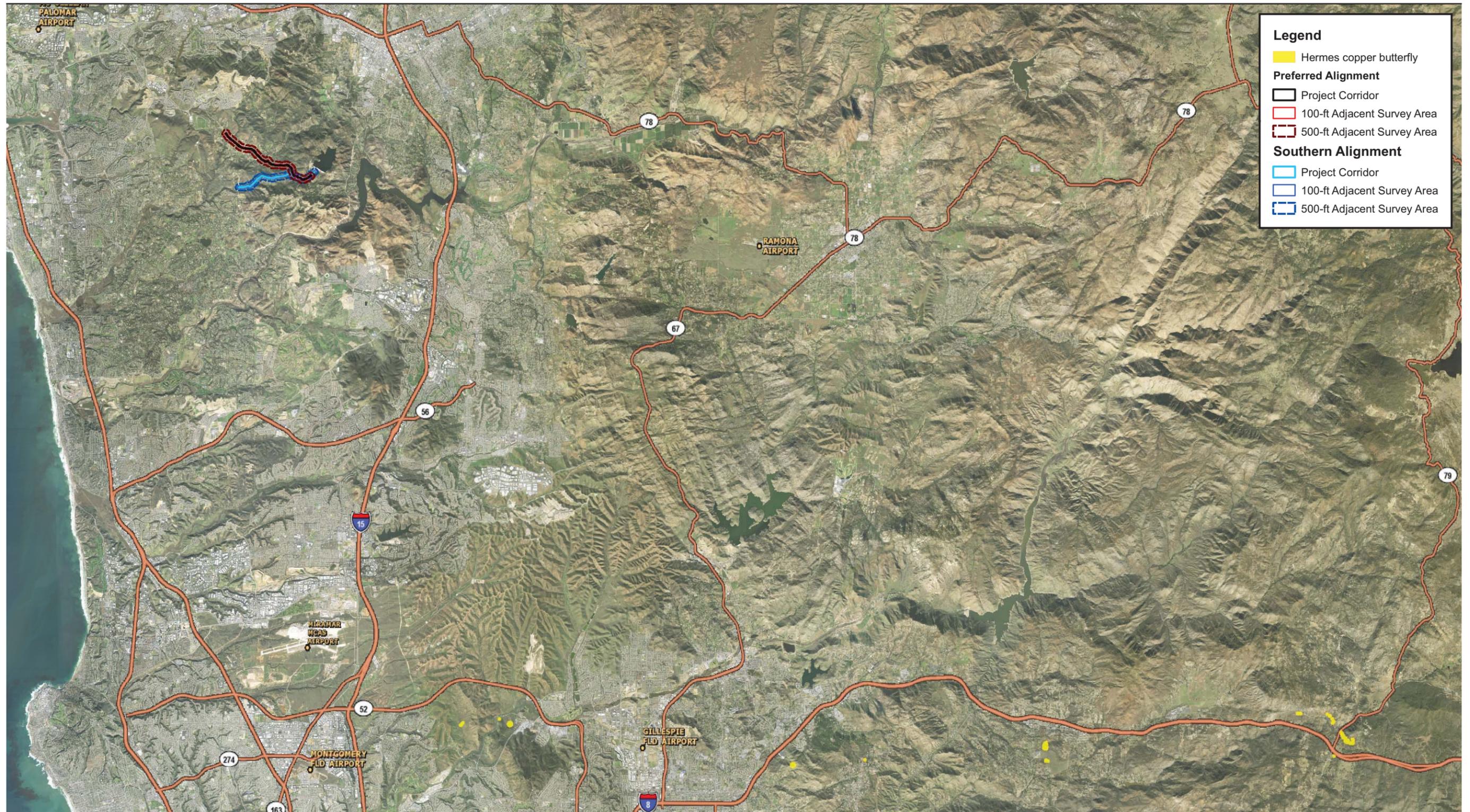
Source: DigitalGlobe 2008; Nolte 2009; AECOM 2009



**Figure 3.6-4**  
**Sensitive Wildlife**

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**Legend**

- Hermes copper butterfly
- Preferred Alignment**
- Project Corridor
- 100-ft Adjacent Survey Area
- 500-ft Adjacent Survey Area
- Southern Alignment**
- Project Corridor
- 100-ft Adjacent Survey Area
- 500-ft Adjacent Survey Area

Source: DigitalGlobe 2008; Nolte 2009; AECOM 2009

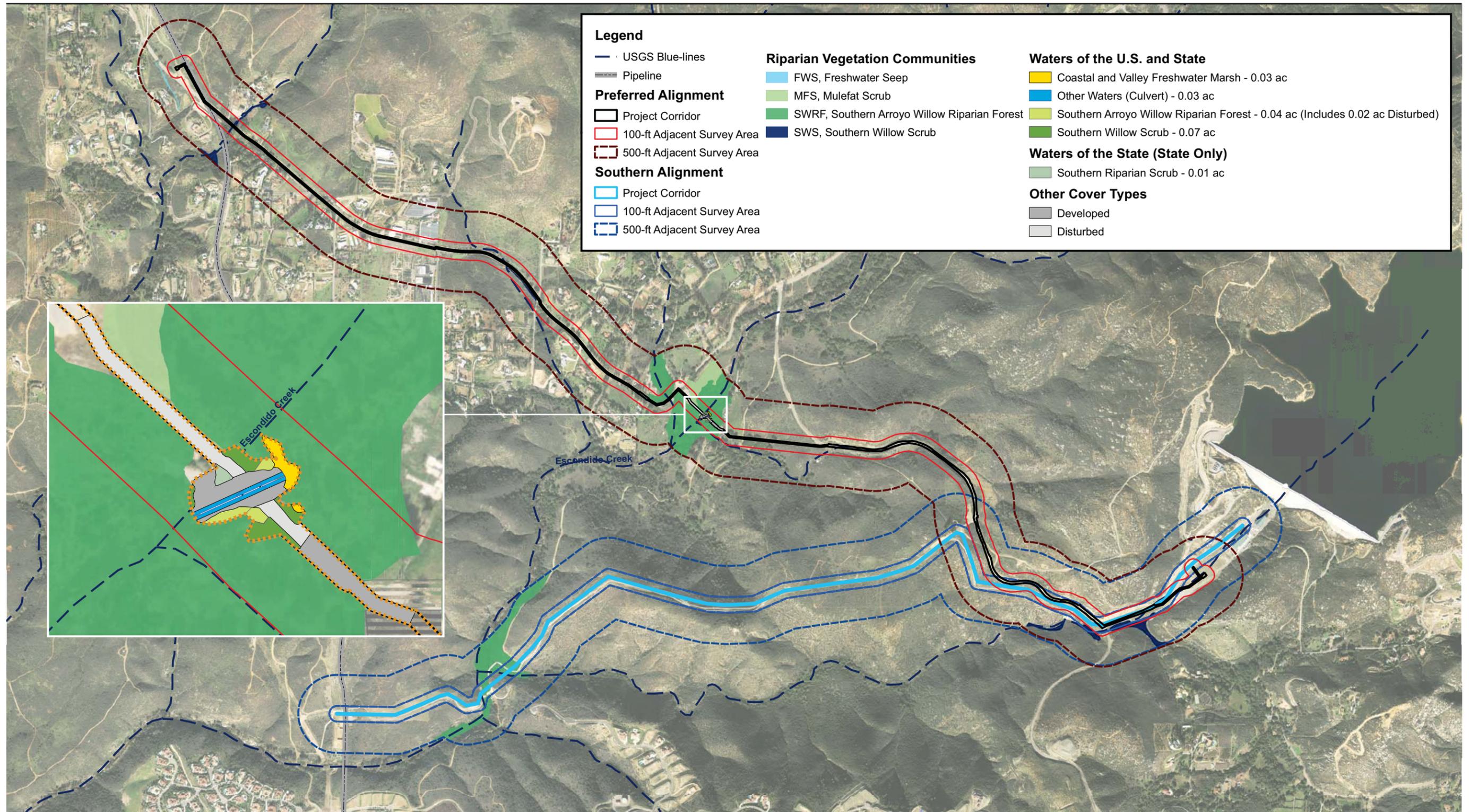
3 1.5 0 3 Miles

Scale: 1 = 180,000; 1 inch = 15,000 feet

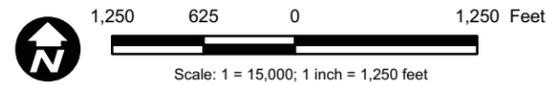
**Figure 3.6-5**  
**Hermes Copper Butterfly Occurrences in Project Vicinity**

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Source: DigitalGlobe 2008; Nolte 2009; AECOM 2009; National Hydrology Dataset 2007



**Figure 3.6-6**  
**Limits of Potential Jurisdictional Wetlands,**  
**Riparian Extents and Other Waters**

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southern willow scrub; southern riparian woodland; and disturbed wetland associated with Misha Creek, Escondido Creek, and additional unnamed drainages. All of the water types are under both federal and state jurisdiction with the exception of southern riparian scrub, which is a state-only water type. The features adjacent to Elfin Forest Road are unobstructed via culverts, which ultimately discharge into Escondido or Misha creeks (creating a significant nexus to the Pacific Ocean through indirect tributary flow).

## **Wildlife Corridors**

Wildlife movement corridors or linkages are considered sensitive by local, state, and federal resource and conservation agencies because these corridors allow wildlife to move between adjoining open space areas that are becoming increasingly isolated as open space becomes fragmented from urbanization, rugged terrain, or changes in vegetation. However, corridors mitigate the effects of this fragmentation by (1) allowing wildlife to move between remaining habitats, thereby permitting depleted populations to be replenished and promoting genetic exchange; (2) providing escape routes from fire, predators, and human disturbances, thus reducing the risk of catastrophic events (such as fire or disease) on population or local species extinction; and (3) serving as travel routes for individual animals as they move within their home ranges in search of food, water, mates, and other needs.

The proposed project site is located within the Elfin Forest and Harmony Grove NCMSCP core planning units. Although these two core planning units are not connected to other planning units by designated linkages, there is currently habitat connectivity to other NCMSCP core units, linkage units, and units designated as “special,” as well as other planning areas within the SCMSCP. Currently, habitat connectivity exists between the proposed project site and San Elijo Lagoon and the San Elijo/Rancho Santa Fe Coastal planning unit to the southwest through San Elijo and Lux canyons. The San Elijo/Rancho Santa Fe Coastal planning unit is designated as “special.” To the southeast, the area surrounding Lake Hodges and the San Bernardo Valley provides connectivity between the proposed project site and many MSCP and NCMSCP planning units and Cleveland National Forest. Planning units connected to the proposed project site through San Bernardo Valley are core planning units San Pasqual Valley, Ramona Grasslands, and Mount Woodson, and linkage planning units Mount Woodson and Ramona/Blue Sky.

## **Regulatory Setting**

Several federal, state, and local regulations have been established to protect and conserve biological resources. The descriptions below provide a brief overview of the regulations

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applicable to the resources that occur within or adjacent to the proposed project site, and their respective requirements. Permits or other authorizations that could be required under these regulations if impacts would occur are noted where applicable. The final determination of whether permits are required is made by the regulating agencies.

### Federal Endangered Species Act<sup>1</sup>

Enacted in 1973, the federal Endangered Species Act (ESA) provides for the conservation of threatened and endangered species and their ecosystems. The federal ESA prohibits the “take” of threatened and endangered species except under certain circumstances and only with authorization from USFWS through a permit under Section 4(d), 7 or 10(a) of the ESA. Under the ESA, “take” is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Formal consultation under Section 7 of the ESA would be required if the proposed project had the potential to affect the federally listed species that have been detected within or adjacent to the proposed project site.

### Migratory Bird Treaty Act<sup>2</sup>

Congress passed the Migratory Bird Treaty Act (MBTA) in 1918 to prohibit the kill or transport of native migratory birds, or any part, nest, or egg of any such bird unless allowed by another regulation adopted in accordance with the MBTA. The prohibition applies to birds included in the respective international conventions between the United States and Great Britain, the United States and Mexico, the United States and Japan, and the United States and Russia. No permit is issued under the MBTA; however, the proposed project would need to comply with the measures that would avoid or minimize effects on migratory birds.

### Clean Water Act, 1972<sup>3</sup>

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into waters of the U.S. It gives USEPA the authority to implement pollution-control programs, including setting wastewater standards for industry and water quality standards for contaminants in surface waters. The CWA makes it unlawful for any person to discharge any pollutant from a point source into navigable waters without a permit under its provisions. CWA Section 404 permits are issued by USACE for dredge/fill activities within wetlands or nonwetland waters of the U.S. CWA Section 401 certifications are issued by RWQCB for

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<sup>1</sup> USC Title 16, Chapter 35, Sections 1531–1544.

<sup>2</sup> USC Title 16, Chapter 7, Subchapter II, Sections 703–712.

<sup>3</sup> USC Title 33, Chapter 26, Subchapters I–VI.

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activities requiring a federal permit or license that may result in discharge of pollutants into waters of the U.S. Any proposed discharge of dredge or fill materials into federal jurisdictional waters within or adjacent to the proposed project site would require a Section 404 permit from USACE and a Section 401 Water Quality Certification from RWQCB.

### California Fish and Game Code

The California Fish and Game Code (CFGC) regulates the taking or possession of birds, mammals, fish, amphibians, and reptiles, as well as natural resources such as wetlands and waters of the state. It includes the California Endangered Species Act (CESA) (Sections 2050–2115) and Streambed Alteration Agreement regulations (Sections 1600–1616), as well as provisions for legal hunting and fishing, and tribal agreements for activities involving take of native wildlife. Any proposed impact to state-listed species within or adjacent to the proposed project site would require a permit under CESA. If an alteration is proposed to a state-defined wetland with a defined bed and bank, then Sections 1600–1616 of the CFGC would apply and a Streambed Alteration Agreement from CDFG would be required.

### California Endangered Species Act<sup>4</sup>

CESA generally parallels the main provisions of the federal ESA and is administered by CDFG. CESA prohibits take of any species that the California Fish and Game Commission determines to be a threatened or endangered species. CESA allows for take incidental to otherwise lawful development projects upon approval from CDFG. Under the CFGC, “take” is defined as to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill. Any proposed impact to state-listed species within or adjacent to the proposed project site would require a permit under CESA.

### Porter–Cologne Water Quality Control Act<sup>5</sup>

The Porter–Cologne Water Quality Control Act (Porter–Cologne) provides for statewide coordination of water quality regulations. Porter–Cologne established the California State Water Resources Control Board as the statewide authority and nine separate RWQCBs to oversee water quality on a day-to-day basis at the regional/local level. Proposed discharges of waste that would affect state waters (that are not federal waters) within or adjacent to the proposed project site would require a Report of Waste Discharge from RWQCB.

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<sup>4</sup> California Fish and Game Code, Division 3, Chapter 1.5, Sections 2050–2115.

<sup>5</sup> California Water Code, Division 7, Sections 13000–14958.

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## Natural Community Conservation Planning (NCCP) Act of 1991<sup>6</sup>

The Natural Community Conservation Planning (NCCP) Act is designed to conserve natural communities at the ecosystem scale while accommodating compatible land use. CDFG is the principal state agency implementing the NCCP Act Program. Conservation plans developed in accordance with the NCCP Act (i.e., NCCP plans) provide for comprehensive management and conservation of multiple wildlife species, and identify and provide for the regional or area-wide protection and perpetuation of natural wildlife diversity while allowing compatible and appropriate development and growth. Project-specific permits under the NCCP are not issued; however, proposed County-authorized projects must comply with the state's NCCP Act Program.

## Multiple Species Conservation Program and Biological Mitigation Ordinance<sup>7</sup>

The MSCP is a long-term regional conservation plan designed to establish a connected preserve system that protects the County's sensitive species and habitats. The MSCP covers 582,243 acres over 12 jurisdictions. Each jurisdiction will have its own subarea plan to be implemented separately. The subarea plan for the southwestern portion of unincorporated lands within the County's jurisdiction covers 252,132 acres. The County's MSCP Subarea Plan is regulated by the Biological Mitigation Ordinance (BMO), which outlines the specific criteria and requirements for projects within the MSCP boundaries. The County's MSCP Subarea Plan (adopted October 1997), the BMO (adopted March 1998), the Final MSCP Plan (dated August 1998), and the Implementation Agreement (signed March 1998) between the County and the wildlife agencies are the documents used to implement the MSCP. The County's MSCP Subarea Plan and BMO provide specific criteria for project design, impact allowances, and mitigation requirements. The criteria contained within the BMO do not replace those required by the MSCP. All projects within the MSCP boundaries must conform to both the MSCP requirements and the County's policies under CEQA.

The proposed project site is within the boundaries of both of the County's subarea plans, the approved SCMSCP and the draft NCMSCP, which is not yet approved. When the Final NCMSCP and associated BMO are approved, an Implementation Agreement between the County and the wildlife agencies, specific to this area of unincorporated lands within the County's jurisdiction, will be signed. If the NCMSCP is in place prior to project approval, the

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<sup>6</sup> Section 2800 et seq. of the California Fish and Game Code, as amended January 1, 2003 (Chapter 4, sections 1 and 2 of California statutes) 2002.

<sup>7</sup> County of San Diego, Multiple Species Conservation Program (MSCP), County of San Diego Subarea Plan, 1997, and County of San Diego, Biological Mitigation Ordinance, (Ord. Nos. 8845, 9246) 1998 (new series).

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portions of the proposed project within the boundaries of the NCMSCP will have to conform to the NCMSCP BMO requirements. Until these documents are finalized, however, projects must continue to meet the conditions of the County's Resource Protection Ordinance.

### Habitat Loss Permit Ordinance

The Habitat Loss Permit (HLP) Ordinance was adopted in March 1994 in response to both the listing of the CAGN as a federally threatened species and the adoption of the NCCP by the State of California. Pursuant to the Special 4(d) Rule under the federal ESA, the County is authorized to issue "take permits" for the CAGN (in the form of HLPs) in lieu of Section 7 or 10(a) permits typically required from USFWS. Although issued by the County, the wildlife agencies must concur with the issuance of an HLP for it to become valid as take authorization under the ESA.

The HLP Ordinance states that projects must obtain an HLP prior to the issuance of a grading permit, clearing permit, or improvement plan if the project will directly or indirectly impact any of several coastal sage scrub habitat types. An HLP is required if coastal sage scrub will be impacted, regardless of whether the site is currently occupied by CAGN. HLPs are not required for projects within the boundaries of the MSCP, since take authorization is conveyed to those projects through compliance with the MSCP. HLPs are also not required for projects that have separately obtained Section 7 or 10(a) permits for take of the CAGN. For more explicit information on these requirements, refer to the HLP Ordinance.

Until the Final NCMSCP and associated BMO are approved, and an Implementation Agreement between the County and wildlife agencies is signed, the proposed project will need to prepare appropriate NCCP 4(d) Findings. An HLP will need to be obtained prior to issuance of any permit that would allow the clearing or grading of the areas of Diegan coastal sage scrub habitat that occur within the site.

### **3.6.2 Thresholds of Significance**

In accordance with Appendix G of the CEQA Guidelines, the impacts of the proposed project related to biological resources would be considered significant if they do any of the following:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFG or USFWS;

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- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFG or USFWS;
  - Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal) through direct removal, filling, hydrological interruption, or other means;
  - Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
  - Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
  - Conflict with the provisions of an adopted Habitat Conservation Plan, NCCP, or other approved local, regional, or state habitat conservation plan.

### **3.6.3 Impact Analysis**

**BIO-1** *The proposed project would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species. Impacts would be less than significant with mitigation.*

Neither project alternative would impact the survival of a local population of any sensitive plant or animal species. For plant species, all project impacts are expected to occur within the direct impact area only. Species located within the 100-foot buffer are not expected to be affected by the proposed project because all direct impacts will stay within the project corridor. Any indirect impacts will be insignificant and temporary. Thus, no impacts to the survival of a local population are anticipated to existing or potentially occurring plant species.

Thirteen wildlife species were observed within the Preferred Alternative during surveys: southwestern willow flycatcher, least Bell's vireo, CAGN, Southern California rufous-crowned sparrow, Bell's sage sparrow, Cooper's hawk, northern harrier, white-tailed kite, yellow warbler, yellow breasted chat, southern mule deer, Belding's orange-throated whiptail, and coastal western whiptail. Suitable nesting habitat for CAGN, southern California rufous-crowned sparrow, Bell's sage sparrow, and least Bell's vireo is present within the proposed project site. Impacts to Diegan coastal sage scrub will directly impact CAGN. Impacts to Diegan coastal sage scrub and southern mixed chaparral will directly impact Southern California rufous-crowned sparrow and Bell's sage

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sparrow. While a northern harrier was observed, it was likely foraging within the proposed project site, but not nesting. A southwestern willow flycatcher observed during wildlife surveys was likely a migrant, and did not appear to be nesting near the project area. Nesting habitat for the white-tailed kite and Cooper's hawk includes coast live oak woodland, eucalyptus woodland, and southern arroyo willow riparian forest. In addition, southern arroyo willow riparian forest provides suitable nesting habitat for the least Bell's vireo, which was observed near the project area. While the southern mule deer occupies almost all types of habitat within its range, it prefers arid, open areas and rocky hillsides. For the Belding's orange-throated whiptail, suitable habitat occurs within the sparse coastal sage and chamise chaparral habitat types. Suitable habitat for the western whiptail occurs mainly within the open areas associated with Diegan coastal sage scrub, but also within the grassland areas. The impacts to the habitat types suitable for the wildlife species described above are minimal and, therefore, would not impact the long-term survival of the local populations of these species. Additionally, implementation of mitigation measures BIO-A through BIO-N, which includes scheduling the construction period outside of the bird nesting season to avoid impacting nesting success of sensitive bird species, would ensure a less-than-significant impact.

As previously stated, the closest occurrences of the Hermes copper butterfly are approximately 16 miles south and more than 50 miles north of the project site (recorded in 2003), according to CNDDDB occurrence records. However, according to a paper published by Daniel A. Marschalek and Michael W. Klein Sr. in the *Journal of Insect Conservation* (2010), two extant occurrences occur near Escondido and Cielo creeks. Hermes copper inhabits Diegan coastal sage scrub in San Diego County, and its host plant is spiny redberry (*Rhamnus crocea*). A total of 0.46 acre of Diegan coastal sage scrub occurs in the footprint of the Preferred Alternative and a total of 3.64 acres is in the footprint of the Southern Alternative. Because the two extant occurrences occur near the Southern Alternative, it is more likely that Hermes copper butterfly could be impacted by implementation of the Southern Alternative rather than the Preferred Alternative. With selection of either project alternative, the potential to directly impact Hermes copper butterfly would be low.

**BIO-2** *The proposed project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFG or USFWS. Impacts would be less than significant with mitigation.*

The construction of a 48-inch-diameter raw water pipeline within the proposed Preferred Alternative would directly affect 9.33 acres, of which the effects to 0.46 acre of Diegan coastal sage scrub and 0.04 acre of nonnative grassland would warrant mitigation. Approximately 0.21 acre of Diegan coastal sage scrub would be permanently impacted by the proposed Preferred Alternative at

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the Sage Hill Preserve if this location is selected for the construction of an access road to the flow control facility over the DCMWTP site. The construction of a 48-inch-diameter raw water pipeline within the proposed Southern Alternative would directly affect 7.41 acres, of which the combined effects to 3.64 acres of Diegan coastal sage scrub, 0.32 acre of sage scrub-chaparral transition, and 0.50 acre of southern mixed chaparral would warrant mitigation (Table 3.6-1). These temporary direct impacts would be considered significant if left unmitigated.

Project design requires tunneling under all creeks and culverts that coincide with the project corridor. Therefore, no trenching across federal or state regulated waters would occur from project construction. By tunneling under all creeks and culverts that coincide with the project corridor, pipeline construction would avoid all direct impacts to the southern arroyo willow riparian forest vegetation community.

Existing habitats within the adjoining 100-foot and 500-foot survey areas surrounding either alignment may be indirectly impacted by project construction. Indirect effects could include temporary construction-generated noise, dust, and siltation, and the more permanent operational indirect effects of increased human activities throughout the site (i.e., noise, facility nighttime lighting, and the potential for exotic species intrusions). Thus, construction and long-term operation have the potential to indirectly impact approximately 78.72 acres of vegetation communities and cover types within the adjacent 100-foot survey area surrounding the proposed Preferred Alternative, 326.25 acres of vegetation communities and cover types within the 500-foot survey area surrounding the Preferred Alternative, 56.28 acres of vegetation communities and cover types within the adjacent 100-foot survey area surrounding the Southern Alternative, and 266.53 acres of vegetation communities and cover types within the adjacent 500-foot buffer surrounding the Southern Alternative. Within the 100-foot and 500-foot survey areas, indirect temporary impacts to mulefat scrub, southern arroyo willow scrub, southern willow scrub, dense coast live oak woodland, Diegan coastal sage scrub, coastal sage-chaparral transition, nonnative grassland, and southern mixed chaparral may be considered significant. Construction BMPs (i.e., use of temporary fencing) and project design features (i.e., permanent fencing) that would avoid or minimize these potential indirect impacts would be used. Table 3.6-1 provides a summary of the area of potential direct impacts that would occur to vegetation communities and other cover types from implementation of the proposed project. Additionally, mitigation measures BIO-A through BIO-N would ensure less-than-significant impacts.

**BIO-3** *The proposed project would not have a substantial adverse effect on federally protected wetlands through direct removal, filling, hydrological interruption, or other means. No impact would occur as a result of the proposed project.*

**Table 3.6-1  
Direct Impacts to Vegetation Communities and Cover Types**

| Vegetation Communities and Cover Types | MSCP Tier Level <sup>1</sup> | Preferred Alternative          |  | Southern Alternative           |  |
|--|------------------------------|--------------------------------|--|--------------------------------|--|
|  |                              | Existing Acres within Corridor | Proposed Corridor Impacts <sup>2</sup> | Existing Acres within Corridor | Proposed Corridor Impacts <sup>2</sup> |
| Freshwater Seep                        | I                            | ---                            | ---                                    | ---                            | ---                                    |
| Mulefat Scrub                          | I                            | ---                            | ---                                    | ---                            | ---                                    |
| Southern Arroyo Willow Riparian Forest | I                            | 0.05                           | --- <sup>3</sup>                       | 0.19                           | --- <sup>4</sup>                       |
| Southern Willow Scrub                  | I                            | ---                            | ---                                    | ---                            | ---                                    |
| <b><i>Uplands</i></b>                  |                              |                                |  |                                |  |
| Coast Live Oak Woodland                | I                            | ---                            | ---                                    | ---                            | ---                                    |
| Diegan Coastal Sage Scrub              | II                           | 0.46                           | 0.46 <sup>5</sup>                      | 3.64                           | 3.64                                   |
| Sage Scrub-Chaparral Transition        | II                           | ---                            | ---                                    | 0.32                           | 0.32                                   |
| Eucalyptus Woodland                    | IV                           | ---                            | ---                                    | ---                            | ---                                    |
| Nonnative Grassland                    | III                          | 0.04                           | 0.04                                   | ---                            | ---                                    |
| Valley Needlegrass Grassland           | I                            | ---                            | ---                                    | ---                            | ---                                    |
| Southern Mixed Chaparral               | III                          | ---                            | ---                                    | 0.50                           | 0.50                                   |
| Ornamental Plantings                   | IV                           | 0.17                           | 0.17                                   | ---                            | ---                                    |
| <i>Total Area Uplands =</i>            |                              | <i>0.67</i>                    | <i>0.67</i>                            | <i>4.46</i>                    | <i>4.46</i>                            |
| <b><i>Other Cover Types</i></b>        |                              |                                |  |                                |  |
| Disturbed                              | n.a.                         | 0.28                           | 0.28                                   | 0.72                           | 0.72                                   |
| Developed                              | n.a.                         | 8.37                           | 8.37                                   | 2.23                           | 2.23                                   |
| <i>Total Area Other Cover Types =</i>  |                              | <i>8.66</i>                    | <i>8.66</i>                            | <i>2.94</i>                    | <i>2.94</i>                            |
| <b>Total:</b>                          |                              | <b>9.38</b>                    | <b>9.33</b>                            | <b>7.60</b>                    | <b>7.41</b>                            |

<sup>1</sup> County of San Diego and TAIC (2008); see the MSCP BMO for a description of the Tier levels.

<sup>2</sup> All impacts herein are considered temporary except for the 0.46 acre in Diegan coastal sage scrub of the Preferred Alternative.

<sup>3</sup> Although the 0.05 acre of southern arroyo willow riparian forest coincides with the Preferred Alternative, directional drilling will allow for avoidance of impacts to this vegetation community.

<sup>4</sup> Although the 0.19 acre of southern arroyo willow riparian forest coincides with the Southern Alternative, directional drilling will allow for avoidance of impacts to this vegetation community.

<sup>5</sup> Approximately 0.21 acre of Diegan coastal sage scrub will be permanently impacted within the Preferred Alternative at the Sage Hill Preserve if this site is selected for the construction of an access road to the flow control facility over the DCMWTP site.

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Project design requires tunneling under all creeks and culverts that coincide with the project corridor. Therefore, no trenching across federal or state regulated waters would occur from project construction. By tunneling under all creeks and culverts that coincide with the project corridor, pipeline construction would avoid all direct impacts to regulated waters (i.e., the jurisdictional waters summarized in Table 3.6-1 for the Preferred Alternative's crossing at Escondido Creek and all other crossing of regulated waters).

Within the 100-foot and 500-foot survey areas, indirect impacts to jurisdictional waters have the potential to be considered significant. However, construction BMPs and project design features as presented in the analyses in Chapter 2 would avoid or minimize these potential indirect impacts.

**BIO-4** *The proposed project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. Impacts would be less than significant with mitigation.*

The project may temporarily hinder wildlife access to foraging habitat, breeding habitat, water sources, or other areas necessary for reproduction during project construction. Temporary fences installed during the construction phase could temporarily prohibit smaller wildlife species such as rodents and herpetofauna from accessing required resources. In addition, noise and artificial lighting as a result of construction could temporarily deter wildlife movement at the proposed project site, potentially prohibiting access to foraging habitat, breeding habitat, water sources, or other areas necessary for reproduction. The implementation of mitigation measures BIO-A through BIO-K would minimize temporary construction impacts. Temporary impacts to 0.32 acre from the Preferred Alternative or impacts to 0.72 acre from Southern Alternative of foraging habitat for raptors would be considered a less-than-significant impact with mitigation incorporated.

In the long term, the proposed project site is small in scale and impacts to habitat would be temporary. The pipeline would be buried underground; therefore, permanent above-ground impacts that could affect wildlife movements are not expected. The impacted foraging habitat occurs within a larger area that contains additional foraging habitat within the 500-foot survey buffer and beyond. Thus, the proposed project would not permanently affect wildlife access to foraging habitat, breeding habitat, water sources, or other areas necessary for reproduction during project construction.

**BIO-5** *The proposed project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. No impact would occur.*

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As discussed above, the County of San Diego identifies mitigation ratios recommended under the San Diego County guidelines for impacts to wetlands and other sensitive habitats within PAMAs, and under the County's Guidelines for Determining Significance for Biological Resources for impacts that occur outside approved MSCP Plans. Mitigation for unavoidable permanent impacts to the native and naturalized habitats that require mitigation would be provided in compliance with mitigation ratios approved for the project by the County and the resource agencies. Unavoidable temporary impacts within the proposed project site will be mitigated in-place at a 1:1 ratio. No impact would occur.

**BIO-6** *The proposed project would not conflict with the provisions of an adopted Habitat Conservation Plan, NCCP, or other approved local, regional, or state habitat conservation plan. Impacts would be less than significant with mitigation.*

The proposed project occurs primarily within the Draft NCMSCP subarea planning area. However, until this plan is approved, impacts to the Diegan coastal sage scrub that occurs within the proposed project site would be considered "outside" of the MSCP. Neither the 0.46 acre that would be impacted by the Preferred Alternative nor the 3.64 acres that would be impacted by the Southern Alternative would exceed the County's 5 percent habitat loss threshold. The District will be required to submit an HLP and Administrative Permit to mitigate the direct impacts to Diegan coastal sage scrub. Additionally, mitigation measures BIO-A through BIO-N would ensure less-than-significant impacts.

### **3.6.4 Mitigation Measures**

The following design features and mitigation measures would reduce temporary biological impacts from the proposed project. Table 3.6-2 illustrates the mitigation required for the impacts on vegetation communities and cover types within the project area.

**BIO-A** A project biologist will review grading plans, oversee all aspects of construction monitoring that pertain to biological resource protection, and ensure compliance with both the general and specific mitigation measures for the Raw Water Pipeline Project.

**BIO-B** All sensitive habitat areas or occurrences of sensitive species to be avoided will be clearly marked on project maps. These areas will be designated as "no construction" or "limited construction" zones. These areas will be flagged by the project biologist and reviewed with the project engineer prior to the onset of construction activities. If needed, resources will be fenced or otherwise protected from direct and indirect impacts.

**Table 3.6-2  
Direct Impacts to Sensitive Vegetation Communities and Anticipated Mitigation<sup>1</sup>**

| Vegetation Communities and Cover Types | Relevant Mitigation Ratios for Proposed Impacts |                                  | Preferred Alternative              |                     |                                  |                     |   | Southern Alternative               |                     |                                  |                     |  |
|--|---|----------------------------------|------------------------------------|---------------------|----------------------------------|---------------------|---|------------------------------------|---------------------|----------------------------------|---------------------|--|
|  |   |                                  | Within South County MSCP Plan Area |                     | Outside Approved MSCP Plan Areas |                     | Total Mitigation Required Preferred Alternative | Within South County MSCP Plan Area |                     | Outside Approved MSCP Plan Areas |                     | Total Mitigation Required Southern Alternative |
|  | Within South County MSCP Plan Area              | Outside Approved MSCP Plan Areas | Impact                             | Required Mitigation | Impact                           | Required Mitigation |   | Impact                             | Required Mitigation | Impact                           | Required Mitigation |  |
| <i>Uplands</i>                         |   |                                  |                                    |                     |                                  |                     |   |                                    |                     |                                  |                     |  |
| Diegan Coastal Sage Scrub              | 1.5:1   | 3:1                              | ---                                | ---                 | 0.46 <sup>2</sup>                | 1.38                | 1.38  | 1.16                               | 1.74                | 2.48                             | 7.44                | 9.18   |
| Coastal Sage-Chaparral Transition      | 1.5:1   | 3:1                              | ---                                | ---                 | ---                              | ---                 | ---   | ---                                | ---                 | 0.32                             | 0.96                | 0.96   |
| Nonnative Grassland                    | 1:1   | 0.5:1                            | ---                                | ---                 | 0.04                             | 0.02                | 0.02  | ---                                | ---                 | ---                              | ---                 | ---  |
| Southern Mixed Chaparral               | 1.5:1   | 0.5:1                            | ---                                | ---                 | ---                              | ---                 | ---   | 0.19                               | 0.29                | 0.31                             | 0.16                | 0.45   |
| <b>Total =</b>                         |   |                                  | ---                                | ---                 | 0.50                             | 1.40                | 1.40  | 1.35                               | 2.03                | 3.11                             | 8.56                | 10.59  |

<sup>1</sup> All impacts to Tier I, II, and III habitats as identified in Table 3.6-1 herein are noted above (segregated as within vs. outside an approved MSCP area for each alignment). As previously noted, direct impacts to wetland vegetation communities or jurisdictional waters will be avoided by directional drilling (tunneling) under any areas of these sensitive/regulated resources that coincide with the project corridor.

<sup>2</sup> Approximately 0.21 acre of Diegan coastal sage scrub would be permanently impacted within the Sage Hill Preserve if this site is selected for the construction of an access road to the flow control facility over the DCMWTP site.

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- BIO-C** Construction will occur during the dry season, when feasible, using silt fences, sandbags, detention basins, and any other appropriate measures to avoid direct and indirect impacts to wetlands.
- BIO-D** A contractor education program will be implemented to ensure that contractors and all construction personnel are fully informed of the biological sensitivities associated with the project.
- BIO-E** Fueling areas will be designated on construction maps and will be situated a minimum of 50 feet from all drainages. All fueling areas shall be located outside of the Sage Hill Preserve.
- BIO-F** To the extent possible, construction through sensitive areas will be appropriately scheduled to minimize potential impacts to biological resources. Construction adjacent to drainages will occur during periods of minimum flow (i.e., summer through the first significant rain of fall) to avoid excessive sedimentation and erosion, and to avoid impacts to drainage-dependent species. Construction near riparian or other wetland areas will also be scheduled to avoid potential impacts to sensitive riparian bird species.
- BIO-G** Setback limitations from all habitat, trees, and sensitive plant locations meant to be preserved will be established by a qualified biologist prior to construction. Construction corridor widths will be minimized to the extent feasible in sensitive areas (e.g., oak woodlands, coastal sage scrub, and wetlands). Setback limitations within Sage Hill Preserve shall be coordinated with the DPR Resource Management Division.
- BIO-H** Pipeline installation, as proposed, requires no trenching across watercourses. Instead, by tunneling under creeks and culverts, pipeline construction will avoid impacts to jurisdictional waters as defined by USACE, CDFG, and the County.
- BIO-I** The project will incorporate the following design features to minimize noise generated from construction activities:
- Noise analyses will be performed during construction activities adjacent to sensitive habitats or potential active nests. If necessary, temporary noise attenuation barriers will be erected to reduce construction-related noise to below

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60 dBA hourly  $L_{eq}$ . Any proposed noise attenuation barriers within Sage Hill Preserve shall be coordinated with the DPR District Park Manager.

- Heavy equipment will be repaired as far as practical from habitats where nesting birds may be present. No heavy equipment shall be repaired within Sage Hill Preserve.
- Construction equipment, including generators and compressors, will be equipped with manufacturers' standard noise control devices or better (e.g., mufflers, acoustical lagging, and/or engine enclosures).
- The construction contractor will maintain all construction vehicles and equipment in proper operating condition and provide mufflers on all equipment.

**BIO-J** The project design will incorporate features to minimize the potential for pests and exotic species establishment by installing fencing between the proposed project site and adjacent open space areas to restrict encroachment into biologically sensitive areas. Any proposed fencing within Sage Hill Preserve shall be temporary and coordinated with the DPR District Park Manager.

**BIO-K** Several general construction BMPs will be implemented to avoid and minimize impacts to natural communities of special concern, special-status plants, and special-status animals:

1. Construction limits – The contractor(s) will be informed, prior to the bidding process, about the biological constraints of this project. The construction limits will be clearly marked on project maps provided to the contractor(s) and areas outside of the construction limits will be designated as “no construction” zones.
2. Equipment staging/Storage/Fueling restrictions – No equipment staging and refueling areas will be located at the construction site outside of designated staging areas. Moreover, staging/storage areas for construction equipment and materials will be located away from sensitive biological resources that are not approved for project impact, and no equipment maintenance will be performed near drainages to minimize the potential for pollution runoff. Staging/storage areas shall be located outside the Sage Hill Preserve. Additionally, no heavy equipment maintenance shall be performed in the Sage Hill Preserve.
3. Soil stockpiles – Soils from construction grading will be stockpiled either on portions of the proposed project site where direct impacts are approved or at an

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off-site location approved by the County and the resource agencies. Stockpiled soils must be located and piled in a manner that will avoid potential erosion and sedimentation into downstream drainages, swales, or vernal pool habitat. Any soil stockpiles proposed within the Sage Hill Preserve shall be coordinated with the DPR District Park Manager.

4. Construction debris – Project construction areas will be kept as clean of debris as possible to avoid attracting predators of native wildlife. Spoils, trash, or any debris will be removed off-site to an approved disposal facility.
5. Fugitive dust – Construction-related fugitive dust will be minimized by incorporating appropriate reasonably available control measures to minimize fugitive dust emissions, as outlined in an approved dust control plan specific to the proposed construction activities. The dust control plan will consider and/or incorporate the application of water, use of wind screens, and other applicable methods appropriate to the site, and in consideration of the sensitive biological resources that exist adjacent to and downstream of the site.
6. Construction fencing – To prevent accidental egress by construction equipment or workers onto preserved lands adjacent the proposed project site, construction fencing will be installed along the entire northern boundary of the County-owned portion of the proposed project site, the northern boundary of the western private parcel, and the portion of the County-owned parcel's eastern boundary that connects these two northern borders. Any proposed construction fencing within Sage Hill Preserve shall be temporary and coordinated with the DPR District Park Manager.

**BIO-L** To provide the District with the latitude in the future for impacts within the right-of-way without future mitigation requirements, all temporary impacts will be mitigated as though they were permanent impacts consistent with applicable mitigation ratios. Where project impacts occur outside approved MSCP Plan areas, mitigation ratios will be consistent with ratios presented in the County guidelines. Where project impacts occur within the South County MSCP Plan area, mitigation ratios will be consistent with the MSCP BMO mitigation requirements. The 0.21 acre of Diegan coastal sage scrub that would be permanently impacted within the Preferred Alternative at the Sage Hill Preserve if the access road for the flow control facility is located at the Second San Diego Aqueduct will be mitigated per the County guidelines. Mitigation will be 1:1 revegetation on-site according to the County guidelines and the MSCP BMO. The remainder of the required mitigation will be

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accomplished through off-site habitat acquisition or preservation. Any proposed revegetation work within Sage Hill Preserve or adjacent to the Mendocino property shall use native plants and the planting palette shall be pre-approved by the DPR Resource Management Division.

**BIO-M** Construction activities will occur outside of the nesting season when feasible. If construction is to occur during the nesting season, a nesting bird survey will be completed no more than 30 days prior to construction by a qualified biologist.

**BIO-N** Construction activities will take place during daylight hours to prevent impacts to wildlife species due to night lighting.

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### 3.7 CULTURAL AND PALEONTOLOGICAL RESOURCES

This section describes the cultural and paleontological resources within the proposed project area and the potential impacts related to project construction and operation. This section is based on the *Cultural Resources Phase I Survey and Inventory Report for the Proposed Olivenhain Municipal Water District Raw Water Pipeline Project from the Second San Diego Aqueduct to the David C. McCollom Water Treatment Plant* (AECOM 2010b).

#### 3.7.1 Existing Conditions

The approximately 10,000 years of documented prehistory of the San Diego region has often been divided into three periods: Early Prehistoric period (San Dieguito tradition/complex), Archaic period (Milling Stone horizon, Encinitas tradition, La Jolla and Pauma complexes), and Late Prehistoric period (Cuyamaca and San Luis Rey complexes).

The San Dieguito complex is the earliest reliably dated occupation of the area. The earliest component of the Harris Site (CA-SDI-149/316/4935B), a site located in proximity to the project approximately 2 miles to the southeast along the San Dieguito River, is characteristic of the San Dieguito complex. Artifacts from the lower levels of the site include leaf-shaped knives, ovoid bifaces, flake tools, choppers, core and pebble hammerstones, several types of scrapers, crescents, and short-bladed shouldered points.

In the southern coastal region, the Archaic period dates from circa 8,600 years before present (B.P.) to circa 1,300 years ago. The La Jolla/Pauma complexes have been identified from the content of archaeological site assemblages dating to the Archaic period. These assemblages occur at a range of coastal and inland sites, which appears to indicate that a relatively stable, sedentary, hunting and gathering complex, possibly associated with one people, was present in the coastal and immediately inland areas of San Diego County for more than 7,000 years. The content of these site assemblages is characterized by manos and metates, shell middens, terrestrial and marine mammal remains, burials, rock features, cobble-based tools at coastal sites, and increased hunting equipment and quarry-based tools at inland sites. This artifact assemblage also includes bone tools; doughnut stones; discoidals; stone balls; plummets; biface points/knives; Elko-eared dart points; and beads made of stone, bone, and shell. With the presence of numerous sites in adjacent areas associated with, and dating to, the Archaic period, it might be expected that sites from this period would be present in the project area of potential effects (APE). The APE for cultural resources consists of a corridor 100 feet wide from the centerline of each alignment's proposed pipeline installation route. The lack of artifacts,

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however, diagnostic of the La Jolla/Pauma complex or radiocarbon results from project sites dating to this period does not currently allow for a definite assignment of any of the resources in the project APE to this period.

Similar to the subsistence changes occurring during the middle and late Archaic period, the end of the Encinitas tradition/La Jolla/Pauma complexes and the beginning of the Late Prehistoric period is evidenced by a number of new tool technologies and subsistence shifts in the archaeological record. Compared to those noted for the Archaic period, those occurring at the onset of the Late Prehistoric period are rather abrupt changes. The magnitude of these changes and the short period of time within which they took place seem to indicate a significant change in subsistence practices in San Diego County (circa 1500 to 1300 B.P.). The changes observed include a shift from atlatl and dart to the bow and arrow; a reduction in shellfish gathering in some areas (possibly due to silting of the coastal lagoons); and the storage of crops, such as acorns, by Yuman and Shoshonean peoples in the county area. In addition, new traits such as the production of pottery and cremation of the dead were introduced during the Late Prehistoric period. Because of the presence of sites in areas adjacent to the project associated with the Late Prehistoric period, sites from this period could be present in the project APE. Most of the sites previously recorded and investigated within the project APE, however, consist of bedrock milling stations or sparse lithic scatters. The lack of artifacts at these sites, diagnostic of the Cuyamaca or San Luis Rey complexes, or radiocarbon results from the sites dating to the period, does not currently allow for a definite assignment of any of the resources recorded in the project APE to this period.

The project is situated within the northernmost extent of the traditional territory of prehistoric Yuman people who inhabited the area at the time of European contact. The southern boundary between the territories of the Shoshonean Luiseño/Juaneño and the Yuman Northern Diegueño has been delineated as extending from the coast, east along Agua Hedionda Creek as far as the northern tip of the valley of San José and Palomar Mountain. With this delineation, the project lies within the territory defined for the Yuman Northern Diegueño. These people were designated as the Diegueño by the Spaniards, a term derived from the mission with which they came to be associated after 1769, i.e., the San Diego Mission Alcalá. More recently, a Yuman language term “Kumeyaay” has been used for the people formerly designated as the Diegueño. With a long history in the area, the Kumeyaay at the point of contact in the late 1700s were settled in permanent villages or rancherías. While their exact locations are not certain, several villages, including Hakutl, Shikapa, Jeyal (San Elijo), and Ajopunguile (“Batequitos”), are indicated to have been located in the general area of the project.

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Outreach efforts to Native American representatives began in November 2009 with a letter sent to the NAHC announcing the District's proposed project. The search of the Sacred Lands File by the NAHC failed to indicate the presence of resources in the project area or the immediate area surrounding the project. The NAHC response also included a list of local Native American contacts. On December 1, 2009, letters were sent to the local Native American contacts provided by the NAHC requesting further consultation. To date, responses have been received from five of the contacts: the San Luis Rey Band of Luiseño Indians, the Pala Band of Mission Indians, the Rincon Band of Mission Indians, the Pauma Valley Band of Luiseño Indians, and the Kwaaymii Laguna Band of Mission Indians. No respondent has expressed opposition to the project. Two of the letters recommended that approved cultural monitors be on-site during construction activities. The remaining letters requested additional information as the project design progresses, or replied with no comments on the project.

### **Records Search and Field Survey**

A records search was conducted on October 13, 2009, by the South Coastal Information Center (SCIC), San Diego, California. The purpose of this search was to identify any previously recorded resources within or near the project and to assess the potential for cultural resources in the project APE. Because the Southern Alternative was previously surveyed and two pipelines were already constructed within the corridor, a narrower search radius was conducted for this alternative. This search was to determine if any additional sites had been recorded in areas immediately adjacent to the previously studied corridor since the pipeline construction. The search consisted of all recorded cultural resources and previously conducted studies within a 1,000-foot radius of the Southern Alternative and within a 0.5-mile radius of the Preferred Alternative.

### **Cultural Resources**

The records search indicated that 23 previous cultural resources studies are on file at the SCIC that have included portions of one or both of the project alignments. Five other studies have occurred within 1,000 feet of the Southern Alternative, and 23 within 0.5 mile of the Preferred Alternative (see Tables 3.7-1 and 3.7-2). While most of the 23 studies included only minor portions of the APE, several studies were cultural resources inventories or resource evaluation studies conducted for either the District or SDCWA that involved previous pipeline or other facility construction projects within portions of the current APE.

**Table 3.7-1  
Cultural Resource Studies within a 1,000-Foot Radius of the Southern Alternative**

| <b>NADB#</b> | <b>Author</b>  | <b>Date</b> | <b>Title</b>  |
|--------------|--|-------------|---|
| 1121933      | May, Ronald V.<br>(May 74-01)  | 1974        | The Archaeological Resources of Byron White Lot Split TPM 10697. County of San Diego Environmental Management Impact Division. Submitted to County of San Diego Environmental Review Board.   |
| 1122126      | Consulease<br>(Consulease 75-01)   | 1975        | Environmental Analysis of TPM 11055, TPM 11076, HDPM 4625 Harmony Grove, County of San Diego. Consulease, Inc. Submitted to Byron F. White.   |
| 1122168      | Mooney-Lettieri and Associates, Inc.<br>(MLA 84-05)                        | 1984        | Draft Supplemental Environmental Impact Report for the Rancho Cielo Project. Mooney-Lettieri and Associates, Inc. Submitted to Rancho Cielo Association.  |
| 1122405      | Smith, Brian F.<br>(Smith 91-171)  | 1991        | An Archaeological Survey of the McGrath Subdivision Project. Brian F. Smith and Associates. Submitted to Stevens Planning Group.  |
| 1122580      | Gallegos, Dennis, and Ivan Strudwick<br>(Gallego 93-133)                   | 1993        | Survey and Test Report for the Rancho Penasquitos Pipeline (P5E11) County Water Authority, County of San Diego. Gallegos and Associates. Submitted to P & D Technologies.   |
| 1122604      | Cook, John<br>(Cookj 92-39)  | 1992        | Cultural Resources Survey and Significance Evaluation of the Santa Fe Creek Project. Brian F. Mooney. Submitted to Escondido Creek Development, Inc.  |
| 1122771      | County of San Diego<br>(CountySD 92-34)                                    | 1992        | Draft Environmental Impact Report for Santa Fe Creek, San Diego County, California. County of San Diego. Submitted to Escondido Creek Development, Inc.   |
| 1123280      | American Pacific Environmental Consultants<br>(APEC 80-19)                 | 1980        | Rancho Cielo: Draft Environmental Impact Report – Volumes I & II. American Pacific Environmental Consultants (APEC). Submitted to Rancho Cielo Property Owners.   |
| 1123419      | Shackley, Steven, and Stephan Van Wormer<br>(Shackley 89-04)               | 1989        | A Cultural Resources Evaluation and Treatment Plan for SDI-11222, the Israel Adobe, Appendix B Cultural Resources Technical Appendix for the Mt. Israel Reservoir Project. Brian F. Mooney. Submitted to Olivenhain Municipal Water District. |
| 1124157      | Whitney-Desautels, Nancy A.<br>(Desautel 91-04)                            | 1991        | Archaeological and Historical Literature Search and Records Check for Alternative Alignments for Highway 680 San Diego County, California. Scientific Resource Survey, Inc. (SRS). Submitted to Curtis Scott Englehorn and Associates.        |
| 1124967      | RECON<br>(RECON 82-109)  | 1982        | Draft for Elfin Forest Village, County of San Diego, California. Submitted to Joseph Murat and Veronica Murat Trust.  |
| 1126245      | Cook, John, Jerry Schaefer, Drew Pallette, and Carol Serr<br>(CookJ 95-44) | 1995        | Cultural Resource Significance and National Register Eligibility Evaluation Program for Proposed Olivenhain Water Storage Project, San Diego, California. Brian F. Mooney Associates. Submitted to Olivenhain Municipal Water District.       |
| 1127774      | McFarland, Sharon, and Brian F. Smith<br>(McFarland 00-6)                  | 2000        | An Archaeological Survey for the Sherman and Sons Subdivision Project, San Diego County, California. Brian F. Mooney Associates. Submitted to Sherman and Sons, LLC.  |
| 1128052      | Gallegos, Dennis R., and Nina M. Harris<br>(Gallego 99-260)                | 1999        | Cultural Resource Literature Review for the North Coast Transportation Study, Arterial Streets Alternative, San Diego County, California. Gallegos and Associates. Submitted to MLF/San Diego Association of Governments.                     |

| <b>NADB#</b> | <b>Author</b>  | <b>Date</b> | <b>Title</b>  |
|--------------|--|-------------|---|
| 1129253      | Underwood, Jackson<br>(UnderJ 04-04)                       | 2004        | Addendum 15 Supplemental Cultural Resources Inventory Emergency Storage Project. Olivenhain Reservoir Landscape Area, San Diego County, California. EDAW, Inc. (now AECOM). Submitted to San Diego County Water Authority.                              |
| 1129276      | Wahoff, Tanya, and<br>Jackson Underwood<br>(WahoffT 00-15) | 2000        | Supplemental Cultural Resources Inventory Emergency Storage Project, Olivenhain Reservoir and Olivenhain to Second Aqueduct Pipeline, San Diego County, California. KEA Environmental, Inc. (now AECOM). Submitted to San Diego County Water Authority. |
| 1129820      | Berryman, Stanley R.<br>(BerrymanS 75-91)                  | 1975        | Archaeological Investigations of Harmony Groves. Berryman Archaeological Consultants. Submitted to Consulate Corporation.   |
| 1129824      | Cook, John R.<br>(Cook 83-100)                             | 1983        | An Archaeological Test/Mitigation of SDI-7980 and W-267. Archaeological Systems Management. Submitted to Ms. Charlene Pavlick, Trustee.   |
| -            | Mooney-Lettieri and<br>Associates                          | 1984        | Cultural Resources Inventory for the Mt. Israel Reservoir. Report submitted to, and on file at, the Olivenhain Municipal Water District.  |
| -            | Brian F. Mooney<br>Associates                              | 1992        | Supplemental Cultural Resource Survey for the Mt. Israel Reservoir Project. Report submitted to, and on file at, the Olivenhain Municipal Water District.   |
| -            | Ogden Environmental<br>and Energy Services<br>Company      | 1995        | San Diego County Water Authority Emergency Water Storage Project Cultural Resources Technical Report for Draft Environmental Impact Statement. Report submitted to the San Diego County Water Authority and U.S. Army Corps of Engineers, Los Angeles.  |
| -            | Wahoff, Tanya, and<br>Lorraine M. Willey                   | 2003        | Addendum 9 Supplemental Cultural Resources Survey, Emergency Storage Project, Escondido Creek Wetland Mitigation Project, San Diego County, California. Report submitted to the San Diego County Water Authority.                                       |

**Table 3.7-2  
Cultural Resource Studies within a 0.5-Mile Radius of the Preferred Alternative**

| <b>NADB#</b> | <b>Author</b>                                       | <b>Date</b> | <b>Title</b>   |
|--------------|---|-------------|--|
| 1120152      | Berryman, Stanley R.<br>(BerryS 75-13)              | 1975        | Archaeological Study of McCarty Lot Splits. Berryman Archaeological Consultants. Submitted to North Star Realty.   |
| 1121476      | Scientific Resource<br>Surveys, Inc.<br>(SRS 81-16) | 1981        | Archaeological Test Report II on TMP 13960 (Zupkas Lot Split) Located in the Harmony Grove Area of the County of San Diego, California. Scientific Resource Surveys, Inc. Submitted to Wayne Zupkas. |
| 1121847      | Fink, Gary R.<br>(Fink 76-35)                       | 1976        | Archaeological Survey for the Proposed San Marcos Landfill, San Diego, California, Project No. UJ0190. San Diego County Engineers Department. Submitted to Department of Sanitation & Flood Control. |
| 1121933      | May, Ronald V.<br>(May 74-01)                       | 1974        | The Archaeological Resources of Byron White Lot Split TPM 10697. County of San Diego Environmental Management Impact Division. Submitted to County of San Diego Environmental Review Board.          |
| 1122123      | City of San Marcos<br>(CitySM 89-01)                | 1989        | Initial Environmental Assessment, Byron White Property Specific Plan, San Marcos. City of San Marcos. Submitted to ABQ Development Corporation.  |

| <b>NADB#</b> | <b>Author</b>  | <b>Date</b> | <b>Title</b>   |
|--------------|--|-------------|--|
| 1122126      | Consulease<br>(Consulease 75-01)                             | 1975        | Environmental Analysis of TPM 11055, TPM 11076, HDPM 4625 Harmony Grove, County of San Diego. Consulease, Inc. Submitted to Byron F. White.  |
| 1122168      | Mooney-Lettieri and Associates, Inc<br>(MLA 84-05)           | 1984        | Draft Supplemental Environmental Impact Report for the Rancho Cielo Project. Mooney-Lettieri and Associates, Inc. Submitted to Rancho Cielo Association.   |
| 1122197      | P and D Technologies, Inc.<br>(PDTech 90-01)                 | 1990        | San Elijo Ranch Specific Plan Draft Environmental Impact Report, P and D Technologies. Submitted to the City of San Marcos.  |
| 1122419      | Smith, Brian F.<br>(Smith 92-160)                            | 1992        | An Archaeological Survey of the Weedman Lot Split Project. Elfin Forest, County of San Diego. Brian F. Smith and Associates. Submitted to Clifford W. Weedman.   |
| 1122613      | Advanced Planning and Research Associates<br>(APRA 78-22)    | 1978        | Archaeological Survey Report, Zupkas Lot Split Near Harmony Grove, California. Advanced Planning and Research Associates. Submitted to Wayne R. Zupkas.  |
| 1122661      | Smith, Brian F.<br>(Smith 90-114)                            | 1990        | Results of an Archaeological Survey and Evaluation of Cultural Resources within the San Elijo Ranch Specific Plan. Brian F. Smith Associates. Submitted to P and D Technologies.   |
| 1122665      | Smith, Brian F.<br>(Smith 90-118)                            | 1990        | An Archaeological Survey of the Grismer Lot Split Project, Elfin Forest. County of San Diego. Brian F. Smith Associates. Submitted to Craig Lorenz and Associates.   |
| 1123064      | Smith, Brian<br>(Smith 85-268)                               | 1985        | An Archaeological Reconnaissance of the 1,800-acre Partin-Bennett Project, San Marcos, California. Brian F. Smith. Submitted to Partin-Bennett Brokerage Services, Inc.  |
| 1123280      | American Pacific Environmental Consultants<br>(APEC 80-19)   | 1980        | Rancho Cielo: Draft Environmental Impact Report – Volumes I & II. American Pacific Environmental Consultants (APEC). Submitted to Rancho Cielo Property Owners.  |
| 1123419      | Shackley, Steven, and Stephan Van Wormer<br>(Shackley 89-04) | 1989        | A Cultural Resources Evaluation and Treatment Plan for SDI-11222 the Israel Adobe, Appendix B Cultural Resources Technical Appendix for the Mt. Israel Reservoir Project. Brian F. Mooney. Submitted to Olivenhain Municipal Water District. |
| 1124129      | Gallegos, Dennis<br>(Gallegos 91-91)                         | 1991        | Historical/Archaeological Survey Report for the Olivenhain MWD Alternative Sites, County of San Diego, California. Gallegos & Associates. Submitted to Olivenhain Municipal Water District.  |
| 1124157      | Whitney-Desautels, Nancy A.<br>(Desautel 91-04)              | 1991        | Archaeological and Historical Literature Search and Records Check for Alternative Alignments for Highway 680 San Diego County, California. Scientific Resource Survey, Inc. (SRS). Submitted to Curtis Scott Englehorn and Associates.       |
| 1124173      | Harris, Nina M., and Dennis R. Gallegos<br>(Gallegos 99-208) | 1999        | Santa Fe Ridge Cultural Resource Survey, Elfin Forest, County of San Diego, California. Gallegos and Associates. Submitted to Hover Development Company.   |
| 1124967      | RECON<br>(RECON 82-109)                                      | 1982        | Draft for Elfin Forest Village, County of San Diego, California. Submitted to Joseph Murat and Veronica Murat Trust.   |
| 1125501      | (Smith 90-371)   | 1990        | Results of an Archaeological Survey and Evaluation of Cultural Resources within the San Elijo Ranch Specific Plan. Brian F. Smith and Associates. Submitted to P&D Technologies.   |
| 1125513      | Rosen, Martin<br>(Rosen 01-62)                               | 2001        | California Department of Transportation (Caltrans)– District 11 Environmental Resource Studies. Martin Rosen. Submitted to Caltrans.   |

| <b>NADB#</b> | <b>Author</b>  | <b>Date</b> | <b>Title</b>  |
|--------------|--|-------------|---|
| 1126245      | Cook, John, Jerry Schaefer, Drew Pallette, and Carol Serr (CookJ 95-44)                        | 1995        | Cultural Resource Significance and National Register Eligibility Evaluation Program for Proposed Olivenhain Water Storage Project, San Diego, California. Brian F. Mooney Associates. Submitted to Olivenhain Municipal Water District.                                 |
| 1127774      | McFarland, Sharon, and Brian F. Smith (McFarland 00-6)   | 2000        | An Archaeological Survey for the Sherman and Sons Subdivision Project, San Diego County, California. Brian F. Mooney Associates. Submitted to Sherman and Sons, LLC.  |
| 1128052      | Gallegos, Dennis R., and Nina M. Harris (Gallego 99-260)                                       | 1999        | Cultural Resource Literature Review for the North Coast Transportation Study, Arterial Streets Alternative, San Diego County, California. Gallegos and Associates. Submitted to MLF/San Diego Association of Governments.   |
| 1128071      | Gallegos, Dennis R., Richard Cerrito, Tracy A. Stropes, and Steve Van Wormer (Gallegos 00-279) | 2001        | The Quail Ridge Project Cultural Resource Test Program, San Diego County, California. Gallegos and Associates. Submitted to Helix Environmental Planning, Inc.  |
| 1128550      | Wright, Gail (Wright 03-20)  | 2003        | Negative Cultural Resources Survey Report for Weber Residence – L14358 Log No. 03-08-022; APN 264-042-24 Negative Findings. Gail Wright. Submitted to County of San Diego.  |
| 1128875      | Wright, Gail (Wright 03-34)  | 2003        | Negative Cultural Resources Survey Report for TPM 20764, Log No. 03-08-046 GAO Minor Subdivision APN 264-042-07 Negative Findings. Gail Wright. Submitted to County of San Diego.   |
| 1129253      | Underwood, Jackson (UnderJ 04-04)  | 2004        | Addendum 15 Supplemental Cultural Resources Inventory Emergency Storage Project. Olivenhain Reservoir Landscape Area, San Diego County, California. EDAW, Inc. Submitted to San Diego County Water Authority.   |
| 1129275      | Wahoff, Tanya, and Rebecca McCorkle Apple (WahoffT 02-14)                                      | 2002        | Supplemental Cultural Resources Survey Emergency Storage Project, Olivenhain Dam Visitors Center and Harmony Grove Road Temporary Transportation Improvements, San Diego County, California. KEA Environmental, Inc. Submitted to the San Diego County Water Authority. |
| 1129276      | Wahoff, Tanya, and Jackson Underwood (WahoffT 00-15)   | 2000        | Supplemental Cultural Resources Inventory Emergency Storage Project, Olivenhain Reservoir and Olivenhain to Second Aqueduct Pipeline, San Diego County, California. KEA Environmental, Inc. Submitted to San Diego County Water Authority.                              |
| 1129685      | Smith, Brian F., and Seth A. Rosenberg (SmithB 491)  | 2005        | An Archaeological Survey for the Cielo Azul Project, Harmony Grove, San Diego, California. Brian F. Smith and Associates. Submitted to Dudek and Associates.  |
| 1129820      | Berryman, Stanley R. (BerrymanS 75-91)   | 1975        | Archaeological Investigations of Harmony Groves. Berryman Archaeological Consultants. Submitted to Consulate Corporation.   |
| 1129824      | Cook, John R. (Cook 83-100)  | 1983        | An Archaeological Test/Mitigation of SDI-7980 and W-267. Archaeological Systems Management. Submitted to Ms. Charlene Pavlick, Trustee.   |
| 1129948      | Aislin-Kay, Marnie, and Christeen Taniguchi (ASLIM 04-18)                                      | 2004        | Records Search and Site Visit for Cingular Telecommunications Facility Candidate SD-390-13 (Selvig Residence), 19914 Elfin Forest Lane, San Diego County, California. Michael Brandman and Associates.  |
| 1130371      | Mooney & Associates (Mooney 02-46)   | 2002        | Cultural Resources Survey for the Oak Roase Tentative Map. Escondido, California (TM 5204) Log 00-08-012. Mooney & Associates. Submitted to Raymond Saatjian.   |
| -            | Mooney-Lettieri and Associates   | 1984        | Cultural Resources Inventory for the Mt. Israel Reservoir. Report submitted to, and on file at, the Olivenhain Municipal Water District.  |

| NADB# | Author  | Date | Title  |
|-------|---|------|--|
| -     | Brian F. Mooney Associates                        | 1992 | Supplemental Cultural Resource Survey for the Mt. Israel Reservoir Project. Report submitted to, and on file at, the Olivenhain Municipal Water District.  |
| -     | Ogden Environmental and Energy Services Co., Inc. | 1995 | San Diego County Water Authority Emergency Water Storage Project Cultural Resources Technical Report for Draft Environmental Impact Statement. Report submitted to SDCWA and USACE, Los Angeles. |
| -     | Wahoff, Tanya, and Rebecca McCorkle Apple         | 2002 | Addendum 6 Supplemental Cultural Resources Survey, Emergency Storage Project, Olivenhain Dam and Reservoir Visitor's Overlook, San Diego, County, California. Report submitted to SDCWA.         |
| -     | Wahoff, Tanya, and Lorraine M. Willey             | 2003 | Addendum 9 Supplemental Cultural Resources Survey, Emergency Storage Project, Escondido Creek Wetland Mitigation Project, San Diego, County, California. Report submitted to SDCWA.              |

Eighteen cultural resource sites and four isolates have been previously recorded within a 1,000-foot radius of the Southern Alternative APE, and 32 sites and four isolates within a 0.5-mile radius of the Preferred Alternative APE. The 18 sites within 1,000 feet of Southern Alternative APE are all prehistoric, as are 31 of the 32 sites within 0.5 mile of the Preferred Alternative APE. One of the 31 prehistoric sites within 0.5 mile of the Preferred Alternative APE also contains a historic component consisting of a mortared rock foundation and associated historic trash. The single historic site contains an adobe foundation with associated trash scatter. The prehistoric resource types include prehistoric campsites, bedrock milling stations, and lithic scatters.

In addition to the record search, a field survey of the project was conducted on October 29, 2009, November 20, 2009, and June 8, 2010, by AECOM. No new cultural resources were identified during the current field survey. The locations and vicinities of eight previously recorded prehistoric sites were examined during the survey. Three previously recorded prehistoric isolates were not relocated. At all of these locations, substantial disturbance from previous construction activities was evident.

### **Archaeological Resources**

Within the APE (100-foot width) of the Southern Alternative, seven prehistoric cultural resource sites have been previously recorded. Within the APE (100-foot width) of the Preferred Alternative, five prehistoric cultural resource sites have been previously recorded. Four of these resources co-occur within the APE of each alternative. No newly identified prehistoric or historic archaeological sites are present in the APE of either of the alternatives.

Within the APE (100-foot width) of the Southern Alternative, two prehistoric cultural isolates have been previously recorded. Within the APE (100-foot width) of the Preferred Alternative, one

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prehistoric isolate was previously recorded. No newly identified prehistoric isolates are present in the APE of either of the alternatives.

### **Paleontological Resources**

Paleontological resources are found in geologic deposits of sedimentary rock. These deposits may be exposed at the surface of valley slopes and roadcuts, but are typically buried under surficial soil deposits. The project area is composed almost entirely of non-sedimentary rock. The project area contains Mesozoic bedrock, either Cretaceous granitic rocks of the Southern California Batholith, or Triassic/Jurassic metavolcanic rocks of the Santiago Peak Volcanics Formation. However, small areas of unnamed Cenozoic, Tertiary-age sedimentary gravel deposits exist in the northwestern areas of the project (Rogers 1965; Weber 1963).

Potential impacts to paleontological resources are rated high, moderate, low, marginal, and no potential, depending on the paleontological resource potential and sensitivity of the impacted geologic formations. The majority of the project site is designated by the County of San Diego as having no potential to encounter paleontological resources, and the area approximately 1 mile west of the project site has marginal sensitivity to paleontological resources.

#### **3.7.2 Thresholds of Significance**

In accordance with Appendix G of the CEQA Guidelines, the impacts of the proposed project related to cultural and paleontological resources would be considered significant if they do any of the following:

- Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5;
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5;
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

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### **3.7.3 Impact Analysis**

**CUL-1** *The proposed project would not cause a substantial adverse change in the significance of a historical, archaeological, paleontological, or geologic resource. The proposed project would not disturb any human remains, including those interred outside of formal cemeteries. Impacts would be less than significant.*

#### **Southern Alternative**

Within the APE of the Southern Alternative, seven prehistoric cultural resource sites were previously recorded. Three prehistoric isolates were also previously recorded within or contiguous to the project APE. Six of the seven sites were previously evaluated for importance and found not to be significant resources under CEQA or National Register of Historic Places (NRHP) criteria. During the field survey, five of the seven sites appeared to have been completely destroyed by previous roadway, pipeline, and/or reservoir facilities construction activities. Even though the two remaining sites have been substantially disturbed by construction activities, they still have areas and/or features remaining intact in proximity to the Southern Alternative. These sites have both been previously evaluated for importance and found not to be significant resources under CEQA or NRHP criteria. The three previously recorded prehistoric isolates are not considered as significant resources and were not relocated during the current survey.

#### **Preferred Alternative**

Along the Preferred Alternative, six prehistoric cultural resource sites were previously recorded within or contiguous to the project APE. One prehistoric isolate has also been previously recorded within or contiguous to the project APE. All of these six sites were previously evaluated for importance and found not to be significant resources under CEQA or NRHP criteria. During the current survey, four of the sites appeared to have been completely destroyed by previous roadway, pipeline, and/or reservoir facilities construction activities. Although the remaining sites have been substantially disturbed by construction activities, they still have areas and/or features remaining intact in proximity to the project alignment. The sites have been previously evaluated for importance and were found not to be significant resources under CEQA or NRHP criteria. The previously recorded prehistoric isolate is not considered as a significant resource and was not re-identified during the current survey.

## Impact Identification

Seven prehistoric cultural resources have been recorded within, or within proximity of, the APE of the Southern Alternative. Five of these resources were observed during the current survey to have been destroyed by previous construction activities, with the remaining two substantially disturbed by these same activities. Six of the seven sites have been previously evaluated and determined as not significant resources under CEQA criteria. Six prehistoric cultural resources have been recorded within, or within proximity of, the APE of the Preferred Alternative. Four of these resources were observed during the current survey to have been destroyed by previous construction activities, with the remaining sites substantially disturbed by these same activities. All six of these sites have been previously evaluated and determined as not significant resources under CEQA criteria. Table 3.7-3 identifies the status of the cultural sites recorded in the project alignment alternatives.

**Table 3.7-3  
Status of Cultural Sites Recorded in the Project Alternatives**

| <b>Trinomial or Primary or Temp Site #</b> | <b>Description</b>   | <b>Project Alternative</b> | <b>Previously Evaluated for Significance under CEQA</b> | <b>Current Condition</b>   |
|--|--|----------------------------|---|----------------------------|
| CA-SDI-5498                                | Prehistoric site – lithic scatter  | Both                       | Yes – Found Not Significant                             | All or Partially Destroyed |
| CA-SDI-13,832                              | Prehistoric milling station site – one milling feature                     | Northern                   | Yes – Found Not Significant                             | Destroyed                  |
| CA-SDI-13,833                              | Prehistoric milling station site – one milling feature                     | Both                       | Yes – Found Not Significant                             | Destroyed                  |
| CA-SDI-13,834                              | Prehistoric milling station site – one milling feature                     | Both                       | Yes – Found Not Significant                             | Destroyed                  |
| CA-SDI-13,835                              | Prehistoric milling station site – five or seven milling features          | Southern                   | Yes – Found Not Significant                             | Partially Destroyed        |
| CA-SDI-13,836                              | Prehistoric milling feature and lithic scatter site – two milling features | Both                       | Yes – Found Not Significant                             | Destroyed                  |
| CA-SDI-13,838                              | Prehistoric quarrying and lithic scatter site                              | Southern                   | Yes – Not Relocated/Found Not Significant               | Destroyed                  |
| CA-SDI-14,837                              | Prehistoric milling feature site – three milling features                  | Southern                   | Unknown   | Destroyed                  |

As none of these sites constitute significant cultural resources under CEQA criteria, if the 100-foot-wide APE is adhered to, that is, no earth-disturbing activities occur during construction activities beyond the 100-foot APE width surveyed, then no impacts to significant cultural resources will occur. If future construction activities are proposed that will occur outside of the currently evaluated

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APE, then these additional areas will need to be examined and evaluated for potential for impacts to cultural resources that may exist in those areas. Additionally, there is marginal to no potential for the occurrence of paleontological resources at the project site. Therefore, impacts to paleontological resources would be less than significant and monitoring would not be required.

It is also recommended that if earth-moving activities during construction reveal buried cultural deposits, work should be temporarily halted and diverted a safe distance from the location, and a qualified archaeologist should be contacted to evaluate the significance of the deposit.

#### **3.7.4 Mitigation Measures**

No mitigation measures related to cultural or paleontological resources are required. However, if construction activities reveal buried cultural resource, all construction work should be stopped and diverted a safe distance from the location, and a qualified archaeologist should be contacted to evaluate the significance of the resource.

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## **3.8 GEOLOGY AND SOILS**

This section describes the geology and soils within the proposed project area and the potential impacts related to project construction and operation.

### **3.8.1 Existing Conditions**

#### **Geology**

Elevations range between approximately 900 feet AMSL at the eastern end of the project alignments to approximately 320 feet AMSL in the Escondido Creek Valley at the southwestern end of the proposed project site. The proposed project occurs at an elevation of approximately 650 feet AMSL. Topography is flat to undulating, with numerous scattered Santiago Peak metavolcanic rock outcroppings and two main drainages: Escondido Creek and Misha Creek. These two creeks drain toward the southwest through the proposed project site. Misha Creek drains into Escondido Creek south of the proposed project site near Questhaven Road.

As mapped by the San Diego County Geologic Hazards Guidelines (San Diego County 2007) and the California Geological Survey, the project site is located in the Peninsular Ranges Geomorphic Province. The Peninsular Ranges Geomorphic Province has northwest-trending mountain ranges separated by sub-parallel fault zones. Although the geologic map of the site does not identify faults within the vicinity of the project, the project area is susceptible to high-intensity ground shaking that affects all structures, as is the case for most of southern California.

Liquefaction, the transformation of the soil into a liquid state, results in lateral spreading, ground settlement, sand boils, and sand falls. According to the San Diego County General Plan Public Safety Element (County of San Diego 2008), the project site is not located in a liquefaction zone. Additionally, expansive soil is soil that expands to a significant degree upon wetting and shrinks upon drying. The proposed project site does not contain soils that are expansive.

#### **Soils**

The project area contains almost entirely Mesozoic bedrock of either Cretaceous granitic rocks or Triassic/Jurassic metavolcanic rocks. Also present, in the northwestern area of the project, are small areas of unnamed sedimentary gravel deposits of Cenozoic, Tertiary age (Rogers 1965; Weber 1963). Within the project area, two general soil associations are principally represented: the Cieneba-Fallbrook association and the Exchequer-San Miguel association.

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The Cieneba-Fallbrook association, characterized as very rocky with excessively drained to well-drained coarse sandy loams and sandy loams with a sandy clay subsoil over decomposed granodiorite bedrock, 9 to 75 percent slopes, is present over most of the eastern project area. Soil types represented include Cieneba coarse sandy loams, 15 to 30 percent slopes; Cieneba very rocky coarse sandy loams, 30 to 75 percent slopes; and Cieneba-Fallbrook very rocky sandy loams, 30 to 65 percent slopes. These soils are associated with the physical and chemical decomposition of the granitic bedrock in the area.

The Exchequer–San Miguel association, characterized as rocky, well-drained silt loams over metavolcanic bedrock with 30 to 70 percent slopes, is present in much of the western half of the project area. Soil types within this association include San Miguel–Exchequer rocky silt loams, 9 to 70 percent slopes, and the San Miguel rocky silt loam, 9 to 30 percent slopes. These soils are associated with the physical and chemical decomposition of the Santiago Peak Volcanics Formation metavolcanic bedrock in the area.

Minor occurrences of Vista rocky coarse sandy loam, 5 to 15 percent slopes; Placentia sandy loam, alluvial fan soils with 2 to 9 percent slopes; Visalia sandy loam with 2 to 9 percent slopes; Escondido very fine sandy loam with 5 to 9 percent slopes; and Huerhuero loam soils, eroded with 5 to 9 and 9 to 15 percent slopes, are also present, mostly in the west-central area, adjacent to Escondido Creek. These latter two Huerhuero soils generally develop in sandy marine sediments. Also present along the Escondido Creek bed are Riverwash and Soboba alluvial fan deposit soils (Bowman 1973). These various soil types account for more than 98 percent of the soils present within the project area. Table 3.8-1 lists the soil series that occur within and adjacent to the project alignments.

### **3.8.2 Thresholds of Significance**

In accordance with Appendix G of the CEQA Guidelines, the impacts of the proposed project related to geology and soils would be considered significant if they do the following:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving the following:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map;
  - Strong seismic ground shaking;
  - Seismic-related ground failure, including liquefaction; or
  - Landslides;

**Table 3.8-1  
Soils Occurring within the Proposed Project Alignments**

| <b>Soil Series</b> | <b>Phase</b>   | <b>Preferred Alternative</b> | <b>Southern Alternative</b> |
|--------------------|--|------------------------------|-----------------------------|
| Cieneba            | Cieneba rocky coarse sandy loam, 9 to 30 percent slopes, eroded      |                              |                             |
|                    | Cieneba very rocky coarse sandy loam, 30 to 75 percent slopes        | 1.93                         | 1.67                        |
|                    | Cieneba coarse sandy loam, 15 to 30 percent slopes, eroded           | 2.10                         | ---                         |
| Fallbrook          | Cieneba-Fallbrook rocky sandy loams, 30 to 65 percent slopes, eroded | 8.63                         | 7.54                        |
| Soboba             | Soboba stony loamy sand, 9 to 30 percent slopes                      | 0.92                         | ---                         |
| San Miguel         | San Miguel rocky silt loam, 9 to 30 percent slopes                   | 2.52                         | ---                         |
| Huerhuero          | Huerhuero loam, 5 to 9 percent slopes, eroded                        | 8.12                         | ---                         |
|                    | Huerhuero loam, 9 to 15 percent slopes, eroded                       | 1.91                         | ---                         |
| Exchequer          | San Miguel-Exchequer rocky silt loams, 9 to 70 percent slopes        | 4.40                         | 12.65                       |
| Escondido          | Escondido very fine sandy loam, 5 to 9 percent slopes                | 1.82                         | ---                         |
| Visalia            | Visalia sandy loam, 2 to 5 percent slopes                            | ---                          | 0.014                       |
| Placentia          | Placentia sandy loam, 2 to 9 percent slopes                          | ---                          | 1.20                        |
| Vista              | Vista rocky coarse sandy loam, 5 to 15 percent slopes                | ---                          | 2.32                        |

- Result in substantial soil erosion, loss of topsoil, or changes in topography or unstable soil conditions from excavation, grading, or fill;
- Are located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;
- Are located on expansive soil creating substantial risks to life or property; or
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

### **3.8.3 Impact Analysis**

**GEO-1** *The proposed project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving the rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, and landslides. The proposed project is also not*

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*located on expansive soils or a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. Impacts would be less than significant.*

The project site is not located within an Alquist-Priolo Earthquake Fault Zone or within a Fault Rupture Study Area, as mapped by the San Diego County Geologic Hazards Guidelines and the California Geological Survey. The project site is located in the Peninsular Ranges Geomorphic Province. This province is characterized by northwest-trending mountain ranges separated by sub-parallel fault zones. The pipeline trench is likely to encounter some disturbed formational material. The geologic map of the site does not identify faults within the vicinity of the project. However, as is the case for most of southern California, the project area is susceptible to high-intensity ground shaking that affects all structures. Thus, the pipeline would be constructed in accordance with seismic requirements of the California Building Code Seismic Hazards Standards. Compliance with established standards would reduce the risks of structural failure or collapse to a less-than-significant level.

Liquefaction, the transformation of the soil into a liquid state, results in lateral spreading, ground settlement, sand boils, and sand falls. Expansive soil is defined as soil that expands to a significant degree upon wetting and shrinks upon drying. The proposed project is not located in a liquefaction zone according to the San Diego County General Plan Public Safety Element (County of San Diego 2008) or on soils that are expansive, as described in Figure 6, Potential Expansive Soil Areas of the San Diego County Guidelines (County of San Diego 2007). As such, no impacts would occur.

There is no circumstance surrounding the geology of the project area or the nature of the project that would result in increased geologic hazards. The project alignment does not traverse steep slopes or cut into hillsides that could increase the potential for landslides, mudslides, or lateral spreading as described by the San Diego County Geologic Hazards Guidelines. Compliance with established standards would reduce the risks associated with landslides to a less-than-significant level.

**GEO-2** *The proposed project would not result in substantial soil erosion, loss of topsoil, or changes in topography or unstable soil conditions from excavation, grading, or fill. Impacts would be less than significant.*

The proposed project would not result in substantial soil erosion or the loss of topsoil. Construction of the proposed project would result in ground surface disturbance during excavation and grading that could potentially cause erosion. The District will prepare a Storm

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Water Pollution Prevention Plan (SWPPP), which would include erosion-control measures, and obtain a National Pollutant Discharge Elimination System (NPDES) permit. Compliance with existing regulations would reduce impacts due to soil erosion to a less-than-significant level.

**GEO-3** *The proposed project would not have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater. No impacts would occur.*

The proposed project would be installing an underground pipeline for the movement of potable water. No septic tanks or alternative wastewater disposal systems would be constructed. As such, no impacts would occur.

#### **3.8.4 Mitigation Measures**

No mitigation measures are required.

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### **3.9 PUBLIC SAFETY AND HAZARDOUS MATERIALS**

This section discusses the potential impacts to public safety and hazardous materials for the proposed project. The analysis for this section will describe the potential facility accidents or failures, increased public exposure to unsafe conditions/activities, and the use of and exposure to hazardous materials. Hazardous substances are defined by state and federal regulations as substances that must be regulated to protect the public health and the environment. Such materials have certain chemical, physical, or infectious properties that cause them to be hazardous.

#### **3.9.1 Existing Conditions**

The land use surrounding and within the proposed project is mostly low-density estate residential. Elfin Forest Road and Harmony Grove Road serve as the main access roads through the area. There are several undeveloped hillsides in the general vicinity of the project alignment. Farmland is located to the north of the Community Plan Area and is divided into small agricultural fields, orchards, pasture lane, and commercial nursery operations. Via Ambiente is used only by emergency response personnel and personnel authorized to travel to and from the DCMWTP.

The State Water Resources Control Board Geotracker (2010) and State Department of Toxic Substances Envirostor (DTSC 2010) databases were evaluated to determine if hazardous materials are present on the project site currently or in the past. No properties within a 0.25-mile radius of the project area were listed on these databases. Approximately 1.5 miles northwest of the project area is a landfill that was operated by the City of San Marcos, but is now closed. The landfill is not close enough to the project area to be an environmental concern. Additionally, the proposed project will be an underground pipeline that will be closed to any potential surface water or groundwater contamination.

#### **3.9.2 Thresholds of Significance**

The impact of the proposed project related to land use would be considered significant if, in accordance with Appendix G of the CEQA Guidelines, it would do any of the following:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;

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- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
  - Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school;
  - Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment;
  - For a project located within an airport land use plan, or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area;
  - For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area;
  - Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
  - Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

### **3.9.3 Impact Analysis**

**HAZ-1** *The proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials nor would it create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. The impacts would be less than significant.*

Construction may involve the transport, storage, use, or disposal of some hazardous materials, such as on-site fueling or servicing of construction equipment. However, construction activities would be temporary. These construction activities would not be expected to create a substantial hazard to workers or the community. Additionally, all construction activities involving hazardous materials would be subject to federal, state, and local health and safety requirements involving transport, use, storage, and disposal.

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Operational activities would be limited to occasional maintenance along the pipeline and would not create a significant hazard to the public. No foreseeable upset or accident conditions involving the release of hazardous materials into the environment are anticipated during construction or operation of the proposed project. The impact would be less than significant.

**HAZ-2** *The proposed project would not emit or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school. No impact would occur.*

San Elijo Elementary School is located approximately 1.6 miles to the northwest of the project area. La Costa Canyon High School is located approximately 2.9 miles to the west of the project area. Although construction activities may involve on-site fueling and servicing of construction equipment, these activities would not create a significant hazard or involve hazardous emissions. Operation of the proposed project would not involve hazardous emissions or materials. In addition, all activities involving hazardous materials would be subject to federal, state, and local health and safety requirements. As such, no impact would occur.

**HAZ-3** *The proposed project would not be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65965.5 and would not create a significant hazard to the public or the environment. No impact would occur.*

The proposed project site is not on the list of hazardous materials sites compiled pursuant to Government Code Section 65965.5 and the proposed project would not create a significant hazard to the public or the environment relative to hazardous materials. No impact would occur.

**HAZ-4** *If the proposed project is located within an airport land use plan or within 2 miles of a public airport or private airstrip, the proposed project would not result in a safety hazard for people residing or working in the project area. No impact would occur.*

The proposed project is not located within an airport land use plan or within 2 miles of an airport. The closest public airport to the project site is McClellan–Palomar Airport, located approximately 6 miles to the northwest. As such, the proposed project would not result in a safety hazard for people residing or working in the project area. No impact would occur.

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**HAZ-5** *The proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. No impact would occur.*

The proposed project would not impair or physically interfere with an adopted emergency response plan or any local, state, or federal agencies' emergency evacuation plan. No road closures are anticipated during project construction, and delays with emergency response would be temporary and less than significant.

**HAZ-6** *The proposed project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. The impact would be less than significant.*

According to the California Department of Forestry and Fire Protection, the project site is located within the vicinity of a Very High Fire Hazard Severity Zone (FRAP 2009). However, construction and operation of the proposed project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. The undeveloped portion of the project site contains vegetation that could catch fire. Fire prevention procedures would be implemented during project construction, including fire safety training for all construction workers, on-site water truck for rapid response, and stopping construction during red flag alert conditions at the site. Red flag warnings are issued by the National Weather Service when the following criteria are met or are expected to occur: (1) a sustained wind average of 15 mph or greater; (2) relative humidity less than or equal to 25 percent; and (3) a temperature of greater than 75°F. Compliance with the existing County regulations would ensure a less-than-significant impact.

### **3.9.4 Mitigation Measures**

No mitigation measures are required.

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## 3.10 PUBLIC SERVICES AND UTILITIES

This section describes the public services and utilities within the proposed project area and the potential impacts related to project construction and operation.

### 3.10.1 Existing Conditions

#### Public Services

##### Fire and Police Protection

Fire service to the project site is provided by the Elfin Forest/Harmony Grove Fire Department. The station is located at 20223 Elfin Forest Road (Elfin Forest/Harmony Grove 2010). Elfin Forest is contracted by the County of San Diego to provide fire suppression, fire prevention, and medical aid. The fire department has mutual aid agreements with all County fire agencies and automatic aid agreements with Rancho Santa Fe, Carlsbad, Encinitas, Escondido, San Marcos, and Vista. The station provides service to approximately 11 square miles of the unincorporated communities of Elfin Forest and Harmony Grove. The fire department has two structure engines, two wildland engines, one ambulance, two command vehicles, and one utility vehicle.

Police protection services are provided by the San Diego County Sheriff's Department. The San Marcos Station, located at 182 Santar Place, would be the main responder to the project area. The station serves approximately 100 square miles, which includes the City of San Marcos and the surrounding unincorporated areas of San Marcos and Escondido. The station provides first response services, patrol, traffic, search and rescue, and criminal investigations (San Diego County Sheriff's Department 2010b). The California Highway Patrol provides traffic control and enforcement in the unincorporated areas. Encinitas Station, located at 175 North El Camino Real, also serves the area surrounding the proposed project. The station services approximately 60 square miles, which includes the cities of Del Mar, Encinitas, and Solana Beach, and the unincorporated communities of Rancho Santa Fe, Del Dios, Camp Pendleton, and San Onofre. The Encinitas Station provides first response to crimes or emergencies, traffic enforcement, and routine patrols and preliminary investigations (San Diego County Sheriff's Department 2010a).

##### Utilities

The District provides water service to the project area and surrounding communities. The District provides service to a population of approximately 68,000 people. The District purchases its water

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from SDCWA. Water mains and pipelines are located underground throughout the project area (District 2009).

Most of the non-recyclable waste produced within the project area is disposed of at one of the five municipal solid waste landfills in San Diego County: Borrego, Otay, Ramona, Sycamore, and Miramar Landfills. Allied Waste Industries, Inc. owns and operates all but the Miramar Landfill, which is owned by the City of San Diego. With the current landfill expansions and two proposed landfills, San Diego County will have enough landfill capacity for 30 more years (San Diego County DPW 2005).

San Diego Gas & Electric (SDG&E) provides the gas and electric services for the project area and surrounding communities. Within the Elfin Forest Community, property owners individually contract with various local propane providers for gas service. There are various companies that provide telecommunication service in the area. A majority of these service lines are located underground.

### **3.10.2 Thresholds of Significance**

In accordance with Appendix G of the CEQA Guidelines, the impacts of the proposed project related to utilities and public services would be considered significant if they do any of the following:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered fire protection facilities in order to maintain acceptable service ratios, response times, or other performance objectives;
- Result in substantial adverse physical impacts associated with the provision of new or physically altered police protection facilities in order to maintain acceptable service ratios, response times, or other performance objectives;
- Exceed wastewater treatment requirements of the applicable RWQCB;
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Result in a determination by the wastewater treatment provider that serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments;

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- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
  - Not have sufficient water supplies available to serve the project from existing entitlements and resources (are new or expanded entitlements needed?);
  - Not be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs and comply with federal, state, and local statutes and regulations related to solid waste;
  - Require or result in the construction of new electricity, natural gas, or telecommunication facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; or
  - Not have sufficient electricity, natural gas, or telecommunication supplies available from the local provider to serve the project from existing entitlements and resources.

### **3.10.3 Impact Analysis**

**PSU-1** *The proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered fire or police protection facilities in order to maintain acceptable service ratios, response times, or other performance objectives. Impacts would be less than significant.*

Fire service to the project site is provided by the Elfin Forest/Harmony Grove Fire Department. Police protection services are provided by the San Diego County Sheriff's Department. Construction and operation of the proposed project would not require additional fire or police protection.

During the installation of the pipeline within roadway segments, portions of Elfin Forest Road, Harmony Grove Road, and Via Ambiente may be reduced to one lane during construction. The closed lanes would alternate between east- and west-bound travel directions and result in a temporary delay in response times. However, emergency vehicles would be given priority, and impacts would be less than significant.

**PSU-2** *The proposed project would not exceed wastewater treatment requirements of the applicable RWQCB, require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects, or result in a determination by the*

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*wastewater treatment provider that serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments. No impact would occur.*

The proposed project would construct an alternative underground pipeline to transport raw water from the Second San Diego Aqueduct to the DCMWTP. Construction and operation of the proposed project would generate minimal amounts of wastewater. As such, this would not result in changes to facilities or operations at existing wastewater treatment facilities. The relatively small volume of wastewater generated by the proposed project would not result in a determination by the wastewater treatment provider that it lacked adequate capacity. No impact to wastewater treatment requirements of the applicable RWQCB would occur. The proposed project would not require or result in the construction of a new water or wastewater treatment facility. As such, no impact would occur.

**PSU-3** *The proposed project would not require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. Impacts would be less than significant.*

Construction and operation of the proposed project would not require the construction of new storm drainage facilities. Creation of a SWPPP and compliance with NPDES permit regulations would ensure a less-than-significant impact on drainage facilities.

**PSU-4** *The proposed project would have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed? Impacts would be less than significant.*

The proposed project would construct an alternative pipeline that would draw raw water from the Second San Diego Aqueduct to the District's DCMWTP. Current operation of the DCMWTP relies on water drawn almost exclusively from the Second San Diego Aqueduct. This water is pumped into the Olivenhain Reservoir before being transferred to the DCMWTP. Only a very small portion of the District's treated water is sourced from the small watershed surrounding the Olivenhain Reservoir. The additional water needed from the Second San Diego Aqueduct to compensate for the natural runoff into the reservoir would be minimal.

Construction of the proposed pipelines would comply with the District's Standard Specifications and Drawings for the Construction of Water Mains and Facilities (District 2008), which describes procedures for avoiding disruptions to underground utilities such as water, gas,

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electrical, telecommunication, and sewer lines. Implementation of these procedures would ensure less-than-significant impacts.

**PSU-5** *The proposed project would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs and comply with federal, state, and local statutes and regulations related to solid waste. Impacts would be less than significant.*

Construction debris would be recycled or transported to a landfill site and disposed of appropriately. The District would ensure that source reduction techniques and recycling measures are incorporated into project construction and operation. The amount of debris generated during project construction is not expected to significantly impact landfill capacities. Operation of the proposed project would be limited to occasional maintenance. The impact would be less than significant.

During construction and operation of the proposed project, the District will comply with all County and state solid waste diversion, reduction, and recycling mandates. No impact would occur.

**PSU-6** *The proposed project would not require or result in the construction of new electricity, natural gas, or telecommunication facilities, or expansion of existing facilities, and would have sufficient electricity, natural gas, or telecommunication supplies available from the local provider to serve the project from existing entitlements and resources. Impacts would be less than significant.*

The proposed project would require grading and excavation activities that may potentially affect the buried pipelines along Elfin Forest Road, Harmony Grove Road, and Via Ambiente. Replacement or realignment of the underground pipelines may be required during project construction; however, operation of the proposed project would not require additional supplies beyond those available. Coordination between the District and SDG&E, local propane providers, or the telecommunication companies during final design and construction would address potential impacts to electricity, natural gas, and telecommunication lines and service during construction. This would allow pipelines and service lines to be avoided, relocated, and/or supported during construction, as necessary, to prevent damage to lines and to minimize disruption and degradation of service to local customers. Should any interruption in service be required, the District would provide adequate notice to customers prior to relocation of service lines in accordance with SDG&E and the propane and telecommunication service providers'

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policies. Following coordination with the service provider and noticing of customers, impacts related to the relocation of electricity, natural gas, or telecommunication lines would be less than significant.

#### **3.10.4 Mitigation Measures**

No mitigation measures are required.

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## **CHAPTER 4.0**

### **EFFECTS FOUND NOT TO BE SIGNIFICANT**

CEQA requires consideration of many areas of environmental concern. Chapter 3 addressed those issues for which the project may result in a significant adverse impact to the environment. The District has determined that, for some issue areas, the project would clearly not result in a potentially significant impact. The Initial Study (IS) checklist guided this analysis based on the project components discussed in Chapter 2. No further discussion of these issues is included in this EIR. The IS checklist is attached as Appendix A.

The following areas of environmental concern would not apply to the impacts resulting from the proposed project:

- Aesthetics
- Agricultural Resources
- Public Safety and Hazardous Materials
- Mineral Resources
- Population and Housing
- Recreation

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## **CHAPTER 5.0 ALTERNATIVES**

The following project alternatives are analyzed for consistency with the project objectives in Section 1.3 of this EIR, as well as for their ability to avoid or substantially reduce the project's significant environmental impacts. The alternatives considered must satisfy the District's responsibility to provide clean and reliable potable water to its customers, and to do so at a reasonable cost to avoid unnecessary increases in water service rates. In addition, alternatives considered should result in lower levels of environmental impacts on issues such as habitat loss, noise, and/or traffic.

### **5.1 NO PROJECT ALTERNATIVE**

The No Project Alternative would require the use of existing water transmission system infrastructure to import and treat raw water. This can only be accomplished via the existing 78-inch east/west pipeline, owned by SDCWA, which transfers water from the Second San Diego Aqueduct to the Olivenhain Reservoir and DCMWTP. After completion of its Lake Hodges Projects, SDCWA will begin transferring water between the Olivenhain Reservoir and Lake Hodges, and the 78-inch pipeline may begin to transfer water back from Olivenhain Reservoir to the aqueduct by reversing the normal pipeline flow. The DCMWTP would no longer receive water from the Olivenhain Reservoir, but would access its storage directly from the Second San Diego Aqueduct. Using the current system, the DCMWTP would have to be shut down when the SDCWA is transferring water from the Olivenhain Reservoir to the Second San Diego Aqueduct. The District must provide an alternate source of raw water for use by the DCMWTP or purchase treated water from SDCWA. With the No Project Alternative, the ability to provide reliable and high-quality treated water to the District's customers would not exist.

### **5.2 SOUTHERN ALTERNATIVE**

The Southern Alternative would begin just east of Suerte Del Este Road, near the District's maintenance entrance just north of the point where the Second San Diego Aqueduct crosses Escondido Creek. This pipeline would roughly parallel two existing pipelines to the east, located in a District easement adjacent to the maintenance road. The maintenance road intersects Via Ambiente approximately 2 miles east of the aqueduct, where the pipeline would transition to a trench within the paved Via Ambiente, which it would follow to the DCMWTP. Although the current easement would be physically adequate to accommodate another pipeline, the construction

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methods required would require additional right-of-way and engineering at a cost and risk to the District.

This alternative would, like the Preferred Alternative, use a combination of trench and tunnel construction methods to install the pipeline. In addition, the Southern Alternative would require blasting through many portions of the rocky slopes along the alignment. To safely construct a trench without harming the existing pipelines, blasting would have to be conducted a safe distance from the existing lines. In some areas, the distance required would push the limits of construction beyond the District's current easement.

In addition, the steep slopes pose problems for handling the hydraulic loads created by the sharp changes in aspect of the alignment. Thicker and more expensive pipeline would be required for portions of the Southern Alternative.

The risk to existing pipelines and increased costs associated with more robust pipeline and additional right-of-way give the Preferred Alternative the advantage in regards to constructability. In terms of environmental impact, the Southern Alternative may provide some advantages; however, these potential benefits do not outweigh the cost and risk factors noted above.

The environmental impacts due to the Southern Alternative would not include impacts to residential noise levels or impacts to local traffic. All blasting, grading, and tunneling would occur at a sufficient distance from residential areas to maintain the existing noise levels. Nearly all construction traffic (except daily employee trips and deliveries) would occur off public roadways, and would not interfere with residential traffic along Elfin Forest Road.

The Southern Alternative would reduce impacts to the noise and traffic levels as noted above, but would increase impacts to natural vegetation communities and sensitive wildlife species. Most notably, this alignment would increase impacts to coastal sage scrub and CAGN. Since the installation of the two existing pipelines in 2001, nearly the entire alignment along the maintenance road and ridgeline has been revegetated with coastal sage scrub. Surveys conducted in 1994 found CAGN-occupied habitat in many areas immediately adjacent to the pipeline easement. Constructing a new pipeline in this area would impact substantially more habitat, and would require substantially more mitigation and revegetation, at an increased cost to the District.

The Southern Alternative would also draw water out of the Second San Diego Aqueduct in close proximity to where SDCWA would place water, via its 78-inch pipeline, from the Olivenhain Reservoir (which would contain water from Lake Hodges). The District remains concerned that this

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close proximity of the two connections would not satisfy project objectives #1 and #2, as noted on page 1–4 in Chapter 1 of this EIR.

The Southern Alternative, although satisfying many of the project objectives, would result in a reduction of some environmental impacts at the expense of construction cost, construction risk, and impacts to natural vegetation communities and sensitive wildlife species. The District has determined that the temporary increase in noise and traffic levels along Elfin Forest Road is preferable in light of the cost, risk, and impacts associated with the Southern Alternative.

### **5.3 FLOW CONTROL FACILITY AT AQUEDUCT ALTERNATIVE**

The FCF at Aqueduct Alternative would follow the alignment of the Preferred Alternative, but would include the construction of an above-ground FCF at the northern terminus of the proposed Unit AA raw water pipeline. Under this alternative, the flow control facility would be located within the Sage Hill Preserve. This location, adjacent to Elfin Forest Road, is the point where the pipeline would connect to the SDCWA’s Second San Diego Aqueduct, approximately 1.0 mile southeast of the community of San Elijo Hills. The site is undeveloped, and the surrounding vicinity is characterized by rural residential housing and small-scale horse ranch operations. Like the Preferred Alternative, all work under the FCF at Aqueduct Alternative would be conducted within the County right-of-way. The Preferred Alternative, as discussed in Chapter 2, would construct a flow control facility near the DCMWTP site.

The potential Second San Diego Aqueduct FCF location contains sensitive visual and biological resources. Travelers on Elfin Forest Road are exposed to views of the hillside where the proposed FCF would be located, as would be several residents within one-quarter mile of the site. A structural elevation on the site would be noticeable to both viewer groups and would contrast with the existing rural character. Architectural treatments and landscaping would be required to mitigate potential visual and community character impacts.

The potential Second San Diego Aqueduct site is dominated by Diegan coastal sage scrub (CSS), which provides suitable habitat for the federally threatened CAGN. Construction of an FCF would result in the permanent loss of sensitive CSS habitat. An HLP would be required, and conditions of the County’s issuance of an HLP would require mitigation for impacts to CSS; from past discussions between the District and County DPLU, it is assumed that compensatory mitigation would be required above a 3:1 ratio for permanent impacts. The construction of an FCF at this site would introduce a permanent footprint, and mitigation for CSS impacts could not be fully accomplished on-site. Off-site mitigation would be required.

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The rural nature of the surrounding community, as well as the presence of sensitive habitat, lends substantial reason for selection of an alternative site for construction of an FCF. A more suitable site would not contain sensitive biological resources, nor would it be located as to introduce a development that is inconsistent with community character and aesthetic values.

#### **5.4 ESCONDIDO CREEK RESTORATION ALTERNATIVE**

The Escondido Creek Restoration Alternative would follow the alignment of the Preferred Alternative, but a different construction technique would be used to cross Escondido Creek. Instead of tunneling beneath Escondido Creek to avoid all impacts to wetlands and associated riparian habitat, an existing roadway, dam structure, and large culverts that are currently in disrepair would be removed from the Escondido Creek floodplain. Escondido Creek would be temporarily diverted around the construction area required for structure removal. This diversion would enable trenching to proceed into the streambed. The Unit AA pipeline and relocated 10-inch potable water pipeline would be installed in the trench across the creek. A small concrete low-flow crossing would be constructed, in place of the existing damaged structure, within the pipeline easement to allow District maintenance vehicles to access the pipeline corridor. The remainder of the area, from which fill, debris, and concrete culverts would be removed, would be revegetated with native plant species. While this alternative would result in greater temporary impacts to Escondido Creek than the Preferred Alternative, the condition of the existing road crossing and culverts would be improved.

#### **5.5 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD**

One alternative project was considered early in project development that would have expanded the treatment capability of the DCMWTP. The DCMWTP currently operates near capacity, treating water from the Second San Diego Aqueduct and the Olivenhain Reservoir. An agreement reached in December 2009 between SDCWA and the District will result in the transfer of water from Lake Hodges to the Olivenhain Reservoir. The District expects this action to result in a lowering of the water quality in the reservoir beyond the treatment capability of the DCMWTP. The District explored options for expanding its treatment capability, but the expansion project was estimated to cost in excess of \$100 million, and would result in substantial costs to the District for additional treatment processes, space, chemicals, and employees for the DCMWTP. The cost to the District and the rate increases that would have been necessary to pass on to customers made this project infeasible.

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## **CHAPTER 6.0 CUMULATIVE IMPACTS**

### **6.1 PRESENT AND REASONABLY FORESEEABLE PROJECTS**

The District has identified one project that is likely to occur within the construction timeframe of the proposed project. The District is the proponent of both projects.

#### **Elfin Forest Loop Pipeline Project**

The District has approved the construction of a new 12-inch pipeline that would extend from the SDCWA 01 connection point for approximately 1,600 feet within Elfin Oaks Road. A very short segment would be required in Elfin Forest Road to connect to an existing 12-inch pipeline at the intersection of Elfin Forest Road and Elfin Oaks Road. The new loop connection is required to promote circulation and provide back-up domestic and fire supply to service connections in the 30-inch pipeline the District operates between the SDCWA 01 connection and the District's Gaty Reservoir complex.

### **6.2 ENVIRONMENTAL EFFECTS**

The project discussed above involves similar construction methods as the proposed project. Trenching within paved and unpaved areas would cause similar environmental impacts related to noise, air quality, traffic circulation, and biological resources. However, this foreseeable project is expected to begin construction in fall 2010, and construction would be complete before the construction of the Unit AA pipeline in the same area. If the 12-inch pipeline cannot be completed prior to the Unit AA construction, then the District would reschedule the 12-inch pipeline construction window to avoid having both projects under construction in the same area at the same time. The project would, therefore, not result in cumulative impacts for any environmental impact type addressed in this document.

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## **CHAPTER 7.0**

### **OTHER CONSIDERATIONS REQUIRED BY CEQA**

#### **7.1 SIGNIFICANT ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED IF THE PROJECT IS IMPLEMENTED**

The mitigation and impact avoidance measures discussed in Chapter 3 of this document would minimize levels of environmental impact to less than significant. Temporary impacts from construction to traffic, noise, and air quality would not have long-term effects, and would not result in residual effects after construction is complete. Impacts to biological resources would be mitigated according to regional planning guidelines, and areas of direct impact to coastal sage scrub would be revegetated after construction is complete. Although some impacts to the environment would result from implementation of the proposed project, these impacts would be temporary and less than significant.

#### **7.2 GROWTH INDUCING IMPACTS**

The proposed project would not increase the District's capacity to deliver treated water to its customers. The pipeline would provide the District with an alternative source of raw water for use in the DCMWTP, and would allow the District to maintain its current levels of water distribution. No component of the project would induce growth.

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## CHAPTER 8.0 CLARIFICATIONS AND MODIFICATIONS

The following clarifications and modifications are intended to update the Draft EIR in response to the comments received during the public review period. These changes constitute the Final EIR, to be presented to the District's Board of Directors for certification and project approval. None of the changes to the Draft EIR would require recirculation of the EIR. Revisions made to the EIR have not resulted in new significant impacts or mitigation measures, nor has the severity of an impact increased. None of the CEQA criteria for recirculation have been met, and recirculation of the EIR is not warranted.

The changes to the Draft EIR are listed by section, page number, and paragraph number, if applicable. Text that has been removed is shown with a strikethrough line, while text that has been added is shown as underlined. All of the changes described in this section have also been made in the corresponding Final EIR sections. Please refer to Section 7.0, Response to Comments, for referenced comment letters and corresponding comments.

| <u>Page</u> | <u>Clarification/Revision</u> |
|-------------|-------------------------------|
|-------------|-------------------------------|

|      |   |
|------|---|
| ES-4 | <i>The following table was added to the end of the Executive Summary:</i> |
|------|---|

**Table ES-1  
Summary of Impacts and Mitigation Measures**

| <b>Potential Environmental Impacts</b>   | <b>Significance Determination</b> | <b>Mitigation Measures</b>  | <b>Level of Significance after Mitigation</b> |
|--|-----------------------------------|---|---|
| <b>LAND USE AND PLANNING</b>   |                                   |   |   |
| <b>LU-1</b> The proposed project would not physically divide an established community. No impact would occur.  | No impact                         | No mitigation measures are required.  | No impact                                     |
| <b>LU-2</b> The proposed project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect. No impact would occur. | No impact                         | No mitigation measures are required.  | No impact                                     |
| <b>LU-3</b> The proposed project would not conflict with any applicable habitat conservation plan or natural community conservation plan. Impacts would be less than significant.  | Less than significant             | Mitigation measures for impacts pursuant to the Natural Communities Conservation Plan (NCCP) process are contained in Section 3.6, Biological Resources, of this EIR. No mitigation measures for land use and planning are required.  | Less than significant                         |
| <b>TRAFFIC AND CIRCULATION</b>   |                                   |   |   |
| The proposed project would have no significant impacts associated with the study area intersections.   | Less than significant             | Even though there are no calculated significant impacts, the District would implement the following traffic control measures to minimize the interruption of traffic due to the proposed project: <ul style="list-style-type: none"> <li>• All construction that directly affects movement of traffic along any public street as a result of lane closures, realignments, detours, narrowing, or erection of barriers or other traffic control devices would be detailed in a traffic control plan in accordance with the Manual of Uniform for Traffic Control Devices (MUTCD) and County Standard Drawings and Department Instructions. The traffic control plan would be approved by the County of San Diego Public Works Division and would include appropriate signs and other warning devices in</li> </ul> | Less than significant                         |

| Potential Environmental Impacts  | Significance Determination | Mitigation Measures  | Level of Significance after Mitigation |
|--|----------------------------|--|--|
|  |                            | <p>advance of construction zones, as well as posted notices prior to commencement of construction.</p> <ul style="list-style-type: none"> <li>• Along Elfin Forest Road and Harmony Grove Road, a single lane of traffic would always be maintained and traffic would alternate on a single-lane road controlled by a flagger. Hand-signaling devices, such as STOP/SLOW paddles, lights, and red flags, would be used to control road users through temporary traffic control zones.</li> <li>• Flagger stations would be located far enough in advance of the work space so that approaching road users would have sufficient distance to stop before entering the work space. Based on MUTCD standards, 50 mph on Elfin Forest Road requires 425 feet.</li> <li>• During times when construction activity is not occurring, these roadways would be restored to their normal operating conditions.</li> <li>• Signs, notices, and other warning devices shall be posted to direct bikes and pedestrians to safe crossing locations in advance of the construction zones.</li> <li>• Access to residences, businesses, and institutions shall be maintained at all times during construction.</li> </ul> |  |
| The proposed project would have no significant impacts associated with the study area roadway segments.  | Less than significant      | See traffic control measures above.  | Less than significant                  |
| <b>AIR QUALITY</b>   |                            |  |  |
| <b>AQ-1</b> The proposed project would not result in a cumulatively considerable net increase of emissions of any criteria pollutant for which the project region is in nonattainment under applicable federal or state ambient air quality standards. Impacts would be less than significant. | Less than significant      | No mitigation measures are required.   | Less than significant                  |
| <b>AQ-2:</b> The project would not violate an air quality standard or contribute substantially to an existing or projected air quality violation. Impacts would be   | Less than significant      | No mitigation measures are required.   | Less than significant                  |

| Potential Environmental Impacts  | Significance Determination | Mitigation Measures   | Level of Significance after Mitigation |
|--|----------------------------|---|--|
| less than significant.   |                            |   |  |
| <b>AQ-3:</b> The project would not conflict with or obstruct implementation of the applicable air quality plan. No impact would occur.   | No impact                  | No mitigation measures are required.  | No impact                              |
| <b>AQ-4:</b> The project would not expose sensitive receptors to substantial pollutant concentrations. Impacts would be less than significant.   | Less than significant      | No mitigation measures are required.  | Less than significant                  |
| <b>AQ-5:</b> The project would not create objectionable odors affecting a substantial number of people. Impacts would be less than significant.  | Less than significant      | No mitigation measures are required.  | Less than significant                  |
| <b>NOISE</b>   |                            |   |  |
| <b>N-1:</b> The project would not expose persons to, or generate, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Impacts would be less than significant.   | Less than significant      | No mitigation measures are required.  | Less than significant                  |
| <b>N-2:</b> The project would not result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Impacts would be less than significant.  | Less than significant      | No mitigation measures are required.  | Less than significant                  |
| <b>N-3:</b> The project would not expose persons to, or generate, excessive groundborne vibration or groundborne noise levels. Impacts would be less than significant.   | Less than significant      | No mitigation measures are required.  | Less than significant                  |
| <b>HYDROLOGY AND WATER QUALITY</b>   |                            |   |  |
| <b>WQ-1:</b> Potential significant impacts could result from inadequate containment of sediment from grading, trenching, tunneling, or other construction operations. Impacts could also result from fuels associated with construction equipment, such as from leaks or during maintenance and fueling. In addition, equipment storage areas and trash receptacles could pose potential significant impacts to water quality if they are not properly managed | Significant                | <b>WQ-A:</b> To reduce potential water quality impacts during construction to a less-than-significant level, the District would implement water quality protection measures as detailed below, and would comply with the National Pollutant Discharge Elimination System (NPDES) General Construction Permit.<br>10. Prior to commencement of grading, and to obtain coverage under an NPDES General Permit for Construction Activity, the District (or its construction contractor) shall submit a Notice of Intent (NOI) to | Less than significant                  |

| <b>Potential Environmental Impacts</b> | <b>Significance Determination</b> | <b>Mitigation Measures</b>   | <b>Level of Significance after Mitigation</b> |
|--|-----------------------------------|--|---|
| and maintained.                        |                                   | <p>prepare a Storm Water Pollution Prevention Plan (SWPPP) that incorporates all conditions of the permit.</p> <p>11. Prior to commencement of grading, the SWPPP shall be completed, and shall detail proposed methods to preclude runoff and contaminants from leaving the construction site. The SWPPP shall include forms and maps for the documentation of all compliance and noncompliance of construction activities, and shall remain on-site for 3 years after the Regional Water Quality Control Board (RWQCB) acceptance of the Notice of Termination (NOT).</p> <p>12. The manager for the construction contractor shall be responsible for implementing and maintaining the SWPPP.</p> <p>13. Prior to commencement of grading and as part of the SWPPP, the District shall cause the preparation of an erosion control plan for the construction phase. The plan shall ensure that all erosion and runoff control measures are in place prior to major grading activities, and that exposed slopes and graded areas are protected throughout construction. Best management practices (BMPs) shall include the short-term use of silt fences, gravel bags, fiber rolls, erosion control blankets, and/or similar devices. Any erosion and runoff control measures proposed within Sage Hill Preserve shall be coordinated with the Department of Parks and Recreation (DPR) District Park Manager.</p> <p>14. All soils to be stockpiled shall be protected from erosion and sediment runoff at all times. Stockpiles shall be protected through the use of gravel bags or similar mechanisms near the base of the piles and covered with secured tarps or tackifiers.</p> <p>15. Stockpiles, refueling activities, and storage areas of hazardous materials (e.g., fuels, lubricants, solvents, and other potential contaminants) shall be located only at</p> |   |

| Potential Environmental Impacts  | Significance Determination                   | Mitigation Measures  | Level of Significance after Mitigation |
|--|--|--|--|
|  |  | <p>predesignated sites with adequate pollution control. Pre-designated sites for stockpiles, refueling activities, and storage areas of hazardous materials shall be located outside of Sage Hill Preserve.</p> <p>16. Prior to commencement of grading, and as a part of the SWPPP, the District (or its construction contractor) shall prepare a construction spill contingency plan in accordance with County Department of Environmental Health regulations.</p> <p>17. Exposed slopes shall be appropriately stabilized according to the SWPPP after completion of site grading. Stabilization of any exposed slopes within Sage Hill Preserve shall be coordinated with the DPR District Park Manager.</p> <p>18. Native vegetation shall be preserved, wherever feasible, for immediate replacement on disturbed areas following grading. Native topsoil shall be stockpiled and reapplied as part of site reclamation.</p> |  |
| <p><b>WQ-2:</b> The normal operation of the proposed pipeline would result in less-than-significant impacts to water quality. The portions of the pipeline located beneath paved roadway would not result in any increase of impervious surfaces that could contribute to storm water runoff. The portions of pipeline outside of the paved roadway would require removal of vegetation, resulting in increased soil exposure. However, the cleared areas would be revegetated after completion of construction.</p> | <p>Less than significant</p>                 | <p>No mitigation measures are required.</p>  | <p>Less than significant</p>           |
| <b>BIOLOGICAL RESOURCES</b>  |  |  |  |
| <p><b>BIO-1:</b> The proposed project would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species. Impacts would be less than significant with mitigation.</p>   | <p>Less than significant with mitigation</p> | <p>The following design features and mitigation measures would reduce temporary biological impacts from the proposed project.</p> <p><b>BIO-A:</b> A project biologist will review grading plans, oversee all aspects of construction monitoring that pertain to biological resource protection, and ensure compliance</p>   | <p>Less than significant</p>           |

| Potential Environmental Impacts | Significance Determination | Mitigation Measures   | Level of Significance after Mitigation |
|---------------------------------|----------------------------|---|--|
|                                 |                            | <p>with both the general and specific mitigation measures for the Raw Water Pipeline Project.</p> <p><b>BIO-B:</b> All sensitive habitat areas or occurrences of sensitive species to be avoided will be clearly marked on project maps. These areas will be designated as “no construction” or “limited construction” zones. These areas will be flagged by the project biologist and reviewed with the project engineer prior to the onset of construction activities. If needed, resources will be fenced or otherwise protected from direct and indirect impacts.</p> <p><b>BIO-C:</b> Construction will occur during the dry season, when feasible, using silt fences, sandbags, detention basins, and any other appropriate measures to avoid direct and indirect impacts to wetlands.</p> <p><b>BIO-D:</b> A contractor education program will be implemented to ensure that contractors and all construction personnel are fully informed of the biological sensitivities associated with the project.</p> <p><b>BIO-E:</b> Fueling areas will be designated on construction maps and will be situated a minimum of 50 feet from all drainages. All fueling areas shall be located outside of the Sage Hill Preserve.</p> <p><b>BIO-F:</b> To the extent possible, construction through sensitive areas will be appropriately scheduled to minimize potential impacts to biological resources. Construction adjacent to drainages will occur during periods of minimum flow (i.e., summer through the first significant rain of fall) to avoid excessive sedimentation and erosion, and to avoid impacts to</p> |  |

| Potential Environmental Impacts | Significance Determination | Mitigation Measures   | Level of Significance after Mitigation |
|---------------------------------|----------------------------|---|--|
|                                 |                            | <p>drainage-dependent species. Construction near riparian or other wetland areas will also be scheduled to avoid potential impacts to sensitive riparian bird species.</p> <p><b>BIO-G:</b> Setback limitations from all habitat, trees, and sensitive plant locations meant to be preserved will be established by a qualified biologist prior to construction. Construction corridor widths will be minimized to the extent feasible in sensitive areas (e.g., oak woodlands, coastal sage scrub, and wetlands). Setback limitations within Sage Hill Preserve shall be coordinated with the DPR Resource Management Division.</p> <p><b>BIO-H:</b> Pipeline installation, as proposed, requires no trenching across watercourses. Instead, by tunneling under creeks and culverts, pipeline construction will avoid impacts to jurisdictional waters as defined by the U.S. Army Corps of Engineers (USACE), the California Department of Fish and Game (CDFG), and the County.</p> <p><b>BIO-I:</b> The project will incorporate the following design features to minimize noise generated from construction activities:</p> <ul style="list-style-type: none"> <li>• Noise analyses will be performed during construction activities adjacent to sensitive habitats or potential active nests. If necessary, temporary noise attenuation barriers will be erected to reduce construction-related noise to below 60 A-weighted decibels (dBA) hourly <math>L_{eq}</math>. Any proposed noise attenuation barriers within Sage Hill Preserve shall be coordinated with the DPR District Park Manager.</li> </ul> |  |

| Potential Environmental Impacts | Significance Determination | Mitigation Measures  | Level of Significance after Mitigation |
|---------------------------------|----------------------------|--|--|
|                                 |                            | <ul style="list-style-type: none"> <li>• Heavy equipment will be repaired as far as practical from habitats where nesting birds may be present. No heavy equipment shall be repaired within Sage Hill Preserve.</li> <li>• Construction equipment, including generators and compressors, will be equipped with manufacturers' standard noise control devices or better (e.g., mufflers, acoustical lagging, and/or engine enclosures).</li> <li>• The construction contractor will maintain all construction vehicles and equipment in proper operating condition and provide mufflers on all equipment.</li> </ul> <p><b>BIO-J:</b> The project design will incorporate features to minimize the potential for pests and exotic species establishment by installing fencing between the proposed project site and adjacent open space areas to restrict encroachment into biologically sensitive areas. Any proposed fencing within Sage Hill Preserve shall be temporary and coordinated with the DPR District Park Manager.</p> <p><b>BIO-K:</b> Several general construction BMPs will be implemented to avoid and minimize impacts to natural communities of special concern, special-status plants, and special-status animals:</p> <ol style="list-style-type: none"> <li>1. Construction limits – The contractor(s) will be informed, prior to the bidding process, about the biological constraints of this project. The construction limits will be clearly marked on project maps provided to the contractor(s) and areas outside of the construction limits will be designated as “no construction” zones.</li> <li>2. Equipment staging/Storage/Fueling restrictions –</li> </ol> |  |

| Potential Environmental Impacts | Significance Determination | Mitigation Measures   | Level of Significance after Mitigation |
|---------------------------------|----------------------------|---|--|
|                                 |                            | <p>No equipment staging and refueling areas will be located at the construction site outside of designated staging areas. Moreover, staging/storage areas for construction equipment and materials will be located away from sensitive biological resources that are not approved for project impact, and no equipment maintenance will be performed near drainages to minimize the potential for pollution runoff. Staging/storage areas shall be located outside the Sage Hill Preserve. Additionally, no heavy equipment maintenance shall be performed in the Sage Hill Preserve.</p> <p>3. Soil stockpiles – Soils from construction grading will be stockpiled either on portions of the proposed project site where direct impacts are approved or at an off-site location approved by the County and the resource agencies. Stockpiled soils must be located and piled in a manner that will avoid potential erosion and sedimentation into downstream drainages, swales, or vernal pool habitat. Any soil stockpiles proposed within the Sage Hill Preserve shall be coordinated with the DPR District Park Manager.</p> <p>4. Construction debris – Project construction areas will be kept as clean of debris as possible to avoid attracting predators of native wildlife. Spoils, trash, or any debris will be removed off-site to an approved disposal facility.</p> <p>5. Fugitive dust – Construction-related fugitive dust will be minimized by incorporating appropriate reasonably available control measures to minimize fugitive dust emissions, as outlined in an approved dust control plan specific to the proposed construction activities. The dust control plan will</p> |  |

| Potential Environmental Impacts | Significance Determination | Mitigation Measures   | Level of Significance after Mitigation |
|---------------------------------|----------------------------|---|--|
|                                 |                            | <p>consider and/or incorporate the application of water, use of wind screens, and other applicable methods appropriate to the site, and in consideration of the sensitive biological resources that exist adjacent to and downstream of the site.</p> <p>6. Construction fencing – To prevent accidental egress by construction equipment or workers onto preserved lands adjacent the proposed project site, construction fencing will be installed along the entire northern boundary of the County-owned portion of the proposed project site, the northern boundary of the western private parcel, and the portion of the County-owned parcel’s eastern boundary that connects these two northern borders. Any proposed construction fencing within Sage Hill Preserve shall be temporary and coordinated with the DPR District Park Manager.</p> <p><b>BIO-L:</b> To provide the District with the latitude in the future for impacts within the right-of-way without future mitigation requirements, all temporary impacts will be mitigated as though they were permanent impacts consistent with applicable mitigation ratios. Where project impacts occur outside approved Multiple Species Conservation Program (MSCP) plan areas, mitigation ratios will be consistent with ratios presented in the County guidelines. Where project impacts occur within the South County MSCP Plan area, mitigation ratios will be consistent with the MSCP Biological Mitigation Ordinance (BMO) mitigation requirements. The 0.21-acre of Diegan coastal sage scrub that would be permanently impacted within the Preferred Alternative at the Sage Hill Preserve if the access road for the flow control facility is located at the Second San Diego Aqueduct</p> |  |

| Potential Environmental Impacts   | Significance Determination                   | Mitigation Measures   | Level of Significance after Mitigation |
|---|--|---|--|
|   |  | <p>will be mitigated per the County guidelines. Mitigation will include a 1:1 ratio of revegetation on-site according to the County guidelines and the MSCP BMO. The remainder of the required mitigation will be accomplished through off-site habitat acquisition or preservation. Any proposed revegetation work within Sage Hill Preserve or adjacent to the Mendocino property shall use native plants and the planting palette shall be pre-approved by the DPR Resource Management Division.</p> <p><b>BIO-M:</b> Construction activities will occur outside of the nesting season when feasible. If construction is to occur during the nesting season, a nesting bird survey will be completed by a qualified biologist no more than 30 days prior to construction.</p> <p><b>BIO-N:</b> Construction activities will take place during daylight hours to prevent impacts to wildlife species due to night lighting.</p> |  |
| <p><b>BIO-2:</b> The proposed project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFG or the U.S. Fish and Wildlife Service (USFWS). Impacts would be less than significant with mitigation.</p> | <p>Less than significant with mitigation</p> | <p>See mitigation measures BIO-A through BIO-N above.</p>   | <p>Less than significant</p>           |
| <p><b>BIO-3:</b> The proposed project would not have a substantial adverse effect on federally protected wetlands through direct removal, filling, hydrological interruption, or other means. No impact would occur as a result of the proposed project.</p>  | <p>No impact</p>                             | <p>No mitigation measures are required.</p>   | <p>No impact</p>                       |
| <p><b>BIO-4:</b> The proposed project would not interfere substantially with the movement of any native</p>   | <p>Less than significant</p>                 | <p>See mitigation measures BIO-A through BIO-K above.</p>   | <p>Less than significant</p>           |

| <b>Potential Environmental Impacts</b>   | <b>Significance Determination</b>     | <b>Mitigation Measures</b>   | <b>Level of Significance after Mitigation</b> |
|--|---------------------------------------|--|---|
| resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. Impacts would be less than significant with mitigation.  |                                       |  |   |
| <b>BIO-5:</b> The proposed project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. No impact would occur.   | No impact                             | No mitigation measures are required.   | No impact                                     |
| <b>BIO-6:</b> The proposed project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Program (NCCP), or other approved local, regional, or state habitat conservation plan. Impacts would be less than significant with mitigation.   | Less than significant with mitigation | See mitigation measures BIO-A through BIO-N above.   | Less than significant                         |
| <b>CULTURAL AND PALEONTOLOGICAL RESOURCES</b>  |                                       |  |   |
| <b>CUL-1:</b> The proposed project would not cause a substantial adverse change in the significance of a historical, archaeological, paleontological, or geologic resource. The proposed project would not disturb any human remains, including those interred outside of formal cemeteries. Impacts would be less than significant.   | Less than significant                 | No mitigation measures are required. However, if construction activities reveal buried cultural resources, all construction work would be stopped and diverted a safe distance from the location, and a qualified archaeologist would be contacted to evaluate the significance of the resource. | Less than significant                         |
| <b>GEOLOGY AND SOILS</b>   |                                       |  |   |
| <b>GEO-1:</b> The proposed project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving the rupture of a known earthquake fault, strong seismic ground shaking, or seismic-related ground failure, including liquefaction and landslides. The proposed project is also not located on expansive soils or a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off- | Less than significant                 | No mitigation measures are required.   | Less than significant                         |

| <b>Potential Environmental Impacts</b>  | <b>Significance Determination</b> | <b>Mitigation Measures</b>           | <b>Level of Significance after Mitigation</b> |
|---|-----------------------------------|--------------------------------------|---|
| site landslide, lateral spreading, subsidence, liquefaction, or collapse. Impacts would be less than significant.   |                                   |                                      |   |
| <b>GEO-2:</b> The proposed project would not result in substantial soil erosion, loss of topsoil, or changes in topography or unstable soil conditions from excavation, grading, or fill. Impacts would be less than significant.   | Less than significant             | No mitigation measures are required. | Less than significant                         |
| <b>GEO-3:</b> The proposed project would not have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater. No impacts would occur.  | No impact                         | No mitigation measures are required. | No impact                                     |
| <b>PUBLIC SAFETY AND HAZARDOUS MATERIALS</b>  |                                   |                                      |   |
| <b>HAZ-1:</b> The proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, nor would it create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. The impacts would be less than significant. | Less than significant             | No mitigation measures are required. | Less than significant                         |
| <b>HAZ-2:</b> The proposed project would not emit or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school. No impact would occur.   | No impact                         | No mitigation measures are required. | No impact                                     |
| <b>HAZ-3:</b> The proposed project would not be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65965.5 and would not create a significant hazard to the public or the environment. No impact would occur.   | No impact                         | No mitigation measures are required. | No impact                                     |
| <b>HAZ-4:</b> If the proposed project is located within an airport land use plan or within 2 miles of a public  | No impact                         | No mitigation measures are required. | No impact                                     |

| <b>Potential Environmental Impacts</b>  | <b>Significance Determination</b> | <b>Mitigation Measures</b>           | <b>Level of Significance after Mitigation</b> |
|---|-----------------------------------|--------------------------------------|---|
| airport or private airstrip, the proposed project would not result in a safety hazard for people residing or working in the project area. No impact would occur.  |                                   |                                      |   |
| <b>HAZ-5:</b> The proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. No impact would occur.  | No impact                         | No mitigation measures are required. | No impact                                     |
| <b>HAZ-6:</b> The proposed project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. The impact would be less than significant.  | Less than significant             | No mitigation measures are required. | No impact                                     |
| <b>PUBLIC SERVICES AND UTILITIES</b>  |                                   |                                      |   |
| <b>PSU-1:</b> The proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered fire or police protection facilities in order to maintain acceptable service ratios, response times, or other performance objectives. Impacts would be less than significant.  | Less than significant             | No mitigation measures are required. | Less than significant                         |
| <b>PSU-2:</b> The proposed project would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board (RWQCB), require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects, or result in a determination by the wastewater treatment provider that serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments. No impact would occur. | No impact                         | No mitigation measures are required. | No impact                                     |

| <b>Potential Environmental Impacts</b>   | <b>Significance Determination</b> | <b>Mitigation Measures</b>           | <b>Level of Significance after Mitigation</b> |
|--|-----------------------------------|--------------------------------------|---|
| <b>PSU-3:</b> The proposed project would not require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. Impacts would be less than significant.  | Less than significant             | No mitigation measures are required. | Less than significant                         |
| <b>PSU-4:</b> The proposed project would have sufficient water supplies available to serve the project from existing entitlements and resources. Impacts would be less than significant.   | Less than significant             | No mitigation measures are required. | Less than significant                         |
| <b>PSU-5:</b> The proposed project would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs and comply with federal, state, and local statutes and regulations related to solid waste. Impacts would be less than significant.   | Less than significant             | No mitigation measures are required. | Less than significant                         |
| <b>PSU-6:</b> The proposed project would not require or result in the construction of new electricity, natural gas, or telecommunication facilities, or expansion of existing facilities, and would have sufficient electricity, natural gas, or telecommunication supplies available from the local provider to serve the project from existing entitlements and resources. Impacts would be less than significant. | Less than significant             | No mitigation measures are required. | Less than significant                         |

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Page      Clarification/Revision

2-1      *The last sentence of the last paragraph has been revised as follows:*

The Southern Alternative is addressed in Chapter ~~6~~ 5 – Alternatives.

2-5      *The last sentence of the first paragraph has been revised as follows:*

These alternatives, along with the No Project Alternative, are addressed in detail in Chapter ~~6~~ 5.

2-5      *The first paragraph under 2.2.1 Project Components has been revised as follows:*

The Preferred Alternative begins on the north side of Elfin Forest Road in a portion of the Sage Hill Preserve where the road crosses the Second San Diego Aqueduct. An underground connection would join the Unit AA pipeline to the Second San Diego Aqueduct. The Unit AA pipeline would be placed within public right-of-way following Elfin Forest Road to the southeast. The public road right-of-way would be used in coordination with the County of San Diego. At the intersection where Elfin Forest Road transitions to Harmony Grove Road, the relocated 10-inch distribution pipeline would be constructed parallel with the Unit AA pipeline. The portion of the 10-inch pipeline extending south of the intersection would be abandoned. Approximately 300 feet northeast of the intersection, the two pipelines would turn southeast and continue through a disturbed paved area. The pipelines would follow a dirt roadway for approximately 200 feet where the pipelines would transition to a single tunnel passing underneath Escondido Creek for approximately 160 feet. After surfacing southeast of Escondido Creek, the pipelines would transition back to parallel trenches, and would pass under the City of Escondido's sewer outfall. Pipeline installation under the sewer outfall may also be completed using tunnel construction; trenches would be constructed east of the sewer outfall. The trenches would accommodate the pipelines along an existing easement and dirt road until intersecting Via Ambiente. Along Via Ambiente, the 10-inch pipeline would reconnect to the existing 10-inch distribution line, and the Unit AA pipeline would continue in a trench to the DCMWTP. All work is anticipated to be conducted within the County right-of-way.

2-11      *The second sentence under the 2.2.2 Project Schedule subheading has been modified as follows:*

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Work would be conducted on weekdays between 7:00 a.m. and 4:00 5:00 p.m.

3.1-1 *The first paragraph under the Surrounding Land Uses subheading has been modified as follows:*

The San Dieguito Community Plan Area, which encompasses approximately 30,000 acres, is primarily a low-density, estate residential area consisting of properties measuring 2 to 4 acres. The project area is mainly surrounded by the estate residential communities of Elfin Forest and Harmony Grove, and the Questhaven Retreat. The cities of Encinitas and Solana Beach border the project area to the west, Carlsbad and San Marcos to the north, Escondido to the east, and the City of San Diego to the south. The San Dieguito Community Plan Area includes the communities of Elfin Forest, Del Dios, Mt. Israel, Rancho Santa Fe, Whispering Palms, and Fairbanks Ranch, and the Ecke Agricultural Preserve. The Community Plan Area also includes Sage Hill Preserve and the Mendocino property. Sage Hill Preserve (Preserve) is a 235-acre area located in the Elfin Forest community that is managed by the County of San Diego's Parks and Recreation Department. The Preserve was acquired in 2009 for inclusion in the North County Multiple Species Conservation Program (NCMSCP) preserve system (County of San Diego 2010). The Mendocino property is a 39-acre area that has been identified by the County for addition to the Escondido Creek Preserve.

3.2-4 *The last paragraph has been modified as follows:*

The project would generate traffic that would be a mix of daily employee trips in personal vehicles and truck traffic delivering materials and equipment. A typical day during the peak of the construction period would include a 12-person pipeline crew and three trucks per construction front. Assuming a maximum of three construction fronts, up to 36 employees may be simultaneously installing pipeline, supported by nine trucks. Several administrative staff members are assumed to be present, as well. Most employee trips are assumed to occur during normal commuter peak hours. Truck traffic was assumed to be spread evenly throughout the work day. Table 3.2-1 shows the total project traffic generation. The project is calculated to generate 180 ADTs under these conditions. A typical day would likely have less than three fronts under construction and, therefore, would generate less than 180 ADTs. It is the intent of the District to have only one area of construction-impacted traffic on Elfin Forest Road at any one time. If more than one area of construction is deemed necessary, the District will work with the community to minimize impacts.

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3.2-8 *The first bullet point addressing traffic control measures has been revised as follows:*

- All construction that directly affects movement of traffic along any public street as a result of lane closures, realignments, detours, narrowing, or erection of barriers or other traffic control devices would be detailed in a traffic control plan in accordance with the Manual of Uniform for Traffic Control Devices (MUTCD) and County Standard Drawings and Department Instructions. The traffic control plan would be approved by the County of San Diego Public Works Division and would include appropriate signs and other warning devices in advance of construction zones, as well as posted notices prior to commencement of construction. Notices will be posted at the beginning and terminus of Elfin Forest Road and Harmony Grove Road in the cities of San Marcos and Escondido.

3.5-1 *The impacts to water quality have been labeled as follows:*

Impacts to water quality from the proposed project could occur from construction or operation activities.

WQ-1 Construction

Potential significant impacts could result from inadequate containment of sediment from grading, trenching, tunneling, or other construction operations. Impacts could also result from fuels associated with construction equipment, such as from leaks or during maintenance and fueling. In addition, equipment storage areas and trash receptacles could pose potential significant impacts to water quality if they are not properly managed and maintained.

WQ-2 Operations

The normal operation of the proposed pipeline would result in less-than-significant impacts to water quality. The portions of the pipeline located beneath paved roadway would not result in any increase of impervious surfaces that could contribute to storm water runoff. The portions of pipeline outside of the paved roadway would require removal of vegetation, resulting in increased soil exposure. However, the cleared areas would be revegetated after completion of construction.

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3.5-2 *The mitigation measures for water quality impacts have been modified as follows:*

**WO-A** To reduce potential water quality impacts during construction to a less-than-significant level, the District would implement water quality protection measures as detailed below, and would comply with the National Pollutant Discharge Elimination System (NPDES) General Construction Permit.

1. Prior to commencement of grading, and to obtain coverage under an NPDES General Permit for Construction Activity, the District (or its construction contractor) shall submit a Notice of Intent (NOI) to prepare a Storm Water Pollution Prevention Plan (SWPPP) that incorporates all conditions of the permit.
2. Prior to commencement of grading, the SWPPP shall be completed and shall detail proposed methods to preclude runoff and contaminants from leaving the construction site. The SWPPP shall include forms and maps for the documentation of all compliance and noncompliance of construction activities, and shall remain on-site for 3 years after the RWQCB acceptance of the Notice of Termination (NOT).
3. The manager for the construction contractor shall be responsible for implementing and maintaining the SWPPP.
4. Prior to commencement of grading and as part of the SWPPP, the District shall cause the preparation of an erosion control plan for the construction phase. The plan shall ensure that all erosion and runoff control measures are in place prior to major grading activities, and that exposed slopes and graded areas are protected throughout construction. BMPs shall include the short-term use of silt fences, gravel bags, fiber rolls, erosion control blankets, and/or similar devices. Any erosion and runoff control measures proposed within Sage Hill Preserve shall be coordinated with the DPR District Park Manager.
5. All soils to be stockpiled shall be protected from erosion and sediment runoff at all times. Stockpiles shall be protected through the use of gravel bags or similar mechanisms near the base of the piles and covered with secured tarps or tackifiers.

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6. Stockpiles, refueling activities, and storage areas of hazardous materials (e.g., fuels, lubricants, solvents, and other potential contaminants) shall be located only at pre-designated sites with adequate pollution control. Pre-designated sites for stockpiles, refueling activities, and storage areas of hazardous materials shall be located outside of Sage Hill Preserve.
  7. Prior to commencement of grading, and as a part of the SWPPP, the District (or its construction contractor) shall prepare a construction spill contingency plan in accordance with County Department of Environmental Health regulations.
  8. Exposed slopes shall be appropriately stabilized according to the SWPPP after completion of site grading. Stabilization of any exposed slopes within Sage Hill Preserve shall be coordinated with the DPR District Park Manager.
  9. Native vegetation shall be preserved, wherever feasible, for immediate replacement on disturbed areas following grading. Native topsoil shall be stockpiled and reapplied as part of site reclamation.

3.6-1 *The last sentence of first paragraph under 3.6 has been revised as follows:*

This section is based on the *Biological Resource Report for the Proposed Olivenhain Municipal Water District Raw Water Pipeline Project from the Second San Diego Aqueduct to the David C. McCollom Water Treatment Plant* (AECOM ~~2009a~~ 2010a).

3.6-1 *The second and third paragraphs under 3.6.1 have been revised as follows:*

Portions of the Preferred and Southern alternatives are located within the County's proposed North County Multiple Species Conservation Program (NCMSCP), the Multiple Habitat Conservation Program (MHCP), and also within the approved South County Multiple Species Conservation Program (SCMSCP) (Figure 3.6-1). The proposed project is within lands designated as Pre-Approved Mitigation Areas (PAMAs) within the NCMSCP, and additional preserve areas surround the proposed project site. The project is also within pre-negotiated (hardlined) Take Authorized Areas per the NCMSCP. In addition, one NCMSCP Open Space Easement exists on the northern perimeter of the proposed project site. The NCMSCP meets the northern boundary of the SCMSCP in the eastern portion of the proposed project site. This portion includes both SCMSCP Hardline Preserve and Take Authorized Areas

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(Figure 3.6-1). Portions of the preferred alignment also fall within the 235-acre Sage Hill Preserve, which is managed by the County of San Diego's Parks and Recreation Department.

Biological reconnaissance for the proposed project began in September 2009 until July 2010. Biological surveys and investigations conducted for the proposed project include a biological reconnaissance survey, vegetation mapping, focused rare plant surveys, jurisdictional wetlands delineation, protocol nonbreeding season coastal California gnatcatcher (CAGN) surveys (*Poliioptila californica californica*), protocol breeding season surveys for least Bell's vireo (*Vireo bellii pusillus*; LBV), and protocol breeding season surveys for the southwestern willow flycatcher (*Empidonax traillii extimus*; SWFL). Biological surveys for the proposed project were ~~initiated~~ completed by AECOM in September 2009 ~~and are ongoing in~~ until July 2010. ~~Completed survey results will be included in the final EIR.~~ Prior to field surveys, a query of the CDFG California Natural Diversity Database (CNDDDB) was conducted to determine which sensitive species have the potential to occur within the proposed project site. All surveys were conducted on foot to cover all areas of the proposed project site and in accordance with USFWS and CDFG guidelines. The biological surveys focused on specific areas within a 602.78-acre survey area that includes both alignments. A 71.01-acre overlap exists between the two alignments and is only accounted for once in the survey area total acreage. The Preferred Alternative survey area totals 414.35 acres and the Southern Alternative alignment survey area totals ~~188.43~~ 330.42 acres. This includes an area extending 100 feet out from the project corridor totaling approximately ~~126.84~~ 135.0 acres. The survey area also includes an area extending 500 feet beyond the project corridor totaling approximately ~~530.18~~ 592.78 acres. In addition to the 100-foot and 500-foot survey areas, both alignments contain a "project corridor" varying in width from 20 to 40 feet that encompasses the actual pipeline placements where direct impacts will occur (Figure 3.6-1). The sensitive vegetation communities and species and regulated waters that were detected within and adjacent to the proposed project corridor during these surveys are summarized below.

- 3.6-9 *The fourteen vegetation communities have been reordered and categorized under Riparian and Wetlands, Uplands, and Other Types to be consistent with the Biological Resources Report.*

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3.6-15 *The third and fourth paragraphs under Sensitive Plant Species have been revised as follows:*

Most wetlands and riparian oak woodlands are considered Tier I vegetation communities per the County, the draft NCMSCP, and the SCMSCP. Therefore, five wetland habitats within the project area are considered Tier I communities: freshwater seep, southern arroyo willow riparian forest, mulefat scrub, southern willow scrub, and dense coast live oak woodland. In addition, the upland valley needlegrass grassland habitat is also considered a Tier I community by the County, the draft NCMSCP, and the SCMSCP. Diegan coastal sage scrub is considered a Tier II nonnative grassland; southern mixed chaparral is considered Tier III; and eucalyptus woodland and ~~orchards/vineyards~~ ornamental plantings are considered Tier IV communities per the County, the draft NCMSCP, and the SCMSCP. Lastly, urban/developed lands are considered a Tier IV community per the draft NCMSCP. The southern willow scrub, freshwater seep, southern arroyo willow riparian forest, and mulefat scrub are regulated by USACE, the Regional Water Quality Control Board (RWQCB), and CDFG. Only impacts to habitats within Tiers I through III warrant mitigation.

Focused surveys for sensitive plants were conducted for the proposed project on September 14 and 15, and November 12, 2009. ~~Five~~ Six sensitive plant species were detected during the sensitive plant survey within the Preferred and Southern Alternatives: San Diego sagewort (*Artemisia palmeri*), wart-stemmed ceanothus (*Ceanothus verrucosus*), summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*), San Diego marsh-elder (*Iva hayesiana*), ~~and~~ Southwestern spiny rush (*Juncus acutus* spp. *leopoldii*), and California adolphia (*Adolphia californica*). Figure 3.6-3 shows the location of the sensitive plant species observed during the focused surveys.

3.6-16 *The second through fourth paragraphs under Sensitive Wildlife Species have been revised as follows:*

Common birds observed within and adjacent to the proposed project site include western meadowlark (*Sturnella neglecta*), American crow (*Corvus brachyrhynchos hesperis*), mourning dove (*Zenaida macroura marginella*), house finch (*Carpodacus mexicanus frontalis*), Anna's hummingbird (*Calypte anna*), California towhee (*Pipilo crissalis*), bushtit (*Psaltriparus minimus*), white-crowned sparrow (*Zonotrichia leucophrys*), California thrasher (*Toxostoma redivivum*), wrenit (*Chamaea fasciata*), and Bewick's wren (*Thryomanes bewickii*). Several sensitive bird species were observed foraging within the proposed project site, including the Southern California

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rufous-crowned sparrow (*Aimophila ruficeps*), Bell's sage sparrow (*Amphispiza belli belli*), ~~Belding's savannah sparrow (*Passerculus sandwichensis*)~~, Cooper's hawk (*Accipiter cooperii*), northern harrier (*Circus cyaneus*), white-tailed kite (*Elanus leucurus*), ~~and CAGN. LBV, yellow warbler (*Dendroica petechia brewsteri*), yellow-breasted chat (*Icteria virens*), SWFL, and CAGN.~~ Figure 3.6-4 shows the location of the sensitive wildlife species observed during the focused surveys.

Cottontail rabbit (*Sylvilagus audubonii*), Botta's pocket gopher (*Thomomys bottae*), raccoon (*Procyon lotor*), southern mule deer (*Odocoileus hemionus*), and woodrat (*Neotoma* sp.) were observed or detected during surveys in 2009. Several sensitive wildlife species, including southern mule deer (*Odocoileus hemionus*), Belding's orangethroated whiptail (*Aspidoscelis hyperythrus beldingi*), and coastal western whiptail (*Aspidoscelis tigris stejnegeri*), were observed within the proposed project site.

Additionally, according to CNDDDB occurrence records, the closest occurrences of the Hermes copper butterfly were recorded in 2003 and are approximately 16 miles south and more than 50 miles north of the project site (see Figure 3.6-5). However, according to a paper published by Daniel A. Marschalek and Michael W. Klein Sr. in the *Journal of Insect Conservation* (2010), there are two extant occurrences near Escondido and Cielo creeks.

3.6-23 *The first paragraph under Wetlands and Jurisdictional Waters has been revised as follows:*

There are ~~2.37~~ 0.18 acre of potential jurisdictional waters that occur within the ~~two alternative pipeline alignments, and an additional 3.96 acres of potential jurisdictional waters within proposed project site and~~ the associated 100-foot adjoining survey areas (see Figure ~~3.6-5~~ 3.6-6). The proposed project site and associated 100-foot adjoining survey area support ~~four~~ five types of potential federal and/or state regulated waters: ~~mulefat scrub~~ coastal and valley freshwater marsh; southern arroyo willow riparian forest; southern willow scrub; ~~and~~ southern riparian woodland; and ~~other waters~~ disturbed wetland associated with Misha Creek, Escondido Creek, and additional unnamed drainages. All of the water types are under both federal and state jurisdiction with the exception of southern riparian scrub, which is a state-only water type. The features adjacent to Elfin Forest Road are unobstructed via culverts, which ultimately discharge into Escondido or Misha creeks (creating a significant nexus to the Pacific Ocean through indirect tributary flow).

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3.6-23 *Figure 3.6-5, Hermes Copper Butterfly Occurrences in Project Vicinity, has been added to Section 3.6 Biological Resources of the Final EIR.*

3.6-31 *The second and third paragraphs under 3.6.3, BIO-1 has been revised as follows:*

~~Nine~~ Thirteen wildlife species were observed within the Preferred Alternative during surveys: southwestern willow flycatcher, least Bell's vireo, CAGN, Southern California rufous-crowned sparrow, Bell's sage sparrow, ~~Belding's savannah sparrow~~, Cooper's hawk, northern harrier, ~~and~~ white-tailed kite, yellow warbler, yellow breasted chat, southern mule deer, Belding's orange-throated whiptail, and coastal western whiptail. Suitable nesting habitat for CAGN, Southern California rufous-crowned sparrow, Bell's sage sparrow, and least Bell's vireo, ~~and Belding's savannah sparrow~~ is present within the proposed project site. Impacts to Diegan coastal sage scrub will directly impact CAGN. Impacts to Diegan coastal sage scrub and southern mixed chaparral will directly impact Southern California rufous-crowned sparrow and Bell's sage sparrow. ~~Impacts to nonnative grassland will directly impact Belding's savannah sparrow.~~ While a northern harrier was observed, it was likely foraging within the proposed project site, but not nesting. A southwestern willow flycatcher observed during wildlife surveys was likely a migrant, and did not appear to be nesting near the project area. Nesting habitat for the white-tailed kite and Cooper's hawk includes coast live oak woodland, eucalyptus woodland, and southern arroyo willow riparian forest. In addition, southern arroyo willow riparian forest provides suitable nesting habitat for the least Bell's vireo, which was observed near the project area. While the southern mule deer occupies almost all types of habitat within its range, it prefers arid, open areas and rocky hillsides. For the Belding's orange-throated whiptail, suitable habitat occurs within the sparse coastal sage and chamise chaparral habitat types. Suitable habitat for the western whiptail occurs mainly within the open areas associated with Diegan coastal sage scrub, but also within the grassland areas. The impacts to the habitat types suitable for the wildlife species described above are minimal and, therefore, would not impact the long-term survival of the local populations of these species. Additionally, implementation of mitigation measures BIO-A through BIO-N, which includes scheduling the construction period outside of the bird nesting season to avoid impacting nesting success of sensitive bird species, would ensure a less-than-significant impact.

As previously stated, the closest occurrences of the Hermes copper butterfly are approximately 16 miles south and more than 50 miles north of the project site

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(recorded in 2003), according to CNDDDB occurrence records. However, according to a paper published by Daniel A. Marschalek and Michael W. Klein Sr. in the *Journal of Insect Conservation* (2010), two extant occurrences occur near Escondido and Cielo creeks. Hermes copper inhabits Diegan coastal sage scrub in San Diego County, and its host plant is spiny redberry (*Rhamnus crocea*). A total of 0.46 acre of Diegan coastal sage scrub occurs in the footprint of the Preferred Alternative and a total of 3.64 acres is in the footprint of the Southern Alternative. Because the two extant occurrences occur near the Southern Alternative, it is more likely that Hermes copper butterfly could be impacted by implementation of the Southern Alternative rather than the Preferred Alternative. With selection of either project alternative, the potential to directly impact Hermes copper butterfly would be low.

3.6-32 *The first through third paragraphs under 3.6.3, BIO-2 have been revised as follows:*

The construction of a 48-inch-diameter raw water pipeline within the proposed Preferred Alternative would directly affect ~~9.4~~ 9.33 acres, of which the effects to 0.46 acre of Diegan coastal sage scrub and 0.04 acre of nonnative grassland would warrant mitigation. Approximately 0.21 acre of Diegan coastal sage scrub would be permanently impacted by the proposed Preferred Alternative at the Sage Hill Preserve if this location is selected for the construction of an access road to the flow control facility over the DCMWTP site. The construction of a 48-inch-diameter raw water pipeline within the proposed Southern Alternative would directly affect ~~7.3~~ 7.41 acres, of which the combined effects to 3.64 acres of Diegan coastal sage scrub, 0.32 acre of sage scrub-chaparral transition, and 0.50 acre of southern mixed chaparral would warrant mitigation (Table 3.6-1). These temporary direct impacts would be considered significant if left unmitigated.

Project design requires tunneling under all creeks and culverts that coincide with the project corridor. Therefore, no trenching across federal or state regulated waters would occur from project construction. By tunneling under all creeks and culverts that coincide with the project corridor, pipeline construction would avoid all direct impacts to the southern arroyo willow riparian forest vegetation community.

Existing habitats within the adjoining 100-foot and 500-foot survey areas surrounding either alignment may be indirectly impacted by project construction. Indirect effects could include temporary construction-generated noise, dust, and siltation, and the more permanent operational indirect effects of increased human activities throughout the site (i.e., noise, facility nighttime lighting, and the potential for exotic species intrusions). Thus, construction and long-term operation have the potential to

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indirectly impact approximately ~~76.60~~ 78.72 acres of vegetation communities and cover types within the adjacent 100-foot survey area surrounding the proposed Preferred Alternative, ~~321.50~~ 326.25 acres of vegetation communities and cover types within the 500-foot survey area surrounding the Preferred Alternative, ~~38.48~~ 56.28 acres of vegetation communities and cover types within the adjacent 100-foot survey area surrounding the Southern Alternative, and 266.53 acres of vegetation communities and cover types within the adjacent 500-foot buffer surrounding the Southern Alternative. Within the 100-foot and 500-foot survey areas, indirect temporary impacts to mulefat scrub, southern arroyo willow scrub, southern willow scrub, dense coast live oak woodland, Diegan coastal sage scrub, coastal sage-chaparral transition, nonnative grassland, and southern mixed chaparral may be considered significant. Construction BMPs (i.e., use of temporary fencing) and project design features (i.e., permanent fencing) that would avoid or minimize these potential indirect impacts would be used. Table 3.6-1 provides a summary of the area of potential direct impacts that would occur to vegetation communities and other cover types from implementation of the proposed project. Additionally, mitigation measures BIO-A through BIO-N would ensure less-than-significant impacts.

3.6-34 *Table 3.6-1 has been revised as follows:*

**Table 3.6-1  
Direct Impacts to Vegetation Communities and Cover Types**

| Vegetation Communities and Cover Types | MSCP Tier Level <sup>1</sup> | Preferred Alternative                    |  | Southern Alternative                     |  |
|--|------------------------------|--|--|--|--|
|  |                              | Existing Acres within Footprint Corridor | Proposed Footprint Impacts Corridor Impacts <sup>2</sup> | Existing Acres within Footprint Corridor | Proposed Footprint Impacts Corridor Impacts <sup>2</sup> |
| Freshwater Seep                        | I                            | ---                                      | ---  | ---                                      | ---  |
| Mulefat Scrub                          | I                            | ---                                      | ---  | ---                                      | ---  |
| Southern Arroyo Willow Riparian Forest | I                            | <del>0.10</del> <u>0.05</u>              | <del>---</del> <sup>23</sup>                             | <del>0.20</del> <u>0.19</u>              | <del>---</del> <sup>34</sup>                             |
| Southern Willow Scrub                  | I                            | ---                                      | ---  | ---                                      | ---  |
| <b><i>Uplands</i></b>                  |                              |  |  |  |  |
| Coast Live Oak Woodland                | I                            | ---                                      | ---  | ---                                      | ---  |
| Diegan Coastal Sage Scrub              | II                           | 0.46                                     | 0.45 <sup>5</sup>  | 3.64                                     | 3.64   |
| Sage Scrub-Chaparral Transition        | II                           | ---                                      | ---  | 0.32                                     | 0.32   |
| Eucalyptus Woodland                    | IV                           | ---                                      | ---  | ---                                      | ---  |
| Nonnative Grassland                    | III                          | 0.04                                     | 0.04   | ---                                      | ---  |
| Valley Needlegrass Grassland           | I                            | ---                                      | ---  | ---                                      | ---  |
| Southern Mixed Chaparral               | III                          | ---                                      | ---  | 0.50                                     | 0.50   |
| Ornamental Plantings                   | IV                           | <del>0.20</del> <u>0.17</u>              | <del>0.20</del> <u>0.17</u>                              | ---                                      | ---  |
| <i>Total Area Uplands =</i>            |                              | <del>0.70</del> <u>0.67</u>              | <del>0.70</del> <u>0.67</u>                              | <del>4.4</del> <u>4.46</u>               | <del>4.4</del> <u>4.46</u>                               |
| <b><i>Other Cover Types</i></b>        |                              |  |  |  |  |
| Disturbed                              | n.a.                         | 0.28                                     | 0.28   | 0.72                                     | 0.72   |
| Developed                              | n.a.                         | <del>8.40</del> <u>8.37</u>              | <del>8.40</del> <u>8.37</u>                              | <del>2.20</del> <u>2.23</u>              | <del>2.20</del> <u>2.23</u>                              |
| <i>Total Area Other Cover Types =</i>  |                              | <del>8.70</del> <u>8.66</u>              | <del>8.70</del> <u>8.66</u>                              | <del>2.9</del> <u>2.94</u>               | <del>2.9</del> <u>2.94</u>                               |
| <b>Total:</b>                          |                              | <del>9.4</del> <u>9.38</u>               | <del>9.4</del> <u>9.33</u>                               | <del>7.3</del> <u>7.60</u>               | <del>7.3</del> <u>7.41</u>                               |

1 County of San Diego and TAIC (2008); see the MSCP BMO for a description of the Tier levels.

2 All impacts herein are considered temporary except for the 0.46 acre in Diegan coastal sage scrub of the Preferred Alternative.

3 Although the ~~0.1~~ 0.05-acre of southern arroyo willow riparian forest coincides with the Preferred Alternative, directional drilling will allow for avoidance of impacts to this vegetation community.

4 Although the ~~0.2~~ 0.19-acre of southern arroyo willow riparian forest coincides with the Southern Alternative, directional drilling will allow for avoidance of impacts to this vegetation community.

5 Approximately 0.21 acre of Diegan coastal sage scrub will be permanently impacted within the Preferred Alternative at the Sage Hill Preserve if this site is selected for the construction of an access road to the flow control facility over the DCMWTP site.

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3.6-36 *The first paragraph under 3.6.3, BIO-6 has been revised as follows:*

The proposed project occurs primarily within the Draft NCMSCP subarea planning area. However, until this plan is approved, impacts to the Diegan coastal sage scrub that occurs within the proposed project site would be considered “outside” of the MSCP. Neither the 0.46 acre that would be impacted by the Preferred Alternative nor the 3.64 acres that would be impacted by the Southern Alternative would exceed the County’s 5 percent habitat loss threshold. ~~An HLP~~ The District will be required, if to submit an HLP and Administrative Permit to mitigate ~~the NCMSCP is not approved prior to project implementation~~ direct impacts to Diegan coastal sage scrub. Additionally, mitigation measures BIO-A through BIO-N would ensure less-than-significant impacts.

3.6-37 *The title and notes for Table 3.6-2 have been revised as follows:*

**Table 3.6-2  
Mitigation for Direct Impacts to Sensitive Vegetation Communities and Cover Types Anticipated Mitigation<sup>1</sup>**

| Vegetation Communities and Cover Types | Relevant Mitigation Ratios for Proposed Impacts |                                  | Preferred Alternative              |                     |                                  |                     |   | Southern Alternative               |                     |                                  |                     |  |
|--|---|----------------------------------|------------------------------------|---------------------|----------------------------------|---------------------|---|------------------------------------|---------------------|----------------------------------|---------------------|--|
|  |   |                                  | Within South County MSCP Plan Area |                     | Outside Approved MSCP Plan Areas |                     | Total Mitigation Required Preferred Alternative | Within South County MSCP Plan Area |                     | Outside Approved MSCP Plan Areas |                     | Total Mitigation Required Southern Alternative |
|  | Within South County MSCP Plan Area              | Outside Approved MSCP Plan Areas | Impact                             | Required Mitigation | Impact                           | Required Mitigation |   | Impact                             | Required Mitigation | Impact                           | Required Mitigation |  |
| <i>Uplands</i>                         |   |                                  |                                    |                     |                                  |                     |   |                                    |                     |                                  |                     |  |
| Diegan Coastal Sage Scrub              | 1.5:1   | 3:1                              | ---                                | ---                 | 0.46 <sup>2</sup>                | 1.38                | 1.38  | 1.16                               | 1.74                | 2.48                             | 7.44                | 9.18   |
| Coastal Sage-Chaparral Transition      | 1.5:1   | 3:1                              | ---                                | ---                 | ---                              | ---                 | ---   | ---                                | ---                 | 0.32                             | 0.96                | 0.96   |
| Nonnative Grassland                    | 1:1   | 0.5:1                            | ---                                | ---                 | 0.04                             | 0.02                | 0.02  | ---                                | ---                 | ---                              | ---                 | ---  |
| Southern Mixed Chaparral               | 1.5:1   | 0.5:1                            | ---                                | ---                 | ---                              | ---                 | ---   | 0.19                               | 0.29                | 0.31                             | 0.16                | 0.45   |
| <b>Total =</b>                         |   |                                  | ---                                | ---                 | 0.50                             | 1.40                | 1.40  | 1.35                               | 2.03                | 3.11                             | 8.56                | 10.59  |

<sup>1</sup> All impacts to Tier I, II, and III habitats as identified in Table 3.6-1 herein are noted above (segregated as within vs. outside an approved MSCP area for each alignment). As previously noted, direct impacts to wetland vegetation communities or jurisdictional waters will be avoided by directional drilling (tunneling) under any areas of these sensitive/regulated resources that coincide with the project corridor.

<sup>2</sup> Approximately 0.21 acre of Diegan coastal sage scrub would be permanently impacted within the Sage Hill Preserve if this site is selected for the construction of an access road to the flow control facility over the DCMWTP site.

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3.6-38 *The mitigation measures have been revised as follows:*

**BIO-E** Fueling areas will be designated on construction maps and will be situated a minimum of 50 feet from all drainages. All fueling areas shall be located outside of the Sage Hill Preserve.

**BIO-G** Setback limitations from all habitat, trees, and sensitive plant locations meant to be preserved will be established by a qualified biologist prior to construction. Construction corridor widths will be minimized to the extent feasible in sensitive areas (e.g., oak woodlands, coastal sage scrub, and wetlands). Setback limitations within Sage Hill Preserve shall be coordinated with the DPR Resource Management Division.

**BIO-I** The project will incorporate the following design features to minimize noise generated from construction activities:

- Noise analyses will be performed during construction activities adjacent to sensitive habitats or potential active nests. If necessary, temporary noise attenuation barriers will be erected to reduce construction-related noise to below 60 dBA hourly  $L_{eq}$ . Any proposed noise attenuation barriers within Sage Hill Preserve shall be coordinated with the DPR District Park Manager.
- Heavy equipment will be repaired as far as practical from habitats where nesting birds may be present. No heavy equipment shall be repaired within Sage Hill Preserve.
- Construction equipment, including generators and compressors, will be equipped with manufacturers' standard noise control devices or better (e.g., mufflers, acoustical lagging, and/or engine enclosures).
- The construction contractor will maintain all construction vehicles and equipment in proper operating condition and provide mufflers on all equipment.

**BIO-J** The project design will incorporate features to minimize the potential for pests and exotic species establishment by installing fencing between the proposed project site and adjacent open space areas to restrict encroachment into biologically sensitive areas. Any proposed fencing

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within Sage Hill Preserve shall be temporary and coordinated with the DPR District Park Manager.

**BIO-K** Several general construction BMPs will be implemented to avoid and minimize impacts to natural communities of special concern, special-status plants, and special-status animals:

1. Construction limits – The contractor(s) will be informed, prior to the bidding process, about the biological constraints of this project. The construction limits will be clearly marked on project maps provided to the contractor(s) and areas outside of the construction limits will be designated as “no construction” zones.
2. Equipment staging/Storage/Fueling restrictions – No equipment staging and refueling areas will be located at the construction site outside of designated staging areas. Moreover, staging/storage areas for construction equipment and materials will be located away from sensitive biological resources that are not approved for project impact, and no equipment maintenance will be performed near drainages to minimize the potential for pollution runoff. Staging/storage areas shall be located outside the Sage Hill Preserve. Additionally, no heavy equipment maintenance shall be performed in the Sage Hill Preserve.
3. Soil stockpiles – Soils from construction grading will be stockpiled either on portions of the proposed project site where direct impacts are approved or at an off-site location approved by the County and the resource agencies. Stockpiled soils must be located and piled in a manner that will avoid potential erosion and sedimentation into downstream drainages, swales, or vernal pool habitat. Any soil stockpiles proposed within the Sage Hill Preserve shall be coordinated with the DPR District Park Manager.
4. Construction debris – Project construction areas will be kept as clean of debris as possible to avoid attracting predators of native wildlife. Spoils, trash, or any debris will be removed off-site to an approved disposal facility.
5. Fugitive dust – Construction-related fugitive dust will be minimized by incorporating appropriate reasonably available control measures

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to minimize fugitive dust emissions, as outlined in an approved dust control plan specific to the proposed construction activities. The dust control plan will consider and/or incorporate the application of water, use of wind screens, and other applicable methods appropriate to the site, and in consideration of the sensitive biological resources that exist adjacent to and downstream of the site.

6. Construction fencing – To prevent accidental egress by construction equipment or workers onto preserved lands adjacent the proposed project site, construction fencing will be installed along the entire northern boundary of the County-owned portion of the proposed project site, the northern boundary of the western private parcel, and the portion of the County-owned parcel’s eastern boundary that connects these two northern borders. Any proposed construction fencing within Sage Hill Preserve shall be temporary and coordinated with the DPR District Park Manager.

**BIO-L** ~~Temporary impacts to coastal sage scrub will be revegetated on-site according to conditions of a County Habitat Loss Permit to be approved before project construction. In addition, these impacts will be permanently mitigated at a 1:1 ratio through off-site habitat acquisition. Land will be acquired within existing land banks or within other properties identified by the MSCP, MHCP, or other conservation programs recognized by the NCCP. To provide the District with the latitude in the future for impacts within the right-of-way without future mitigation requirements, all temporary impacts will be mitigated as though they were permanent impacts consistent with applicable mitigation ratios. Where project impacts occur outside approved MSCP Plan areas, mitigation ratios will be consistent with ratios presented in the County guidelines. Where project impacts occur within the South County MSCP Plan area, mitigation ratios will be consistent with the MSCP BMO mitigation requirements. The 0.21 acre of Diegan coastal sage scrub that would be permanently impacted within the Preferred Alternative at the Sage Hill Preserve if the access road for the flow control facility is located at the Second San Diego Aqueduct will be mitigated per the County guidelines. Mitigation will be 1:1 revegetation on-site according to the County guidelines and the MSCP BMO. The remainder of the required mitigation will be accomplished through off-site habitat acquisition or preservation.~~

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Any proposed revegetation work within Sage Hill Preserve or adjacent to the Mendocino property shall use native plants and the planting palette shall be pre-approved by the DPR Resource Management Division.

3.10-1 *The second paragraph under the Fire and Police Protection subheading has been modified as follows:*

Police protection services are provided by the San Diego County Sheriff's Department. The San Marcos Station, located at 182 Santar Place, would be the main responder to the project area. The station serves approximately 100 square miles, which includes the City of San Marcos and the surrounding unincorporated areas of San Marcos and Escondido. The station provides first response services, patrol, traffic, search and rescue, and criminal investigations (San Diego County Sheriff's Department 2010b). The California Highway Patrol provides traffic control and enforcement in the unincorporated areas. Encinitas Station, located at 175 North El Camino Real, ~~is the closest Sheriff's station to the project area~~ also serves the area surrounding the proposed project. The station services approximately 60 square miles, which includes the cities of Del Mar, Encinitas, and Solana Beach, and the unincorporated communities of Rancho Santa Fe, Del Dios, Camp Pendleton, and San Onofre. The Encinitas Station provides first response to crimes or emergencies, traffic enforcement, and routine patrols and preliminary investigations (San Diego County Sheriff's Department 2010a).

3.10-2 *The second paragraph has been modified as follows:*

San Diego Gas & Electric (SDG&E) provides the gas and electric services for the project area and surrounding communities. Within the Elfin Forest Community, property owners individually contract with various local propane providers for gas service. There are various companies that provide telecommunication service in the area. A majority of these service lines are located underground.

3.10-5 *The last paragraph has been modified as follows:*

The proposed project would require grading and excavation activities that may potentially affect the buried pipelines along Elfin Forest Road, Harmony Grove Road, and Via Ambiente. Replacement or realignment of the underground pipelines may be required during project construction; however, operation of the proposed project would not require additional supplies beyond those available. Coordination between the District and SDG&E, local propane providers, or the telecommunication companies during final design and construction would address potential impacts to electricity, natural gas, and telecommunication lines and service during construction. This would allow pipelines and service lines to be avoided, relocated, and/or

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supported during construction, as necessary, to prevent damage to lines and to minimize disruption and degradation of service to local customers. Should any interruption in service be required, the District would provide adequate notice to customers prior to relocation of service lines in accordance with SDG&E and the propane and telecommunication service providers' policies. Following coordination with the service provider and noticing of customers, impacts related to the relocation of electricity, natural gas, or telecommunication lines would be less than significant.

5-3 *The first paragraph under the Flow Control Facility at Aqueduct Alternative subheading has been revised as follows:*

The FCF at Aqueduct Alternative would follow the alignment of the Preferred Alternative, but would include the construction of an above-ground FCF at the northern terminus of the proposed Unit AA raw water pipeline. Under this alternative, the flow control facility would be located within the Sage Hill Preserve. This location, adjacent to the Elfin Forest Road, is the point where the pipeline would connect to the SDCWA's Second San Diego Aqueduct, approximately 1.0 mile southeast of the community of San Elijo Hills. The site is undeveloped, and the surrounding vicinity is characterized by rural residential housing and small-scale horse ranch operations. Like the Preferred Alternative, all work under the FCF at Aqueduct Alternative would be conducted within the County right-of-way. The Preferred Alternative, as discussed in Chapter 2, would construct a flow control facility near the DCMWTP site.

11-1 *The following reference has been updated:*

AECOM

~~2009a~~ 2010a *Biological Resource Report for the Proposed Olivenhain Municipal Water District Unit AA Raw Water Pipeline Project from the Second San Diego Aqueduct to the David C. McCollum Water Treatment Plant.* July 2010.

11-2 *The following reference has been added:*

County of San Diego

2010 *Draft Resource Management Plan for Sage Hill Preserve, San Diego County.* May 2010.

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11-3      *The following reference has been updated:*

San Diego County Sheriff's Department

2010a Encinitas Station. Available at <http://www.sdsheriff.net/patrolstations/encinitas.html>. Updated 2009. Accessed on January 14, 2010.

2010b San Marcos Station. Available at <http://www.sdsheriff.net/patrolstations/sanmarcos.html>. Accessed on September 22, 2010.

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## CHAPTER 9.0

### RESPONSE TO COMMENTS ON THE DRAFT EIR

The 45-day Draft EIR public review and comment period began on July 30, 2010, and ended on September 13, 2010, pursuant to CEQA and its implementing guidelines. During this public review period, nine letters were received. The comment letters are listed below in Table 9-1 and the corresponding responses are provided in this section. A copy of each comment letter is provided prior to each response.

According to CEQA Guidelines Section 15088(a), “the lead agency shall evaluate comments on environmental issues received from persons who reviewed the Draft EIR and shall prepare a written response.” This chapter provides responses to written comments received during the public comment period that address environmental issues. A community presentation for the Draft EIR occurred on August 25, 2010. However, no written or oral comments on the EIR were received at the community presentation.

**Table 9-1 List of Comment Letters on Draft EIR**

| Letter No. | Agency/Organization/Individual  | Date                 |
|------------|---|----------------------|
| 1          | Shasta Gaughen, Pala Band of Mission Indians                          | August 3, 2010       |
| 2          | Mark Vezzola, San Luis Rey Band of Luiseno Indians                    | August 6, 2010       |
| 3          | Dave Singleton, Native American Heritage Commission                   | August 6, 2010       |
| 4          | Greg Holmes, Department of Toxic Substances Control                   | September 1, 2010    |
| 5          | Elfin Forest Residents (14)   | September 2-21, 2010 |
| 6          | Eric Gibson, County of San Diego, Department of Planning and Land Use | September 13, 2010   |
| 7          | Nancy Goodrich, Elfin Forest/Harmony Grove Town Council               | September 13, 2010   |
| 8          | Susanne and Prasanna Desai, Elfin Forest Residents                    | September 13, 2010   |
| 9          | Julia Dyer, California Department of Fish and Game                    | September 22, 2010   |

Letter 1



Ph: (760) 891-3591  
Fax: (760) 742-4543

**PALA BAND OF MISSION INDIANS**  
Tribal Historic Preservation Office  
35008 Pala Temecula Rd. PMB 445  
Pala, CA 92059

August 3, 2010

Karen Ogawa  
Olivenhain Municipal Water District  
1966 Olivenhain Road  
Encinitas, CA 92024

Re: Unit AA Raw Water Pipeline Project

Dear Ms. Ogawa:

The Pala Band of Mission Indians Tribal Historic Preservation Office has received your notification of the project referenced above. This letter constitutes our response on behalf of Robert Smith, Tribal Chairman.

We have consulted our maps and determined that the project as described is not within the boundaries of the recognized Pala Indian Reservation. The project is also beyond the boundaries of the territory that the tribe considers its Traditional Use Area (TUA). Therefore, we have no objection to the continuation of project activities as currently planned and we defer to the wishes of Tribes in closer proximity to the project area.

1-1

We appreciate involvement with your initiative and look forward to working with you on future efforts. If you have questions or need additional information, please do not hesitate to contact me by telephone at 760-891-3591 or by e-mail at [sgaughen@palatribe.com](mailto:sgaughen@palatribe.com).

Sincerely,

Shasta C. Gaughen, MA  
Tribal Historic Preservation Officer  
Pala Band of Mission Indians

ATTENTION: THE PALA TRIBAL HISTORIC PRESERVATION OFFICE IS RESPONSIBLE FOR ALL REQUESTS FOR CONSULTATION. PLEASE ADDRESS CORRESPONDENCE TO **SHASTA C. GAUGHEN** AT THE ABOVE ADDRESS. IT IS NOT NECESSARY TO ALSO SEND NOTICES TO PALA TRIBAL CHAIRMAN ROBERT SMITH. PLEASE ALSO NOTE THAT JOE NIXON NO LONGER WORKS FOR THE PALA THPO.

Consultation letter 1



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**Letter 1: Shasta Gaughen, Pala Band of Mission Indians**

**Response 1-1**

The Pala Band of Mission Indians has determined that the proposed project is not within the boundaries of the recognized Pala Indian Reservation, and thus has no comments. No further response is necessary because no issues related to the adequacy of the environmental impact analysis in the Draft EIR were raised.

Letter 2

# CALIFORNIA INDIAN LEGAL SERVICES

## Escondido Office

609 South Escondido Boulevard, Escondido, CA 92025 ♦ Phone 760/746-8941 ♦ Fax 760/746-1815  
www.calindian.org ♦ contactCILS@calindian.org

BISHOP

ESCONDIDO

EUREKA

SACRAMENTO

August 6, 2010

Ms. Karen Ogawa  
Engineering Project Supervisor  
Olivenhain Municipal Water District  
1966 Olivehain Road  
Encinitas, CA 92024

RE: Comments on Olivenhain Municipal Water District Proposed Unit AA Raw  
Water Pipeline Project

Dear Ms. Ogawa:

Thank you for informing the San Luis Rey Band of Luiseno Indians ("Tribe" or "San Luis Rey Band") of the above-referenced project and the request for comments on the Environmental Impact Report (EIR) regarding the Project. The San Luis Rey Band is a San Diego County Tribe whose traditional territory includes the present-day cities of Oceanside, Carlsbad, Vista, San Marcos, and Escondido. The San Luis Rey Band is concerned with preservation of cultural, archeological, and historical sites within the area affected by the proposed project area.

The Tribe would like to reiterate the points submitted during the initial comment period for the project found in the EIR – Appendix C, dated January 8, 2010. While there are "no new cultural resources identified" (Environmental Impact Report Unit AA Raw Water Pipeline Project 3.7-8), the EIR has noted that there are cultural resource sites previously recorded. The Tribe's main concern is the protection of unique and irreplaceable cultural resources and sacred sites which may be damaged or destroyed by the construction of the water pipeline.

2-1

The Tribe is also concerned about the proper and lawful treatment of Native American human remains and sacred items likely to be uncovered in the course of project development given that the proposed route travels through the heart of the Tribe's traditional lands. Your request for concerns and/or recommendations is appreciated but the Tribe wishes to see an analysis of what, if any, impacts the project will have on cultural resources. The Tribe appreciates your proposed action of "temporarily halt[ing]" the work and contacting a "qualified archeologist to evaluate the significance of the deposit" (EIR 3.7-12).

2-2

The Tribe is not opposed to the Project generally, but is fervently opposed to any plans that may damage or destroy any potentially important cultural or sacred sites and human remains that may be located within the project boundaries. In addition, based on the Tribe's ancestral ties to the project area, it is very likely that there are resources that have not been located in previous surveys or data recovery programs, or that are visible on the surface. The amount of disturbance

2-3



Comment Letter to Ms. Ogawa  
Re: Olivenhaim Municipal Water District Pipeline  
August 5, 2010  
Page 2

required to meet the objectives of the plan is not clear, however, given that many habitation sites are located near water resources, efforts to rehabilitate habitats may impact cultural resources.

Because the project area is located in an area where resources may be disturbed, the Tribe requests mitigation measure be added and that they be conditions of approval for this project, to ensure that this project is handled in a manner consistent with the requirements of the law and which respects the Tribe's religious and cultural beliefs and practices. The following measures must be included in both the mitigation plans and the conditions of approval for the project.

The Tribe would like to reiterate their requests that the Olivenhaim Municipal Water District be required to enter into pre-excavation agreement with the Tribe prior to the start of the project. This agreement will contain provisions to address the proper treatment of any cultural resources or Native American human remains inadvertently uncovered during the course of the project. Should any Native American remains be uncovered during the development, the San Luis Rey Band will likely be designated the "Most Likely Descendant" (MLD) by the Native American Heritage Commission, as this is their traditional territory, as recognized by the Commission.

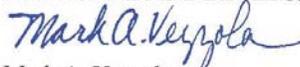
The pre-excavation agreement should be entered into prior to any ground-disturbing activities. The agreement will outline, to the satisfaction of the San Luis Rey Band, the roles and powers of the Native American monitors and the archaeologist, in addition to requiring compensation of the monitors by the Olivenhaim Municipal Water District. Such an agreement is necessary to guarantee the proper treatment of cultural resources or Native American human remains displaced during the project development.

To ensure the proper treatment of any cultural resources or Native American human remains that are uncovered during the course of the development, the San Luis Rey Band formally requests that Olivenhaim Municipal Water District agree to return these items to the Tribe if any are discovered. Any plans to curate any such items would disregard the respect due to these cultural resources. Instead, any such items or remains should be returned to the San Luis Rey Band. The Tribe considers all cultural items found in this area to belong to their ancestors rather than to the Olivenhaim Municipal Water District.

We look forward to working with Olivenhaim Municipal Water District to guarantee that the requirements of the California Environmental Quality Act are rigorously applied to this project. Thank you for your continuing assistance in protecting our invaluable Luiseño cultural resources.

Sincerely,

CALIFORNIA INDIAN LEGAL SERVICES



Mark A. Vezzola  
Staff Attorney

2-3  
cont.

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## **Letter 2: Mark Vezzola, San Luis Rey Band of Luiseno Indians**

### **Response 2-1**

The commenter is concerned about the protection of unique and irreplaceable cultural resources and sacred sites previously recorded within the project area that may be damaged or destroyed by the construction of the water pipeline. As stated on pages 3.7-10 through 3.7-12 of the Draft EIR, seven of the eight prehistoric cultural resource sites and isolates previously recorded within the project APE were evaluated and found not to be significant resources under CEQA or the California Register of Historic Places (CRHP) criteria. Additionally, all of the cultural sites recorded in the project alignment alternatives have been completely or partially destroyed by road construction, previous pipeline projects, residential development, and associated land uses. However, the District concurs that if earth-moving activities during construction reveal buried cultural deposits, work should be temporarily halted and diverted a safe distance from the location, and a qualified archaeologist should be contacted to evaluate the significance of the resource. This will be made a condition of the contract for pipeline construction.

### **Response 2-2**

Refer to Response 2-1 for the summary of the proposed project's impacts related to cultural resources. In addition, and as summarized below, pages 3.7-10 through 3.7-12 of the Draft EIR provide further details on the impacts associated with the Preferred and Southern Alternatives.

Seven prehistoric cultural resources have been recorded within, or within proximity of, the APE of the Southern Alternative. Five of these resources were observed during the current survey to have been destroyed by previous construction activities, with the remaining two substantially disturbed by these same activities. Six of the seven sites have been previously evaluated and determined as not significant resources under CEQA criteria.

Six prehistoric cultural resources have been recorded within, or within proximity of, the APE of the Preferred Alternative. Four of these resources were observed during the current survey to have been destroyed by previous construction activities, with the remaining sites substantially disturbed by these same activities. All six of these sites have been previously evaluated and determined as not significant resources under CEQA criteria. As none of these sites constitute significant cultural resources under CEQA criteria, no impacts to significant cultural resources will occur.

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No mitigation measures related to cultural resources are required. However, if construction activities reveal buried cultural resources, all construction work should be stopped and diverted a safe distance from the location, and a qualified archaeologist should be contacted to evaluate the significance of the resource.

### **Response 2-3**

The majority of the project will be accomplished through the trenching and backfilling of materials within Elfin Forest Road and Via Ambiente. The crossing of Escondido Creek will be accomplished using jack and bore tunneling to avoid impacts to the streambed and associated wetland areas. The pipeline alignment between Elfin Forest Road and Via Ambiente will, for the most part, follow existing paved and dirt roadways. As stated above, potential impacts to cultural resources within the project site would be less than significant. This determination is based on the fact that all known cultural resources within the APE have been destroyed, previously determined to be less than significant per CEQA, or both. Therefore, the District does not agree that a pre-excavation agreement with the San Luis Rey Band of Luiseno Indians would be necessary for this project. However, the District does agree that if earth-moving activities during construction reveal buried cultural deposits, work should be temporarily halted and diverted a safe distance from the location, and a qualified archaeologist should be contacted to evaluate the significance of the deposit (page 3.7-12).

In the unlikely event that cultural deposits are discovered, the District will notify and work with the Native American Heritage Commission regarding the discovery and treatment of Native American cultural deposits and human remains. The District has no plans to curate any cultural items or human remains discovered during construction and agrees that any such items or remains should be returned to the Most Likely Descendent (MLD) identified by the Native American Heritage Commission.

**NATIVE AMERICAN HERITAGE COMMISSION**

915 CAPITOL MALL, ROOM 364  
SACRAMENTO, CA 95814  
(916) 853-6251  
Fax (916) 857-5390  
Web Site [www.nahc.ca.gov](http://www.nahc.ca.gov)  
e-mail: [na\\_hc@pscbell.net](mailto:na_hc@pscbell.net)



August 6, 2010

Ms. Karen Ogawa  
**OLIVENHAIN MUNICIPAL WATER DISTRICT**  
1966 Olivenhain Road  
Encinitas, CA 92024

Re: SCH#2010011026; CEQA Notice of Completion; draft Environmental Impact Report (DEIR) for the "Unit AA Raw Water Pipeline Project;" located in the Service District of the Olivenhain Municipal Water District, San Diego County, California.

Dear Ms. Ogawa:

The Native American Heritage Commission (NAHC) is the state 'trustee agency' pursuant to Public Resources Code §21070 for the protection and preservation of California's Native American Cultural Resources. (Also see *Environmental Protection Information Center v. Johnson* (1985) 170 Cal App. 3<sup>rd</sup> 604). The California Environmental Quality Act (CEQA - CA Public Resources Code §21000-21177, amendment effective 3/18/2010) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR) per the California Code of Regulations §15064.5(b)(c)(f) CEQA guidelines). Section 15382 of the CEQA Guidelines defines a significant impact on the environment as "a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including ... objects of historic or aesthetic significance. The lead agency is required to assess whether the project will have an adverse impact on these resources within the 'area of potential effect (APE), and if so, to mitigate that effect. State law also addresses Native American Religious Expression in Public Resources Code §5097.9.

3-1

The Native American Heritage Commission did perform a Sacred Lands File (SLF) search in the NAHC SLF Inventory, established by the Legislature pursuant to Public Resources Code §5097.94(a) and Native American Cultural Resources were not identified within the APE identified for the project. Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. Enclosed are the names of the culturally affiliated tribes and interested Native American individuals that the NAHC recommends as 'consulting parties,' for this purpose, that may have knowledge of the religious and cultural significance of the historic properties in the project area (e.g. APE). We recommend that you contact persons on the attached list of Native American contacts. A Native American Tribe or Tribal Elder may be the only source of information about a cultural resource.. Also, the NAHC recommends that a Native American Monitor or Native American culturally knowledgeable person be employed whenever a professional archaeologist is employed during the 'Initial Study' and in other phases of the environmental planning processes.

Furthermore the NAHC recommends that you contact the California Historic Resources Information System (CHRIS) at the Office of Historic Preservation (OHP)

3-2

Coordinator's office (at (916) 653-7278, for referral to the nearest OHP Information Center of which there are 10.

Consultation with tribes and interested Native American tribes and interested Native American individuals, as consulting parties, on the NAHC list, should be conducted in compliance with the requirements of federal NEPA (42 U.S.C. 4321-43351) and Section 106 and 4(f) of federal NHPA (16 U.S.C. 470 [f] *et seq.*), 36 CFR Part 800.3, the President's Council on Environmental Quality (CSQ; 42 U.S.C. 4371 *et seq.*) and NAGPRA (25 U.S.C. 3001-3013), as appropriate. The 1992 *Secretary of the Interior's Standards for the Treatment of Historic Properties* were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including *cultural landscapes*. Consultation with Native American communities is also a matter of environmental justice as defined by California Government Code §65040.12(e).

Lead agencies should consider avoidance, as defined in Section 15370 of the California Environmental Quality Act (CEQA) when significant cultural resources could be affected by a project. Also, Public Resources Code Section 5097.98 and Health & Safety Code Section 7050.5 provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery. Discussion of these should be included in your environmental documents, as appropriate.

The authority for the SLF record search of the NAHC Sacred Lands Inventory, established by the California Legislature, is California Public Resources Code §5097.94(a) and is exempt from the CA Public Records Act (c.f. California Government Code §6254.10). The results of the SLF search are confidential. However, Native Americans on the attached contact list are not prohibited from and may wish to reveal the nature of identified cultural resources/historic properties. Confidentiality of 'historic properties of religious and cultural significance' may also be protected the under Section 304 of the NHPA or at the Secretary of the Interior' discretion if not eligible for listing on the National Register of Historic Places. The Secretary may also be advised by the federal Indian Religious Freedom Act (cf. 42 U.S.C. 1996) in issuing a decision on whether or not to disclose items of religious and/or cultural significance identified in or near the APE and possibly threatened by proposed project activity.

CEQA Guidelines, Section 15064.5(d) requires the lead agency to work with the Native Americans identified by this Commission if the initial Study identifies the presence or likely presence of Native American human remains within the APE. CEQA Guidelines provide for agreements with Native American, identified by the NAHC, to assure the appropriate and dignified treatment of Native American human remains and any associated grave liens. Although tribal consultation under the California Environmental Quality Act (CEQA; CA Public Resources Code Section 21000 – 21177) is 'advisory' rather than mandated, the NAHC does request 'lead agencies' to work with tribes and interested Native American individuals as 'consulting parties,' on the list provided by the NAHC in order that cultural resources will be protected. However, the 2006 SB 1059 the state enabling legislation to the Federal Energy Policy Act of 2005, does mandate tribal consultation for the 'electric transmission corridors. This is codified in the California Public Resources Code, Chapter 4.3, and §25330 to Division 15, requires consultation with California Native American tribes, and identifies both federally recognized and non-federally recognized on a list maintained by the NAHC

3-2  
cont.

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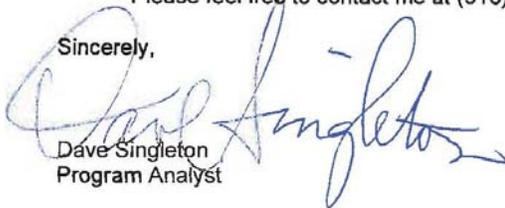
Health and Safety Code §7050.5, Public Resources Code §5097.98 and Sec. §15064.5 (d) of the California Code of Regulations (CEQA Guidelines) mandate procedures to be followed, including that construction or excavation be stopped in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery until the county coroner or medical examiner can determine whether the remains are those of a Native American. Note that §7052 of the Health & Safety Code states that disturbance of Native American cemeteries is a felony.

3-3

Again, Lead agencies should consider avoidance, as defined in §15370 of the California Code of Regulations (CEQA Guidelines), when significant cultural resources are discovered during the course of project planning and implementation.

Please feel free to contact me at (916) 653-6251 if you have any questions.

Sincerely,



Dave Singleton  
Program Analyst

Attachment: List of Culturally Affiliated Native American Contacts

Cc: State Clearinghouse

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Native American Contacts  
San Diego County  
August 6, 2010

Kumeyaay Cultural Heritage Preservation  
Paul Cuero  
36190 Church Road, Suite 5 Diegueno/ Kumeyaay  
Campo , CA 91906  
chairman@campo-nsn.gov  
(619) 478-9046  
(619) 478-9505  
(619) 478-5818 Fax

Pauma Valley Band of Luiseño Indians  
Bennae Calac, Tribal Council Member  
P.O. Box 369 Luiseno  
Pauma Valley CA 92061  
bennaecalac@aol.com  
(760) 617-2872  
(760) 742-3422 - FAX

Kwaaymii Laguna Band of Mission Indians  
Carmen Lucas  
P.O. Box 775 Diegueno -  
Pine Valley , CA 91962  
(619) 709-4207

San Pasqual Band of Indians  
Kristie Orosco, Environmental Coordinator  
P.O. Box 365 Luiseno  
Valley Center, CA 92082 Diegueno  
council@sanpasqualtribe.org  
(760) 749-3200  
(760) 749-3876 Fax

Inaja Band of Mission Indians  
Rebecca Osuna, Spokesperson  
2005 S. Escondido Blvd. Diegueno  
Escondido , CA 92025  
(760) 737-7628  
(760) 747-8568 Fax

San Luis Rey Band of Mission Indians  
Carmen Mojado, Co-Chair  
1889 Sunset Drive Luiseno  
Vista , CA 92081  
cjmojado@slrmissionindians.org  
(760) 724-8505  
(760) 724-2172 - FAX  
(760) 917-1736 - cell

San Luis Rey Band of Mission Indians  
Russell Romo  
12064 Old Pomerado Road Luiseno  
Poway , CA 92064  
(858) 748-1586

Kupa Cultural Center (Pala Band)  
Shasta Gaughen, Assistant Director  
35008 Pala-Temecula Rd.PMB Box Luiseno  
Pala , CA 92059  
cupa@palatribe.com  
(760) 891-3590  
(760) 742-4543 - FAX

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code. Also, federal National Environmental Policy Act (NEPA), National Historic Preservation Act, Section 106 and federal NAGPRA. And 36 CFR Part 800.3.

This list is only applicable for contacting local Native Americans for consultation purposes with regard to cultural resources impact by the proposed SCH#2010011026; CEQA Notice of Completion; draft Environmental Impact Report (DEIR) for the Unit AA Raw Water Pipeline Project located in the Enclinitas Area of San Diego County, California.

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Native American Contacts  
San Diego County  
August 6, 2010

Barona Group of the Capitan Grande  
Edwin Romero, Chairperson  
1095 Barona Road Diegueno  
Lakeside , CA 92040  
sue@barona-nsn.gov  
(619) 443-6612  
619-443-0681

Jamul Indian Village  
Kenneth Meza, Chairperson  
P.O. Box 612 Diegueno/Kumeyaay  
Jamul , CA 91935  
jamulrez@sctdv.net  
(619) 669-4785  
(619) 669-48178 - Fax

San Pasqual Band of Mission Indians  
Allen E. Lawson, Chairperson  
PO Box 365 Diegueno  
Valley Center, CA 92082  
(760) 749-3200  
(760) 749-3876 Fax

Mesa Grande Band of Mission Indians  
Mark Romero, Chairperson  
P.O Box 270 Diegueno  
Santa Ysabel, CA 92070  
mesagrandeband@msn.com  
(760) 782-3818  
(760) 782-9092 Fax

Santa Ysabel Band of Diegueno Indians  
Johnny Hernandez, Spokesman  
PO Box 130 Diegueno  
Santa Ysabel, CA 92070  
brandietaylor@yahoo.com  
(760) 765-0845  
(760) 765-0320 Fax

Pauma & Yuima  
Christobal C. Devers, Chairperson  
P.O. Box 369 Luiseno  
Pauma Valley CA 92061  
paumareservation@aol.com  
(760) 742-1289  
(760) 742-3422 Fax

Kumeyaay Cultural Historic Committee  
Ron Christman  
56 Viejas Grade Road Diegueno/Kumeyaay  
Alpine , CA 92001  
(619) 445-0385

Rincon Band of Mission Indians  
Angela Veltrano, Rincon Culture Committee  
P.O. Box 68 Luiseno  
Valley Center, CA 92082  
council@rincontribe.org  
(760) 749-1051  
(760) 749-8901 Fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code. Also, federal National Environmental Policy Act (NEPA), National Historic Preservation Act, Section 106 and federal NAGPRA. And 36 CFR Part 800.3.

This list is only applicable for contacting local Native Americans for consultation purposes with regard to cultural resources impact by the proposed SCH#2010011026; CEQA Notice of Completion; draft Environmental Impact Report (DEIR) for the Unit AA Raw Water Pipeline Project located in the Encinitas Area of San Diego County, California.

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Native American Contacts  
San Diego County  
August 6, 2010

La Jolla Band of Mission Indians  
ATTN: Rob Roy, Environmental Director  
22000 Highway 76 Luiseno  
Pauma Valley CA 92061  
lajolla-sherry@aol.com and  
(760) 742-3790  
(760) 742-1704 Fax

Clint Linton  
P.O. Box 507 Diegueno/Kumeyaay  
Santa Ysabel, CA 92070  
(760) 803-5694  
cjlinton73@aol.com

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code. Also, federal National Environmental Policy Act (NEPA), National Historic Preservation Act, Section 106 and federal NAGPRA. And 36 CFR Part 800.3.

This list is only applicable for contacting local Native Americans for consultation purposes with regard to cultural resources impact by the proposed SCH#2010011026; CEQA Notice of Completion; draft Environmental Impact Report (DEIR) for the Unit AA Raw Water Pipeline Project located in the Encinitas Area of San Diego County, California.

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### **Letter 3: Dave Singleton, Native American Heritage Commission**

#### **Response 3-1**

The NAHC did not identify any Native American cultural resources within the APE for the proposed project. However, the NAHC recommends that the District consult with culturally affiliated tribes and interested Native American individuals who may have knowledge of the religious and cultural significance of the historic properties in the APE. As stated on pages 3.7-10 through 3.7-12 of the Draft EIR, seven of the eight prehistoric cultural resource sites and isolates previously recorded within the project APE were evaluated and found not to be significant resources under CEQA or the NRHP criteria. Additionally, all of the cultural sites recorded in the project alignment alternatives have been completely or partially destroyed. However, the District agrees that if earth-moving activities during construction reveal buried cultural deposits, work should be temporarily halted and diverted a safe distance from the location, and a qualified archaeologist should be contacted to evaluate the significance of the resource.

#### **Response 3-2**

As discussed on page 3.7-3 of the Draft EIR, outreach efforts were made to Native American representatives provided by the NAHC for further consultation in compliance with federal and state requirements. The District contacted the Barona Group of the Capitan Grande, Mesa Grande Band of Mission Indians, San Pasqual Band of Mission Indians, Pauma & Yuima, Santa Ysabel Band of Diegueno Indians, Rincon Band of Mission Indians, Kumeyaay Cultural Historical Committee, Kwaaymii Laguna Band of Mission Indians, Inaja Band of Mission Indians, San Luis Rey Band of Mission Indians, Kupa Cultural Center (Pala Band), and Pauma Valley Band of Luiseno Indians. Of those tribes that were contacted, the San Luis Rey Band of Luiseno Indians, the Pala Band of Mission Indians, the Rincon Band of Mission Indians, the Pauma Valley Band of Luiseno Indians, and the Kwaaymii Laguna Band of Mission Indians responded. None of the respondents expressed opposition to the project, but they recommended that approved cultural monitors be on-site during construction activities.

#### **Response 3-3**

As stated above, no cultural resources were found to be significant under CEQA or the NRHP criteria. However, the District agrees that if earth-moving moving activities during construction reveal buried cultural deposits, work should be temporarily halted and diverted a safe distance from the location, and a qualified archaeologist should be contacted to evaluate the significance of the resource.

Letter 4



Linda S. Adams  
Secretary for  
Environmental Protection



Department of Toxic Substances Control

Maziar Movassaghi, Acting Director  
5796 Corporate Avenue  
Cypress, California 90630



Arnold Schwarzenegger  
Governor

September 1, 2010

Ms. Karen Ogawa  
Olivenhain Municipal Water District  
1966 Olivenhain Road  
Encinitas, California 92024

NOTICE OF AVAILABILITY OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR  
THE OLIVENHAIN MUNICIPAL WATER DISTRICT UNIT AA RAW WATER PIPELINE  
PROJECT (SCH# 2010011026), SAN DIEGO COUNTY

Dear Ms. Ogawa:

The Department of Toxic Substances Control (DTSC) has received your submitted draft Environmental Impact Report (EIR) for the above-mentioned project. The following project description is stated in your document: "The Olivenhain Municipal Water District (District) proposes to construct a new underground 48-inch-diameter pipeline extending approximately 3 miles from the Second San Diego Aqueduct to the David C. McCollom Water Treatment Plant (DCMWTP) at the Olivenhain Reservoir. The proposed project includes the relocation of a 10-inch-diameter potable water distribution pipeline that would be co-located with the proposed Unit AA raw water pipeline where it crosses Escondido Creek. The proposed project is situated in central San Diego County, approximately 25 miles northeast of downtown San Diego, 8 miles southwest of the Pacific Ocean, 4 miles southwest of the center of the City of San Marcos, and 6 miles southwest of the City of Escondido, California. The proposed project area is bounded by Fortuna del Sur to the northwest, the Olivenhain Reservoir to the east, Calle Mesina to the south, and Suerte del Este to the west. Approximately 1.5 miles northwest of the project area is a landfill that was operated by the City of Marcos, but is now closed. The landfill is not close enough to the project area to be an environmental concern. The land use surrounding and within the proposed project is mostly low-density estate residential".

4-1

♻️ Printed on Recycled Paper

Ms. Karen Ogawa  
September 1, 2010  
Page 2

Based on the review of the submitted document DTSC has the following comments:

- 1) The EIR should evaluate whether conditions within the Project area may pose a threat to human health or the environment. Following are the databases of some of the regulatory agencies:
  - National Priorities List (NPL): A list maintained by the United States Environmental Protection Agency (U.S.EPA).
  - Envirostor (formerly CalSites): A Database primarily used by the California Department of Toxic Substances Control, accessible through DTSC's website (see below).
  - Resource Conservation and Recovery Information System (RCRIS): A database of RCRA facilities that is maintained by U.S. EPA.
  - Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS): A database of CERCLA sites that is maintained by U.S.EPA.
  - Solid Waste Information System (SWIS): A database provided by the California Integrated Waste Management Board which consists of both open as well as closed and inactive solid waste disposal facilities and transfer stations.
  - GeoTracker: A List that is maintained by Regional Water Quality Control Boards.
  - Local Counties and Cities maintain lists for hazardous substances cleanup sites and leaking underground storage tanks.
  - The United States Army Corps of Engineers, 911 Wilshire Boulevard, Los Angeles, California, 90017, (213) 452-3908, maintains a list of Formerly Used Defense Sites (FUDS).
- 2) The EIR should identify the mechanism to initiate any required investigation and/or remediation for any site within the Project area that may be contaminated, and the government agency to provide appropriate regulatory oversight. If necessary, DTSC would require an oversight agreement in order to review such documents.

4-2

4-3

- 3) Any environmental investigations, sampling and/or remediation for a site should be conducted under a Workplan approved and overseen by a regulatory agency that has jurisdiction to oversee hazardous substance cleanup. The findings of any investigations, including any Phase I or II Environmental Site Assessment Investigations should be summarized in the document. All sampling results in which hazardous substances were found above regulatory standards should be clearly summarized in a table. All closure, certification or remediation approval reports by regulatory agencies should be included in the EIR.
- 4) If buildings, other structures, asphalt or concrete-paved surface areas are being planned to be demolished, an investigation should also be conducted for the presence of other hazardous chemicals, mercury, and asbestos containing materials (ACMs). If other hazardous chemicals, lead-based paints (LPB) or products, mercury or ACMs are identified, proper precautions should be taken during demolition activities. Additionally, the contaminants should be remediated in compliance with California environmental regulations and policies.
- 5) Future project construction may require soil excavation or filling in certain areas. Sampling may be required. If soil is contaminated, it must be properly disposed and not simply placed in another location onsite. Land Disposal Restrictions (LDRs) may be applicable to such soils. Also, if the project proposes to import soil to backfill the areas excavated, sampling should be conducted to ensure that the imported soil is free of contamination.
- 6) Human health and the environment of sensitive receptors should be protected during any construction or demolition activities. If necessary, a health risk assessment overseen and approved by the appropriate government agency should be conducted by a qualified health risk assessor to determine if there are, have been, or will be, any releases of hazardous materials that may pose a risk to human health or the environment.
- 7) If it is determined that hazardous wastes are, or will be, generated by the proposed operations, the wastes must be managed in accordance with the California Hazardous Waste Control Law (California Health and Safety Code, Division 20, Chapter 6.5) and the Hazardous Waste Control Regulations (California Code of Regulations, Title 22, Division 4.5). If it is determined that hazardous wastes will be generated, the facility should also obtain a United States Environmental Protection Agency Identification Number by contacting (800) 618-6942. Certain hazardous waste treatment processes or hazardous materials, handling, storage or uses may require authorization from the local

4-3  
cont.

Ms. Karen Ogawa  
September 1, 2010  
Page 4

Certified Unified Program Agency (CUPA). Information about the requirement for authorization can be obtained by contacting your local CUPA.

- 8) If during construction/demolition of the Project Area, the soil and/or groundwater contamination is suspected, construction/demolition in the area should cease and appropriate health and safety procedures should be implemented.
- 9) If a site was used for agricultural, livestock or related activities, onsite soils and groundwater might contain pesticides, agricultural chemical, organic waste or other related residue. Proper investigation, and remedial actions, if necessary, should be conducted under the oversight of and approved by a government agency at the site prior to construction of the project.
- 10) DTSC can provide cleanup oversight through an Environmental Oversight Agreement (EOA) for government agencies that are not responsible parties, or a Voluntary Cleanup Agreement (VCA) for private parties. For additional information on the EOA or VCA, please see [www.dtsc.ca.gov/SiteCleanup/Brownfields](http://www.dtsc.ca.gov/SiteCleanup/Brownfields), or contact Ms. Maryam Tasnif-Abbasi, DTSC's Voluntary Cleanup Coordinator, at (714) 484-5489.
- 11) Also, in future CEQA documents, please provide your e-mail address, so DTSC can send you the comments both electronically and by mail.

4-3  
cont.

4-4

If you have any questions regarding this letter, please contact me at [rahmed@dtsc.ca.gov](mailto:rahmed@dtsc.ca.gov), or by phone at (714) 484-5491.

Sincerely,



Greg Holmes  
Unit Chief  
Brownfields and Environmental Restoration Program

cc: Governor's Office of Planning and Research  
State Clearinghouse  
P.O. Box 3044  
Sacramento, California 95812-3044  
[state.clearinghouse@opr.ca.gov](mailto:state.clearinghouse@opr.ca.gov)

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Ms. Karen Ogawa  
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Page 5

cc: CEQA Tracking Center  
Department of Toxic Substances Control  
Office of Environmental Planning and Analysis  
P.O. Box 806  
Sacramento, California 95812  
[ADelacr1@dtsc.ca.gov](mailto:ADelacr1@dtsc.ca.gov)

CEQA # 2995

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**Letter 4: Greg Holmes, Department of Toxic Substances Control**  
**Response 4-1**

The commenter accurately describes the proposed project and the project area. This comment does not contain a specific question or concern regarding the adequacy of the environmental analysis in the Draft EIR. Therefore, pursuant to CEQA Guidelines § 15204, no further response to this comment is necessary.

**Response 4-2**

The commenter states that the EIR should evaluate whether existing conditions in the project area may pose a threat to human health and the environment. The commenter also lists databases of regulatory agencies.

The commenter is referred to Chapter 3.9, Public Safety and Hazardous Materials, page 3.9-1 of the Draft EIR, which states, “the State Water Resources Control Board Geotracker (2010) and State Department of Toxic Substances EnviroStor (DTSC 2010) databases were evaluated to determine if hazardous materials are present on the project site currently or in the past.” The EnviroStor database includes the following site types: those listed on the National Priorities List (Federal Superfund sites), State Superfund and Military Facilities, Voluntary Cleanup, and school sites. The GeoTracker includes geographic information and data on underground fuel tanks, fuel pipelines, and public drinking water supplies, and contains information about leaking underground fuel tanks (LUFT). This database also includes information and data on non-LUFT cleanup programs, including Spills-Leaks-Investigations-Cleanups (SLIC) sites, Department of Defense Sites (DOD), and Land Disposal programs.

These databases are comprehensive and cover the types of facilities and sites required for listing under Government Code Section 69565.5. As stated on page 3.9-1 of the Draft EIR, “no properties within a 0.25-mile-radius of the project area were listed on these databases. Approximately 1.5 miles northwest of the project area is a landfill that was operated by the County of San Diego, but is now closed. The landfill is not close enough to the project area to be an environmental concern. Additionally, the proposed project will be an underground pipeline that will be closed to any potential surface water or groundwater contamination.” Further, page 3.9-3 concludes, “the project site is not included on the list of hazardous materials sites ... and would not create a significant hazard to the public or the environment relative to hazardous materials.” No further analysis is necessary.

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### **Response 4-3**

The commenter states that the EIR should identify the mechanism to initiate required investigation and/or remediation for sites in the project area that may be contaminated. The commenter also provides a list of suggested measures to implement should contamination be encountered on the project site.

The project site is currently undeveloped. As such, the likelihood of the discovery of contaminated sites is very low and not anticipated to occur. If, however, contaminated sites are discovered, the District would work with DTSC to properly investigate and remediate the site pursuant to state and federal requirements. No further analysis is necessary.

### **Response 4-4**

The commenter requests that the District provide its email address so the commenter can provide comments both electronically and by mail. The Notice of Availability (NOA) for the Draft EIR was distributed on July 30, 2010. The NOA included an email address for the District to which comments could be electronically submitted.

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Letter 5

**From:** John Haass [jnlhaass@yahoo.com]  
**Sent:** Thursday, September 02, 2010 12:19 PM  
**To:** nancygoodrich@hotmail.com  
**Cc:** mfallon1@att.net; George Brist; j.arsivaud@gmail.com  
**Subject:** Fw: Opportunity for community improvements

Dear Ms. Goodrich,

As residents of Elfin Forest who will be impacted directly by the proposed pipeline construction project through our community, we urge you to consider contributing to the building of gates on Fortuna del Este and Canyon de Oro to mitigate the project impact. Traffic restriction and congestion on Elfin Forest Road when the traffic is down to one lane is sure to result in traffic diversion on to Fortuna del Este and Fortuna Del Sur, two private roads whose residents are already severely affected by cut-through traffic. A group of residents from both roads has been working for years to build a gate system that would prevent that traffic, and the project is ready to move to construction phase.

We believe there is a nexus between OMWD's construction project and this one because while the issue of traffic calming on those roads is not new, the project will add considerably to the traffic volume for residents and non-residents trying to avoid traffic delays caused by excavation work on Elfin Forest Road. There will be wear and tear inflicted on our private roads as a direct result of this project, and since they are private, we as property owners will bear the cost of repairs. In addition, once built the gates will protect several hundred acres of OMWD protected open space mitigation land from dumping, fire risk, graffiti, and off-roading activities, which will in turn reduce maintenance costs to the district. While the ability of the district to give monetary contributions may be limited, in-kind contribution of construction work while the contractors are in Elfin Forest would be most appreciated.

Thank you for considering our request,

John Haass  
19401 Fortuna del Este  
Elfin Forest, CA 92029

5-1

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**From:** minoo sohaey [minoosoh@yahoo.com]  
**Sent:** Friday, September 03, 2010 8:09 AM  
**To:** Nancy goodrich  
**Cc:** Melanie Fallon; George Briest  
**Subject:** Re: OMWD pipeline

As residents of Elfin Forest who will be impacted directly by the proposed construction project through our community, we urge you to consider contribution to the building of gates on Fortuna del Este and Canyon de Oro to mitigate the project impact. Traffic restriction and congestion on Elfin Forest Road when the traffic is down to one lane is sure to result in traffic diversion on to Fortuna del Este and Fortuna del Sur, two private roads whose residents are already severely affected by cut-through traffic. A group of residents from both roads has been working for years to build a gate system that would prevent that traffic and the project is ready to move to construction phase.

We believe there is a nexus between OMWD's construction project and this one because while the issue of traffic calming on those roads is not new, the project will add considerably to the traffic volume for residents and non residents trying to avoid traffic delays caused by excavation work on Elfin Forest Road. There will be also wear and tear on our private roads as a direct result of this project and since they are private, so as property owners bear the cost of repairs. In addition, once when the gates are built will protect several hundred acres of OMWD protected open space mitigation land from dumping, fire risk and off road activities, which will in turn reduce maintenance costs to the district. While the ability of the district to give monetary contributions may be limited, in-kind contribution of construction work while the contractors are in Elfin Forest would be most appreciated. Thank you for considering our request.

Minoo Sohaey  
1420 Paint Mountain Road. Elfin Forest

5-1  
cont.

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**From:** Lee Haass [mailto:lee.haass@gmail.com]  
**Sent:** Friday, September 03, 2010 10:34 AM  
**To:** nancygoodrich@hotmail.com; mfallon1@att.net; George Briest; j.arsivaud@gmail.com  
**Subject:** Opportunity for Community Improvements

Dear Ms. Goodrich,

As residents of Elfin Forest who will be impacted directly by the proposed pipeline construction project through our community, we urge you to consider contributing to the building of gates on Fortuna del Este and Canyon de Oro to mitigate the project impact. Traffic restriction and congestion on Elfin Forest Road when the traffic is down to one lane is sure to result in traffic diversion on to Fortuna del Este and Fortuna Del Sur, two private roads whose residents are already severely affected by cut-through traffic. A group of residents from both roads has been working for years to build a gate system that would prevent that traffic, and the project is ready to move to construction phase.

We believe there is a nexus between OMWD's construction project and this one because while the issue of traffic calming on those roads is not new, the project will add considerably to the traffic volume for residents and non-residents trying to avoid traffic delays caused by excavation work on Elfin Forest Road. There will be wear and tear inflicted on our private roads as a direct result of this project, and since they are private, we as property owners will bear the cost of repairs. In addition, once built the gates will protect several hundred acres of OMWD protected open space mitigation land from dumping, fire risk, graffiti, and off-roading activities, which will in turn reduce maintenance costs to the district. While the ability of the district to give monetary contributions may be limited, in-kind contribution of construction work while the contractors are in Elfin Forest would be most appreciated.

5-1  
cont.

Thank you for considering our request,

Lee Anne Haass  
19401 Fortuna del Este  
Elfin Forest, CA 92029

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**From:** Gail Twohy [gtwohy@gmail.com]  
**Sent:** Saturday, September 04, 2010 6:26 PM  
**To:** nancygoodrich@hotmail.com  
**Cc:** mfallon1@att.net; George Briest  
**Subject:** Mitigation for OMWD's construction project

September 4, 2010

TO: Nancy Goodrich, Chair, OMWD pipeline committee for EFHGTC  
CC: Melanie Fallon, Chair, EFHGTC  
CC: George Briest, OMWD

As residents of Elfin Forest who will be impacted directly by the proposed pipeline construction project through our community, we urge you to consider contributing to the building of gates on Fortuna del Este and Canyon de Oro to mitigate the project impact. Traffic restriction and congestion on Elfin Forest Road, when the traffic is down to one lane, is sure to result in traffic diversion on to Fortuna del Este and Fortuna Del Sur, two private roads whose residents are already severely affected by cut-through traffic. A group of residents from both roads has been working for years to build a gate system that would prevent that traffic, and the project is ready to move to construction phase.

We believe there is a nexus between OMWD's construction project and this one, because while the issue of traffic calming on those roads is not new, the project will add considerably to the traffic volume for residents and non-residents trying to avoid traffic delays caused by excavation work on Elfin Forest Road. There will be wear and tear inflicted on our private roads as a direct result of this project, and since they are private, we as property owners will bear the cost of repairs. In addition, once built, the gates will protect several hundred acres of OMWD protected open space mitigation land from dumping, fire risk, and off-roading activities, which will in turn reduce maintenance costs to the district. While the ability of the district to give monetary contributions may be limited, in-kind contribution of construction work, while the contractors are in Elfin Forest, would be most appreciated.

Thank you for considering our request,

Gail Twohy  
20018 Fortuna del Este

5-1  
cont.

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**From:** minoo sohaey [minoosoh@yahoo.com]  
**Sent:** Tuesday, September 07, 2010 11:18 AM  
**To:** George Briest  
**Subject:** re: pipeline

TO: Nancy Goodrich, Chair, OMWD pipeline committee for EFHGTC  
(nancygoodrich@hotmail.com)  
CC: Melanie Fallon, Chair, EFHGTC (mfallon1@att.net)  
CC: George Briest, OMWD (gbriest@olivenhain.com)

As residents of Elfin Forest who will be impacted directly by the proposed pipeline construction project through our community, we urge you to consider contributing to the building of gates on Fortuna del Este and Canyon de Oro to mitigate the project impact. Traffic restriction and congestion on Elfin Forest Road when the traffic is down to one lane is sure to result in traffic diversion on to Fortuna del Este and Fortuna Del Sur, two private roads whose residents are already severely affected by cut-through traffic. A group of residents from both roads has been working for years to build a gate system that would prevent that traffic, and the project is ready to move to construction phase.

We believe there is a nexus between OMWD's construction project and this one because while the issue of traffic calming on those roads is not new, the project will add considerably to the traffic volume for residents and non-residents trying to avoid traffic delays caused by excavation work on Elfin Forest Road. There will be wear and tear inflicted on our private roads as a direct result of this project, and since they are private, we as property owners will bear the cost of repairs. In addition, once built the gates will protect several hundred acres of OMWD protected open space mitigation land from dumping, fire risk, and off-roading activities, which will in turn reduce maintenance costs to the district. While the ability of the district to give monetary contributions may be limited, in-kind contribution of construction work while the contractors are in Elfin Forest would be most appreciated.

Thank you for considering our request,

Your name  
Your add

5-1  
cont.

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**From:** minoo sohaey [minoosoh@yahoo.com]  
**Sent:** Tuesday, September 07, 2010 11:23 AM  
**To:** George Briest  
**Subject:** re: Pinpline

TO: Nancy Goodrich, Chair, OMWD pipeline committee for EFHGTC  
(nancygoodrich@hotmail.com)  
CC: Melanie Fallon, Chair, EFHGTC (mfallon1@att.net)  
CC: George Briest, OMWD (gbriest@olivenhain.com)

As residents of Elfin Forest who will be impacted directly by the proposed pipeline construction project through our community, we urge you to consider contributing to the building of gates on Fortuna del Este and Canyon de Oro to mitigate the project impact. Traffic restriction and congestion on Elfin Forest Road when the traffic is down to one lane is sure to result in traffic diversion on to Fortuna del Este and Fortuna Del Sur, two private roads whose residents are already severely affected by cut-through traffic. A group of residents from both roads has been working for years to build a gate system that would prevent that traffic, and the project is ready to move to construction phase.

We believe there is a nexus between OMWD's construction project and this one because while the issue of traffic calming on those roads is not new, the project will add considerably to the traffic volume for residents and non-residents trying to avoid traffic delays caused by excavation work on Elfin Forest Road. There will be wear and tear inflicted on our private roads as a direct result of this project, and since they are private, we as property owners will bear the cost of repairs. In addition, once built the gates will protect several hundred acres of OMWD protected open space mitigation land from dumping, fire risk, and off-roading activities, which will in turn reduce maintenance costs to the district. While the ability of the district to give monetary contributions may be limited, in-kind contribution of construction work while the contractors are in Elfin Forest would be most appreciated.

Thank you for considering our request,

Minoo Sohaey 1420 Paint Mountain Road, Escondido, Ca. 92029

5-1  
cont.

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**From:** CHRIS CASSAPAKIS [cassapakis@msn.com]  
**Sent:** Wednesday, September 08, 2010 2:08 PM  
**To:** nancygoodrich@hotmail.com  
**Cc:** mfallon1@att.net; George Briest  
**Subject:** Pipeline Construction Project at Elfin Forest

Dear Ms. Goodrich,

As a resident of Elfin Forest who will be impacted directly by the proposed pipeline construction project through our community, I would greatly appreciate your consideration in contributing to the building of gates on Fortuna del Este and Canyon de Oro, as an effective mitigation of the pipeline project's overall impact to our community. Traffic restriction and congestion on Elfin Forest Road, as traffic will be restricted to one lane, is sure to result in traffic diversion on to Fortuna del Este and Fortuna Del Sur, two private roads whose residents are already severely affected by cut-through traffic. A group of residents from both roads has been working for years to build a gate system that would prevent that traffic, and the project is ready to move to construction phase.

We believe there is a nexus between OMWD's construction project and this one because while the issue of traffic calming on those roads is not new, the project will add considerably to the traffic volume for residents and non-residents trying to avoid traffic delays caused by excavation work on Elfin Forest Road. There will be wear and tear inflicted on our private roads as a direct result of this project, and since they are private, we as property owners will bear the cost of repairs. From OMWD's perspective, building the gates will protect several hundred acres of OMWD protected open space mitigation land from dumping, fire risk, and off-roading activities, which will in turn reduce maintenance costs to the district. While the ability of the district to give monetary contributions may be limited, in-kind contribution of construction work while the contractors are in Elfin Forest would be most appreciated.

Thank you for your time and consideration.

With kind regards,

Chris Cassapakis  
1408 Paint Mountain Rd,  
Escondido, CA. 92029

5-1  
cont.

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**From:** Victoria Kindel [victoriakindel@yahoo.com]  
**Sent:** Sunday, September 12, 2010 6:44 PM  
**To:** nancygoodrich@hotmail.com  
**Cc:** mfallon1@att.net; George Brist  
**Subject:** OMWD pipeline project in Elfin Forest

Dear Ms. Goodrich:

As residents of Elfin Forest who will be impacted directly by the proposed pipeline construction project through our community, we urge you to consider contributing to the building of gates on Fortuna del Este and Canyon de Oro to mitigate the project impact. Traffic restriction and congestion on Elfin Forest Road when the traffic is down to one lane is sure to result in traffic diversion on to Fortuna del Este and Fortuna Del Sur, two private roads whose residents are already severely affected by cut-through traffic. A group of residents from both roads has been working for years to build a gate system that would prevent that traffic, and the project is ready to move to construction phase.

We believe there is a nexus between OMWD's construction project and this one because while the issue of traffic calming on those roads is not new, the project will add considerably to the traffic volume for residents and non-residents trying to avoid traffic delays caused by excavation work on Elfin Forest Road. There will be wear and tear inflicted on our private roads as a direct result of this project, and since they are private, we as property owners will bear the cost of repairs. In addition, once built, the gates will protect several hundred acres of OMWD protected open space mitigation land from dumping, fire risk, and off-roading activities, which will in turn reduce maintenance costs to the district. While the ability of the district to give monetary contributions may be limited, in-kind contribution of construction work while the contractors are in Elfin Forest would be most appreciated.

Thank you for considering our request.

Sincerely,

Geoff and Victoria Kindel  
20177 Fortuna del Este  
Elfin Forest, CA 92029

5-1  
cont.

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**From:** Jan Denny [jan@raptorridge.net]  
**Sent:** Sunday, September 12, 2010 9:13 PM  
**To:** nancygoodrich@hotmail.com  
**Cc:** j.arsivaud@gmail.com; mfallon1@att.net; George Briest  
**Subject:** Request Mitigation for Pipeline Project on Elfin Forest Road

TO: Nancy Goodrich, Chair, OMWD pipeline committee for EFHGTC  
(nancygoodrich@hotmail.com)  
CC: Melanie Fallon, Chair, EFHGTC (mfallon1@att.net)  
CC: George Briest, OMWD (gbriest@olivenhain.com)  
CC: Jacqueline Arsivaud, EFHGTC (j.arsivaud@gmail.com)

As residents of Elfin Forest who will be impacted directly by the proposed pipeline construction project through our community, we urge you to consider contributing to the building of a gate on Seaquest Trail to mitigate the project impact. Traffic restriction and congestion on Elfin Forest Road when the traffic is down to one lane is sure to result in traffic diversion on to Fortuna del Sur, which turns into Seaquest Trail - two private roads whose residents are already severely affected by cut-through traffic. A group of residents from Fortuna del Sur / Seaquest Trail has been working for years to upgrade our existing gate system that would allow us to control that traffic, but the project is in need of financial support.

We believe there is a nexus between OMWD's construction project and this one because while the issue of traffic calming on those roads is not new, the project will add considerably to the traffic volume for residents and non-residents trying to avoid traffic delays caused by excavation work on Elfin Forest Road. There will be wear and tear inflicted on our private roads as a direct result of this project, and since they are private, we as property owners will bear the cost of repairs. In addition, once built, the gate will protect several hundred acres of OMWD protected open space mitigation land from dumping, fire risk, and off-roading activities, which will in turn reduce maintenance costs to the district. While the ability of the district to give monetary contributions may be limited, in-kind contribution of construction work while the contractors are in Elfin Forest would be most appreciated.

Thank you for considering our request,

Jan Denny  
2255 Seaquest Trail  
Escondido, CA 92029  
760-736-8436  
jan@raptorridge.net

5-1  
cont.

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**From:** julieaherrick@hotmail.com  
**Sent:** Sunday, September 12, 2010 10:10 PM  
**To:** nancygoodrich@hotmail.com  
**Cc:** mfallon1@att.net; George Briest  
**Subject:** Elfin Forest Rd. Pipeline

As residents of Elfin Forest who will be impacted directly by the proposed pipeline construction project through our community, we urge you to consider contributing to the building of gates on Fortuna del Este and Canyon de Oro and automating the gate on Seaquest to mitigate the project impact. Traffic restriction and congestion on Elfin Forest Road when the traffic is down to one lane is sure to result in traffic diversion on to Fortuna del Este and Fortuna Del Sur, two private roads whose residents are already severely affected by cut-through traffic. A group of residents from both roads has been working for years to build a gate system that would prevent that traffic, and the project is ready to move to construction phase. The Seaquest gate is already built, partly with a previous donation from OMWD, so there is a precedent for the district to help with traffic calming.

We believe there is a nexus between OMWD's construction project and this one because while the issue of traffic calming on those roads is not new, the project will add considerably to the traffic volume for residents and non-residents trying to avoid traffic delays caused by excavation work on Elfin Forest Road. There will be wear and tear inflicted on our private roads as a direct result of this project, and since they are private, we as property owners will bear the cost of repairs. In addition, once built the gates will protect several hundred acres of OMWD protected open space mitigation land from dumping, fire risk, and off-roading activities, which will in turn reduce maintenance costs to the district. While the ability of the district to give monetary contributions may be limited, in-kind contribution of construction work while the contractors are in Elfin Forest would be most appreciated.

Thank you for considering our request,  
Julie and Joe Herrick  
20462 Fortuna Del Sur

5-1  
cont.

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**From:** Charles Bair [charles.bair@me.com]  
**Sent:** Monday, September 13, 2010 11:19 PM  
**To:** nancygoodrich@hotmail.com  
**Cc:** mfallon1@att.net; George Briest  
**Subject:** Elfin Forest Gates

Dear Ms. Goodrich,

As residents of Elfin Forest who will be impacted directly by the proposed pipeline construction project through our community, we urge you to consider contributing to the building of gates on Fortuna del Este and Canyon de Oro and automating the gate on Seaquest to mitigate the project impact. Traffic restriction and congestion on Elfin Forest Road when the traffic is down to one lane is sure to result in traffic diversion on to Fortuna del Este and Fortuna Del Sur, two private roads whose residents are already severely affected by cut-through traffic. A group of residents from both roads has been working for years to build a gate system that would prevent that traffic, and the project is ready to move to construction phase. The Seaquest gate is already built, partly with a previous donation from OMWD, so there is a precedent for the district to help with traffic calming.

We believe there is a nexus between OMWD's construction project and this one because while the issue of traffic calming on those roads is not new, the project will add considerably to the traffic volume for residents and non-residents trying to avoid traffic delays caused by excavation work on Elfin Forest Road. There will be wear and tear inflicted on our private roads as a direct result of this project, and since they are private, we as property owners will bear the cost of repairs. In addition, once built the gates will protect several hundred acres of OMWD protected open space mitigation land from dumping, fire risk, and off-roading activities, which will in turn reduce maintenance costs to the district. While the ability of the district to give monetary contributions may be limited, in-kind contribution of construction work while the contractors are in Elfin Forest would be most appreciated.

Thank you for considering our request,

Charles J. Bair and Teri S. Bair  
20426 Fortuna Del Sur  
Elfin Forest, CA 92029

5-1  
cont.

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**From:** Scot Cheatham [SCheatham@eosintl.com]  
**Sent:** Thursday, September 16, 2010 12:14 PM  
**To:** nancygoodrich@hotmail.com  
**Cc:** George Briest  
**Subject:** Elfin Forest Construction

Dear Nancy:

I am a property owner in Elfin Forest. As you know, our community has been dramatically impacted on multiple occasions by various OMWD pipeline construction projects. I understand that a new proposed project will increase traffic congestion on Elfin Forest Road and other arteries that flow into it. Many private road arteries, like Fortuna del Este, Fortuna del Sur, and Canyon de Oro will likely be negatively impacted by your newly planned construction.

For many years, we have been working with various agencies to construct a series of gates to help us mitigate traffic, reduce maintenance costs, and protect mitigation land located around our roads.

As a good neighbor, we would appreciate if OMWD would contribute directly and substantially to the construction and maintenance of the gate system we have proposed.

Thank you for your consideration of this request.

Regards,

Scot Cheatham  
Property Owner and Member of Paint Mountain Association

5-1  
cont.

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**From:** Alan Benjamin [abfilters@gmail.com]  
**Sent:** Monday, September 20, 2010 9:19 AM  
**To:** nancygoodrich@hotmail.com  
**Cc:** mfallon1@att.net; George Brist; abfilters@gmail.com  
**Subject:** Pipeline construction in Elfin Forest

Hello Nancy,

As residents of Elfin Forest who will be impacted directly by the proposed pipeline construction project through our community, we urge you to consider contributing to the building of the gates on Fortuna del Este and Canyon de Oro and automating the gate on Seaquest to mitigate the project impact. Once Elfin Forest is taken down to one lane, for what is now to be almost a year, this will surely result in people trying to bypass the jam and seek alternatives - which are Fortuna del Este and Fortuna Del Sur, two private roads whose residents are already severely affected by cut-through traffic. A group of residents from both roads has been working for years to build a gate system that would prevent that traffic, and the project is ready to move to construction phase. The Seaquest gate is already built, partly with a previous donation from OMWD, so there is a precedent for the district to help with traffic calming.

We believe there is a nexus between OMWD's construction project and this one because while the issue of traffic calming on those roads is not new, the project will add considerably to the traffic volume for residents and non-residents trying to avoid traffic delays caused by excavation work on Elfin Forest Road. There will be wear and tear inflicted on our private roads as a direct result of this project, and since they are private, we as property owners will bear the cost of repairs. In addition, once built the gates will protect several hundred acres of OMWD protected open space mitigation land from dumping, fire risk, and off-roading activities, which will in turn reduce maintenance costs to the district. While the ability of the district to give monetary contributions may be limited, in-kind contribution of construction work while the contractors are in Elfin Forest would be most appreciated.

Thank you for considering our request,

Alan Benjamin  
148 Paint Mountain Road  
Elfin Forest, CA 92029

5-1  
cont.

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**From:** D Caldwell [docaldwell@gmail.com]  
**Sent:** Tuesday, September 21, 2010 2:44 PM  
**To:** nancygoodrich@hotmail.com  
**Cc:** Melanie Fallon; George Briest  
**Subject:** OMWD Proposed Pipeline Project-Mitigation

September 21, 2010

TO: Nancy Goodrich, Chair, OMWD pipeline committee for EFHGTC

The OMWD proposed pipeline construction project planned in our Elfin Forest community will cause considerable increased traffic along Fortuna del Este (flowing onto Canyon de Oro) and Fortuna del Sur—all privately maintained roads. This is a huge burden on our private road maintenance funds. I am requesting that OMWD consider a contribution to the construction of gates on these small private roads to stop the flow of through traffic.

5-1  
cont.

Thank you for considering this request,

Dorothy Caldwell  
20215 Fortuna del Este  
Elfin Forest, CA 92029

CC: Melanie Fallon, Chair, EFHGTC  
George Briest, OMWD

---

## Letter 5: Elfin Forest Residents

### Response 5-1

The commenter requests that the District help mitigate potential traffic that cuts through Fortuna del Este and Fortuna del Sur by constructing gates on these roads. As stated on page 2-11 of the Draft EIR, limited amounts of materials and equipment staging would occur within the roadway during construction to limit the length of the lane closure required. No materials or equipment would be left obstructing traffic after daily construction hours end.

Additionally, as stated on page 3.2-8 of the Draft EIR, the proposed project is calculated to have no significant impacts to the study intersections or roadway segments. The study intersections were calculated to operate at LOS B or better and roadway segments were calculated to operate at LOS C or better. Even though there are no calculated significant traffic impacts, the District would implement the following traffic control measures to minimize the interruption of traffic due to the project:

- All construction that directly affects movement of traffic along any public street as a result of lane closures, realignments, detours, narrowing, or erection of barriers or other traffic control devices would be detailed in a traffic control plan in accordance with the Manual of Uniform for Traffic Control Devices (MUTCD) and County Standard Drawings and Department Instructions. The traffic control plan would be approved by the County of San Diego Public Works Division and would include appropriate signs and other warning devices in advance of construction zones, as well as posted notices prior to commencement of construction. Notices will be posted at the beginning and terminus of Elfin Forest Road and Harmony Grove Road in the cities of San Marcos and Escondido.
- Along Elfin Forest Road and Harmony Grove Road, a single lane of traffic would always be maintained and traffic would alternate on a single-lane road controlled by a flagger. Hand-signaling devices, such as STOP/SLOW paddles, lights, and red flags, would be used to control road users through temporary traffic control zones.
- Flagger stations would be located far enough in advance so that approaching road users would have sufficient distance to stop before entering the work space. Based on MUTCD standards, 50 mph on Elfin Forest Road requires 425 feet.
- During times when construction activity is not occurring, these roadways would be restored to their normal operating conditions.

- 
- Signs, notices, and other warning devices shall be posted to direct bikes and pedestrians to safe crossing locations in advance of the construction zones.
  - Access to residences, businesses, and institutions shall be maintained at all times during construction.

As such, the District has not identified significant environmental traffic impacts per CEQA to the local roadways, but would work with the residents most affected by the construction of the proposed project to address their concerns.

Letter 6



## County of San Diego

ERIC GIBSON  
DIRECTOR

### DEPARTMENT OF PLANNING AND LAND USE

5201 RUFFIN ROAD, SUITE B, SAN DIEGO, CALIFORNIA 92123-1666  
INFORMATION (858) 694-2960  
TOLL FREE (800) 411-0017  
[www.sdcounty.ca.gov/dplu](http://www.sdcounty.ca.gov/dplu)

September 13, 2010

Karen Ogawa  
Olivenhain Municipal Water District  
1966 Olivehain Road  
San Diego, California 92024

Via email to: [KOgawa@Olivenhain.com](mailto:KOgawa@Olivenhain.com)

#### **COMMENTS ON THE RAW WATER PIPELINE PROJECT FROM SECOND SAN DIEGO AQUEDUCT TO DAVID C. McCOLLOM WATER TREATMENT PLANT**

The County of San Diego has received and reviewed the Draft Environmental Impact Report (EIR) for the Raw Water Pipeline Project from the Second San Diego Aqueduct to the David C. McCollom Water Treatment Plant and appreciates this opportunity to comment. In response to the document the County has comments that identify potentially significant environmental issues that may have an affect on the unincorporated lands of San Diego County, reasonable alternatives and mitigation measures that the County will need to have explored in the environmental document.

6-1

County Department of Planning and Land Use (DPLU) and the Department of Parks and Recreation (DPR) staff has completed its review and has the following comments regarding the content of the above documents:

#### **GENERAL COMMENTS**

1. The County of San Diego, Land Use and Environment Group has developed Guidelines for Determining Significance that are used as guidance for determining the significance of environmental impacts in the unincorporated portions of the County of San Diego. The Guidelines also provide mitigation options for addressing potentially significant impacts. Project impacts that could have potentially significant adverse effects to the unincorporated County or County facilities should evaluate and mitigate environmental impacts using the guidance described in these guidelines, available online at: <http://www.sdcounty.ca.gov/dplu/procguid.html#guide>.

6-2

2. Portions of the Preferred Alternative and Flow Control Facility at Aqueduct Connection Alternative are located within the boundaries of the County's existing Sage Hill Preserve and directly adjacent to the County-owned Mendocino property (APN 264-042-87). These properties were purchased and are under conservation easement to: (1) provide mitigation for transportation projects funded by the San Diego Association of Governments (SANDAG); (2) protect critical habitat for California gnatcatcher; (3) further implement the California Department of Fish and Game (CDFG) Natural Community Conservation Planning (NCCP) efforts in North San Diego County; and (4) enhance a general wildlife corridor between larger habitat areas, as well as help to enhance existing efforts to conserve coastal sage scrub habitat.

The County Department of Parks and Recreation (DPR) has agreed to manage the properties consistent with the terms and conditions of the Sage Hill and Mendocino Land Management Agreements, the Conservation Easement Deeds, and Resource Management Plans (RMPs) to developed by DPR, so that the properties' conservation values, including the mitigation value to SANDAG, are maintained and protected. The Sage Hill Preserve RMP was completed by DPR in May 2010 and it is currently under review for approval by the U.S. Fish and Wildlife Service and CDFG. A RMP for the Mendocino property is currently under development.

6-3

While it appears that the proposed work will be conducted within easements held by the San Diego County Water Authority (SDCWA) and Olivenhain Municipal Water District (OMWD), or along the County's road right-of-way, impacts to these properties must be evaluated within the EIR. The Draft Environmental Impact Report (DEIR) should be revised to provide additional details and/or figures to clearly indicate the specific activities and locations of all proposed work within and adjacent to Sage Hill Preserve and Mendocino. The DEIR should also provide an analysis of any temporary, permanent, direct or indirect impacts to these properties including those outside of the designated easements or road right-of-way.

### SPECIFIC COMMENTS

3. **Section 2.1 Project Location and Environmental Setting –**
- a. **Page 2.1, Last Sentence** – The Southern Alternative is addressed in Chapter 5, not 6 as indicated.
  - b. **Page 2.5, First Paragraph, Last Sentence** – The alternatives are addressed in Chapter 5, not 6 as indicated.

6-4

4. **Section 2.2.1 Project Components** - This section should be revised to indicate that the Preferred Alternative begins within the Sage Hill Preserve. It should state if all work is anticipated to be conducted within the SDCWA and OMWD easements. 6-5
5. **Section 3.1.1 Existing Conditions, Surrounding Land Uses** - This section should be revised to include discussion of the existing Sage Hill Preserve and Mendocino mitigation properties as a surrounding land use.
6. **Section 3.5.3 Hydrology and Water Quality Mitigation** –
  - a. **Measure #4** – Any erosion and runoff control measures proposed within Sage Hill Preserve should be coordinated with the DPR District Park Manager (see contact information below).
  - b. **Measure #6** – Pre-designated sites for stockpiles, refueling activities, and storage areas of hazardous materials should be located outside of the Sage Hill Preserve. 6-6
  - c. **Measure #8** – Stabilization of any exposed slopes within Sage Hill Preserve should be coordinated with the DPR District Park Manager.
7. **Section 3.6.4 Biological Resources Mitigation Measures** –
  - a. **BIO-E** – All fueling areas should be located outside of the Sage Hill Preserve.
  - b. **BIO-G** – Setback limitations within Sage Hill Preserve should be coordinated with the DPR Resource Management Division.
  - c. **BIO-I** – Any proposed noise attenuation barriers within Sage Hill Preserve should be coordinated with the DPR District Park Manager. No heavy equipment should be repaired within the Sage Hill Preserve. 6-7
  - d. **BIO-J** – Any proposed fencing within Sage Hill Preserve should be temporary and coordinated with the DPR District Park Manager.
  - e. **BIO-K** – Staging/storage areas and should be located outside the Sage Hill Preserve. No heavy equipment maintenance should be performed in the Sage Hill Preserve. Any soil stockpiles proposed within the Preserve should be coordinated with the DPR District Park Manager. In addition, any proposed construction fencing within Sage Hill Preserve should be temporary and coordinated with the DPR District Park Manager.

- f. **BIO-L** – Any proposed revegetation work within Sage Hill Preserve or adjacent to the Mendocino property should use native plants and the planting palette should be pre-approved by the DPR Resource Management Division. 6-7  
cont.
8. **Section 5.3 Flow Control Facility at Aqueduct Alternative** – This section should be revised to provide additional details and/or figures to indicate that the proposed flow control facility is located within the Sage Hill Preserve. It should state if all work is anticipated to be conducted within the SDCWA and OMWD easements. 6-8

DPR appreciates the opportunity to participate in the review process for this project. The DPR District Park Manager is Jake Enriquez at (858) 966-1365 or [jake.enriquez@sdcounty.ca.gov](mailto:jake.enriquez@sdcounty.ca.gov). We look forward to receiving future environmental documents related to this project or providing additional assistance at your request. If you have any questions or comments please contact Megan Hamilton, Group Program Manager at (858) 966-1377 or e-mail [megan.hamilton@sdcounty.ca.gov](mailto:megan.hamilton@sdcounty.ca.gov).

The County of San Diego appreciates the opportunity to continue to participate in the environmental review process for this project. We look forward to receiving and future environmental documents related to this project or providing additional assistance at your request. If you have any questions regarding these comments, please contact LeAnn Carmichael at (858) 694-3739 or email at [leann.carmichael@sdcounty.ca.gov](mailto:leann.carmichael@sdcounty.ca.gov).

Sincerely,

  
for ERIC GIBSON, Director  
Department of Planning and Land Use

cc: Megan Jones, CAO Staff Officer, DCAO, (via email)  
Trish Boaz, Chief, County Department of Parks and Recreation, (via email)  
Lee Shick, Project Manager, Department of Public Works, (via email)  
LeAnn Carmichael, Land Use/Environmental Planning Manager, Department of Planning and Land Use (via email)  
Priscilla Jaszkwski, Administrative Secretary, Department of Planning and Land Use, (via email)

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## **Letter 6: Eric Gibson, County of San Diego, Department of Planning and Land Use**

### **Response 6-1**

The commenter states that the County of San Diego, Department of Planning and Land Use has received and reviewed the Draft EIR and provided comments. No further response to this comment is necessary.

### **Response 6-2**

The commenter states that the County's Guidelines for Determining Significance should be used to evaluate and mitigate potential environmental impacts.

As stated in Chapter 3.2, Traffic and Circulation, page 3.2-2 of the Draft EIR, the County's Guidelines for Determining Significance were used to evaluate potential impacts to road segments and intersections. Additionally, the County's Guidelines for Determining Significance were used to determine mitigation ratios to reduce impacts to biological resources and to determine impacts related to geology and soils (pages 3.6-32 and 3.8-4 of the Draft EIR, respectively). Furthermore, the County's Guidelines for Determining Significance were developed using Appendix G to the State CEQA Guidelines. The environmental impacts of the proposed project were analyzed in the Draft EIR in accordance with the Standards of Significance set forth in Appendix G to the State CEQA Guidelines. Therefore, the analysis contained in the Draft EIR is consistent with the County's Guidelines for Determining Significance. No further analysis is necessary.

### **Response 6-3**

The commenter states that portions of the Preferred Alternative and the Flow Control Facility at Aqueduct Connection Alternative are located within the boundaries of the County's existing Sage Hill Preserve and directly adjacent to the County-owned Mendocino property. The commenter also states that the EIR should provide additional details and/or figures to indicate the specific activities and locations of proposed work within and adjacent to Sage Hill Preserve and Mendocino property, and that any impacts to these properties should be analyzed.

Direct impacts related to the proposed project were analyzed within the "project corridor," an area varying in width between 20 and 40 feet that encompasses the actual pipeline placements. As shown in Figure 2-1, Vicinity Map, of the Draft EIR, the alignments also include a 100- and 500-foot adjacent survey area extending beyond the project corridor (also described in Chapter 3.6, Biological Resources, page 3.6-2 of the Final EIR). The 100- and 500-foot survey areas were analyzed for potential indirect impacts resulting from the proposed project, and include areas

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within and adjacent to Sage Hill Preserve and the Mendocino property. As such, the District has identified the area of potential effect (APE) in the Draft EIR. The District will provide the County with exhibits showing final project design and right-of-way requirements once the location of the flow control facility has been determined.

**Response 6-4**

The commenter states that the Southern Alternative is addressed in Chapter 5, not Chapter 6 as indicated in the last sentence on page 2-1 of the Draft EIR. Additionally, the commenter states that the alternatives are addressed in Chapter 5, not Chapter 6 as indicated in the last sentence of the first paragraph on page 2-5 of the Draft EIR. The commenter is correct and is referred to Chapter 8, Clarifications and Modifications, page 8-17 of the Final EIR, which includes corrections to the Draft EIR in reference to the chapter in which the alternatives to the proposed project are discussed.

**Response 6-5**

The commenter states that Section 2.2.1, Project Components, of the Draft EIR should be revised to indicate that the Preferred Alternative begins within the Sage Hill Preserve, and should state whether work is anticipated to be conducted within the San Diego County Water Authority (SDCWA) and District easements. The commenter also states that Section 3.1.1, Existing Conditions, Surrounding Land Uses, of the Draft EIR should be revised to include a discussion of the existing Sage Hill Preserve and Mendocino mitigation properties.

The commenter is referred to Chapter 8, Clarifications and Modifications, page 8-17 of the Final EIR, which includes revisions to Section 2.2.1 of Draft EIR indicating that the Preferred Alternative begins within the Sage Hill Preserve, and that construction of the pipeline would be conducted within the County right-of-way.

Additionally, in response to this comment, a discussion has been added to Section 3.1.1 Existing Conditions, Surrounding Land Use, of the EIR describing the Sage Hill Preserve and the Mendocino property (refer to page 8-18 of the Final EIR).

**Response 6-6**

The commenter lists suggested modifications to the hydrology and water quality mitigation measure. The commenter is referred to Chapter 8, Clarifications and Modifications, page 8-20 of the Final EIR, which includes revisions to the hydrology and water quality mitigation measure.

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**Response 6-7**

The commenter lists suggested modifications to the biological resources mitigation measures. The commenter is referred to Chapter 8, Clarifications and Modifications, page 8-38 of the Final EIR, which includes revisions to the biological resources mitigation measures.

**Response 6-8**

The commenter states that Chapter 5, Alternatives, Section 5.3, Flow Control at Aqueduct Alternative, should be revised to indicate that the proposed flow control facility is located within the Sage Hill Preserve, and that this section should state whether work would be conducted within the SDCWA and District easements. The commenter is referred to Chapter 8, Clarifications and Modifications, page 8-35 of the Final EIR, which includes revisions to Section 5.3 in response to this comment.

Letter 7



20223 Elfin Forest Rd., Elfin Forest, CA 92029

**2010 Board Members:**

Melanie Fallon, Chair  
Jacqueline Arsivaud-Benjamin, Vice-Chair  
May Meintjes, Treasurer  
Nancy Goodrich, Secretary  
Eric Anderson  
Bonnie Baumgartner  
Minoos Sohaey

George Briest PE, Engineering Manager  
Olivenhain Municipal Water District  
1966 Olivenhain Rd  
Encinitas, CA 92024

September 13, 2010

RE: ENVIRONMENTAL IMPACT REPORT: UNIT AA RAW WATER PIPELINE PROJECT

Thank you for the opportunity to comment. The residents of Elfin Forest are very concerned about the potential impacts of the Olivenhain Municipal Water District's proposed pipeline project. Elfin Forest has been characterized as a "peaceful, quiet and environmentally healthy" community. It has an extremely strong community spirit that has focused on preserving its status as a rural community, defending its sensitive environmental habitat and peace and quiet. A key characteristic of our community is that many residents own horses. Private equestrian, hiking and mountain biking trails extend throughout the community and, for many residents, the available trails were a major factor in their decision to live here. The proposed project alignment will directly impact the trails most used in the community along Elfin Forest Road, wreak havoc on the peace and quiet residents cherish, and create a traffic nightmare.

7-1

Although most residents understand the necessity of this project and agree that the preferred alignment is the best of the alternatives; it will significantly impact the quality of life in the community for its entire duration. The Draft EIR describes the project area on Elfin Forest Road as being between Fortuna Del Sur and Harmony Grove Road. That is the majority of the main artery running through the community, used by most residents daily. The road is normally free flowing without traffic signals or stop signs within the geographical boundaries of Elfin Forest. Traffic stoppages with reduction to a single lane for construction will cause significant delays negatively affecting users, especially during peak commute hours.

7-2

In addition to the normal construction issues of traffic impediment and noise, the use of the trails by equestrians and others will be severely impacted. Equestrians will be unable to ride on trails adjacent to where heavy equipment is being operated, and the pipeline path from the intersection of Elfin Forest Road and Harmony Grove Road up to the treatment plant will bisect the current trail system on the east end of Elfin Forest.

7-3

The community's highest priorities for this project are: a) that it be completed as quickly as possible, b) that Elfin Forest Road be completely restored, and c) that the cumulative impacts of the project on the community be fully mitigated. It took many years for area residents to get the County of San Diego to repave their crumbling main road and it was finally done approximately one year ago. It is imperative that OMWD return it to pristine condition.

7-4

To ensure that our first objective is met, we believe that project construction continuing beyond the nine to twelve month window described in the Draft EIR should trigger additional mitigation in the amount of \$10,000 per month to the Elfin Forest Community Foundation.

7-5

You personally assured residents at the August 4, 2010, Elfin Forest/Harmony Grove Town Council meeting that the County would require you to completely restore the road and that you would do so. The Draft EIR, however, states on page 2-6 that "the County *would likely* (italics are mine) require a 1.5 inch grind and overlay over the entire road width to fully restore the road surface." Regardless of what the County actually requires, community support for the preferred alternative is contingent upon the road being completely restored to its current state.

7-6

You have also told us that the project should be finished within nine or ten months, that construction within the roadway would likely take half that time, and that any one portion of the roadway would likely be impacted by the laying of the pipeline for just a few weeks at most, other than the final road reconstruction at the end of the project.

The Draft EIR, however, states on page 3.3-11, "Construction of the proposed project would occur over a multi-year period, but use of diesel powered construction equipment in any one area would likely occur for no more than a few months". A project duration beyond a year would constitute an extreme hardship to our community. Any extension of the project beyond one year, or any unreasonable period of time in excess of a few weeks within any single residential area resulting in continuing Air Quality, Traffic or Noise impacts will require further mitigation as described above.

7-7

Additional concerns regarding specific issues included within the Draft EIR are as follows:

#### 1. LAND USE AND PLANNING

- Impact Analysis Concerns
  - None. From the information provided, there does not appear to be any impact related to Land Use or Planning beyond the duration of the project.
- Mitigation Requested
  - None noted at this time.

7-8

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## 2. TRAFFIC AND CIRCULATION

- Impact Analysis Concerns

- The Draft EIR states on page 2-11 that, “At a maximum, three construction fronts may install pipeline simultaneously in three separate areas. This could result in three distinct areas along Harmony Grove Road and/or Elfin Forest Road that would experience traffic control with only one lane operating.”
- Simultaneous flagging and reduction to one lane at three successive sections of roadway would significantly affect the flow of traffic, emergency vehicle response, ingress and egress from private property and cross streets, and also usage of trails adjacent to roadways, especially during peak commuter traffic and trail usage times between 7:00-9:00am and 3:00-6:00pm.
- Trail access is extremely important in this community. Resident equestrians and others use the trail system daily. Availability of trail crossings on Elfin Forest Road, Harmony Grove Road and along Escondido Creek is a significant concern.
- Traffic delays on Elfin Forest Road will increase pressure to use the privately owned and maintained side streets that are used as shortcuts through our community, chiefly Fortuna del Este, Canyon de Oro, and Fortuna del Sur. The project will cause additional wear and tear to the private property that should be mitigated.

7-9

- Mitigation Requested

- OMWD should ensure that there is only one area of controlled traffic on Elfin Forest Road at any given time. Should there be a need for more than one area to be controlled during the hours between 6 am and 9 pm, OMWD should pay a penalty to the community of \$500 per day per additional area of controlled traffic on Elfin Forest Road as a disincentive to pursue that strategy.
- OMWD should utilize available media such as the North County Times, Union Tribune, radio and television to advise the public of the proposed project and related delays so commuters will know to use other available routes. Signage should also be placed at San Elijo Road and on Harmony Grove Road advising of lengthy delays during construction.
- OMWD should make every effort to keep trails and trail crossings unobstructed by construction activity whenever possible.

7-10

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|--|---------------|
| <ul style="list-style-type: none"> <li>➤ OMWD should compensate the Fortuna del Este , Fortuna del Sur and Canuon de Oro (Paint Mountain Association) Road Associations for the increased impact the additional traffic will cause to their private roads.</li> </ul>  | 7-10<br>cont. |
| 3. AIR QUALITY   |               |
| <ul style="list-style-type: none"> <li>• Impact Analysis Concerns <ul style="list-style-type: none"> <li>➤ The Draft EIR notes that there will be short term impacts on ambient air quality in the project area, including exposure to diesel particulate matter which is described as being the greatest health risk. If the project was to become as lengthy as described on page 3.3-11, it would pose an even greater health risk to residents.</li> </ul> </li> <li>• Mitigation Requested <ul style="list-style-type: none"> <li>➤ Any extension of the project beyond one year, or any unreasonable period of time in excess of a few weeks within any specific residential area resulting in continuing Air Quality impacts would require additional mitigation as previously described.</li> </ul> </li> </ul>  | 7-11          |
| 4. NOISE   |               |
| <ul style="list-style-type: none"> <li>• Impact Analysis Concerns <ul style="list-style-type: none"> <li>➤ The Draft EIR discusses the impact of the increased construction noise on humans. It does not, however, address the effect on other sensitive receptors in the area such as residents' horses, some of which are stabled very close to the proposed roadway construction. Horses are very sensitive animals that see themselves as prey and most things around them that they don't know or understand as predators. Many are very nervous and skittish around loud noises. This project is likely to affect some of these horses very negatively.</li> </ul> </li> <li>• Mitigation Requested <ul style="list-style-type: none"> <li>➤ OMWD should work directly with residents whose horses are stabled adjacent to the roadway project area to mitigate their specific issues.</li> <li>➤ Any extension of the project beyond one year, or any unreasonable period of time in excess of a few weeks within any specific residential area resulting in continuing noise impacts would require additional mitigation as previously described.</li> </ul> </li> </ul> | 7-12          |
| 5. HYDROLOGY AND WATER QUALITY   |               |
| <ul style="list-style-type: none"> <li>• Impact Analysis Concerns</li> </ul>   | 7-13          |

|   |               |
|---|---------------|
| <ul style="list-style-type: none"> <li>➤ None. From the information provided, there does not appear to be any impact related to hydrology and water quality beyond the duration of the project.</li> </ul>  | 7-13<br>cont. |
| <ul style="list-style-type: none"> <li>• Mitigation Requested <ul style="list-style-type: none"> <li>➤ None noted at this time.</li> </ul> </li> </ul>  |               |
| 6. BIOLOGICAL RESOURCES   |               |
| <ul style="list-style-type: none"> <li>• Impact Analysis Concerns <ul style="list-style-type: none"> <li>➤ On page 3.6-13, the Draft EIR, in describing ornamental plantings along Elfin Forest Rd, states that, “The community is dominated by olive trees (Olea Europa)”. We are unaware of any olive trees along Elfin Forest Rd. The predominant ornamental plantings are of California Pepper and Eucalyptus trees, which are interspersed with the native Coast Live Oak trees and other chaparral. The Pepper trees were planted and are maintained as a community funded project.</li> </ul> </li> </ul>  | 7-14          |
| <ul style="list-style-type: none"> <li>➤ On page 3.6-34, Section BIO-D, the Draft EIR describes a contractor education program that will be implemented to ensure that contractors and construction personnel are informed regarding the biological sensitivities associated with the project. This would be an opportunity to also inform the construction personnel of the residents concerns of the impact of the construction on their horses.</li> </ul>   | 7-15          |
| <ul style="list-style-type: none"> <li>➤ On page 3.6-36, Section BIO-L, the Draft EIR states, “In addition, these impacts will be permanently mitigated at a 1:1 ratio through off-site habitat acquisition. Land will be acquired within existing land banks or within other properties identified by the MSCP, MHCP, or other conservation programs recognized by the NCCP.” We strongly believe any such mitigation land should be acquired within the boundaries of the Elfin Forest area. Community support of the preferred alternative is contingent upon mitigation land being purchased exclusively within the Elfin Forest boundaries, as redefined by our new Community Plan.</li> </ul> | 7-16          |
| <ul style="list-style-type: none"> <li>• Mitigation Requested <ul style="list-style-type: none"> <li>➤ OMWD should include in the contractor/construction worker education program information regarding the sensitivities and skittishness of horses so they will understand residents concerns about their activities.</li> </ul> </li> </ul>   | 7-17          |
| <ul style="list-style-type: none"> <li>➤ Any land acquired for mitigation purposes due to impacts in the Elfin Forest Community shall also be within the Elfin Forest geographical boundaries.</li> </ul>   | 7-18          |

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7. CULTURAL AND PALEONTOLOGICAL RESOURCES

- Impact Analysis Concerns
  - None. From the information provided, there does not appear to be any impact to Cultural or Paleontological Resources.
- Mitigation Requested
  - None noted at this time.

7-19

8. GEOLOGY AND SOILS

- Impact Analysis Concerns
  - According to pages 3.8-2 and 3.8-3 of the Draft EIR, one of the “Thresholds of Significance” is project activity exposing “people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving...changes in topography or unstable soil conditions from excavation, grading or fill”.
  - There is a serious concern in the community regarding the backfilling of the pipeline trench in the roadway, and the potential difference in compaction and wear levels between the lane containing the pipe and the one not dug up that could result in road degradation within a very short time after the project is completed.
- Mitigation Requested
  - Specifications for reconstruction of the roadway should include the appropriate backfilling of the pipeline trench with rock and dirt. The entire roadway, including the area adjacent to the pavement must be ground and overlaid, as well as the pavement.
  - The roadway should be assessed after five years to ensure that the pipeline side hasn’t compacted more than the other side.
  - A construction bond should be obtained to ensure that the new reconstructed roadway is in fact replaced to the excellent standard that exists today and to cover project related repairs to the reconstructed road five years after the completion of the project.

7-20

9. PUBLIC SAFETY AND HAZARDOUS MATERIALS

- Impact Analysis Concerns
  - Reducing Elfin Forest Road to a single lane will affect emergency response times, especially during peak commute times of 7:00-9:00am and 3:00 – 6:00pm. Even if flaggers give priority to emergency vehicles, they

7-21

will still have to get around backed up traffic that will have little room to pull over to let them by.

- If there are three simultaneous construction fronts as stated on page 2-11, each with its own traffic control, response could be extremely delayed. The Fire Department might have to rely on mutual aid agencies to provide timely response to outlying areas.
- In the event of a major fire, a significant number of residents will be attempting to evacuate horses and other livestock in large trailers via Elfin Forest Road. Construction fronts preventing access from side streets or driveways onto Elfin Forest Road will create a major public safety problem at a very stressful time.
- The open gate at Via Ambiente has allowed many trespassers in vehicles onto property east of the Escondido Creek. Some of these trespassers have started small fires or committed other violations of law.

7-21  
cont.

- Mitigation Requested

- OMWD should ensure that there is only one area of controlled traffic on Elfin Forest Road at a time.
- OMWD must work with the Elfin Forest/Harmony Grove Fire Department to develop a plan that would allow for stopping construction and covering the trench with the metal plates used at night and on weekends to allow for a safe and timely evacuation in the event of a fire or other major emergency.
- OMWD should secure the Via Ambiente gate that leads to their treatment plant.

7-22

## 10. PUBLIC SERVICES AND UTILITIES

- Impact Analysis Concerns

- The Elfin Forest Community is served by the San Marcos Station of the San Diego Sheriff's Department, not the Encinitas Station, as stated on page 3.10-1 of the Draft EIR.
- San Diego Gas & Electric provides electricity to the Elfin Forest Community, but not gas, as erroneously noted on page 3.10-2 of the Draft EIR. Property owners individually contract with various local propane providers for gas service.

7-23

7-24

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➤ The Draft EIR did not address the possibility of including “purple pipe” along with the new pipeline for potential future use of reclaimed water for irrigation of the large properties in the community. Piping included now would prevent the road from having to be torn up again should reclaimed water become available from OMWD or other adjacent water districts in the future.

7-25

- Mitigation Requested

➤ Evaluate the possibility of including “purple pipe” in this project for potential future use.

If you have any questions about the issues raised in this document, or would like to discuss them further, please call me at 760 591-9489.

Sincerely,



Nancy Goodrich  
Chair of Unit AA Raw Water Pipeline Project Committee  
Elfin Forest/Harmony Grove Town Council Board

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## **Letter 7: Nancy Goodrich, Elfin Forest/Harmony Grove Town Council**

### **Response 7-1**

The commenter thanks the District for the opportunity to comment on the Draft EIR and states that the residents of Elfin Forest have concerns about the impact of the proposed project. The commenter states that the alignment of the proposed project will directly impact the trails most used in the community along Elfin Forest Road, as well as create noise and traffic impacts. The commenter further states that the proposed project will significantly impact the quality of life in the community for the duration of the project. The commenter continues in the rest of the letter to provide specific details of her concerns for the proposed project. As such, no further response to this comment is necessary.

### **Response 7-2**

The commenter states that construction activities will cause significant delays on Elfin Forest Road, especially during peak commute hours. As discussed in Chapter 3.2, Traffic and Circulation, page 3.2-4 of the Draft EIR, the project would generate traffic that would be a mix of daily employee trips in personal vehicles and truck traffic delivering materials and equipment. As stated on page 3.2-4 of the Draft EIR, “A typical day during the peak of the construction period would include a 12-person pipeline crew and three trucks per construction front. Assuming a maximum of three construction fronts, up to 36 employees may be simultaneously installing pipeline, supported by nine trucks.” Table 3.2-1, Estimated Construction Project Trip Generation, shows that approximately 180 average daily trips (ADTs) are estimated to be generated under these conditions. However, as discussed on page 3.2-4, “a typical day would likely have less than three fronts under construction and, therefore, would generate less than 180 ADTs.” The commenter is referred to Chapter 8, Clarifications and Modifications, page 8-18 of the Final EIR, which further explains that the District intends to have only one area of construction-impacted traffic on Elfin Forest Road at any one time. If more than one area of construction is deemed necessary, the District will work with the community to minimize impacts.

Five intersections and five street segments, including Elfin Forest Road, were analyzed for impacts to LOS resulting from the proposed project. As shown in Table 3.2-2, Existing and Project Intersection Operations, and Table 3.2-3, Existing and Project Street Segment Operations (page 3.2-6 and 3.2-7 of the Draft EIR, respectively), and based on the County of San Diego’s published significance criteria, the proposed project is not calculated to have significant impacts at any of the study intersections or street segments under any of the three truck traffic distribution scenarios during either the morning or evening peak hour. Furthermore, as stated on

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page 3.2-8 of the Draft EIR, although no significant impacts were calculated, the District would implement the following traffic control measures to minimize the interruption of traffic resulting from construction of the proposed project:

- “All construction that directly affects movement of traffic along any public street as a result of lane closures, realignments, detours, narrowing, or erection of barriers or other traffic control devices would be detailed in a traffic control plan in accordance with the Manual of Uniform for Traffic Control Devices (MUTCD) and County Standard Drawings and Department Instructions. The traffic control plan would be approved by the County of San Diego Public Works Division and would include appropriate signs and other warning devices in advance of construction zones, as well as posted notices prior to commencement of construction. Notices will be posted at the beginning and terminus of Elfin Forest Road and Harmony Grove Road in the cities of San Marcos and Escondido.
- Along Elfin Forest Road and Harmony Grove Road, a single lane of traffic would always be maintained and traffic would alternate on a single-lane road controlled by a flagger. Hand-signaling devices, such as STOP/SLOW paddles, lights, and red flags, would be used to control road users through temporary traffic control zones.
- Flagger stations would be located far enough in advance of the work space so that approaching road users would have sufficient distance to stop before entering the work space. Based on MUTCD standards, 50 mph on Elfin Forest Road requires 425 feet.
- During times when construction activity is not occurring, these roadways would be restored to their normal operating conditions.
- Signs, notices, and other warning devices shall be posted to direct bikes and pedestrians to safe crossing locations in advance of the construction zones.
- Access to residences, businesses, and institutions shall be maintained at all times during construction.”

Construction-related traffic impacts on area roadways, including Elfin Forest Road, would be less than significant. No further analysis is necessary.

### **Response 7-3**

The commenter states that equestrians will be unable to use trails adjacent to where heavy equipment is being operated during the construction phase. Indirect impacts to equestrian trails will be short term and construction is anticipated to progress several hundred feet each day within Elfin Forest Road. While no significant impacts to trails or other recreational facilities

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have been identified per CEQA, the District will provide public notice to the residents of Elfin Forest regarding the construction schedule so that alternate routes may be selected and so that those residents immediately adjacent to the pipeline alignment may relocate their horses during construction closest to their quarters, if deemed necessary. Because construction would be limited to the hours of 7:00 a.m. to 5:00 p.m. on weekdays, weekend equestrian activity would not be affected.

#### **Response 7-4**

The commenter states that the community's priorities for the proposed project are that it is completed as quickly as possible, that Elfin Forest Road be completely restored, and that the cumulative impacts of the project on the community be fully mitigated.

As described in Chapter 2, Project Description, page 2-11 of the Draft EIR, construction of the proposed project is expected to occur over a 9- to 12-month period, with mitigation monitoring anticipated to continue for up to 5 years after pipeline construction is complete. The commenter does not state a specific concern or question regarding the adequacy of the analysis in the EIR. Therefore, pursuant to CEQA Guidelines § 15204, no further response to this comment is necessary.

During the construction phase, portions of the existing roadway along Elfin Forest Road would need to be temporarily removed. As stated on page 2-6 of the Draft EIR, "after the pipelines are completely installed within the roadway, the contractor would grind and install a 1.5-inch rubberized asphalt overlay along the full roadway width of Elfin Forest Road and Harmony Gove Road in accordance with County of San Diego requirements." Therefore, the roadway will be restored upon completion of pipeline installation.

Chapter 6 of the Draft EIR addresses cumulative impacts associated with the proposed project. One project has been identified by the District as being likely to occur within the construction timeframe of the proposed project. However, as discussed on page 6-1, if the related project cannot be completed prior to construction of the proposed project, then the District would reschedule the related project construction window to avoid having both projects under construction in the same area at the same time. The EIR concludes that "the project would, therefore, not result in cumulative impacts for any environmental impact type addressed in this document."

#### **Response 7-5**

The commenter suggests that additional mitigation in the amount of \$10,000 per month be paid to the Elfin Forest Community Foundation if project construction continues beyond the 9- to 12-

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month construction schedule. As a municipal water agency, the District is not able to commit ratepayer funds to such a general cause with no nexus to a specific environmental impact.

**Response 7-6**

The commenter states that the District assured residents at the Elfin Forest/Harmony Grove Town Council meeting, held on August 4, 2010, that the County would require complete restoration of the road and that community support for the proposed project is contingent upon complete restoration of the road to its current state, regardless of the County's actual requirements.

The commenter notes that page 2-6 of the Draft EIR states "the County would likely require a 1.5-inch grind and overlay over the entire road width to fully restore the road surface." This language refers to the technique likely required by the County for roadway restoration only and does not imply that restoration of the roadway itself would not be required. As discussed in Response 7-4, the affected roadway(s) will be restored upon completion of pipeline installation.

**Response 7-7**

The commenter states that project duration beyond a year would constitute an extreme hardship to the community and any extension of the project would require further mitigation as previously suggested by the commenter.

The commenter notes that page 3.3-11 of the Draft EIR states, "Construction of the proposed project would occur over a multi-year period, but use of diesel powered construction equipment in any one area would likely occur for no more than a few months." The statement that construction would occur "over a multi-year period" refers to the fact that construction of the proposed project is anticipated to begin in 2010 and be completed in 2011. This distinction is necessary for determining air quality impacts and does not imply that construction would occur over multiple years. As discussed in Response 7-4, construction of the proposed project is expected to occur over a 9- to 12-month period.

**Response 7-8**

The commenter states that the Elfin Forest/Harmony Grove Town Council has no additional concerns and requests no additional mitigation related to the Land Use and Planning analysis in the Draft EIR. No further response to this comment is necessary.

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## **Response 7-9**

The commenter states that the town council is concerned with the Traffic and Circulation impact analysis. Specifically, the commenter is concerned that reduction to one lane of traffic at three successive roadway sections would significantly affect traffic flow and emergency access. As discussed in Response 7-2, the proposed project is not calculated to have significant impacts at any of the study intersections or street segments during either the morning or evening peak hour. It is the intent of the District to have only one area of construction-impacted traffic on Elfin Forest Road at any one time. If more than one area of construction is deemed necessary, the District will work with the community to minimize impacts.

The commenter also states that availability of trail crossings at area roadways is important to the community. No more than one trail crossing on Elfin Forest Road will be impacted during construction at any one time. The District is not aware of any legally recorded easements along Harmony Grove Road or Escondido Creek that will be impacted by the proposed project.

The commenter states that traffic delays on Elfin Forest Road will increase pressure to use privately owned and maintained roads in the community. Refer to Response 5-1 regarding the District's plan to address this issue.

## **Response 7-10**

The commenter suggests mitigation measures to address their Traffic and Circulation concerns. As stated on page 2-11 of the Draft EIR, the construction of the proposed project is expected to occur over a 9- to 12-month period. Work would be conducted on weekdays between 7:00 a.m. and 5:00 p.m. Additionally, construction occurring near any single residence would last for a short portion of the construction period. Refer to Response 5-1 regarding traffic control measures that will be implemented for the proposed project.

## **Response 7-11**

The commenter states that if project construction was extended, it would pose a greater health risk to residents. The commenter further requests that mitigation be implemented stating that any extension of the project beyond 1 year would require additional mitigation. As discussed in Response 7-7, the statement that construction would occur over a multi-year period does not imply that construction would occur over multiple years. Further, as discussed in Response 7-4, construction of the proposed project is expected to occur over a 9- to 12-month period.

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### **Response 7-12**

The commenter asserts that the Draft EIR discusses the impacts of construction noise on humans and does not address effects on residents' horses. Potential impacts due to construction would be temporary. As stated on page 2-11 of the Draft EIR, the construction of the proposed project is expected to occur over a 9- to 12-month period. Work would be conducted on weekdays between 7:00 a.m. and 5:00 p.m. Additionally, construction occurring near any single residence would last for a short portion of the construction period. While no significant noise impacts have been identified, the District is sensitive to the concerns of the community and will provide advance notice to those residents immediately adjacent to the pipeline alignment so that they may relocate their horses during construction closest to their quarters.

Additionally, the commenter requests that additional mitigation be implemented should the project be extended beyond 1 year. As discussed in Response 7-4, construction of the proposed project is expected to occur over a 9- to 12-month period and, as a municipal water agency, the District is not able to commit ratepayer funds to such a general cause with no nexus to a specific environmental impact.

### **Response 7-13**

The commenter states that the town council has no additional concerns and requests no additional mitigation related to the Hydrology and Water Quality analysis in the Draft EIR. No further response to this comment is necessary.

### **Response 7-14**

The commenter states that, while the Draft EIR says that the community is dominated by olive trees, the community is unaware of any olive trees along Elfin Forest Road and that the predominant ornamental plantings are of California pepper and eucalyptus trees.

Biological surveys for the project site were initiated in September 2009 and were ongoing through July 2010. As discussed in the Biological Resources Report, included as Appendix C to the Draft EIR, vegetation mapping for both alignments was conducted in October and November 2009 and March 2010. The biological surveys focused on specific areas within a 602.78-acre survey area that includes both alignments. Conclusions made in the Draft EIR regarding vegetation present in the project area were based on what was observed in the survey area during the survey period. Olive trees were observed during these biological surveys within the project corridor and 500-foot buffer along the preferred alignment.

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**Response 7-15**

The commenter states that implementation of mitigation measure BIO-D would be an opportunity to inform construction personnel of the residents' concerns of the impact of construction on their horses. As previously stated, the District is sensitive to the concerns of the community and will work with the residents most affected by the construction of the proposed project to address their concerns.

**Response 7-16**

The commenter requests that mitigation land be acquired in the Elfin Forest area. The District operates the 784-acre Elfin Forest Recreational Reserve, which was developed by the District in partnership with the San Diego County Water Authority and the U.S. Department of the Interior – Bureau of Land Management as an element of the Olivenhain Water Storage Project and the Water Authority's Emergency Storage Project.

Owned by the Water Authority and managed by the District, the Reserve has been designed to unify the interests of domestic water supply development, natural resources management, and recreational opportunities. The District has also recorded conservation easements along Escondido Creek that allow for the removal of exotic species and the restoration of native riparian habitat along the creek. The District does not anticipate the need to purchase additional mitigation lands for the proposed project, which will be mostly constructed within existing paved and dirt roadways and will have minimal long-term impacts to native habitat.

**Response 7-17**

The commenter requests that mitigation be implemented to inform workers of the sensitivities of horses to construction activities. As stated in Response 7-15, the District will work with the residents most affected by the construction of the proposed project to address their concerns.

**Response 7-18**

The commenter requests that any land acquired for mitigation purposes due to impacts in the Elfin Forest Community shall be within the Elfin Forest geographical boundaries. See Response 7-16.

**Response 7-19**

The commenter states that the town council has no additional concerns and requests no additional mitigation related to the Cultural and Paleontological Resources analysis in the Draft EIR. No further response to this comment is necessary.

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**Response 7-20**

The commenter has concerns regarding the potential degradation of the road after project completion. As stated on page 2-6 of the Draft EIR, the recently paved road surface would be restored in accordance with the County of San Diego requirements. Specifically, after the pipelines are completely installed within the roadway, the contractor will grind and install a 1.5-inch rubberized asphalt overlay along the full roadway width of Elfin Forest Road and Harmony Grove Road.

**Response 7-21**

The commenter has concerns regarding emergency response delays and horse and livestock evacuation access with the road construction. As stated on page 3.10-3, during the installation of the pipeline within roadway segments, portions of Elfin Forest Road, Harmony Grove Road, and Via Ambiente may be reduced to one lane during construction. The closed lanes would alternate between east- and west-bound travel directions and result in a temporary delay in response times. However, emergency vehicles would be given priority. As stated on page 3.2-8, traffic control measures would be implemented to further minimize the interruption of traffic. In the event that an evacuation would be required of the residences within the project area, construction activities would cease and roadways would be restored to normal operating conditions to allow for proper evacuation.

The commenter has concerns about vehicles trespassing onto private property. This comment is noted for the City's consideration during review and approval of the proposed project. No further response is necessary.

**Response 7-22**

The commenter requests that mitigation be implemented to ensure only one area of controlled traffic on Elfin Forest Road at a time. The commenter also requests mitigation requiring the District to coordinate with the Elfin Forest/Harmony Grove Fire Department to ensure access to emergency routes. Further, the commenter requests that the District secure the gate on Via Ambiente that leads to the treatment plant.

As discussed in Response 7-2, the proposed project is not calculated to have significant impacts at any of the study intersections or street segments during either the morning or evening peak hour during the construction and operation phases of the proposed project. Additionally, the District would implement traffic control measures to minimize the interruption of traffic resulting from construction of the proposed project. Furthermore, as discussed on page 3.9-4,

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“The proposed project would not impair or physically interfere with an adopted emergency response plan or any local, state, or federal agencies’ emergency evacuation plan. No road closures are anticipated during project construction, and delays with emergency response would be temporary and less than significant.” As discussed on page 3.10-3, portions of roadway segments may be reduced to one lane during construction, which could result in a temporary delay in response times. However, emergency vehicles would be given priority. Thus, the proposed project would not result in a significant traffic impact to area roadways or emergency routes, and no mitigation measures are required.

### **Response 7-23**

The commenter states that the Elfin Forest Community is served by the San Marcos Station of the San Diego Sheriff’s Department, not the Encinitas Station as indicated in the Draft EIR. The commenter is correct that the San Marcos Station located at 182 Santar Place would be the main responder to emergencies within the project area. The commenter is referred to Chapter 8, Clarifications and Modifications, page 8-34 of the Final EIR, which includes the modification to include the San Marcos Sheriff’s station as serving the project area.

### **Response 7-24**

The commenter states that San Diego Gas & Electric only provides electricity to the Elfin Forest Community, not gas as indicated in the Draft EIR. The commenter further states that property owners individually contract with local propane providers for gas services. The commenter is referred to Chapter 8, Clarifications and Modifications, page 8-34 of the Final EIR, which includes a modification to gas service providers in the project area.

### **Response 7-25**

The commenter requests that the “purple pipe” reclaimed water pipeline be included in the analysis of the EIR. The “purple pipe” is not within the project scope of the Unit AA Raw Water Pipeline and would not satisfy the objectives specific to this project, which are to provide a reliable source of raw water to the David C. McCollom Water Treatment Plant and to avoid the need to use low-quality water pumped from Lake Hodges into the Olivenhain Reservoir. The District supports the use of reclaimed water; however, there is currently no source of reclaimed water in the project area. The District’s website provides further information on recycled water: <http://www.olivenhain.com/index.php/about-us/your-water-supplies/recycled-water>. Additionally, potential recycled water demand along the project corridor is not high enough to make the installation of purple pipe economically feasible.

Letter 8

Susanne and Prasanna Desai  
7030 Elfin Oaks Rd.  
Elfin Forest, CA 92029  
(760) 471-5363

Public Comment to OMWD Unit AA Raw Water Pipeline EIR

OMWD  
1966 Olivenhain Rd.  
Encinitas, CA 92024

September 13, 2010

To Whom It May Concern:

This letter is to provide public comment on the EIR for the proposed pipeline "Unit AA Raw Water" that will be adjacent our property at 7030 Elfin Oaks Rd, Elfin Forest, CA 92029.

The pipeline project proposes concerns for us as it will provide challenges to maintain our safety and the safety of our horses that we keep very close to the proposed pipeline. During construction it will be unsafe for us to manage, care for and protect the safety of our horses. As I have discussed with you it has been deemed unsafe to keep horses so close to loud construction noises by myself and our vet Dr. Jessica Laemmlle. She evaluated the proximity of the road to the horse facilities (paddocks, arena) and determined it would be safe to house them and to handle them during work in the street adjacent to our property when she was here in August 2010. Her letter if not attached will be forthcoming. I plan to move the horses during the time the project is completed. It will also be unsafe to handle the horses if there is traffic regulation right in front of our property due to the nature of horses. We are used to cars and bikes and normal traffic. My main complaint and comment to the proposed project relates to being able to effectively and safely keep my horses on my property.

8-1

Reading the EIR I do question how the bird population will be protected. While I may not be a biologist I do walk on my property and I am aware of the existence of many bird species which may or may not be affected by construction. We have a dense oak tree reserve and it may qualify as Tier 1. I have personally seen coastal California gnatcatchers, Bells Vireo, Western Towhees and Black Phoebes....as well as many birds nesting in the large very tall stands of Eucalyptus trees we have which may be some kind of hawk. Along the creek we have standing water and lots of vegetation and I have seen Rio Grande leopard frogs (Or so I think they are) which seem to like the creek and also like to visit my nearby hot tub. As a running creek year round I have plenty of evidence that all the local coyotes, mountain lions, bobcats and deer come to drink here as it has privacy yet good access to water. We recently found a dead deer that seemed to be eaten by a mountain lion and there was one sighting of the cat nearby this year. We see large deer all the time and they are known to follow the deer. I would like to understand what mitigation OMWD will provide for bird nesting and wildlife protection during the construction of this pipeline including the water flow of the creek that runs in the 2 culverts under the road onto my property maintaining essential water for all wildlife to prosper. Will the creek flow be changed by the pipeline? Will the pipeline be under the culverts for the creek? I assume the culverts will stay as the county just spent time and money to internally coat the culverts to maintain their integrity. We have a running creek year round which provides water to all the local wildlife.

8-2

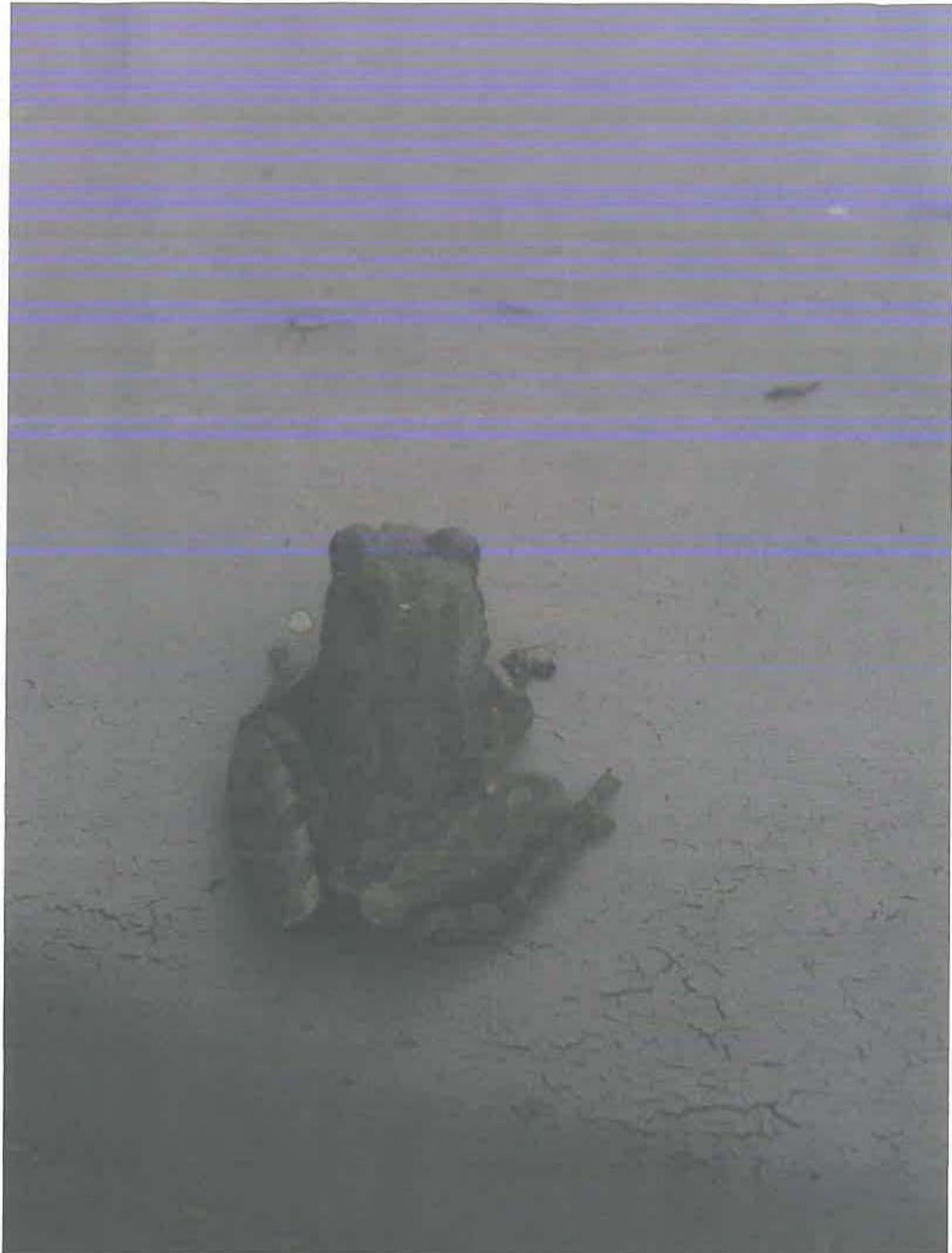
We have many trees on our property such as those which afford birds nesting grounds but also a couple very near the street. I have one protected oak tree near the street. Then we have a huge very tall stand of Eucalyptus trees just surrounding the culverts that carry the creek under Elfin Forest Rd. I wonder how the construction will affect the tree root strength. Thank you for your time and I look forward to hearing from you regarding these issues.

8-3

Sincerely,

*Susanne Desai*





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## **Letter 8: Susanne and Prasanna Desai, Elfin Forest Residents**

### **Response 8-1**

The commenter is concerned about the impacts of the proposed project during construction to her horses. Potential impacts due to construction would be temporary. As stated on page 2-11 of the Draft EIR, the construction of the proposed project is expected to occur over a 9- to 12-month period. Work would be conducted on weekdays between 7:00 a.m. and 5:00 p.m. Additionally, construction occurring near any single residence would last for a short portion of the construction period. While no significant noise impacts have been identified, the District is sensitive to the concerns of the community and will provide advance notice to those residents immediately adjacent to the pipeline alignment so that they may relocate their horses during construction closest to their quarters.

### **Response 8-2**

The commenter has concerns about the biological impacts associated with the construction of the proposed project. As stated on page 3-6-29 of the Draft EIR, 13 wildlife species were observed during surveys: southwestern willow flycatcher, least Bell's vireo, California gnatcatcher, Southern California rufous-crowned sparrow, Bell's sage sparrow, Cooper's hawk, northern harrier, white-tailed kite, yellow warbler, yellow-breasted chat, southern mule deer, Belding's orange-throated whiptail, and coastal western whiptail. The impacts to the habitat types suitable for these wildlife species would be minimal and would not impact the long-term survival of the local populations of these species. Additionally, implementation of mitigation measures BIO-A through BIO-N (refer to pages 3.6-33 through 3.6-38), which includes scheduling the construction period outside of the bird nesting season to avoid impacting nesting success of sensitive bird species, would ensure a less-than-significant impact.

As stated on page 3.6-30 of the Draft EIR, the project design specifies tunneling under all creeks and culverts that coincide with the project corridor. No trenching would occur across federal or state regulated waters from construction activities. Therefore, tunneling under all creeks and culverts would avoid direct impacts to the southern arroyo willow riparian forest vegetation community. Additionally, creek flow would not change because the pipeline will be constructed above culverts within the existing paved roadways. As such, the proposed project would avoid impacting the existing County culvert.

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**Response 8-3**

The commenter has concerns about the construction impacts on the tree root strength of the trees located near her residence. As discussed on page 2-6 of the Draft EIR, the pipeline would be installed within the existing County right-of-way beneath the paved roadways segments. Major tree roots are not expected to be encountered beneath the paved roadways. Within the riparian forested area near Escondido Creek, the pipelines would be constructed using a jack and bore tunneling method, which would leave vegetation and structures near the ground surface undisturbed and would cause minimal disturbance to tree roots. An existing roadway that crosses Escondido Creek, which is free of large trees, has been selected as the preferred alignment for the jack and bore tunneling to minimize the need to clear vegetation and to avoid large tree roots.

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Letter 9

**From:** Julia Dyer [mailto:JDyer@dfg.ca.gov]  
**Sent:** Wednesday, September 22, 2010 9:11 AM  
**To:** Karen Ogawa  
**Subject:** (SCH# 2010011026) Comments on the Olivenhain Municipal Water District's Draft Environmental Impact Report Unit AA Raw Water Pipeline Project

Hi Karen - Thank you again for granting me an extension to comment on the above referenced project. Unfortunately I'm not going to be able to provide you with a comment letter by the end of the week. So I was hoping we could resolve my comments via e-mail. I only have two.

9-1

First I'd like to compliment you on the draft Environmental Impact Report. We approve of the avoidance practices, mitigation measures, and mitigation ratios.

Second, we have a question regarding Hermes copper butterfly (*Lycaena hermes*, Hermes copper). We are aware of a population of Hermes copper, documented about five years ago, north of Escondido Creek and not far from the proposed extension. The draft EIR does not mention Hermes copper. Is it possible to address the potential of this species in the footprint of the proposed project area, if there is suitable habitat, in the final EIR?

9-2

Thanks,

## Julia Dyer

Environmental Scientist  
South Coast Region  
California Department of Fish and Game  
4949 Viewridge Avenue  
San Diego, CA 92123  
858.637.5511 (phone)  
858.467.4299 (fax)

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**Letter 9: Julia Dyer, California Department of Fish and Game****Response 9-1**

CDFG approves of the avoidance practices, mitigation measures, and mitigation ratios for biological resources impacted by the proposed project. No further response is necessary.

**Response 9-2**

CDFG states that the Hermes copper butterfly (*Lycaena hermes*) was previously documented 5 years ago, north of Escondido Creek. CDFG would like the EIR to discuss the potential of this species occurring within the proposed project area and if suitable habitat exists.

According to CNDDDB occurrence records, the closest occurrences of the Hermes copper butterfly are approximately 16 miles south and more than 50 miles north of the project site (recorded in 2003) (see Figure 3.6-5). However, according to a paper published by Daniel A. Marschalek and Michael W. Klein Sr. in the *Journal of Insect Conservation* (2010), two extant occurrences occur near Escondido Creek and Cielo Creek.

The Hermes copper butterfly inhabits coastal sage scrub in San Diego County and its host plant is spiny redberry (*Rhamnus crocea*). A total of 0.46 acre of Diegan coastal sage scrub occurs in the footprint of the Preferred Alternative and 3.64 acres is in the footprint of the Southern Alternative. Because the two extant occurrences occur near the Southern Alternative, it is more likely that the Hermes copper butterfly could be impacted by implementation of the Southern Alternative than the Preferred Alternative. With selection of either project alternative, the potential to directly impact Hermes copper butterfly would be low. As such, the Biological Resources Report and the EIR have been updated to reflect this additional information. The commenter is referred to Chapter 8, Clarifications and Modifications, pages 8-24 through 8-26 of the Final EIR, which addresses the Hermes copper butterfly.

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## **CHAPTER 10.0**

### **LIST OF PREPARERS AND PERSONS CONTACTED**

#### **10.1 LIST OF PREPARERS AND CONTRIBUTORS**

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B.A., Economics, University of California, Davis  
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Jessie Lee, GISP, GIS Specialist (8 years)  
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Kathalyn Tung, Environmental Analyst (4 years)  
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Master of Planning, University of Southern California

William Maddux, Air Quality Specialist (7 years)  
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#### **10.2 PERSONS CONTACTED**

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San Diego, CA 92123

California Public Utilities Commission  
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Los Angeles, CA 90013

California Department of Parks and Recreation  
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1416 9th Street, Room 1442-7  
Sacramento, CA 95814

California Dept. of Toxic Substances Control  
Brownfields and Environmental  
Restoration Program  
Greg Holmes  
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California Regional Water Quality Control Board  
San Diego Region  
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San Diego, CA. 92123

Native American Heritage Commission  
Executive Secretary  
915 Capital Mall, Room 364  
Sacramento, CA 95814

California Resources Agency  
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U.S. Fish and Wildlife Service  
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Carlsbad, CA 92011

Environmental Review Section  
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Sacramento, CA 94296

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Planning and Building  
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Encinitas, CA 92024

Rancho Santa Fe Fire Department  
16936 El Fuego  
Rancho Santa Fe, CA 92067

City of Encinitas Police-Sheriff's Department  
175 North El Camino Real  
Encinitas, CA 92024

San Diego Air Pollution Control District  
10124 Old Grove Road  
San Diego, CA 92131

City of Escondido  
Planning Division  
201 North Broadway, First Floor  
Escondido, CA 92025

San Diego County of Planning and Land Use  
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San Diego, CA 92123

City of San Marcos  
Planning Division  
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San Marcos, CA 92069

San Diego County Water Authority  
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San Diego, CA 92123

Elfin Forest/Harmony Grove Fire Station  
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Escondido, CA 92029

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**Native American Contacts:**

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Kumeyaay Cultural Historic Committee  
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Alpine, CA 92001

Kwaaymil Laguna Band of Mission Indians  
Carmen Lucas  
P.O. Box 775  
Pine Valley, CA 91962

Mesa Grande Band of Mission Indians  
Mark Romero  
P.O. Box 270  
Santa Ysabel, CA 92070

Pala Band of Mission Indians  
Tribal Historic Preservation Office  
Shasta Gaughen  
35008 Pala Temecula Road, PMB 445  
Pala, CA 92059

Pauma & Yuima  
Christobal C. Devers  
P.O. Box 369  
Pauma Valley, CA 92061

Pauma Valley Band of Luiseño Indians  
Bennae Calac  
P.O. Box 369  
Pauma Valley, CA 92061

Rincon Band of Mission Indians  
Angela Veltrano  
P.O. Box 68  
Valley Center, CA 92082

San Luis Rey Band of Mission Indians  
Carmen Mojado  
1889 Sunset Drive  
Vista, CA 92081

San Luis Rey Band of Mission Indians  
Henry Contreras  
1763 Chapulin Lane  
Fallbrook, CA 92028

California Indian Legal Services  
San Luis Rey Band of Luiseño Indians  
Mark Vezzola  
609 South Escondido Boulevard  
Escondido, CA 92025

San Luis Rey Band of Mission Indians  
Mel Vernon  
1044 North Ivy Street  
Escondido, CA 92026

San Luis Rey Band of Mission Indians  
Russell Romo  
12064 Old Pomerado Road  
Poway, CA 92064

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San Pasqual Band of Mission Indians  
Allen E. Lawson  
P.O. Box 365  
Valley Center, CA 92082

Santa Ysabel Band of Diegueno Indians  
Johnny Hernandez  
P.O. Box 130  
Santa Ysabel, CA 92070

**Elected Officials:**

California State Assemblyman  
Martin Garrick – District 74  
1910 Palomar Point Way, Suite 106  
Carlsbad, CA 92008

San Diego County Board of Supervisors  
Bill Horn – District 5  
1600 Pacific Highway, Room 335  
San Diego, CA 92101

San Diego County Board of Supervisors  
Pam Slater-Price – District 3  
1600 Pacific Highway, Room 335  
San Diego, CA 92101

Senator Mark Wyland - Senate District 38  
1910 Palomar Point Way, #105  
Carlsbad, CA 92008

**Neighborhood Councils:**

Elfin Forest/Harmony Grove Town Council  
20223 Elfin Forest Road  
Elfin Forest, CA 92029

San Dieguito Community Planning Group  
Cheryl Jones  
P.O. Box 2789  
Rancho Santa Fe, CA 92067

The Escondido Creek Conservancy  
P.O. Box 460791  
Escondido, CA 92046-0791

**Individuals:**

Lee Anne Haass  
19401 Fortuna del Este  
Elfin Forest, CA 92029

Susanne and Prasanna Desai  
7030 Elfin Oaks Road  
Elfin Forest, CA 92029

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## CHAPTER 11.0

### REFERENCES

#### AECOM

- 2010a *Biological Resource Report for the Proposed Olivenhain Municipal Water District Unit AA Raw Water Pipeline Project from the Second San Diego Aqueduct to the David C. McCollum Water Treatment Plant.* July 2010.
- 2010b *Cultural Resources Phase I Survey and Inventory Report for the Proposed Olivenhain Municipal Water District Unit AA Raw Water Pipeline Project from the Second San Diego Aqueduct to the David C. McCollum Water Treatment Plant.* July 2010.
- 2010c *Unit AA Pipeline Project Jurisdictional Delineation Letter Report to the Olivenhain Municipal Water District.* July 2010.

#### Bowman, Roy H.

- 1973 *Soil Survey: San Diego, California.* U.S. Department of Agriculture Soil Conservation Service and Forest Service.

#### California Department of Fish and Game (CDFG)

- 2009 NCCP Plan Status – San Diego Multiple Species Conservation Program (MSCP) (Approved). Available at [http://www.dfg.ca.gov/habcon/nccp/status/SanDiego\\_MultSpecies.html](http://www.dfg.ca.gov/habcon/nccp/status/SanDiego_MultSpecies.html). Accessed January 2009.

#### California Department of Transportation (Caltrans)

- 2004 Transportation- and Construction-Induced Vibration Guidance Manual, June. Available at <http://www.dot.ca.gov/hq/env/noise/pub/vibrationmanFINAL.pdf>.
- 2009 Technical Noise Supplement, November. Available at [http://www.dot.ca.gov/hq/env/noise/pub/tens\\_complete.pdf](http://www.dot.ca.gov/hq/env/noise/pub/tens_complete.pdf).

#### California Department of Toxic Substances (DTSC)

- 2010 Envirostor Database. Available at [http://www.envirostor.dtsc.ca.gov/public/search.asp?cmd=search&city=Escondido&zip=&county=san%20diego&federal\\_superfund=True&state\\_response=True&voluntary\\_cleanup=True&school\\_clean](http://www.envirostor.dtsc.ca.gov/public/search.asp?cmd=search&city=Escondido&zip=&county=san%20diego&federal_superfund=True&state_response=True&voluntary_cleanup=True&school_clean)

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up=True&permitted=True&pc\_permitted=True&hist\_nonoperating=True&corrective\_action=True&display\_results=Report&pub=True. Accessed January 13, 2010.

California State Water Resources Control Board

2010 Geotracker Database. Available at <http://geotracker.swrcb.ca.gov/map/?CMD=runreport&myaddress=encinitas%2C+ca>. Accessed January 13, 2010.

County of San Diego

2006 Noise Ordinance, Sections 36.401 et. seq.

2007 *County of San Diego Guidelines for Determining Significance: Geologic Hazards*. July 30, 2007. Available at [http://www.sdcounty.ca.gov/dplu/docs/Geologic\\_Hazards\\_Guidelines.pdf](http://www.sdcounty.ca.gov/dplu/docs/Geologic_Hazards_Guidelines.pdf). Accessed November 24, 2009.

2008 County of San Diego General Plan Public Safety Element. Adopted May 16, 2008. Available at <http://www.sdcounty.ca.gov/dplu/docs/existgp/safety.pdf>. Accessed January 2010.

2009a San Diego County General Plan Update Draft EIR. July 1.

2009b San Diego North County Plan. Last updated September 2009. Available at <http://www.sdcounty.ca.gov/dplu/mscp/nc.html>. Accessed January 2009.

2009c *Paleontological Resources: County of San Diego Guidelines for Determining Significance*. January 15, 2009.

2010 *Draft Resource Management Plan for Sage Hill Preserve, San Diego County*. May 2010.

County of San Diego and Technology Associates International Corporation (TAIC)

2008 *Revised Preliminary Draft North County Multiple Species Conservation Plan*. February 25.

Elfin Forest/Harmony Grove

2010 *Station/Apparatus*. Available at <http://www.eff-fire.org/station.htm>. Accessed January 14, 2010.

---

Federal Transit Administration (FTA)

- 2006 Transit Noise and Vibration Impact Assessment. U.S. Department of Transportation, May. Available at [http://www.fta.dot.gov/documents/FTA\\_Noise\\_and\\_Vibration\\_Manual.pdf](http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf).

Fire and Resource Assessment Program (FRAP)

- 2009 *San Diego County Very High Fire Hazard Severity Zones in LRA*. June 12, 2009. Available at <http://frap.cdf.ca.gov>. Accessed November 24, 2009.

Linscott, Law, & Greenspan (LLG)

- 2010 Full Traffic Impact Study, Olivenhain Municipal Water District Elfin Forest Raw Water Pipeline Project. January 20.

Olivenhain Municipal Water District (District)

- 1997 *Standard Specifications and Drawings for the Construction of Water Mains and Facilities*.
- 2009 *District Service Area*. Available at [http://www.olivenhain.com/content.php?content=service\\_area\\_map&layout=Layout\\_1\\_column&columns=1](http://www.olivenhain.com/content.php?content=service_area_map&layout=Layout_1_column&columns=1). Accessed September 28, 2009.

Rogers, Thomas H.

- 1965 *Geologic Map of California, Santa Ana Sheet*. California Division of Mines and Technology, Sacramento.

San Diego Air Pollution Control District (SDAPCD)

- 2009 Personal communication by telephone between Carl Selnick, SDAPCD, and William Maddux, AECOM, relative to the status of the 2007 SIP. December 29.

San Diego County Department of Public Works (DPW)

- 2005 *San Diego County Integrated Waste Management Plan Countywide Siting Element*. 2005 5-Year Revision Final. Available at <http://www.sdcdpw.org/siting/pdf/San%20Diego%20County%20Siting%20Element%202005.pdf>. Accessed January 22, 2010.

---

San Diego County Sheriff's Department

2010a Encinitas Station. Available at <http://www.sdsheriff.net/patrolstations/encinitas.html>. Updated 2009. Accessed January 14, 2010.

2010b San Marcos Station. Available at <http://www.sdsheriff.net/patrolstations/sanmarcos.html>. Accessed September 22, 2010.

Thalheimer, Erich

2000 Construction Noise Control Program and Mitigation Strategy as the Central Artery/Tunnel Project. *Noise Control Engineering Journal*. 48 (5), Sep–Oct.

Weber, Harold F.

1963 *Geology and Mineral Resources of San Diego County, California*. County Report 3. California Division of Mines and Geology, San Francisco.

## **APPENDIX A**

### **INITIAL STUDY CHECKLIST**



# Olivenhain Municipal Water District

## Raw Water Pipeline Project CEQA Initial Study

- 1. Project title:** Olivenhain Municipal Water District's Raw Water Pipeline Project
- 2. Lead agency:** Olivenhain Municipal Water District  
1966 Olivenhain Road  
Encinitas, CA 92024
- 3. Consulting Firm:** AECOM  
1420 Kettner Blvd, Suite 500  
San Diego, CA 92101
- 4. Project location:** The proposed project is located in northern San Diego County, bounded by Elfin Forest Road and Via Ambiente to the north, Paseo Esplanada to the south, Olivenhain Reservoir to the east, and the San Diego County Water Authority's Second Aqueduct to the west.
- 5. General Plan designation:** The project area is located within the San Dieguito Community Plan Area of the San Diego County General Plan and is designated as: Estate Residential, Impact Sensitive, Multiple Rural Use, and Public/Semi-Public Lands. The proposed project is also located within the Rancho Cielo Specific Plan Area.
- 6. Zoning:** The San Diego County zoning for the project area is: Rural Residential, Residential Mobile Home, Residential – Variable, Agriculture, Open Space, and Specific Plan Area.
- 7. Description of project:** The Olivenhain Municipal Water District (District) is a publicly-owned water service agency currently serving the needs of approximately 68,000 people in a 48 square mile area of North San Diego County which includes the cities of Encinitas, Carlsbad, San Diego, Solana Beach, and San Marcos and the communities of Olivenhain, Leucadia, Elfin Forest, Rancho Santa Fe, Fairbanks Ranch, Santa Fe Valley, and 4S Ranch. The District is a member agency of the San Diego County Water Authority (SDCWA) and the regional Metropolitan Water District of Southern California. The District purchases and imports its raw water from the aqueduct systems owned by the SDCWA.

The District's Raw Water Pipeline Project proposes to construct and operate a 48-inch pipeline over a distance of approximately three miles, in San Diego County between the SDCWA Second San Diego Aqueduct and the Olivenhain Reservoir. The purpose of this pipeline is to provide an alternate source of water for the David C. McCollom Water Treatment Plant (DCMWTP). The main source for the

DCMWTP is the Olivenhain Reservoir, which is fed by an existing raw water pipeline from the Second San Diego Aqueduct (the reservoir also receives a small amount of runoff). An agreement between the District and the SDCWA will allow the SDCWA to transfer water from Lake Hodges to the Olivenhain Reservoir. With this transfer, the water quality in the Olivenhain Reservoir may deteriorate beyond the treatment capacity of the DCMWTP. This new pipeline is intended to mitigate that risk, and to ensure the District's ability to meet its customer's need for high quality municipal water.

The project proposes to construct a new underground 48-inch pipeline extending approximately three miles from the Second San Diego Aqueduct to the DCMWTP. The pipeline would be constructed using both trenching and tunneling methods. The District has identified two potential alternative alignments for the pipeline. The Northern Alternative begins where the Second San Diego Aqueduct crosses Elfin Forest Road. The pipeline would follow Elfin Forest Road to the southeast. At the sharp turn where Elfin Forest Road transitions to Harmony Grove Road, the Northern Alternative would continue south, where the pipeline would be installed underneath Escondido Creek using tunneling techniques that would avoid impacts to the streambed and associated riparian vegetation. The Northern Alternative would intersect Via Ambiente Road to the east of Escondido Creek and would follow Via Ambiente to the driveway for the DCMWTP. The pipeline would follow the paved driveway to connect to the DCMWTP. The Southern Alternative begins just east of Suerte Del Este Road, at the Second San Diego Aqueduct. This pipeline would roughly parallel two existing pipelines located in a District easement that is readily identifiable by an existing maintenance road and various vent structures. The Southern Alternative would follow the existing easement to the east, where it would intersect with Via Ambiente near the intersection with the DCMWTP driveway. As with the Northern Alternative, the pipeline would follow the driveway to connect with the DCMWTP.

- 8. Surrounding land uses and setting:** The project area is located within the County of San Diego San Dieguito Community Plan Area which encompasses approximately 30,000 acres. The San Dieguito Community Plan Area is primarily a low-density, estate development residential area consisting of properties two to four-acres in size. The cities of Encinitas and Solana Beach border the project area to the west, Carlsbad and San Marcos to the north, Escondido to the east, and the City of San Diego to the south. The San Dieguito Community Plan Area includes the communities of Elfin Forest, Del Dios, Mt. Israel, Rancho Santa Fe, Whispering Palms, Fairbanks Ranch, and Ecke Agricultural Preserve.

Elfin Forest Road and Harmony Grove Road serve as the main access roads through the area. There are several undeveloped hillsides in the general vicinity of the project alignment. Farmland is located to the north of the Community Plan Area and is divided into small agricultural fields, orchards, pasture land, and commercial nursery operations. Approximately 1.5 miles northwest of the project area is a landfill that was operated by the City of San Marcos, but has been closed. The major transportation arteries serving the area include Del Dios County Highway S6 to the southeast, Interstate 15 to the east, State Route 78 to the north, and Interstate 5 to the west.

**9. Other public agencies whose approval is required:** (e.g., permits, financing approval, or participation agreement.) Various permits and approvals would be required in order to approve and implement the project. The environmental documentation for the project would be used to facilitate compliance with federal and state laws and the granting of permits by various state and local agencies having jurisdiction over one or more aspects of the proposed project. These approvals and permits are listed below.

**TABLE 1 PROJECT ENTITLEMENTS AND REGULATORY PERMITS**

| Agency  | Permit/Action   |
|---|---|
| State   |   |
| California Regional Water Quality Control Board, San Diego Region | Construction General Permit for ground disturbing activities; Dewatering Permit;            |
| Local   |   |
| San Diego County  | Clearing and Grading; Section 4(d) Habitat Loss Permit; requires CDFG and USFWS concurrence |

**ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:**

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- Aesthetics
- Agricultural Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology/Soils
- Hazards & Hazardous Materials
- Hydrology/Water Quality
- Land Use/Planning
- Mineral Resources
- Noise
- Population/Housing
- Public Services
- Recreation
- Transportation/Traffic
- Utilities/Service Systems
- Mandatory Findings of Significance

**DETERMINATION:** (To be completed by the Lead Agency)

On the basis of this initial evaluation:

- I find that the proposed project **COULD NOT** have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared.
- I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions to the project have been made by or agreed to by the applicant. A **MITIGATED NEGATIVE DECLARATION** will be prepared.
- I find that the proposed project **MAY** have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required.
- I find that the proposed project **MAY** have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or **NEGATIVE DECLARATION** pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or **NEGATIVE DECLARATION**, including revisions or mitigation measures that are imposed upon the project, nothing further is required.

**Signature** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Printed Name** \_\_\_\_\_

**EVALUATION OF ENVIRONMENTAL IMPACTS:**

1. A brief explanation is required for all answers except “No Impact” answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A “No Impact” answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A “No Impact” answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. “Potentially Significant Impact” is appropriate if there is substantial evidence that an effect may be significant. If there are one or more “Potentially Significant Impact” entries when the determination is made, an EIR is required.
4. “Negative Declaration: Less Than Significant With Mitigation Incorporated” applies where the incorporation of mitigation measures has reduced an effect from “Potentially Significant Impact” to a “Less Than Significant Impact.” The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, “Earlier Analyses,” may be cross-referenced).
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
  - a) Earlier Analysis Used. Identify and state where they are available for review.
  - b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
  - c) Mitigation Measures. For effects that are “Less than Significant with Mitigation Measures Incorporated,” describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies

should normally address the questions from this checklist that are relevant to a project’s environmental effects in whatever format is selected.

- 9. The analysis of each issue should identify:
  - a) the significance criteria or threshold, if any, used to evaluate each question; and
  - b) the mitigation measure identified, if any, to reduce the impact to less than significance.

|   | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|-----------|
| <b>1. AESTHETICS.</b> Would the project:  |                                |  |                              |           |
| a. Have a substantial adverse effect on a scenic vista?   |                                |  |                              | X         |
| b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?  |                                |  |                              | X         |
| c. Substantially degrade the existing visual character or quality of the site and its surroundings?   |                                |  | X                            |           |
| d. Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?  |                                |  |                              | X         |
| e. Create a new source of substantial shade or shadow that would adversely affect daytime views in the area?  |                                |  |                              | X         |
| <p><b>a. No Impact.</b> The proposed project would not have a substantial adverse effect on a scenic vista because the proposed pipeline would be installed underground.</p> <p><b>b. No Impact.</b> The project is not located near a state scenic highway.</p> <p><b>c. Less than Significant Impact.</b> Short-term visual impacts will occur during the pipeline construction. Vegetation and roadway hardscape would be cleared for the installation of the pipeline. The proposed project plans to revegetate and repave the affected areas. As such the proposed project would not substantially damage scenic resources or substantially degrade the visual character or quality of the site. Appropriate mitigation including restoration of habitat, replacement of impacted street hardscape and landscaping, and the repaving of Elfin Forest Road and Via Ambiente, will be incorporated into the project.</p> <p><b>d. No Impact.</b> See discussion in item, e, below.</p> |                                |  |                              |           |

|  | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|--|---------------------------------------|---|-------------------------------------|------------------|
| <p>e. <b>No Impact.</b> No lighting is associated with the proposed project and the pipeline would be placed underground; thus, no light, glare, shade or shadow impacts would occur as a result of the proposed project.</p>  |                                       |   |                                     |                  |
| <p><b>2. AGRICULTURE RESOURCES.</b> In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:</p>   |                                       |   |                                     |                  |
| <p>a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?</p>  |                                       |   |                                     | X                |
| <p>b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?</p>  |                                       |   |                                     | X                |
| <p>c. Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?</p>  |                                       |   |                                     | X                |
| <p>a. <b>No Impact.</b> See discussion in item, c, below.</p> <p>b. <b>No Impact.</b> See discussion in item, c, below.</p> <p>c. <b>No Impact.</b> The project site is located on land designated as rural residential, residential mobile home, residential – variable, open space, and agriculture. The site is not designated as Prime Farmland or Farmland of Statewide Importance; however, some areas are designated as Unique Farmland and Farmland of Local Importance. There are no Williamson Act contracts applicable to the project site. Since the proposed project would consist of the installation of an underground pipeline, it would not convert farmland to non-agricultural uses. The pipeline would be located underground, and within existing utility and road right-of-ways. No impact would result, and no further study of this issue is required.</p> |                                       |   |                                     |                  |

|  | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|--|---------------------------------------|---|-------------------------------------|------------------|
| <p><b>3. AIR QUALITY.</b> Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:</p>  |                                       |   |                                     |                  |
| a. Conflict with or obstruct implementation of the applicable air quality plan?  | X                                     |   |                                     |                  |
| b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?   | X                                     |   |                                     |                  |
| c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?  | X                                     |   |                                     |                  |
| d. Expose sensitive receptors to substantial pollutant concentrations?   | X                                     |   |                                     |                  |
| e. Create objectionable odors affecting a substantial number of people?  |                                       |   | X                                   |                  |
| <p><b>a. Potentially Significant Impact.</b> See discussion in item c, below.</p> <p><b>b. Potentially Significant Impact.</b> See discussion in item c, below.</p> <p><b>c. Potentially Significant Impact.</b> The project is located within the San Diego Air Basin (SDAB) and the San Diego Air Pollution Control District (APCD) is the agency responsible for the administration of federal and state air quality laws.</p> <p>Short-term construction emissions would be generated from equipment used for site grading and excavation, pipeline construction, and worker vehicle exhaust. Construction activities would be temporary and would not add to long-term air quality degradation. However, these emissions including criteria pollutants, individually or cumulatively, may exceed the APCD daily emission thresholds. Short-term construction air pollution emissions would be considered potentially significant and will be analyzed further in the EIR.</p> <p>Operational activities would be limited to occasional maintenance of the pipeline generate less than significant impacts to air quality. Currently, there are no adopted thresholds of significance or specific methodologies established for determining impacts in CEQA documents in relation to a</p> |                                       |   |                                     |                  |

|   | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|---|---------------------------------------|---|-------------------------------------|------------------|
| <p>project’s potential contribution to global climate change. As such, the contribution to global climate change in relation to greenhouse gas emissions will be addressed as cumulative impacts until further guidelines, methodologies, and thresholds of significance are established. This issue will be analyzed as a potentially significant cumulative impact in the EIR.</p> <p><b>d. Potentially Significant Impact.</b> The proposed project would be adjacent to residential sensitive receptors. Daily construction emissions could exceed the County significance thresholds. The impact is potentially significant and will be further analyzed in the EIR.</p> <p><b>e. Less Than Significant Impact.</b> Any odors produced during construction of the proposed project (e.g. odors from construction vehicle emissions) would be controlled in accordance with local nuisance emission regulations APCD Rule 51 (Public Nuisance) and California Health &amp; Safety Code, Division 26, Part 4, Chapter 3, Section §41700. Other than construction vehicle operation, no activities are anticipated to occur that would have potential odor impacts during the construction of the proposed project. Because use of construction vehicles would be temporary, impacts would be less than significant. No further analysis of this issue is required.</p> |                                       |   |                                     |                  |
| <b>4. BIOLOGICAL RESOURCES.</b> Would the project:  |                                       |   |                                     |                  |
| a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?  | X                                     |   |                                     |                  |
| b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?  | X                                     |   |                                     |                  |
| c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?  |                                       |   |                                     | X                |

|  | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|--|---------------------------------------|---|-------------------------------------|------------------|
| d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?   |                                       |   | X                                   |                  |
| e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?  | X                                     |   |                                     |                  |
| f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?   |                                       |   | X                                   |                  |
| <p><b>a. Potentially Significant Impact.</b> See discussion in item <b>d</b>, below.</p> <p><b>b. Potentially Significant Impact.</b> See discussion in item <b>d</b>, below.</p> <p><b>c. No impact.</b> No impacts to wetlands or other waters of the U.S. are expected through the avoidance of Misha Creek and Escondido Creek using a combination of existing piping, and jack and bore construction.</p> <p><b>d. Less-than Significant Impact.</b> Based on a general site assessment and review of the California Department of Fish and Game (CDFG) California Natural Diversity Database (CNDDDB), there is the potential for some sensitive wildlife and plant species to be located on or use portions of the project site. The coastal California gnatcatcher was identified in previous biological reconnaissance surveys within the project vicinity between 1991 and 1995. The project area contains habitat that could be used by migratory bird and terrestrial species. Due to the relative age of the previous surveys and because some areas related to project construction have yet to be defined, additional surveys and a detailed biological technical report will be undertaken for the project to fully characterize the existing biological conditions and evaluate the potential impacts of the proposed project. The findings of the technical report will be incorporated into the EIR.</p> <p><b>e. Potentially Significant Impact.</b> Several areas containing mature trees would be disturbed during project construction. These impacts may represent a significant impact and will be further analyzed in the EIR.</p> <p><b>f. Less-than Significant Impact.</b> Portions of the proposed project are located within the boundary of the Multiple Species Conservation Program (adopted October 22, 1997). Further study on the</p> |                                       |   |                                     |                  |

|  | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
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| impacts of the proposed project will be discussed in the EIR.  |                                       |   |                                     |                  |
| <b>5. CULTURAL RESOURCES.</b> Would the project:   |                                       |   |                                     |                  |
| a. Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5?  |                                       |   | X                                   |                  |
| b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?   |                                       |   | X                                   |                  |
| c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?  |                                       |   | X                                   |                  |
| d. Disturb any human remains, including those interred outside of formal cemeteries?   |                                       |   |                                     | X                |
| <p><b>a. Potentially Significant Impact.</b> See discussion in item c, below.</p> <p><b>b. Potentially Significant Impact.</b> See discussion in item c, below.</p> <p><b>c. Less Than Significant Impact.</b> Some of the proposed alignment has been previously surveyed for cultural resources. Excavation and earth moving activities for the two existing pipelines within the right-of-way and roadway construction indicate a low potential for encountering cultural resources in the area. In addition, recent surveys conducted by a qualified architectural historian indicate a low potential for encountering or adversely affecting historical or archaeological resources. As such, there is the potential to uncover buried archaeological and paleontological resources during project construction. A cultural resources technical report will be prepared further detailing these issues and will be summarized and integrated into the EIR.</p> <p><b>d. No impact.</b> The proposed project would not impact known cemeteries, and no evidence of burials exist in the proposed project site or in surrounding areas. Should any remains be discovered during project construction, the District would be required to stop excavation or disturbance of the affected site until CEQA Sec. 15064.5(e) are satisfied. Based on existing data, and assuming compliance with existing regulations throughout construction, no impact would be expected, and no further study of this issue is required.</p> |                                       |   |                                     |                  |

|   | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
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| <b>6. GEOLOGY AND SOILS.</b> Would the project:   |                                       |   |                                     |                  |
| a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:  |                                       |   |                                     |                  |
| i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.  |                                       |   | X                                   |                  |
| ii) Strong seismic ground shaking?  |                                       |   | X                                   |                  |
| iii) Seismic-related ground failure, including liquefaction?  |                                       |   | X                                   |                  |
| iv) Landslides?   |                                       |   | X                                   |                  |
| b. Result in substantial soil erosion, loss of topsoil, or changes in topography or unstable soil conditions from excavation, grading, or fill?   |                                       |   | X                                   |                  |
| c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?   |                                       |   | X                                   |                  |
| d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?  |                                       |   |                                     | X                |
| e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?  |                                       |   |                                     | X                |
| <p><b>a.</b></p> <p>i. <b>Less Than Significant Impact.</b> See discussion in item <b>ii</b>, below.</p> <p>ii. <b>Less Than Significant Impact.</b> The project site is not located within an Alquist-Priolo Earthquake Fault Zone or within a Fault Rupture Study Area, as mapped by the San Diego County Geologic Hazards Guidelines and the California Geological Survey. The project site is</p> |                                       |   |                                     |                  |

|  | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
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| <p>located in the Peninsular Ranges Geomorphic Province. This province is characterized by northwest-trending mountain ranges separated by sub-parallel fault zones. The pipeline trench is likely to encounter some disturbed formational material. The geologic map of the site does not identify faults within the vicinity of the project. However, as is the case for most of southern California, the project area is susceptible to high-intensity ground shaking that affects all structures. Thus the pipeline would be constructed in accordance with seismic requirements of the California Building Code Seismic Hazards Standards. Compliance with established standards would reduce the risks of structural failure or collapse to a less than significant level. No further study of this issue is required.</p> <p>iii. <b>Less Than Significant Impact.</b> Liquefaction, the transformation of the soil into a liquid state, results in lateral spreading, ground settlement, sand boils, and sand falls. According to the San Diego County General Plan Public Safety Element, the project site is not located in a liquefaction zone. As such, no impact would occur, and no further study of this issue is required.</p> <p>iv. <b>Less Than Significant Impact.</b> There is no circumstance surrounding the geology of the project area or the nature of the project that would result in increased geologic hazards. The project alignment does not traverse steep slopes or cut into hillsides that could increase the potential for landslides or mudslides, as described by the San Diego County Geologic Hazards Guidelines. Compliance with established standards would reduce the risks associated with landslides to a less than significant level, and no further study of this issue is required.</p> <p>b. <b>Less Than Significant Impact.</b> The proposed project would not result in substantial soil erosion or the loss of topsoil. Construction of the proposed project would result in ground surface disturbance during excavation and grading that could potentially cause erosion. The District will prepare a Storm Water Pollution Prevention Plan (SWPPP), which would include erosion control measures and obtain a National Pollution Discharge Elimination System (NPDES) Permit. Compliance with existing regulations would reduce impacts due to soil erosion to a less than significant level. No further study of this issue is required.</p> <p>c. <b>Less Than Significant Impact.</b> As discussed above, the project site does not have high potential for landslides, lateral spreading, or liquefaction. Additionally, compliance with established standards would reduce risks associated with landslides. As such, no impacts would occur, and no further study is required.</p> <p>d. <b>No Impact.</b> Expansive soil is defined as soil that expands to a significant degree upon wetting and</p> |                                       |   |                                     |                  |

|   | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
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| shrinks upon drying. The proposed project is not located on soils that are expansive per San Diego County Guidelines.   |                                       |   |                                     |                  |
| <b>e. No Impact.</b> The proposed project would be installing an underground pipeline for the movement of potable water. No septic tanks or alternative wastewater disposal systems would be constructed. As such, no impacts would occur, and this issue will not be further analyzed. |                                       |   |                                     |                  |
| <b>7. HAZARDS AND HAZARDOUS MATERIALS:</b> Would the project:   |                                       |   |                                     |                  |
| a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?   |                                       |   | X                                   |                  |
| b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?   |                                       |   | X                                   |                  |
| c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?   |                                       |   |                                     | X                |
| d. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?   |                                       |   |                                     | X                |
| e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?                        |                                       |   |                                     | X                |
| f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?   |                                       |   |                                     | X                |
| g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?   |                                       |   | X                                   |                  |

|   | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
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| <p>h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?</p>   |                                       |   |                                     | X                |
| <p><b>a. Less Than Significant Impact.</b> See discussion in item <b>b</b>, below.</p> <p><b>b. Less Than Significant Impact.</b> Construction may involve the transport, storage, use, or disposal of some hazardous materials, such as onsite fueling or servicing of construction equipment. However, construction activities would be temporary. These construction activities would not be expected to create a substantial hazard to workers or the community. Additionally, all construction activities involving hazardous materials would be subject to federal, state, and local health and safety requirements involving transport, use, storage, and disposal.</p> <p>Operational activities would be limited to occasional maintenance along the pipeline and would not create a significant hazard to the public. No foreseeable upset and accident conditions involving the release of hazardous materials into the environment are anticipated during construction or operation of the proposed project. The impact would be less than significant and will not be discussed further in the EIR.</p> <p><b>c. No Impact.</b> San Elijo Elementary School is located approximately 1.6 miles to the northwest of the project area. La Costa Canyon High School is located approximately 2.9 miles to the west of the project area. Although construction activities may involve onsite fueling and servicing of construction equipment, these activities would not create a significant hazard or involve hazardous emissions. Operation of the proposed project would not involve hazardous emissions or materials. In addition, all activities involving hazardous materials would be subject to federal, state, and local health and safety requirements. No impact would occur, and no additional analysis on this issue is required.</p> <p><b>d. No Impact.</b> The proposed project is not on the list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and would not create a significant hazard to the public or the environment relative to hazardous materials. No impact would occur.</p> <p><b>e. No Impact.</b> See discussion in item <b>f</b>, below.</p> <p><b>f. No Impact.</b> The proposed project is not located within an airport land use plan or within two miles of an airport. The closest public airport to the project site is the McClellan-Palomar Airport located approximately six miles to the northwest. As such, the proposed project would not result in a safety</p> |                                       |   |                                     |                  |

|   | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
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| <p>hazard for people residing or working in the project area. No impact would occur, and no further study of this issue is required.</p> <p><b>g. Less Than Significant Impact.</b> The proposed project would not impair or physically interfere with an adopted emergency response plan or any local, state, or federal agencies' emergency evacuation plan. No road closures are anticipated during project construction. Delays to emergency response would be less than significant.</p> <p><b>h. Less Than Significant Impact.</b> According to the California Department of Forestry and Fire Protection, the project site is located within the vicinity of a Very High Fire Hazard Severity Zone. However, construction and operation of the proposed project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. The undeveloped portion of the project site contains vegetation that could catch fire. Fire prevention procedures would be implemented during project construction, including fire safety training for all construction workers, onsite water truck for rapid response, and stopping construction during red flag alert conditions at the site. Compliance with the existing County regulations would ensure a less than significant impact, and no further study of this issue is required.</p> |                                       |   |                                     |                  |
| <b>8. HYDROLOGY AND WATER QUALITY.</b> Would the project:   |                                       |   |                                     |                  |
| a. Violate any water quality standards or waste discharge requirements?   |                                       |   | X                                   |                  |
| b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?   |                                       |   | X                                   |                  |
| c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of stream or river, in a manner that would result in substantial erosion or siltation on- or off-site?   |                                       |   | X                                   |                  |

|  | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
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| d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?   |                                       |   | X                                   |                  |
| e. Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?   |                                       |   | X                                   |                  |
| f. Otherwise substantially degrade water quality?  |                                       |   | X                                   |                  |
| g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?   |                                       |   | X                                   |                  |
| h. Place within a 100-year flood hazard area structures that would impede or redirect flood flows?   |                                       |   | X                                   |                  |
| i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?   |                                       |   | X                                   |                  |
| j. Inundation by seiche, tsunami, or mudflow?  |                                       |   |                                     | X                |
| <p><b>a. Less Than Significant Impact.</b> Construction and operation of the proposed project would not generate significant amounts of wastewater or significantly increase urban runoff entering existing storm drains. The objective of the proposed project is to improve drinking water quality for the customers of the District by installing a pipeline directly connecting the Second San Diego Aqueduct to the DCMWTP. Compliance with existing regulations of the Regional Water Quality Control Board and the NPDES permit would ensure less than significant impact to water quality. No further study of this issue is required.</p> <p><b>b. Less Than Significant Impact.</b> The proposed project would construct an underground pipeline connecting the Second San Diego Aqueduct to the DCMWTP. There would be no interference with percolation to the groundwater supply or depletion of groundwater supplies. No impact to groundwater recharge or supply would occur, and no further study of this issue is required.</p> <p><b>c. Less Than Significant Impact.</b> See discussion in item <b>f</b>, below.</p> |                                       |   |                                     |                  |

|  | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
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| <p><b>d. Less Than Significant Impact.</b> See discussion in item <b>f</b>, below.</p> <p><b>e. Less Than Significant Impact.</b> See discussion in item <b>f</b>, below.</p> <p><b>f. Less Than Significant Impact.</b> The proposed project involves traversing through Misha Creek and Escondido Creek. However, significant impacts to the drainage pattern or alteration of the course of a stream would be avoided. Dewatering of trenches may be necessary, but the District will implement standard Best Management Practices to control erosion, prevent siltation, and protect water quality during construction. Additionally, compliance with applicable requirements of the Regional Water Quality Board, including NPDES permit regulations, would ensure a less than significant impact.</p> <p><b>g. Less Than Significant Impact.</b> See discussion in item <b>h</b>, below.</p> <p><b>h. Less Than Significant Impact.</b> The proposed project would traverse Cielo Creek and Escondido Creek which are located within a 100-year flood zone as mapped by on the federal Flood Hazard Boundary or Flood Insurance Rate Map. However, the proposed project would construct an underground pipeline along either the right-of-way of Elfin Forest Road or parallel to two existing pipelines along the District’s maintenance road easement. No housing will be constructed for this project and flood flows would not be impeded or redirected.</p> <p><b>i. Less Than Significant Impact.</b> The proposed project will connect a pipeline from the Second San Diego Aqueduct to the DCMWTP at the Olivenhain Reservoir. Compliance with regulations would ensure that hydrology and water quality impacts associated with construction and operation of the proposed project would be reduced to less than significant levels. No further analysis is required.</p> <p><b>j. No Impact.</b> The proposed project site includes the Olivenhain Reservoir and therefore is subject to seiches. Areas located along the shoreline of a reservoir are susceptible to inundation by a seiche. The land around the Olivenhain Reservoir is in public holdings and restricts private land ownership and development, thus minimizing the risk of inundation from seiches. The proposed project is not subject to inundation by tsunami as it is not located within the range of a tsunami hazard zone. The proposed project would not be constructed along hillsides which reduce the risk of hazards associated with mudflow. Therefore, no impacts from inundation by seiche, tsunami, or mudflow would occur. No further study of this issue is required.</p> |                                       |   |                                     |                  |
| <p><b>9. LAND USE AND PLANNING.</b> Would the project:</p>   |                                       |   |                                     |                  |
| <p>a. Physically divide an established community?</p>  |                                       |   |                                     | <p>X</p>         |

|  | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
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| b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?  |                                       |   |                                     | X                |
| c. Conflict with any applicable habitat conservation plan or natural community conservation plan?  |                                       |   | X                                   |                  |
| <p><b>a. No Impact.</b> The proposed project will be located along either the right-of-way of Elfin Forest Road, Via Ambiente, or along two existing pipelines located in a District easement adjacent to a maintenance road. No road closures are anticipated during construction. As such, no community will be physically divided, and no further study of this issue is required.</p> <p><b>b. No Impact.</b> The project area is located within the San Dieguito Community Plan Area of the San Diego County General Plan and is designated as: Estate Residential, Impact Sensitive, Multiple Rural Use, and Public/Semi-Public Lands. The proposed project is also located within the Rancho Cielo Specific Plan Area. The San Diego County zoning for the project area is: Rural Residential, Residential Mobile Home, Residential – Variable, Agriculture, Open Space, and Specific Plan Area. There will be no conflicts with any land use plan, policy, or regulation of an agency because the proposed project will be buried underground and along existing roadways or District easements. No further study of this issue is required.</p> <p><b>c. Less Than Significant Impact.</b> The proposed project is located within the Multiple Species Conservation Plan for San Diego County. This issue is addressed in Section 4f and will be further analyzed in the EIR.</p> |                                       |   |                                     |                  |
| <b>10. MINERAL RESOURCES.</b> Would the project:   |                                       |   |                                     |                  |
| a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?   |                                       |   |                                     | X                |
| b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?  |                                       |   |                                     | X                |

|  | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
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| <p><b>a. No Impact.</b> See discussion in item <b>b</b>, below.</p> <p><b>b. No Impact.</b> The proposed project would not result in the loss of a locally important mineral resource. The project site is not designated by the County of San Diego for mineral resource protection and is not currently used for mineral extraction. No impact would occur, and no further study of this issue is required.</p>  |                                       |   |                                     |                  |
| <b>11. NOISE.</b> Would the project result in:   |                                       |   |                                     |                  |
| a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?  | X                                     |   |                                     |                  |
| b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?  | X                                     |   |                                     |                  |
| c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?   |                                       |   | X                                   |                  |
| d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?   | X                                     |   |                                     |                  |
| e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?  |                                       |   |                                     | X                |
| f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?   |                                       |   |                                     | X                |
| <p><b>a. Potentially Significant Impact.</b> See discussion in item <b>b</b>, below.</p> <p><b>b. Potentially Significant Impact.</b> Noise and groundborne vibration from construction activities including excavation, pipeline installation, backfill, paving, materials delivery, and soil hauling may have a potentially significant effect on the surrounding area. Construction activities would generally occur during normal weekday work hours allowed by the County noise ordinance. Operational activities on the project site would be similar to the existing conditions. As such, operational impacts to noise and groundborne vibration would be limited to the consideration of</p> |                                       |   |                                     |                  |

|  | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
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| <p>maintenance activities. A noise study will be performed to assess the construction and construction traffic-related noise impacts to the surrounding land uses. Sensitive receptor exposure to noise impacts will also be analyzed. The results of the noise analysis will be summarized and integrated into the EIR.</p> <p><b>c. Less Than Significant Impact.</b> During project operation, there would be no permanent noise-generating pieces of equipment or personnel at the project site. Post-construction operations would be limited to occasional maintenance activities. The impacts would be less than significant.</p> <p><b>d. Potentially Significant Impact.</b> As discussed above, noise impacts associated with construction activities could potentially result in temporary or periodic increases in daytime noise levels. This issue is potentially significant and will be analyzed in the EIR.</p> <p><b>e. No Impact.</b> See discussion in item f, below.</p> <p><b>f. No Impact.</b> The proposed project is not located within an airport land use plan or within two miles of an airport. The closest public airport to the project site is the McClellan-Palomar Airport located approximately six miles to the northwest. As such, the proposed project would not expose people residing or working in the project area to excessive noise levels associated with airport uses. No impact would occur, and no further study of this issue is required.</p> |                                       |   |                                     |                  |
| <b>12. POPULATION AND HOUSING.</b> Would the project:  |                                       |   |                                     |                  |
| a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?  |                                       |   |                                     | X                |
| b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?  |                                       |   |                                     | X                |
| c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?  |                                       |   |                                     | X                |

|  | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
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| <p><b>a. No Impact.</b> The proposed project involves the installation of an underground water pipeline between the City of Encinitas and Olivenhain Reservoir as a means of maintaining the existing customers' need for high quality municipal water. As such, the proposed project would not induce substantial population growth in the area, either directly or indirectly. No impact would occur, and no further study of this issue area is required.</p> <p><b>b. No Impact.</b> See discussion in item c, below.</p> <p><b>c. No Impact.</b> Construction and operation of the proposed project would occur underground either within the right-of-way of Elfin Forest Road and Via Ambiente or along two existing pipelines located in a District easement adjacent to a maintenance road. As such, no housing or people would be displaced as a result of this project. No impact would occur, and no further study of this issue area is required.</p> |                                       |   |                                     |                  |
| <p><b>13. PUBLIC SERVICES.</b></p>   |                                       |   |                                     |                  |
| <p>a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:</p>   |                                       |   |                                     |                  |
| <p>i) Fire protection?</p>   |                                       |   |                                     | X                |
| <p>ii) Police protection?</p>  |                                       |   |                                     | X                |
| <p>iii) Schools?</p>   |                                       |   |                                     | X                |
| <p>iv) Parks?</p>  |                                       |   |                                     | X                |
| <p>v) Other public facilities?</p>   |                                       |   |                                     | X                |
| <p><b>a.</b></p> <p>i. <b>No Impact.</b> See discussion in item ii, below.</p> <p>ii. <b>No Impact.</b> Fire service to the project site is provided by the Elfin Forest/Harmony Grove Fire Department. Police protection services are provided by the San Diego County Sheriff's Department. Construction and operation of the proposed project would not require additional</p>  |                                       |   |                                     |                  |

|   | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
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| <p>fire or police protection. Construction along the roadway would not result in roadway closures and response times would not be impeded. As such, no impact would occur, and no further study is required.</p> <p>iii. <b>No Impact.</b> See discussion in item v, below.</p> <p>iv. <b>No Impact.</b> See discussion in item v, below.</p> <p>v. <b>No Impact.</b> The primary objective of the proposed project is to maintain the high quality municipal water provided to the District’s customers. No population increase in the project area would result from construction and operation of the underground pipeline. No new housing or businesses would be created to induce population growth. No substantial adverse physical impact to local schools, parks, or other public facilities would occur, and no further study of this issue is required.</p> |                                       |   |                                     |                  |
| <b>14. RECREATION.</b>  |                                       |   |                                     |                  |
| <p>a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?</p>   |                                       |   |                                     | X                |
| <p>b. Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?</p>   |                                       |   |                                     | X                |
| <p>c. Would the project affect existing recreational opportunities?</p>   |                                       |   |                                     | X                |
| <p>a. <b>No Impact.</b> See discussion in item c, below.</p> <p>b. <b>No Impact.</b> See discussion in item c, below.</p> <p>c. <b>No Impact.</b> The proposed project would construct an underground pipeline between the Second San Diego Aqueduct and the DCMWTP. The pipeline will be aligned along either Elfin Forest Road, traverse under Cielo and Escondido Creek, and through Via Ambiente or along District-owned property. No impacts to existing recreational facilities or areas would occur, and no further analysis of this issue will be required.</p>   |                                       |   |                                     |                  |

|  | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|--|---------------------------------------|---|-------------------------------------|------------------|
| <b>15. TRANSPORTATION/TRAFFIC.</b> Would the project:  |                                       |   |                                     |                  |
| a. Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?  | X                                     |   |                                     |                  |
| b. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?   | X                                     |   |                                     |                  |
| c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?  |                                       |   |                                     | X                |
| d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?   |                                       |   |                                     | X                |
| e. Result in inadequate emergency access?  |                                       |   | X                                   |                  |
| f. Result in inadequate parking capacity?  |                                       |   | X                                   |                  |
| g. Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?   |                                       |   |                                     | X                |
| <p><b>a. Potentially Significant Impact.</b> See discussion in item <b>b</b>, below.</p> <p><b>b. Potentially Significant Impact.</b> Based on the trips generated by construction activities (e.g. the delivery of materials and supplies to the project site, hauling of excavated material to and from the site, and worker commutes), the proposed project could result in increased traffic that could be substantial in relation to existing traffic load and street capacity and could, individually or cumulatively, exceed established level of service standards for roads in the vicinity. Although no road closures are expected, Elfin Forest Road and Via Ambiente may be significantly affected by traffic impacts during the construction of the proposed project. Local residents and visitors may experience minor delays during construction phases that occupy paved roadways. A traffic study will be prepared and the results of the study will be summarized in the EIR.</p> <p><b>c. No Impact.</b> Construction and operation of the proposed project would not generate air traffic. The</p> |                                       |   |                                     |                  |

|  | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|--|---------------------------------------|---|-------------------------------------|------------------|
| <p>proposed project would not include above-ground structures that could act as a hazard to aircraft navigation. No impact would occur, and no further study of this issue is required.</p> <p><b>d. No Impact.</b> Because no new roads or changes to existing roads would result from the proposed project, no design features or incompatible uses would occur. No further discussion of this issue is required.</p> <p><b>e. Less Than Significant Impact.</b> The proposed project does not anticipate complete road closures along any public roadways during construction. As such, adequate emergency access will be maintained during construction. Operational activities would be limited to occasional maintenance checks and would not interfere with emergency access.</p> <p><b>f. Less Than Significant Impact.</b> All construction equipment and worker vehicle parking would be located within designated staging areas. No construction related parking would occur on public streets. Operational activities would be limited to occasional maintenance along the pipeline. The impact would be less than significant and no further study is required.</p> <p><b>g. No Impact.</b> The proposed project would not conflict with adopted policies supporting alternative transportation. Staging areas would occur off the main roadway. None of these construction activities would require the removal or relocation of alternative transportation facilities (e.g. bus stops and bike lanes). Bicycle traffic would need to use the vehicular routes through the construction zone. There are not any bicycle lanes on Elfin Forest Road or Via Ambiente. Post-construction operations would not impact alternative transportation facilities. No further study of this issue is required.</p> |                                       |   |                                     |                  |

|  | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|--|---------------------------------------|---|-------------------------------------|------------------|
| <b>16. UTILITIES AND SERVICE SYSTEMS.</b> Would the project:   |                                       |   |                                     |                  |
| a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?  |                                       |   |                                     | X                |
| b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?   |                                       |   |                                     | X                |
| c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?  |                                       |   | X                                   |                  |
| d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?   |                                       |   | X                                   |                  |
| e. Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?   |                                       |   |                                     | X                |
| f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?   |                                       |   | X                                   |                  |
| g. Comply with federal, state, and local statutes and regulations related to solid waste?  |                                       |   |                                     | X                |
| <p><b>a. No Impact.</b> See discussion in item e, below.</p> <p><b>b. No Impact.</b> See discussion in item e, below.</p> <p><b>c. Less Than Significant Impact.</b> Construction and operation of the proposed project would not require the construction of new storm drainage facilities. Creation and implementation of a SWPPP and compliance with NPDES permit regulations would ensure a less than significant impact on drainage facilities. No further analysis is required.</p> <p><b>d. Less Than Significant Impact.</b> The proposed project will construct a pipeline that will draw water</p> |                                       |   |                                     |                  |

|   | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|---|---------------------------------------|---|-------------------------------------|------------------|
| <p>from the Second San Diego Aqueduct to the District’s DCMWTP to maintain the high water quality of the District’s customers. An agreement between the District and SDCWA discusses the terms of this transfer. These details will be discussed in the EIR in the context of water supply capacity and entitlements.</p> <p>e. <b>No Impact.</b> The proposed project would construct an underground pipeline to transport water from the Second San Diego Aqueduct to the DCMWTP. Construction and operation of the proposed project would generate minimal amounts of wastewater. As such, this would not result in changes to facilities or operations at existing wastewater treatment facilities. The relatively small volume of wastewater generated by the proposed project would not result in a determination by the wastewater treatment provider that it lacked adequate capacity. No impact to wastewater treatment requirements of the applicable Regional Water Quality Control Board would occur. The proposed project would not require or result in the construction of a new water or wastewater treatment facility. No further discussion is required.</p> <p>f. <b>Less Than Significant Impact.</b> Construction debris would be recycled or transported to a landfill site and disposed of appropriately. The District would ensure that source reduction techniques and recycling measures are incorporated into project construction and operation. The amount of debris generated during project construction is not expected to significantly impact landfill capacities. Operation of the proposed project would be limited to occasional maintenance. The impact would be less than significant and no further study of this issue is required.</p> <p>g. <b>No Impact.</b> During construction and operation of the proposed project, the District will comply with all County and state solid waste diversion, reduction, and recycling mandates. No impact would occur, and no further study is required.</p> |                                       |   |                                     |                  |
| <p><b>17. MANDATORY FINDINGS OF SIGNIFICANCE.</b></p>   |                                       |   |                                     |                  |
| <p>a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?</p>   | X                                     |   |                                     |                  |

|   | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporated</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|---|---------------------------------------|---|-------------------------------------|------------------|
| b. Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?  | X                                     |   |                                     |                  |
| c. Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?  | X                                     |   |                                     |                  |
| <p><b>a. Potentially Significant Impact.</b> The analysis conducted in this Initial Study results in the determination that the proposed project could potentially degrade the quality of the environment by disturbing the habitat of wildlife species, as discussed in Section 4. The impact is potentially significant, and further analysis of this issue will be included in the EIR.</p> <p><b>b. Potentially Significant Impact.</b> As discussed in Section 3, the proposed project could contribute to cumulative air quality and climate change impacts within a region that is in nonattainment for criteria pollutants. Cumulative noise and traffic impacts may also occur during project construction. The impact is potentially significant and will be further discussed in the EIR.</p> <p><b>c. Potentially Significant Impact.</b> As discussed in the respective issue areas, project construction could have adverse effects on human beings related to aesthetics, air quality, biological resources, cultural resources, noise, and traffic.</p> |                                       |   |                                     |                  |

**REFERENCES:**

## California Department of Conservation (CDC)

- 2006 *San Diego County Important Farmland Map*. California Department of Conservation, Division of Land Resource Protection.
- 2007 *Division of Mines and Geological Special Publication 42 (California Geological Survey)*. Available at <http://www.conservation.ca.gov/cgs/rghm/ap/Pages/Index.aspx>.
- 2008 *San Diego County Williamson Act Lands 2008*. Division of Land Resource Protection. Available at [http://www.consrv.ca.gov/DLRP/fmmp/overview/survey\\_area\\_map.htm](http://www.consrv.ca.gov/DLRP/fmmp/overview/survey_area_map.htm). Accessed September 28, 2009.
- 2009 *Farmland Mapping and Monitoring Program*. Available at [http://www.consrv.ca.gov/DLRP/fmmp/overview/survey\\_area\\_map.htm](http://www.consrv.ca.gov/DLRP/fmmp/overview/survey_area_map.htm). Accessed November 23, 2009.

## County of San Diego

- 2007a *County of San Diego Guideline for Determining Significance: Air Quality*. March 19, 2007. Available at [http://www.co.san-diego.ca.us/dplu/docs/Hydrology\\_Guidelines.pdf](http://www.co.san-diego.ca.us/dplu/docs/Hydrology_Guidelines.pdf). Accessed November 24, 2009.
- 2007b *County of San Diego Guideline for Determining Significance: Hydrology*. July 30, 2007. Available at [http://www.co.san-diego.ca.us/dplu/docs/Hydrology\\_Guidelines.pdf](http://www.co.san-diego.ca.us/dplu/docs/Hydrology_Guidelines.pdf). Accessed November 24, 2009.
- 2007c *County of San Diego Guideline for Determining Significance: Geologic Hazards*. July 30, 2007. Available at [http://www.sdcounty.ca.gov/dplu/docs/Geologic\\_Hazards\\_Guidelines.pdf](http://www.sdcounty.ca.gov/dplu/docs/Geologic_Hazards_Guidelines.pdf). Accessed November 24, 2009.
- 2009 *San Dieguito Community Planning Area*. Website: <http://www.sangis.org/LibraryService/DownloadedFiles/1gpcpasdieguito.jpg>. Accessed November 19, 2009.

## County of San Diego Land Use and Environment Group

- 2009 Property Profile GIS Map. Website: <http://gis.co.san-diego.ca.us/imf/sites/property/index.jsp>. Accessed September 28, 2009.

## Elfin Forest/Harmony Grove Fire Department

- 2009 *Station/Apparatus*. Available at <http://www.eff-fire.org/station.htm>. Accessed November 24, 2009.

## Federal Emergency Management Agency (FEMA)

- 1997 *San Diego County Unincorporated and Incorporated Areas*. FEMA Map Service Center. June 19, 1997. Available at <http://msc.fema.gov/webapp/wcs/stores/servlet/MapSearchResult?storeId=10001&catalogId=10001&langId=-1&userType=G&panelIDs=06073C1058F&Type=pbp&nonprinted=&unmapped=>. Accessed November 24, 2009.

Fire and Resource Assessment Program (FRAP)

2009 *San Diego County Very High Fire Hazard Severity Zones in LRA*. June 12, 2009. Available at <http://frap.cdf.ca.gov>. Accessed November 24, 2009.

Olivenhain Municipal Water District (OMWD)

2009 *District Service Area*. Available at [http://www.olivenhain.com/content.php?content=service\\_area\\_map&layout=Layout\\_1\\_column&columns=1](http://www.olivenhain.com/content.php?content=service_area_map&layout=Layout_1_column&columns=1). Accessed September 28, 2009.

San Diego County Sheriff's Department

2009 *Locations*. Available at [http://www.sdsheriff.net/contact\\_locations.html](http://www.sdsheriff.net/contact_locations.html). Accessed November 24, 2009.

U.S. Fish and Wildlife Service (USFWS)

1995 *Biological Opinion Regarding Issuance of Patent to Olivenhain Municipal Water District in Relation to the Olivenhain Water Storage Project, San Diego County, California (1-6-93-F-44)*. August 4, 1995.

**APPENDIX B**

**NOTICE OF PREPARATION**



## Notice of Preparation

January 7, 2010

**To:** Interested Agencies and Individuals

**Lead Agency:** Olivenhain Municipal Water District  
1966 Olivenhain Road  
Encinitas, CA 92024

**Subject:** Notice of Preparation of an Environmental Impact Report for the Olivenhain Municipal Water District's Raw Water Pipeline Project from the Second San Diego Aqueduct to the David C. McCollom Water Treatment Plant

The Olivenhain Municipal Water District (District) will be the lead agency for the preparation of an Environmental Impact Report (EIR) in accordance with the California Environmental Quality Act (CEQA) and State CEQA Guidelines (CCR Title 14, §15082(a), 15103, and 15375). The EIR will address the impacts to the natural resources and the human environment from construction and operation of a 42- to 48-inch diameter pipeline over a distance of approximately three miles, in San Diego County between the Second San Diego Aqueduct to the David C. McCollom Water Treatment Plant (DCMWTP) at the Olivenhain Reservoir. The project vicinity is shown in Figure 1. The purpose of this pipeline is to provide an alternate source of raw water for the DCMWTP. The main source for the DCMWTP is the Olivenhain Reservoir, which is fed by an existing raw water pipeline from the Second San Diego Aqueduct (the reservoir also receives a small amount of runoff). An agreement between the District and the San Diego County Water Authority (SDCWA) will allow SDCWA to transfer water from Lake Hodges to the Olivenhain Reservoir. With this transfer, the water quality in the Olivenhain Reservoir may deteriorate below acceptable levels for the efficient operation of the DCMWTP. This new pipeline is intended to mitigate that risk, and to ensure the District's ability to meet its customer's need for high quality municipal water.

The **purpose of this notice** is: (1) to serve as the Notice of Preparation (NOP) to local and state responsible agencies with a stake in the proposed project, such as project approval or natural resources jurisdiction; and (2) to advise and solicit comments and suggestions regarding the preparation of the EIR, environmental issues to be addressed in the EIR, and any related issues from interested parties or individuals other than those noted above, including interested or affected members of the public.

From agencies, we need your input regarding to the scope and content of the EIR. Specifically, we need to know what information, in accordance with your agency's statutory responsibilities, should be included so that your agency may make an informed decision (if necessary) regarding any permitting or approval determinations for the proposed project.

From individuals, we need your input regarding local considerations that the EIR should address. Specifically, we need to know, based on your review of the preliminary project proposal, what potential issues may arise during the construction or operation of this pipeline. This input will aid in the pipeline final design, resulting in a project as consistent as possible with local community values and needs.

The **project description** is a new 42- to 48- inch diameter pipeline extending approximately three miles from the Second San Diego Aqueduct to the DCMWTP, which is located adjacent to the Olivenhain Reservoir. The pipeline would be underground, and would be constructed using both trenching and

tunneling methods. The District has identified two potential alternative alignments for the pipeline. The attached Figure 2 shows the two alternative alignments. The Northern Alternative begins where the Second San Diego Aqueduct crosses Elfin Forest Road. The pipeline would follow Elfin Forest Road to the southeast. At the sharp turn where Elfin Forest Road transitions to Harmony Grove Road, the Northern Alternative would continue southeast, where the pipeline would be installed underneath Escondido Creek using tunneling techniques that would avoid impacts to the streambed and associated riparian vegetation. The Northern Alternative would intersect Via Ambiente Road to the east of Escondido Creek and would follow Via Ambiente to the driveway of the DCMWTP. The pipeline would follow the paved driveway to connect to the DCMWTP. The Southern Alternative begins just east of Suerte Del Este Road, at the Second San Diego Aqueduct. This pipeline would roughly parallel two existing pipelines located in a District easement that is readily identifiable by an existing maintenance road and various vent structures. The Southern Alternative would follow the existing easement to the east, where it would intersect with Via Ambiente near the intersection with the DCMWTP driveway. As with the Northern Alternative, the pipeline would follow the driveway to connect with the DCMWTP.

The District has identified the Northern Alternative as the preferred alternative because it would result in fewer impacts to sensitive flora and fauna and would cost less to construct and maintain.

The potential **environmental impacts** due to the construction and operation of the pipeline, along either alignment alternative, will be addressed in detail in the EIR. In summary, anticipated impacts would likely concern the following issue areas:

*Air Quality* - Short-term impacts to air quality associated with project construction. No long-term impacts to air quality would occur.

*Biological Resources* - Potential for short-term direct and indirect impacts to biological resources. Diegan coastal sage scrub occupied by the coastal California gnatcatcher is found along both alignments. Wetland areas and riparian vegetation would be avoided during construction by tunneling.

*Cultural Resources* - Potential for impacts to cultural resources, although most of the Southern Alternative is proposed within existing utility easement that was previously surveyed for cultural resources, approved for construction, and cleared for the construction of two existing pipelines. The Northern Alternative is mostly proposed within existing road right of way.

*Geology and Soils* - A geotechnical study will be prepared to determine the construction methods and materials required for project construction and the speed at which pipeline installation may proceed.

*Noise and Vibration* - Short-term noise impacts associated with project construction along either alternative alignment. Blasting would be required for the Southern Alternative. Blasting may be required for the Northern Alternative.

*Paleontological Resources* - Information from the geotechnical analysis will be used to determine the potential for paleontological resources to be encountered along either proposed pipeline alignment. Based on past projects, the potential for paleontological resources to be encountered is expected to be low.

*Traffic/Transportation* - Potential short-term impacts to traffic and transportation facilities would be primarily limited to the Northern Alternative, which would require excavation within

the Elfin Forest Road right-of-way. Two-way traffic and access to all adjacent properties would be maintained during construction. A Traffic Management Plan would be prepared to minimize the disruption to the flow of traffic. The disturbed sections of roadway would be repaved to existing conditions or better.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date, but no later than 30 days after receipt of this notice. Please send your written responses, including the name of a contact person, to:

Adam Stephenson, Environmental Analyst  
AECOM  
1420 Kettner Blvd, Suite 500  
San Diego, CA 92101



**APPENDIX C**

**BIOLOGICAL TECHNICAL REPORT**



**DRAFT**  
**BIOLOGICAL RESOURCE REPORT FOR THE**  
**PROPOSED OLIVENHAIN MUNICIPAL WATER DISTRICT**  
**UNIT AA RAW WATER PIPELINE PROJECT FROM THE**  
**SECOND SAN DIEGO AQUEDUCT TO THE**  
**DAVID C. MCCOLLOM WATER TREATMENT PLANT**

**PROJECT NUMBER 09080154**

*Prepared for:*

The Olivenhain Municipal Water District  
1966 Olivenhain Road  
Encinitas, California 92024

Contact: George Briest, PE  
760.753.6466

*Prepared by:*

AECOM  
1420 Kettner Boulevard, Suite 500  
San Diego, California 92101

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Contact: Paula Jacks, Senior Biologist (County Approved CEQA Consultant)  
619.233.1454

July 2010  
Amended August 17, 2010



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## GLOSSARY OF TERMS AND ACRONYMS

|          |  |
|----------|--|
| AMSL     | above mean sea level                               |
| AOU      | American Ornithologists' Union                     |
| BGEPA    | Bald and Golden Eagle Protection Act               |
| BMO      | Biological Mitigation Ordinance                    |
| BMP      | best management practice                           |
| CAGN     | coastal California gnatcatcher                     |
| CBOC     | California Burrowing Owl Consortium                |
| CDFG     | California Department of Fish and Game             |
| CEQA     | California Environmental Quality Act               |
| CESA     | California Endangered Species Act                  |
| CFGC     | California Fish and Game Code                      |
| CNDDDB   | California Natural Diversity Data Base             |
| CNPS     | California Native Plant Society                    |
| County   | County of San Diego                                |
| CSC      | California Species of Concern                      |
| CWA      | Clean Water Act                                    |
| District | Olivenhain Municipal Water District                |
| EA       | Environmental Assessment                           |
| EIR      | Environmental Impact Report                        |
| ESA      | Endangered Species Act                             |
| FEIR     | Final Environmental Impact Report                  |
| GPS      | Global Positioning System                          |
| HLP      | Habitat Loss Permit                                |
| HU       | Hydrological Unit                                  |
| JD       | Jurisdictional Delineation                         |
| LBV      | least Bell's vireo                                 |
| MBTA     | Migratory Bird Treaty Act                          |
| MHCP     | Multiple Habitat Conservation Program              |
| MSCP     | Multiple Species Conservation Program              |
| NCCP     | Natural Community Conservation Plan                |
| NCMSCP   | North County Multiple Species Conservation Program |
| OHWM     | ordinary high water mark                           |
| PAMA     | Pre-approved Mitigation Area                       |
| RCA      | Resource Conservation Area                         |

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|        |                                      |
|--------|--------------------------------------|
| RGL    | Regulatory Guidance Letter           |
| RPO    | Resource Protection Ordinance        |
| RWQCB  | Regional Water Quality Control Board |
| SANDAG | San Diego Association of Governments |
| SDCWA  | San Diego County Water Authority     |
| SSC    | state species of concern             |
| SWFL   | southwestern flycatcher              |
| USACE  | U.S. Army Corps of Engineers         |
| USDA   | U.S. Department of Agriculture       |
| USEPA  | U.S. Environmental Protection Agency |
| USFWS  | U.S. Fish and Wildlife Service       |
| USGS   | U.S. Geological Survey               |

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## SUMMARY

AECOM, on behalf of the Olivenhain Municipal Water District (District), has prepared this Biological Resource Report for the District's Unit AA Raw Water Pipeline project. The project site is located southeast of the City of San Marcos, and west of the City of Escondido, due west of Lake Hodges, in San Diego County, California (Figures 1 and 2). The project proposes the construction of approximately 3 miles of 48-inch-diameter raw water pipeline. The entire pipeline would be installed within a cut and cover trench, except where tunneling is proposed underneath Escondido Creek. Two separate alignments have been considered: a northern preferred alignment, and a southern alignment. The proposed southern alignment was addressed in the Final Environmental Impact Report (FEIR)/Environmental Assessment for the Olivenhain Water Storage Project (certified by the District in 1996). This alignment was also addressed in the FEIR/Environmental Impact Statement certified by the San Diego County Water Authority (SDCWA) in 1996 for the Emergency Storage Project and in a Biological Opinion issued by the U.S. Fish and Wildlife Service (USFWS) in 1999. The approximately 3-mile Olivenhain to Second Aqueduct Pipeline was included as part of the Olivenhain/Hodges/San Vicente Alternative in the SDCWA documents. The preferred alternative has not previously been surveyed for natural resources that could be affected by a pipeline project. This report addresses both the preferred alignment and the southern alignment.

The purpose of this report is to identify the existing biological resources within the alternative alignments, assess the potential impacts to these biological resources associated with the proposed project, and recommend mitigation for impacts that are considered significant under California Environmental Quality Act (CEQA) guidelines and County of San Diego (County) Significance Guidelines (County of San Diego 2009). The County of San Diego is a Responsible Agency under CEQA for the issuance of a Habitat Loss Permit for impacts to Diegan coastal sage scrub, which is habitat for the coastal California gnatcatcher (*Polioptila californica californica*; CAGN).

Land ownership within the project site includes multiple private property landowners. In addition, the Sage Hill Preserve (located adjacent to Elfin Forest Road near the northern terminus of the preferred alternative) was purchased jointly by the Conservation Fund, the San Diego Association of Governments (SANDAG), and the County. A County road right-of-way, District utility easements, and SDCWA property are located near the proposed project. In accordance with County Guidelines (2009), the entire proposed project site (both alignment corridors) plus 100 feet onto adjoining properties were surveyed to evaluate on-site and immediately adjacent

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off-site land. In addition, adjoining properties out to a distance of 500 feet were surveyed to evaluate potential indirect impacts that may be relevant at this distance (e.g., noise impacts on sensitive avifauna during construction). The total survey area, including the project footprints of the both routes and associated 100 foot and 500 foot buffers, is 680.90 acres.

Several sensitive biological resources are known to occur within and adjacent to the proposed project site based on direct or indirect observations made during the surveys and investigations that were conducted for the proposed project during 2009. Other sensitive biological resources were determined to have the potential to occur within and adjacent to the proposed project site based on evaluations made during these surveys and investigations. The surveys and investigations that were conducted include a biological reconnaissance survey, vegetation mapping, jurisdictional wetlands delineation, and protocol-level surveys for CAGN, southern willow flycatcher (SWFL), and least Bell's vireo (LBV). The results of the jurisdictional wetlands delineation are presented in Chapter 5 of this document. The sensitive vegetation communities and species, and regulated waters that were detected within and adjacent to the proposed project site during these surveys, and the findings for CAGN, SWFL, and LBV are summarized below.

Sensitive vegetation communities occur within and adjacent to the proposed project site, including freshwater seep, mulefat scrub, southern arroyo willow riparian forest, southern willow scrub, Diegan coastal sage scrub (disturbed and intact), coastal sage-chaparral transition, nonnative grassland, valley needlegrass grassland, southern mixed chaparral, and dense coast live oak woodland. Impacts to potentially jurisdictional wetlands, other waters, and riparian habitat will be avoided through the implementation of specific design measures described in Chapter 3.

Six CNPS List species were found during rare plant surveys conducted for the proposed project site in 2009: San Diego sagewort (*Artemisia palmeri*), a California Native Plant Society (CNPS) List 4 species; wart-stemmed ceanothus (*Ceanothus verrucosus*), a CNPS List 2 species; summer holly (*Camarostaphylis diversifolia* ssp. *diversifolia*), a CNPS List 1B species; San Diego marsh-elder (*Iva hayesiana*), a CNPS list 2 species; California adolphia (*Adolphia californica*), a CNPS list 2 species, and southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*), a CNPS List 4 species.

Several sensitive wildlife species have been found and/or detected on or adjacent to the proposed project site during surveys conducted for the proposed project in 2009, including coastal California gnatcatcher, a federally threatened species and a state species of concern (SSC); Cooper's hawk (*Accipiter cooperii*), a CDFG SSC; northern harrier (*Circus cyaneus*), a CDFG

SSC; white-tailed kite (*Elanus leucurus*), a California fully protected species; southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*); Bell’s sage sparrow (*Amphispiza belli belli*); and Belding’s orange-throated whiptail (*Aspidoscelis hyperythrus beldingi*).

Any impacts to the vegetation communities occurring within the project site that are considered sensitive by the County or regulated by state or federal resource agencies would be considered adverse and significant, according to CEQA, the County, and the resource agencies; therefore, mitigation would be required. Although much of the biological survey area is within the boundaries of the proposed North County Multiple Species Conservation Program (NCMSCP) Subarea Plan, this plan is not yet finalized. Therefore, all mitigation ratios comply with ratios required by the County Biological Mitigation Ordinance. The project’s proposed impacts to vegetation communities that would warrant mitigation from development of either the preferred alignment or the southern alignment are summarized in Table S-1.

**Table S-1**  
**Direct Impacts to Upland Vegetation Communities that Require Mitigation**

| Sensitive Vegetation Communities within Alternative Alignments | MSCP Tier Level <sup>1</sup> | Proposed Impacts            |                            |
|--|------------------------------|-----------------------------|----------------------------|
|  |                              | Preferred Alignment (Acres) | Southern Alignment (Acres) |
| <i>Uplands</i>   |                              |                             |                            |
| Dense Coast Live Oak Woodland                                  | I                            | ---                         | ---                        |
| Diegan Coastal Sage Scrub                                      | II                           | 0.46 <sup>2</sup>           | 3.64                       |
| Coastal Sage – Chaparral Transition                            | II                           | ---                         | 0.32                       |
| Nonnative Grassland  | III                          | 0.04                        | ---                        |
| Valley Needlegrass Grassland                                   | I                            | ---                         | ---                        |
| Southern Mixed Chaparral                                       | III                          | ---                         | 0.50                       |
| <i>Total Area Uplands =</i>                                    |                              | <i>0.50</i>                 | <i>4.46</i>                |

<sup>1</sup> See the County of San Diego Biological Mitigation Ordinance and the South County Multiple Species Conservation Program (MSCP) Biological Mitigation Ordinance for a description of the Tier levels.

<sup>2</sup> Approximately 0.21 acre of Diegan coastal sage scrub would be permanently impacted.

Construction of the proposed project would result in direct and indirect impacts to several sensitive animal species, including the federally threatened coastal California gnatcatcher. Any impacts to federally listed, state listed, and/or fully protected species and SSC would be considered adverse and significant according to CEQA and the County; therefore, mitigation would be required. Coordination with USFWS and the California Department of Fish and Game (CDFG) is recommended to determine appropriate avoidance and/or mitigation measures for these sensitive biological resources. Impacts to nesting raptors or any other nesting bird are considered significant under California Fish and Game Code 3503.5 and the Migratory Bird

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Treaty Act. Site clearing and grading preconstruction activities would be scheduled to avoid and/or minimize impacts to migratory birds.

Project design features and mitigation would reduce all of the impacts summarized above to below a level of significance. Project design features include, and are not limited to, native habitat restoration, avoidance of the bird nesting season, diversion of nighttime lighting, noise attenuation, and construction best management practices. Mitigation measures would include preparation and implementation of a Biological Resource Mitigation Plan. This plan would describe on-site and off-site mitigation (approved by the County and the resource agencies) that would compensate for unavoidable impacts to sensitive biological resources. Additional mitigation measures would include construction fencing and nest monitoring.

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# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 PURPOSE OF REPORT**

At the request of the Olivenhain Municipal Water District (District), AECOM conducted a biological resource analysis to document the existing biological resources and the potential impacts of construction and operation of the proposed Unit AA Raw Water Pipeline Project (project) that would be constructed along one of two alternative alignments: the preferred alignment or the southern alignment. Several sensitive biological resources are known to occur or have the potential to occur within and adjacent to these alignments as identified and/or detected during biological studies and surveys that were conducted for the proposed project in September 2009, and previously by Mooney Associates for the southern alignment in 1991, 1992, and 1993. Some of these sensitive biological resources have potential to be impacted by the proposed project. The purpose of this report is to describe the existing biological resources within the proposed alternative alignments, assess the potential impacts to these biological resources associated with the proposed project, and recommend mitigation for impacts that are considered significant under the California Environmental Quality Act (CEQA) guidelines and the County of San Diego (County) Significance Guidelines (County of San Diego 2009).

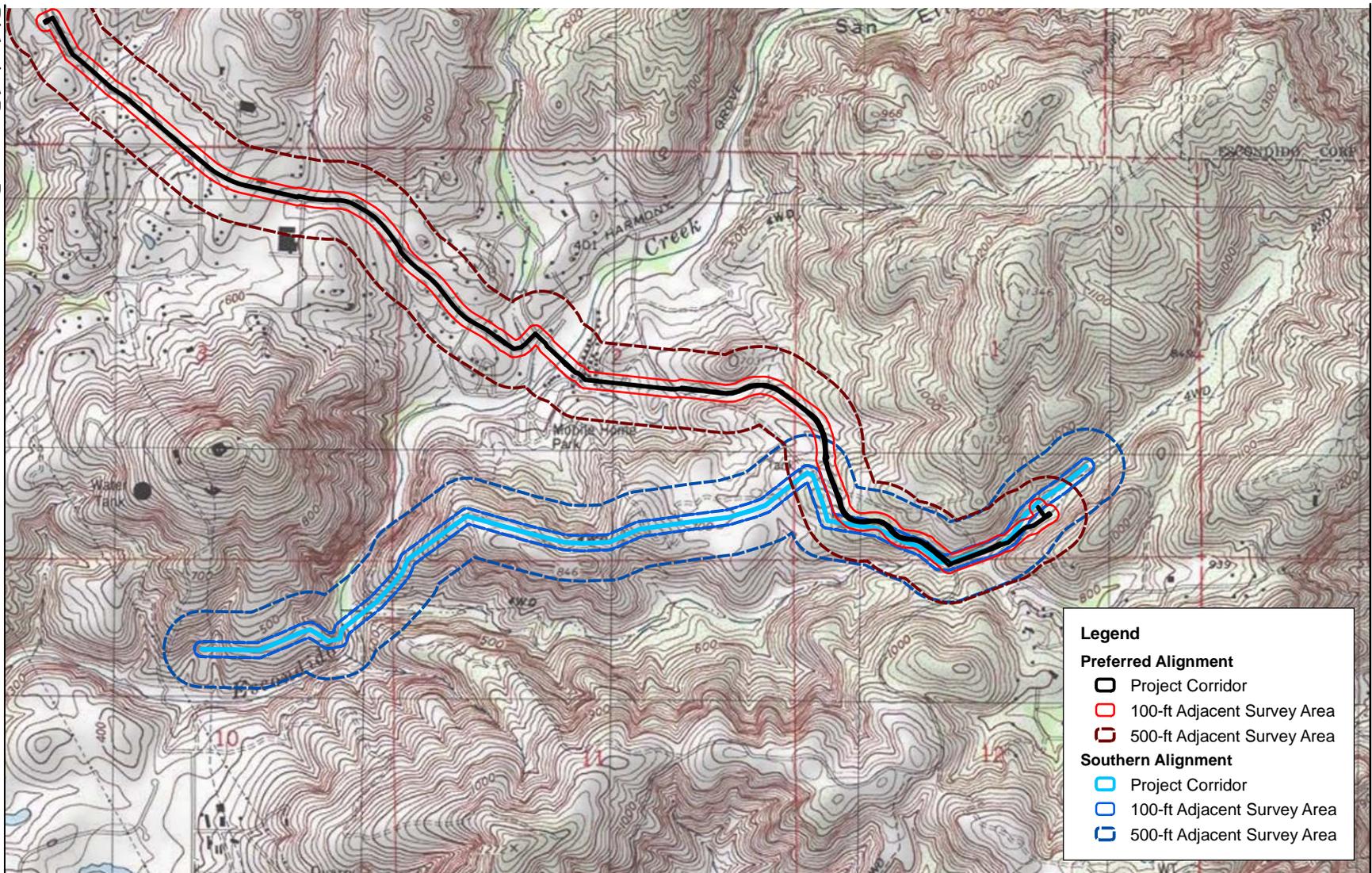
### **1.2 PROPOSED PROJECT LOCATION AND DESCRIPTION**

#### **1.2.1 Project Location and Site Description**

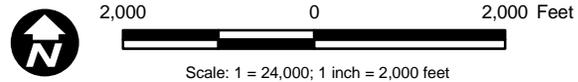
The proposed project is situated in central San Diego County, approximately 25 miles northeast of San Diego, 8 miles east of the Pacific Ocean, 4 miles southwest of the center of the City of San Marcos, and 6 miles southwest of the City of Escondido, California (Figure 1). The proposed project, including both the preferred and southern alignments, occurs at an elevation of approximately 638 feet above mean sea level (AMSL), and is within Section 34, Township 12 S, Range 3 W; and Sections 1, 2, 3, 10, and 11 of Township 13 S, Range 3 W, of the San Bernardino U.S. Geological Survey (USGS) Quadrangle (CaSIL 2009) (Figure 2). The proposed project is bounded by Fortuna del Sur to the northwest, the Olivenhain Reservoir to the east, Questhaven Road to the south, and Suerte del Este to the west (Figure 3). Both proposed alignments are dominated by Diegan coastal sage scrub on generally flat to undulating topography, although much of the preferred alignment is located within the pavement of Elfin Forest Road and Via Ambiente.



**Figure 1**  
**Locality Map**



Source: USGS 7.5' Topo Quad Rancho Santa Fe 1983



**Figure 2**  
**Vicinity Map**

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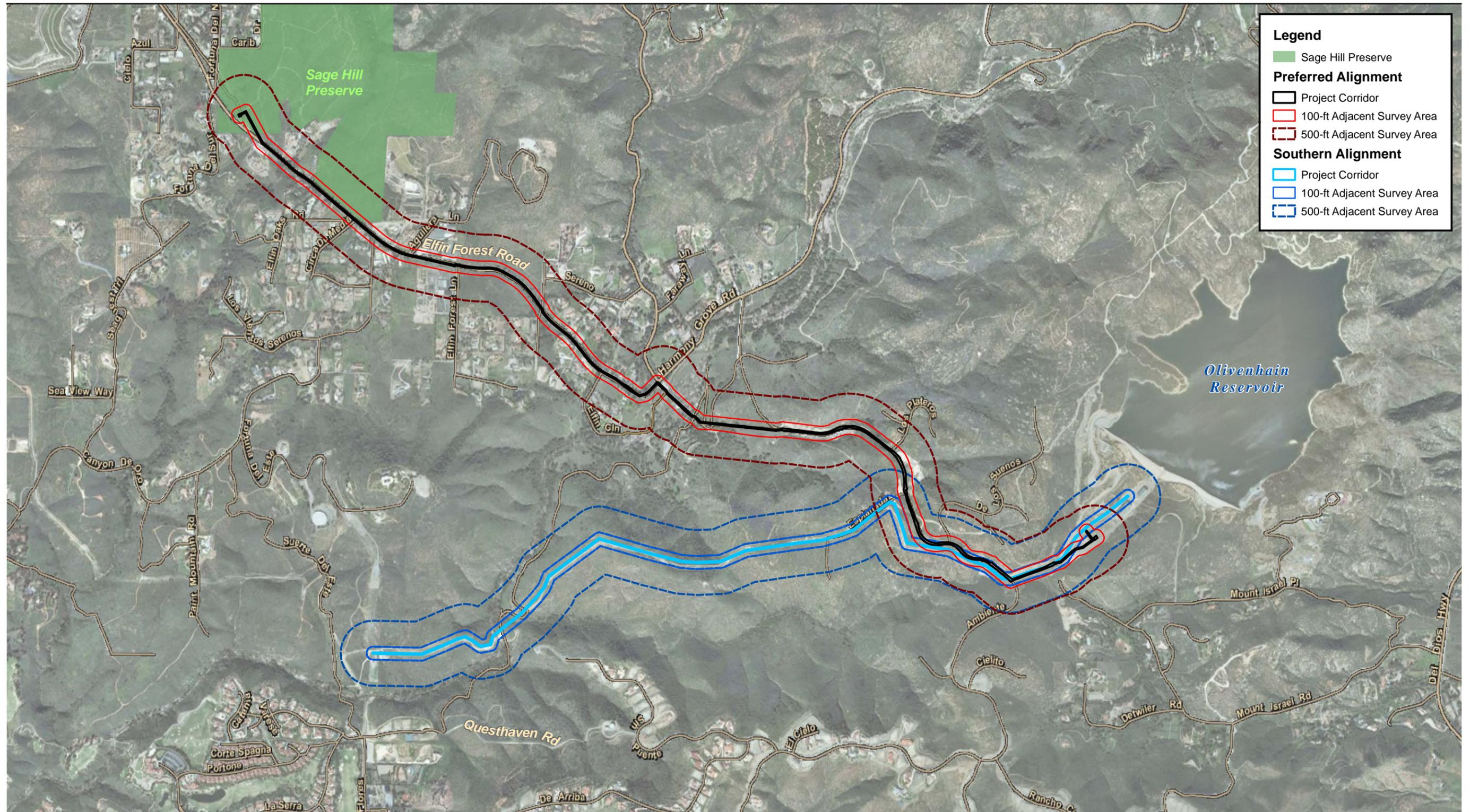
## 1.3 SURVEY METHODS

Biological surveys for the proposed project site were initiated in September 2009 and are ongoing in July 2010; all surveys were conducted by AECOM biologists. Prior to field surveys, a query of the California Department of Fish and Game (CDFG) California Natural Diversity Database (CNDDDB) was conducted to determine which sensitive species have the potential to occur within the proposed project site. A list of the qualified surveyors, survey dates, and survey conditions is provided in Table 1. Biological surveys and investigations conducted for the proposed project include a biological reconnaissance survey, vegetation mapping, focused rare plant surveys, jurisdictional wetlands delineation, protocol nonbreeding season coastal California gnatcatcher (CAGN) surveys (*Polioptila californica californica*), protocol breeding season surveys for least Bell's vireo (*Vireo bellii pusillus*; LBV), and protocol breeding season surveys for the southwestern willow flycatcher (*Empidonax traillii extimus*; SWFL). Information about these survey methodologies is provided below.

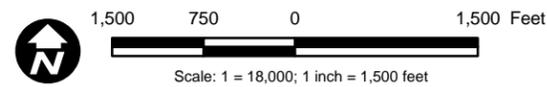
All surveys were conducted on foot to cover the proposed project site. As described below, the biological surveys focused on specific areas within a 602.78-acre survey area that includes both alignments. A 71.01-acre overlap exists between the two alignments and is only accounted for once in the survey area total acreage. In addition to the 100-foot and 500-foot survey areas, both alignments contain a "project corridor" varying in width between 20 and 40 feet that encompasses the actual pipeline placements where direct impacts will occur. The preferred alignment survey area totals 414.35 acres with a project corridor of 9.38 acres, an area extending 100 feet out from the project corridor measuring 78.72 acres, and an area extending 500 feet beyond the project corridor measuring 326.25. The southern alignment survey area totals 330.42 acres with a project corridor of 7.60 acres, a 100-foot buffer survey area of 56.28 acres, and a 500-foot buffer survey area of 266.53 acres. Where applicable, biological surveys were conducted in accordance with guidelines established by the U.S. Fish and Wildlife Service (USFWS) and CDFG. The following paragraphs describe the methodologies used during the various biological resources surveys conducted within the proposed project survey area.

### 1.3.1 Vegetation Mapping

Vegetation mapping for both alignments was conducted in October 2009, November 2009, and March 2010. This effort provided comprehensive coverage data for the preferred alignment, and updated the mapping conducted by Mooney Associates in 1991, 1992, and 1993 for the southern alignment. The 2009 biological reconnaissance survey and vegetation mapping were conducted



Source: DigitalGlobe 2008; Nolte 2009; AECOM 2009



**Figure 3**  
Aerial View of Project Vicinity

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**Table 1  
Survey Information**

| <b>Date</b> | <b>Surveyors</b>                               | <b>Survey Type</b>                                   | <b>Beginning Conditions</b>                  | <b>Ending Conditions</b>                          |
|-------------|--|--|--|---|
| 9/25/09     | D. Morin; S. Innecken                          | Biological Reconnaissance Survey                     | 9:20 A.M.; 1–3 mph; 0% cloud cover           | 1:30 P.M.; 1–3 mph; 0% cloud cover                |
| 10/8/09     | B. Calantas; A. Fisher; L. Quon                | Coastal California gnatcatcher: Focused Survey # 1   | 06:42 A.M.; 49.8°F; 0 mph; 0% cloud cover    | 09:00 A.M.; 74.6°F; 0.7 to 1.7 mph; partly cloudy |
| 10/14/09    | F. Sproul; S. Innecken                         | Vegetation mapping; Rare plant survey                | NA   | NA  |
| 10/15/09    | F. Sproul; S. Innecken                         | Vegetation mapping; Rare plant survey                | NA   | NA  |
| 10/22/09    | B. Calantas; A. Fisher; J. McMorran; S. Dayman | Coastal California gnatcatcher: Focused Survey # 2   | 06:30 A.M.; 57.2°F; 1.8 mph; 2% cloud cover  | 11:30 A.M.; 80°F; 2 to 5 mph; 0% cloud cover      |
| 11/5/09     | A. Fisher; J. McMorran                         | Coastal California gnatcatcher: Focused Survey # 3a* | 06:40 A.M.; 64°F; 0 mph; 100% cloud cover    | 11:00 A.M.; 73°F; 1–2 mph; 0% cloud cover         |
| 11/6/09     | A. Fisher; J. McMorran                         | Coastal California gnatcatcher: Focused Survey # 3b* | 06:45 A.M.; 63°F; 1–2 mph; 100% cloud cover  | 10:00 A.M.; 68°F; 2–3 mph; 80% cloud cover        |
| 11/19/09    | F. Sproul                                      | Vegetation mapping; Rare plant survey                | n.a.   | n.a.  |
| 11/19/09    | A. Fisher; J. McMorran                         | Coastal California gnatcatcher: Focused Survey # 4a* | 07:25 A.M.; 58°F; 0–1 mph; 70% cloud cover   | 11:25 A.M.; 70°F; 2–5 mph; 0% cloud cover         |
| 11/20/09    | A. Fisher; J. McMorran                         | Coastal California gnatcatcher: Focused Survey # 4b* | 06:50 A.M.; 50°F; 0 mph; 0% cloud cover      | 11:30 A.M.; 74°F; 1–3 mph; 5% cloud cover         |
| 12/03/09    | A. Fisher, J. McMorran                         | Coastal California gnatcatcher: Focused Survey # 5a* | 06:50 A.M.; 54°F; 1.4 mph; overcast          | 10:40 A.M.; 66°F; 1.1 mph; sunny and warm         |
| 12/04/09    | B. Calantas, M. Kedziora                       | Coastal California gnatcatcher: Focused Survey # 5b* | 06:45 A.M.; 48°F; 2 mph; clear               | 09:40 A.M.; 62°F; 2–3 mph                         |
| 12/18/09    | E. LaCoste                                     | Coastal California gnatcatcher: Focused Survey # 6a* | 06:41 A.M.; 0–1 mph; cold                    | 10:30 A.M.; 1–2 mph; cool                         |
| 12/18/09    | B. Calantas                                    | Coastal California gnatcatcher: Focused Survey # 6b* | 06:36 A.M.; 48.1°F; 1.8 mph; sunny and clear | 10:00 A.M.; 66.9°F; 1–8 mph; sunny and clear      |
| 12/31/09    | B. Hendricks                                   | Coastal California gnatcatcher: Focused Survey # 7a* | 08:05 A.M.; 48°F; 0–3 mph; sunny and dewy    | 12:00 P.M.; 72°F; 0–3 mph; sunny and warm         |
| 1/01/10     | B. Hendricks                                   | Coastal California gnatcatcher: Focused Survey # 7b* | 08:20 A.M.; 45°F; 0–2 mph; partly overcast   | 12:00 P.M.; 72°F; 3–8 mph; sunny                  |
| 1/15/10     | B. Hendricks                                   | Coastal California gnatcatcher: Focused Survey #8a*  | 08:00 A.M.; 68°F; 0–5 mph; cool              | 12:00 P.M.; 74°F; 3–15 mph                        |

| Date      | Surveyors    | Survey Type  | Beginning Conditions  | Ending Conditions   |
|-----------|--------------|--|---|---|
| 1/16/10   | B. Hendricks | Coastal California gnatcatcher: Focused Survey #8b*  | 08:20 A.M.; 58°F; 3-7 mph; cool and breezy                    | 12:25 P.M.; 79°F; 2-5 mph; warm and sunny                   |
| 1/28/10   | B. Hendricks | Coastal California gnatcatcher: Focused Survey # 9a*                                       | 08:00 A.M.; 45°F; 0-3 mph; good conditions                    | 11:55 AM.; 64°F; 2-5 mph; good conditions                   |
| 1/29/10   | B. Hendricks | Coastal California gnatcatcher: Focused Survey # 9b*                                       | 07:20 A.M.; 39°F; 0-2 mph; good conditions                    | 12:09 A.M.; 65°F; 2-5 mph; good conditions                  |
| 3/30/2010 | S. Innecken  | Vegetation mapping   | NA  | NA  |
| 4/21/2010 | J. Zinn      | Focused Wetlands Jurisdictional Delineation  | NA  | NA  |
| 4/28/10   | A. Fisher    | Least Bell's vireo: Focused Survey #1  | 07:30 A.M.: 59.4°F: 1-4 mph: overcast and drizzly             | 11:30 A.M.: 73°F: 1-5 mph: warm and sunny                   |
| 5/13/10   | A. Fisher    | Least Bell's vireo: Focused Survey #2  | 06:30 A.M.: 60°F: 1-2 mph: 10% cloud cover; sunny             | 11:23 A.M.: 69°F: 2-4 mph: 5% cloud cover: sunny            |
| 5/26/10   | A. Fisher    | Least Bell's vireo: Focused Survey #3<br>Southwestern willow flycatcher: Focused Survey #1 | 06:15 A.M.: 56.2°F: 1-2 mph: 90% cloud cover: cloudy and cool | 11:00 A.M.: 75.6°F: 1-2 mph: 0% could cover: warm and sunny |
| 6/7/10    | E. LaCoste   | Least Bell's vireo: Focused Survey #4<br>Southwestern willow flycatcher: Focused Survey #2 | 05:15 A.M.: 64°F: 1-2 mph: 100% cloud cover: overcast         | 07:45 A.M.: 68°F: 1-2 mph: 50% cloud cover: overcast        |
| 6/23/10   | E. Riley     | Least Bell's vireo: Focused Survey #5<br>Southwestern willow flycatcher: Focused Survey #3 | 05:50 A.M.: 62°F: 0 mph: 100% cloud cover: overcast           | 10:00 A.M.: 75.8°F: 1-2 mph: 0% cloud cover: sunny and warm |
| 7/5/10    | E. LaCoste   | Least Bell's vireo: Focused Survey #6<br>Southwestern willow flycatcher: Focused Survey #4 | 07:00 A.M.: 64°F: 0-1 mph: 100% cloud cover: overcast         | 09:00 A.M.: 67°F: 0-1 mph: 100% cloud cover: overcast       |

F = Fahrenheit; mph = miles per hour; NA = Not Available or Applicable

\* Surveys required more than 1 day to complete; applicable to surveys for coastal California gnatcatcher only

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on foot within the proposed project site. Animal species observed directly or detected from calls, tracks, scat, nests, or other sign were noted during the vegetation mapping surveys and the other surveys conducted for the project. All plant species observed in the study area were also noted, and plants that could not be identified in the field were collected and identified later using taxonomic keys. The *Biological Resource Mapping Requirements* established by the County were used to assess and map the vegetation communities within the proposed project site (County of San Diego 2009). Vegetation communities were classified using the 1986 Holland classification system, as modified by Thomas Oberbauer (1996) and the County of San Diego (2009), and mapped by hand in the field on a 1-inch-equals-200-foot aerial photograph, and later screen-digitized in the office using ArcGIS software.

### **1.3.2 Rare Plant Surveys**

AECOM conducted rare plant surveys on October 14 and 15, 2009; and November 19, 2009. Surveys were conducted on foot using meandering transects to cover the entire proposed project site. All plant species observed in the survey area were also noted, and plants that could not be identified in the field were collected and identified later using taxonomic keys. Rare plants detected were counted and mapped with submeter accuracy using a global positioning system (GPS) unit and incorporated into ArcGIS software.

The following species had potential to occur within the proposed project site, but were not observed during protocol surveys or vegetation mapping: San Diego goldenstar (*Bloomeria clevelandii*), thread-leaved brodiaea (*Brodiaea filifolia*), Orcutt's brodiaea (*Brodiaea orcuttii*), delicate clarkia (*Clarkia delicata*), variegated dudleya (*Dudleya variegata*), Robinson's peppergrass (*Lepidium virginicum* var. *robinsii*), and chaparral ragwort (*Senecio aphanactis*).

### **1.3.3 Coastal California Gnatcatcher Surveys**

Protocol-level nonbreeding-season CAGN surveys were conducted within suitable habitat along the preferred alignment only. Protocol-level CAGN surveys were not conducted along the southern alignment because this alignment was found to be highly occupied by CAGN based on protocol-level surveys conducted by Mooney Associates in 1991 and 1992 (Mooney Associates 1992). Conditions along that alignment remain mostly unchanged; thus, suitable habitat along the southern alignment is assumed occupied. The protocol-level surveys conducted along the preferred alignment began on October 8, 2009, and were completed on January 29, 2010. Surveys followed the current USFWS protocol for the species (dated February 28, 1997, and amended July 28, 1997). The preferred alignment shifted after completion of protocol surveys;

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this shift resulted in an approximately 1.5-acre area with potentially suitable habitat that was not surveyed for CAGN presence. Based on the findings of other surveys in this area, CAGN presence is assumed for this 1.5-acre area, and appropriate avoidance measures will be incorporated into the project design. Although much of the biological survey area is within the boundaries of the proposed North County Multiple Species Conservation Program (NCMSCP) Subarea Plan, this plan is not yet finalized and, thus, the associated Incidental Take Authorization for impacts to threatened and endangered species has not been issued. Similarly, the District is not independently covered under the Natural Community Conservation Plan (NCCP) with separate Incidental Take Authorization. The USFWS non-breeding season survey protocol for non-NCCP areas, which requires a minimum of nine surveys, each conducted at least 2 weeks apart, was, therefore, followed for this project. The *45-Day Summary Report of 2009 Focused Surveys for the Proposed Olivenhain Municipal Water District Unit AA 2010 Raw Water Pipeline Project from the Second San Diego Aqueduct to the David C. McCollom Water Treatment Plant, San Diego County, California* is included as Appendix A of this document.

The CAGN surveys consisted of walking meandering transects through potential CAGN habitat, including all scrub associations. AECOM wildlife biologists Barbra Calantas, Andrew Fisher, Lyndon Quon, James McMorrin (supervised), and Bonnie Hendricks, all permitted under TE#820658-4, and Erik LaCoste, permitted under TE#027736-4, conducted the surveys. The biologists conducted passive surveillance (i.e., listening and looking for the species) in all habitats with potential to support CAGN. If an observation was not made after approximately 5 to 10 minutes of passive survey activity, a taped vocalization of CAGN was played for approximately 5 to 10 seconds (i.e., active survey activity), followed by another period of passive observation. The taped vocalization was discontinued with any positive CAGN response.

As allowed under AECOM's endangered species permit, the survey activity "takes" the CAGN through harassment with playback of taped CAGN vocalizations. No individual CAGNs were captured.

#### **1.3.4 Least Bell's Vireo Surveys**

LBV surveys were determined necessary per a former project alternative that would have resulted in direct impacts to suitable LBV habitat along Escondido Creek. Although the alternative was rejected, surveys had already started; thus, the results of these surveys are discussed in this document. Furthermore, potential indirect impacts to LBV habitat must be determined for the preferred and the southern alignments. Protocol-level LBV surveys were conducted within suitable habitat along the preferred alignment only, since suitable LBV habitat

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does not occur within the southern alignment. The protocol-level surveys conducted along the preferred alignment began on April 28, 2010, and are ongoing. As of July 5, 2010, six of eight total surveys have been conducted, and all surveys are expected to be completed by late July 2010. Results will be available in September 2010. These surveys followed the current USFWS survey protocol for the species (dated February 1992 and amended January 19, 2001). The USFWS survey protocol requires a minimum of eight surveys, each conducted at least 10 days apart.

The LBV surveys consisted of walking meandering transects through potential LBV habitat, including all willow riparian associations. AECOM wildlife biologists Andrew Fisher, Erik LaCoste, Erin Riley, and Barbra Calantas conducted the surveys. The biologists conducted passive surveillance (i.e., listening and looking for the species) in all habitats with potential to support LBV.

### **1.3.5 Southwestern Willow Flycatcher Surveys**

From May 26, 2010 to July 17, 2010, five protocol-level SWFL surveys were conducted within suitable habitat along the preferred alignment only; suitable habitat for SWFL does not occur within the southern alignment. These surveys followed the current USFWS survey protocol for the species (Sogge et al. 1997).

The SWFL surveys consisted of walking meandering transects through potential SWFL habitat, including all willow riparian woodland associations. AECOM wildlife biologists Andrew Fisher (supervised), Erik LaCoste (TE-027736-4), Barbra Calantas (supervised), and Erin Riley (TE-820658-4) conducted the surveys. If an observation was not made after approximately 5 to 10 minutes of passive survey activity, a taped vocalization of SWFL was played for approximately 10 to 15 seconds (i.e., active survey activity), followed by another period of passive observation. This method was repeated every 20 to 30 meters throughout each survey site and more often if background noise was loud.

### **1.3.6 Focused Wetlands Jurisdictional Delineation**

On April 21, 2010, AECOM ecologist Joshua Zinn conducted a field survey of potential jurisdictional waters (including wetlands) within an approximately 0.5-acre survey area where an alternative construction method was considered for the pipeline's crossing of Escondido Creek (this alternative method was subsequently removed from consideration). Areas that potentially meet the definition of federal or state waters, regardless of the extent of the area, warrant detailed

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mapping where proposed activities may affect the potentially regulated resource. Therefore, the minimum mapping unit when delineating jurisdictional waters is small (less than 0.01 acre). Findings from a reconnaissance survey within the approximately 0.5-acre area determined that Escondido Creek and its associated riparian area have the potential for the presence of, at a minimum, two types of federally regulated waters, warranting detailed field assessments composed of (1) formal delineations for potential wetlands based on the three-criteria method outlined in the 1987 Manual and 2008 Regional Supplement (the simultaneous presence of hydrophytic vegetation, hydric soil, and wetland hydrology) to define the type, amount, and extent of wetlands; and (2) formal surveys for field indicators of all potential nonwetland waters of the U.S. (e.g., unvegetated water and drainage features) based on field indicators to define the jurisdictional lateral extent by using indicators of an ordinary high water mark (OHWM) and relevant guidance and procedural documents. Therefore, a focused delineation of jurisdictional waters following federal and state guidelines was conducted for this segment of Escondido Creek and its associated riparian area.

### **1.3.7 Survey Limitations**

For the botanical surveys described above, time of year and seasonality based on late-season rainfall was a limiting factor based on the bloom periods of annual plant species. The following species had potential to occur within the proposed project site, yet were not observed at the time of surveys: San Diego goldenstar (*Bloomeria clevelandii*), thread-leaved brodiaea (*Brodiaea filifolia*), Orcutt's brodiaea (*Brodiaea orcuttii*), delicate clarkia (*Clarkia delicata*), variegated dudleya (*Dudleya variegata*), Robinson's pepper-grass (*Lepidium virginicum* var. *robinsii*), and chaparral ragwort (*Senecio aphanactis*). These species may have bloomed later than expected due to significant rainfall and lower temperatures lasting later into the spring.

The use of existing CAGN data based on the results of the protocol-level surveys conducted by Mooney Associates in 1991, 1992, and 1993 limits certainty of current CAGN occupation within this alignment. However, the habitat within this alignment has not been altered since the last surveys in 1993. Thus, it is prudent to consult the results of the previous surveys, as it is highly unlikely that CAGN individuals and nesting pairs have abandoned suitable habitat in the absence of disturbance. Additionally, the assumption of presence within the approximately 1.5-acre area of the preferred alignment that was not surveyed for CAGN presence limits certainty of CAGN populations within this area. However, this area supports suitable CAGN habitat and is surrounded by occupied habitat. Thus, this assumption is based on supportive data from adjacent survey results.

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## **1.4 ENVIRONMENTAL SETTING**

This section describes the existing environmental setting of the proposed project site, including the regional context of the site, soil types, vegetation communities, plant species, wildlife species, rare and sensitive plant and wildlife species either known or potentially occurring in the proposed project site, potentially jurisdictional waters, and wildlife corridors. The information provided in the following sections is based on the biological surveys conducted within the proposed project site from September 2009 through July 2010. This section also includes all relevant findings from past biological resource surveys along the southern alignment, and available regional data.

### **1.4.1 Regional**

#### **1.4.1.1 Regional Setting**

The proposed project is located in an unincorporated portion of the County of San Diego, east of the Cities of San Marcos and Encinitas and west of the City of Escondido (Figure 1). The proposed project lies at an elevation of approximately 638 feet AMSL (Figure 2). Topography is flat to undulating, with numerous scattered Santiago Peak metavolcanic rock outcroppings and two main drainages: Escondido Creek and Misha Creek (Figures 2 and 3). These two creeks drain toward the southwest through the proposed project site. Misha Creek drains into Escondido Creek south of the proposed project site near Questhaven Road.

#### **1.4.1.2 Regional Conservation**

Both alignments are predominantly located within the County's proposed NCMSCP with the extreme eastern end of the alignments within the approved South County Multiple Species Conservation Program (MSCP) (Figure 4). The proposed project is within lands designated as Pre-approved Mitigation Areas (PAMAs) per the NCMSCP; additional preserve areas surround the proposed project site (Figure 4). The project is also within pre-negotiated (hardlined) Take Authorized Areas per the NCMSCP. In addition, one NCMSCP Open Space Easement exists on the northern perimeter of the proposed project site. The NCMSCP meets the northern boundary of the MSCP in the eastern portion of the proposed project site. This portion includes both MSCP Hardline Preserve and Take Authorized Areas (Figure 4).

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### **1.4.1.3 Regional Climate**

The proposed project is located in an area with seasonal fluctuations in temperatures and rainfall. During the wet winter months, the average daily high temperature in Escondido is approximately 70 degrees Fahrenheit (°F) and the average daily low temperature is approximately 44°F; in San Marcos, the average daily high temperature is approximately 69°F and the average daily low temperature is approximately 45°F. Average precipitation during this period ranges from 2.4 to 3.4 inches per month, with an average rainfall of 2.9 inches. During the dry summer months, the average daily high temperature in Escondido is approximately 85°F and the average daily low temperature is approximately 61°F; the average daily high temperature in San Marcos is approximately 82°F and the average daily low temperature is approximately 60°F. Average precipitation during this period ranges from 0 to 0.2 inch, with an average of 0.1 inch per month (City-Data 2009).

### **1.4.1.4 Regional Hydrology**

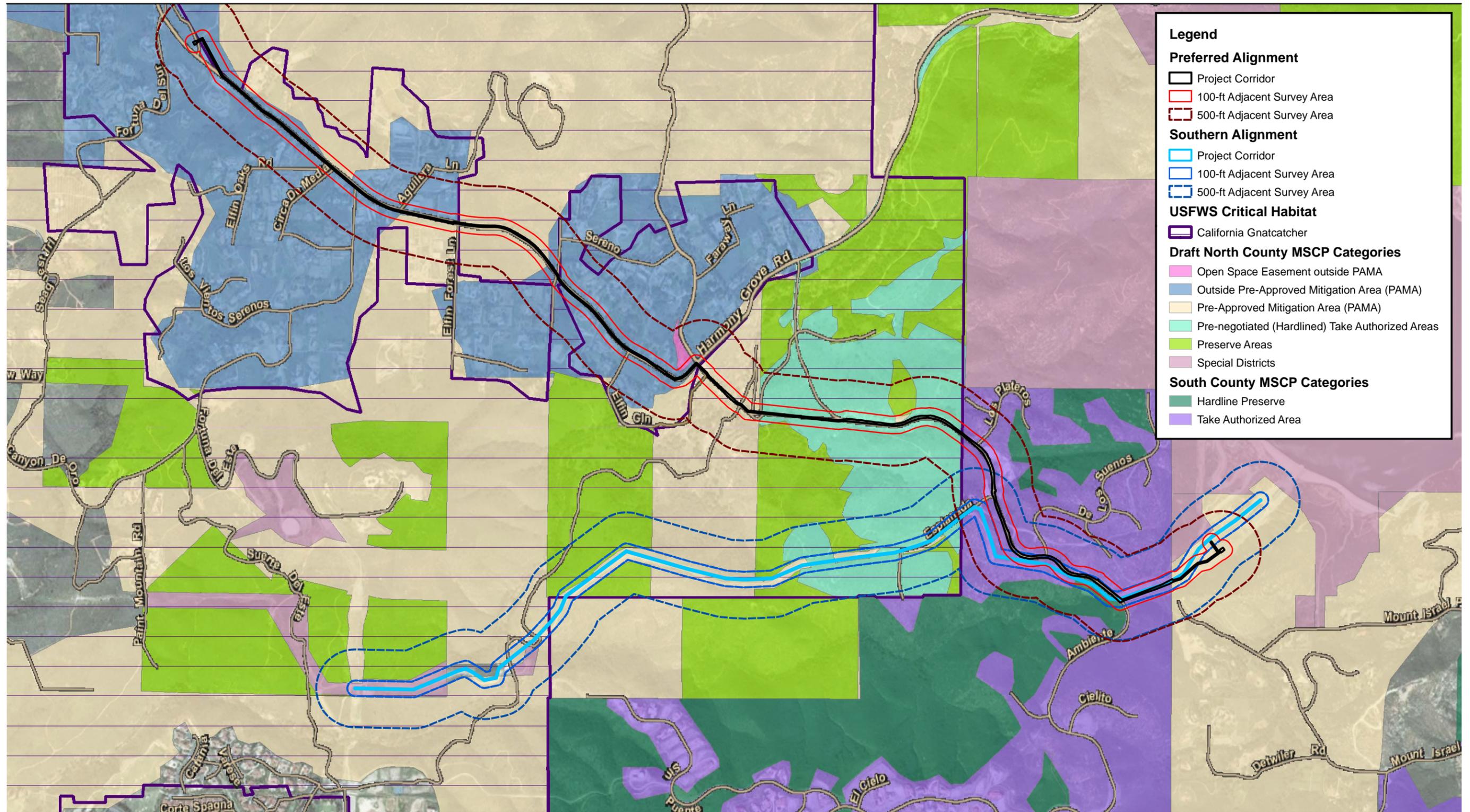
Escondido Creek and Misha Creek fall within the Carlsbad Hydrologic Unit (HU). The Carlsbad HU spans approximately 210 square miles from the headwaters above Lake Wohlford in east San Diego County to the Pacific Ocean (Project Clean Water n.d.). The Carlsbad HU includes portions of Vista, Oceanside, Solana Beach, Escondido, and the community of Rancho Santa Fe.

## **1.4.2 Soil Types**

The soil series that occur within and adjacent to the alternative project alignments are noted in Table 2. Characteristics of these soils are found in the U.S. Department of Agriculture (USDA) Soil Survey of San Diego Area, California (USDA 1973), and the local hydric soil list (USDA 1992). The following soils series descriptions are taken from the Natural Resource Conservation Service Soils Series Classification Database (Soils Survey Staff n.d.).

### **1.4.2.1 Cieneba Series**

Cieneba soils consist of very shallow and shallow, somewhat excessively drained soils that formed in material weathered from granitic rock. They occur on uplands and have slopes of 9 to 85%. The following Cieneba series soil inclusions occur within the project site: Cieneba-Fallbrook rocky sandy loams, 30 to 65% slopes, eroded (CnG2); Cieneba rocky coarse sandy loam, 9 to 30% slopes, eroded (CmE2); Cieneba very rocky coarse sandy loam, 30 to 75% slopes (CmrG); and Cieneba coarse sandy loam, 15 to 30% slopes, eroded (CIE2).



**Legend**

**Preferred Alignment**

- Project Corridor
- 100-ft Adjacent Survey Area
- 500-ft Adjacent Survey Area

**Southern Alignment**

- Project Corridor
- 100-ft Adjacent Survey Area
- 500-ft Adjacent Survey Area

**USFWS Critical Habitat**

- California Gnatcatcher

**Draft North County MSCP Categories**

- Open Space Easement outside PAMA
- Outside Pre-Approved Mitigation Area (PAMA)
- Pre-Approved Mitigation Area (PAMA)
- Pre-negotiated (Hardlined) Take Authorized Areas
- Preserve Areas
- Special Districts

**South County MSCP Categories**

- Hardline Preserve
- Take Authorized Area

Source: DigitalGlobe 2008; Nolte 2009; AECOM 2009

1,000 500 0 1,000 Feet

Scale: 1 = 15,000; 1 inch = 1,250 feet

**Figure 4**  
Regional Conservation and Land Ownership

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**Table 2**  
**Soils Occurring within the Alternative Project Alignments**

| Soil Series | Phase   | Preferred Alignment | Southern Alignment |
|-------------|---|---------------------|--------------------|
| Cieneba     | Cieneba very rocky coarse sandy loam, 30 to 75% slopes        | 0.60                | 0.50               |
|             | Cieneba coarse sandy loam, 15 to 30% slopes, eroded           | 0.50                | ---                |
| Fallbrook   | Cieneba-Fallbrook rocky sandy loams, 30 to 65% slopes, eroded | 2.70                | 2.20               |
| Soboba      | Soboba stony loamy sand, 9 to 30% slopes                      | 0.30                | ---                |
| San Miguel  | San Miguel rocky silt loam, 9 to 30% slopes                   | 0.60                | ---                |
| Huerhuero   | Huerhuero loam, 5 to 9% slopes, eroded                        | 2.00                | ---                |
|             | Huerhuero loam, 9 to 15% slopes, eroded                       | 0.70                | ---                |
| Exchequer   | San Miguel-Exchequer rocky silt loams, 9 to 70% slopes        | 1.60                | 3.80               |
| Escondido   | Escondido very fine sandy loam, 5 to 9% slopes                | 0.40                | ---                |
| Visalia     | Visalia sandy loam, 2 to 5% slopes                            | ---                 | ---                |
| Placentia   | Placentia sandy loam, 2 to 9% slopes                          | ---                 | 0.40               |
| Vista       | Vista rocky coarse sandy loam, 5 to 15% slopes                | ---                 | 0.70               |

Cieneba soils occur at elevations of 500 to 4,000 feet. The climate is dry subhumid mesothermal with warm dry summers and cold moist winters. There is little or no snow. Mean annual precipitation is 12 to 35 inches. Mean annual temperature is 57 to 65°F; average January temperature is 45 to 50°F; average July temperature is 68 to 80°F. The freeze-free season is 175 to 300 days. Cieneba soils are somewhat excessively drained with low to medium runoff. Permeability varies from moderately rapid in the soil to much slower in the weathered granite. Native vegetation is mainly chaparral and chamise (*Adenostoma fasciculatum*) with widely spread oak species (*Quercus* sp.).

#### 1.4.2.2 Fallbrook Series

The Fallbrook series consists of deep, well-drained soils that formed in material weathered from granitic rocks. They occur on rolling hills and have slopes of 5 to 75%. The following Fallbrook series soil inclusion occurs within the project site: Cieneba-Fallbrook rocky sandy loams, 30 to 65% slopes, eroded (CnG2).

Fallbrook soils are gently rolling to very steep and are on round hills at elevations of 200 to 3,000 feet or as high as 3,500 feet on south-facing slopes. The climate is dry subhumid with warm, dry summers and cool, moist winters. The mean annual precipitation is 12 to 18 inches. The average January temperature is 47 to 50°F; the average July temperature is 70°F; and the

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average annual temperature is 60 to 66°F. The frost-free season is 250 to 320 days. Fallbrook soils are well drained with medium to very rapid runoff and moderately slow permeability. Native vegetation is mainly annual grasses and forbs with substantial chamise, flat-top buckwheat (*Eriogonum fasciculatum*), and other shrubs.

#### **1.4.2.3 Soboba Series**

The Soboba series consists of deep, excessively drained soils that formed in alluvium from primarily granitic rock sources. They occur on alluvial fans and flood plains and have slopes of 0 to 30%. The following Soboba series soil inclusion occurs within the project site: Soboba stony loamy sand, 9 to 30% slopes (SsE).

Soboba soils are on alluvial fans and floodplains at elevations of 25 to 3,700 feet. Slopes range from 0 to 30%. The soils formed in recent alluvium, mostly from granitic rocks. The climate is one of long dry summers and mild, moist winters with an average annual rainfall of 10 to 20 inches. The average January temperature is 50°F; the average July temperature is 72°F; and the average annual temperature is 60 to 62°F. The frost-free season is 260 to 330 days. Soboba soils are excessively drained with very slow runoff and very rapid permeability. Typical native vegetation is annual grasses and forbs and chaparral shrubs.

#### **1.4.2.4 San Miguel Series**

The San Miguel soils are strongly sloping to very steep and are in mountainous areas at elevations of 700 to 3,300 feet. The soils formed in residuum weathered from metavolcanic rocks. The following San Miguel series soil inclusion occurs within the project site: San Miguel rocky silt loam, 9 to 30% slopes (SmE), and San Miguel-Exchequer rocky silt loams, 9 to 70% slopes (SnG).

The climate is subhumid mesothermal with warm dry summers and cool moist winters. The mean annual precipitation is 13 to 18 inches. The average January temperature is 48°F, the average July temperature is about 75°F, and the mean annual temperature is 59 to 62°F. The frost-free season is 240 to 280 days. San Miguel soils are well drained with medium to very rapid runoff and very slow permeability. Typical native vegetation includes chamise, ceanothus (*Ceanothus* sp.), sumac (*Malosma laurina*), and yerba santa (*Eriodictyon* sp.).

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#### **1.4.2.5 Huerhuero Series**

Soils of the Huerhuero series are now included with the Antioch series. Antioch soils are on nearly level to strongly sloping alluvial fans and terraces at elevations of less than 1,100 feet. Slopes are usually less than 3%. The following Huerhuero soil inclusions occur within the project site: Huerhuero loam, 9 to 15% slopes, eroded (HrD2), and Huerhuero loam, 5 to 9% slopes, eroded (HrC2).

The climate is subhumid mesothermal with warm to hot dry summers and cool moist winter. Mean annual precipitation is 12 to 20 inches. Average January temperature is 46°F, average July temperature is 68°F, mean annual temperature is 58°F, and the freeze-free season is about 260 days. Huerhuero (Antioch) soils are moderately well to somewhat poorly drained with slow to medium runoff and very slow permeability. Native vegetation is typically annual grasses and forbs and with scattered oaks.

#### **1.4.2.6 Vista Series**

The Vista series consists of moderately deep, well drained soils that formed in material weathered from decomposed granitic rocks. Vista soils are on hills and mountainous uplands and have slopes of 2 to 75%. The following Vista series soil inclusion occurs within the project site: Vista rocky coarse sandy loam, 5 to 15% slopes (VvD).

Vista soils are on hilly slopes at elevations of 400 to 3,900 feet in Southern California and at less than 3,500 feet elevation in central California. Slopes range from 2 to 75%. The soils formed in material weathered from decomposed granite and other closely related rocks. The climate is subhumid mesothermal. The average annual precipitation is 10 to 22 inches. The average January temperature is 47 to 58°F, the average July temperature is 67 to 80°F, and the mean annual temperature is 59 to 65°F. The average frost-free season is 210 to 320 days. Vista soils are well drained with slow to rapid runoff and moderately rapid permeability. Native vegetation typically includes annual grasses and forbs and shrubs such as California sagebrush (*Artemisia californica*), scrub oak (*Quercus berberidifolia*), lilac (*Ceanothus cuneatus*), chamise, sumac, and flat-top buckwheat.

#### **1.4.2.7 Escondido Series**

Escondido soils are on gently rolling to hilly topography in foothills at elevations of 400 to 2,800 feet. The following Escondido series soil inclusion occurs within the project site: Escondido very fine sandy loam, 5 to 9% slopes (EsC).

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Escondido soils are in a semiarid to dry subhumid mesothermal climate with warm, dry summers and cool, moist winters. Mean annual precipitation is 10 to 20 inches. Average January temperature is 45 to 50°F, average July temperature is 70 to 75°F, average annual temperature is 62°F, and the frost-free season is more than 240 days. Escondido soils are well drained with medium runoff and moderate permeability. The native vegetation is oak-savanna and broadleaf chaparral.

#### **1.4.2.8 Visalia Series**

The Elder series includes most of the soils formerly placed in the Molinos and Visalia series. The Elder series consists of very deep and deep, well-drained soils that formed in alluvial material derived from mixed rock sources. Elder soils are on alluvial fans and in floodplains and have slopes of 0 to 15%. The following Visalia series soil inclusion occurs within the project site: Visalia sandy loam, 2 to 5% slopes (VaB).

Elder soils are on alluvial fans and floodplains. Elevations are 20 to 1,500 feet. The soils formed in moderately coarse textured alluvium derived from sedimentary, granitic, and basic igneous rock sources. Slopes are 0 to 15%. The climate is dry, subhumid mesothermal with warm, dry summers and cool, wet winters. The mean annual precipitation is 12 to 35 inches. The average January temperature is about 48°F and about 56°F along the coast of California; the average July temperature is about 65°F; the average annual temperature is about 57°F to 61°F. The freeze-free season is 175 to 325 days and as high as 350 days along the coast of California. Visalia (Elder) soils are well drained with negligible to low runoff and moderately rapid permeability. Typical native vegetation includes annual grasses and forbs with scattered live oak (*Quercus* sp.).

#### **1.4.2.9 Placentia Series**

Placentia soils are nearly level to moderately sloping and are on fans and terraces at elevations of 50 to 2,500 feet. They formed in alluvium from granite and other rocks of similar composition and texture. The following Placentia series soil inclusion occurs within the project site: Placentia sandy loam, 2 to 9% slopes (PeC).

The climate is dry subhumid mesothermal with long dry warm summers and cool moist winters. The mean annual precipitation is about 12 to 18 inches. The average January temperature is about 50°F, the average July temperature is 65 to 75°F, and the average annual temperature is 58 to 65°F. Placentia soils are well or moderately well drained with slow to rapid runoff and very slow permeability. Typical native vegetation includes annual grasses and forbs.

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#### **1.4.2.10 Exchequer Series**

Exchequer soils are on undulating to steep uplands at elevations of 400 to 2,000 feet. They formed in residuum from hard andesitic breccia, schist, and metamorphosed volcanic rocks. The following Exchequer series soil inclusion occurs within the project site: San Miguel-Exchequer rocky silt loams, 9 to 70% slopes (SnG).

The climate is subhumid mesothermal with warm summers and moist cool winters. Mean annual precipitation is 15 to 35 inches. Average January temperature is 44 to 51°F; average July temperature is 74 to 78°F; mean annual temperature is 59 to 64°F. The frost-free season is 220 to 270 days. Exchequer soils are somewhat excessively drained with medium to rapid runoff and moderate permeability. Native vegetation is annual grasses with small herbaceous plants, scattered blue oaks (*Quercus douglasii*), or dense shrubs.

#### **1.4.3 Vegetation Communities**

Fourteen vegetation communities and land cover types occur among the two alternative project alignments and associated 100-foot and 500-foot buffer areas, including four types of riparian and wetland vegetation communities (freshwater seep, mulefat scrub, southern arroyo willow riparian forest, and southern willow scrub), eight types of upland vegetation communities (dense coast live oak woodland, Diegan coastal sage scrub, coastal sage-chaparral transition, eucalyptus woodland, nonnative grassland, ornamental plantings, southern mixed chaparral, and valley needlegrass grassland), and two other cover types (disturbed habitat and urban/developed). Slight variations within specific community types exist. These riparian, wetland, and upland vegetation communities and other cover types are described below, summarized in Table 3, and depicted in Figures 5a and 5b. The Holland (1986) numeric code system (as modified by Thomas Oberbauer 1996 and Oberbauer et al. 2008) of classifying vegetation communities is noted for each cover type in the descriptions below and also provided in Table 3. Within approved Multiple Species Conservation Program (MSCP) Plan areas, mitigation ratios for impacts to vegetation communities are determined by Tier levels (i.e., per the County Biological Mitigation Ordinance [BMO] that was adopted to enable the County to achieve the conservation goals set forth in the MSCP). According to the County BMO, “Natural Vegetation” is the vegetation communities included in Tiers I, II, and III on the List of San Diego County Vegetation Communities and Tier Levels (2010) (Table 4).

**Table 3  
Vegetation Communities and Cover Types**

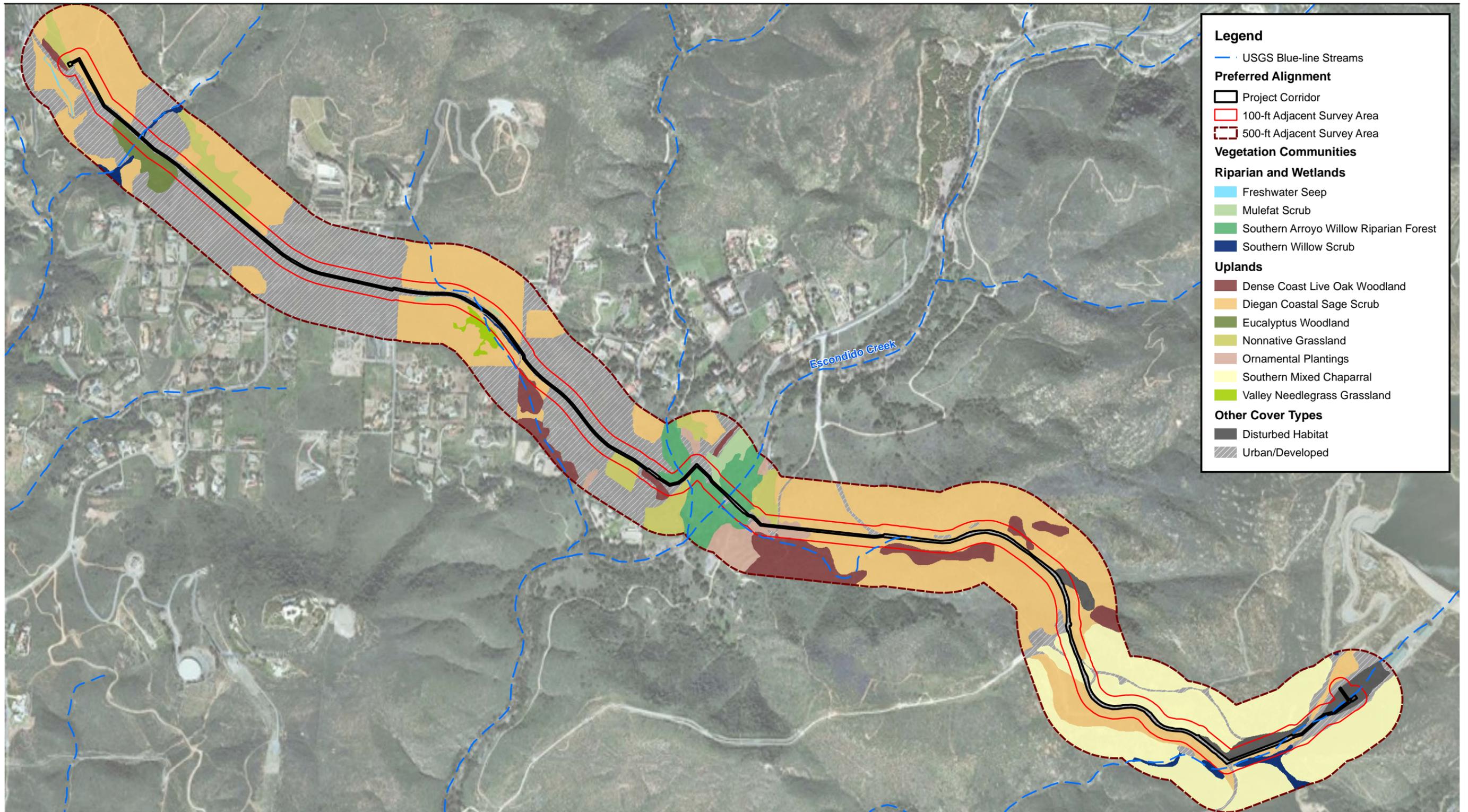
| Vegetation Communities and Cover Types                | Holland Code <sup>1</sup> | MSCP Tier Level <sup>2</sup> | Preferred Alignment <sup>3</sup> |                               |  | Southern Alignment <sup>3</sup> |                               |  |
|---|---------------------------|------------------------------|----------------------------------|-------------------------------|--|---------------------------------|-------------------------------|--|
|   |                           |                              | Project Corridor                 | 100-foot Adjacent Survey Area | 500-foot <sup>3</sup> Adjacent Survey Area | Project Corridor                | 100-foot Adjacent Survey Area | 500-foot <sup>3</sup> Adjacent Survey Area |
| <b><i>Riparian and Wetlands</i></b>                   |                           |                              |                                  |                               |  |                                 |                               |  |
| Freshwater Seep <sup>3,4</sup>                        | 45400                     | I                            | ---                              | ---                           | 0.21                                       | ---                             | ---                           | ---  |
| Mulefat Scrub <sup>3,4</sup>                          | 63310                     | I                            | ---                              | 0.58                          | 1.97                                       | ---                             | ---                           | ---  |
| Southern Arroyo Willow Riparian Forest <sup>3,4</sup> | 61320                     | I                            | 0.05                             | 3.35                          | 10.60                                      | 0.19                            | 1.23                          | 8.64                                       |
| Southern Willow Scrub <sup>3</sup>                    | 32500                     | I                            | ---                              | 1.03                          | 2.68                                       | ---                             | 0.59                          | 1.84                                       |
| <b><i>Uplands</i></b>                                 |                           |                              |                                  |                               |  |                                 |                               |  |
| Dense Coast Live Oak Woodland <sup>3,4</sup>          | 71162                     | I                            | ---                              | 1.90                          | 18.61                                      | ---                             | 1.29                          | 18.78                                      |
| Diegan Coastal Sage Scrub <sup>3,4</sup>              | 32500                     | II                           | 0.46                             | 28.05                         | 119.04                                     | 3.64                            | 28.16                         | 105.21                                     |
| Coastal Sage – Chaparral Transition <sup>4</sup>      | 37G00                     | II                           | ---                              | ---                           | ---  | 0.32                            | 2.92                          | 31.78                                      |
| Eucalyptus Woodland                                   | 79100                     | IV                           | ---                              | 1.74                          | 2.49                                       | ---                             | ---                           | ---  |
| Nonnative Grassland                                   | 42200                     | III                          | 0.04                             | 3.06                          | 12.46                                      | ---                             | ---                           | ---  |
| Ornamental Plantings                                  | 18100                     | IV                           | 0.17                             | 1.61                          | 5.03                                       | ---                             | ---                           | ---  |
| Southern Mixed Chaparral                              | 37120                     | III                          | ---                              | 5.71                          | 59.34                                      | .50                             | 4.12                          | 78.69                                      |
| Valley Needlegrass Grassland <sup>3,4</sup>           | 42110                     | I                            | ---                              | 0.32                          | 1.25                                       | ---                             | ---                           | 1.14                                       |
| <b><i>Other Cover Types</i></b>                       |                           |                              |                                  |                               |  |                                 |                               |  |
| Disturbed Habitat                                     |                           | IV                           | 0.28                             | 4.28                          | 3.23                                       | 0.72                            | 6.78                          | 6.05                                       |
| Urban/Developed                                       | 12000                     | n.a.                         | 8.37                             | 27.08                         | 89.32                                      | 2.23                            | 11.20                         | 14.41                                      |
| <i>Total Area Other Cover Types =</i>                 |                           |                              | 8.65                             | 31.36                         | 92.55                                      | 9.40                            | 17.98                         | 20.46                                      |
| <b>Total =</b>  |                           |                              | <b>9.38</b>                      | <b>78.72</b>                  | <b>326.25</b>                              | <b>7.60</b>                     | <b>56.28</b>                  | <b>266.53</b>                              |

<sup>1</sup> Based on Holland (1986) and Oberbauer (1996) as revised by the County of San Diego (2008).

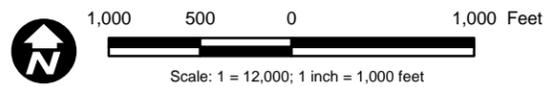
<sup>2</sup> See Table 4 herein for a list of vegetation communities and associated Tier levels.

<sup>3</sup> Note, there is no overlap in acreages; columns may be added as needed. The calculations noted above for the 500-foot survey area represent the total area of those cover types that occur at a distance greater than 100 feet to 500 feet from the project corridor boundary.

<sup>4</sup> Vegetation communities considered to be of high priority for inventory in the CNDDDB.



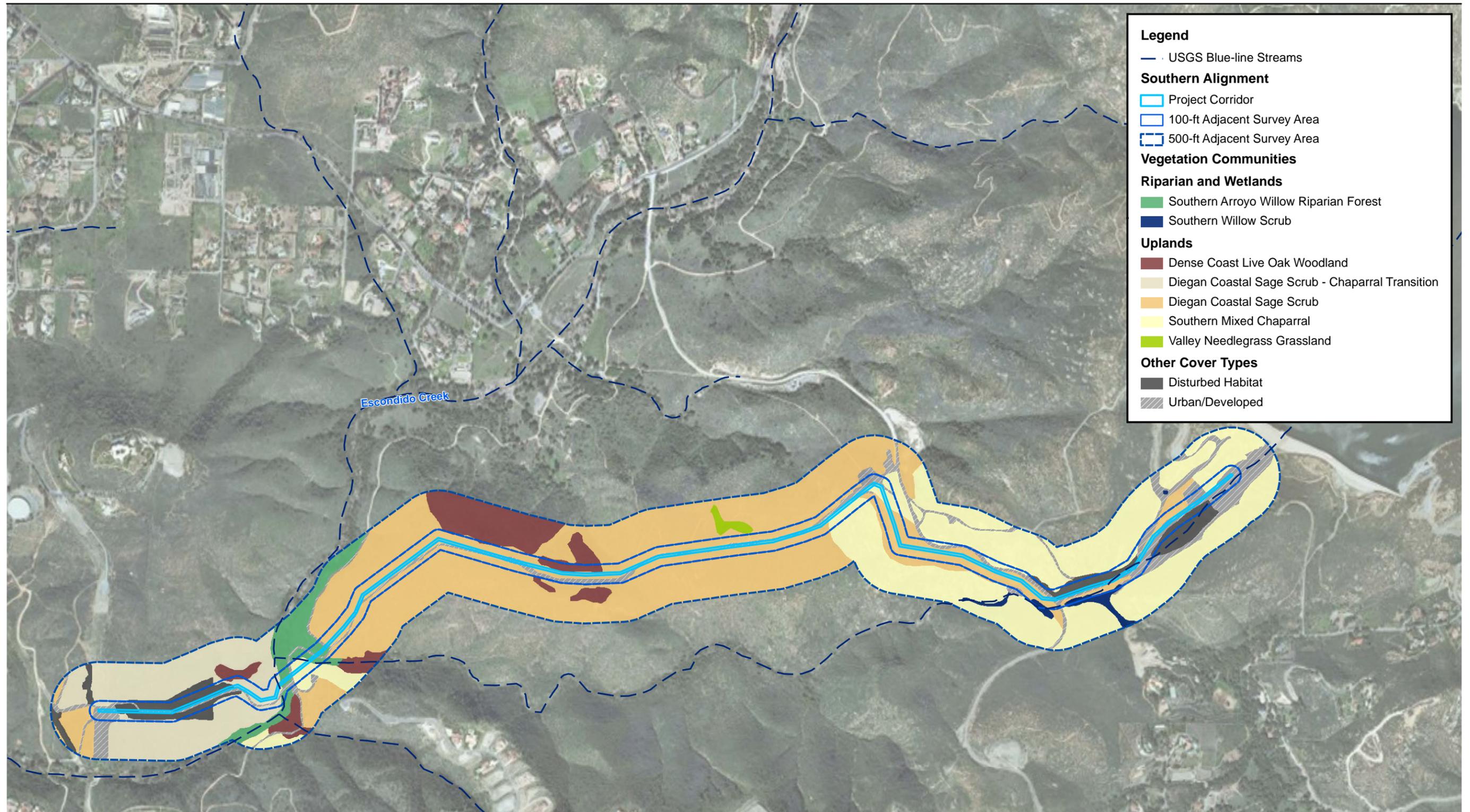
Source: DigitalGlobe 2008; Nolte 2009; AECOM 2009



**Figure 5a**  
**Vegetation Communities and Other Cover Types**  
**Preferred Alignment**

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**Legend**

- USGS Blue-line Streams
- Southern Alignment**
  - Project Corridor
  - 100-ft Adjacent Survey Area
  - 500-ft Adjacent Survey Area
- Vegetation Communities**
- Riparian and Wetlands**
  - Southern Arroyo Willow Riparian Forest
  - Southern Willow Scrub
- Uplands**
  - Dense Coast Live Oak Woodland
  - Diegan Coastal Sage Scrub - Chaparral Transition
  - Diegan Coastal Sage Scrub
  - Southern Mixed Chaparral
  - Valley Needlegrass Grassland
- Other Cover Types**
  - Disturbed Habitat
  - Urban/Developed

Source: DigitalGlobe 2008; Nolte 2009; AECOM 2009

1,000 500 0 1,000 Feet

Scale: 1 = 12,000; 1 inch = 1,000 feet

**Figure 5b**  
**Vegetation Communities and Other Cover Types -**  
**Southern Alignment**

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**Table 4**  
**Vegetation Communities and Tier Levels**

| Tier Level | County Guidelines and MSCP BMO Tier Level Characterization   |
|------------|--|
| <b>I</b>   | Closed Cone Coniferous Forest including Torrey Pine Woodland and Cypress Forest; Coastal Bluff Scrub; Southern Maritime Chaparral; Mafic Southern Mixed Chaparral and Mafic Chamise Chaparral; Native Grassland; Oak Woodlands and Broad Leaved Upland Forest; Wetlands, including Vernal Pools, Alkali Marsh, Freshwater Marsh; Riparian Forests, Riparian Woodlands, and Riparian Scrubs; Maritime Succulent Scrub |
| <b>II</b>  | Coastal Sage Scrub; Coastal Sage-Chaparral Scrub; Flat-topped Buckwheat  |
| <b>III</b> | Chaparral except for Southern Maritime Chaparral and Mafic Chamise and Mafic Southern Mixed Chaparral; Nonnative Grassland   |

### 1.4.3.1 Riparian and Wetlands

#### Freshwater Seep (Holland Code 45400)

According to the modified Holland classification system (Oberbauer et al. 2008), freshwater seeps are typically dominated by low-growing, perennial, herbaceous species, particularly sedges and grasses. Freshwater seeps occur in areas that are permanently moist or saturated and are often associated with grasslands or meadows. Dominant species often include sedges (*Carex* spp.), rushes (*Juncus* spp.), and deergrass (*Muhlenbergia rigens*). Wetlands are considered Tier I habitat by the County and the MSCP.

Freshwater seep occurs within the proposed project site adjacent to the southern perimeter of the preferred alignment within the 500-foot buffer (Table 3 and Figure 5a). The community within the project site is dominated by deergrass, mariposa rush (*Juncus dubius*), and Italian thistle (*Carduus pycnocephalus*). Other species present include curly dock (*Rumex crispus*), deerweed, bristly ox-tongue (*Picris echioides*), and blue-eyed grass (*Sisyrinchium bellum*). It is surrounded by residential development and receives water from a culvert running north/south underneath Elfin Forest Road. Due to the disturbed (urban development) nature of the surrounding land and the prevalence of nonnative plant species, this habitat is of relatively low habitat value.

#### Mulefat Scrub (Holland Code 63310)

According to the modified Holland classification system (Oberbauer et al. 2008), mulefat scrub is a depauperate, tall, herbaceous riparian scrub dominated by mulefat (*Baccharis salicifolia*). This habitat type occurs in intermittent stream channels with somewhat coarse substrate, and is maintained by frequent flooding. Mulefat scrub occurs throughout California from Tehama County south to northwestern Baja California—usually below 2,000 feet. Mulefat scrub, a category of riparian scrub, is considered a Tier I habitat by the County, the MSCP, and the

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NCMSCP Mulefat scrub occurs along the preferred alignment (Table 3 and Figure 5a). The community within the project site is dominated by mulefat and broom baccharis. Deergrass was the one other notable species. Three areas of mulefat scrub exist within the project area: two associated with roadside drainages along Elfin Forest Road south of Elfin Forest Lane and one associated with Escondido Creek near the convergence of Elfin Forest Road and Harmony Grove Road. All three areas are relatively small and are bounded on at least one side by a paved road. However, they are also contiguous with adjacent habitat, including southern arroyo willow riparian forest and Diegan coastal sage scrub, and display typical mulefat scrub species and vegetative structure. These combined characteristics indicate that the mulefat scrub within the proposed project site is of relatively moderate habitat value.

#### Southern Arroyo Willow Riparian Forest (Holland Code 61320)

According to the modified Holland classification system (Oberbauer et al. 2008), southern arroyo willow riparian forest is a winter-deciduous forest dominated by moderately tall broad-leafed trees and arroyo willows (*Salix lasiolepis*) with a shrubby understory of willows. They tend to colonize low terraces that are seasonally flooded by adjacent rivers and streams. Additional typical species include western sycamore (*Platanus racemosa*) and cottonwood (*Populus* spp.). Riparian forests are considered a Tier I habitat by the County, the MSCP, and the NCMSCP.

Southern arroyo willow riparian forest occurs along both alternative project corridors; however, the greater area of southern arroyo willow riparian forest occurs along the preferred alignment within the proposed project site (Table 3; Figures 5a and 5b). The communities within the project site are primarily dominated by arroyo willow, black willow, western sycamore, coast live oak, blue gum (*Eucalyptus* spp.), and mulefat (*Baccharis salicifolia*). Other species present include cattails (*Typha* sp.), marsh fleabane (*Pluchea odorata*), southwestern spiny rush, San Diego sagewort, spikerush (*Eleocharis* sp.), common plantain (*Plantago major*), San Diego sedge (*Carex spissa*), beardless wildrye (*Leymus triticoides*), cocklebur (*Xanthium strumarium*), willowherb (*Epilobium* sp.), and hyssop loosestrife (*Lythrum hyssopifolia*). The southern arroyo willow riparian forest within the project site is characterized by richness in native species diversity and abundance, and an intact vegetative composition. However, there is also a prevalence of nonnative species. Furthermore, there is disturbance in the form of residential and municipal development (i.e., erosion wall, flood-protection maintenance, and footpaths) abutting this habitat at certain areas within the project site. These combined characteristics indicate that the southern arroyo willow riparian forest within the proposed project site is of relatively moderate habitat value.

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### Southern Willow Scrub (Holland Code 32500)

According to the modified Holland classification system (Oberbauer et al. 2008), southern willow scrub is a thick, broad-leafed, winter-deciduous riparian habitat dominated by willows, with occasional Fremont's cottonwood (*Populus fremontii*) and California sycamore. Understory development is inhibited by the thickness of these stands. Southern arroyo willow riparian scrub occurs next to stream channels with sandy to fine gravelly deposits where repeated flooding occurs. Southern willow scrub, a category of riparian scrub, is considered a Tier I habitat by the County, the MSCP, and the NCMSCP.

Southern willow scrub occurs along both alternative project corridors (Table 3 and Figures 5a and 5b). The southern willow scrub within the project site is dominated by arroyo willow and mulefat. Other species present include yerba mansa (*Anemopsis californica*), scrub oaks (*Quercus* spp.), pampas grass (*Cortaderia selloana*), western ragweed (*Ambrosia psilostachya*), cattails, marsh elder (*Iva haysiana*), marsh fleabane, and elderberry (*Sambucus* sp.). The southern willow scrub within the project site exists on an unnamed tributary to Escondido Creek. It is also adjacent to Elfin Forest Road, which borders its northern perimeter. It is also contiguous with adjacent habitat, including Diegan coastal sage scrub, yet displays somewhat atypical southern willow scrub species diversity and vegetative structure. These combined characteristics indicate that the southern willow scrub within the proposed project site is of relatively moderate habitat value.

#### **1.4.3.2 Uplands**

### Dense Coast Live Oak Woodland (Holland Code 71162)

According to the modified Holland classification system (Oberbauer et al. 2008), dense coast live oak woodland consists of a 50 to 70% canopy cover of coast live oak (*Quercus agrifolia*). This habitat tends to occur at the narrowest part of valley riparian floodplains on deep alluvium with high perennial groundwater tables. Dense coast live oak woodland is common on the foothills and into the mountains of San Diego County. Dense coast live oak woodland is considered a Tier I habitat by the County, the MSCP, and the NCMSCP.

Dense coast live oak occurs along both the preferred and southern alignments in close to equivalent acreages (Table 3 and Figures 5a and 5b). The community is dominated by coast live oak. There are a number of patches of dense coast live oak woodland within the project site. They are associated with tributaries to Escondido and Misha creeks and are contiguous with

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other habitats, including Diegan coastal sage scrub and nonnative grassland. The species composition and density are typical of intact dense coast live oak woodland. These combined characteristics indicate that the dense coast live oak woodland within the proposed project site is of relatively high habitat value.

#### Diegan Coastal Sage Scrub (Holland Code 32500)

According to the modified Holland classification system (Oberbauer et al. 2008), Diegan coastal sage scrub is typically dominated by soft, low-growing woody shrubs. Many of the species are drought-deciduous, losing their leaves during periods of low rainfall. Dominant species usually include California sagebrush (*Artemisia californica*) and California buckwheat (*Eriogonum californicum*). This community typically occurs on xeric slopes or clay soils with the capacity to store water. Diegan coastal sage scrub often intergrades with chaparral habitats at higher elevations. Diegan coastal sage scrub is considered a Tier II habitat by the County and the MSCP.

Diegan coastal sage scrub occurs along both alternative project corridors; however, the greater area of Diegan coastal sage scrub occurs along the southern alignment (Table 3 and Figures 5a and 5b). Within the project area, this community is primarily dominated by California buckwheat, laurel sumac, and California sagebrush. Other species include fascicled tarplant (*Deinandra fasciculatum*), black sage (*Salvia mellifera*), purple needle-grass (*Nasella pulchra*), Menzies' goldenbush (*Isocoma menziesii*), redberry (*Rhamnus crocea*), white sage (*Salvia apiana*), and California live oak (*Quercus agrifolia*). Following the preferred alignment from northwest to southeast, the Diegan coastal sage scrub shifts in dominance from the species described above to codominance by laurel sumac and black sage. There are also a number of disturbed Diegan coastal sage scrub areas in the easternmost section of the project area near the water treatment facility associated with both alignments. These areas were likely modified during construction of the dam and/or then water treatment plant and related facilities. Re-colonizing species include California sagebrush, deerweed (*Lotus scoparius*), California buckwheat, brome (*Bromus* sp.), fascicled tarplant, laurel sumac, and brittlebush (*Encelia farinosa*). In addition, previously disturbed road cuts, also in the easternmost section of the project survey area, have been revegetated with California buckwheat.

Where residential development is not immediately adjacent and where Diegan coastal sage scrub is naturally occurring within the proposed project site, Diegan coastal sage scrub is contiguous with other vegetation communities such as nonnative grassland, dense coast live oak woodland, and southern mixed chaparral.

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Overall, the Diegan coastal sage scrub within the project site is characterized by richness in native species diversity and abundance, lack of disturbance, and intact vegetative composition. These characteristics indicate that the Diegan coastal sage scrub within the proposed project site is of relatively high habitat value.

#### Coastal Sage–Chaparral Transition (Holland Code 37G00)

According to the modified Holland classification system (Oberbauer et al. 2008), coastal sage–chaparral transition is composed of a mix of sclerophyllous, woody chaparral species and drought-deciduous, malacophyllous sage scrub species. Dominant species are chamise and California sagebrush. Coastal sage–chaparral transition often colonizes as a post-fire successional community (Oberbauer et al. 2008).

Coastal sage–chaparral transition occurs along the southern alignment only (Table 3 and Figure 5b). Species include California adolphia (*Adolphia californica*), black sage, toyon (*Heteromeles arbutifolia*), laurel sumac, and California buckwheat. Overall, the coastal sage–chaparral transition within the project site displays species composition, density, and vegetative structure typical of a community, and is contiguous with other habitats, including Diegan coastal sage scrub. These combined characteristics indicate that the coastal sage–chaparral transition within the proposed project site is of relatively high habitat value.

#### Eucalyptus Woodland (Holland Code 79100)

According to the modified Holland classification system (Oberbauer et al. 2008), eucalyptus woodland habitats range from single-species groves with little to no understory to multiple-species woodland with a well-developed shrub understory and herbaceous groundcover. Usually, however, they form dense stands with closed canopies. Eucalyptus woodland is considered a Tier IV habitat by the County, the MSCP, and the NCMSCP.

Eucalyptus woodland occurs along the preferred alignment (Table 3 and Figure 5a). The community is dominated by eucalyptus (*Eucalyptus* spp.), forming dense thickets lacking in non-eucalyptus species diversity. Eucalyptus woodland provides suitable nesting habitat for all birds, particularly raptors.

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### Nonnative Grassland (Holland Code 42200)

According to the modified Holland classification system (Oberbauer et al. 2008), nonnative grassland is a dense to sparse cover of annual grasses often associated with native wildflowers whose abundance is directly related to annual rainfall. Nonnative or annual grassland often occurs on fine, often clay soils that remain moist or saturated during the rainy winter months. These same areas tend to be very dry during the summer months. Nonnative grassland is often associated with oak woodland. In California, nonnative grassland dominates most valleys and foothills below 3,000 and 4,000 feet, except for northern coastal and desert areas. Nonnative grassland is considered a Tier III habitat by the County, the MSCP, and the NCMSCP.

Nonnative grassland occurs along the preferred alignment (Table 3 and Figure 5a). The community within the project site is dominated by Crete weed (*Hedypnois cretica*), brome, doveweed (*Croton setigerus*), wild oatgrass (*Avena* spp.), California buckwheat, and shortpod mustard (*Hirschfeldia incana*). Other species present include fennel (*Foeniculum vulgare*), purple needle-grass, laurel sumac, broom baccharis (*Baccharis sarothroides*), cardoon (*Cynara cardunculus*), and wild radish (*Raphanus sativa*). It is evident that coastal sage scrub species are recolonizing some of the nonnative grassland areas within the project site. It is likely that these areas were Diegan coastal sage scrub prior to disturbance (i.e., cleared, grazed, and/or previously burned areas). Although nonnative grassland supports a small percentage of native species, the habitat is contiguous with other habitats such as Diegan coastal sage scrub and dense coast live oak woodland. Furthermore, most of the areas of nonnative grassland are of significant acreage, and not just disjointed, urbanized habitat. These combined characteristics indicate that the nonnative grassland within the proposed project site is of relatively high habitat value.

### Ornamental Plantings

The Holland classification system (Oberbauer et al. 2008) does not include ornamental plantings as a specific vegetation community, but, rather, describes some disturbed habitat (Holland Code 11300) as being dominated by ornamental species. Disturbed habitat is considered a Tier IV habitat by the County, the MSCP, and the NCMSCP.

Ornamental plantings occur along the preferred alignment (Table 3 and Figure 5a). The community is dominated by olive trees (*Olea europea*).

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### Southern Mixed Chaparral (Holland Code 37120)

According to the modified Holland classification system (Oberbauer et al. 2008), southern mixed chaparral consists of broad-leaved sclerophyllous shrubs on either mafic or granitic substrates. In San Diego, this habitat is distinguished from other chaparral communities by the presence of blue-flowered lilacs such as Ramona lilac (*Ceanothus tomentosus* var. *olivaceus*). Southern mixed chaparral tends to occur on dry, rocky, and often steep, north-facing slopes with thin soils. Southern mixed chaparral is considered a Tier III habitat by the County, the MSCP, and the NCMSCP.

Southern mixed chaparral occurs along both the preferred and southern alignments in close to equivalent acreages (Table 3 and Figures 5a and 5b). The community is dominated by wart-stemmed ceanothus, Ramona lilac, and scrub oak-Engelmann oak hybrids (*Quercus berberidifolia* x *Q. engelmanni*). Other species present include redberry, caterpillar scorpionweed (*Phacelia cicutaria*), slender sunflower (*Helianthus gracilentus*), summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*), laurel sumac, small-flower melic grass (*Melica imperfecta*), bush rue (*Cneoridium dumosum*), Indian pink (*Silene laciniata*), black sage, sticky monkeyflower (*Mimulus aurantiacus*), California brittlebush (*Encelia californica*), everlasting pea (*Lathyrus latifolius*), narrowleaf bedstraw (*Galium angustifolium* ssp. *angustifolium*), chamise (*Adenostoma fasciculatum*), Mariposa lily (*Calochortus* sp.), chaparral yucca (*Hesperoyucca whipplei*), and thin grass (*Agrostis pallens*).

Some areas of chaparral in the eastern half of the project site were considerably less vegetated and rockier than the majority of the chaparral within the project site. These areas, which are still classified as southern mixed chaparral, are dominated by oatgrass and brome with scattered wart-stemmed ceanothus, as well as spike-moss (*Selaginella* sp.) and laurel sumac. In addition, there are areas, also within the eastern half of the project site, that occupy south-facing slopes and are less diverse than the majority of the mapped chaparral. These areas, which are still classified as southern mixed chaparral, are dominated by wart-stemmed ceanothus and black sage with scattered laurel sumac.

Overall, the southern mixed chaparral within the project site is extensive, displays species composition, density, and vegetative structure typical of an intact southern mixed chaparral community, and is contiguous with other habitats, including Diegan coastal sage scrub and dense coast live oak woodland. These combined characteristics indicate that the southern mixed chaparral within the proposed project site is of relatively high habitat value.

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### Valley Needlegrass Grassland (Holland Code 42110)

According to the modified Holland classification system (Oberbauer et al. 2008), valley needlegrass grassland is dominated by perennial bunchgrasses such as purple needle-grass. Native and nonnative annual forbs and grasses frequently colonize open areas and tend to exceed bunchgrass cover densities. Valley needlegrass grassland usually occurs on fine-textured and typically clay soils that remain moist or saturated during the rainy season yet are arid in the summer. This habitat is often associated with oak woodlands. Valley needlegrass grassland is considered a Tier I habitat by the County, the MSCP, and the NCMSCP.

Valley needlegrass grassland only occurs within the adjacent survey areas associated with both the preferred and the southern alignments (Table 3 and Figures 5a and 5b). The community within the project site is dominated by brome. Other species present include purple needle-grass, blue-eyed grass, and fascicled tarplant. The valley needlegrass grassland within the project site exists as an inclusion within Diegan coastal sage scrub. It is also contiguous with southern willow scrub and displays typical valley needlegrass grassland species diversity and vegetative structure. However, the area it encompasses is small, dominated by nonnative annual brome, and slightly disturbed by footpaths with easy accessibility via Elfin Forest Road. These combined characteristics indicate that the valley needlegrass grassland within the proposed project site is of relatively moderate habitat value.

#### **1.4.3.3 Other Cover Types**

##### Disturbed Habitat (Holland Code 11300)

Disturbed habitat is generally defined as any land on which the native vegetation has been significantly altered by agriculture, grazing, construction, or other land-clearing activities, resulting in species composition and site conditions that favor invasive species. Such land typically is found in vacant lots, dirt roads, roadsides, construction staging areas, or abandoned fields, and is dominated by bare ground and/or nonnative annual species and perennial broad-leafed species. The level of soil disturbance is such that only the most ruderal plant species would be expected, such as Russian thistle, sweet fennel (*Foeniculum vulgare*), horseweed (*Conyza* spp.), black mustard, lamb's quarters (*Chenopodium album*), fountain grass (*Pennisetum setaceum*), and/or castor bean (*Ricinus communis*).

Within the project survey area, disturbed habitat occurs along both the preferred and southern alignments. These disturbed areas are composed of dirt trails and roads, and areas altered by

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land-clearing activities that are now dominated by nonnative plant species and bare or disturbed ground.

#### Urban/Developed Land (Holland Code 12000)

Urban/developed land supports no native vegetation and may be additionally characterized by the presence of human-made structures such as buildings or roads and ornamental vegetation associated with these human-made structures. The level of soil disturbance is such that only the most ruderal or ornamental plant species would be expected.

Urban/developed land occurs along both the preferred and southern alignments, with the greater acreage occurring within the preferred alignment (Table 3 and Figures 5a and 5b). The developed land within the proposed project site is composed of paved roads, residential and commercial development, horse corrals, and other human-made structures.

#### **1.4.4 Flora**

A total of 114 plant species has been recorded within the entire proposed project site (both alignments), with 96 species (84%) encountered considered native and the remaining 18 species (16%) considered nonnative and/or naturalized into the area (Appendix B). Sensitive plant species observed or potentially occurring in the proposed project site are discussed in Section 1.4.6.2 and listed in Appendix C.

#### **1.4.5 Fauna**

The majority of the proposed project site (both alignments) is of moderate to high value for wildlife species, excluding the disturbed and developed lands. Because the preferred alignment follows the existing roadbed, the associated direct impact areas for this alignment are of low habitat quality. However, moderate to high-quality habitat lies immediately adjacent to this pipeline corridor within the 500-foot adjoining survey area. A large amount of the habitat found within this 500-foot adjoining survey area is Diegan coastal sage scrub (see Figures 5a and 5b), which is suitable for many wildlife species. A complete list of the wildlife species detected is provided in Appendix D. Sensitive wildlife species observed or potentially occurring in the proposed project site are discussed in Section 1.4.6.2 and listed in Appendix E.

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#### **1.4.5.1 Invertebrates**

The distribution of many species of the order Lepidoptera (moths and butterflies) is generally defined by the distribution of their larval food plants and habitats. The proposed project site has boulders and hills that could be used as hill topping areas for certain butterfly species to search for mates. Common butterfly species expected to occur within the proposed project site include cabbage white (*Pieris rapae*), red admiral (*Vanessa atalanta rubria*), painted lady (*Vanessa cardui*), pygmy blue (*Brephidium exile*), and Behr's metalmark (*Apodemia mormo virgulti*).

Vernal pools are important to many sensitive and listed species in California, including fairy shrimp. Since vernal pools were not observed within the alternative project corridor footprints or associated 500-foot adjoining survey areas, fairy shrimp and other vernal pool invertebrate species are not expected to occur. One potential depression was detected during site surveys and will be monitored during the upcoming winter rainy season to see if it holds water. No obvious vernal pool indicators were observed, but the depression will be observed following rain events to see if it has the potential to be a vernal pool.

#### **1.4.5.2 Fish**

Many creeks and waterways in Southern California are perennial and subject to periods of high water flow in winter and spring with little to no water flow in late summer and fall. Fish species that potentially inhabit this environment have adapted to living in these naturally fluctuating conditions. However, natural causes such as drought and human-made causes such as alteration of habitat and introduction of nonnative species often cause reduction in native fish populations in Southern California.

#### **1.4.5.3 Amphibians**

All amphibians require moisture for at least a portion of their life cycle, with many requiring a permanent water source for habitat and reproduction. However, terrestrial amphibian species have adapted to more arid conditions and are not completely dependent on a perennial or standing source of water. These species avoid desiccation by burrowing beneath the soil or leaf litter during the day and during the dry season, and emerging only when temperatures are low and humidity is high. Many of these species' habitats are associated with water, and they emerge to breed once the rainy season begins. Soil moisture conditions can remain high throughout the year within some habitat types, depending on a variety of factors such as amount of vegetation cover, elevation, and the slope aspect.

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Several streams exist within the project area, including Escondido Creek and an unnamed tributary to Escondido Creek. In addition, a freshwater seep was observed but is surrounded by residential developments. While no amphibians were observed at the time of preparation of this document, several amphibians are expected to occur, including western toad (*Bufo boreas*). Suitable habitat for the western spadefoot (*Spea hammondi*) is present within the proposed project site.

#### **1.4.5.4 Reptiles**

The diversity and abundance of reptile species typically vary with vegetation community and character. Many reptiles are restricted to certain vegetation communities and soil types, although some of these species will also forage in a variety of vegetation communities. Other species are more ubiquitous, using a variety of vegetation types for foraging and shelter. Most species occurring in open areas use rodent burrows for cover and protection from predators and extreme weather conditions. Rock outcroppings provide cover and foraging opportunities for reptiles.

The Diegan coastal sage scrub, nonnative grassland, coast live oak woodland, southern mixed chaparral, riparian areas, and rock outcroppings have potential to support a moderate variety of reptiles. Two reptile species was observed within the proposed project site: Belding's orange-throated whiptail (*Aspidoscelis hyperythrus beldingi*), which is a California Species of Concern (CSC) and a County of San Diego Group 2 species, and coastal western whiptail (*Aspidoscelis tigris stejnegeri*), which is a CDFG special animal (State of California 2009) and a County of San Diego Group 2 species. Other common reptiles expected to occur within the proposed project site include the side-blotched lizard (*Uta stansburiana*), southern alligator lizard (*Gerrhonotus multicarinatus*), western fence lizard (*Sceloporus occidentalis*), western Pacific rattlesnake (*Crotalus viridis helleri*), and gopher snake (*Pituophis melanoleucus*).

#### **1.4.5.5 Birds**

The diversity of bird species varies with respect to the character, quality, and diversity of vegetation communities. Diegan coastal sage scrub, nonnative grassland, coast live oak woodland, southern mixed chaparral, riparian habitat (including southern arroyo willow riparian forest, mulefat scrub, and southern willow scrub), eucalyptus woodland, ornamental plantings, and disturbed land typically support a moderate to high diversity of bird species. In addition, rock outcroppings provide cover and foraging opportunities for birds. During the surveys conducted to date, 42 bird species were detected within and adjacent to the proposed project site (Appendix D).

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Diegan coastal sage scrub habitat supports a moderate to high number of bird species and provides habitat for many species, including the CAGN (federally listed threatened; see further discussion in this section). Nonnative grassland typically supports a moderate number of bird species because of its lack of plant diversity and structure; however, this vegetation community provides important habitat for a number of species and foraging habitat for a variety of raptor species. The rock outcroppings provide hunting perches for raptors. The southern willow scrub, mulefat scrub, and southern arroyo willow riparian forest are known to support a moderate number of bird species, including LBV (*Vireo bellii pusillus*) and possibly SWFL. The wooded areas, including the coast live oak woodland and the eucalyptus woodland, have the potential to support a moderate number of bird species and provide nesting habitat for some raptors. Disturbed and developed land both are expected to support a low number of bird species because they lack significant plant diversity and structure.

Common birds observed within and adjacent to the proposed project site include western meadowlark (*Sturnella neglecta*), American crow (*Corvus brachyrhynchos hesperis*), mourning dove (*Zenaida macroura marginella*), house finch (*Carpodacus mexicanus frontalis*), Anna's hummingbird (*Calypte anna*), California towhee (*Pipilo crissalis*), bushtit (*Psaltriparus minimus*), white-crowned sparrow (*Zonotrichia leucophrys*), California thrasher (*Toxostoma redivivum*), wrentit (*Chamaea fasciata*), and Bewick's wren (*Thryomanes bewickii*). Several sensitive bird species were observed foraging within the proposed project site, including the southern California rufous-crowned sparrow (*Aimophila ruficeps*), Bell's sage sparrow (*Amphispiza belli belli*), Cooper's hawk (*Accipiter cooperii*), northern harrier (*Circus cyaneus*), white-tailed kite (*Elanus leucurus*), LBV, yellow warbler (*Dendroica petechia brewsteri*), yellow-breasted chat (*Icteria virens*), SWFL, and CAGN.

#### **1.4.5.6 Mammals**

The nonnative grasslands typically provide foraging opportunities for a variety of mammal species. In addition, rock outcroppings provide cover, nesting sites, denning sites, and foraging opportunities for mammals. Most mammal species are nocturnal and must be detected either during daytime surveys by observing their signs—such as tracks, scat, and burrows—or during nighttime trapping surveys.

The Diegan coastal sage scrub, nonnative grassland, riparian areas, southern mixed chaparral, disturbed areas, and rock outcroppings provide moderate value habitat and have potential to support a variety of mammals. The scattered rock outcroppings within the disturbed habitat/Diegan coastal sage scrub and nonnative grassland provide low to moderate cover,

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nesting sites, and denning sites for a variety of mammals. Cottontail rabbit (*Sylvilagus audubonii*), Botta's pocket gopher (*Thomomys bottae*), raccoon (*Procyon lotor*), southern mule deer (*Odocoileus hemionus*), and woodrat (*Neotoma* sp.) were observed or detected during surveys in 2009. Other small to medium sized mammals expected to occur within the proposed project site include Virginia opossum (*Didelphis virginiana*), coyote (*Canis latrans*), bobcat (*Felis rufus*), and striped skunk (*Mephitis mephitis*). Larger species expected to occur within the range of the proposed project site include mountain lion (*Felis concolor*) and American badger (*Taxidea taxus*).

Bats occur throughout most of Southern California and may use any portion of the proposed project site as foraging habitat. In addition, there is a low potential for some bat species to roost within the rock outcroppings or heavily treed areas. Because the majority of the surveys were conducted during daylight hours, no bats were detected within the proposed project site. Most of the bats that would potentially occur within the proposed project site are inactive during the winter and either hibernate or migrate, depending on the species. The big free-tailed bat (*Nyctinomops macrotis*), western mastiff bat (*Eumops perotis californicus*), pocketed free-tailed bat (*Nyctinomops femorosacca*), pallid bat (*Antrozous pallidus*), Yuma myotis (*Myotis yumanensis*), western red bat (*Lasiurus blossevillii*), hoary bat (*Lasiurus cinereus*), and the western yellow bat (*Lasiurus xanthinus*) have a moderate potential to occur within the proposed project site based on available foraging habitat.

#### **1.4.6 Sensitive Biological Resources**

##### **1.4.6.1 Sensitive Vegetation Communities**

Sensitive vegetation communities are vegetation assemblages, associations, or subassociations that support or potentially support sensitive plant or wildlife species, have significant cumulative losses throughout the region, have relatively limited distribution, or have particular value to wildlife. Typically, sensitive vegetation communities are considered sensitive whether or not they have been disturbed. Sensitive vegetation communities are regulated by various local, state, and federal resource agencies. The CNDDDB provides an inventory of vegetation communities that are considered sensitive by state and federal resource agencies, academic institutions, and conservation groups such as the California Native Plant Society (CNPS). Determination of the level of sensitivity is based on the Nature Conservancy Heritage Program Status Ranks that rank both species and plant communities on a global and statewide basis according to the number and size of remaining occurrences and recognized threats such as proposed development, habitat degradation, and invasion by nonnative species.

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Approximately 254.59 acres composed of nine sensitive vegetation communities (i.e., County BMO Tier I, II, and III) occur within the preferred alignment, and approximately 288.95 acres composed of eight sensitive vegetation communities occur within the southern alignment. Of these, the Diegan coastal sage scrub and valley needlegrass grassland are classified with an S3.1 CDFG state sensitivity ranking, indicating that these are considered “very threatened” (10,000–50,000 acres) natural plant communities; freshwater seep is classified with an S3.2 CDFG state sensitivity ranking, indicating that this is considered a “threatened” (10,000–50,000 acres) natural plant community; and southern arroyo willow riparian forest and southern willow scrub are classified with an S2.1 CDFG state sensitivity ranking, indicating that these are considered “very threatened” (2,000–10,000 acres) natural plant communities.

Most wetlands and riparian oak woodlands are considered Tier I vegetation communities per the County, the draft NCMSCP, and the MSCP. Therefore, the four wetland habitats within the project area are considered Tier I communities: freshwater seep, southern arroyo willow riparian forest, mulefat scrub, and southern willow scrub. In addition, the upland valley needlegrass grassland and dense coast live oak woodland are also considered Tier I communities by the County. Diegan coastal sage scrub is considered a Tier II; nonnative grassland and southern mixed chaparral are considered Tier III communities. The remaining vegetation communities and cover types within the project are categorized as Tier IV or lack tier codes (see Tables 3 and 4). The southern willow scrub, freshwater seep, southern arroyo willow riparian forest, and mulefat scrub are regulated by the U.S. Army Corps of Engineers (USACE), the Regional Water Quality Control Board (RWQCB), and CDFG. Only impacts to habitats within Tiers I through III warrant mitigation, as discussed further in Chapter 2 of this report.

#### **1.4.6.2 Sensitive Plants**

For purposes of this report, plant species are considered sensitive if they are (1) listed or proposed for listing by state or federal agencies as threatened or endangered; (2) on List 1B (considered endangered throughout its range) or List 2 (considered endangered in California but more common elsewhere) of the CNPS’s *Inventory of Rare and Endangered Vascular Plants of California* (CNPS Inventory) (CNPS 2009); or (3) considered rare, endangered, or threatened by the State of California (2009) or other local conservation organizations or specialists. Noteworthy plant species are considered to be those on List 3 (more information about the plant distribution and rarity needed) and List 4 (plants of limited distribution) of the CNPS Inventory. CNPS is a statewide resource conservation organization that has developed an inventory of

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California's sensitive plant species. The CNPS listing is sanctioned by CDFG and essentially serves as an early warning list of potential candidate species for threatened or endangered status.

A federally endangered species is defined as a species facing extinction throughout all or a significant portion of its geographic range, and a federally threatened species is defined as a species that is likely to become endangered within the foreseeable future throughout all or a significant part of its range. The State of California defines an endangered species as one whose prospects of survival and reproduction are in immediate jeopardy, a threatened species as one present in such small numbers throughout its range that it is likely to become an endangered species in the near future in the absence of special protection or management, and a rare species as one present in such small numbers throughout its range that it may become endangered if its present environment worsens.

Species that are federally or state listed threatened or endangered species and/or are designated as CNPS List 1B or 2 species are afforded a degree of protection that entails a permitting process, including specific mitigation measures to compensate for impacts to the species. Species proposed to be listed by USFWS are treated similarly to listed species by that agency. Recommendations of USFWS, however, are advisory rather than mandatory in the case of proposed species. Although plants classified as List 3 or 4 species by CNPS are not provided legal protection, this designation is used to identify declining plant species that are considered sensitive by CNPS but are not considered threatened or endangered.

The County has divided sensitive species into groups based on their level of sensitivity. Plant species are divided into the following four groups as shown in the County Rare Plant List: Group A, Group B, Group C, and Group D. Group A plants are species that are rare, threatened, or endangered in California and elsewhere. Group B plants are species that are rare, threatened, or endangered in California but more common elsewhere. Group C plants are species that may be quite rare, but need more information to determine true rarity status. Group D plants are species that are limited in distribution and uncommon but not presently rare or endangered (County of San Diego 2009). Typically, impacts to 5% or more of a population of a species listed in Group A, Group B, Group C, or Group D are considered significant.

Appendix C summarizes all sensitive plant species that have or were analyzed to have the potential to occur within or adjacent to the proposed project site. Appendix C also includes species that are known historically from the region but are not expected to occur within the proposed project site based on a lack of suitable habitat. According to the CNDDDB (State of California 2009) and historical occurrence data, *Encinitas baccharis*, a state endangered and

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federal threatened species, and County Group A species, occurs within the project site (both alignments). However, this species was not observed during the September and November surveys. In addition, several sensitive plants are known to occur within the vicinity of the proposed project site (Figure 6).

#### Sensitive Plant Species Known to Occur within the Proposed Project Survey Area

Focused surveys for sensitive plants were conducted for the proposed project on September 14 and 15, and November 12, 2009, by AECOM. As described in the following section, six sensitive plant species were detected during the sensitive plant surveys (i.e., within the project footprint and 100-foot and 500-foot adjacent survey areas).

##### San Diego Sagewort (*Artemisia palmeri*)

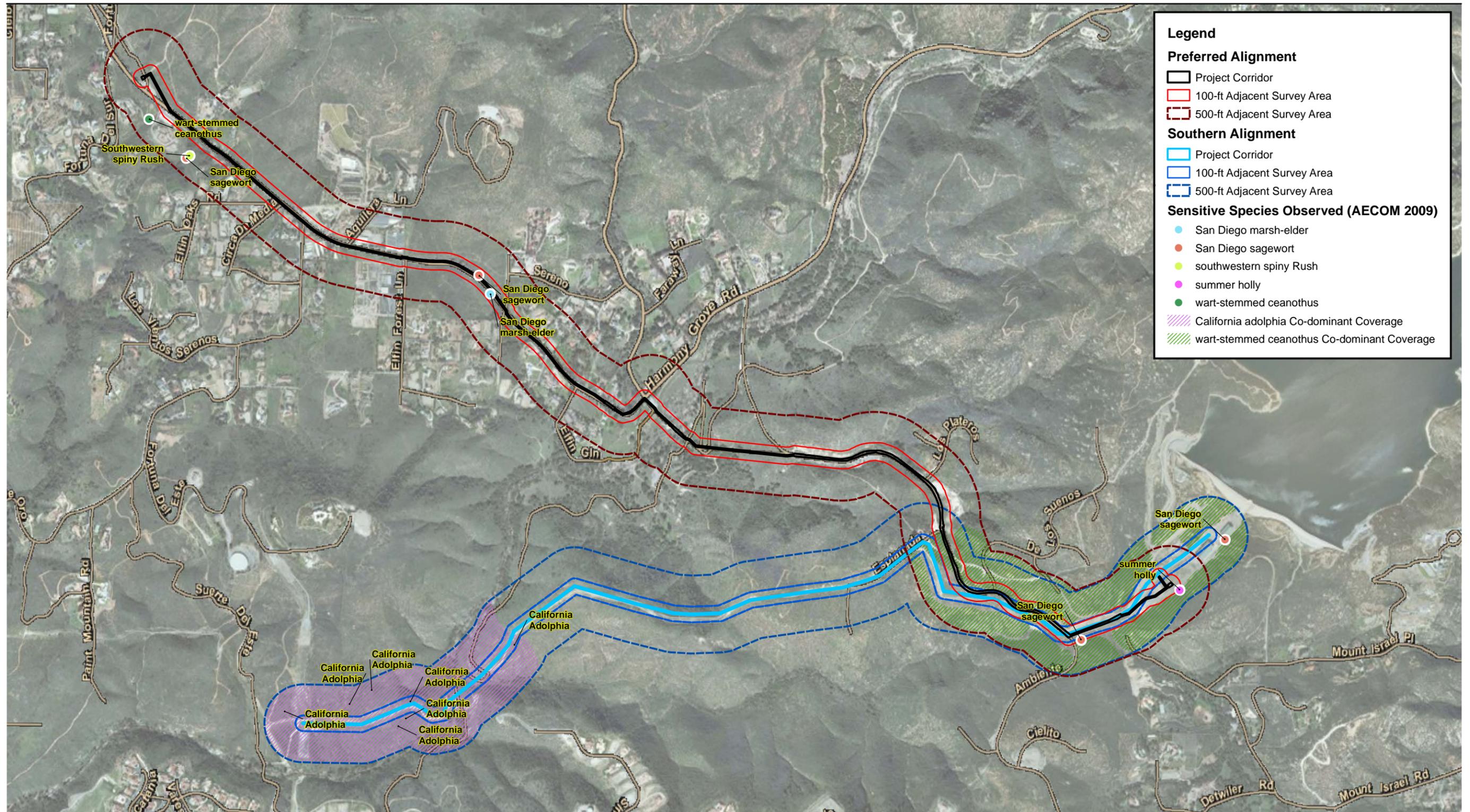
San Diego sagewort is a CNPS List 1B species, and a County List D species. This deciduous shrub of the sunflower family blooms from May through September and occurs in chaparral, coastal sage scrub, riparian forest, riparian scrub, and riparian woodland (CNPS 2009). San Diego sagewort generally occurs at elevations below 3,000 feet in San Diego County and Baja California. Threats to this species include development and flood control projects (CNPS 2009).

There were four occurrences of San Diego sagewort documented in the proposed project site during the 2009 surveys. These occurrences were located throughout the preferred alignment (Figure 6). These populations occur within southern willow scrub, Diegan coastal sage scrub, and southern willow riparian forest, and consisted of one to approximately 10 individuals.

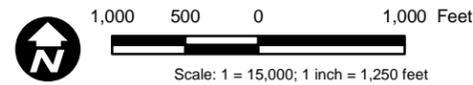
##### Wart-stemmed Ceanothus (*Ceanothus verrucosus*)

Wart-stemmed ceanothus is a CNPS List 2 species and a County List B species. This evergreen shrub of the buckthorn family blooms from December through May and occurs in chaparral (CNPS 2009). Wart-stemmed ceanothus generally occurs at elevations below 1,250 feet in Riverside and San Diego counties, and Baja California. Development is the primary threat to this species (CNPS 2009).

There were numerous occurrences of wart-stemmed ceanothus documented in the proposed project site during the 2009 surveys. These occurrences were located throughout the preferred



Source: DigitalGlobe 2008; NHD 2007; Nolte 2009; AECOM 2009



**Figure 6**  
**Sensitive Plants Detected During Project Surveys**

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alignment in southern mixed chaparral and in the uplands adjacent the freshwater seep; in the southern alignment, it was found within southern chaparral (Figure 6).

Summer Holly (*Comarostaphylis diversifolia* ssp. *diversifolia*)

Summer holly is a CNPS List 1B species and a County List A species. This evergreen shrub of the heath family blooms from April through June and occurs in chaparral and cismontane woodland (CNPS 2009). Summer holly generally occurs at elevations below 1,800 feet in Orange, Riverside, and San Diego counties, and in Baja California. This species is threatened by development and gravel mining (CNPS 2009).

There was a single occurrence of summer holly documented in the proposed project site during the 2009 September surveys. This occurrence is located in southern mixed chaparral at the easternmost end of the preferred alignment and consists of an individual summer holly (Figure 6).

San Diego Marsh-Elder (*Iva hayesiana*)

San Diego marsh-elder is a CNPS List 2 species and a County List B species. This perennial herb of the sunflower family blooms from April through October and occurs in marshes, swamps, and playas (CNPS 2009). San Diego marsh-elder generally occurs below 1,640 feet in San Diego County and Baja California (CNPS 2009).

There was a single occurrence of San Diego marsh-elder documented in the proposed project site during the 2009 September surveys. This occurrence is located in southern willow scrub in the western half of the preferred alignment and consists of a population of approximately one to 10 individuals (Figure 6).

California Adolphia (*Adolphia californica*)

California adolphia is a CNPS List 2 species and a County List B species. This deciduous shrub of the buckthorn family blooms from December through May and occurs in chaparral, coastal scrub, and valley and foothill grassland usually on clay soils (CNPS 2009). California adolphia generally occurs below 2,247 feet in San Diego County and Baja California (CNPS 2009).

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There were numerous occurrences of California adolphia in the proposed project site. These occurrences were located throughout the southern alignment within Diegan coastal sage scrub and sage scrub-chaparral transition.

#### Southwestern Spiny Rush (*Juncus acutus* ssp. *leopoldii*)

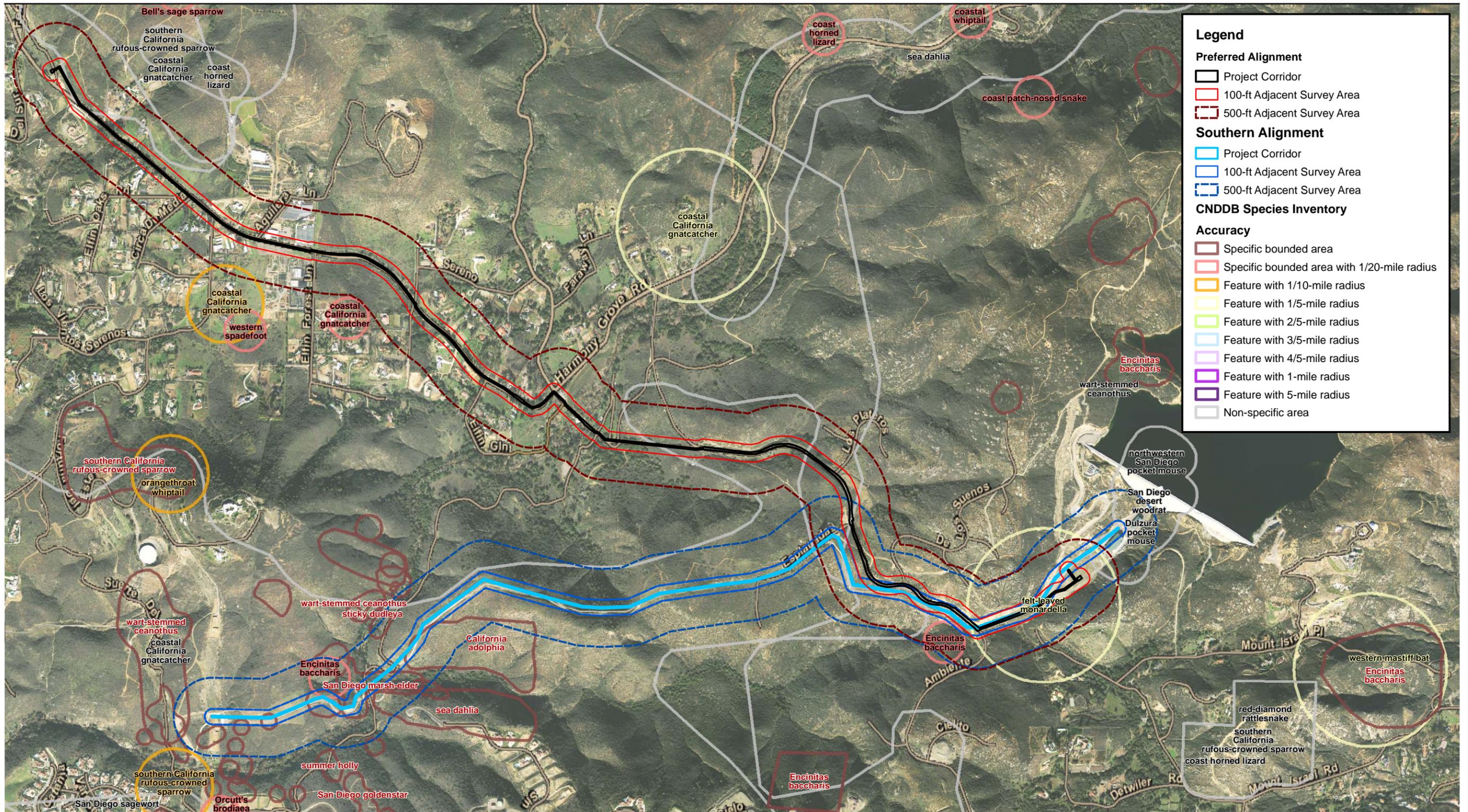
Southwestern spiny rush is a CNPS List 4 species and a County List D species. This rhizomatous herb of the rush family blooms from May to June and occurs on coastal dunes and in meadows, seeps, marshes, and swamps. Southwestern spiny rush generally occurs below 2,950 feet in San Diego, Imperial, Los Angeles, Orange, Santa Barbara, San Luis Obispo, and Ventura counties, and in Arizona, Baja California, and elsewhere (CNPS 2009).

There was one occurrence of southwestern spiny rush documented in the proposed project site during the 2009 September surveys. This occurrence, which consisted of two individuals, is located within the northernmost portion of the preferred alignment in southern willow scrub (Figure 6).

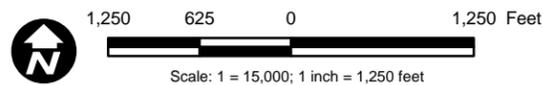
#### Sensitive Plant Species with a Potential to Occur within the Proposed Project Survey Area

As previously stated, Appendix C summarizes all other sensitive plant species that have or were analyzed to have the potential to occur within the proposed project site (Figure 7). Of those species potentially present, seven are considered to have a high or moderate potential to occur because suitable habitat is present. However, time of year and seasonality based on late-season rainfall was a limiting factor based on the bloom periods of annual plant species. Thus, some species may have bloomed later than expected due to significant rainfall and lower temperatures lasting later into the spring, and may have been indiscernible during the time of surveys.

These species are discussed further below. Of these seven species, one is listed as threatened by USFWS and is also listed as endangered by CDFG. Of the remaining six sensitive plant species considered to have a moderate or high potential to occur, five are included on the County's Group A list and one is on the Group B list.



Source: DigitalGlobe 2008; Nolte 2009; AECOM 2009



**Figure 7**  
**CNDDDB Special-Status Plant and Wildlife Occurrences in Project Vicinity**

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### Sensitive Plants with High Potential to Occur – County Group A

#### San Diego Goldenstar (*Bloomeria clevelandii*)

San Diego goldenstar is a CNPS List 1B species. This bulbiferous herb blooms from April through May in chaparral, coastal scrub, valley and foothill grassland, and vernal pools with clay soils (CNPS 2009). This species occurs at elevations of less than 1,525 feet within San Diego and Riverside counties, and Baja California (CNPS 2009). San Diego goldenstar is threatened by urbanization, road construction, vehicles, nonnative plants, and illegal dumping (CNPS 2009). This species has a high potential to occur within the proposed project site because highly suitable habitat and soils are present. Furthermore, during inspection of vegetative remains of last season's wildflowers, the presence of a taxon in the genus *Bloomeria* was discovered within the project site. Further investigation during the bloom period (April–May) would be needed to positively identify this plant to species. The closest mapped occurrence of San Diego goldenstar in relation to the site is approximately 0.32 mile to the northwest of the westernmost end of the preferred alignment in San Marcos, east of the corner of Rancho Santa Fe Road and Questhaven Road, along the west side of Questhaven Road (Regents of the University of California 2009). It was mapped in 1965 by Anne Repa. More recent occurrences have been mapped south of Escondido near Scripps Ranch.

### Listed Plants with a Moderate Potential to Occur – County Group A

#### Thread-Leaved Brodiaea (*Brodiaea filifolia*)

Thread-leaved brodiaea is a state-endangered, federally threatened, and CNPS List 1B species. This herbaceous perennial blooms from March through June in vernal moist grasslands and within the periphery of vernal pools with heavy clay soils. This species occurs at elevations of less than 4,000 feet within San Diego, Orange, Los Angeles, and Riverside counties (CNPS 2009). Thread-leaved brodiaea is substantially declining throughout its Southern California range because of habitat loss, illegal dumping, and foot traffic (Reiser 2001).

This species has a moderate potential to occur within the proposed project site because reasonably suitable habitat is present. The closest mapped occurrence of thread-leaved brodiaea is approximately 2.83 miles north of the intersection of Elfin Forest Road and San Elijo Road. This mapped occurrence was documented in 1978 in a vacant field southeast of the intersection between La Mirada Drive and Pacific Street in San Marcos (Regents of the University of

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California 2009). However, this same location was documented for Orcutt's brodiaea. Thus, the species may have been misidentified.

#### Additional Sensitive Plants with Moderate Potential to Occur – County Group A

##### Delicate Clarkia (*Clarkia delicata*)

Delicate clarkia is a CNPS List 1B species. This herbaceous annual in the evening-primrose family blooms from April through June in chaparral and cismontane woodland. Delicate clarkia occurs at elevations of less than 3,280 feet within San Diego County and Baja California (CNPS 2009). Delicate clarkia is threatened by development, nonnative plants, road improvement/maintenance, and possibly by frequent wildfires (CNPS 2009).

This species has moderate potential to occur within the proposed project site because reasonably suitable habitat is present. The closest mapped occurrence of delicate clarkia in relation to the site is approximately 11.89 miles southeast of the intersection of Elfin Forest Road and San Elijo Road. This mapped occurrence was documented in 2005 in the Blue Sky Ecological Reserve, east of Rancho Bernardo and north of Poway (Regents of the University of California 2009).

##### Orcutt's Brodiaea (*Brodiaea orcuttii*)

Orcutt's brodiaea is a CNPS List 1B species. This herbaceous perennial species blooms from May through July in association with vernal moist grasslands and mima mound topography, and within the periphery of vernal pools, streams, and seeps. This species occurs at elevations of less than 5,300 feet within Riverside, San Bernardino, Orange, and San Diego counties, as well as in Baja California, Mexico. Orcutt's brodiaea is substantially declining throughout its Southern California range because of habitat loss and disturbance from cattle grazing (Reiser 2001).

This species has a moderate potential to occur within the proposed project site because reasonably suitable habitat is present. The closest mapped occurrence of Orcutt's brodiaea in relation to the site is approximately 2.78 miles north of the intersection of Elfin Forest Road and San Elijo Road. This mapped occurrence was documented in 1978 in a vacant field southeast of the intersection between La Mirada Drive and Pacific Street in San Marcos (Regents of the University of California 2009). However, this same location was documented for thread-leaved brodiaea. Thus, the species may have been misidentified.

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Variegated Dudleya (*Dudleya variegata*)

Variegated dudleya is a CNPS List 1B species. This perennial herb in the stonecrop family blooms from April through June in chaparral, cismontane woodland, coastal scrub, valley and foothill grassland, and vernal pools on clay soils. This species occurs at elevations of less than 1,900 feet within San Diego County and Baja California. Variegated dudleya is threatened by development and grazing.

This species has a moderate potential to occur within the proposed project site because reasonably suitable habitat is present. The closest mapped occurrence of variegated dudleya in relation to the site is approximately 6.23 miles southeast of the intersection of Elfin Forest Road and San Elijo Road. This mapped occurrence was documented in 2001 in the hills south of Lake Hodges on a gentle north-facing slope on rocky barren ground surrounded by mixed grassland and coastal sage scrub and extending into grassland (Regents of the University of California 2009).

Robinson's Pepper-Grass (*Lepidium virginicum* var. *robinsii*)

Robinson's pepper-grass is a CNPS List 1B species. This annual herb in the mustard family blooms from January through July in chaparral and coastal sage scrub. Robinson's pepper-grass occurs at elevations of less than 2,900 feet within San Diego, Los Angeles, Orange, Riverside, Santa Barbara, and San Bernardino counties, and in Baja California. This species is threatened by erosion and feral herbivores (on Santa Cruz Island).

This species has a moderate potential to occur within the proposed project site because reasonably suitable habitat is present. The closest mapped occurrence of Robinson's pepper-grass in relation to the site is approximately 5.91 miles southeast of the intersection of Elfin Forest Road and San Elijo Road. This mapped occurrence was documented in 2008 in the Del Dios Highlands County Preserve, southwest of Escondido, just west of S-6 (Del Dios Highway), northwest of Lake Hodges, south of the old homestead, and east of the main eucalyptus grove (Regents of the University of California 2009).

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## Additional Sensitive Plants with Moderate Potential to Occur – County Group B

### Chaparral Ragwort (*Senecio aphanactis*)

Chaparral ragwort is a CNPS List 2 species. This annual herb in the sunflower family blooms from January through April in chaparral, cismontane woodland, and coastal scrub. It occurs at elevations of less than 2,600 feet within San Diego, Alameda, Contra Costa, Fresno, Los Angeles, Merced, Monterey, Orange, Riverside, Santa Barbara, Santa Clara, San Luis Obispo, Solano, and Ventura counties, and in Baja California.

This species has a moderate potential to occur within the proposed project site because reasonably suitable habitat is present. The closest mapped occurrence of chaparral ragwort in relation to the site is approximately 14.92 miles northwest of the intersection of Elfin Forest Road and San Elijo Road. This mapped occurrence was documented in 1989 near the mouth of the Santa Margarita River on Marine Corp Base Camp Pendleton (Regents of the University of California 2009).

### **1.4.6.3 Sensitive Wildlife**

For purposes of this report, wildlife species will be considered sensitive if they are (1) listed or proposed for listing as threatened or endangered by USFWS or CDFG; and/or (2) designated as California Fully Protected by CDFG. In addition, raptors (birds of prey) and active raptor nests are protected by California Fish and Game Code (CFG) 3503.5, which states that it is “unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird” unless authorized (CDFG 1991). The federal Migratory Bird Treaty Act (MBTA), which restricts the killing, taking, collecting, selling, or purchasing of native bird species or their parts, nests, or eggs, also provides legal protection for almost all breeding bird species occurring in the United States. Noteworthy wildlife species are those given the informal designation of California SSC by CDFG. This designation applies to animals not listed under the federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA), but which nonetheless (1) are declining at a rate that could result in listing, or (2) historically occur in low numbers and known threats to their persistence currently exist.

A federally endangered species is defined as a species facing extinction throughout all or a significant part of its geographic range, and a federally threatened species is defined as a species that is likely to become endangered within the foreseeable future throughout all or a significant part of its range. The State of California defines an endangered species as one whose prospects

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of survival and reproduction are in immediate jeopardy, a threatened species as one present in such small numbers throughout its range that it is likely to become an endangered species in the near future in the absence of special protection or management, a fully protected species as one that is rare or faces possible extinction, and a California SSC as one that is declining in numbers.

Federally or state listed threatened or endangered species are afforded a degree of protection that entails a permitting process, including specific mitigation measures to compensate for impacts to the species. Species that are proposed to be listed by USFWS are treated similarly to listed species by that agency. Recommendations of USFWS, however, are advisory rather than mandatory in the case of proposed species. As regulated by CDFG, fully protected species may not be taken or possessed at any time, and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocating species for the protection of livestock. Wildlife species classified as California SSC by CDFG are not typically provided legal protection; however, there are exceptions for some species such as burrowing owl.

The County has divided sensitive wildlife into groups based on their level of sensitivity. Wildlife species are divided into two groups—Group 1 and Group 2—as shown in the County Sensitive Animal List (County of San Diego 2009). Group 1 animals are species with a high level of sensitivity, either because they are threatened or endangered or because they have very specific natural history requirements that must be met. Group 2 animals are species that are becoming less common but are not yet so rare that extirpation or extinction is imminent without immediate action. Typically, impacts to 5% or more of a population of a species listed in Groups 1 or 2 are considered significant.

Appendix E summarizes all sensitive wildlife species that are known or have the potential to occur within or adjacent to the proposed project site. This appendix also includes species that are known historically from the region but are not expected to occur within the proposed project site based on a lack of suitable habitat. According to the CNDDDB (State of California 2009) and other data for the site, several sensitive wildlife species are historically known to occur within and immediately adjacent to the proposed project site.

#### Sensitive Wildlife Species Known to Occur within the Proposed Project Survey Area

Appendix E summarizes all sensitive wildlife species that were detected within or immediately adjacent to the proposed project site during the biological reconnaissance survey and subsequent

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focused surveys for CAGN and LBV. The 13 sensitive wildlife species found or detected within and adjacent to the two alternative alignments are described below and depicted in Figure 8.

Coastal California Gnatcatcher (*Polioptila californica californica*)

CAGN is a federally threatened species, a state species of concern (State of California 2009), and a County Group 1 species. This subspecies is usually found in association with coastal sage scrub communities, particularly coastal sage scrub, occurring on gentle slopes within the maritime and coastal climate zones, generally below 1,000 feet elevation. Often, California sagebrush and flat-top buckwheat are the dominant plant species in the occupied area. CAGN range is restricted to the coastal slopes of Southern California, from Los Angeles County south to El Rosario, Baja California, Mexico.

CAGN was listed as threatened by USFWS on March 30, 1993 (58 Federal Register [FR] 16742). Critical habitat for CAGN was originally designated on October 24, 2000 (65 FR 653680), but was overturned by the U.S. District Court on March 8, 2002. Subsequently, USFWS published a new Proposed Designation of Critical Habitat, dated April 24, 2003 (68 FR 20228).

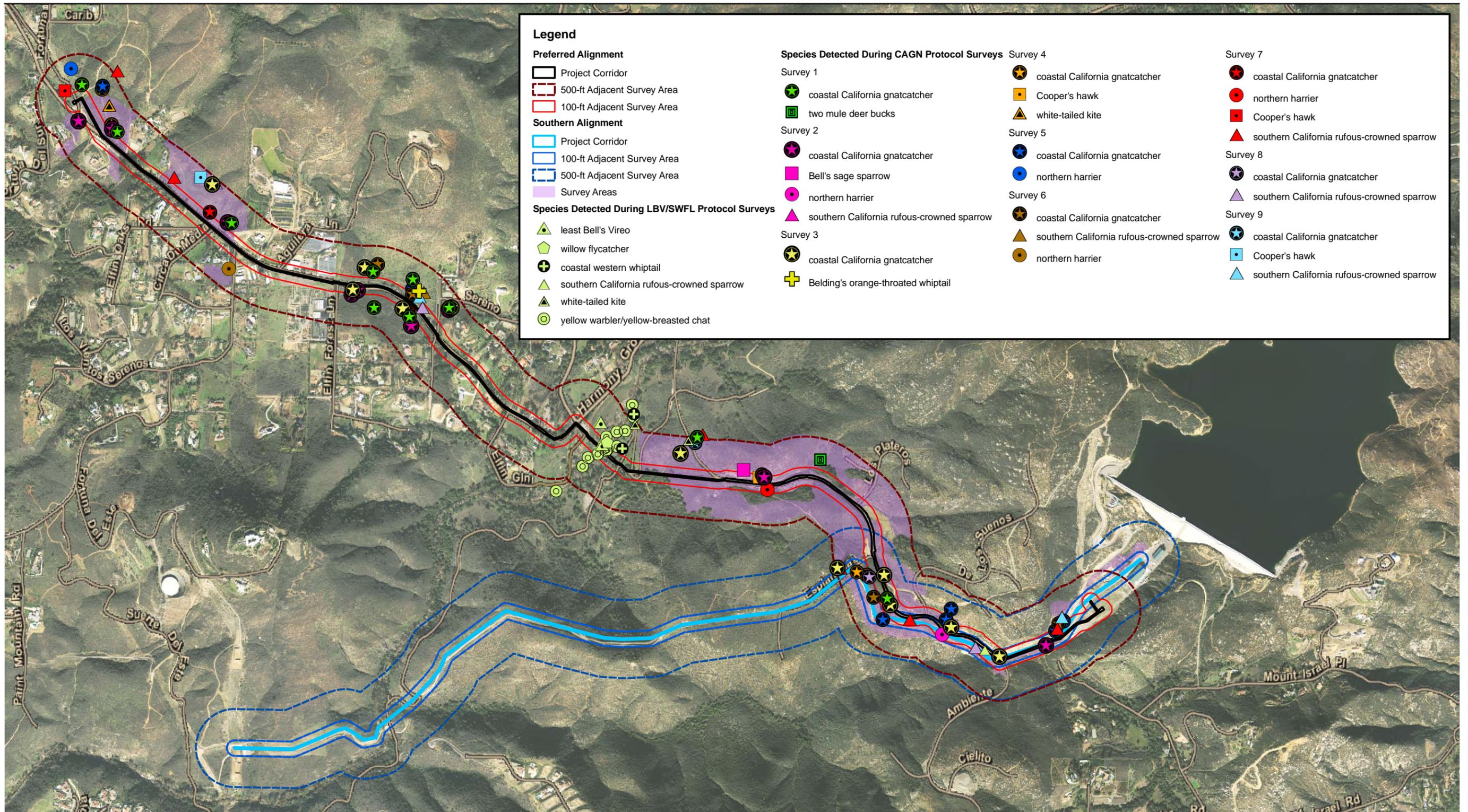
Suitable habitat exists in many areas within and neighboring both alternative alignments, and numerous observations of CAGN were made within both the preferred alignment and the southern alignment. Some observations were made within the pipeline alignment and direct impact area. Especially within the preferred alignment, AECOM biologists noticed CAGN flying across the paved road between patches of habitat.

Least Bell's Vireo (*Vireo bellii pusillus*)

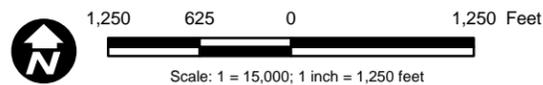
LBV is a federally and state listed endangered species, is a covered species under the MSCP, and is a County of San Diego Group 1 species.

LBV is the westernmost subspecies of the Bell's vireo. It breeds entirely within California and northern Baja California, and winters in southern Baja California, Mexico.

The LBV breeding season extends from March through September. During the breeding season, LBV is restricted to riparian woodland and riparian scrub. In San Diego County, it occurs mainly in the coastal lowlands, rarely up to 3,000 feet elevation. Territory size ranges from 0.5 to 7.5



Source: DigitalGlobe 2008; Nolte 2009; AECOM 2009



**Figure 8**  
Sensitive Wildlife Detected During project Surveys

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acres, and there is evidence of high site fidelity among adults (Kus 2002). Early to mid-successional riparian habitat is typically used for nesting by this vireo because it supports the dense shrub cover required for nest concealment and a structurally diverse canopy for foraging (Kus 2002).

Suitable habitat for LBV occurs on-site, and one LBV was detected during the five protocol-level surveys conducted to date. The LBV was observed in southern arroyo willow riparian forest on the northwestern edge of Escondido Creek. It is likely that the LBV detected during surveys is an indication of a breeding pair.

#### Cooper's Hawk (*Accipiter cooperi*)

Cooper's hawk is a CDFG SSC, and its nesting sites are considered sensitive by CDFG (State of California 2009). It is also an MSCP covered species and a County of San Diego Group 1 species. Cooper's hawk ranges year-round throughout most of the United States; its wintering range extends south to Central America, and its breeding range extends north to southern Canada (Rosenfeld and Bielefeldt 1993). It is a common breeder in both natural and urban environments, with eucalyptus trees used nearly as often as oaks (Unitt 1984). This hawk mainly breeds in oak and willow riparian woodlands, but will also use eucalyptus trees. Breeding occurs from March to July. This hawk forages primarily on medium sized birds, but is also known to eat small mammals, such as chipmunks and other rodents (Rosenfeld and Bielefeldt 1993). The decline of this species has been caused by urbanization and loss of habitat. However, during the last 20 years, Cooper's hawk has apparently adapted to city living (Unitt 1984).

Suitable nesting habitat for Cooper's hawk was observed within the eucalyptus woodlands within the proposed project site, as well as within the coast live oak woodlands and riparian areas (mainly in the southern arroyo willow riparian forest). Cooper's hawks were observed on two separate occasions flying over and hunting within the preferred alignment.

#### Northern Harrier (*Circus cyaneus*)

Northern harriers are CDFG SSC (State of California 2009) and County of San Diego Group 1 species. Northern harriers winter throughout most of North America, from southern Canada to Central America and the Caribbean Islands (MacWhirter and Bildstein 1996). Their breeding range extends from Canada and Alaska to the northwestern United States, with some year-round residents in coastal California and northern Baja California, Mexico. In San Diego County, the northern harrier is a fairly common migrant in the winter and a rare summer breeder (Unitt 1984). The northern harrier most commonly nests on the ground at the edge of marshes, but will

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also nest on grasslands, in fields, or in areas of sparse shrubs (MacWhirter and Bildstein 1996). Northern harriers hover close to the ground while foraging in grasslands, agricultural fields, and coastal marshes. Their diet consists of small and medium sized rodents, birds, reptiles, and frogs. The range of this species has been reduced as a result of urbanization and agricultural development.

A single northern harrier was observed in the eastern portion of the survey area in late October. This individual was likely a migrant/winter resident. It is unlikely that this individual is a breeding resident of the site.

#### White-Tailed Kite (*Elanus leucurus*)

The white-tailed kite is a California fully protected species and a County of San Diego Group 1 Species, and its nesting sites are considered sensitive by CDFG (State of California 2009). This raptor occurs in coastal lowland areas from Oregon to northern Baja California, Mexico (National Geographic Society 1983).

Nesting occurs in riparian woodlands, oaks, or sycamore groves that border grassland or open fields (Unitt 1984). While this species is commonly observed hunting within savanna, open woodlands, marshes, grasslands, and agricultural fields, they are known to almost exclusively nest in association with watercourses. Nests are typically placed in the crowns of oaks or other densely foliated trees. In San Diego County, the nesting season lasts from February through fledging in June (Unitt 1984). This species is known to roost in large communal groups (Unitt 1984).

The white-tailed kite forages over open areas and grasslands, feeding primarily on small rodents and insects (National Geographic Society 1983). White-tailed kite populations in Southern California have declined as a result of the loss of nesting and foraging habitat.

On November 20, 2009, two white-tailed kites were observed flying over the site, and briefly foraging over some coastal sage scrub habitat in the northern part of the preferred alignment. Suitable nesting habitat for white-tailed kite occurs within the riparian woodlands in the proposed project site.

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Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*)

Southern California rufous-crowned sparrow, a County Group 1 species, is a common resident of sparse, mixed chaparral and coastal scrub habitats (especially coastal sage) from Mendocino and Tehama counties, south to the Mexican border. It is uncommon on lower slopes of the western Sierra Nevada and on Santa Cruz Island (Grinnell and Miller 1944). This species is most numerous in the western portion of its range in California.

Rufous-crowned sparrows frequent relatively steep, often rocky hillsides with grass and forb patches, and also grassy slopes without shrubs, if rock outcrops are present.

This sparrow breeds from mid-March to mid-June, with a peak in May. Clutch size is two to five eggs, with usually three or four. Incubation is by female only, but altricial young are tended by both parents (Harrison 1978).

This bird is a resident species in San Diego County. It prefers grassy or rocky slopes with open scrub at elevations from sea level to approximately 2,000 feet. Most of the species' population occurs in coastal sage scrub. It forages and nests on the ground, usually near vegetative cover, and maintains year-round territories. The decline of this species is closely associated with the loss of coastal sage scrub vegetation.

At least two observations of rufous-crowned sparrows were made, both during the second CAGN focused survey. The sparrows were observed within the buffer area, on the western side of the preferred alignment, just north of Elfin Forest Road within Diegan sage scrub habitat (Figure 8). Subsequent surveys revealed the continual presence of rufous-crowned sparrows in these areas.

Bell's Sage Sparrow (*Amphispiza belli belli*)

Bell's sage sparrow, a County Group 1 species, was observed within Diegan sage scrub habitat in the proposed project area, near the central portion of the preferred alignment, on the north side of Via Ambiente (Figure 8). This observation was made during the second CAGN focused survey.

Bell's sage sparrow is a subspecies of sage sparrow restricted to the coastal lowlands of California and the edges of the Central Valley (Grinnell and Miller 1944). It is a scattered and localized resident in San Diego County (Unitt 1984).

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Sage sparrow is locally common in sage scrub and chaparral habitats. Sage sparrows forage mainly on the ground among shrubs. They nest in low dense shrubs and form small feeding flocks during the nonbreeding season.

According to Unitt (1984), this species “merits attention because of its predilection for mesa tops and other areas of nearly flat topography,” i.e., highly developable areas. Sage sparrow is believed to be sensitive to disturbance and habitat fragmentation, often being absent from small habitat fragments that support other scrub birds (Lovio 1999).

#### Yellow Warbler (*Dendroica petechia brewsteri*)

The yellow warbler (*brewsteri* subspecies) is designated as an SSC by CDFG (State of California 2009) and is a County of San Diego Group 2 species. The yellow warblers nesting in San Diego County and most migrants are *D. p. morcomi* (Unitt 1984). However, per the American Ornithologists’ Union (AOU), *D. p. brewsteri* (Grinnell 1903) is considered not separable from *D. p. morcomi* (AOU 1953); therefore, they have been addressed as sensitive herein.

The yellow warbler breeds from northern Alaska and Canada southward to the middle United States, and in the western United States southward into Mexico. It also breeds from southern Florida, throughout the Caribbean and Central American coasts to northern South America. This warbler winters in Mexico, and Central and South America. Nest building may occur as early as April in San Diego County, with fledglings reaching independence by August (Unitt 1984).

At low elevations, this species is confined to larger streams, while in the foothills and mountains, it takes advantage of narrow strips and patches of riparian trees. Yellow warblers strongly favor surface water, but this is probably not essential as long as groundwater suffices to support tall trees (Unitt 2004). This species occurs most commonly in riparian woodlands dominated by willows. It remains a fairly common species in mature riparian woodland on the California coastal slope. In coastal San Diego County, breeding yellow warblers are most widespread from Carlsbad north and more localized farther south (Unitt 2004).

Yellow warblers were observed within the southern arroyo willow riparian forest and mulefat scrub adjacent to Escondido Creek during LBV and SWFL protocol-level surveys.

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### Yellow Breasted Chat (*Icteria virens*)

The yellow-breasted chat is designated as an SSC by CDFG and is a County of San Diego Group 2 species. Yellow-breasted chats breed across the central and eastern United States, and southern Canada from South Dakota to New Hampshire and southward to eastern Texas and northern Florida. This species also occurs in scattered regions across the western United States from southern Canada to very northern Mexico. In San Diego County, nest building typically occurs in May and fledging is completed by August (Unitt 2004).

This wood warbler winters in Mexico and Central America. In California, chats require dense riparian thickets associated with watercourses, saturated soils, or standing water (lakes or ponds). They typically occur in riparian woodland/scrub with dense undergrowth. In San Diego County, this species occurs in the coastal lowlands and is strongly concentrated in the northwest portion of the County (i.e., Santa Margarita River and San Luis Rey River) (Unitt 2004).

Yellow breasted chat were observed within the southern arroyo willow riparian forest and mulefat scrub adjacent to Escondido Creek during LBV and SWFL protocol-level surveys.

### Southwestern Willow Flycatcher (*Empidonax traillii extimus*)

SWFL was listed as endangered by USFWS in February 1995 and is an MSCP covered species and County Group 1 species. This subspecies was previously listed as endangered by CDFG in December 1990.

This subspecies of willow flycatcher is a summer breeding resident in riparian habitats in Southern California, southern Nevada, southern Utah, Arizona, New Mexico, western Texas, southwestern Colorado, and northwestern Mexico (USFWS 1995). In San Diego County, only two substantial breeding populations are known to remain along the Santa Margarita River and the upper San Luis Rey River.

Spring migration of the endangered subspecies is relatively late, beginning in early May and extending through June (Unitt 2004). Another subspecies that breeds to the north in the northern Sierra Nevada and the Cascade Range (*E.t. brewsteri*) migrates through San Diego between mid-May and mid-June. There is a period of overlapping occurrence in San Diego County riparian habitats for these two very similar looking subspecies during spring and fall migration. Fall migration of both subspecies occurs rather early, from August through mid-October. Egg laying by the endangered SWFL occurs in San Diego County from the end of May through the end of

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June. Dense willow thickets are required for nesting, and nests are often near standing water (CDFG 1990). Willow flycatchers hunt for insects from low exposed perches, flying out to catch the insects in midair.

This subspecies was listed because of “extensive loss of riparian breeding habitat, brood parasitism by the brown-headed cowbird (*Molothrus ater*), and lack of adequate protective regulations” (USFWS 1995). The population of SWFL in Southern California was estimated to be less than 80 pairs in the early 1980s (Unitt 2004).

Suitable habitat for SWFL occurs on-site, and a willow flycatcher was detected in southern arroyo willow riparian forest on the northwestern edge of Escondido Creek during protocol-level surveys conducted on May 26, 2010. It is likely that the flycatcher detected during the SWFL survey is a transient, since it has not been detected during subsequent surveys.

#### Southern Mule Deer (*Odocoileus hemionus*)

Southern mule deer is a County of San Diego Group 2 species and an MSCP covered species. The range of the southern mule deer extends throughout the western United States, including the four deserts of the southwest. This species moves between various zones from the forest edges at higher elevations to the desert floor, depending on the season. While southern mule deer occupies almost all types of habitat within its range, it prefers arid, open areas and rocky hillsides.

The mating season for southern mule deer reaches its peak in November and December, as antlered stags round up females and fight for their possession. Antlers are shed after the breeding season, from mid-January to about mid-April. Most mature bucks in good condition have lost their antlers by the end of February; immature bucks generally lose them a little later. Males and females mix freely while traveling together in groups during winter months, often down to the desert floor.

Seasonal movements involving migrations from higher elevations (summer ranges) to lower winter ranges are associated, in part, with decreasing temperatures, severe snow storms, and snow depths that reduce mobility and food supply. Deep snows ultimately limit usable range to a fraction of the total. Southern mule deer in the arid southwest may migrate in response to rainfall patterns.

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Several mule deer were observed just off-site, and tracks and scat were observed within the proposed project site in the preferred alignment.

Belding's Orange-Throated Whiptail (*Aspidoscelis hyperythrus beldingi*)

The orange-throated whiptail is a CDFG SSC (State of California 2009) and a County of San Diego Group 2 species.

The great majority of the geographic distribution of this species occurs in Baja California south of the international border (Stebbins 2003). Within the United States, its distribution is restricted to the coastal belt from near sea level to approximately 3,400 feet ranging from the United States/Mexico border northward up through the south-facing slopes of the Transverse Mountains in San Bernardino County.

This species is most often associated with sparsely vegetated patches of coastal sage scrub and chamise chaparral (Lemm 2006).

Males are known to be reproductively active from early April through the first week of July. During the period of midsummer to late summer (June–July), hatchlings begin to appear active on the surface, while the adults become less surface active by late summer (July–August) (Case and Fisher 1996). This temporal shift by age class is known to occur in other lizard species, and is understood as a means to avoid or minimize intraspecific competition. Migration and dispersal requirements of this lizard are not well known.

Orange-throated whiptails were observed within the project site. Suitable habitat occurs within the sparse coastal sage and chamise chaparral habitat types.

Coastal Western Whiptail (*Aspidoscelis tigris stejnegeri*)

The coastal western whiptail is a County of San Diego Group 2 species and a CDFG Special Animal (State of California 2009). The western whiptail can be found in open, often rocky areas with little vegetation or sunny microhabitats within shrub or grassland associations (Benes 1969).

Suitable habitat for the western whiptail was observed mainly within the open areas associated with Diegan coastal sage scrub, but also within the grassland areas.

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## Sensitive Wildlife Species with a Potential to Occur within the Proposed Project Survey Area

Appendix E summarizes all sensitive wildlife species that have the potential to occur within the proposed project survey area based on observations made during the biological reconnaissance survey, historical occurrence data, and the presence of suitable habitat in the vicinity of the proposed project site. Appendix E also includes species that are known historically from the region but are not expected to occur within the proposed project site based on a lack of suitable habitat. Of those species potentially present, the 33 species that have a potential to occur and are federally and/or state listed and/or CDFG SSC and/or California fully protected species are discussed in more detail below.

### Western Burrowing Owl (*Athene cunicularia*)

Burrowing owl is a County of San Diego Group 1 species and is designated as a CDFG SSC, Priority 2 Bird (State of California 2009) due to rapid habitat loss and degradation from urbanization. Urbanization has greatly reduced the amount of suitable habitat for this species. Other contributions to the decline of this species include the poisoning of squirrels and prairie dogs and collisions with automobiles.

Suitable burrowing owl habitat consists of annual and perennial grasslands, deserts, and scrublands characterized by low-growing vegetation (CBOC 1993; Haug et al. 1993; Zarn 1974). A year-round resident in San Diego County, the burrowing owl ranges throughout the coastal lowlands in grasslands, agricultural areas, and coastal dunes (Unitt 1984). Suitable burrowing owl habitat may also include trees and shrubs if the canopy covers less than 30% of the ground surface (DeSante et al. 1996). Burrows are the essential component of burrowing owl habitat, and both natural and artificial burrows provide protection, shelter, and nests. Burrowing owls typically use burrows made by mammals, such as kit foxes, ground squirrels, or badgers, but also may use human-made structures such as cement culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement (Collins and Landry 1977; Trulio 1994).

Burrowing owls in California are generally nonmigratory and most abundant in the Central and Imperial valleys, primarily in agricultural areas (Center for Biology Diversity et al. 2003). Nesting occurs from March through August. Burrowing owls form a pair-bond for more than 1 year and exhibit high site fidelity, reusing the same burrow year after year (Haug et al. 1993).

Population density seems to be correlated with prey availability, particularly small mammals (Klute et al. 2003). Western burrowing owls are opportunistic feeders, consuming a diet that

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includes arthropods, small mammals, and birds, and occasionally amphibians and reptiles (Haug et al. 1993).

Potential habitat for burrowing owl does exist within the agricultural/grassland areas on the western side of the proposed project site; however, the presence of nesting habitat for raptors (eucalyptus groves and other stands of large trees) reduces the probability of burrowing owls surviving here. The probability of occurrence of this species is therefore low.

#### California Horned Lark (*Eremophila alpestris actia*)

The California horned lark is a County of San Diego Group 2 species. Its range is limited to the coastal slopes of California, from Sonoma County to San Diego County, and includes most of the San Joaquin Valley. In San Diego County, the California horned lark typically inhabits areas with sparse vegetation, including sandy shores, grasslands, mesas, and agricultural lands. Breeding occurs between the months of March through July, with peak activity occurring in May. California horned larks forage by walking and running on the ground and consume a diet of spiders; insects; insect larvae; snails; buds; berries; waste grains; and seeds from grasses, weeds, and forbs. Horned larks usually forage in flocks, except during nesting. Decline of this species is generally attributed to loss of habitat, urbanization, and human disturbance.

Suitable habitat for this species is present within the disturbed habitat, nonnative grassland, and the valley needlegrass grassland within the proposed project site.

#### Coastal Cactus Wren (*Campylorhynchus brunneicapillus couesi*)

The coastal cactus wren is a CDFG SSC and a County of San Diego Group 1 species. The coastal cactus wren differs from the interior population in that the coastal population occurs exclusively within the coastal sage scrub plant community. Patches of tall *Opuntia* cacti for nesting and breeding is an essential component of habitat for this species (Solek and Szijj 1999).

Suitable habitat for this species was observed within areas with *Opuntia* patches in Diegan coastal sage scrub habitat.

#### Golden Eagle (*Aquila chrysaetos*)

The golden eagle is a federally protected species under the Bald and Golden Eagle Protection Act (BGEPA), is fully protected by California (State of California 2009), and is a County of San

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Diego Group 1 species. This eagle occurs throughout the United States and is an uncommon resident in San Diego County. The nesting population in San Diego County is concentrated in the foothill zone and coastal lowlands. Golden eagles nest on cliffs or boulders, or in large trees. This species requires vast foraging areas to prey on small mammals. Ideal foraging habitat includes vegetation communities such as grassland, open chaparral, and coastal sage scrub. Several golden eagle territories in the coastal lowland have been eliminated by urbanization, agricultural development, and other human disturbances (Unitt 1984).

Golden eagle has a moderate potential to forage within and adjacent to the proposed project site; however, this species is not expected to nest within the proposed project site because the site lacks suitable nesting locations.

#### Western Spadefoot (*Spea hammondi*)

The western spadefoot is a CDFG SSC (State of California 2009) and a County of San Diego Group 2 species. This species ranges from central northern California through the Coast Ranges from San Francisco and south into Baja California, Mexico, at elevations from sea level to 4,500 feet (Stebbins 1985; Zeiner et al. 1988). Habitat for the western spadefoot includes lowlands, washes, floodplains of rivers, alluvial fans, alkali flats, temporary ponds, and vernal pools. Although this species is generally found in areas of open vegetation with sandy or gravelly soil (Stebbins 1985), it has been observed in vernal pools containing clay soils on Otay Mesa. Surface activity can occur from October through April depending on rainfall, and oviposition occurs between late February and May (Jennings and Hayes 1994). The western spadefoot diet consists of crickets, butterflies, ants, flies, and earthworms (Jennings and Hayes 1994). Decline in western spadefoot populations primarily is due to habitat loss and fragmentation, and possibly pesticide use.

Suitable habitat for western spadefoot exists within the project site. Freshwater seep habitat and temporary ponds associated with Escondido Creek and an unnamed tributary to Escondido Creek provide habitat for this species.

#### Southwestern Pond Turtle (*Actinemys marmorata pallid*)

The southwestern pond turtle is a CDFG SSC (State of California 2009), is MSCP covered, and is a County of San Diego Group 1 species. It inhabits permanent or nearly permanent bodies of water (ponds, rivers, vernal pools, streams, ephemeral creeks, reservoirs, agricultural ditches,

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sewage treatment ponds, and estuaries), and requires basking sites such as partially submerged logs, vegetation mats, or open mud banks (Holland 1994).

The pond turtle has declined throughout its range, mainly through the loss of habitat through conversions to agriculture and urbanization. Threats to the species from urbanization include channelization and siltation of water ways, aquatic vegetation reduction, and degradation of appropriate basking sites. This species also requires suitable terrestrial habitat for nesting, hibernating, and aestivating. Both aquatic and surrounding upland habitat need to be suitable for long-term population viability (Spinks et al. 2003). Often optimal basking sites (emergent logs or branches) in landscaped or in flood control areas are removed. There is a strong positive correlation between basking sites and turtle abundance, as well as a positive correlation between juvenile growth and sufficient basking opportunities (Koper and Brooks 2000).

Suitable habitat for this species occurs within Encinitas Creek and other unnamed creeks within the area. The upland habitat here and emergent logs and branches within the creek are also important components for the long-term survival of this species.

#### Coronado Skink (*Eumeces skiltonianus interparietalis*)

The Coronado skink is a CDFG SSC (State of California 2009) and is a County of San Diego Group 2 species. The Coronado skink is a subspecies of the western skink and is found in grassland, woodland, pine forests, chaparral, and especially in open areas with sun in clearings or at the edge of creeks/rivers. This species is often found in rocky areas near streams with a lot of vegetation, but can be found in areas away from water.

Suitable habitat for this species is present within Diegan coastal sage scrub, nonnative and valley needlegrass grassland, southern mixed chaparral, and riparian areas.

#### San Diego Horned Lizard (*Phrynosoma coronatum blainvillii*)

The San Diego horned lizard is a CDFG SSC (State of California 2009) and a County of San Diego Group 2 species. This lizard ranges from coastal Southern California to the desert foothills and into Baja California, Mexico. In San Diego County, it has a wide range but spotty distribution. It is often associated with coastal sage scrub, especially areas of level to gently sloping ground with well-drained loose or sandy soil, but it can also be found in annual grasslands, chaparral, oak woodland, riparian woodland, and coniferous forest between 30 and 7,030 feet (Jennings and Hayes 1994). This reptile typically avoids dense vegetation, preferring

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20 to 40% bare ground in its habitat. The San Diego horned lizard can be locally abundant in areas where it occurs, with densities near 20 adults per acre. Adults are active from late March to late August, and young are active from August to November or December. They are largely dependent on native harvester ants (*Pogonomyrmex* sp.) for food. Populations along the coast and inland have been severely reduced by loss of habitat.

Suitable habitat for the San Diego horned lizard exists mainly within the Diegan coastal sage scrub, especially in areas with sandy soils, as well as within coast live oak woodland, southern mixed chaparral, and riparian areas.

#### Rosy Boa (*Charina trivirgata*)

The coastal rosy boa (*Charina trivirgata roseofusca*) is found on the Pacific Coast of southwestern California and northwestern Baja California. *C. trivirgata* is found in dry shrublands within rocky areas, usually on south-facing hillsides at elevations of 0 to 6,560 feet. This species is rarely found without rock cover and is often associated with free water. This species is nocturnal and secretive (Ernst and Ernst 2003). Rosy boas may be active year-round, but are more active from March through November (Klauber 1924). Winters are usually spent in rock crevices or mammal burrows underground. This species consumes prey by seizing prey, coiling around it, and then constricting. Threats to this species include habitat loss, mortality associated with roads, and collection for the pet trade (Ernst and Ernst 2003).

Suitable habitat for the rosy boa was observed mainly within the rocky areas associated with Diegan coastal sage scrub and southern mixed chaparral.

#### San Diego Ringneck Snake (*Diadophis punctatus similis*)

The San Diego ringneck snake is a CDFG Special Animal (State of California 2009) and a County of San Diego Group 2 species. This species prefers moist habitats, including meadows, rocky hillsides, grassland, chaparral, and woodlands.

Suitable habitat for the San Diego ringneck snake is present mainly within the areas associated with the drainages, including the riparian areas, southern mixed chaparral, grassland, coast live oak woodland, and possibly eucalyptus woodland.

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### Coast Patch-Nosed Snake (*Salvadora hexalepis virgultea*)

The coast patch-nosed snake is a CDFG SSC (State of California 2009) and a County of San Diego Group 2 species. Distribution of the coast patch-nosed snake includes the coastal slope of Southern California and northern Baja California (Stebbins 2003). The coast patch-nosed snake is found in a variety of habitats from sea level to 7,000 feet, including coastal sage scrub, chaparral, riparian, grasslands, and agricultural fields (CDFG 1988). It prefers open habitats with friable or sandy soils, burrowing rodents for food, and enough cover to escape predation. Its activity patterns are diurnal and it is active most of the year in Southern California. This uncommon snake is threatened by intensive agricultural practices and urbanization of its habitat.

Suitable habitat for the coast patch-nosed snake within the proposed project site is present mainly within the Diegan coastal sage scrub, the southern mixed chaparral, the riparian habitats, and the nonnative and valley needle grasslands.

### Two-Striped Garter Snake (*Thamnophis hammondi*)

The two-striped garter snake is a CDFG SSC (State of California 2009) and a County of San Diego Group 1 species. The two-striped garter snake ranges along coastal California from Monterey County south to northwestern Baja California, Mexico, at elevations below 7,500 feet. Several isolated populations also occur in Baja California Sur, Mexico. This highly aquatic species occurs in or near permanent fresh water, usually along streams with rocky beds bordered by willows and other riparian vegetation.

Courtship and mating normally occur soon after spring emergence. Young are born alive in the late summer, usually in secluded sites such as under the loose bark of rotting logs or in dense vegetation near pond or stream margins (Cunningham 1959; Rossman et al. 1996).

The two-striped garter snake is now common only in eastern San Diego County (Jennings and Hayes 1994). Populations have been affected by the elimination of natural sloughs and marshy areas; loss of riparian habitat through agricultural practices and urban development; predation by introduced bullfrogs, fish, and feral pigs; and loss of amphibian prey (Jennings and Hayes 1994).

Suitable habitat for the two-striped garter snake is present within the proposed project site within areas that are associated with water, including the southern arroyo willow riparian forest, the mulefat scrub, and the southern willow scrub.

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### South Coast Garter Snake (*Thamnophis sirtalia* ssp.)

The south coast garter snake is a CDFG SSC (State of California 2009) and a County of San Diego Group 2 species. This species is generally found associated with ponds or flowing water. It prefers habitat types such as mixed woodland, grassland, coniferous forest, dunes, and brushland.

Suitable habitat for this species exists in association with the riparian areas and the upland habitats associated with these areas.

### Northern Red-Diamond Rattlesnake (*Crotalus ruber ruber*)

The northern red-diamond rattlesnake is a CDFG SSC (State of California 2009) and a County of San Diego Group 2 species. It is found in rocky habitats with thick vegetation, including desert scrub, thorn scrub, cacti, chaparral, and pine oak woodlands at elevations of 0 to 4,900 feet. This species is observed most often in the western foothills of the Coast Ranges, but is also found in the dry, rocky, inland valleys (Ernst and Ernst 2003). Prey for this species includes mammals, birds, and lizards (Hammerson 1981; Klauber 1972). Threats to the northern red-diamond rattlesnake include habitat destruction, road mortality, and collection for the pet trade (Ernst and Ernst 2003).

Suitable habitat for the northern red-diamond rattlesnake is present within the rocky outcrops observed within the Diegan coastal sage scrub and the southern mixed chaparral. Also, any areas with dense vegetation provides suitable habitat, including coast live oak woodland, nonnative and valley needle grasslands, and the riparian areas.

### San Diego Black-Tailed Jackrabbit (*Lepus californicus bennettii*)

The San Diego black-tailed jackrabbit is a CDFG SSC (State of California 2009) and a County of San Diego Group 2 species. It ranges from near Mount Pinos (at the Kern/Ventura County line) southward and west of the Peninsular Range into Baja California, Mexico (Hall 1981). This species can be found throughout Southern California, with the exception of high-altitude mountains. It occupies open or semi-open habitats, such as coastal sage scrub and open chaparral areas. Forested and thick chaparral regions are not suitable (Bond 1977). The San Diego black-tailed jackrabbit breeds throughout the year, with the greatest number of births occurring from April through May. The black-tailed jackrabbit is strictly herbivorous, preferring habitat with

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ample forage such as grasses and forbs. Declines in San Diego black-tailed jackrabbit populations are due to a decline in suitable habitat as a result of urban development.

Suitable habitat for the San Diego black-tailed jackrabbit is present within the proposed project site, mainly within the open areas of Diegan coastal sage scrub and southern mixed chaparral.

#### Stephens' Kangaroo Rat (*Dipodomys stephensi*)

Stephens' kangaroo rat is a state listed threatened, federally listed endangered (State of California 2009), and a County of San Diego Group 1 species. This nocturnal species occupies portions of Riverside and San Diego counties. There are three distinct regions with Stephens' kangaroo rat populations: western Riverside County, western San Diego County, and central San Diego County. Stephens' kangaroo rat historically occurred in southwestern San Bernardino County, but this species is believed to be extirpated from that area (USFWS 1997).

Habitat for Stephens' kangaroo rat includes open grasslands, fallow agricultural fields, and sparse coastal sage scrub vegetation types in areas with penetrable soils and a flat to fairly steep sloping topography (USFWS 1997). Stephens' kangaroo rat is found at elevations of 180 to 4,100 feet, with most populations located at elevations below 2,000 feet (USFWS 1997). Habitat for Stephens' kangaroo rat varies in composition and density from place to place and season to season. Filaree (*Erodium* spp.) frequently dominates the best Stephens' kangaroo rat habitat areas, especially during and shortly after the rainy season. Areas with dense grass cover are not suitable for Stephens' kangaroo rat (USFWS 1997). Stephens' kangaroo rat consumes a diet primarily of seeds. The decline of this species is attributed primarily to habitat loss and fragmentation resulting from urban development and agriculture. Other factors contributing to loss of the species include off-road vehicles, rodent control, and predation by feral and domestic cats (USFWS 1997).

Suitable habitat for Stephens' kangaroo rat was observed within areas with sparse vegetation (often due to localized disturbances such as trails or dirt roads) mainly within the Diegan coastal sage scrub, nonnative grassland, and southern mixed chaparral on the site.

#### Pallid Bat (*Antrozous pallidus*)

The pallid bat is a CDFG SSC (State of California 2009) and a County of San Diego Group 2 species. Pallid bats are colonial and roost in caves, mine tunnels, rock crevices, buildings, and trees. This species flies later in the evening. Pallid bats feed near the ground and may land to pick up prey. This species eats beetles, grasshoppers, Jerusalem crickets, moths, scorpions,

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flightless arthropods, and sometimes lizards. This species is a natural pollinator for several cacti species (Burt and Grossenheider 1976; Kays and Wilson 2002; Wilson and Ruff 1999).

Suitable roost sites for this species are present within the rocky outcrops observed in the Diegan coastal sage scrub and southern mixed chaparral habitats, and within the trees of the coast live oak woodland, the eucalyptus woodland, and the riparian forest areas. The buildings associated with the developed habitat also provide potential roost sites.

#### Big Free-Tailed Bat (*Nyctinomops macrotis*)

The big free-tailed bat is a CDFG SSC (State of California 2009) and a County of San Diego Group 2 species. This species is colonial and roosts in caves, cliff crevices, and buildings (Burt and Grossenheider 1976). Big free-tailed bats forage mainly for large moths. This species is found in the southwestern United States in the summer and migrates to Mexico in the winter (Kays and Wilson 2002; Wilson and Ruff 1999).

Suitable roosting habitat for the big free-tailed bat is present within the buildings associated with the developed areas.

#### Yuma Myotis (*Myotis yumanensis*)

Yuma myotis is a CDFG Special Animal and a County of San Diego Group 2 species. This bat species is colonial and roosts in caves, tunnels, or buildings in arid areas. Yuma myotis usually fly close to the ground (Burt and Grossenheider 1976).

Suitable roosting habitat for Yuma myotis is present within the buildings associated with the developed areas.

#### Western Red Bat (*Lasiurus blossevillii*)

The western red bat is a CDFG SSC (State of California 2009) and a County of San Diego Group 2 species. This species is solitary and roosts in broad leaved trees, especially cottonwoods and willows, and sometimes in orchard trees. Western red bats are often found near streams, and their preferred food is moths (Kays and Wilson 2002; Wilson and Ruff 1999).

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Suitable roosting habitat for the western red bat is present within the southern arroyo willow riparian forest, the southern willow scrub, the coast live oak woodland, and the eucalyptus woodland.

#### Hoary Bat (*Lasiurus cinereus*)

The hoary bat is a CDFG SSC (State of California 2009) and a County of San Diego Group 2 species. This solitary species is found in wooded areas, and roosts in trees and sometimes in caves. Hoary bats feed on moths, beetles, grasshoppers, wasps, and dragonflies (Burt and Grossenheider 1976; Kays and Wilson 2002).

Suitable nesting habitat for the hoary bat is present within the southern arroyo willow riparian forest, the coast live oak woodland, and the eucalyptus woodland.

#### Western Yellow Bat (*Lasiurus xanthinus*)

The western yellow bat is a CDFG SSC (State of California 2009) and a County of San Diego Group 2 species. The western yellow bat will often roost in cottonwoods or oak trees, and sometimes within the fronds of surrounding palm trees.

Suitable roosting habitat for this species is present within the proposed project site in the riparian areas and within the coast live oak woodland habitat.

#### Pocketed Free-Tailed Bat (*Nyctinomops femorosacca*)

The pocketed free-tailed bat is a CDFG SSC (State of California 2009) and a County of San Diego Group 2 species. This species roosts mainly in crevices in rugged cliffs, and high rocky outcrops and slopes, but may also roost in buildings and caves, and under roof tiles.

Suitable roosting habitat for this species occurs within the buildings associated with the developed areas.

#### Dulzura California Pocket Mouse (*Chaetodipus californicus femoralis*)

The Dulzura California pocket mouse is a CDFG SSC (State of California 2009) and a County of San Diego Group 2 species. This species is found in oak woodlands and chaparral, often on sloped areas.

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Suitable habitat for this species exists within the coast live oak woodland and the southern mixed chaparral.

Northwestern San Diego Pocket Mouse (*Chaetodipus fallax fallax*)

The northwestern San Diego pocket mouse is a CDFG SSC (State of California 2009) and a County of San Diego Group 2 species. This species is often found in coastal sage scrub, chaparral, and grassland habitat throughout San Diego County. The main habitat requirement for this species is the presence of low-growing vegetation or rocky outcroppings, as well as sandy soils for digging burrows (Lackey 1996).

Suitable habitat for this species exists within the rocky and open areas associated with the Diegan coastal sage scrub and southern mixed chaparral habitat.

San Diego Desert Woodrat (*Neotoma lepida intermedia*)

The San Diego desert woodrat is a CDFG SSC (State of California 2009) and a County of San Diego Group 2 species. This subspecies occurs in coastal Southern California south of San Luis Obispo and northern Baja California (Hall 1981).

This woodrat species is known to utilize desert habitats, Joshua tree vegetative communities, mixed and redshank chaparral, and sagebrush habitats.

Like other woodrats, it constructs large middens, usually of small twigs, cactus pads, and other plant material. Middens are often constructed under patches of prickly pear or cholla (*Opuntia* spp.), or in rock outcrops or under low trees. Although the middens are easily detectable, trapping is usually necessary to distinguish between the middens of the dusky-footed woodrat (*Neotoma fuscipes*) and those of the desert woodrat.

The primary threat to this species is urbanization and habitat degradation.

*Neotoma* sp. were observed within the proposed project site in the form of a woodrat midden and associated scat. Suitable habitat for this species is present within the Diegan coastal sage scrub habitat.

American Badger (*Taxidea taxus*)

The American badger is a CDFG SSC (State of California 2009), is MSCP covered, and is a County of San Diego Group 2 species. Badgers are residents of level, open areas in grasslands,

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agricultural areas, and open shrub habitats. This species digs large burrows in dry, friable soils and feeds mainly on fossorial mammals: ground squirrels, gophers, rats, mice, etc. Badgers are primarily active during the day, but may become more nocturnal in proximity to humans. The home range of badgers has been measured to be 1,327 to 1,549 acres for males and 338 to 751 acres for females in Utah (Lindzey 1978), and 400 to 600 acres in Idaho (Messick and Hornocker 1981).

Suitable habitat for badgers was observed within the level areas of the Diegan coastal sage scrub and the valley needlegrass grassland.

#### Mountain Lion (*Felis concolor*)

The mountain lion is a County of San Diego Group 2 species. Mountain lions are widespread but uncommon in California, ranging from sea level to alpine meadows. The species is most abundant in riparian and brushy habitats, in areas where mule deer (their primary food source) are present. Home ranges for adult animals are from 5 to 25 square miles; males have larger home ranges than females. The mountain lion breeding season is year-round (Beier et al. 1995). The main threat to the mountain lion is human encroachment into habitat and habitat fragmentation. The mountain lion has shown a dramatic decline in Southern California due to habitat fragmentation, restriction of movement, and increased encounters with humans (Dickson and Beier 2002).

Mountain lion is likely to occur throughout the proposed project site. In addition, its primary prey source, southern mule deer, have been observed in the area to the west of the proposed project site, and scat and tracks have been observed near Escondido Creek within the proposed project site.

#### **1.4.6.4 Wetlands/Jurisdictional Waters**

Jurisdictional waters (including wetland and other aquatic environments/habitats) occurring within California are regulated under the following federal and state laws, as applicable to the project.

##### Federal Waters

##### *Federal Regulations*

Under Section 404 of the Clean Water Act (CWA), USACE regulates the discharge of dredged or fill material into jurisdictional “waters of the U.S.”

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Under Section 401 of the CWA, RWQCB requires a water quality certification from the state for all permits issued by USACE under Section 404 of the CWA.

### *Jurisdictional Determination*

Determining if the delineated waters (including wetlands) occurring within the proposed project area are under the regulatory administration of USACE is primarily based on the procedural guidance as outlined within the following:

1. The March 30, 2007, U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook (2007 Guidebook) for making a jurisdictional determination for waters of the U.S. (including wetlands).
2. The June 5, 2007, USACE and U.S. Environmental Protection Agency (USEPA) Joint Guidance Memorandum. This memorandum provides guidance to both USACE and USEPA on the interpretation and implementation of the *Rapanos* Supreme Court case.
3. The June 5, 2007, USACE/USEPA Memorandum for the Field regarding the coordination on jurisdictional determinations (JDs) following the Solid Waste Agency of Northern Cook County (SWANCC) and *Rapanos* Supreme Court cases. This memorandum procedure replaces the coordination procedures contained in the January 2003 USEPA/USACE guidance implementing the SWANCC decision (but leaves the remainder of that guidance unaffected) and articulates new coordination procedures for JDs affected by *Rapanos*.
4. The June 5, 2007, Approved Jurisdictional Determination Form.
5. The January 28, 2008, Interagency Coordination Memorandum for following jurisdictional procedures (until modified by USACE/USEPA).
6. The June 26, 2008, USACE Regulatory Guidance Letter (RGL 08-02). This RGL explains the differences between Approved JDs and Preliminary JDs, and provides guidance on when an Approved JD is required and when a landowner, permit applicant, or other “affected party” can decline to request and obtain an Approved JD and elect to use a Preliminary JD instead.

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## State Waters

### *State Regulations*

Under Section 1600 et seq. of the CFGC, CDFG regulates activities that would substantially alter the channel, bed, or bank, of a lake, river, or stream. In practice, CDFG extends its jurisdictional limit to the continuous edge of the riparian canopy that may grow along a lake, river, or stream.

Under Section 13000 et seq. of the Porter-Cologne Water Quality Control Act (Porter-Cologne), RWQCB is the agency that regulates discharges of waste and fill material within any region that could affect a water of the state (Water Code 13260[a]), including wetlands and isolated waters, as defined by the California Water Code Section 13050(e). Waters of the state are not regulated by USACE if there is a lack of connectivity with a navigable water body or lack of an ordinary high water mark (33 Code of Federal Regulations [CFR] 328.3[e]).

### Jurisdictional Waters Occurring within the Proposed Project Area

As noted in Section 1.3.6, a wetland delineation was conducted for one segment of Escondido Creek and its associated riparian area where an alternative construction method was considered for the pipeline's crossing of Escondido Creek. The *Unit AA Pipeline Focused Jurisdictional Delineation Letter Report for the Escondido Creek Crossing* is included as Appendix F to this document. Findings from this focused survey are summarized below. As noted in Section 1.3.6, the minimum mapping unit for delineating jurisdictional waters is small (less than 0.01 acre). The different methodologies used for mapping vegetation communities (i.e., typical minimum mapping unit for uplands approximately 0.1 acre) versus delineating jurisdictional waters are provided for the detailed findings presented below.

### Federal Waters

Within the approximately 0.5-acre survey area that was evaluated for potential jurisdictional waters, the proposed project site and the 100-foot adjoining survey area supports four types of potential federally regulated waters as defined in 33 CFR Part 328.3(b), and the jurisdictional determination guidance documents noted in Section 1.4.6.4.1 above: coastal valley and freshwater marsh, southern arroyo willow riparian forest, southern willow scrub, and disturbed wetland (Figure 9). These features total 0.17 acre (Table 5). The features adjacent to Elfin Forest Road are unobstructed via culverts, which ultimately discharge into Escondido Creek or Misha Creek (creating a significant nexus to the Pacific Ocean through indirect tributary flow).

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## State Waters

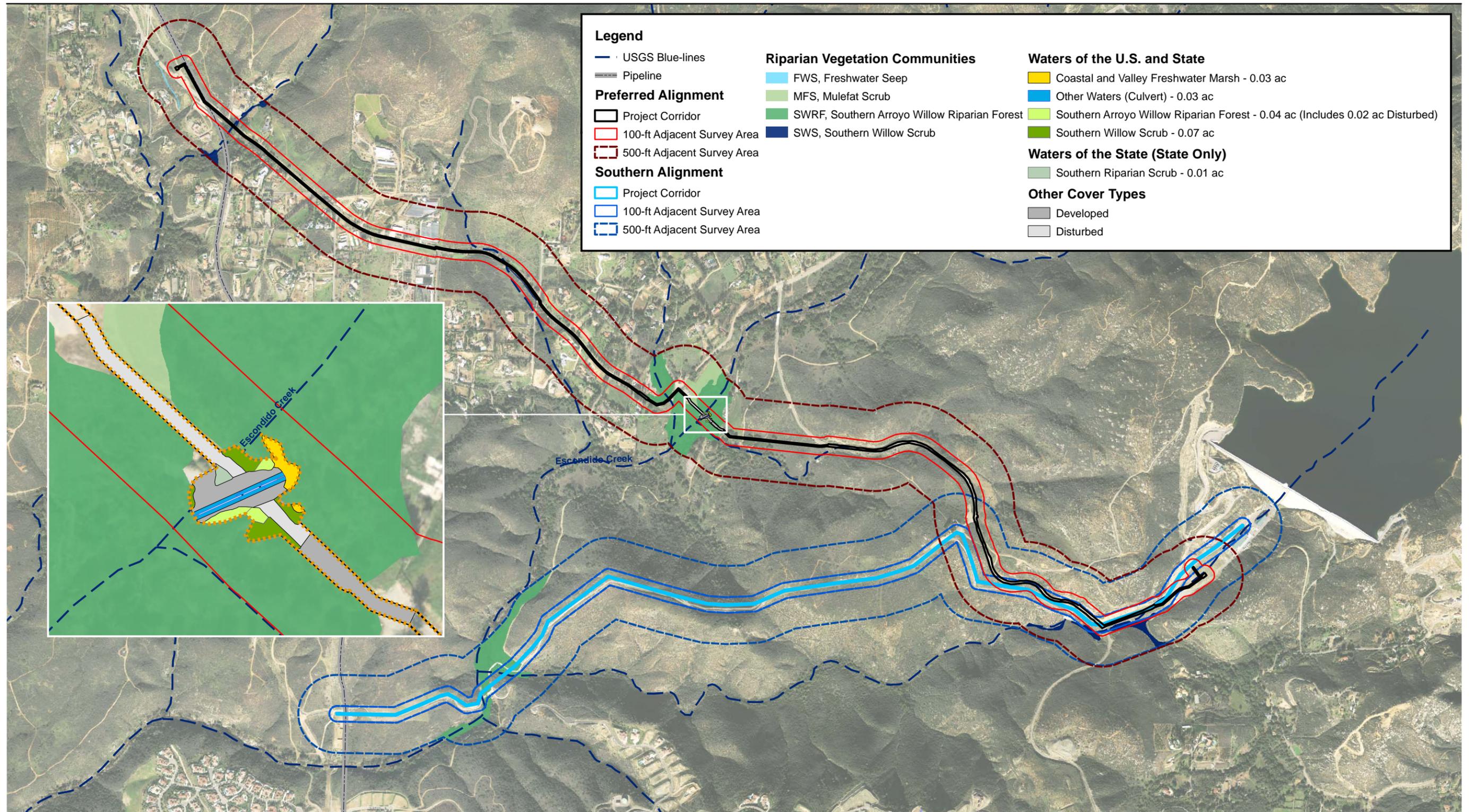
The 0.17 acre of potential federal jurisdictional waters discussed above in the form of the creek channels and riparian extents of Escondido Creek and Misha Creek and a disturbed wetland are also regulated as waters of the state.

In conjunction with adopting a wetlands policy on March 9, 1987, the California Fish and Game Commission assigned CDFG the task of recommending a wetlands definition. CDFG determined the USFWS wetland definition and classification system to be the most biologically valid. Therefore, CDFG essentially relies on the USFWS wetland definition and classification system, which is based on *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). CDFG/USFWS guidance documents and classification manual(s) use the one-parameter method to define and delineate the presence of wetlands. Therefore, CDFG only requires the presence of one parameter (e.g., wetland hydrology, hydric soils, or hydrophytic vegetation) for an area to qualify as a wetland. However, only if the state-defined wetland is directly associated with the defined bed and bank (riparian area) of a riverine or lacustrine ecosystem that would be altered by a proposed project activity would Section 1600 et seq. apply.

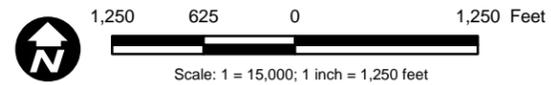
Within the survey area that was evaluated for potential jurisdictional waters, one additional type of water was identified that did not meet criteria to be considered federal jurisdictional waters. The type of water that would be regulated only by the state was identified in the form of southern riparian scrub. This feature totals 0.01 acre (Table 5). The total area of waters of the state that were delineated in the approximately 0.5-acre focused wetland survey area is 0.18 acre (Table 5).

**Table 5**  
**Estimate of Potentially Jurisdictional Waters in Project Area**

| <b>Jurisdictional Waters Type</b>      | <b>Agency Jurisdiction</b> | <b>Total (acres)</b> |
|--|----------------------------|----------------------|
| <b>Riparian and Wetlands</b>           |                            |                      |
| Coastal and Valley Freshwater Marsh    | USACE, RWQCB, CDFG         | 0.03                 |
| Southern Arroyo Willow Riparian Forest | USACE, RWQCB, CDFG         | 0.04                 |
| Southern Willow Scrub                  | USACE, RWQCB, CDFG         | 0.07                 |
| Southern Riparian Scrub                | RWQCB, CDFG                | 0.01                 |
| <b>Other Waters</b>                    |                            |                      |
| Disturbed Wetland                      | USACE, RWQCB, CDFG         | 0.03                 |
| <i>Total</i>                           |                            | <i>0.18</i>          |



Source: DigitalGlobe 2008; Nolte 2009; AECOM 2009; National Hydrology Dataset 2007



**Figure 9**  
**Limits of Potential Jurisdictional Wetlands,  
Riparian Extents and Other Waters**

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#### 1.4.6.5 Habitat Connectivity and Wildlife Corridors

Wildlife movement corridors or linkages are considered sensitive by local, state, and federal resource and conservation agencies because these corridors allow wildlife to move between adjoining open space areas that are becoming increasingly isolated as open space becomes increasingly fragmented from urbanization, rugged terrain, or changes in vegetation (Beier and Loe 1992). Numerous studies have concluded that many wildlife species would not likely persist over time because isolation through fragmentation would prohibit the infusion of new individuals and genetic information (Bennett 1990; Harris and Gallagher 1989; MacArthur and Wilson 1967; Soule 1987). However, corridors mitigate the effects of this fragmentation by (1) allowing wildlife to move between remaining habitats, thereby permitting depleted populations to be replenished and promoting genetic exchange; (2) providing escape routes from fire, predators, and human disturbances, thus reducing the risk of catastrophic events (such as fire or disease) on population or local species extinction; and (3) serving as travel routes for individual animals as they move within their home ranges in search of food, water, mates, and other needs (Farhig and Merriam 1985; Harris and Gallagher 1989; Noss 1983; Simberloff and Cox 1987).

Wildlife movement activities typically fall into one of three movement categories: (1) dispersal (e.g., juvenile animals from natal areas or individuals extending range distributions); (2) seasonal migration; and (3) movements related to home range activities (foraging for food or water; defending territories; searching for mates, breeding areas, or cover). A number of terms have been used in various wildlife movement studies such as “travel route,” “wildlife corridor,” and “wildlife crossing” to refer to areas in which wildlife move from one area to another. To clarify the meaning of these terms and facilitate the discussion on wildlife movement in this analysis, these terms are defined below.

*Travel route* – A landscape feature (such as a ridgeline, drainage, canyon, or riparian strip) within a larger natural habitat area that is used frequently by animals to facilitate movement and provide access to necessary resources (e.g., water, food, cover, or den sites). The travel route is generally preferred because it provides the least amount of topographic resistance in moving from one area to another. It contains adequate food, water, and/or cover while moving between habitat areas, and provides a relatively direct link between target habitat areas.

*Wildlife corridor* – A piece of habitat, usually linear, that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bounded by urban land areas or other areas unsuitable for wildlife. The corridor generally contains suitable cover, food, and/or water to support species and facilitate movement while in

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the corridor. Larger, landscape-level corridors (often referred to as “habitat or landscape linkages”) can provide both transitory and resident habitat for a variety of species.

*Wildlife crossing* – A small, narrow area, relatively short in length and generally constricted that allows wildlife to pass under or through an obstacle or barrier that otherwise hinders or prevents movement. Crossings typically are human-made and include culverts, underpasses, drainage pipes, and tunnels to provide access across or under roads, highways, pipelines, or other physical obstacles. These wildlife crossings are often areas with reduced width along a movement corridor.

Large open space areas that have few or no human-made or naturally occurring physical constraints to wildlife movement may not have wildlife corridors but may be large enough to maintain viable populations of species; provide adequate food, water, and cover; and provide a variety of travel routes (canyons, ridgelines, trails, riverbeds, and others) without the movement of wildlife into other large open space areas. However, once an open space area becomes constrained and/or fragmented as a result of urban encroachment, the remaining linkage area that connects the larger open space areas can act as a corridor as long as it provides adequate space, cover, food, and water, and does not contain obstacles or distractions (e.g., human-made noise, lighting) that would generally hinder wildlife movement.

The proposed project site is located within two designated NCMSCP core planning units: Elfin Forest and Harmony Grove. Although these two core planning units are not connected to other planning units by designated linkages, there is currently habitat connectivity to other NCMSCP core units, linkage units, and units designated as “special,” as well as other planning areas within the MSCP. Currently, habitat connectivity exists between the proposed project site and San Elijo Lagoon, and the San Elijo–Rancho Santa Fe Coastal planning unit to the southwest through San Elijo and Lux canyons. The San Elijo–Rancho Santa Fe Coastal planning unit is designated as “special.” To the southeast, the area surrounding Lake Hodges and the San Bernardo Valley provides connectivity between the proposed project site and many MSCP and NCMSCP planning units and Cleveland National Forest. Planning units connected to the proposed project site through San Bernardo Valley include core planning units San Pasqual Valley, Ramona Grasslands, and Mount Woodson, and linkage planning units Mount Woodson and Ramona/Blue Sky.

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## **1.5 APPLICABLE REGULATIONS**

Several federal, state, and local regulations have been established to protect and conserve biological resources. The descriptions below provide a brief overview of the regulations applicable to the resources that occur within or adjacent to the proposed project site, and their respective requirements. Permits or other authorizations that could be required under these regulations if impacts would occur are noted where applicable. The final determination of whether permits are required is made by the regulating agencies.

### **1.5.1 Federal Regulations and Standards**

#### **1.5.1.1 Federal Endangered Species Act<sup>1</sup>**

Enacted in 1973, the federal ESA provides for the conservation of threatened and endangered species and their ecosystems. The ESA prohibits the “take” of threatened and endangered species except under certain circumstances and only with authorization from USFWS through a permit under Section 4(d), 7, or 10(a) of the ESA. Under the ESA, “take” is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

Formal consultation under Section 7 of the ESA would be required if the proposed project had the potential to affect the federally listed species that have been detected within or adjacent to the proposed project site.

#### **1.5.1.2 Migratory Bird Treaty Act<sup>2</sup>**

Congress passed the MBTA in 1918 to prohibit the kill or transport of native migratory birds, or any part, nest, or egg of any such bird unless allowed by another regulation adopted in accordance with the MBTA. The prohibition applies to birds included in the respective international conventions between the United States and Great Britain, the United States and Mexico, the United States and Japan, and the United States and Russia.

No permit is issued under the MBTA; however, the proposed project would need to comply with the measures that would avoid or minimize effects on migratory birds.

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<sup>1</sup> U.S. Code (USC) Title 16, Chapter 35, Sections 1531–1544.

<sup>2</sup> USC Title 16, Chapter 7, Subchapter II, Sections 703–712.

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### **1.5.1.3 Bald and Golden Eagle Protection Act<sup>3</sup>**

When first enacted in 1940, the BGEPA prohibited the take, transport, or sale of bald eagles, their eggs, or any part of an eagle except where expressly allowed by the Secretary of Interior. The BGEPA was amended in 1962 to extend the prohibitions to the golden eagle.

No permit is issued under the BGEPA; however, the proposed project would need to comply with the measures that would avoid or minimize effects on golden eagles in the project area.

### **1.5.1.4 Federal Water Pollution Control Act (Clean Water Act), 1972<sup>4</sup>**

The Federal Water Pollution Control Act was first passed by Congress in 1948. The act was later amended and became known as the CWA. The CWA establishes the basic structure for regulating discharges of pollutants into waters of the U.S. It gives USEPA the authority to implement pollution control programs, including setting wastewater standards for industry and water quality standards for contaminants in surface waters. The CWA makes it unlawful for any person to discharge any pollutant from a point source into navigable waters without a permit under its provisions. CWA Section 404 permits are issued by USACE for dredge/fill activities within wetlands or nonwetland waters of the U.S. CWA Section 401 certifications are issued by RWQCB for activities requiring a federal permit or license that may result in discharge of pollutants into waters of the U.S.

Any proposed discharge of dredge or fill materials into federal jurisdictional waters within or adjacent to the proposed project site would require a Section 404 permit from USACE and a Section 401 Water Quality Certification from RWQCB.

## **1.5.2 State Regulations and Standards**

### **1.5.2.1 California Environmental Quality Act<sup>5</sup>**

CEQA requires that biological resources be considered when assessing the environmental impacts resulting from proposed actions. CEQA does not specifically define what constitutes an “adverse effect” on a biological resource. Instead, lead agencies are charged with determining what specifically should be considered an impact.

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<sup>3</sup> USC Title 16, Chapter 5A, Subchapter II, Sections 668 a–d.

<sup>4</sup> USC Title 33, Ch. 26, Sub-Ch. I–VI.

<sup>5</sup> Public Resources Code (PRC) § 21000 et seq. and the State CEQA Guidelines, California Code of Regulations (CCR), §15000 et seq.

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An environmental document would be prepared for the proposed project in accordance with CEQA. The effects of the project on biological resources would be evaluated therein, in accordance with County guidelines.

### **1.5.2.2 California Fish and Game Code**

The CFGC regulates the taking or possession of birds, mammals, fish, amphibians, and reptiles, as well as natural resources such as wetlands and waters of the state. It includes CESA (Sections 2050–2115) and a Streambed Alteration Agreement regulations (Sections 1600–1616), as well as provisions for legal hunting and fishing, and tribal agreements for activities involving take of native wildlife.

Any proposed impact to state-listed species within or adjacent to the proposed project site would require a permit under CESA. As noted in Section 1.4.6.4.3 for state waters, if an alteration is proposed to a state-defined wetland with a defined bed and bank, then Sections 1600–1616 of the CFGC would apply and a Streambed Alteration Agreement from CDFG would be required.

### **1.5.2.3 California Endangered Species Act<sup>6</sup>**

CESA generally parallels the main provisions of the federal ESA and is administered by CDFG. CESA prohibits take of any species that the California Fish and Game Commission determines to be a threatened or endangered species. CESA allows for take incidental to otherwise lawful development projects upon approval from CDFG. Under the CFGC, “take” is defined as to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.

Any proposed impact to state-listed species within or adjacent to the proposed project site would require a permit under CESA.

### **1.5.2.4 Porter-Cologne Water Quality Control Act<sup>7</sup>**

Porter-Cologne provides for statewide coordination of water quality regulations. The act established the California State Water Resources Control Board as the statewide authority and nine separate RWQCBs to oversee water quality on a day-to-day basis at the regional/local level.

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<sup>6</sup> California Fish and Game Code, Division 3, Chapter 1.5, Sections 2050–2115.

<sup>7</sup> California Water Code, Division 7, Sections 13000–14958.

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Proposed discharges of waste that would affect state waters (that are not federal waters) within or adjacent to the proposed project site would require a Report of Waste Discharge from the RWQCB.

#### **1.5.2.5 Natural Community Conservation Planning (NCCP) Act of 1991<sup>8</sup>**

The NCCP Act is designed to conserve natural communities at the ecosystem scale while accommodating compatible land use. CDFG is the principal state agency implementing the NCCP Act program. Conservation plans developed in accordance with the act (i.e., NCCP plans) provide for comprehensive management and conservation of multiple wildlife species and identify and provide for the regional or areawide protection and perpetuation of natural wildlife diversity while allowing compatible and appropriate development and growth.

Project-specific permits under the NCCP are not issued; however, proposed County-authorized projects must comply with the state's NCCP Act program.

### **1.5.3 Local Regulations and Standards**

#### **1.5.3.1 San Diego County General Plan – Open Space Element (Part I), Conservation Element (Part X), and Community and Subregional Plans**

The Open Space Element and the Conservation Element of the San Diego County General Plan provide guiding principles for the conservation of biological resources. The Open Space Element outlines the goals and policies pertaining to each type of open space, not all of which are for the preservation of biological resources. The Conservation Element, specifically Chapters 3 and 4, addresses County policies relating to water, vegetation, and wildlife habitat. Appendix K of the Conservation Element outlines the County's Resource Conservation Areas (RCAs), which are further described and delineated in each of the Community and Subregional Plans. Each RCA has been designated as such for a purpose specific to that area. When a site is located within a mapped RCA, the project must comply with the relevant policies for that RCA (i.e., avoidance of oaks).

No permit is issued under these elements of the County's General Plan. Furthermore, the District, as a Special District of the State, is not bound by County land use or zoning regulations.

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<sup>8</sup> Section 2800 et seq. of the California Fish and Game Code, as amended January 1, 2003 (Chapter 4, sections 1 and 2 of California statutes 2002).

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### **1.5.3.2 County of San Diego Zoning Ordinance**

Land may also have a zoning designation or Special Area Regulation with certain restrictions pursuant to the County of San Diego Zoning Ordinance (Zoning Ordinance). For instance, lands may have a zoning designation of S81 Ecological Resource Area Regulations. The few uses allowed on lands with this designation are subject to strict provisions and limitations. The Zoning Ordinance also applies to other Special Area Regulations with specific restrictions and provisions, including designator G (Sensitive Resource), R (Coastal Resource Protection Area), and V (Vernal Pool Area).

No permit is issued under this Zoning Ordinance. Furthermore, the District, as a Special District of the State, is not bound by County land use or zoning regulations.

### **1.5.3.3 Multiple Species Conservation Program and Biological Mitigation Ordinance<sup>9</sup>**

The MSCP is a long-term regional conservation plan designed to establish a connected preserve system that protects the County's sensitive species and habitats. The MSCP covers 582,243 acres over 12 jurisdictions. Each jurisdiction will have its own subarea plan to be implemented separately. The subarea plan for the southwestern portion of unincorporated lands within the County's jurisdiction covers 252,132 acres. The County's MSCP Subarea Plan is regulated by the BMO, which outlines the specific criteria and requirements for projects within MSCP boundaries. The County's MSCP Subarea Plan (adopted October 1997), the BMO (adopted March 1998), the Final MSCP Plan (dated August 1998), and the Implementation Agreement (signed March 1998) between the County and the wildlife agencies are the documents used to implement the MSCP. The County's MSCP Subarea Plan and BMO provide specific criteria for project design, impact allowances, and mitigation requirements. The criteria contained within the BMO do not replace those required by the MSCP. All projects within the MSCP boundaries must conform to both the MSCP requirements and the County's policies under CEQA.

The proposed project site is within the boundaries of the County's Draft NCMSCP, a subarea plan that is not yet approved. When the Final NCMSCP and associated BMO are approved, an Implementation Agreement between the County and wildlife agencies, specific to this area of unincorporated lands within the County's jurisdiction, will be signed. Because these documents are not finalized, however, projects must continue to meet the conditions of the County's Resource Protection Ordinance (RPO), as described below.

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<sup>9</sup> County of San Diego, Multiple Species Conservation Program (MSCP), County of San Diego Subarea Plan, 1997 and County of San Diego, Biological Mitigation Ordinance, (Ord. Nos. 8845, 9246) 1998 (new series).

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### **1.5.3.5 Habitat Loss Permit Ordinance**

The Habitat Loss Permit (HLP) Ordinance was adopted by the County in March 1994 in response to both the listing of CAGN as a federally threatened species, and the adoption of the NCCP by the State of California. Pursuant to the Special 4(d) Rule under the federal ESA, the County is authorized to issue “take permits” for CAGN (in the form of HLPs) in lieu of Section 7 or 10(a) permits typically required from USFWS. Although issued by the County, the wildlife agencies must concur with the issuance of an HLP for it to become valid as take authorization under the federal ESA.

The HLP Ordinance states that projects must obtain an HLP prior to the issuance of a grading permit, clearing permit, or improvement plan if the project will directly or indirectly impact any of several coastal sage scrub habitat types. The HLP Ordinance requires an HLP if coastal sage scrub will be impacted, regardless of whether the site is currently occupied by CAGN. HLPs are not required for projects within the boundaries of the MSCP, since take authorization is conveyed to those projects through compliance with the MSCP. HLPs are also not required for projects that have separately obtained Section 7 or 10(a) permits for take of CAGN. For more explicit information on these requirements, refer to the HLP Ordinance.

Until the Final NCMSCP and associated BMO are approved, and an Implementation Agreement between the County and wildlife agencies is signed, the proposed project will need to prepare appropriate NCCP 4(d) findings. An HLP will need to be obtained prior to issuance of any permit that would allow the clearing or grading of the areas of Diegan coastal sage scrub habitat that occur within the site.

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## CHAPTER 2 PROJECT EFFECTS

### 2.1 APPROACH TO IMPACT ANALYSIS

The proposed project would result in both direct and indirect impacts to biological resources (Figures 5a, 5b, 6, 8, and 9). Direct and indirect impacts are defined below.

Direct: Any alteration, disturbance, or destruction of biological resources that would result from project-related activities is considered a direct impact. Examples include clearing vegetation, encroaching into wetlands, diverting surface water flows, and the loss of individual species and/or their habitats.

Indirect: As a result of project-related activities, biological resources may also be affected in a manner that is not direct. Examples include elevated noise and dust levels, soil compaction, increased human activity, decreased water quality, and the introduction of invasive wildlife (domestic cats and dogs) and plants.

Permanent:

Direct and indirect impacts can also be described as permanent or temporary. Permanent direct impacts to biological resources would result from a permanent loss of resources where an area is converted to another condition (e.g., developed, ornamental landscaping, agriculture). Permanent indirect impacts would result from a condition that would persist within a project site, thereby permanently affecting neighboring biological resources (e.g., edge effects or operational noise).

Temporary: Direct impacts may be considered temporary when an area could be restored to its pre-impact condition, thus providing habitat and wildlife functions and values effectively equal to the functions and values that existed before an area was impacted.

Significant biological impacts include the following:

- All impacts to federally or state-listed species or sensitive habitats.
- Impacts to high-quality or undisturbed biological communities and vegetation associations that are restricted on a regional basis or serve as wildlife corridors.
- Impacts to habitats that serve as breeding, foraging, nesting, or migrating grounds that are limited in availability or serve as core habitats for regional plant and wildlife populations.

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Adverse but not significant impacts would include the following:

- Impacts that adversely affect biological resources but would not significantly change or stress the resources on a long-term basis.
- Impacts to biological resources that are already disturbed or lack importance in the preservation of local or regional native biological diversity and productivity.

## **2.2 OVERVIEW OF POTENTIAL IMPACTS**

The removal of native or naturalized habitat through project-related grading and development activities would directly affect habitats and associated plant and animal species that occur therein, including sensitive species, and foraging, breeding, and movement habitat for local wildlife.

### **2.2.1 Potential Impacts to Upland Vegetation Communities**

Table 6 provides a summary of the area of potential direct permanent and impacts that would occur to upland vegetation communities and other cover types from development of either of the two alternative alignments. These potential direct impacts and other potential indirect temporary impacts that could occur to vegetation communities and other cover types that exist within the project survey area are summarized below and analyzed further in Chapter 3.

The construction of a 48-inch-diameter raw water pipeline within the proposed preferred alignment would directly affect 9.33 acres, of which the effects to 0.46 acre of Diegan coastal sage scrub and 0.04 acre of nonnative grassland would warrant mitigation. Of these total impacts to the proposed preferred alignment, up to 0.21 acre of Diegan coastal sage scrub would be permanently impacted by the construction of an access road to a flow control facility within the Sage Hill Preserve at the Second San Diego Aqueduct if this site is selected for the flow control facility over the water treatment plant location. The remaining 0.25 acre of Diegan coastal sage scrub associated with the preferred alignment would be temporary impacts because these areas can be restored after project implementation. The construction of a 48-inch-diameter raw water pipeline within the proposed southern alignment would directly affect 7.41 acres, of which the combined effects to 3.64 acres of Diegan coastal sage scrub, 0.32 acre of sage scrub-chaparral transition, and 0.50 acre of southern mixed chaparral would warrant mitigation (Table 6). The entirety of the southern alignment would be temporary impacts.

**Table 6  
Direct Impacts to Vegetation Communities and Cover Types**

| Vegetation Communities and Cover Types    | MSCP Tier Level <sup>1</sup> | Preferred Alignment             |   | Southern Alignment              |   |
|---|------------------------------|---------------------------------|---|---------------------------------|---|
|   |                              | Existing Acres within Footprint | Proposed Footprint Impacts <sup>2</sup> | Existing Acres within Footprint | Proposed Footprint Impacts <sup>2</sup> |
| <b><i>Riparian and Wetlands</i></b>       |                              |                                 |   |                                 |   |
| Freshwater Seep                           | I                            | ---                             | ---                                     | ---                             | ---                                     |
| Mulefat Scrub                             | I                            | ---                             | ---                                     | ---                             | ---                                     |
| Southern Arroyo Willow Riparian Forest    | I                            | 0.05                            | ---                                     | 0.19                            | ---                                     |
| Southern Willow Scrub                     | I                            | ---                             | ---                                     | ---                             | ---                                     |
| <i>Total Area Riparian and Wetlands =</i> |                              | <i>0.05</i>                     | <i>---</i>                              | <i>0.19</i>                     | <i>---</i>                              |
| <b><i>Uplands</i></b>                     |                              |                                 |   |                                 |   |
| Coast Live Oak Woodland                   | I                            | ---                             | ---                                     | ---                             | ---                                     |
| Diegan Coastal Sage Scrub                 | II                           | 0.46                            | 0.46 <sup>5</sup>                       | 3.64                            | 3.64                                    |
| Sage Scrub-Chaparral Transition           | II                           | ---                             | ---                                     | 0.32                            | 0.32                                    |
| Eucalyptus Woodland                       | IV                           | ---                             | ---                                     | ---                             | ---                                     |
| Non Native Grassland                      | III                          | 0.04                            | 0.04                                    | ---                             | ---                                     |
| Valley Needlegrass Grassland              | I                            | ---                             | ---                                     | ---                             | ---                                     |
| Southern Mixed Chaparral                  | III                          | ---                             | ---                                     | 0.50                            | 0.50                                    |
| Ornamental Plantings                      | IV                           | 0.17                            | 0.17                                    | ---                             | ---                                     |
| <i>Total Area Uplands =</i>               |                              | <i>0.67</i>                     | <i>0.67</i>                             | <i>4.46</i>                     | <i>4.46</i>                             |
| <b><i>Other Cover Types</i></b>           |                              |                                 |   |                                 |   |
| Disturbed                                 | n.a.                         | 0.28                            | 0.28                                    | 0.72                            | 0.72                                    |
| Developed                                 | n.a.                         | 8.37                            | 8.37                                    | 2.23                            | 2.23                                    |
| <i>Total Area Other Cover Types =</i>     |                              | <i>8.66</i>                     | <i>8.66</i>                             | <i>2.94</i>                     | <i>2.94</i>                             |
| <b>Total:</b>                             |                              | <b>9.38</b>                     | <b>9.33</b>                             | <b>7.60</b>                     | <b>7.41</b>                             |

<sup>1</sup> County of San Diego and TAIC (2008); see the MSCP BMO for a description of the Tier levels

<sup>2</sup> All impacts herein are considered temporary except for the 0.46 acre in Diegan coastal sage scrub of the preferred alignment.

<sup>3</sup> Although the 0.05-acre of southern arroyo willow riparian forest coincides with the preferred alignment, directional drilling will allow for avoidance of impacts to this vegetation community

<sup>4</sup> Although the 0.19-acre of southern arroyo willow riparian forest coincides with the southern alignment, directional drilling will allow for avoidance of impacts to this vegetation community

<sup>5</sup> Approximately 0.21 acre of Diegan coastal sage scrub will be permanently impacted within the preferred alignment at the Sage Hill Preserve if the access road to the flow control facility is located at the Second San Diego Aqueduct and not the DCMWTP.

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Existing habitats within the adjoining 100-foot and 500-foot survey areas surrounding either alignment may be indirectly impacted by project construction. Indirect effects could include temporary construction-generated noise, dust, and siltation, and the more permanent operational indirect effects of increased human activities throughout the site, noise, facility nighttime lighting, and the potential for exotic species intrusions. Thus, construction and long-term operation have the potential to indirectly impact approximately 78.72 acres of vegetation communities and cover types within the adjacent 100-foot survey area surrounding the proposed preferred alignment, 326.25 acres of vegetation communities and cover types within the 500-foot survey area surrounding the preferred alignment, 56.28 acres of vegetation communities and cover types within the adjacent 100-foot survey area surrounding the southern alignment, and 266.53 acres of vegetation communities and cover types within the adjacent 500-foot buffer surrounding the southern alignment (Table 3). Within the 100-foot and 500-foot survey areas, indirect temporary impacts to mulefat scrub, southern arroyo willow scrub, southern willow scrub, dense coast live oak woodland, Diegan coastal sage scrub, coastal sage-chaparral transition, nonnative grassland, and southern mixed chaparral may be considered significant. Construction best management practices (BMPs) (i.e., use of temporary fencing) and project design features (i.e., permanent fencing) that would avoid or minimize these potential indirect impacts are presented in the analyses in Chapter 3.

### **2.2.2 Potential Impacts to Jurisdictional Wetlands and Waters**

Project design requires tunneling under all creeks and culverts that coincide with the project corridor. Therefore, no trenching across federal or state regulated waters would occur from project construction. By tunneling under all creeks and culverts that coincide with the project corridor, pipeline construction would avoid all direct impacts to regulated waters (i.e., the jurisdictional waters summarized in Table 3 for the preferred alignment's crossing at Escondido Creek and all other crossing of regulated waters).

Within the 100-foot and 500-foot survey areas, indirect impacts to jurisdictional waters have the potential to be considered significant. However, construction BMPs and project design features as presented in the analyses in Chapter 3 would avoid or minimize these potential indirect impacts.

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## **CHAPTER 3**

### **SPECIAL-STATUS SPECIES**

#### **3.1 GUIDELINES FOR DETERMINATION OF SIGNIFICANCE**

Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by USFWS or CDFG?

Guidelines for the determination of significance:

- A. The project would impact one or more individuals of a species listed as federally or state endangered or threatened.
- B. The project would impact the survival of a local population of any County Group A or B plant species, or a County Group 1 animal species, or a species listed as a state SSC.
- C. The project would impact the regional long-term survival of a County Group C or D plant species, or a County Group 2 animal species.
- D. The project could impact arroyo toad aestivation or breeding habitat.
- E. The project would impact golden eagle habitat.
- F. The project would result in a loss of functional foraging habitat for raptors.
- G. The project would increase noise and/or nighttime lighting to a level above ambient proven to adversely affect sensitive species.
- H. The project would impact the viability of a core wildlife area, defined as a large block of habitat (typically 500 acres or more not limited to project boundaries, though smaller areas with particularly vulnerable resources may also be considered a core wildlife area), that supports a viable population of a sensitive wildlife species or an area that supports multiple wildlife species.

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- I. The project would increase human access or predation or competition from domestic animals, pests, or exotic species to levels that would adversely affect sensitive species.
  - J. The project would impact nesting success of sensitive animals (as listed in the Guidelines for Determining Significance) through grading, clearing, fire fuel modification, and/or noise-generating activities such as construction.

## **3.2 ANALYSIS OF PROJECT EFFECTS**

### **3.2.1 Project Effects Relevant to Guideline 3.1.A**

The federally listed threatened and CDFG SSC CAGN was detected within the buffer and directly adjacent to the proposed preferred alignment. Impacts to this species in the form of permanent removal of 0.21 acre and temporary removal of 0.25 acre of Diegan coastal sage scrub would occur.

The state and federally endangered LBV and the federally endangered SWFL were detected within the proposed project site for the preferred alignment. The District intends to avoid any direct impacts to suitable habitat for the LBV and SWFL; however, indirect impacts could occur due to construction activity and noise in close proximity to suitable habitat. LBV and SWFL surveys are ongoing and population size will be determined after the completion of 2010 focused surveys.

For the southern alignment, CAGN is assumed to occupy all areas of suitable habitat based on findings from previous protocol-level surveys for this corridor. Impacts to this species in the form of temporary removal of 3.64 acres of Diegan coastal sage scrub would occur.

For both alignments, temporary indirect impacts to habitat for CAGN would occur as a result of construction-related noise and fugitive dust; however, construction BMPs (see general mitigation measures summarized in Section 3.4) would provide that this effect is avoided or minimized to a level of insignificance.

### **3.2.2 Project Effects Relevant to Guideline 3.1.B**

The development of either project alignment would not impact the survival of a local population of any County Group A or B plant species, or a County Group 1 animal species, or a species listed as a state SSC. Indirect impacts to sensitive plant species are assessed for the 100-foot

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survey area adjoining both alignments. Indirect impacts to sensitive wildlife species, especially those that may be adversely affected by noise impacts (e.g., avifauna), are assessed for the 500-foot survey area adjoining both alignments.

As summarized in Section 1.4.6.2.1, one County Group A plant species, summer holly, was detected within both the preferred and southern alignments. However, the one mapped occurrence of summer holly occurs outside of the project corridor within the 100-foot adjoining survey area. Species located within the 100-foot buffer are not expected to be affected by the proposed project because all direct impacts will stay within the project corridor. Any indirect impacts will be insignificant and temporary. Thus, no impacts to the survival of a local population of summer holly are anticipated.

Two County Group B plant species were detected within the preferred alignment: wart-stemmed ceanothus and San Diego marsh elder. San Diego marsh elder was observed within southern willow scrub adjacent to Elfin Forest Road. Because impacts to potentially jurisdictional riparian habitat will be avoided, and because this single occurrence is located outside of the direct impact area within the 100-foot buffer, no impacts to the survival of a local population of San Diego marsh elder are anticipated. Wart-stemmed ceanothus was found to occur abundantly throughout the chaparral within the project survey area. None of the occurrences were found within the direct impact area. Although individuals of this species would be impacted, these adverse effects are not anticipated to jeopardize the survival of a local population of wart-stemmed ceanothus. One County Group B plant species was detected within the southern alignment: California adolphia. California adolphia was observed within sage scrub–chaparral transition throughout the alignment, where it was one of the dominant shrubs. Thus, no impacts to the survival of a local population of California adolphia are anticipated. One County Group A species has a high potential to occur within the project site: San Diego goldenstar. However, all suitable habitat for San Diego goldenstar is located outside of the direct impact area within the 100-foot buffer. Thus, no impacts to the survival of a local population of San Diego goldenstar are anticipated.

Five County Group A species have a moderate potential to occur within the project site: thread-leaved brodiaea, Orcutt's brodiaea, delicate clarkia, variegated dudleya, and Robinson's peppergrass. However, all suitable habitat for these five species is located outside of the direct impact area within the 100-foot buffer. Thus, no impacts to the survival of a local population of thread-leaved brodiaea, Orcutt's brodiaea, delicate clarkia, variegated dudleya, and Robinson's peppergrass are anticipated.

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One County Group B species has a moderate potential to occur within the project site: chaparral ragwort. However, all suitable habitat for San Diego chaparral ragwort is located outside of the direct impact area within the 100-foot buffer associated with each alignment. Thus, no impacts to the survival of a local population of chaparral ragwort are anticipated.

Eight County Group 1 wildlife species were observed within the preferred alignment during surveys: CAGN, LBV, southern California rufous-crowned sparrow, Bell's sage sparrow, Cooper's hawk, northern harrier, SWFL, and white-tailed kite. Suitable nesting habitat for CAGN (discussed above in Section 3.2.1), southern California rufous-crowned sparrow, and Bell's sage sparrow is present within the proposed project site. Impacts to Diegan coastal sage scrub will directly impact CAGN. Impacts to Diegan coastal sage scrub and southern mixed chaparral will directly impact southern California rufous-crowned sparrow and Bell's sage sparrow. While a northern harrier was observed, it was likely foraging within the proposed project site, but not nesting. Nesting habitat for the white-tailed kite and Cooper's hawk includes coast live oak woodland, eucalyptus woodland, and southern arroyo willow riparian forest.

Five County Group 1 wildlife species have a moderate potential to occur within the project site: southwestern pond turtle, two-striped gartersnake, coastal cactus wren, golden eagle, and Stephens' kangaroo rat. Habitat for southwestern pond turtle and two-striped gartersnake includes the aquatic habitats and adjacent upland habitats associated with the mulefat scrub, southern arroyo willow riparian forest, and southern willow scrub. Nesting habitat for the golden eagle is not likely with the proposed project site. Habitat for the coastal cactus wren occurs in several *Opuntia* stands associated with the Diegan coastal sage scrub. There are some small areas that have suitable habitat for Stephens' kangaroo rat, which include any open/disturbed areas such as dirt roads and paths, mainly within Diegan coastal sage scrub, but also in disturbed habitat and nonnative grassland areas.

One County Group 1 wildlife species has a low potential to occur within the proposed project site: burrowing owl. It is unlikely that this species is present due to the large trees associated with the habitat suitable for burrowing owls (open areas). The large trees provide suitable nesting habitat for raptorial bird species that prey on burrowing owls. It is unlikely that burrowing owls nesting adjacent to large groves of trees would persist.

The impacts to the habitat types suitable for the wildlife species described above are minimal and therefore would not impact the long-term survival of the local populations of these species.

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### **3.2.3 Project Effects Relevant to Guideline 3.1.C**

The project would not impact the regional long-term survival of a County Group C or D plant species, or a County Group 2 animal species.

Two County Group D plant species are known to occur within the proposed project survey area: San Diego sagewort and southwestern spiny rush. Because impacts to potentially jurisdictional riparian habitat will be avoided, and because the populations of San Diego sagewort are located outside of the direct impact area within the 500-foot buffer, no impacts to the survival of a local population of San Diego sagewort or southwestern spiny rush are anticipated.

One County Group D plant species occurs within the project site: southwestern spiny rush. Because impacts to potentially jurisdictional riparian habitat will be avoided, and because the populations of southwestern spiny rush are located outside of the direct impact area within the 500-foot buffer, no impacts to the survival of a local population of southwestern spiny rush are anticipated.

Four County Group 2 wildlife species were observed: Belding's orange throated whiptail, yellow warbler, coastal western whiptail and southern mule deer.

Seventeen additional County Group 2 wildlife species have the potential to occur within the proposed project site. These are the monarch butterfly, western spadefoot, Coronado skink, San Diego horned lizard, rosy boa, San Diego ringneck snake, coast patch-nosed snake, south coast garter snake, northern red-diamond rattlesnake, California horned lark, pallid bat, big free-tailed bat, Yuma myotis, western red bat, hoary bat, western yellow bat, and pocketed free-tailed bat.

### **3.2.4 Project Effects Relevant to Guideline 3.1.D**

The proposed project site does not currently contain habitat that supports arroyo toad.

### **3.2.5 Project Effects Relevant to Guideline 3.1.E**

The proposed project site does not currently contain nesting habitat for golden eagle. While suitable foraging habitat does exist for this species, the stands of trees present are likely not tall enough or thick enough to provide suitable nesting habitat.

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### **3.2.6 Project Effects Relevant to Guideline 3.1.F**

The functioning foraging habitat for raptors within the project survey area include the areas of nonnative grassland, valley needlegrass grassland, and disturbed habitat, as summarized in Table 3. For the preferred alignment, approximately 0.32 acre of foraging habitat would be temporarily directly impacted within the project corridor and an additional 24.6 acres may be indirectly impacted in 100 and 500-foot buffer areas. For the southern alignment, approximately 0.72 acre of foraging habitat would be temporarily directly impacted in the project corridor and an additional 17.09 acres may be indirectly impacted in the 100 and 500-foot buffer areas. The direct impacts will be restored in-place. In addition, direct impacts to Tier I, II, and III vegetation communities will be permanently mitigated at a 1:1 ratio through off-site habitat acquisition or preservation in order to provide the District with the latitude in the future for impacts within the right-of-way without future mitigation requirements. Land will be acquired or preserved within existing land banks or within other properties identified by the MSCP, Multiple Habitat Conservation Program (MHCP), or other conservation programs recognized by the NCCP. Direct and indirect impacts to functional foraging habitat are considered insignificant given the temporary nature of the impacts, and the total amount of impacts (0.32 acre for the preferred alignment or 0.72 acre for the southern alignment) in contrast to the abundance of intact foraging habitat available adjacent the project site.

### **3.2.7 Project Effects Relevant to Guideline 3.1.G**

No nighttime lighting is intended as part of the project design. Noise levels will increase only during the construction phase of the project. Construction will occur outside of the bird nesting season to avoid impacting nesting success of sensitive bird species or a nesting bird survey will be completed and active nests will be avoided until the young have fledged.

### **3.2.8 Project Effects Relevant to Guideline 3.1.H**

For the preferred alignment, the total direct impact to habitat that is not developed or disturbed is 0.67 acre. For the southern alignment, the total direct impact to habitat that is not developed or disturbed is 4.47 acres (Table 3). This minor impact area will not affect the viability of a core wildlife area. Also, no areas of particularly vulnerable resources were observed within the proposed project site.

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### **3.2.9 Project Effects Relevant to Guideline 3.1.I**

Project construction activities will be kept as clean of debris as possible and would not result in a significant increase of pests or exotic species beyond those already occurring in the area. Furthermore, project activities will not require the clearing of existing vegetation; thus, areas where nonnative weed species could establish postconstruction will not be created.

### **3.2.10 Project Effects Relevant to Guideline 3.1.J**

Several sensitive bird species were observed or have the potential to occur within the proposed project site. Construction will occur outside of the bird nesting season to avoid impacting nesting success of sensitive bird species or a nesting bird survey will be completed and active nests will be avoided until the young have fledged.

## **3.3 CUMULATIVE IMPACT ANALYSIS**

Cumulative impacts refer to incremental, individual environmental effects of two or more projects when considered together. Impacts may be minor when addressed individually but may collectively be considered significant as they occur over a period of time. When assessing cumulative impacts to biological resources, the geographic area included in the area of analysis should consider (1) biological conditions comparable to those occurring on the proposed project site or within the same watershed, (2) distribution and home ranges of sensitive species populations similar to those known for the proposed project site, and (3) habitat use patterns of wildlife species similar to those on the proposed project site.

Cumulative impacts are assessed in this document; they are discussed thoroughly in the project's Environmental Impact Report (EIR).

## **3.4 MITIGATION MEASURES AND DESIGN CONSIDERATIONS**

Project design considerations and mitigation measures will be implemented into the project to avoid, minimize, and mitigate for unavoidable impacts to meet RPO and County guidelines. These measures correspond to impacts identified in Section 3.2 and are described in the following text.

The following design considerations will be implemented to avoid or minimize potential impacts to sensitive biological resources:

- 
- D-1 The District will retain a project biologist to review grading plans, oversee all aspects of construction monitoring that pertain to biological resource protection, and ensure compliance with both the general and specific mitigation measures for the Olivenhain Unit AA Raw Water Pipeline Project.
- D-2 All sensitive habitat areas or occurrences of sensitive species to be avoided will be clearly marked on project maps. These areas will be designated as “no construction” or “limited construction” zones. These areas will be flagged by the project biologist and reviewed with the project engineer prior to the onset of construction activities. In some cases, resources will need to be fenced or otherwise protected from direct and indirect impacts.
- D-3 Construction will occur during the dry season, where feasible; if construction occurs during the wet season, appropriate construction BMPs will be implemented, including silt fences, sandbags, and detention basins.
- D-4 A contractor education program will be implemented to ensure that contractors and all construction personnel are fully informed of the biological sensitivities associated with the project.
- D-5 Fueling areas will be designated on construction maps and will be situated a minimum of 50 feet from all drainages.
- D-6 To the extent possible, construction through or adjacent to sensitive areas will be appropriately scheduled to minimize potential impacts to biological resources. Construction adjacent to drainages will occur during periods of minimum flow (i.e., summer through the first significant rain of fall) to avoid excessive sedimentation and erosion, and to avoid impacts to drainage-dependent species. Construction near riparian or other wetland areas will also be scheduled to avoid potential impacts to sensitive riparian bird species.
- D-7 Setback limitations from all habitat, trees, and sensitive plant locations meant to be preserved will be established by a qualified biologist prior to construction. Construction corridor widths will be minimized to the extent feasible in sensitive areas (e.g., oak woodlands, coastal sage scrub, and wetlands).

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D-8 Pipeline installation, as proposed, requires no trenching across watercourses. Instead, by tunneling under creeks and culverts, pipeline construction will avoid impacts to jurisdictional waters as defined by USACE, CDFG, and the County.

D-9 The project design will incorporate features to minimize noise generated from construction activities:

- Noise analyses will be performed during construction activities adjacent to sensitive habitats or potential active nests. If necessary, temporary noise attenuation barriers will be erected to reduce construction-related noise to below 60 dBA (A-weighted decibels) hourly  $L_{eq}$ .
- Heavy equipment will be repaired as far as practical from habitats where nesting birds may be present.
- Construction equipment, including generators and compressors, will be equipped with manufacturers' standard noise-control devices or better (e.g., mufflers, acoustical lagging, and/or engine enclosures).
- The construction contractor will maintain all construction vehicles and equipment in proper operating condition and provide mufflers on all equipment.

D-10 The project design will incorporate features to minimize the potential for pests and exotic species establishment that could occur from human or vehicle egress by installing fencing between the proposed project site and adjacent open space areas to restrict encroachment into biologically sensitive areas.

D-11 Several general construction BMPs will be implemented to avoid and minimize impacts to natural communities of special concern, special-status plants, and special-status animals:

1. Construction Limits – The contractor(s) will be informed, prior to the bidding process, about the biological constraints of this project. The construction limits will be clearly marked on project maps provided to the contractor(s) and areas outside of the construction limits will be designated as “no construction” zones.
2. Equipment Staging/Storage/Fueling Restrictions – No equipment staging or refueling areas will be located at the construction site outside of designated

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staging areas. Moreover, staging/storage areas for construction equipment and materials will be located away from sensitive biological resources that are not approved for project impact, and no equipment maintenance will be performed near drainages to minimize the potential for pollution runoff.

3. Soil Stockpiles – Soils from construction grading will be stockpiled either on portions of the proposed project site where direct impacts are approved, or at an off-site location approved by the County and the resource agencies. Stockpiled soils must be located and piled in a manner that will avoid potential erosion and sedimentation into downstream drainages, swales, or vernal pool habitat.
4. Construction Debris – Project construction areas will be kept as clean of debris as possible to avoid attracting predators of native wildlife. Spoils, trash, or any debris will be removed off-site to an approved disposal facility.
5. Fugitive Dust – Construction-related fugitive dust will be minimized by incorporating appropriate, reasonably available control measures to minimize fugitive dust emissions, as outlined in an approved dust-control plan specific to the proposed construction activities. The dust-control plan will consider and/or incorporate the application of water, use of wind screens, and other applicable methods appropriate to the site, and in consideration of the sensitive biological resources that exist adjacent to and downstream of the site.

Mitigation to compensate for unavoidable significant impacts will include the following measures:

- M-B1-1 To provide the District with the latitude in the future for impacts within the right-of-way without future mitigation requirements, all temporary impacts will be mitigated as though they were permanent impacts consistent with applicable mitigation ratios. Where project impacts occur outside approved MSCP Plan areas, mitigation ratios will be consistent with ratios presented in the County Guidelines. Where project impacts occur within the South County MSCP Plan area, mitigation ratios will be consistent with the MSCP BMO Mitigation requirements. The 0.21 acre of Diegan coastal sage scrub that would be permanently impacted within the preferred alignment at the Sage Hill Preserve if the access road for the flow control facility is located at the Second San Diego Aqueduct will be mitigated per the County guidelines. Mitigation will include a 1:1 revegetation on-site according to the County

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guidelines and the MSCP BMO. The remainder of the required mitigation will be accomplished through off-site habitat acquisition or preservation.

M-B1-2 If construction is to occur during the nesting season, a nesting bird survey will be completed no more than 30 days prior to construction by a qualified biologist. If nests are observed that could be disturbed by construction activities, these nests and a 500-foot buffer surrounding the nests will be avoided until the young have fledged. A biological monitor will be present if construction does occur during the nesting season to ensure that nesting birds are not disturbed by the construction activities and may increase the buffer distance if necessary to reduce impacts and prevent take.

M-B1-3 Construction activities will take place during daylight hours to prevent impacts to wildlife species through night lighting.

### **3.5 CONCLUSIONS**

Potentially significant impacts include direct and indirect impacts to CAGN (3.1.A), LBV (3.1.A), and SWFL (3.1.A), and nesting Group 1 or 2 bird species during the breeding season (3.1.B and 3.1.C). The potential significant impacts to special-status species are summarized below, and the relevant County guidelines for determining significance are noted. Direct impacts to foraging habitat for raptors and Group 1 species (3.1.F), operational night-time lighting (3.1.G.), construction-generated noise (3.1.G.), and an increase of pests or exotic species (3.1.I) and impacting nesting success of sensitive animals (3.1.J) are also noted. Project design features and mitigation measures will reduce impacts to these sensitive resources to below a level of significance according to the following rationale:

- Potential impacts to sensitive habitats and species as a result of increased pests and exotic species (3.1.I) will be avoided through installation of permanent fencing along the boundary of the project site to prevent encroachment into adjacent habitat areas, and implementation of BMPs as discussed in Section 3.4 (D-10 and D-11). This design consideration will avoid impacts to sensitive habitats and species within these habitats per County and MSCP BMO guidelines. Project construction activities will be kept as clean of debris as possible and, therefore, would not result in a significant increase in pests or exotic species beyond those already occurring in the area. Furthermore, project activities will not require the clearing of existing vegetation; thus, areas where nonnative weed species could establish postconstruction will not be created.

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- Potential impacts to CAGN (3.1.A), LBV (3.1.A), and SWFL (3.1.A), and Group 1 or 2 nesting birds (3.1.B and 3.1.C), or construction-generated noise affecting nesting success (3.1.G) and reductions in nest success (3.1.J) will be mitigated by having construction-related activities restricted to outside the nesting season or having a nesting bird survey and nest avoidance during the nesting season (M-B1-2).
  - Direct impacts to foraging habitat for raptors and Group 1 wildlife species (3.1.F) will be mitigated for via habitat-based mitigation at the ratios specified for different habitat types.
  - Results of the protocol surveys for LBV and SWFL, to be completed July 2010, will indicate the nature and level of species' activity within the survey area. No direct or indirect impacts to such habitat will be permitted to occupied habitat during the breeding season without consulting USFWS. Direct impacts are not anticipated; however, indirect impacts may occur if loud construction equipment operates in close proximity to occupied habitat. Prior to construction, a qualified biologist will assess the potential for impacts based on adequate construction plans. Appropriate mitigation for any impacts to habitat will be determined in coordination with CDFG and USFWS.

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## CHAPTER 4

### RIPARIAN HABITAT OR SENSITIVE NATURAL COMMUNITY

#### 4.1 GUIDELINES FOR DETERMINATION OF SIGNIFICANCE

Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by USFWS or CDFG?

Guidelines for the determination of significance are as follows:

- A. Project-related grading, clearing, construction, or other activities would temporarily or permanently remove sensitive native or naturalized habitat (excluding those without a mitigation ratio) on or off the proposed project site.
- B. Any of the following will occur to or within jurisdictional wetlands and/or riparian habitats as defined by USACE, CDFG, and the County: removal of vegetation; grading; obstruction or diversion of water flow; adverse change in velocity, siltation, volume of flow, or runoff rate; placement of fill; placement of structures; construction of a road crossing; placement of culverts or other underground piping; any disturbance of the substratum; and/or any activity that may cause an adverse change in native species composition, diversity, or abundance.
- C. The project would draw down the groundwater table to the detriment of groundwater-dependent habitat, typically a drop of 3 feet or more from historical low groundwater levels.
- D. The project would increase human access or competition from domestic animals, pests, or exotic species to levels proven to adversely affect sensitive habitats.
- E. The project does not include a wetland buffer adequate to protect the functions and values of existing wetlands.

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## 4.2 ANALYSIS OF PROJECT EFFECTS

### 4.2.1 Project Effects Relevant to Guideline 4.1.A

Project-related clearing, grading, and construction would directly impact approximately 16.98 acres of sensitive native and naturalized habitats, as summarized in Table 3 in Section 1.4.3. Removal of these sensitive habitat lands, which include County Tier Levels I, II, and II, would be considered a significant impact under the County guidelines (BI-9). Additionally, permits under Sections 401 and 404 of the CWA would be required if impacts to federal and state regulated waters occur. However, the proposed project requires no trenching across federal or state regulated waters. Instead, by tunneling under creeks and culverts, pipeline construction will avoid direct impacts to these waters. Thus, permits under Sections 401 and 404 of the CWA will not be required. However, indirect temporary impacts may occur during project construction. Where it is determined that there would be temporary impacts to jurisdictional waters (including wetlands) related to the project, the attached Jurisdictional Delineation Letter Report (JDLR) is intended to support and provide the information necessary for agency documentation. In addition, the District, as the project applicant, would apply for and receive the following requisite authorizations, permits, and compliances, based on any potential impacts to jurisdictional aquatic resources:

- Determination of regulatory requirements and, if required, authorization under Section 404 of the CWA (as regulated by USACE and USEPA)
- Certification of compliance under Section 401 of the CWA, if required (as regulated by RWQCB)
- Issuance of Waste Discharge Requirements or waiver under Section 13263 of the 1969 Porter-Cologne Water Quality Act (Porter-Cologne Act) (as regulated by RWQCB)
- CFGC Chapter 6 Section 1600 et seq. (as regulated by CDFG)

Of the total impacts to sensitive native and naturalized habitats, all areas temporarily impacted will be restored (D-1), thereby providing on-site mitigation. The sensitive native and naturalized habitats that would be affected within the site will be temporarily impacted by site development. The project's unavoidable direct and indirect temporary impacts to sensitive habitat lands designated by the County as Tier levels I, II, or III will be mitigated to a level below significance through the design considerations and mitigation measures outlined in Section 3.4. Mitigation ratios for impacts within the portion of the project that is within the approved South County MSCP will comply with the MSCP and the County guidelines. Mitigation ratios for impacts in

areas within the NCMSCP will comply with those identified in the County of San Diego’s Guidelines for Determining Significance to Biological Resources for areas under County jurisdiction that are outside of approved MSCP plans. The mitigation ratios from these two sources are summarized in Table 7. Project-specific mitigation ratios will be finalized after review and approval by the County and the resource agencies. The project’s potential indirect impacts to native and naturalized habitats that exist within the surrounding 500-foot buffer will be reduced to a level below significance through incorporation of design measures D-6 and D-7, and the general construction measures noted in Section 3.4.

**Table 7  
Compensatory Habitat Mitigation Ratios**

| <b>Vegetation Community</b>                      | <b>MSCP BMO Mitigation Ratios for Impacts Occurring within PAMAs<sup>1</sup></b> | <b>County Guidelines Mitigation Ratios<sup>2</sup></b> |
|--|--|--|
| <b>Riparian Habitat and Wetlands<sup>3</sup></b> |  |  |
| Freshwater Seep                                  | 2:1  | 3:1  |
| Mulefat Scrub                                    | 2:1  | 3:1  |
| Southern Arroyo Willow Riparian Forest           | 2:1  | 3:1  |
| Southern Willow Scrub                            | 2:1  | 3:1  |
| Southern Riparian Woodland                       | 2:1  | 3:1  |
| <b>Uplands</b>                                   |  |  |
| Dense Coast Live Oak Woodland                    | 2:1  | 3:1  |
| Diegan Coastal Sage Scrub                        | 1.5:1  | 3:1  |
| Sage Scrub-Chaparral Transition                  | 1.5:1  | 3:1  |
| Nonnative Grassland                              | 1:1  | 0.5:1  |
| Valley Needlegrass Grassland                     | 2:1  | 3:1  |
| Southern Mixed Chaparral                         | 1.5:1  | 0.5:1  |

<sup>1</sup> County of San Diego (2008)

<sup>2</sup> County of San Diego (2009)

<sup>3</sup> To achieve no net loss for riparian and wetland communities, at least a 1:1 portion of the mitigation requirement should be accomplished by creation or restoration, which each results in a net increase in riparian-wetland acreage

**4.2.2 Project Effects Relevant to Guideline 4.1.B**

Impacts to jurisdictional wetlands and/or riparian habitats as defined by USACE, CDFG, and the County will be avoided through the incorporation of design measures D1–D8, D-10, and D-11.

**4.2.3 Project Effects Relevant to Guideline 4.1.C**

The project will use water from the District and, as such, will not draw down the groundwater table.

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#### **4.2.4 Project Effects Relevant to Guideline 4.1.D**

The project will not increase human access within the project site; any increased exotic species levels due to temporary impacts to natural communities will be mitigated through the incorporation of design measures D-10 and D-11.

#### **4.2.5 Project Effects Relevant to Guideline 4.1.E**

Impacts to wetlands will be avoided through the incorporation of design measures D1–D8 and D-11. These measures include adequate buffers to protect the functions and values of existing wetlands.

### **4.3 CUMULATIVE IMPACT ANALYSIS**

Cumulative impacts are not assessed in this document; they are discussed thoroughly in the project's EIR.

### **4.4 MITIGATION MEASURES AND DESIGN CONSIDERATIONS**

Table 7 identifies mitigation ratios recommended per the County's Guidelines for Determining Significance for Biological Resources for impacts that occur outside approved MSCP Plans. Mitigation for unavoidable permanent impacts to the native and naturalized habitats that require mitigation will be provided in compliance with mitigation ratios approved for the project by the County and the resource agencies as described in Section 3.4 (M-BI-1). Unavoidable temporary impacts within the proposed project site will be mitigated in-place at a 1:1 ratio.

### **4.5 CONCLUSIONS**

Potential project impacts to riparian habitat and sensitive natural communities (BI-9) would be avoided through the incorporation of design measures D-1–D-8 and D-11. Furthermore, any increased exotic species levels due to temporary impacts to natural communities will be mitigated through the incorporation of design measures D-10 and D-11.

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## **CHAPTER 5 WILDLIFE DISPERSAL**

### **5.1 GUIDELINES FOR DETERMINATION OF SIGNIFICANCE**

Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Guidelines for the determination of significance are as follows:

- A. The project would prevent wildlife access to foraging habitat, breeding habitat, water sources, or other areas necessary for their reproduction.
- B. The project would substantially interfere with connectivity between blocks of habitat or would potentially block or substantially interfere with a local or regional wildlife corridor or linkage.
- C. The project would create artificial wildlife corridors that do not follow natural movement patterns.
- D. The project would increase noise and/or lighting in a wildlife corridor or linkage to levels proven to affect the behavior of the animals identified in a site-specific analysis of wildlife movement.
- E. The project does not maintain an adequate width for an existing wildlife corridor or linkage and/or would further constrain an already narrow corridor through activities such as (but not limited to) reduction of corridor width, removal of available vegetative cover, placement of incompatible uses adjacent to it, and placement of barriers in the movement path.
- F. The project does not maintain adequate visual continuity (i.e., long lines-of-sight) within wildlife corridors or linkages.

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## **5.2 ANALYSIS OF PROJECT EFFECTS**

### **5.2.1 Project Effects Relevant to Guideline 5.1.A**

The project may temporarily hinder wildlife access to foraging habitat, breeding habitat, water sources, or other areas necessary for reproduction during project construction. This would be most likely in the vicinity of Escondido Creek, between Elfin Forest Road and Via Ambiente. Temporary fences installed during the construction phase could temporarily prohibit smaller wildlife species such as rodents and herpetofauna from accessing required resources. In addition, noise as a result of construction could temporarily deter wildlife movement at the proposed project site, especially those areas outside of existing paved roads, potentially prohibiting access to foraging habitat, breeding habitat, water sources, or other areas necessary for reproduction. Mitigation and design measures as described in Table 9 of Chapter 7, such as D-6 (appropriately scheduling construction to minimize potential impacts) and D-9 (incorporating features to minimize noise during construction), would reduce temporary impacts to below a level of significance.

The proposed project site is small in scale and impacts to habitat are temporary. The pipeline will be buried underground; therefore, permanent aboveground impacts that could affect wildlife movements are not expected. Thus, the proposed project will not permanently affect wildlife access to foraging habitat, breeding habitat, water sources, or other areas necessary for reproduction during project construction.

### **5.2.2 Project Effects Relevant to Guideline 5.1.B**

Construction activities associated with the proposed project may temporarily deter wildlife movement at the proposed project site, especially those areas outside of paved roads, thus temporarily affecting connectivity between habitat blocks. Mitigation and design measures as described in Table 9 of Chapter 7, such as D-6 (appropriately scheduling construction to minimize potential impacts) and D-9 (incorporating features to minimize noise during construction), would reduce temporary impacts to below a level of significance.

The proposed project site is small in scale and impacts to habitat will be temporary. The pipeline will be buried underground; therefore, permanent aboveground impacts that could affect wildlife movements are not expected. Thus, the proposed project will not permanently affect connectivity between habitat blocks.

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### **5.2.3 Project Effects Relevant to Guideline 5.1.C**

The proposed project would not add to any artificial wildlife corridors. The proposed project site is small in scale and impacts to habitat will be temporary. The pipeline will be buried underground, mostly within existing paved roads; therefore, permanent aboveground impacts that could affect wildlife movements are not expected.

### **5.2.4 Project Effects Relevant to Guideline 5.1.D**

Additional noise and artificial light as a result of construction activities associated with the proposed project may temporarily deter wildlife movement at the proposed project site. Mitigation and design measures as described in Table 9 of Chapter 7, such as D-6 (appropriately scheduling construction to minimize potential impacts) and D-9 (incorporating features to minimize noise during construction), will reduce temporary impacts to below a level of significance.

The proposed project site is small in scale and impacts to habitat will be temporary. The pipeline will be buried underground; therefore, permanent aboveground impacts that could affect wildlife movements are not expected. Thus, the proposed project will not permanently affect connectivity between habitat blocks.

### **5.2.5 Project Effects Relevant to Guideline 5.1.E**

The project may temporarily hinder wildlife movement through habitat corridors described in Section 1.4.6.5. Temporary fences installed during the construction phase could temporarily prohibit dispersal of smaller wildlife species such as rodents and herpetofauna. In addition, noise as a result of construction could temporarily deter wildlife movement at the proposed project site, potentially reducing regional connectivity. Mitigation and design measures as described in Table 9 of Chapter 7, such as D-6 (appropriately scheduling construction to minimize potential impacts) and D-9 (incorporating features to minimize noise during construction), will reduce temporary impacts to below a level of significance.

The proposed project site is small in scale and impacts to habitat are temporary. The pipeline will be buried underground; therefore, permanent aboveground impacts that could affect wildlife movements are not expected. Thus, the proposed project will not permanently affect regional connectivity.

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### **5.2.6 Project Effects Relevant to Guideline 5.1.F**

The proposed project may temporarily affect visual continuity through the use of fences and construction equipment at the proposed project site. Mitigation and design measures as described in Table 9 of Chapter 7, such as D-6 (appropriately scheduling construction to minimize potential impacts) and D-9 (incorporating features to minimize noise during construction), will reduce temporary impacts to below a level of significance.

The proposed project site is small in scale and impacts to habitat will be temporary. The pipeline will be buried underground; therefore, permanent aboveground impacts that could affect wildlife movements are not expected. Thus, the proposed project will not permanently affect visual continuity.

### **5.3 CUMULATIVE IMPACT ANALYSIS**

Cumulative impacts are not assessed in this document; they are discussed thoroughly in the project's EIR.

### **5.4 MITIGATION MEASURES AND DESIGN CONSIDERATIONS**

Mitigation to compensate for unavoidable significant impacts include the following measures:

- M-B3-1 Construction activities will take place during daylight hours to prevent impacts to wildlife species through night lighting and high noise levels at night when wildlife activity and movement is common.
- M-B3-2 Fences required for construction activities will only be installed in active construction areas and will be removed as soon as they are not needed so wildlife movement and access to resources will not be unnecessarily impeded.

### **5.5 CONCLUSIONS**

Potentially significant impacts include direct impacts as a result of construction fencing and indirect impacts from noise and/or lighting during the project construction phase. Project design features and mitigation measures will reduce impacts to these sensitive resources to below a level of significance according to the following rationale:

Potential impacts to wildlife corridors or linkages will be avoided by scheduling construction activities during daylight to avoid times of important wildlife movements.

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## **CHAPTER 6**

### **LOCAL POLICIES, ORDINANCES, ADOPTED PLANS**

#### **6.1 GUIDELINES FOR DETERMINATION OF SIGNIFICANCE**

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? Would the project conflict with the provisions of an adopted Habitat Conservation Plan; NCCP; or other approved local, regional, or state habitat conservation plan?

Guidelines for the determination of significance are as follows:

- A. For lands outside of the MSCP, the project would impact coastal sage scrub vegetation in excess of the County's 5% habitat loss threshold as defined by the Southern California Coastal Sage Scrub NCCP Guidelines.
- B. The project would preclude or prevent the preparation of the subregional NCCP. For example, the project proposes development within areas that have been identified by the County or resource agencies as critical to future habitat preserves.
- C. The project would impact any amount of wetlands or sensitive habitat lands as outlined in the RPO.
- D. The project would not minimize and/or mitigate coastal sage scrub habitat loss in accordance with Section 4.3 of the NCCP Guidelines.
- E. The project would not conform to the goals and requirements as outlined in any applicable Habitat Conservation Plan, Habitat Management Plan, Special Area Management Plan, Watershed Plan, or similar regional planning effort.
- F. For lands within the MSCP, the project would not minimize impacts to Biological Resource Core Areas, as defined in the BMO.
- G. The project would preclude connectivity between areas of high habitat values, as defined by the Southern California Coastal Sage Scrub NCCP Guidelines.
- H. The project would not maintain existing movement corridors and/or habitat linkages as defined by the BMO.

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- I. The project would not avoid impacts to MSCP narrow endemic species and would impact core populations of narrow endemics.
  - J. The project would reduce the likelihood of survival and recovery of listed species in the wild.
  - K. The project would result in the killing of migratory birds or destruction of active migratory bird nests and/or eggs (MBTA).
  - L. The project would result in the take of eagles, eagle eggs, or any part of an eagle (BGEPA).

## **6.2 ANALYSIS OF PROJECT EFFECTS**

### **6.2.1 Project Effects Relevant to Guideline 6.1.A**

The proposed project occurs both inside and outside of the County MSCP subarea planning area. Neither the 1.38 acre that would be impacted by the preferred alignment, nor the 9.18 acres that would be impacted by the southern alignment would exceed the County's 5% habitat loss threshold. As discussed in Section 1.5.3.5, an HLP will be required if the NCMSCP is not approved prior to project implementation.

### **6.2.2 Project Effects Relevant to Guideline 6.1.B**

The proposed preferred alignment occurs within the Draft NCMSCP boundary and includes some PAMAs, pre-negotiated (hardlined) take authorized area, and special districts, and occurs within an MSCP take authorized area. Although the proposed project is in proximity to the NCMSCP and MSCP Preserves, and several sensitive species are known to occur or have been determined to have a potential to occur, the site itself has not been identified by the County or resource agencies as critical to future habitat preserves. The preferred alignment falls within the 235-acre Sage Hill Preserve, which is managed by the County of San Diego's Parks and Recreation Department. The proposed project will directly impact 0.25 acre of land within the Sage Hill Preserve; approximately 0.21 acre of Diegan coastal sage scrub and 0.04 acre of nonnative grassland would be permanently impacted. Per the HLP Ordinance, the District will be required to submit an HLP and Administrative Permit to mitigate the direct impacts to Diegan coastal sage scrub. Additionally, avoidance, minimization, and mitigation will be incorporated into the project as discussed in Sections 3.4, 4.4, 5.4, and 6.4, and Chapter 7 to reduce impacts to below a level of significance.

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The proposed southern alignment occurs within the Draft NCMSCP boundary and includes some Preserve, PAMAs, pre-negotiated (hardlined) take authorized area, and special districts, as well as occurs within an MSCP take authorized area. Although some temporary direct impacts may occur with the Preserve, avoidance, minimization, and mitigation will be incorporated into the project as discussed in Sections 3.4, 4.4, 5.4, and 6.4, and Chapter 7 to reduce impacts to below a level of significance.

### **6.2.3 Project Effects Relevant to Guideline 6.1.C**

The proposed project will potentially impact wetlands and sensitive habitats as outlined in the RPO. However, avoidance, minimization, and mitigation will reduce impacts to below a level of significance as discussed in Section 4.4.

### **6.2.4 Project Effects Relevant to Guideline 6.1.D**

The proposed project will mitigate for impacts to Diegan coastal sage scrub habitat loss according to the guidelines of the County and MSCP BMO, as described in Sections 3.4 and 4.4. The District is required to submit an HLP and Administrative Permit to mitigate for the direct impacts to Diegan coastal sage scrub.

### **6.2.5 Project Effects Relevant to Guideline 6.1.E**

The proposed project will conform to the goals and requirements as outlined in the County guidelines and the MSCP BMO. Impacts to sensitive plant and animal species, riparian habitat or sensitive natural community, jurisdictional wetlands, and wildlife movement corridors will be mitigated to below a level of significance according to the goals and requirements of the County guidelines, as discussed in Sections 3.4 and 4.4.

### **6.2.6 Project Effects Relevant to Guideline 6.1.F**

No significant impacts to Biological Resource Core Areas, as defined in the County guidelines and the MSCP, would occur as a result of project implementation, as discussed in Section 3.4. Although Biological Resource Core Areas, as defined in the County guidelines and the MSCP, do occur within the project site, avoidance, minimization, and mitigation will reduce impacts to below a level of significance as discussed in Section 4.4.

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### **6.2.7 Project Effects Relevant to Guideline 6.1.G**

The project includes portions of the draft NCMSCP and South County MSCP Preserve and the Sage Hill Preserve, as well as portions of the MSCP Preserve. Also, the areas of Diegan coastal sage scrub on-site are of high habitat quality. Thus, the project does connect lands of high habitat value, as defined by the Southern California Coastal Sage Scrub NCCP Guidelines. However, avoidance, minimization, and mitigation will reduce impacts to below a level of significance, as discussed in Section 4.4.

### **6.2.8 Project Effects Relevant to Guideline 6.1.H**

The proposed project area occurs adjacent to the draft NCMSCP and MSCP Preserve and within the Sage Hill Preserve and, as such, contributes to providing open space areas available for wildlife movement as defined by the County guidelines and MSCP BMO. Development of the site would reduce local movement within the area; however, all impacted habitat will be restored and will continue to function as part of this regional corridor.

### **6.2.9 Project Effects Relevant to Guideline 6.1.I**

No species defined by the County Guidelines or the MSCP BMO as narrow endemic species occur within the southern alignment. Thus, the proposed project would not impact narrow endemics or core populations of narrow endemic species.

### **6.2.10 Project Effects Relevant to Guideline 6.1.J**

While CAGNs were observed within the Diegan coastal sage scrub, with appropriate mitigation measures, no take of these individuals will occur. To ensure that no take occurs, construction activities will be restricted to outside the nesting season or a nesting bird survey will be completed by a qualified biologist prior to construction and avoidance of all active nests will occur until the young have fledged.

### **6.2.11 Project Effects Relevant to Guideline 6.1.K**

Several bird species were observed and/or have the potential to occur within the proposed project site. To avoid take of active nests, construction activities will be restricted to outside the nesting season, or a nesting bird survey will be completed by a qualified biologist prior to construction and avoidance of all active nests will occur until the young have fledged.

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### **6.2.12 Project Effects Relevant to Guideline 6.1.L**

While suitable foraging habitat for eagles was observed within the proposed project site, it is unlikely that suitable nesting habitat is present. In the unlikely event that eagles do nest within the proposed project site, construction activities will be restricted to outside the nesting season, or a nesting bird survey will be completed by a qualified biologist prior to construction and avoidance of all active nests will occur until the young have fledged.

### **6.3 CUMULATIVE IMPACT ANALYSIS**

Cumulative impacts will not be assessed in this document; they will be discussed thoroughly in the EIR.

### **6.4 MITIGATION MEASURES AND DESIGN CONSIDERATIONS**

Mitigation to compensate for unavoidable significant impacts includes the following measure:

M-B4-1 Construction activities will occur outside the nesting season. If construction is to occur during the nesting season, a nesting bird survey will be completed no more than 30 days prior to construction by a qualified biologist. If nests are observed that could be disturbed by construction activities, these nests and a 500-foot buffer surrounding the nests will be avoided until the young have fledged. A biological monitor will be present if construction does occur during the nesting season to ensure that nesting birds are not disturbed by the construction activities; the biological monitor may increase the buffer distance if necessary to reduce impacts and prevent take.

### **6.5 CONCLUSIONS**

Unavoidable impacts to nesting bird species (6.1.J, 6.1.K, 6.1.I) will be mitigated through Mitigation Measure M-B4-1. Project design features and mitigation measures will reduce impacts to these sensitive resources to below a level of significance according to the following rationale:

- Potential impacts to nesting bird species (6.1.J, 6.1.K, and 6.1.I) will be avoided by having construction-related activities restricted to outside the nesting season or completing a nesting bird survey and practicing nest avoidance during the nesting season.

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## **CHAPTER 7**

### **SUMMARY OF PROJECT IMPACTS AND MITIGATION**

Table 8 provides a summary of potential temporary and permanent direct impacts to habitat types/vegetation communities resulting from the proposed project, areas that can be preserved or restored within the project site, and the range of potential off-site mitigation areas that could be required using the MSCP and other County guidelines.

Design features and mitigation measures that would reduce temporary biological impacts from the proposed project are listed in Table 9.

**Table 8**  
**Direct Impacts to Sensitive Vegetation Communities and Anticipated Mitigation<sup>1</sup>**

| Vegetation Communities and Cover Types | Relevant Mitigation Ratios for Proposed Impacts |                                  | Preferred Alignment                |                     |                                  |                     |   | Southern Alignment                 |                     |                                  |                     |  |
|--|---|----------------------------------|------------------------------------|---------------------|----------------------------------|---------------------|---|------------------------------------|---------------------|----------------------------------|---------------------|--|
|  |   |                                  | Within South County MSCP Plan Area |                     | Outside Approved MSCP Plan Areas |                     | Total Mitigation Required Preferred Alignment | Within South County MSCP Plan Area |                     | Outside Approved MSCP Plan Areas |                     | Total Mitigation Required Southern Alignment |
|  | Within South County MSCP Plan Area              | Outside Approved MSCP Plan Areas | Impact                             | Required Mitigation | Impact                           | Required Mitigation |   | Impact                             | Required Mitigation | Impact                           | Required Mitigation |  |
| <i>Uplands</i>                         |   |                                  |                                    |                     |                                  |                     |   |                                    |                     |                                  |                     |  |
| Diegan Coastal Sage Scrub              | 1.5:1   | 3:1                              | ---                                | ---                 | 0.46 <sup>2</sup>                | 1.38                | 1.38  | 1.16                               | 1.74                | 2.48                             | 7.44                | 9.18   |
| Coastal Sage-Chaparral Transition      | 1.5:1   | 3:1                              | ---                                | ---                 | ---                              | ---                 | ---   | ---                                | ---                 | 0.32                             | 0.96                | 0.96   |
| Non Native Grassland                   | 1:1   | 0.5:1                            | ---                                | ---                 | 0.04                             | 0.02                | 0.02  | ---                                | ---                 | ---                              | ---                 | ---  |
| Southern Mixed Chaparral               | 1.5:1   | 0.5:1                            | ---                                | ---                 | ---                              | ---                 | ---   | 0.19                               | 0.29                | 0.31                             | 0.16                | 0.45   |
| <b>Total =</b>                         |   |                                  | ---                                | ---                 | <b>0.50</b>                      | <b>1.40</b>         | <b>1.40</b>                                   | <b>1.35</b>                        | <b>2.03</b>         | <b>3.11</b>                      | <b>8.56</b>         | <b>10.59</b>                                 |

<sup>1</sup> All impacts to Tier I, II, and III habitats as identified in Table 6 herein, are noted above (segregated as within vs. outside an approved MSCP area for each alignment). As previously noted, direct impacts to wetland vegetation communities or jurisdictional waters will be avoided by directional drilling (tunneling) under any areas of these sensitive/regulated resources that coincide with the project corridor.

<sup>2</sup> Approximately 0.21 acre of Diegan coastal sage scrub would be permanently impacted at the Sage Hill Preserve if the access road to the flow control facility is located at the Second San Diego Aqueduct and not the DCMWTP.

**Table 9**  
**Summary of Design Features and Mitigation Measures**

| Reference No. | Design Features  |
|---------------|--|
| D-1           | A project biologist will review grading plans, oversee all aspects of construction monitoring that pertain to biological resource protection, and ensure compliance with both the general and specific mitigation measures.  |
| D-2           | All sensitive habitat areas or occurrences of sensitive species to be avoided will be clearly marked on project maps. These areas will be designated as “no construction” or “limited construction” zones. These areas will be flagged by the project biologist and reviewed with the project engineer prior to the onset of construction activities. If needed, resources will need to be fenced or otherwise protected from direct and indirect impacts.   |
| D-3           | Construction will occur during the dry season, where feasible; if construction occurs during the wet season, appropriate construction BMPs will be implemented, including silt fences, sandbags, and detention basins.   |
| D-4           | A contractor education program will be implemented to ensure that contractors and all construction personnel are fully informed of the biological sensitivities associated with the project.   |
| D-5           | Fueling areas will be designated on construction maps and will be situated a minimum of 50 feet from all drainages.  |
| D-6           | To the extent possible, construction through sensitive areas will be appropriately scheduled to minimize potential impacts to biological resources. Construction adjacent to drainages will occur during periods of minimum flow (i.e., summer through the first significant rain of fall) to avoid excessive sedimentation and erosion, and to avoid impacts to drainage-dependent species. Construction near riparian or other wetland areas will also be scheduled to avoid potential impacts to sensitive riparian bird species.   |
| D-7           | Setback limitations from all habitat, trees, and sensitive plant locations meant to be preserved will be established by a qualified biologist prior to construction. Construction corridor widths will be minimized to the extent feasible in sensitive areas (e.g., oak woodlands, coastal sage scrub, and wetlands).   |
| D-8           | Pipeline installation, as proposed, requires no trenching across watercourses. Instead, by tunneling under creeks and culverts, pipeline construction will avoid impacts to jurisdictional waters as defined by USACE, CDFG, and the County.   |
| D-9           | The project design will incorporate the following design features to minimize noise generated from construction activities: <ul style="list-style-type: none"> <li>• Noise analyses will be performed during construction activities adjacent to sensitive habitats or potential active nests. If necessary, temporary noise attenuation barriers will be erected to reduce construction-related noise to below 60 dBA hourly <math>L_{eq}</math>.</li> <li>• Heavy equipment will be repaired as far as practical from habitats where nesting birds may be present.</li> <li>• Construction equipment, including generators and compressors, will be equipped with manufacturers’ standard noise-control devices or better (e.g., mufflers, acoustical lagging, and/or engine enclosures).</li> <li>• The construction contractor will maintain all construction vehicles and equipment in proper operating condition and provide mufflers on all equipment.</li> </ul> |
| D-10          | The project design will incorporate features to minimize the potential for pests and exotic species establishment by installing fencing between the proposed project site and adjacent open space areas to restrict encroachment into biologically sensitive areas.  |

| Reference No. | Design Features  |
|---------------|--|
| D-11          | <p>Several general construction BMPs will be implemented to avoid and minimize impacts to natural communities of special concern, special-status plants, and special-status animals:</p> <ol style="list-style-type: none"> <li>1. <u>Construction Limits</u> – The contractor(s) will be informed, prior to the bidding process, about the biological constraints of this project. The construction limits will be clearly marked on project maps provided to the contractor(s) and areas outside of the construction limits will be designated as “no construction” zones.</li> <li>2. <u>Equipment Staging/Storage/Fueling Restrictions</u> – No equipment staging or refueling areas will be located at the construction site outside of designated staging areas. Moreover, staging/storage areas for construction equipment and materials will be located away from sensitive biological resources that are not approved for project impact, and no equipment maintenance will be performed near drainages to minimize the potential for pollution runoff.</li> <li>3. <u>Soil Stockpiles</u> – Soils from construction grading will be stockpiled either on portions of the proposed project site where direct impacts are approved, or at an off-site location approved by the County and the resource agencies. Stockpiled soils will be located and piled in a manner that will avoid potential erosion and sedimentation into downstream drainages, swales, or vernal pool habitat.</li> <li>4. <u>Construction Debris</u> – Project construction areas will be kept as clean of debris as possible to avoid attracting predators of native wildlife. Spoils, trash, or any debris will be removed off-site to an approved disposal facility.</li> <li>5. <u>Fugitive Dust</u> – Construction-related fugitive dust will be minimized by incorporating appropriate, reasonably available control measures to minimize fugitive dust emissions, as outlined in an approved dust control plan specific to the proposed construction activities. The dust control plan will consider and/or incorporate the application of water, use of wind screens, and other applicable methods appropriate to the site, and in consideration of the sensitive biological resources that exist adjacent to and downstream of the site.</li> <li>6. <u>Construction Fencing</u> – To prevent accidental egress by construction equipment or workers onto preserved lands adjacent the proposed project site, construction fencing will be installed along the entire northern boundary of the County-owned portion of the proposed project site, the northern boundary of the western private parcel, and the portion of the County-owned parcel’s eastern boundary that connects these two northern borders.</li> </ol> |

| Reference No. | Mitigation Measures   |
|---------------|---|
| M-B1-1        | To provide the District with the latitude in the future for impacts within the right-of-way without future mitigation requirements, all temporary impacts will be mitigated as though they were permanent impacts consistent with applicable mitigation ratios. Where project impacts occur outside approved MSCP Plan areas, mitigation ratios will be consistent with ratios presented in the County Guidelines. Where project impacts occur within the South County MSCP Plan area, mitigation ratios will be consistent with the MSCP BMO Mitigation requirements. The 0.21 acre of Diegan coastal sage scrub that would be permanently impacted within the preferred alignment at the Sage Hill Preserve if the access road for the flow control facility is located at the Second San Diego Aqueduct will be mitigated per the County guidelines. Mitigation will include a 1:1 revegetation on-site according to the County guidelines and the MSCP BMO. The remainder of the required mitigation will be accomplished through off-site habitat acquisition or preservation. |
| M-B1-2        | If construction is to occur during the nesting season, a nesting bird survey will be completed no more than 30 days prior to construction by a qualified biologist. If nests are observed that could be disturbed by construction activities, these nests and a 500-foot buffer surrounding the nests will be avoided until the young have fledged. A biological monitor will be present if construction does occur during the nesting season to ensure that nesting birds are not disturbed by the construction activities; the biological monitor may increase the buffer distance if necessary to reduce impacts and prevent take.   |
| M-B1-3        | Construction activities will take place during daylight hours to prevent impacts to wildlife species through night lighting.  |

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## CHAPTER 8

### REFERENCES

American Ornithologists' Union, The (AOU)

1953 *The Auk* 70 (3).

Beier, Paul, David Choate, and Reginald H. Barrett

1995 Movement Patterns of Mountain Lions during Different Behaviors. School of Environmental Science Policy and Management, University of California, Berkeley.

Beier, Paul, and Steven Loe

1992 A Checklist for Evaluating Impacts to Wildlife Movement Corridors. *Wildlife Society Bulletin* 20:434–440.

Benes, E. S.

1969 Behavioral Evidence of Color Discrimination by the Whiptail Lizard, *Cnemidophorus*. *Copeia* 1969:707–722.

Bennett, A. F.

1990 Habitat Corridors and the Conservation of Small Mammals in the Fragmented Forest Environment. *Landscape Ecology* 4:109–122.

Bond, S. I.

1977 Annotated List of the Mammals of San Diego County, California. *Trans. San Diego Soc. Nat. Hist.* 18:229–248.

Burt, W. H., and R. P. Grossenheider

1976 *A Field Guide to the Mammals: North America, North of Mexico: Third Edition*. Houghton Mifflin Company, Boston.

California Burrowing Owl Consortium (CBOC)

1993 Burrowing Owl Survey Protocol and Mitigation Guidelines. April.

---

California Native Plant Society (CNPS)

- 2009 Inventory of Rare and Endangered Plants (online edition, v7-09d). California Native Plant Society. Sacramento, CA. Accessed November 11, 2009. Available at <http://www.cnps.org/inventory>.

California Department of Fish and Game (CDFG)

- 1988 California Statewide Wildlife Habitat Relationships System. Volume 1: Amphibians and Reptiles. David Zeiner, W. Laudenslayer, and K. Mayer, eds. The Resource Agency. Sacramento. 269 pp.
- 1990 California Statewide Wildlife Habitat Relationships System. Volume 2: Birds. David Zeiner, W. Laudenslayer and K. Mayer, eds. The Resource Agency. Sacramento. 732 pp.
- 1991 Fish and Game Code of California. Gould Publications, Inc.

California Spatial Information Library (CaSIL)

- 2009 Available at <http://casil.ucdavis.edu/casil/>. Accessed November 2009.

California, State of

- 2009 State and Federally Listed Endangered and Threatened Animals of California. The Resources Agency, California Department of Fish and Game. July.

Case, T. J., and R. N. Fisher

- 1996 Final Report on Coastal Sage Scrub Amphibian and Reptile Autecology Study. Contract report to the California Department of Fish and Game (Contract number: 4188ES).

Center for Biological Diversity, Santa Clara Valley Audubon Society, Defenders of Wildlife, San Bernardino Valley Audubon Society, California State Park Rangers Association and Tri-County Conservation League

- 2003 Petition to the State of California Fish and Game Commission and Supporting Information for Listing the California Population of the Western Burrowing Owl (*Athene cunicularia hypugaea*) as an Endangered or Threatened Species under the California Endangered Species Act. Submitted April 7.

---

City-Data.com

2009 Available at <http://www.city-data.com/>. Accessed November 2009.

Collins, C. T., and R. E. Landry

1977 Artificial Nest Burrows for Burrowing Owls. *North American BirdBander* 2:151–154.

County of San Diego

2009 County of San Diego Guidelines for Determining Significance to Biological Resources and Report Format and Content Requirements. June.

2010 Biological Mitigation Ordinance.

Cowardin, L., V. Carter, F. Golet, and E. LaRoe

1979 Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of Interior. U.S. Fish and Wildlife Service. FWS/OBS-79/31. December.

Cunningham, J. D.

1959 Reproduction and Food of Some California Snakes. *Herpetologica* 15:17–19.

DeSante, D. F., E. D. Ruhlen, and D. K. Rosenberg

1996 The Distribution and Relative Abundance of Burrowing Owls in California: Evidence for a Declining Population. Institute for Bird Populations. Point Reyes Station, California.

Dickson, Brett G., and Paul Beier

2002 Home-Range and Habitat Selection by Adult Cougars in Southern California. *The Journal of Wildlife Management*. Vol. 66, No. 4 (October 2002), pp. 1235–1245.

Ernst, C. H., and E. M. Ernst

2003 *Snakes of the United States and Canada*. The Smithsonian Institution.

Farhig, L., and G. Merriam

1985 Habitat Patch Connectivity and Population Survival. *Ecology* 66:1,762–1,768.

Grinnell, J.

1903 Call Notes of the Bush-tit. *Condor*, Vol. 5, pp. 85–87.

---

Grinnell, J., and A. H. Miller

1944 The Distribution of the Birds of California. *Pacific Coast Avifauna* 27.

Hall, E. Raymond

1981 *Mammals of North America*. 2 vols. John Wiley and Sons. New York. 1,181 pp.

Hammerson, G. A.

1981 Opportunistic Scavenging by *Crotalus ruber* Not Field-Proven. *Herpetologica* 15:125.

Harris, L. D., and P. B. Gallagher

1989 New Initiatives for Wildlife Conservation: The Need for Movement Corridors. Pages 11–34 in *Defenders of Wildlife*. In *Defense of Wildlife: Preserving Communities and Corridors*. Defenders of Wildlife, Washington, D.C.

Harrison, C.

1978 A Field Guide to the Nests, Eggs and Nestlings of North American Birds.

Haug, E. A., B. A. Millsap, and M. S. Martell

1993 Burrowing Owl (*Athene cunicularia*), The Birds of North America Online (A. Poole, ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online. Available at <http://bna.birds.cornell.edu/bna/species/061>.

Holland, D. C.

1994 The Western Pond Turtle: Habitat and History. United States Department of Energy, Bonneville Power Administration Environment, Fish and Wildlife, Portland, Oregon.

Holland, R. F.

1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. State of California, The Resources Agency.

Jennings, M. R., and M. P. Hayes

1994 Amphibian and Reptile Species of Special Concern in California. Final Report to the California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, California. 225 pp.

---

Kays, R. W., and D. E. Wilson

2002 *Mammals of North America*. Princeton University Press.

Klauber, L. M.

1924 Notes on the Distribution of Snakes in San Diego County, California Bull. Zool. Soc. San. Diego 1:1–23.

1972 *Rattlesnakes: Their Habits, Life Histories, and Influence on Mankind*. 2<sup>nd</sup> ed. Berkeley: University of California Press.

Klute, D. S., L. W. Ayers, M. T. Green, W. H. Howe, S. L. Jones, J. A. Shaffer, S. R. Sheffield, and T. S. Zimmerman

2003 Status Assessment and Conservation Plan for the Western Burrowing Owl in the United States. U.S. Department of Interior, Fish and Wildlife Service, Biological Technical Publication FWS/BTP-R6001-2003, Washington, D.C.

Koper, N., and R. J. Brooks

2000 Environmental Constraints on Growth of Painted Turtles (*Chrysemys picta*) in Northern Climates. *Herpetologica* 56: 421–432.

Kus, B. E.

2002 Fitness Consequences of Nest Desertion in an Endangered Host, the Least Bell's Vireo. *Condor* 104:795–802.

Lackey, J.

1996 *Chaetodipus fallax*. *Mammalian Species* 517:1–4.

Lemm, J. M.

2006 Field Guide to Amphibians and Reptiles of the San Diego Region. California Natural History Guides, 89. University of California Press, Berkeley, California.

Lindzey, F. G.

1978 Movement Patterns of Badgers in Northwestern Utah. *J. Wildl. Manage.* 42:418–422.

---

Lovio, J.

- 1999 More about the Sage Sparrow. Wrenderings, Spring 1999. Available at <http://www.sdnhm.org/research/birdatlas/wrenderings/99spring-reports.html#sage>.

MacArthur, R. H., and E. O. Wilson

- 1967 *The Theory of Island Biogeography*. Princeton University Press, New Jersey. 203 pp.

MacWhirter, R. B., and K. L. Bildstein

- 1996 Northern Harrier. *In* The Birds of North America, No. 210. pp 1–29.

Messick, John P, and Maurice G. Hornocker

- 1981 Ecology of the Badger in Southwestern Idaho. *Wildlife Monographs* 76:1–53.

Mooney and Associates

- 1992 Biological Survey Report for the Olivenhain Municipal Water District Mt. Israel Reservoir Project (SCH# 90011079). San Diego, CA.

National Geographic Society

- 1983 *Field Guide to the Birds of North America*. 2nd ed. National Geographic Society, Washington, DC.

Noss, R. F.

- 1983 A Regional Landscape Approach to Maintain Diversity. *BioScience* 33(11): 700–706.

Oberbauer, Thomas

- 1996 Terrestrial Vegetation Communities in San Diego County Based on Holland's Descriptions.

Oberbauer, Thomas, Meghan Kelly, and Jeremy Buegge

- 2008 Draft Vegetation Communities of San Diego County. Based on "Preliminary Descriptions of the Terrestrial Natural Communities for California," Robert F. Holland, PhD., October 1986. March.

---

Project Clean Water

n.d. Carlsbad Watershed. Available at [http://www.projectcleanwater.org/html/ws\\_carlsbad.html](http://www.projectcleanwater.org/html/ws_carlsbad.html). Accessed November 2009.

Regents of the University of California

2009 The Consortium of California Herbaria. Available at <http://ucjeps.berkeley.edu/consortium/>. Accessed November 2009.

Reiser, C. H.

2001 Rare Plants of San Diego County. Aquafir Press, Imperial Beach, California.

Rossman, D. A., N. B. Ford, and R. A. Siegel

1996 *The Garter Snakes: Evolution and Ecology*. University of Oklahoma Press, Norman. 332 pp.

Rosenfield, R. N., and J. Bielefeldt

1993 Cooper's Hawk. In A. Poole and F. Gill [eds.]. *The Birds of North America*, No. 75. Philadelphia: The Academy of Natural Sciences; Washington D.C.; The American Ornithologists' Union.

Simberloff, D. S., and J. Cox

1987 Consequences and Costs of Conservation Corridors. *Conservation Biology* 1: 63–71.

Soil Survey Staff

n.d. Natural Resources Conservation Service, United States Department of Agriculture. Official Soil Series Descriptions. Available at <http://soils.usda.gov/technical/classification/osd/index.html>. Accessed February 10, 2008. USDA-NRCS, Lincoln, NE.

Sogge, M. K., R. M. Marshall, S. J. Sferra, and T. J. Tibbitts.

1997 A Southwestern Willow Flycatcher Natural History Summary and Survey Protocol. Technical Report NPS/NAUCPRS/NRTR-97/12. USGS Colorado Plateau Research Station, Northern Arizona University, Flagstaff, AZ.

---

Solek, C. W., and L. J. Szijj

- 1999 California Partners in Flight Coastal Shrub-Chaparral Bird Conservation Plan: Species Account for the Coastal Cactus Wren (*Campylorhynchus brunneicapillus*). California State Polytechnic University, Pomona.

Soule, M.

- 1987 *Viable Populations for Conservation*. Cambridge Univ. Press, Cambridge.

Spinks, P. Q., G. B. Pauly, J. J. Crayon, and H. B. Shaffer

- 2003 Survival of the Western Pond Turtle (*Emys marmorata*) in an Urban California environment. *Biological Conservation* 113:257–267.

Stebbins, R. C.

- 1985 *A Field Guide to Western Reptiles and Amphibians*. Second edition. Houghton Mifflin Co., Boston. 336 pp.

- 2003 *Peterson Field Guides: Western Reptiles and Amphibians*, 3rd Edition, New York, Houghton Mifflin Company.

Trulio, L. A.

- 1994 The Ecology of a Population of Burrowing Owls at a Naval Air Station in Northern California. Department of the Navy. San Bruno, California.

Unitt, P. A.

- 1984 Birds of San Diego County. Memoir No. 13. San Diego Society of Natural History.

U.S. Department of Agriculture (USDA)

- 1973 Soil Survey, San Diego Area, California. Soil Conservation Service and Forest Service. Roy H. Bowman, ed. San Diego. December.

- 1992 Hydric Soil List. Natural Resources Conservation Service. Escondido, California Field Office. Field Office Technical Guide. March.

U.S. Fish and Wildlife Service (USFWS)

- 1995 Final Rule Determining Endangered Status for the Southwestern Willow Flycatcher. Federal Register, 60, 10694-10715.

- 
- 1997 Coastal California Gnatcatcher (*Polioptila californica californica*) Presence/Absence Survey Guidelines. February 28. USFWS, Carlsbad, California.
- 1997 Recovery Plan for the Stephen's Kangaroo Rat (*Dipodomys stephensi*). USFWS, Portland, Oregon.
- 2001 Least Bell's Vireo Survey Guidelines. January 19. USFWS, Carlsbad, California.
- 2003 Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). USFWS, Carlsbad, California.

Wilson, D., and S. Ruff.

1999. *The Smithsonian Book of North American Mammals*. Washington: Smithsonian Institution Press.

Zarn, M.

- 1974 Burrowing Owl. U.S. Department of Interior, Bureau of Land Management. Technical Note T-N 250. Denver, Colorado. 25 pp.

Zeiner, D. C., W. F. Laudenslayer, Jr., and K. E. Mayer, eds.

- 1988 *California's Wildlife*. Volume I. Amphibians and Reptiles. California Statewide Wildlife Habitat Relationships System, California Department of Fish and Game, Sacramento, California.

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## **CHAPTER 9**

### **LIST OF PREPARERS**

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**APPENDIX A**

**45-DAY SUMMARY REPORT OF  
2009 FOCUSED COASTAL CALIFORNIA GNATCATCHER  
SURVEYS**





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July 12, 2010

Ms. Sandy Marquez  
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Mr. L. Breck McAlexander  
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**RE: 45-Day Summary Report of 2009 Focused Surveys for the Proposed Olivenhain Municipal Water District Unit AA 2010 Raw Water Pipeline Project from the Second San Diego Aqueduct to the David C. McCollom Water Treatment Plant, San Diego County, California**

Dear Ms. Marquez and Mr. McAlexander:

In compliance with the Special Terms and Conditions for Endangered Species Permit TE-820658-4 and TE-027736-4, AECOM and Erik LaCoste (of AECOM) conducted non-breeding-season focused surveys from October 2009 to January 2010 to determine the presence or absence of the federally threatened coastal California gnatcatcher (*Polioptila californica californica*; CAGN) within the proposed Olivenhain Municipal Water District (OMWD) Unit AA Raw Water Pipeline Project from the Second San Diego Aqueduct to the David C. McCollom Water Treatment Plant (DCMWTP), California. Surveys were conducted on behalf of OMWD.

### **Project Description**

OMWD proposes to construct a new underground 48-inch-diameter pipeline extending approximately 3 miles from the Second San Diego Aqueduct to the DCMWTP at the Olivenhain Reservoir (the proposed project). The Preferred Alternative would be constructed using a combination of trenching and tunneling methods.

### **Preferred Alternative**

The Preferred Alternative begins where the Second San Diego Aqueduct crosses Elfin Forest Road. An underground connection would join the Unit AA pipeline to the Second San Diego Aqueduct. The Unit AA pipeline would be placed within public right-of-way following Elfin Forest Road to the southeast. The public road right-of-way would be used in coordination with the County of San Diego. At the intersection where Elfin Forest Road transitions to Harmony Grove Road, the 10-inch distribution pipeline would begin its parallel trench with the Unit AA pipeline. The portion of the 10-inch pipeline extending south of the intersection would be abandoned. Approximately 300 feet northeast of the intersection, the two pipeline trenches would turn southeast and continue through a disturbed paved area.

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The pipelines would follow a dirt roadway for approximately 200 feet where the trenches would transition to a single tunnel passing underneath Escondido Creek for approximately 160 feet. After surfacing southeast of Escondido Creek, the pipelines would transition back to parallel trenches, and would pass under the City of Escondido's sewer outfall. The trenches would accommodate the pipelines along an existing easement and dirt road until intersecting Via Ambiente. Along Via Ambiente, the 10-inch pipeline would reconnect to the existing 10-inch distribution line, and the Unit AA pipeline would continue in a trench to the DCMWTP. A flow control facility (FCF) would be constructed near the Unit AA pipeline's connection with the DCMWTP.

This current project description is different from the original project that proposed at the start of protocol surveys. The Preferred Alignment shifted, which resulted in an approximately 1.5-acre area with potentially suitable habitat that was not surveyed for gnatcatcher presence.

#### Southern Alternative

The Southern Alternative would begin just east of Suerte Del Este Road, near the District's maintenance entrance just north of the point where the Second San Diego Aqueduct crosses Escondido Creek. This pipeline would roughly parallel two existing pipelines to the east, located in a District easement adjacent to the maintenance road, which it would follow to the DCMWTP. This alternative would use a combination of trench and tunnel construction methods to install the pipeline. In addition, the Southern Alternative would require blasting through many portions of the rocky slopes along the alignment. This alternative would include an FCF near the pipeline's connection with the DCMWTP.

#### **Site Description**

The proposed project is situated in central San Diego County, California, within an unincorporated area, approximately 25 miles northeast of the City of San Diego, and approximately 8 miles west of the Pacific Ocean (Figure 1). The proposed project, including both the Preferred Alternative and the Southern Alternative, occur at an elevation of approximately 638 feet above mean sea level (AMSL), and is within Range 3 West, Township 12 and 13 South, of the San Bernardino U.S. Geological Survey (USGS) Quadrangle (CaSIL 2009). The proposed project is bounded by Fortuna del Sur to the northwest, the Olivenhain Reservoir to the east, Questhaven Road to the south, and Suerte del Este to the west (Figure 2).

Both proposed alignments are dominated by Diegan coastal sage scrub on generally flat to undulating topography. Although portions of the Southern Alternative are extremely steep and rugged. Within the project area, this community is primarily dominated by flat-topped buckwheat (*Eriogonum fasciculatum*), laurel sumac (*Malosma laurina*), and California sagebrush (*Artemisia californica*). Other species include fascicled tarplant (*Deinandra fasciculatum*), black sage (*Salvia mellifera*), purple needle-grass (*Nasella pulchra*), Menzies' goldenbush (*Isocoma menziesii*), spiny redberry (*Rhamnus crocea*), white sage (*Salvia*

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*apiana*), and coast live oak (*Quercus agrifolia*). Following the Elfin Forest Road–Via Ambiente alignment from northwest to southeast, the Diegan coastal sage scrub shifts in dominance from the species described above to codominance by laurel sumac and black sage. There are also a number of disturbed Diegan coastal sage scrub patches in the easternmost section of the project area near the water treatment facility associated with both alignments. These areas were likely modified during construction of the dam and/or water treatment plant and related facilities. Re-colonizing species include California sagebrush, deerweed (*Lotus scoparius*), California buckwheat, brome (*Bromus* sp.), fascicled tarplant, laurel sumac, and brittlebush (*Encelia farinosa*). In addition, previously disturbed road cuts, also in the easternmost section of the proposed project area, have been revegetated with California buckwheat.

Residential development is scattered throughout the proposed project site, and some structures are immediately adjacent to Diegan coastal sage scrub, which, in some cases, is contiguous with other vegetation communities such as nonnative grassland, dense coast live oak woodland, and southern mixed chaparral.

Overall, the Diegan coastal sage scrub within the project site is characterized by richness in native species diversity and abundance, lack of disturbance, and intact vegetative composition. These characteristics indicate that the Diegan coastal sage scrub within the proposed project site is of relatively high quality.

### **Background Information**

The coastal California gnatcatcher, a subspecies of the California gnatcatcher (*Poliophtila californica*), is federally listed as threatened by the U.S. Fish and Wildlife Service (USFWS 1993), and is considered a species of special concern by the California Department of Fish and Game (CDFG 2009). Critical habitat was originally designated by the U.S. Fish and Wildlife Service (USFWS) for the CAGN in 2000, but was revised, and a final rule was published in 2007 (USFWS 2007). No recovery plan has been drafted for the CAGN. The CAGN is an uncommon year-round resident of Southern California. This species is declining proportionately with the continued loss of coastal sage scrub habitat in the six Southern California counties located within the coastal plain (San Bernardino, Ventura, Los Angeles, Orange, San Diego, and Riverside).

The primary cause of the decline of the CAGN is the cumulative loss of coastal sage scrub vegetation to urban and agricultural development, poor dispersal, reliance on a specific habitat type, and difficulty in successful breeding. Studies suggest that the CAGN may be highly sensitive to the effects of habitat fragmentation and development activity (Atwood 1990; ERCE 1990). USFWS has estimated that coastal sage scrub habitat has been reduced 70% to 90% from its historical extent (USFWS 1991), and little of what remains is protected in natural open space.

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The CAGN generally inhabits Diegan coastal sage scrub and Riversidian coastal sage scrub dominated by California sagebrush and flat-topped buckwheat, generally below 1,500 feet in elevation along the coastal slope. When nesting, the CAGN typically avoids slopes greater than 25% that have tall, dense vegetation. CAGN pairs will attempt several nests each year, each placed in a different location inside their breeding territory, but most nest attempts are unsuccessful due to depredation by a variety of species (Atwood and Bontrager 2001). Clutch size ranges from one to five eggs, with three or four eggs most common. The CAGN tends to have slightly smaller clutches in years with poor rainfall and will experience a higher rate of mortality during cold winters (Atwood and Bontrager 2001; Grishaver et al. 1998). CAGNs will remain paired through the non-breeding season and will generally expand their home range when not breeding. Juvenile CAGNs tend to remain close to their natal territories. On average, juveniles disperse less than 1.2 miles from their natal territories, making colonization of distant habitat patches difficult.

### **Survey Methodology**

Prior to beginning protocol surveys in 2009, AECOM consulted historical biological information, including the California Natural Diversity Database (CDFG 2009), and conducted a biological reconnaissance survey in September 2009 to determine the extent of suitable CAGN habitat within the proposed project site "survey area" out to 500 feet paralleling both sides of the proposed project footprint (Figure 2). Approximately 146.5 acres within the survey area were considered potentially suitable CAGN habitat (Figures 3a and 3b). This area was considered reasonable to survey in 1 day with two biologists, or in 2 days with a single biologist.

Non-breeding-season protocol-level coastal California gnatcatcher surveys were conducted between October 2009 and January 2010 within suitable habitat along the Elfin Forest Road–Via Ambiente alignment only (Preferred Alternative). Protocol-level coastal California gnatcatcher surveys were not conducted along the cross-country alignment (Southern Alternative) because this alignment was determined to be occupied by CAGNs based on protocol-level surveys conducted by Mooney and Associates in 1991, 1992, and 1993 (Mooney Associates 1994) and the existing conditions remain very similar to those of the early 1990s. Thus, suitable habitat along the cross-country alignment is assumed to be occupied.

The protocol-level surveys conducted along the Elfin Forest Road–Via Ambiente alignment were completed between October 8, 2009, and January 29, 2010, within habitat suitable for the CAGN within the proposed project site. These surveys followed the Coastal California Gnatcatcher Presence/Absence Survey Guidelines (USFWS 1997; dated February 28, 1997, and amended July 28, 1997). Although the survey area is mostly within the boundaries of the proposed North County Multiple Species Conservation Program (NCMSCP) Subarea Plan, this plan is not yet finalized and, thus, the associated Incidental Take Authorization has not been issued. Similarly, OMWD is not independently covered under the Natural Communities Conservation Plan (NCCP) with separate incidental take authorization.

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CAGN surveys were conducted between 6 a.m. and 12 p.m. according to protocol requirements. The USFWS non-breeding-season (July 1 through March 14) survey protocol for non-NCCP areas requires a minimum of nine surveys conducted at least 2 weeks apart. The nine protocol surveys were separated by a minimum of 14 days and were conducted from October 8, 2009, through January 29, 2010. Approximately 146.5 acres of potential CAGN habitat were surveyed.

The surveys consisted of walking meandering transects through potential CAGN habitat, including all scrub associations. AECOM wildlife biologists Barbra Calantas, Andrew Fisher, Bonnie Hendricks, and Lyndon Quon conducted the surveys under TE-820658-4, and Erik LaCoste conducted the surveys under TE-027736-4. Supervised individuals during the surveys were AECOM wildlife biologists Shelly Dayman, Matt Kedziora, and James McMorran. The biologists conducted passive surveillance (i.e., listening and looking for the species) in all habitats with potential to support CAGN. If an observation was not made after approximately 5 to 10 minutes of passive survey activity, a taped vocalization of CAGN was played for approximately 5 to 10 seconds (i.e., active survey activity), followed by another period of passive observation. The taped vocalization was discontinued with any positive CAGN response. Surveys were not conducted during periods of inclement weather such as extreme wind or during a rain event.

As allowed under AECOM's endangered species permit, the survey activity "takes" the CAGN through harassment with playback of taped coastal California gnatcatcher vocalizations. No individual CAGNs were captured.

## **Results**

A summary of survey dates, times, weather conditions, permitted biologists, and observations are presented in Table 1. During surveys, temperature ranged from 39 to 80 degrees Fahrenheit (°F) and wind speed ranged from an average of 0 to 5 miles per hour (mph). A unique survey week identification number (e.g., 1a) was made when circumstances required that multiple permitted biologist conduct surveys on the same day to survey the entire site, or two consecutive days were needed to survey the site by different permitted biologists.

CAGNs were detected within the survey area during all nine focused surveys. Detections of CAGN pairs/individuals fluctuated per survey period, with a gradual decrease in detections during the latter half of the non-breeding-season CAGN surveys. It should be noted that many individuals were not sexed, as the difference between male, female, and immature CAGNs during the non-breeding season can pose an identification challenge. Therefore, CAGNs were only sexed when obvious characteristics and/or behavior were present. Additionally, though CAGNs were present (and sometimes in numbers) throughout the non-breeding-survey season, it was not assumed that any CAGN was partial to a specific area, as the numbers of dispersing and/or wandering individuals was evident. Locations of all CAGN detections are depicted in Figures 3a and 3b.

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**Table 1**  
**Coastal California Gnatcatcher Survey**  
**Dates, Time, Weather Conditions, Permitted Biologists, and Observations**

| Survey Week | Date         | Time      | % Cloud Cover (Start-End) | Temp. (°F) (Start-End) | Wind Avg. (mph) (Start-End) | Permitted Biologists           | CAGN Observations  |
|-------------|--------------|-----------|---------------------------|------------------------|-----------------------------|--------------------------------|--|
| 1a          | Oct 8, 2009  | 0650-1011 | 0-65                      | 60-67                  | 2-3.5                       | Andrew Fisher                  | 4 CAGN pairs and 2 adult female CAGN observed                            |
| 1b          | Oct 8, 2009  | 0640-0900 | 2-0                       | 62-74.6                | 1.8-1.7                     | Barbra Calantas                | 2 adult male CAGN and 1 female CAGN (potentially juvenile) observed      |
| 1c          | Oct 8, 2009  | 0642-0900 | 0-60                      | 49.8-74.6              | 0.7-1.7                     | Lyndon Quon                    | 1 CAGN pair observed   |
| 2a          | Oct 22, 2009 | 0630-1100 | 2-0                       | 57.2-80                | 1.8-5                       | Barbra Calantas, Shelly Dayman | 2 CAGN pairs observed  |
| 2b          | Oct 22, 2009 | 0725-1130 | 10-0                      | 63-80                  | 1-5                         | Andrew Fisher, James McMorran  | 4 CAGN pairs (one CAGN pair with one juvenile) and 1 individual observed |
| 3           | Nov 5, 2009  | 0640-1100 | 100-0                     | 64-73                  | 0-2                         | Andrew Fisher, James McMorran  | 3 CAGN pairs and 2 individuals observed, and 5 CAGN detected aurally     |
|             | Nov 6, 2009  | 0645-1000 | 100-80                    | 63-68                  | 1-3                         |                                |  |
| 4           | Nov 19, 2009 | 0725-1125 | 70-0                      | 58-70                  | 1-5                         | Andrew Fisher, James McMorran  | 2 CAGN pairs and 2 individuals observed, and 1 CAGN detected aurally     |
|             | Nov 20, 2009 | 0650-1130 | 0-5                       | 50-74                  | 0-3                         |                                |  |
| 5a          | Dec 3, 2009  | 0650-1040 | 100-0                     | 54-66                  | 1.4-1.1                     | Andrew Fisher, James McMorran  | 1 CAGN pair observed, and 1 CAGN detected aurally                        |
| 5b          | Dec 4, 2009  | 0645-0940 | 0-0                       | 48-62                  | 2-3                         | Barbra Calantas, Matt Kedziora | 1 CAGN pair and 2 individuals observed                                   |
| 6a          | Dec 18, 2009 | 0641-1030 | 10-2                      | N/A                    | 1-2                         | Erik LaCoste                   | 1 CAGN pair and 1 individual observed                                    |
| 6b          | Dec 18, 2009 | 0636-1000 | 10-0                      | 48.1-66.9              | 1.8-2.3                     | Barbra Calantas                | 3 CAGN pairs observed  |
| 7           | Dec 31, 2009 | 0805-1200 | 0-0                       | 48-72                  | 0-5                         | Bonnie Hendricks               | 2 CAGN pairs and 1 individual observed                                   |
|             | Jan 1, 2010  | 0820-1200 | 25-10                     | 45-72                  | 0-3                         |                                |  |
| 8           | Jan 15, 2010 | 0800-1200 | 0-90                      | 68-74                  | 0-3                         | Bonnie Hendricks               | 1 CAGN observed  |
|             | Jan 16, 2010 | 0820-1225 | 50-10                     | 58-79                  | 3-5                         |                                |  |
| 9           | Jan 28, 2010 | 0800-1155 | 30-50                     | 45-64                  | 0-2                         | Bonnie Hendricks               | 1 CAGN pair observed   |
|             | Jan 29, 2010 | 0720-1209 | 5-5                       | 39-65                  | 0-2                         |                                |  |

<sup>a</sup> Separate data from permitted biologists who split up to survey the entire site in either 1 day or 2 consecutive days.  
<sup>b</sup> Separate data from permitted biologists who split up to survey the entire site in either 1 day or 2 consecutive days.  
<sup>c</sup> Separate data from permitted biologists who split up to survey the entire site in either 1 day or 2 consecutive days.

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Survey 1 yielded five CAGN pairs and five individuals, for a total of 15 CAGNs detected. Survey 2 yielded six CAGN pairs, with one of the pairs associating with a third CAGN (potentially a family group), and one individual, for a total of 14 CAGNs detected. Survey 3 yielded three CAGN pairs, two individuals, and an additional five individuals aurally detected, for a total of 13 CAGNs detected. Survey 4 yielded two CAGN pairs, two individuals, and one individual detected aurally, for a total of seven CAGNs detected. Survey 5 yielded two CAGN pairs, two individuals, and one individual detected aurally, for a total of seven CAGNs detected. Survey 6 yielded four CAGN pairs and one individual for a total of nine CAGNs detected. Survey 7 yielded two CAGN pairs and one individual for a total of five CAGNs detected. Survey 8 yielded one individual CAGN. Survey 9 yielded one CAGN pair for a total of two CAGNs detected.

In addition to the CAGN, seven wildlife species with state special status (California Department of Fish and Game [CDFG]) were detected during focused CAGN surveys within or adjacent to CAGN survey areas: the orange throated whiptail (*Aspidoscelis hyperythra*; CDFG species of special concern), northern harrier (*Circus cyaneus*; CDFG species of special concern), white-tailed kite (*Elanus leucurus*; state fully protected species), Cooper's hawk (*Accipiter cooperii*; CDFG watch list), osprey (*Pandion unicinctus*; CDFG watch list), Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*; CDFG watch list), and Bell's sage sparrow (*Amphispiza belli belli*; CDFG watch list). Locations of these species are depicted in Figures 4a and 4b. Field notes are presented in Appendix A, and a list of all wildlife species detected during protocol CAGN surveys is presented in Appendix B.

## **Discussion**

Overall, the habitat quality for CAGNs varied throughout the proposed project site and 500-foot buffer survey area. A variety of topography, development, and habitats are found within this area, including large areas of dense chaparral (some on steep slopes), nonnative woodlands, disturbed and/or developed areas and pastures, and both large and isolated areas of coastal sage scrub. Structures and dwellings are scattered within the survey area in a variety of these habitats. Many of these buildings lie within areas of suitable occupied CAGN habitat, and are contiguous with large areas of suitable CAGN habitat. Although it is difficult to know the exact numbers of CAGNs utilizing the proposed project site and 500-foot survey area during the non-breeding season at any given time, a minimum of two CAGNs and a maximum of 13 CAGNs were detected and observed per survey throughout the non-breeding-season surveys, including juvenile individuals, thus confirming that areas of suitable CAGN habitat within the proposed project site and the 500-foot survey area are used year-round by CAGNs.

## **Certification Statement**

Qualified AECOM biologists who conducted CAGN surveys for the proposed OMWD Unit AA Raw Water Pipeline project certify that the information in this survey report fully and accurately represents the work performed by AECOM biologists. Signatures of current AECOM biologists Barbra Calantas, Andrew Fisher, Lyndon Quon, Bonnie Hendricks, and

Ms. Sandy Marquez, Carlsbad Fish and Wildlife Office  
Mr. Breck McAlexander, California Department of Fish and Game  
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Erik LaCoste, who conducted the protocol surveys, are included below. The results of focused surveys for listed species are typically considered valid for 1 year by the resource agencies. If you have any questions or require additional information, please feel free to contact James McMorran at (619) 233-1454, ext. 6929.

Sincerely,



Andrew Fisher  
Wildlife Biologist



Erik LaCoste  
Wildlife Biologist



Barbara Calantas  
Wildlife Biologist



Lyndon Quon  
Wildlife Biologist



Bonnie Hendricks  
Wildlife Biologist

- Attachments: Figure 1 – Regional Map  
Figure 2 – Vicinity Map  
Figure 3a – CAGN Detections for Nonbreeding Season Surveys (West)  
Figure 3b – CAGN Detections for Nonbreeding Season Surveys (East)  
Figure 4a – Other Sensitive Wildlife Species Detected (West)  
Figure 4b – Other Sensitive Wildlife Species Detected (East)  
Appendix A – Field Datasheets  
Appendix B – Wildlife Species Detected during CAGN Surveys

Ms. Sandy Marquez, Carlsbad Fish and Wildlife Office  
Mr. Breck McAlexander, California Department of Fish and Game  
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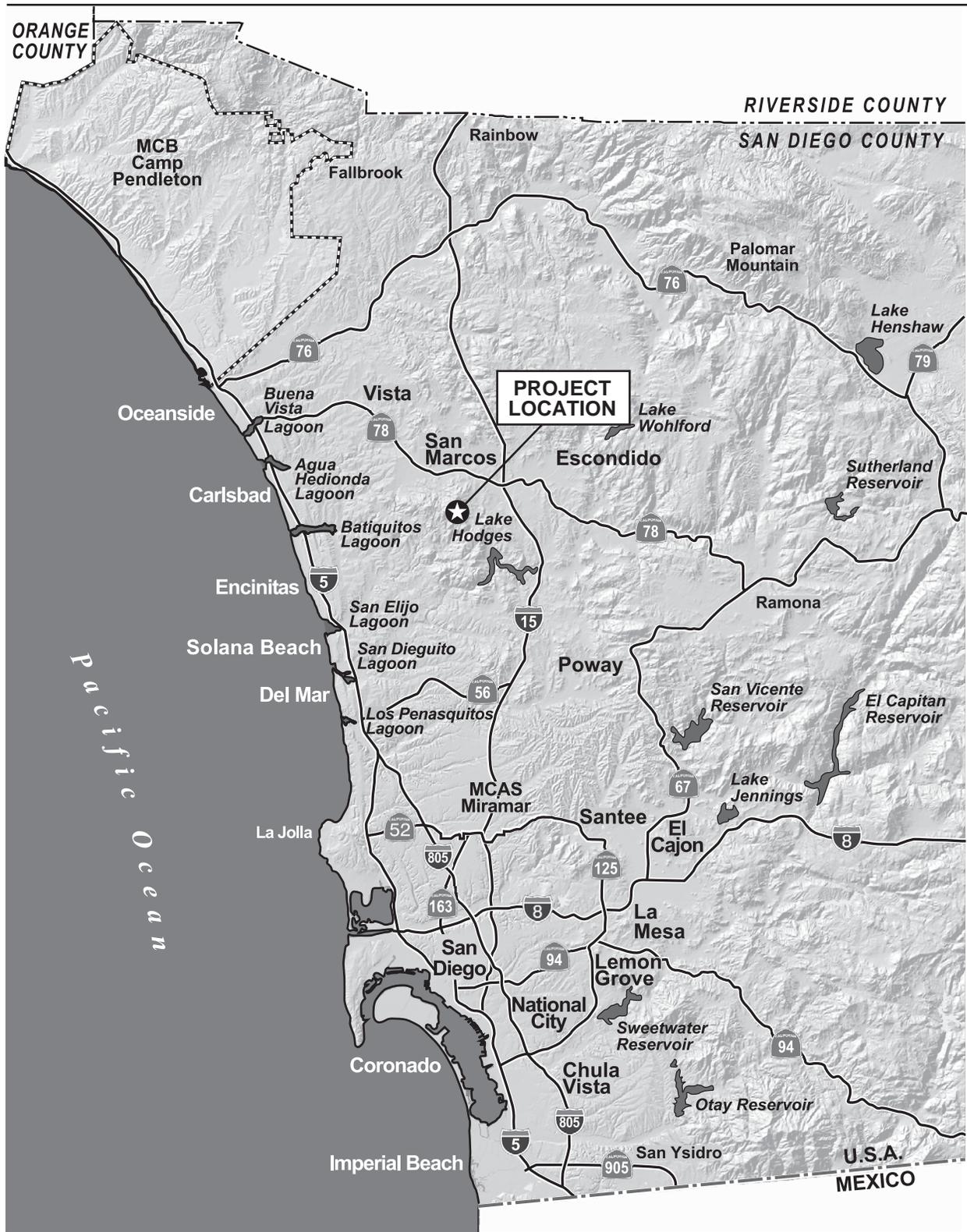
### **Literature Cited**

- Atwood, J. L. 1990. Status Review of the California Gnatcatcher (*Polioptila californica*).  
Manomet Bird Observatory, Manomet, Massachusetts. 79 pp.
- Atwood, J. L., and D. R. Bontrager. 2001. California Gnatcatcher (*Polioptila californica*), The  
Birds of North America, No. 574, 32 pp.
- California Department of Fish and Game (CDFG). 2009. California Natural Diversity  
Database. Special Animals List. March.
- California Spatial Information Library (CaSIL). 2009. [Online WWW]. Available URL:  
<http://casil.ucdavis.edu/casil/>. Accessed November 2009.
- Environmental and Energy Services Company (ERCE). 1990. Phase 1 Report Amber Ridge  
California Gnatcatcher Study. Prepared for Weingarten, Siegel, Fletcher Group, Inc.  
April. 30 pp.
- Grishaver, M. A., P. J. Mock, and K. L. Preston. 1998. Breeding Behavior of the California  
Gnatcatcher in Southwestern San Diego County, California. West. Birds 29.  
299–322 pp.
- Mooney Associates. 1994. Biological Assessment for the Olivenhain Water Storage Project.  
Prepared for the Olivenhain Municipal Water District (available from Wilson Ornithol.  
Soc., Mus. Zool., University of Michigan, Ann Arbor, Michigan 48109-1079).
- U.S. Fish and Wildlife Service (USFWS). 1991. Summary of the Proposed Rule to List the  
Coastal California Gnatcatcher (*Polioptila californica*) as Endangered in California  
and Baja, Mexico. September. 114 pp.
- U.S. Fish and Wildlife Service (USFWS). 1993. Endangered and Threatened Wildlife and  
Plants: Special Rule Concerning Take of the Threatened Coastal California  
Gnatcatcher. Final Rule. Federal Register 58:65088–65096.
- U.S. Fish and Wildlife Service (USFWS). 1997. Coastal California Gnatcatcher (*Polioptila  
californica californica*) Presence/Absence Survey Guidelines February 28, 1997.  
Available at [http://www.fws.gov/ventura/speciesinfo/protocols\\_guidelines/docs/  
cagn/coastal-gnatcatcher\\_survey-guidelines.pdf](http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/docs/cagn/coastal-gnatcatcher_survey-guidelines.pdf).
- U.S. Fish and Wildlife Service (USFWS). 2007. Endangered and Threatened Wildlife and  
Plants; Revised Designation of Critical Habitat for the Coastal California Gnatcatcher  
(*Polioptila californica californica*); Final Rule. Federal Register 72:72009–72213.

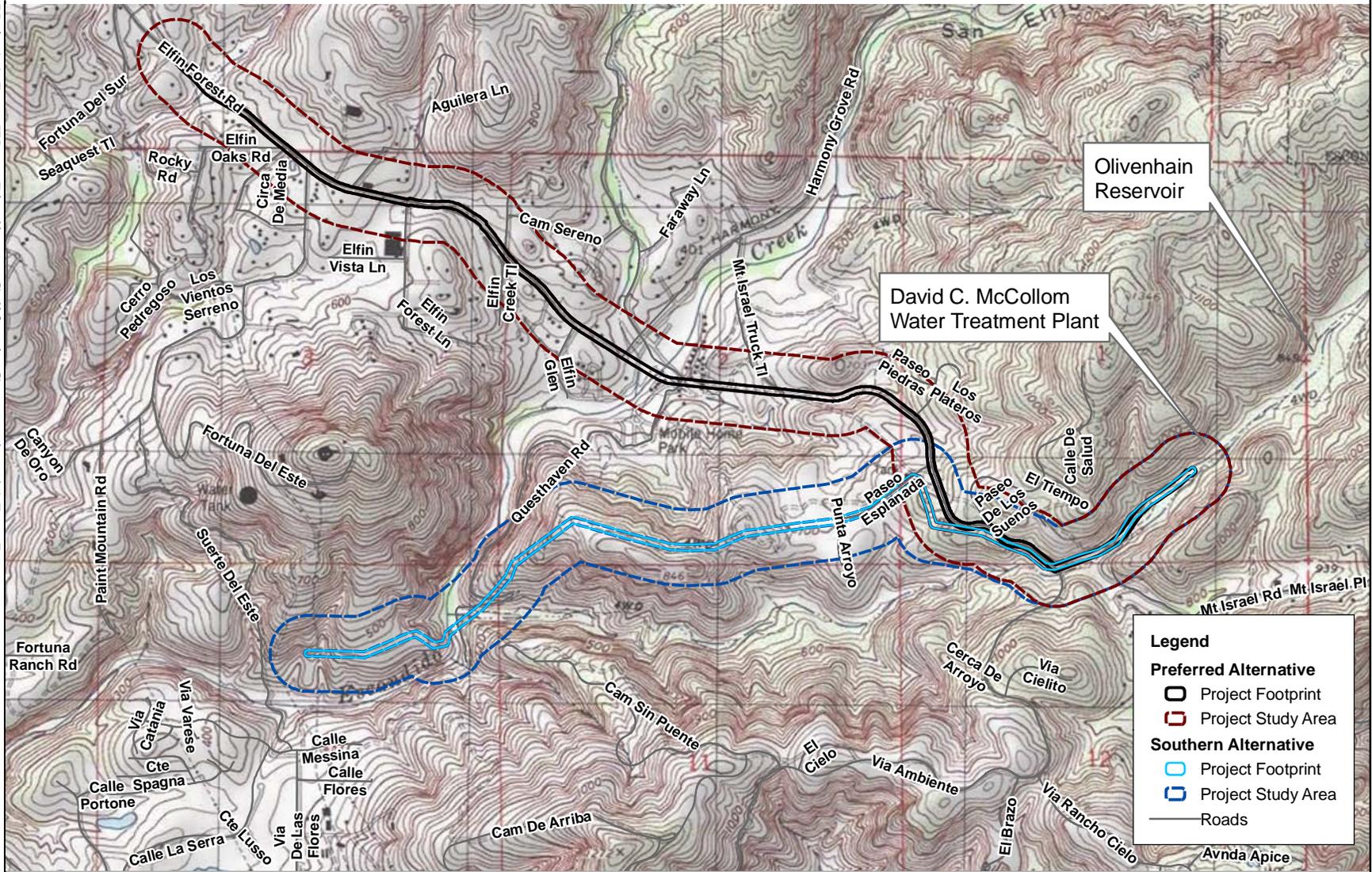


## **FIGURES**

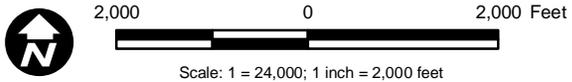




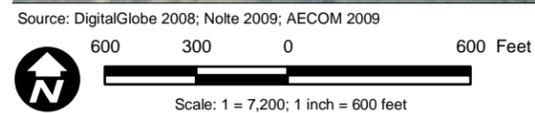
**Figure 1**  
**Regional Map**



Source: USGS 7.5' Topo Quad Rancho Santa Fe 1983; SanGIS 2010

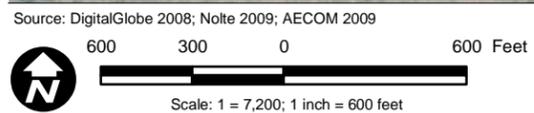
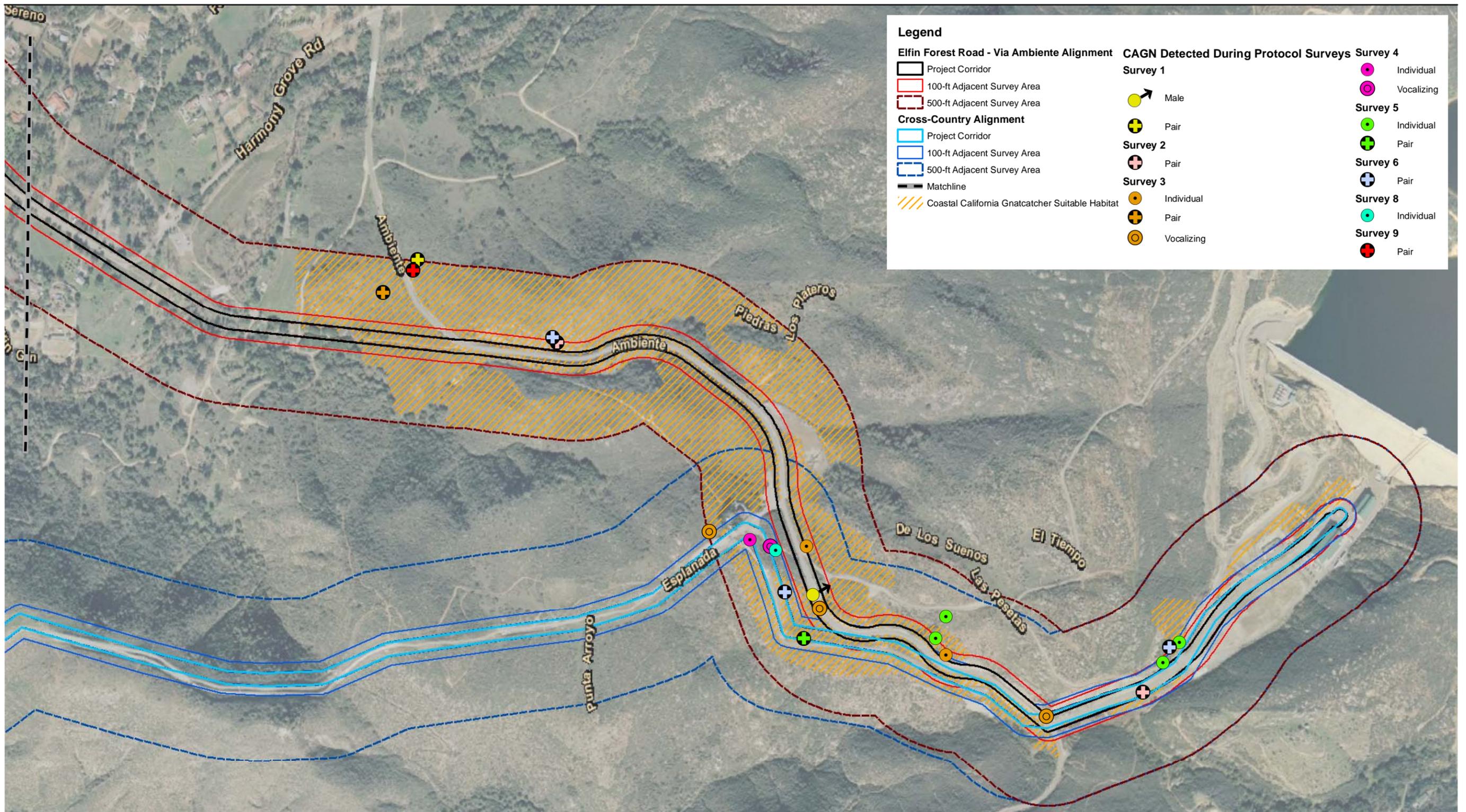


**Figure 2**  
**Vicinity Map**



**Figure 3a**  
**Coastal California Gnatcatcher Detections for Nonbreeding Season Surveys (WEST)**



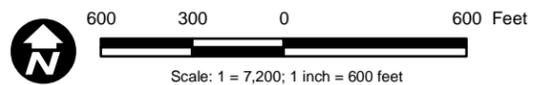


**Figure 3b**  
**Coastal California Gnatcatcher Detections for Nonbreeding Season Surveys (EAST)**



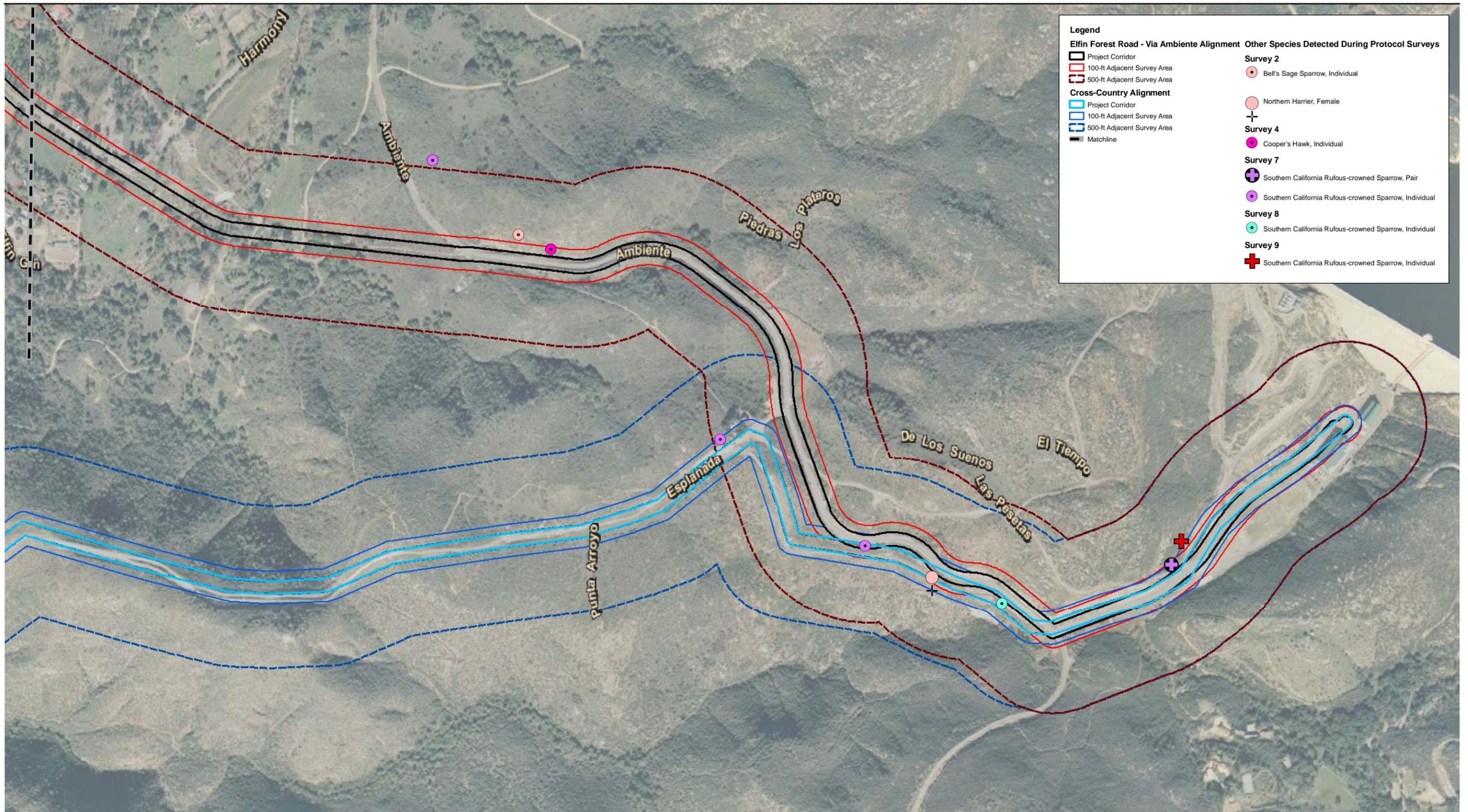


Source: DigitalGlobe 2008; Nolte 2009; AECOM 2009

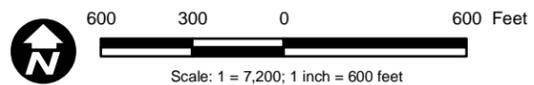


**Figure 4a**  
**Other Sensitive Wildlife Species Detected (WEST)**





Source: DigitalGlobe 2008; Nolte 2009; AECOM 2009



**Figure 4b**  
**Other Sensitive Wildlife Species Detected (EAST)**



**APPENDIX A**  
**FIELD DATASHEETS**



# CAGN SURVEYS

Recorder: AFT Add'l Person: — GPS Unit: —

Date: 10-8-2009 Project: OMWD Raw Water Pipeline Survey 1 of 9

Time Start: 0650 Time End: 1000 Map #: —

Start T: 60°F CC: 0 Wind Sp/Dir: 2-3 W General Weather Condition: Cool, calm, clear

End T: 67°F CC: 65% Wind Sp/Dir: 1.5-3.5 W General Weather Condition: Calm

| Map/ GPS # | Time | Species    | Age | Sex | Point Type | Comments        |
|------------|------|------------|-----|-----|------------|-----------------|
|            |      | RTHA       | AJU | MFU |            |                 |
|            |      | WREN       | AJU | MFU |            |                 |
|            |      | CORA       | AJU | MFU |            |                 |
|            |      | NOFI       | AJU | MFU |            |                 |
|            |      | RSNA       | AJU | MFU |            |                 |
|            |      | WCSP       | AJU | MFU |            |                 |
|            |      | CALT       | AJU | MFU |            |                 |
|            |      | SPTO       | AJU | MFU |            |                 |
| (A)        | 0659 | CAGN       | AJU | MFU |            |                 |
| (A)        | 0702 | CAGN       | AJU | MFU |            | Pair            |
|            |      | YRNA       | AJU | MFU |            |                 |
|            |      | SOSP       | AJU | MFU |            |                 |
| (A)        | 0717 | CAGN       | AJU | MFU |            | Probably same ♀ |
|            |      | RISP       | AJU | MFU |            | all over        |
|            |      | CORA       | AJU | MFU |            | later           |
|            |      | DEER       | AJU | MFU |            | later           |
|            |      | Cottontail | AJU | MFU |            | later           |
|            |      | NOMO       | AJU | MFU |            |                 |
|            |      | WSTA       | AJU | MFU |            |                 |
|            |      | WUWO       | AJU | MFU |            |                 |
| (B)        | 0730 | CAGN       | AJU | MFU |            | male            |
|            |      | LEGO       | AJU | MFU |            |                 |
|            |      | SAPT       | AJU | MFU |            |                 |
|            |      | ANNA       | AJU | MFU |            |                 |
| (C)        | 0753 | CAGN       | AJU | MFU |            | male            |
|            |      | BLPH       | AJU | MFU |            |                 |
|            |      | MODO       | AJU | MFU |            |                 |
|            |      | HOWR       | AJU | MFU |            |                 |
| (D)        | 0913 | CAGN       | AJU | MFU |            | Pair            |
| (E)        | 0923 | CAGN       | AJU | MFU |            | Pair            |
|            |      | CAHJ       | AJU | MFU |            |                 |











### CAGN SURVEYS

Recorder: BCA Add'l Person: SDA GPS Unit: \_\_\_\_\_  
 Date: 10/22/09 Project: OMWD Raw Water Pipeline Survey 2 of 9  
 Time Start: 0630 Time End: \_\_\_\_\_ Map #: \_\_\_\_\_  
 Start T: 57.2 CC: 2% Wind Sp/Dir: 1-8 General Weather Condition: SUNNY  
 End T: \_\_\_\_\_ CC: \_\_\_\_\_ Wind Sp/Dir: \_\_\_\_\_ General Weather Condition: \_\_\_\_\_

| Map/ GPS #        | Time | Species  | Age | Sex  | Point Type | Comments                          |
|-------------------|------|----------|-----|------|------------|-----------------------------------|
| <del>BCA001</del> |      | G/TOW    | AJU | MFU  |            |                                   |
|                   |      | WREN     | AJU | MFU  |            |                                   |
|                   |      | RSHA     | AJU | MFU  |            |                                   |
|                   |      | HDFI     | AJU | MFU  |            |                                   |
|                   |      | NUWO     | AJU | MFU  |            |                                   |
|                   |      | HOWR     | AJU | MFU  |            |                                   |
|                   |      | CALT     | AJU | MFU  |            |                                   |
|                   |      | AMCR     | AJU | MFU  |            |                                   |
|                   |      | WCSP     | AJU | MFU  |            |                                   |
|                   |      | SPTO     | AJU | MFU  |            |                                   |
|                   |      | YRWA     | AJU | MFU  |            |                                   |
|                   |      | CORA     | AJU | MFU  |            |                                   |
|                   |      | LEWO     | AJU | MFU  |            | ask Jimmy                         |
|                   |      | WESJ     | AJU | MFU  |            |                                   |
|                   |      | SHPLA    | AJU | MFU  |            |                                   |
|                   |      | Wtenthil | AJU | MFU  |            |                                   |
|                   |      | ANHU     | AJU | MFU  |            |                                   |
| BCSG01            |      | BCSP     | ⓐJU | MFU  | ind        | foraging                          |
|                   |      | COJHC    | AJU | MFU  |            |                                   |
|                   |      | WLE      | AJU | MFU  |            |                                   |
|                   |      | WOLY     | AJU | MFU  |            |                                   |
| BCCG01            | 853  | CAGN     | ⓐJU | ⓐMFU | pair       | foraging, stuck -<br>down 2-3 min |
|                   |      | CAQU     | AJU | MFU  |            |                                   |
|                   |      | NUWO     | AJU | MFU  |            |                                   |
| BCNH01            |      | NOTA     | ⓐJU | ⓐMFU | individual | flying over                       |
| BCCG02            | 1030 | CAGN     | ⓐJU | ⓐMFU | pair       | foraging                          |
|                   |      | NUWO     | AJU | MFU  |            |                                   |
|                   |      |          | AJU | MFU  |            |                                   |
|                   |      |          | AJU | MFU  |            |                                   |
|                   |      |          | AJU | MFU  |            |                                   |
|                   |      |          | AJU | MFU  |            |                                   |

## CAGN SURVEYS

Recorder: AFI Add'l Person: JMC GPS Unit: GTF 6.4  
 Date: 10-22-09 Project: OMWD Raw Water Pipeline Survey 2 of 9  
 Time Start: 0725 Time End: 1130 Map #: \_\_\_\_\_  
 Start T: 63°F CC: 10% Wind Sp/Dir: 1-2 W General Weather Condition: Sunny, Cool  
 End T: 89°F CC: 0% Wind Sp/Dir: 2-5 W General Weather Condition: Sunny, Hot

| Map/ GPS # | Time   | Species | Age   | Sex   | Point Type | Comments  |
|------------|--------|---------|-------|-------|------------|---|
|            |        | NOMD    | AJU   | MFU   |            |   |
|            |        | WCSP    | AJU   | MFU   |            |   |
|            |        | YRWA    | AJU   | MFU   |            |   |
|            |        | CORA    | AJU   | MFU   |            |   |
|            |        | BUSH    | AJU   | MFU   |            |   |
|            |        | WREN    | AJU   | MFU   |            |   |
|            |        | WSJA    | AJU   | MFU   |            |   |
|            |        | CATN    | AJU   | MFU   |            |   |
|            |        | ANNUL   | AJU   | MFU   |            |   |
|            |        | MOMO    | AJU   | MFU   |            |   |
| AFRISP01   |        | RISP    | (A)JU | (M)FU |            |   |
|            |        | ACWD    | AJU   | MFU   |            |   |
| AFCRGN01   | Pair B | CAGN    | (A)JU | (M)FU |            | Heard 1 then  |
|            |        | NUIN    | AJU   | MFU   |            |   |
|            |        | BLPH    | AJU   | MFU   |            |   |
|            |        | LEGO    | AJU   | MFU   |            |   |
| AFCRGN02   | Pair A | CAGN    | (A)JU | (M)FU |            | Heard across rd. & then saw them fly across Elkins forest rd. |
|            |        | AMBO    | AJU   | MFU   |            |   |
|            |        | HOFI    | AJU   | MFU   |            |   |
|            |        | EUST    | AJU   | MFU   |            |   |
|            |        | NETH    | AJU   | MFU   |            |   |
|            |        | INTSP   | AJU   | MFU   |            |   |
|            |        | SVSP    | AJU   | MFU   |            |   |
| AFCRGN03   | Pair C | CAGN    | (A)JU | (M)FU |            | 3 Birds - Family Grp.   |
| AFRISP02   |        | RISP    | (A)JU | (M)FU |            |   |
|            |        | CALT    | AJU   | MFU   |            |   |
|            |        | SPTD    | AJU   | MFU   |            |   |
|            |        | WEBL    | AJU   | MFU   |            |   |
|            |        | HOWR    | AJU   | MFU   |            |   |
| AFCRGN04   | Pair D | CAGN    | (A)JU | (M)FU |            |   |
|            |        | CAON    | AJU   | MFU   |            |   |



### CAGN SURVEYS

Recorder: KFI Add'l Person: JMC GPS Unit: GTK4  
 Date: 11-5-2009 Project: OMWD Raw Water Pipeline Survey 3a of 9  
 Time Start: 0640 Time End: \_\_\_\_\_ Map #: 3a  
 Start T: 64 CC: 100 Wind Sp/Dir: Ø General Weather Condition: Overcast  
 End T: 737 CC: Ø Wind Sp/Dir: 1-2W General Weather Condition: SUNNY, Calm

| Map/ GPS # | Time | Species | Age | Sex | Point Type | Comments                   |
|------------|------|---------|-----|-----|------------|----------------------------|
|            |      | BEKI    | AJU | MFU |            |                            |
|            |      | CORR    | AJU | MFU |            |                            |
|            |      | AUWA    | AJU | MFU |            |                            |
|            |      | WCSP    | AJU | MFU |            |                            |
|            |      | WREN    | AJU | MFU |            |                            |
|            |      | ADWD    | AJU | MFU |            |                            |
|            |      | CALT    | AJU | MFU |            |                            |
|            |      | LECO    | AJU | MFU |            |                            |
|            |      | WJTA    | AJU | MFU |            |                            |
|            |      | BREN    | AJU | MFU |            |                            |
|            |      | ADWD    | AJU | MFU |            |                            |
|            |      | CAKI    | AJU | MFU |            |                            |
|            |      | BEWR    | AJU | MFU |            |                            |
|            |      | GCSP    | AJU | MFU |            |                            |
|            |      | CATH    | AJU | MFU |            |                            |
|            |      | SAPA    | AJU | MFU |            |                            |
|            |      | SPTO    | AJU | MFU |            |                            |
|            |      | HOFE    | AJU | MFU |            |                            |
|            |      | ENST    | AJU | MFU |            |                            |
|            |      | COYE    | AJU | MFU |            |                            |
|            |      | SOSP    | AJU | MFU |            |                            |
|            |      | REHA    | AJU | MFU |            |                            |
|            |      | WERL    | AJU | MFU |            |                            |
|            |      | COWR    | AJU | MFU |            | *Lots of traffic noise     |
|            |      | HOWR    | AJU | MFU |            |                            |
|            |      | ANHL    | AJU | MFU |            |                            |
|            |      | MOOD    | AJU | MFU |            |                            |
|            |      | CRDH    | AJU | MFU |            |                            |
|            |      | RCSP    | AJU | MFU |            |                            |
|            |      | CRGN    | AJU | MFU |            | Group @ least 2 ind / pair |
|            |      | CEWR    | AJU | MFU |            |                            |



### CAGN SURVEYS

Recorder: AGI Add'l Person: JMC GPS Unit: \_\_\_\_\_  
 Date: 11-06-2009 Project: OMWD Raw Water Pipeline Survey 3b of 9  
 Time Start: 0645 Time End: 1000 Map #: 3b, 3c  
 Start T: 63 ~~OFF~~ CC: 100% Wind Sp/Dir: 1-2N General Weather Condition: Cool, calm  
 End T: OFF CC: 80% Wind Sp/Dir: 2-3N General Weather Condition: " "

| Map/ GPS #     | Time | Species | Age | Sex | Point Type | Comments           |
|----------------|------|---------|-----|-----|------------|--------------------|
|                |      | ROWR    | AJU | MFU |            |                    |
|                |      | WREN    | AJU | MFU |            |                    |
|                |      | SPTD    | AJU | MFU |            |                    |
|                |      | CHLT    | AJU | MFU |            |                    |
|                |      | RTHA    | AJU | MFU |            |                    |
|                |      | AWWA    | AJU | MFU |            |                    |
|                |      | WCSP    | AJU | MFU |            |                    |
|                |      | SAPP    | AJU | MFU |            |                    |
|                |      | NOFL    | AJU | MFU |            |                    |
|                |      | WSTP    | AJU | MFU |            |                    |
|                |      | BUSH    | AJU | MFU |            |                    |
|                |      | CATH    | AJU | MFU |            |                    |
|                |      | ROPA    | AJU | MFU |            |                    |
|                |      | LEGO    | AJU | MFU |            |                    |
| AF CAGN06      |      | CAGN    | AJU | MFU | Heard      | CAGN <u>NO</u>     |
| ALL over Chap. |      | RCSP    | AJU | MFU |            | responding to      |
|                |      | AMKE    | AJU | MFU |            | callback at all    |
|                |      | GCSP    | AJU | MFU |            | -very quiet, seems |
| AF CAGN07      |      | CAGN    | AJU | MFU |            | to make them       |
|                |      | HOVE    | AJU | MFU |            | shut-up.           |
| AF CAGN08      |      | CAGN    | AJU | MFU | Heard      |                    |
| AF CAGN09      |      | CAGN    | AJU | MFU | 1 ind      |                    |
| AF CAGN10      |      | CAGN    | AJU | MFU | Heard      |                    |
|                |      | MADO    | AJU | MFU |            |                    |
|                |      | NETA    | AJU | MFU |            |                    |
|                |      | AWWA    | AJU | MFU |            |                    |
|                |      | AWWA    | AJU | MFU |            |                    |
|                |      | SOSP    | AJU | MFU |            |                    |
|                |      | VOSP    | AJU | MFU |            |                    |
|                |      | DETR    | AJU | MFU |            |                    |
|                |      | CAQU    | AJU | MFU |            |                    |

CAGN SURVEYS

Recorder: AFI Project: OmWD Survey Site: \_\_\_\_\_  
 Date: 11-6-2009 Map #: 36, 3C

| Map/ GPS # | Time | Species        | Age | Sex | Point Type     | Comments |
|------------|------|----------------|-----|-----|----------------|----------|
|            |      | AMR Robin      | AJU | MFU |                |          |
|            |      | deer           | AJU | MFU | tree           |          |
|            |      | coyote         | AJU | MFU | tree           |          |
|            |      | CA grnd sq     | AJU | MFU |                |          |
|            |      | Am cotton tail | AJU | MFU |                |          |
| AF CAGN 11 |      | CAGN           | ⓐJU | MFⓐ | Pair - 2 ind - |          |
|            |      | ORFI           | AJU | MFU |                |          |
|            |      | PCWA           | AJU | MFU |                |          |
|            |      | ACHW           | AJU | MFU |                |          |
|            |      | RSWA           | AJU | MFU |                |          |
|            |      |                | AJU | MFU |                |          |
|            |      |                | AJU | MFU |                |          |
|            |      |                | AJU | MFU |                |          |
|            |      |                | AJU | MFU |                |          |
|            |      |                | AJU | MFU |                |          |
|            |      |                | AJU | MFU |                |          |
|            |      |                | AJU | MFU |                |          |
|            |      |                | AJU | MFU |                |          |
|            |      |                | AJU | MFU |                |          |
|            |      |                | AJU | MFU |                |          |
|            |      |                | AJU | MFU |                |          |
|            |      |                | AJU | MFU |                |          |
|            |      |                | AJU | MFU |                |          |

Comments:  
 Total # adult CAGN: 7 (5 + 1 pair)  
 Total # juvenile CAGN: \_\_\_\_\_  
 Total # CAGN pairs: 1  
 Total # BHCO: \_\_\_\_\_

CAGN SURVEYS

Recorder: AFT Add'l Person: JmC GPS Unit: GTF 4  
 Date: 11-19-2009 Project: OMWD Raw Water Pipeline Survey 4a of 9  
 Time Start: 0725 Time End: 1125 Map #: 4c, 4b  
 Start T: 58% CC: 70% Wind Sp/Dir: 0-1 W General Weather Condition: Partly fog - cleared quickly  
 End T: 70 CC: 0% Wind Sp/Dir: 2-5 W General Weather Condition:

| Map/ GPS # | Time | Species | Age   | Sex   | Point Type | Comments   |
|------------|------|---------|-------|-------|------------|--|
|            |      | HOPV    | AJU   | MFU   |            |  |
|            |      | CALT    | AJU   | MFU   |            |  |
|            |      | WREN    | AJU   | MFU   |            |  |
|            |      | SPTO    | AJU   | MFU   |            |  |
|            |      | BICPH   | AJU   | MFU   |            |  |
|            |      | WCSP    | AJU   | MFU   |            |  |
|            |      | WSJA    | AJU   | MFU   |            |  |
|            |      | CAGN    | AJU   | MFU   |            |  |
|            |      | RCSP    | AJU   | MFU   |            |  |
|            |      | ROWR    | AJU   | MFU   |            |  |
|            |      | SAPPH   | AJU   | MFU   |            |  |
|            |      | ADWA    | AJU   | MFU   |            |  |
|            |      | CATH    | AJU   | MFU   |            |  |
|            |      | ANHA    | AJU   | MFU   |            |  |
|            |      | LEGO    | AJU   | MFU   |            |  |
|            |      | VALWD   | AJU   | MFU   |            |  |
|            |      | CORA    | AJU   | MFU   |            |  |
|            |      | AMKE    | AJU   | MFU   |            |  |
|            |      | FXSP    | AJU   | MFU   |            |  |
|            |      | DEER    | AJU   | MFU   | Tiles      | Overall birds are very quiet and not responsive      |
|            |      | COYOTE  | AJU   | MFU   | Scad       |  |
|            |      | HOWR    | AJU   | MFU   |            |  |
|            |      | LEWD    | AJU   | MFU   |            |  |
|            |      | AMLE    | AJU   | MFU   |            |  |
| AFCAGN01   |      | CAGN    | (A)JU | (M)FU | Hard ✓     |  |
|            |      | NOFL    | AJU   | MFU   |            |  |
| AFCAGN002  |      | ORGN    | (A)JU | (M)FU | I ind. ↙   | different CAGN's seen foraging & flying across road. |
|            |      | BUSH    | AJU   | MFU   |            |  |
|            |      | NETH    | AJU   | MFU   |            | Somewhat responsive to call back.                    |
|            |      | SISP    | AJU   | MFU   |            |  |
|            |      | ACWD    | AJU   | MFU   |            |  |



### CAGN SURVEYS

Recorder: AFI Add'l Person: JMC GPS Unit: GTR 4  
 Date: 11-20-09 Project: OMWD Raw Water Pipeline Survey 46 of 9  
 Time Start: 0650 Time End: 1130 Map #: 4a  
 Start T: 50°F CC: 0% Wind Sp/Dir: 0 General Weather Condition: Clear, Chilly  
 End T: 74°F CC: 5% Wind Sp/Dir: 1-3W General Weather Condition: \_\_\_\_\_

| Map/ GPS # | Time | Species | Age | Sex | Point Type | Comments             |
|------------|------|---------|-----|-----|------------|----------------------|
|            |      | NUNW    | AJU | MFU |            |                      |
|            |      | RUMR    | AJU | MFU |            |                      |
|            |      | WCSP    | AJU | MFU |            |                      |
|            |      | NOMO    | AJU | MFU |            |                      |
|            |      | CALT    | AJU | MFU |            |                      |
|            |      | B6PH    | AJU | MFU |            |                      |
|            |      | HOPI    | AJU | MFU |            |                      |
|            |      | MOBO    | AJU | MFU |            |                      |
|            |      | AMCR    | AJU | MFU |            |                      |
|            |      | ANHU    | AJU | MFU |            |                      |
|            |      | RCSP    | AJU | MFU |            |                      |
|            |      | CATH    | AJU | MFU |            |                      |
|            |      | BUSH    | AJU | MFU |            |                      |
|            |      | NOMO    | AJU | MFU |            |                      |
| AFWTK101   |      | WTKI    | ♂JU | MF♂ |            | TWO WTKI             |
|            |      | GREG    | AJU | MFU |            | Four flying overhead |
| AFCAGN03   | 0709 | CAGN    | AJ♂ | MF♂ |            | PAIR                 |
| AFCAGN04   | 0712 | CAGN    | AJ♂ | MF♂ |            | Heard 1 ind          |
|            |      | CAKI    | AJU | MFU |            |                      |
|            |      | RTHA    | AJU | MFU |            |                      |
|            |      | WREN    | AJU | MFU |            |                      |
|            |      | WEST    | AJU | MFU |            |                      |
|            |      | EUST    | AJU | MFU |            |                      |
|            |      | ACWO    | AJU | MFU |            |                      |
|            |      | CORA    | AJU | MFU |            |                      |
| AFCAGN05   | 0807 | CAGN    | AJ♂ | MF♂ |            | PAIR                 |
|            |      | LEBO    | AJU | MFU |            |                      |
|            |      | WEBL    | AJU | MFU |            |                      |
|            |      | HOWR    | AJU | MFU |            |                      |
|            |      | HETH    | AJU | MFU |            |                      |
|            |      | KILL    | AJU | MFU |            |                      |



# CAGN SURVEYS

Recorder: AFI Add'l Person: JMC GPS Unit: 6744  
 Date: 12-3-2009 Project: OMWD Raw Water Pipeline Survey 5a of 9  
 Time Start: 0650 Time End: 1040 Map #: 5a  
 Start T: 54° CC: 160 Wind Sp/Dir: 1.4W General Weather Condition: Overcast, Cold!  
 End T: 66° CC: 0 Wind Sp/Dir: 1.1 General Weather Condition: Sunny & warm

| Map/ GPS # | Time            | Species         | Age | Sex | Point Type | Comments |
|------------|-----------------|-----------------|-----|-----|------------|----------|
|            |                 | RTNA            | AJU | MFU |            |          |
|            |                 | LEGO            | AJU | MFU |            |          |
|            |                 | WCSP            | AJU | MFU |            |          |
|            |                 | SPTD            | AJU | MFU |            |          |
|            |                 | ANWA            | AJU | MFU |            |          |
|            |                 | CALT            | AJU | MFU |            |          |
|            | <del>NUWD</del> | <del>ANWA</del> | AJU | MFU |            |          |
|            |                 | ANWA            | AJU | MFU |            |          |
| AFNOHA01   | 0658            | NOHA            | ⊙JU | MF⊙ |            |          |
|            |                 | WEST            | AJU | MFU |            |          |
|            |                 | CATH            | AJU | MFU |            |          |
|            |                 | CORA            | AJU | MFU |            |          |
| AFCAENO1   | 0707            | CAGN            | ⊙JU | ⊙⊙U | PAIR       |          |
|            |                 | CAKI            | AJU | MFU |            |          |
|            |                 | DCCO            | AJU | MFU |            |          |
|            |                 | EUST            | AJU | MFU |            |          |
|            |                 | BUSH            | AJU | MFU |            |          |
|            |                 | WREN            | AJU | MFU |            |          |
|            |                 | SOSP            | AJU | MFU |            |          |
|            |                 | COYE            | AJU | MFU |            |          |
|            |                 | AMER            | AJU | MFU |            |          |
|            |                 | ACWO            | AJU | MFU |            |          |
|            |                 | MODO            | AJU | MFU |            |          |
|            |                 | HOPI            | AJU | MFU |            |          |
|            |                 | SAPH            | AJU | MFU |            |          |
|            |                 | RCKI            | AJU | MFU |            |          |
|            |                 | BLPH            | AJU | MFU |            |          |
|            |                 | OCWA            | AJU | MFU |            |          |
|            |                 | BEKI            | AJU | MFU |            |          |
|            |                 | RSHA            | AJU | MFU |            |          |
|            |                 | OATI            | AJU | MFU |            |          |





09080154.01.001

CAGN SURVEYS

WEST END OF  
SURVEY AREA Along  
Harmony Grove  
RD.

Recorder: ERIK LALOSTE Add'l Person: NONE GPS Unit: \_\_\_\_\_  
 Date: 12/18/09 Project: OMWD Raw Water Pipeline Survey B of 9  
 Time Start: 0641 Time End: 1030 Map #: \_\_\_\_\_  
 Start T: 641 CC: 10 Wind Sp/Dir: 0-1 WEST General Weather Condition: SOLO & nice  
 End T: 1030 CC: 2 Wind Sp/Dir: 1-2 EAST General Weather Condition: COOL & nice

| Map/ GPS # | Time | Species | Age     | Sex     | Point Type            | Comments                   |
|------------|------|---------|---------|---------|-----------------------|----------------------------|
|            |      | YRWA    | A J U   | M F U   |                       |                            |
|            |      | HOFI    | A J U   | M F U   |                       |                            |
|            |      | WREN    | A J U   | M F U   |                       |                            |
|            |      | RTHA    | (A) J U | M F U   |                       |                            |
|            |      | WCSP    | A J U   | M F U   |                       |                            |
|            |      | ANHU    | A J U   | M F U   |                       |                            |
|            |      | NUWO    | A J U   | M F U   |                       |                            |
|            |      | CALT    | A J U   | M F U   |                       |                            |
|            |      | BUSH    | A J U   | M F U   |                       |                            |
|            |      | CAKI    | A J U   | M F U   |                       |                            |
|            |      | SPTO    | A J U   | M F U   |                       |                            |
|            |      | RSHA    | (A) J U | M F U   |                       |                            |
|            |      | CATH    | A J U   | M F U   |                       |                            |
|            |      | EUST    | A J U   | M F U   |                       |                            |
|            |      | NOMO    | A J U   | M F U   |                       |                            |
|            |      | BLPH    | A J U   | M F U   |                       |                            |
| -          | 0710 | RCSP    | (A) J U | M F (U) | 1150484090<br>3659972 | PAIR Rufous Crown Sparrows |
|            |      | AMCR    | A J U   | M F U   |                       |                            |
|            |      | CORA    | A J U   | M F U   |                       |                            |
| -          | 0737 | CAGN    | (A) J U | M F (U) | 1150483909<br>3660081 | Single Gnatcatcher         |
|            |      | SGTA    | A J U   | M F U   |                       |                            |
|            |      | LEGO    | A J U   | M F U   |                       |                            |
|            |      | NOFL    | A J U   | M F U   |                       |                            |
| -          | 0830 | CAGN    | (A) J U | M F (U) | 1150484046<br>3659965 | PAIR Gnatcatchers          |
| -          | 0840 | NOHA    | (A) J U | (M) F U | 1150483324<br>3660059 | Male Harrier Flyover       |
|            |      | KIU     | A J U   | M F U   |                       |                            |
|            |      | MOOD    | A J U   | M F U   |                       |                            |
|            |      | SAPH    | A J U   | M F U   |                       |                            |
|            |      | BEWR    | A J U   | M F U   |                       |                            |
|            |      | ACWO    | A J U   | M F U   |                       |                            |
|            |      |         | A J U   | M F U   |                       |                            |



### CAGN SURVEYS

Recorder: Bonnie Hendricks Add'l Person: — GPS Unit: None

Date: Dec 31, 09 Project: OMWD Raw Water Pipeline Survey 7 of 9

Time Start: 8:05 am Time End: 12:00 pm Map #: 1

Start: T: 48° CC: 0% Wind Sp/Dir: 0-3 SE General Weather Condition: Sunny, heavy dew  
 End: T: 72 CC: 0% Wind Sp/Dir: 0-5 E General Weather Condition: Sunny + warm

| Map/ GPS # | Time  | Species | Age | Sex | Point Type | Comments                        |
|------------|-------|---------|-----|-----|------------|---------------------------------|
| NA         | 8:05  | VRWA    | AJU | MFU |            |                                 |
| "          | "     | AMCR    | AJU | MFU |            |                                 |
| "          | "     | WREN    | AJU | MFU |            |                                 |
|            |       | LEGO    | AJU | MFU |            |                                 |
|            |       | NOMO    | AJU | MFU |            |                                 |
|            |       | HOFI    | AJU | MFU |            |                                 |
|            |       | BUSH    | AJU | MFU |            | 225                             |
|            |       | ACWO    | AJU | MFU |            |                                 |
|            |       | ANHU    | AJU | MFU |            |                                 |
|            |       | CORA    | AJU | MFU |            |                                 |
|            |       | CATO    | AJU | MFU |            |                                 |
| BH RCSP01  | 8:35  | RCSP    | AJU | MFU | map pt.    | pair                            |
|            |       | SCJA    | AJU | MFU |            |                                 |
|            |       | COYE    | AJU | MFU |            | 1                               |
|            |       | WCSP    | AJU | MFU |            |                                 |
|            |       | BLPH    | AJU | MFU |            |                                 |
|            |       | HOWR    | AJU | MFU |            |                                 |
| BHCOHA01   | 9:03  | COHA    | AJU | MFU | map pt.    | pair                            |
|            |       | SASP    | AJU | MFU |            | 1                               |
|            |       | RSHA    | AJU | MFU |            | heard                           |
|            |       | AMKE    | AJU | MFU |            | 1                               |
|            |       | RTHA    | AJU | MFU |            | pair                            |
| BH RCSP02  | 10:40 | RCSP    | AJU | MFU | map pt.    | pair                            |
| BH CAGN01  | 10:50 | CAGN    | AJU | MFU | map pt.    | open area NNG w/ Epta<br>Abasar |
| BH CAGN02  | 11:30 | CAGN    | AJU | MFU | map pt.    | pair                            |
|            |       | CATH    | AJU | MFU |            | 2                               |
|            |       | TUVU    | AJU | MFU |            | 2                               |
|            |       |         | AJU | MFU |            |                                 |
|            |       |         | AJU | MFU |            |                                 |
|            |       |         | AJU | MFU |            |                                 |
|            |       |         | AJU | MFU |            |                                 |



CAGN SURVEYS

Recorder: Bonnie Hendricks Add'l Person: \_\_\_\_\_ GPS Unit: None

Date: 1/1/10 Project: OMWD Raw Water Pipeline Survey 1 of 9

Time Start: 8:20 am Time End: 12:00 pm Map #: 2 + 3

Start T: 45° CC: 25% Wind Sp/Dir: 0-2 calm General Weather Condition: partly overcast  
 End T: 72° CC: 10% Wind Sp/Dir: 3-8 SW General Weather Condition: Sunny dry

| Map/ GPS # | Time  | Species | Age   | Sex   | Point Type | Comments                 |
|------------|-------|---------|-------|-------|------------|--------------------------|
|            | 8:20  | CATO    | AJU   | MFU   |            |                          |
|            |       | YRWA    | AJU   | MFU   |            |                          |
|            |       | RTHA    | AJU   | MFU   |            | pair mating?             |
|            |       | RSIA    | AJU   | MFU   |            |                          |
| BH RCSP03  | 8:40  | RCSP    | (A)JU | (M)FU | map pt.    | 1 adult                  |
|            |       | ANHU    | AJU   | MFU   |            |                          |
|            |       | WREN    | AJU   | MFU   |            |                          |
|            |       | SPTO    | AJU   | MFU   |            |                          |
|            |       | AMCR    | AJU   | MFU   |            |                          |
|            |       | NOFL    | AJU   | MFU   |            |                          |
|            |       | HOFI    | AJU   | MFU   |            |                          |
|            |       | SCJA    | AJU   | MFU   |            |                          |
|            |       | CAKI    | AJU   | MFU   |            |                          |
|            |       | ACWO    | AJU   | MFU   |            |                          |
|            |       | HOWR    | AJU   | MFU   |            |                          |
|            |       | NOHO    | AJU   | MFU   |            |                          |
|            |       | WCSP    | AJU   | MFU   |            |                          |
| BH NOHA01  | 9:05  | NOHA    | (A)JU | (M)FU | map pt.    | Flying low up canyon     |
|            |       | TUVU    | AJU   | MFU   |            |                          |
|            |       | AMKE    | AJU   | MFU   |            |                          |
|            |       | CGRA    | AJU   | MFU   |            |                          |
| BH RCSP04  | 10:36 | RCSP    | (A)JU | (M)FU | map pt.    | 1 adult                  |
|            |       | ROWR    | AJU   | MFU   |            |                          |
| BH RCSP05  | 11:40 | RCSP    | (A)JU | (M)FU | map pt.    | 2 adults - pair          |
|            |       | SAPH    | AJU   | MFU   |            |                          |
| BH CAGN03  | 12:00 | CAGN    | (A)JU | (M)FU | map pt.    | pair very upset scolding |
|            |       | CATH    | AJU   | MFU   |            |                          |
|            |       |         | AJU   | MFU   |            |                          |
|            |       |         | AJU   | MFU   |            |                          |
|            |       |         | AJU   | MFU   |            |                          |

















# LBVI SURVEYS

Recorder: Andrew Fisher Add'l Person: \_\_\_\_\_ GPS Unit: 4  
 Project: Onondaga Raw Water Pipeline Survey Section: All Map #: 2A, B, C  
 Date: 4-28-2010 Survey Type: LBVI Survey 1 of 8  
 Time Start: 0730 Time End: 11:30

Start: T: 59.4% CC: 100% Wind Sp/Dir: 1-4 mph W General Weather Condition: overcast, light drizzle

| Map/ GPS #    | Time | Species         | Age          | Sex          | Point Type  | Comments |
|---------------|------|-----------------|--------------|--------------|-------------|----------|
|               |      | EUST            | AJU          | MFU          |             |          |
|               |      | CACT            | AJU          | MFU          |             |          |
|               |      | HAFI            | AJU          | MFU          |             |          |
|               |      | BUSK            | AJU          | MFU          |             |          |
|               |      | CAQU            | AJU          | MFU          |             |          |
|               |      | SOSP            | AJU          | MFU          |             |          |
|               |      | ANHA            | AJU          | MFU          |             |          |
|               |      | BHGR            | AJU          | MFU          |             |          |
|               |      | WSJA            | AJU          | MFU          |             |          |
|               |      | MMWD            | AJU          | MFU          |             |          |
|               |      | WREN            | AJU          | MFU          |             |          |
|               |      | PSPL            | AJU          | MFU          |             |          |
|               |      | MDDO            | AJU          | MFU          |             |          |
|               |      | AMCR            | AJU          | MFU          |             |          |
|               |      | CLSI            | AJU          | MFU          |             |          |
|               |      | HONR            | AJU          | MFU          |             |          |
|               |      | LEBD            | AJU          | MFU          |             |          |
|               |      | BEWR            | AJU          | MFU          |             |          |
|               |      | OCWA            | AJU          | MFU          |             |          |
|               |      | WCSP            | AJU          | MFU          |             |          |
|               |      | COYE            | AJU          | MFU          |             |          |
|               |      | YRWA            | AJU          | MFU          |             |          |
|               |      | <del>WEKI</del> | AJU          | MFU          |             |          |
| <u>AFCB01</u> |      | BHCB            | <u>(A)JU</u> | <u>(M)FU</u> | <u>Pair</u> |          |
|               |      | BLPI            | AJU          | MFU          |             |          |
|               |      | NOMD            | AJU          | MFU          |             |          |
|               |      | WBNU            | AJU          | MFU          |             |          |
|               |      | CHSP            | AJU          | MFU          |             |          |
|               |      | SPTO            | AJU          | MFU          |             |          |
|               |      | RCWO            | AJU          | MFU          |             |          |

End: T: 73 CC: 50% Wind Sp/Dir: 1-5 W General Weather Condition: Sunny, warm

# LBVI SURVEYS

Recorder: AFI Project: OMWD Survey Section: ALI  
 Date: 4-28-2010 Survey Type: LBVI Map #: 1A,B,C

| Map/ GPS #      | Time | Species | Age   | Sex   | Point Type                                    | Comments |
|-----------------|------|---------|-------|-------|---|----------|
|                 |      | RSHA    | (A)JU | (M)FU | Pair  |          |
|                 |      | BLGR    | (A)JU | (M)FU |   |          |
|                 |      | GREG    | AJU   | MFU   |   |          |
| AFWK01          |      | WTKI    | (A)JU | (M)FU | Foraging                                      |          |
|                 |      | ATFL    | AJU   | MFU   |   |          |
|                 |      | LAEB    | (A)JU | (M)FU |   |          |
|                 |      | RCSP    | (A)JU | (M)FU |   |          |
|                 |      | CORN    | AJU   | MFU   |   |          |
|                 |      | RTHA    | AJU   | MFU   |   |          |
|                 |      | CATH    | AJU   | MFU   |   |          |
|                 |      | CONK    | AJU   | MFU   |   |          |
|                 |      | WAVI    | AJU   | MFU   |   |          |
|                 |      | ROWR    | AJU   | MFU   |   |          |
|                 |      | NWVI    | AJU   | MFU   |   |          |
|                 |      | TOWA    | AJU   | MFU   |   |          |
|                 |      | WETA    | AJU   | MFU   |   |          |
|                 |      | COHA    | (A)JU | (M)FU | Harass RSHA pair                              |          |
|                 |      | NEOR    | AJU   | MFU   |   |          |
| AFCB02          |      | BHCB    | (A)JU | (M)FU | 1 ind.  |          |
| AFCB03          |      | BHCB    | (A)JU | (M)FU | 1 ind.  |          |
| AFCB01,02,03,04 |      | YENA    | (A)JU | (M)FU | 1 pair + 3 males singing                      |          |
| AFWKNEST01      |      | WTKI    | AJU   | MFU   | WTKI Nest - active - pair defending territory |          |
|                 |      | ORAI    | AJU   | MFU   |   |          |
|                 |      |         | AJU   | MFU   |   |          |

Comments:

Total # Adult LBV: 0  
 Total # Juvenile LBV: 0  
 Total # LBV nests: 0  
 Total # LBV Pairs: 0  
 Total # BHCO: 4 (1 pair + 2 ind fs)

Other species tracks: mule deer, coyote, bobcat, raccoon

Butterflies: Longwing admiral, Java Orange tip, Western Tiger Swallowtail

Reps: Fence lizard, Southern Alligator lizard

End: T: 73 CC: 50% Wind Sp/Dir: 1-5 N General Weather Condition: Sunny, warm



# OMWD Raw Water Pipeline LBV SURVEYS

Recorder: AFI Project: OMWD Raw Water Pipeline Survey Section: AM  
 Date: 5-13-10 Survey Type: LBV Map #: 2A, B, C

| GPS Label       | Time | Species | Age   | Sex   | # Ind | Activity Code | Comments                     |
|-----------------|------|---------|-------|-------|-------|---------------|------------------------------|
|                 |      | LEBO    | AJU   | MFU   |       |               |                              |
|                 |      | WAVJ    | AJU   | MFU   |       |               |                              |
|                 |      | ORATJ   | AJU   | MFU   |       |               |                              |
|                 |      | WETA    | AJU   | MFU   |       |               |                              |
| AFOMWDYWD1      |      | YENW    | (AJU) | (MFU) |       |               | At least 2 ♂ + 1 ♀           |
| AFOMWDYCD1      |      | YBCH    | (AJU) | (MFU) |       |               | 1                            |
| Mapped Survey I |      | WTKI    | (AJU) | (MFU) |       |               | 1 pair + 3 juvs / fledglings |
|                 |      | AMGO    | AJU   | MFU   |       |               |                              |
| AFOMWDYWD2      |      | YENW    | (AJU) | (MFU) |       |               | 1                            |
| AFOMWDCB01      |      | BHCB    | (AJU) | (MEU) |       |               | 15 (4 ♂ + 1 ♀)               |
|                 |      | ACWO    | AJU   | MFU   |       |               |                              |
|                 |      | LBHE    | AJU   | MFU   |       |               |                              |
|                 |      | MALL    | AJU   | MFU   |       |               |                              |
|                 |      | PKKIN   | AJU   | MFU   |       |               |                              |
|                 |      | BCGR    | AJU   | MFU   |       |               |                              |
| AFOMWDYWD3      |      | YENW    | (AJU) | (MFU) |       |               | Pair                         |
| AFOMWDYWD4      |      | YENW    | (AJU) | (MFU) |       |               | 2                            |
| AFOMWDCS001     |      | RCSP    | (AJU) | (MFU) |       |               | 1                            |
| AFOMWDYWD5      |      | YENW    | (AJU) | (MFU) |       |               | 1                            |
|                 |      | HOOR    | AJU   | MFU   |       |               |                              |
|                 |      | BMOR    | AJU   | MFU   |       |               |                              |
|                 |      | RSNA    | AJU   | MFU   |       |               |                              |
|                 |      | COHU    | AJU   | MFU   |       |               |                              |
|                 |      |         | AJU   | MFU   |       |               |                              |
|                 |      |         | AJU   | MFU   |       |               |                              |
|                 |      |         | AJU   | MFU   |       |               |                              |

Comments:

Other Eggs: W. Tiger Swallowtail, Longwing, Admiral, Mourning cloak, W. fence lizard, S. alligator lizard, P. tree frog, Deer ticks, coyote scat

Total # Adult LBV: 8

Total # Juvenile LBV: 9

Total # LBV Pairs: 8

Total # LBV Nests: 8

Total # BHCB: 6

NO LBV

SWFL  
OMWD Raw Water Pipeline LBV SURVEYS

Recorder: AFisher Add'l Person: Erin Riley GPS Unit: GTF 4  
 Project: OMWD Raw Water Pipeline Survey Section: All Map #: 3  
 Date: 5-26-2010 Survey Type: LBV/SWFL Survey 3 of 8 for CBV/1 of 5 SWFL  
 Time Start: 0615 Time End: 11:00  
 Start: T: 56.2 CC: 90% Wind Sp/Dir: 1-2 W General Weather Condition: cloudy, cool  
 End: T: 75.6% CC: 0 Wind Sp/Dir: 1-2 W General Weather Condition: warm, sunny

| GPS Label        | Time | Species     | Age        | Sex        | # Ind                                | Activity Code | Comments |
|------------------|------|-------------|------------|------------|--------------------------------------|---------------|----------|
|                  |      | AMRO        | AJU        | MFU        |                                      |               |          |
|                  |      | ENST        | AJU        | MFU        |                                      |               |          |
|                  |      | CLSW        | AJU        | MFU        |                                      |               |          |
|                  |      | ANMU        | AJU        | MFU        |                                      |               |          |
|                  |      | CORA        | AJU        | MFU        |                                      |               |          |
|                  |      | WSJA        | AJU        | MFU        |                                      |               |          |
|                  |      | WREN        | AJU        | MFU        |                                      |               |          |
|                  |      | CWLT        | AJU        | MFU        |                                      |               |          |
|                  |      | SPTO        | AJU        | MFU        |                                      |               |          |
|                  |      | SOSP        | AJU        | MFU        |                                      |               |          |
|                  |      | WEKI        | AJU        | MFU        |                                      |               |          |
|                  |      | HOWR        | AJU        | MFU        |                                      |               |          |
| <u>AFOMWCB01</u> |      | <u>BHCB</u> | <u>AJU</u> | <u>ADU</u> | <u>4-3♂ &amp; 1♀</u>                 |               |          |
|                  |      | RSNA        | AJU        | MFU        |                                      |               |          |
|                  |      | ATFL        | AJU        | MFU        |                                      |               |          |
|                  |      | RTNA        | AJU        | MFU        |                                      |               |          |
|                  |      | CAQU        | AJU        | MFU        |                                      |               |          |
|                  |      | NWNO        | AJU        | MFU        |                                      |               |          |
|                  |      | WOFI        | AJU        | MFU        |                                      |               |          |
|                  |      | COYE        | AJU        | MFU        |                                      |               |          |
|                  |      | BUSA        | AJU        | MFU        |                                      |               |          |
|                  |      | PSFL        | AJU        | MFU        |                                      |               |          |
|                  |      | BCHU        | AJU        | MFU        |                                      |               |          |
|                  |      | BHGR        | AJU        | MFU        |                                      |               |          |
|                  |      | OCWA        | AJU        | MFU        |                                      |               |          |
| <u>AFOMWCB02</u> |      | <u>BHCB</u> | <u>ADU</u> | <u>ADU</u> | <u>At 2</u>                          |               |          |
|                  |      | <u>WTKI</u> | <u>ADU</u> | <u>ADU</u> | <u>Adults + 3 Juvs flying around</u> |               |          |
|                  |      | BSGR        | AJU        | MFU        |                                      |               |          |
|                  |      | LEGO        | AJU        | MFU        |                                      |               |          |
|                  |      | LAZR        | AJU        | MFU        |                                      |               |          |
|                  |      | CORA        | AJU        | MFU        |                                      |               |          |



OMWD Raw Water Pipeline SWFL SURVEYS

Recorder: Erik LaCoste Add'l Person: Barbra Calantus GPS Unit: none  
 Project: OMWD Raw Water Pipeline Surveys Survey Section: All Map #: 4A, b, c  
 Date: 6/7/10 Survey Type: SWFL Survey 2 <sup>SWFL</sup> of 4 <sub>LBV</sub>  
 Time Start: 5:15 Time End: 7:45  
 Start: T: 64 CC: 100 Wind Sp/Dir: 1-2 General Weather Condition: overcast calm  
 End: T: 68 CC: 50 Wind Sp/Dir: 1-2 General Weather Condition: overcast 50%

| GPS Label | Time | Species         | Age   | Sex   | # Ind | Activity Code | Comments |
|-----------|------|-----------------|-------|-------|-------|---------------|----------|
|           |      | HOP1            | AJU   | MFU   |       |               |          |
|           |      | SPTD            | AJU   | MFU   |       |               |          |
|           |      | YBCH            | AJU   | MFU   |       |               |          |
|           |      | SOSP            | AJU   | MFU   |       |               |          |
|           |      | YEWA            | AJU   | MFU   |       |               |          |
| LBV01     | 0530 | LBV1            | (A)JU | (M)FU | 1     |               | LBV01    |
|           |      | AMCR            | AJU   | MFU   |       |               |          |
|           |      | BLGR            | AJU   | MFU   |       |               |          |
| WTKI01    |      | WTK1            | AJU   | MFU   | 3     |               | WTKI01   |
|           |      | BUOR            | AJU   | MFU   |       |               |          |
|           |      | NUWO            | AJU   | MFU   |       |               |          |
|           |      | DUCK SP         | AJU   | MFU   |       |               |          |
|           |      | <del>FRSW</del> | AJU   | MFU   |       |               |          |
|           |      | <del>CLSD</del> | AJU   | MFU   |       |               |          |
|           |      | LEGO            | AJU   | MFU   |       |               |          |
|           |      | PSFL            | AJU   | MFU   |       |               |          |
|           |      | BUSH            | AJU   | MFU   |       |               |          |
|           |      | ANHU            | AJU   | MFU   |       |               |          |
|           |      | HOWR            | AJU   | MFU   |       |               |          |
|           |      | HOOR            | AJU   | MFU   |       |               |          |
|           |      | CATO            | AJU   | MFU   |       |               |          |
|           |      | AMGO            | AJU   | MFU   |       |               |          |
|           |      | BHOR            | AJU   | MFU   |       |               |          |
|           |      | NRWS.           | AJU   | MFU   |       |               |          |
| BHCO01    |      | BHCO            | (A)JU | (M)FU | 1     |               | BHCO01   |
|           |      | COYE            | AJU   | MFU   |       |               |          |
|           |      | MODO            | AJU   | MFU   |       |               |          |
|           |      | RTHA            | AJU   | MFU   |       |               |          |
|           |      | CAQU            | AJU   | MFU   |       |               |          |
|           |      | ROWR            | AJU   | MFU   |       |               |          |
| BHCO02    |      | BHCO            | (A)JU | (M)FU | 1     |               | BHCO02   |



OMWD Raw Water Pipeline LBV SURVEYS + SWFL

Recorder: Eric D Riley Add'l Person: Anderson Fisker GPS Unit: GTRV1

Project: OMWD Raw Water Pipeline Survey Section: AW Map #: 5a#

Date: 6-23-2010 Survey Type: LBV / SWFL Survey 5 of 8 for LBV

Time Start: 0550 Time End: 10:00 3 of 5 for SWFL

Start: T: 027 CC: 100 Wind Sp/Dir: Ø General Weather Condition: Overcast, light fog

End: T: 758 CC: Ø Wind Sp/Dir: 1-2 W General Weather Condition: Sunny, warm

| GPS Label             | Time        | Species | Age | Sex | # Ind | Activity Code | Comments |
|-----------------------|-------------|---------|-----|-----|-------|---------------|----------|
|                       |             | CAKI    | AJU | MFU |       |               |          |
|                       |             | ACWD    | AJU | MFU |       |               |          |
|                       |             | RTNA    | AJU | MFU |       |               |          |
|                       |             | HOWR    | AJU | MFU |       |               |          |
|                       |             | BUSH    | AJU | MFU |       |               |          |
|                       |             | HOWR    | AJU | MFU |       |               |          |
|                       |             | CLSW    | AJU | MFU |       |               |          |
|                       |             | WREN    | AJU | MFU |       |               |          |
|                       |             | PSFL    | AJU | MFU |       | feeding young |          |
|                       |             | WUSA    | AJU | MFU |       |               |          |
|                       |             | CALT    | AJU | MFU |       |               |          |
|                       |             | SPRO    | AJU | MFU |       |               |          |
| <i>opposite</i>       |             | BHCB    | AJU | MFU | 1     |               |          |
|                       |             | ORVI    | AJU | MFU |       |               |          |
|                       |             | CONA    | AJU | MFU |       |               |          |
|                       |             | ENST    | AJU | MFU |       |               |          |
|                       |             | BLPH    | AJU | MFU |       |               |          |
| <i>AF OMWD</i>        | <i>CBO1</i> | BHCB    | AJU | MFU | 2     | heard + young |          |
|                       |             | LEGO    | AJU | MFU |       |               |          |
|                       |             | RSWA    | AJU | MFU |       |               |          |
|                       |             | MOOD    | AJU | MFU |       |               |          |
|                       |             | AMKE    | AJU | MFU |       |               |          |
|                       |             | CATH    | AJU | MFU |       |               |          |
|                       |             | CHYE    | AJU | MFU |       |               |          |
|                       |             | ATFL    | AJU | MFU |       |               |          |
| <i>AF OMWD</i>        | <i>CBO2</i> | BHCB    | AJU | MFU | 1     | heard         |          |
| <i>AF OMWD</i>        | <i>CBO3</i> | BHCB    | AJU | MFU | 2     | heard         |          |
|                       |             | HWFI    | AJU | MFU |       |               |          |
|                       |             | CONA    | AJU | MFU |       |               |          |
|                       |             | ANNU    | AJU | MFU |       |               |          |
| <i>Already mapped</i> |             | JENK    | AJU | MFU |       | numerous      |          |

OMWD Raw Water Pipeline LBV SURVEYS <sup>5/8</sup> / 5 WFL <sub>3/5</sub>

Recorder: AFI / ERI Project: OMWD Raw Water Pipeline Survey Section: \_\_\_\_\_  
 Date: 6-23-2010 Survey Type: LBV / 5 WFL Map #: 5

| GPS Label                | Time | Species       | Age   | Sex   | # Ind        | Activity Code | Comments                             |
|--------------------------|------|---------------|-------|-------|--------------|---------------|--------------------------------------|
|                          |      | SOSP          | AJU   | MFU   |              |               |                                      |
|                          |      | BLGR          | AJU   | MFU   |              |               |                                      |
| <del>AFOMWD</del> BOH    |      | BHCB          | (A)JU | (M)FU | <del>5</del> |               |                                      |
| <del>AFOMWD</del> LVO    |      | LBV           | (A)JU | (M)FU | 1            |               | Singing Solo, very quiet & secretive |
|                          |      | NWVO          | AJU   | MFU   |              |               |                                      |
| <del>AFOMWD</del> WYCO   |      | SYEWA         | (A)JU | (M)FU | 1            |               | Singing in same location             |
|                          |      | WBCN          | (A)JU | (M)FU | 1            |               |                                      |
| <del>AFOMWD</del> HWL    |      | YEWA          | (A)JU | (M)FU | 1            |               |                                      |
|                          |      | MALL          | AJU   | MFU   |              |               |                                      |
| <del>AFOMWD</del> CROS   |      | BUCB          | AJU   | (M)FU | 1            |               | being fed by SOSP.                   |
|                          |      | WTKI          | AJU   | MFU   |              |               |                                      |
| <del>AFOMWD</del> CRO    |      | BHCB          | (A)JU | (M)FU | 2            |               |                                      |
| <del>AFOMWD</del> LVER   |      | LBV           | (A)JU | (M)FU | 1            |               | to same ind as LVO + just moved      |
|                          |      | DOWD          | AJU   | MFU   |              |               |                                      |
| <del>AFOMWD</del> BDT    |      | BHCB          | (A)JU | (M)FU | 2            |               |                                      |
|                          |      | BHCB          | AJU   | MFU   |              |               |                                      |
|                          |      | Striped Skunk | AJU   | MFU   |              |               | ticks                                |
|                          |      | Coon          | AJU   | MFU   |              |               | ticks                                |
|                          |      | Deer          | AJU   | MFU   |              |               | ticks                                |
| <del>AFOMWD</del> WNTAIL |      | Robin         | (A)JU | (M)FU | 3            |               |                                      |
|                          |      | Blue Jay      | AJU   | MFU   |              |               |                                      |
|                          |      | Red Wing      | AJU   | MFU   |              |               |                                      |
|                          |      | Water Thrush  | AJU   | MFU   |              |               |                                      |
|                          |      |               | AJU   | MFU   |              |               |                                      |
|                          |      |               | AJU   | MFU   |              |               |                                      |
|                          |      |               | AJU   | MFU   |              |               |                                      |

Comments:

Total # Adult LBV: 1

Total # Juvenile LBV: 0

Total # LBV Pairs: 0 + one - of very quiet - perhaps nest nearby & secretive.

Total # LBV Nests: 0

Total # BHCB: 10

<sup>+LBV</sup>  
OMWD Raw Water Pipeline SWFL SURVEYS

Recorder: ERIK LaCoste Add'l Person: None GPS Unit: None - Entered on MAP  
 Project: OMWD Raw Water Pipeline Surveys Survey Section: All Map #: -  
 Date: 7/5/10 Survey Type: SWFL / LBV Survey 2 of 3  
 Time Start: 0700 Time End: 0900  
 Start: T: 01 CC: 100 Wind Sp/Dir: 0-1 E-W General Weather Condition: Overcast cool Calm  
 End: T: 01 CC: 100 Wind Sp/Dir: 0-1 W-E General Weather Condition: Overcast cool Calm

| GPS Label | Time | Species | Age   | Sex   | # Ind | Activity Code | Comments |
|-----------|------|---------|-------|-------|-------|---------------|----------|
| BHCO 01   | 0700 | BHCO    | (A)JU | (M)FU | 8     | Flyover       |          |
|           |      | PSFL    | AJU   | MFU   |       |               |          |
|           |      | AMCR    | AJU   | MFU   |       |               |          |
|           |      | SOSP    | AJU   | MFU   |       |               |          |
|           |      | COYE    | AJU   | MFU   |       |               |          |
|           |      | LE60    | AJU   | MFU   |       |               |          |
|           |      | NRWS    | AJU   | MFU   |       |               |          |
|           |      | ACWO    | AJU   | MFU   |       |               |          |
|           |      | NUWO    | AJU   | MFU   |       |               |          |
| YEWA 01   | 0705 | YEWA    | (A)JU | MFU   |       |               |          |
|           |      | BLPH    | AJU   | MFU   |       |               |          |
|           |      | HOFL    | AJU   | MFU   |       |               |          |
|           |      | WTKI    | AJU   | MFU   | 2     |               |          |
|           |      | WREN    | AJU   | MFU   |       |               |          |
| YEWA 02   | 0715 | YEWA    | (A)JU | MFU   |       |               |          |
| YBCH 01   | 0715 | YBCH    | AJU   | MFU   |       |               |          |
|           |      | AMRD    | AJU   | MFU   |       |               |          |
|           |      | HOWR    | AJU   | MFU   |       |               |          |
|           |      | ATEL    | AJU   | MFU   |       |               |          |
|           |      | PHAI    | AJU   | MFU   |       |               |          |
| LBVLO 1   | 0720 | LBVI    | (A)JU | (M)FU | 1     |               |          |
|           |      | MODS    | AJU   | MFU   |       |               |          |
| BHCO 02   | 0722 | BHCO    | (A)JU | (M)FU | 6     |               |          |
|           |      | SPTD    | AJU   | MFU   |       |               |          |
|           |      | ANHU    | AJU   | MFU   |       |               |          |
|           |      | BCHU    | AJU   | MFU   |       |               |          |
|           |      | PLGR    | AJU   | MFU   |       |               |          |
|           |      | EUST    | AJU   | MFU   |       |               |          |
|           |      | RSHA    | AJU   | MFU   |       |               |          |
|           |      | HOOR    | AJU   | MFU   |       |               |          |
| BHCO 03   | 0800 | BHCO    | (A)JU | (M)FU | 1     |               |          |

Deer, Raccoon, Coyotes, Cottontail, Dog, Bobcat



**OMWD Raw Water Pipeline SWFL SURVEYS** <sup>LBV</sup>

Recorder: LYNDON QUINN Add'l Person: WHITNEY BRAEKING GPS Unit: NONE  
 Project: OMWD Raw Water Pipeline Surveys Survey Section: ALL Map #: \_\_\_\_\_  
 Date: 7-15-2010 Survey Type: SWFL Survey 5 of 5  
 Time Start: 0600 Time End: 1000 <sup>LBV</sup> 7 of 8  
 Start: T: 64°C CC: 82% Wind Sp/Dir: 0.7/N General Weather Condition: CLEAR & SUNNY  
 End: T: 85°F CC: 55% Wind Sp/Dir: 1.4/N General Weather Condition: SUNNY

| GPS Label | Time | Species     | Age   | Sex   | # Ind | Activity Code | Comments |
|-----------|------|-------------|-------|-------|-------|---------------|----------|
|           |      | CORA        | AJU   | MFU   |       |               |          |
|           |      | HDFI        | AJU   | MFU   |       |               |          |
|           |      | CARU        | AJU   | MFU   |       |               |          |
|           |      | PSFL        | AJU   | MFU   |       |               |          |
|           |      | ANHU        | AJU   | MFU   |       |               |          |
|           |      | LEGO        | AJU   | MFU   |       |               |          |
|           |      | MODO        | AJU   | MFU   |       |               |          |
|           |      | BUSH        | AJU   | MFU   |       |               |          |
|           |      | HBR         | (A)JU | (M)FU |       |               |          |
|           |      | BEWR        | AJU   | MFU   |       |               |          |
|           |      | NRWS        | AJU   | MFU   |       |               |          |
|           |      | MAWR        | AJU   | MFU   |       |               |          |
|           |      | NOMO        | AJU   | MFU   |       |               |          |
|           |      | NUWD        | AJU   | MFU   |       |               |          |
|           |      | COYE        | AJU   | MFU   |       |               |          |
|           |      | GOPHER      | AJU   | MFU   |       |               |          |
|           |      | COYTE       | (A)JU | MFU   | 2     |               |          |
|           |      | CATD        | AJU   | MFU   |       |               |          |
|           |      | COPO        | AJU   | MFU   |       |               |          |
| LQBHCO-01 |      | BHCO        | (A)JU | (M)FU | 2♂-3  |               |          |
| LQYENA-01 |      | YENA        | (A)JU | (M)FU |       |               |          |
|           |      | SWALLOWTAIL | AJU   | MFU   |       |               |          |
|           |      | RTHA        | AJU   | MFU   |       |               |          |
|           |      | WSJA        | AJU   | MFU   |       |               |          |
| LQBHCO-02 |      | BHCO        | (A)JU | (M)FU | 2♂    |               |          |
|           |      | BGGN        | AJU   | MFU   |       |               |          |
|           |      | RSHA        | AJU   | MFU   |       |               |          |
|           |      | ACWO        | AJU   | MFU   |       |               |          |
|           |      | BLPH        | AJU   | MFU   |       |               |          |
|           |      | MODO        | AJU   | MFU   |       |               |          |
|           |      | SSEP        | AJU   | MFU   |       |               |          |



# OMWD Raw Water Pipeline LBV SURVEYS

Recorder: BCA Add'l Person: - GPS Unit: none  
 Project: OMWD Raw Water Pipeline Surveys Survey Section: all Map #: overview 1  
 Date: 07/28/10 Survey Type: LBV Survey 8 of 8  
 Time Start: 0535 Time End: 0930  
 Start: T: 52.3 CC: 100 Wind Sp/Dir: 3.2 / NW General Weather Condition: overcast  
 End: T: 68.1 CC: 100 Wind Sp/Dir: 1.3 / W General Weather Condition: overcast

| GPS Label | Time | Species | Age   | Sex   | # Ind | Activity Code | Comments        |
|-----------|------|---------|-------|-------|-------|---------------|-----------------|
|           |      | BENR    | AJU   | MFU   |       |               |                 |
| BCBH001   | 0536 | BHCO    | (A)JU | (M)FU | 1     | perched       |                 |
|           |      | YBOH    | AJU   | MFU   |       |               |                 |
|           |      | HOFI    | AJU   | MFU   |       |               |                 |
|           |      | BLPH    | AJU   | MFU   |       |               |                 |
|           |      | PSFL    | AJU   | MFU   |       |               |                 |
|           |      | ACWO    | AJU   | MFU   |       |               |                 |
|           |      | NOMO    | AJU   | MFU   |       |               |                 |
|           |      | MODO    | AJU   | MFU   |       |               |                 |
|           |      | CORA    | AJU   | MFU   |       |               |                 |
|           |      | RTHA    | AJU   | MFU   |       |               |                 |
|           |      | WTKI    | (A)JU | MFU   | 4     |               | around nest     |
|           |      | YENA    | AJU   | MFU   |       |               |                 |
|           |      | NUWO    | AJU   | MFU   |       |               |                 |
|           |      | CART    | AJU   | MFU   |       |               |                 |
|           |      | BLGR    | AJU   | MFU   |       |               |                 |
|           |      | HOFI    | AJU   | MFU   |       |               |                 |
|           |      | HOVR    | AJU   | MFU   |       |               |                 |
|           |      | PSFL    | AJU   | MFU   |       |               |                 |
|           |      | CAKI    | AJU   | MFU   |       |               |                 |
|           |      | ELSW    | AJU   | MFU   |       |               |                 |
|           |      | SPTO    | AJU   | MFU   |       |               |                 |
|           |      | EVST    | AJU   | MFU   |       |               |                 |
|           |      | ANHU    | AJU   | MFU   |       |               |                 |
|           |      | YENA    | AJU   | MFU   |       |               |                 |
|           |      | DOND?   | AJU   | MFU   |       |               |                 |
| BCBH002   | 0650 | BHCO    | (A)JU | (M)FU | 2     |               |                 |
|           |      | MALE    | AJU   | MFU   |       |               |                 |
|           |      | GULLSP  | AJU   | MFU   |       |               | flying overhead |
|           |      | SOSP    | AJU   | MFU   |       |               |                 |
|           |      | OWE     | AJU   | MFU   |       |               |                 |





## **APPENDIX B**

### **WILDLIFE SPECIES DETECTED DURING CAGN SURVEYS**



**APPENDIX B**  
**WILDLIFE SPECIES DETECTED DURING CAGN SURVEYS**

| Scientific Name  | Common Name   |
|--|---|
| <b>INVERTEBRATES</b>   |   |
| Order Lepidoptera  | Butterflies   |
| Family Papilionidae<br><i>Papilio sp.</i>                    | swallowtail sp.                                       |
| <b>REPTILES</b>  |   |
| Order Squamata   | Alligator Lizards and Allies                          |
| Family Anguidae<br><i>Sceloporus occidentalis</i>            | western fence lizard                                  |
| Family Teiidae<br><i>*Cnemidophorus hyperythrus beldingi</i> | orange-throated whiptail                              |
| <b>BIRDS</b>   |   |
| Order Pelecaniformes   | Tropicbirds, Pelicans, and Relatives                  |
| Family Phalacrocoracidae<br><i>Phalacrocorax auritus</i>     | double-crested cormorant                              |
| Order Ciconiiformes  | Hérons, Ibises, Storks, American Vultures, and Allies |
| Family Ardeidae<br><i>Ardea alba</i>                         | great egret   |
| Family Cathartidae<br><i>Cathartes aura</i>                  | turkey vulture  |
| Order Falconiformes  | Diurnal Birds of Prey                                 |
| Family Accipitridae<br><i>*Circus cyaneus</i>                | northern harrier                                      |
| <i>*Elanus leucurus</i>                                      | white-tailed kite                                     |
| <i>*Accipiter cooperii</i>                                   | Cooper's hawk   |
| <i>Buteo lineatus</i>  | red-shouldered hawk                                   |
| <i>Buteo jamaicensis</i>                                     | red-tailed hawk                                       |
| <i>*Pandion haliaetus</i>                                    | osprey  |
| Family Falconidae<br><i>Falco sparverius</i>                 | American kestrel                                      |
| Order Gruiformes   |   |
| Family Rallidae<br><i>Rallus limicola</i>                    | Virginia rail   |
| Order Charadriiformes  |   |
| Family Charadriidae<br><i>Charadrius vociferus</i>           | killdeer  |
| Order Galliformes  | Magapodes, Curassows, Pheasants, and Allies           |
| Family Odontophoridae<br><i>Callipepla californica</i>       | California quail                                      |
| Order Columbiformes  | Pigeons and Doves                                     |
| Family Columbidae<br><i>Zenaida macroura</i>                 | mourning dove   |
| Order Cuculiformes   |   |
| Family Cuculidae<br><i>Geococcyx californianus</i>           | greater roadrunner                                    |
| Order Strigiformes   | Owls  |
| Family Strigidae<br><i>Bubo virginianus</i>                  | great horned owl                                      |
| Order Apodiformes  | Swifts and Hummingbirds                               |
| Family Trochilidae<br><i>Calypte anna</i>                    | Anna's hummingbird                                    |
| Order Coraciiformes  |   |
| Family Alcedinidae<br><i>Ceryle alcyon</i>                   | belted kingfisher                                     |
| <i>Geococcyx californianus</i>                               | greater roadrunner                                    |

| Scientific Name                      | Common Name                                |
|--------------------------------------|--|
| <b>Order Piciformes</b>              |  |
| Family Picidae                       |  |
| <i>Picoides nuttallii</i>            | Nuttall's woodpecker                       |
| <i>Colaptes auratus</i>              | northern flicker                           |
| <i>Melanerpes formicivorus</i>       | acorn woodpecker                           |
| <i>Melanerpes lewis</i>              | Lewis's woodpecker                         |
| <b>Order Passeriformes</b>           |  |
| Song birds                           |  |
| Family Tyrannidae                    |  |
| <i>Sayornis nigricans</i>            | black phoebe                               |
| <i>Sayornis saya</i>                 | Say's phoebe                               |
| <i>Tyrannus vociferans</i>           | Cassin's kingbird                          |
| <i>Tyrannus verticalis</i>           | western kingbird                           |
| Family Corvidae                      |  |
| <i>Aphelocoma californica</i>        | western scrub jay                          |
| <i>Corvus branchyrhynchos</i>        | American crow                              |
| <i>Corvus corax</i>                  | common raven                               |
| Family Paridae                       |  |
| <i>Baeolophus inornatus</i>          | oak titmouse                               |
| Family Aegithalidae                  |  |
| <i>Psaltriparus minimus</i>          | bush tit                                   |
| Family Sittidae                      |  |
| <i>Sitta carolinensis</i>            | white-breasted nuthatch                    |
| <i>Sitta Canadensis</i>              | red-breasted nuthatch                      |
| Family Troglodytidae                 |  |
| <i>Thryomanes bewickii</i>           | Bewick's wren                              |
| <i>Troglodytes aedon</i>             | house wren                                 |
| <i>Salpinctes obsoletus</i>          | rock wren                                  |
| Family Timaliidae                    |  |
| <i>Chamaea fasciata</i>              | wren tit                                   |
| Family Regulidae                     |  |
| <i>Regulus calendula</i>             | ruby-crowned kinglet                       |
| Family Sylviidae                     |  |
| <i>Poliophtila californica</i>       | California gnatcatcher                     |
| <i>Poliophtila caerulea</i>          | blue-gray gnatcatcher                      |
| Family Turdidae                      |  |
| <i>Sialia Mexicana</i>               | western bluebird                           |
| <i>Turdus migratorius</i>            | American robin                             |
| <i>Catharus guttatus</i>             | hermit thrush                              |
| Family Mimidae                       |  |
| <i>Mimus polyglottos</i>             | northern mockingbird                       |
| <i>Toxostoma redivivum</i>           | California thrasher                        |
| Family Ptilonotidae                  |  |
| <i>Phainopepla nitens</i>            | phainopepla                                |
| Family Bombycillidae                 |  |
| <i>Bombycilla cedrorum</i>           | cedar waxwing                              |
| Family Sturnidae                     |  |
| <i>Sturnus vulgaris</i>              | European starling                          |
| Family Parulidae                     |  |
| <i>Vermivora celata</i>              | orange-crowned warbler                     |
| <i>Dendroica coronate</i>            | yellow-rumped warbler                      |
| <i>Geothlypis trichas</i>            | common yellowthroat                        |
| Family Emberizidae                   |  |
| <i>Pipilo crissalis</i>              | California towhee                          |
| <i>*Aimophila ruficeps canascens</i> | southern California rufous-crowned sparrow |
| <i>*Amphispiza belli belli</i>       | Bell's sage sparrow                        |
| <i>Ammodramus savannarum</i>         | grasshopper sparrow                        |
| <i>Passerella illaca</i>             | fox sparrow                                |
| <i>Passerculus sandwichensis</i>     | savannah sparrow                           |
| <i>Melospiza melodia</i>             | song sparrow                               |
| <i>Junco hyemalis</i>                | dark-eyed junco                            |
| <i>Pipilo maculatus</i>              | spotted towhee                             |

| <b>Scientific Name</b>         | <b>Common Name</b>         |
|--------------------------------|----------------------------|
| <i>Zonotrichia leucophrys</i>  | white-crowned sparrow      |
| <i>Zonotrichia atricapilla</i> | golden-crowned sparrow     |
| <i>Zonotrichia albicollis</i>  | white-throated sparrow     |
| Family Icteridae               |                            |
| <i>Sturnella neglecta</i>      | western meadowlark         |
| <i>Euphagus cyanocephalus</i>  | Brewer's blackbird         |
| Family Fringillidae            |                            |
| <i>Carpodacus mexicanus</i>    | house finch                |
| <i>Carduelis psaltria</i>      | lesser goldfinch           |
| <i>Carduelis tristis</i>       | American goldfinch         |
| <b>MAMMALS</b>                 |                            |
| Order Lagomorpha               |                            |
| Family Leporidae               |                            |
| <i>Sylvilagus audubonii</i>    | cottontail rabbit          |
| Order Carnivora                |                            |
| Carnivores                     |                            |
| Family Canidae                 |                            |
| <i>Canis latrans</i>           | coyote                     |
| <i>Canis familiaris</i>        | domestic dog               |
| Family Procyonidae             |                            |
| <i>Procyon lotor</i>           | raccoon                    |
| Order Rodentia                 |                            |
| Rodents                        |                            |
| Family Sciuridae               |                            |
| <i>Spermophilus beecheyi</i>   | California ground squirrel |
| Family Muridae                 |                            |
| <i>Neotoma</i> sp.             | woodrat sp.                |
| Order Perissodactyla           |                            |
| Horses, Tapirs, and Relatives  |                            |
| Family Equidae                 |                            |
| <i>Equus caballus</i>          | feral horse                |
| Order Artiodactyla             |                            |
| Even-toed Ungulates            |                            |
| Family Cervidae                |                            |
| <i>Odocoileus hemionus</i>     | mule deer                  |

\*Sensitive Wildlife Species/ Species of Special Concern



## **APPENDIX B**

### **FLORAL COMPENDIUM**



**APPENDIX B  
 FLORAL COMPENDIUM FOR THE OLIVENHAIN MUNICIPAL WATER DISTRICT  
 RAW WATER PIPELINE  
 FROM THE SECOND SAN DIEGO AQUEDUCT  
 TO THE DAVID C. MCCOLLOM WATER TREATMENT PLANT  
 PROJECT SITE**

| <b>Scientific Name</b>                     | <b>Common Name</b>              | <b>Habitat</b>       |
|--|---------------------------------|----------------------|
| <b><u>FERNS AND FERN ALLIES</u></b>        |                                 |                      |
| <b>Dryopteridaceae - Wood Fern Family</b>  |                                 |                      |
| <i>Dryopteris arguta</i>                   | coastal wood fern               | SMC                  |
| <b>Pteridaceae - Brake Family</b>          |                                 |                      |
| <i>Pentagramma triangularis</i>            | silverback fern                 | DCSS                 |
| <b>Selaginellaceae - Spike-moss Family</b> |                                 |                      |
| <i>Selaginella cinerascens</i>             | mesa spike-moss                 | SMC, DCSS            |
| <b><u>DICOTS</u></b>                       |                                 |                      |
| <b>Agavaceae - Agave Family</b>            |                                 |                      |
| <i>Hesperoyucca whipplei</i>               | chaparral yucca                 | DCSC                 |
| <b>Amaranthaceae - Amaranth Family</b>     |                                 |                      |
| <i>Salsola tragus*</i>                     | Russian thistle                 | DCSS                 |
| <b>Anacardiaceae - Sumac Family</b>        |                                 |                      |
| <i>Malosma laurina</i>                     | laurel sumac                    | DCSS, NNG, SMC       |
| <i>Rhus integrifolia</i>                   | lemonadeberry                   | DCSS, SMC            |
| <i>Toxicodendron diversilobum</i>          | poison oak                      | DCSS                 |
| <b>Apiaceae– Carrot Family</b>             |                                 |                      |
| <i>Foeniculum vulgare*</i>                 | fennel                          | FWS, DCSS, NNG       |
| <i>Galium angustifolium</i>                | Narrow-leaved Bedstraw          | SMC                  |
| <b>Asclepiadaceae - Milkweed Family</b>    |                                 |                      |
| <i>Asclepias fascicularis</i>              | narrow-leaf milkweed            | DCSS                 |
| <b>Asteraceae - Sunflower Family</b>       |                                 |                      |
| <i>Ambrosia psilostachya</i>               | western ragweed                 | SWS                  |
| <i>Artemisia californica</i>               | California sagebrush            | CSS, NNG             |
| <i>Artemisia douglasiana</i>               | mugwort                         | SWRF                 |
| <i>Artemisia palmeri</i>                   | San Diego sagewort              | SWRF                 |
| <i>Aster exilis</i>                        | southern annual saltmarsh aster | SWRF                 |
| <i>Baccharis pilularis</i>                 | coyote bush                     | DCSS                 |
| <i>Baccharis salicifolia</i>               | mule fat                        | SWS, MFS, DCSS, SWRF |
| <i>Baccharis sarothroides</i>              | broom baccharis                 | DCSS, SWRF, NNG, MFS |
| <i>Carduus pycnocephalus*</i>              | Italian thistle                 | FWS                  |
| <i>Conyza sp.</i>                          | n.a.                            | SWRF                 |
| <i>Cynara cardunculus*</i>                 | wild artichoke                  | NNG                  |
| <i>Deinandra fasciculata</i>               | fascicled tarplant              | DCSS, NNG, SWS       |
| <i>Encelia californica</i>                 | bush sunflower                  | SMC, DCSS            |

| <b>Scientific Name</b>                                       | <b>Common Name</b>      | <b>Habitat</b> |
|--|-------------------------|----------------|
| <i>Encelia farinosa</i>                                      | brittlebush             | DIST           |
| <i>Eriophyllum confertiflorum</i> var. <i>confertiflorum</i> | golden yarrow           | SMC            |
| <i>Hazardia squarrosa</i>                                    | sawtooth goldenbush     | FWS, SMC       |
| <i>Helianthus gracilentus</i>                                | slender sunflower       | SMC            |
| <i>Heterotheca grandiflora</i>                               | telegraph weed          | SMC            |
| <i>Hedypnois cretica</i> *                                   | crete weed              | NNG            |
| <i>Isocoma menziesii</i>                                     | goldenbush              | DCSS           |
| <i>Iva hayesiana</i>   | San Diego marsh-elder   | SWS            |
| <i>Picris echioides</i> *                                    | bristly ox-tongue       | FWS            |
| <i>Pluchea odorata</i>                                       | fragrant marsh fleabane | SWRF           |
| <i>Stephanomeria virgata</i>                                 | twiggy wreath-plant     | FWS            |
| <i>Xanthium strumarium</i> *                                 | cocklebur               | SWRF           |
| <b>Brassicaceae - Mustard Family</b>                         |                         |                |
| <i>Brassica kaber</i> *                                      | wild mustard            | DCSS           |
| <i>Hirschfeldia incana</i> *                                 | short-pod mustard       | DCSS, NNG      |
| <i>Raphanus sativus</i> *                                    | wild radish             | NNG            |
| <i>Rorippa nasturtium-aquaticum</i>                          | watercress              | SWRS           |
| <b>Cactaceae - Cactus Family</b>                             |                         |                |
| <i>Opuntia littoralis</i>                                    | prickly pear            | FWS, DCSS      |
| <b>Caprifoliaceae - Honeysuckle Family</b>                   |                         |                |
| <i>Lonicera subspicata</i> var. <i>denudata</i>              | southern honeysuckle    | DCSS           |
| <i>Sambucus</i> sp.  | elderberry              | SWS            |
| <b>Caryophyllaceae - Pink Family</b>                         |                         |                |
| <i>Silene laciniata</i>                                      | Indian pink             | SMC            |
| <b>Cistaceae - Rock-rose Family</b>                          |                         |                |
| <i>Helianthemum scoparium</i>                                | yellow rock-rose        | SMC            |
| <b>Convolvulaceae - Morning-glory Family</b>                 |                         |                |
| <i>Calystegia macrostegia</i>                                | morning-glory           | SMC            |
| <b>Crassulaceae - Stonecrop Family</b>                       |                         |                |
| <i>Dudleya pulverulenta</i>                                  | dudleya                 | FWS            |
| <b>Cucurbitaceae - Gourd Family</b>                          |                         |                |
| <i>Marah macrocarpus</i>                                     | wild cucumber           | DCSS           |
| <i>Xylococcus bicolor</i>                                    | mission Manzanita       | SMC            |
| <b>Ericaceae - Heath Family</b>                              |                         |                |
| <i>Comarostaphylis diversifolia</i> ssp. <i>diversifolia</i> | summer holly            | SMC            |
| <b>Euphorbiaceae - Spurge Family</b>                         |                         |                |
| <i>Croton setigerus</i>                                      | doveweed                | NNG            |
| <i>Ricinus communis</i> *                                    | castor bean             | SWRF           |

| Scientific Name                                     | Common Name          | Habitat         |
|---|----------------------|-----------------|
| <b>Fabaceae - Legume Family</b>                     |                      |                 |
| <i>Acacia cyclops</i> *                             | red-eye acacia       | DCSS            |
| <i>Lathyrus latifolius</i>                          | everlasting pea      | SCM             |
| <i>Lotus scoparius</i>                              | deerweed             | FWS, DCSS, DIST |
| <i>Oxalis corniculata</i>                           | yellow sorrel        | DCSS            |
| <b>Fagaceae – Oak Family</b>                        |                      |                 |
| <i>Quercus agrifolia</i>                            | coast live oak       | DCSS, SWRF      |
| <i>Quercus berberidifolia</i>                       | scrub oak            | DCSS            |
| <i>Quercus berberidifolia x Quercus engelmannii</i> |                      | SMC             |
| <i>Quercus sp.</i>                                  | oak                  | SWS             |
| <b>Hydrophyllaceae - Waterleaf Family</b>           |                      |                 |
| <i>Phacelia cicutaria</i>                           | caterpillar phacelia | SMC, DCSS       |
| <b>Lamiaceae - Mint Family</b>                      |                      |                 |
| <i>Salvia apiana</i>                                | white sage           | DCSS            |
| <i>Salvia melifera</i>                              | black sage           | DCSS, SMC       |
| <i>Stachys sp.</i>                                  | hedge nettle         | SWRF            |
| <b>Lythraceae - Loosestrife Family</b>              |                      |                 |
| <i>Lythrum hyssopifolium</i>                        | purple loosestrife   | SWRF            |
| <b>Malvaceae - Mallow Family</b>                    |                      |                 |
| <i>Malacothamnus fasciculatus</i>                   | bushmallow           | FWS             |
| <b>Myrtaceae - Myrtle Family</b>                    |                      |                 |
| <i>Eucalyptus sp.</i> *                             | gum tree             | EUC, SWRF       |
| <b>Oleaceae - Olive Family</b>                      |                      |                 |
| <i>Olea europea</i>                                 | olive                | ORN             |
| <b>Onagraceae - Primrose Family</b>                 |                      |                 |
| <i>Epilobium sp.</i>                                | willowherb           | SWRF            |
| <b>Orobanchaceae - Broom-rape Family</b>            |                      |                 |
| <i>Cordylanthus rigidus ssp. setigerus</i>          | dark-tip bird's beak | SMC             |
| <b>Plantaginaceae - Plantain Family</b>             |                      |                 |
| <i>Plantago lanceolata</i>                          | English plantain     | SMC             |
| <i>Plantago major</i>                               | common plantain      | SWRF            |
| <b>Platanaceae - Sycamore Family</b>                |                      |                 |
| <i>Platanus racemosa</i>                            | California sycamore  | SWRF            |
| <b>Polygonaceae - Buckwheat Family</b>              |                      |                 |
| <i>Eriogonum fasciculatum</i>                       | California buckwheat | DCSS, NNG, DIST |
| <i>Rumex crispus</i> *                              | curly dock           | FWS             |

| Scientific Name                           | Common Name            | Habitat       |
|---|------------------------|---------------|
| <b>Primulaceae - Primrose Family</b>      |                        |               |
| <i>Anagallis arvensis*</i>                | scarlet pimpernel      | SWRF          |
| <b>Rhamnaceae - Buckthorn Family</b>      |                        |               |
| <i>Adolphia californica</i>               | adolphia               | DCSS, SMC     |
| <i>Ceanothus verrucosus</i>               | Wart-stemmed ceanothus | FWS, SMC, SMC |
| <i>Rhamnus crocea</i>                     | spiny redberry         | DCSS, SWS     |
| <b>Rosaceae - Rose Family</b>             |                        |               |
| <i>Adenostoma fasciculatum</i>            | chamise                | SMC           |
| <i>Hetermomeles arbutifolia</i>           | toyon                  | SMC, DCSS     |
| <b>Rutaceae - Citrus Family</b>           |                        |               |
| <i>Cneoridium dumosum</i>                 | bush-rue               | SMC           |
| <b>Salicaceae - Willow Family</b>         |                        |               |
| <i>Salix goodingii</i>                    | black willow           | SWRF          |
| <i>Salix lasiolepis</i>                   | arroyo willow          | SWRF, SWS     |
| <i>Salix</i> spp.                         | willow                 | SWRF          |
| <b>Saururaceae - Lizard's Tail Family</b> |                        |               |
| <i>Anemopsis californica</i>              | yerba mansa            | SWS           |
| <b>Saxifragaceae - Saxifrage Family</b>   |                        |               |
| <i>Jepsonia parryi</i>                    | coast jepsonia         | FWS           |
| <b>Scrophulariaceae - Figwort Family</b>  |                        |               |
| <i>Mimulus aurantiacus</i>                | bush monkeyflower      | DCSS, SMC     |
| <b>Solanaceae - Nightshade Family</b>     |                        |               |
| <i>Solanum nigrum</i>                     | black nightshade       | SWRF          |
| <b>MONOCOTS</b>                           |                        |               |
| <b>Agavaceae - Agave Family</b>           |                        |               |
| <i>Hesperoyucca whipplei</i>              | chaparral yucca        | SMC           |
| <b>Araceae - Arum Family</b>              |                        |               |
| <i>Lemna minor</i>                        | duckweed               | SWS           |
| <b>Arecaceae - Palm Family</b>            |                        |               |
| <i>Washingtonia robusta</i>               | Mexican fan palm       | SWRP          |
| <b>Cyperaceae - Sedge Family</b>          |                        |               |
| <i>Carex spissa</i>                       | San Diego sedge        | SWRF          |
| <i>Eleocharis</i> sp.                     | spike rush             | SWRF          |
| <b>Iridaceae - Iris Family</b>            |                        |               |
| <i>Sisyrinchium bellum</i>                | blue-eyed grass        | SWS, FWS      |

| Scientific Name                            | Common Name             | Habitat             |
|--|-------------------------|---------------------|
| <b>Juncaceae - Rush Family</b>             |                         |                     |
| <i>Juncus acutus</i> ssp. <i>leopoldii</i> | southwestern spiny rush | SWRF                |
| <i>Juncus dubius</i>                       | mariposa rush           | FWS, SWRF           |
| <i>Juncus mexicanus</i>                    | Mexican rush            | SWRF                |
| <b>Liliaceae - Lily Family</b>             |                         |                     |
| <i>Calochortus</i> sp.                     | mariposa lily           | SMC                 |
| <b>Poaceae - Grass Family</b>              |                         |                     |
| <i>Agrostis pallens</i>                    | thin grass              | SMC                 |
| <i>Avena</i> sp.*                          | wild oat                | NNG                 |
| <i>Avena barbata</i>                       | wild oat                | NNG, SMC            |
| <i>Bothriochloa barbinodis</i>             | cane bluestem           | SMC                 |
| <i>Bromus</i> spp.*                        | brome                   | NNG, SWS, DIST, SMC |
| <i>Cynodon dactylon</i> *                  | Bermuda grass           | SWRF                |
| <i>Cortaderia selloana</i>                 | pampas grass            | SWS                 |
| <i>Gastridium ventricosum</i>              | nitgrass                | SMC                 |
| <i>Leymus triticoides</i>                  | beardless wildrye       | SWRF                |
| <i>Muhlenbergia rigens</i>                 | deergrass               | FWS, MFS            |
| <i>Melica imperfecta</i>                   | coast melic             | SMC                 |
| <i>Nasella pulchra</i>                     | purple needle-grass     | DCSS, NNG, SWS, SMC |
| <i>Paspalum</i> sp.                        |                         | SWRF                |
| <i>Pennisetum setaceum</i>                 | African fountaingrass   | DCSS                |
| <b>Typhaceae – Cattail Family</b>          |                         |                     |
| <i>Typha</i> sp.                           | cattail                 | SWRF, SWS           |

\* = denotes exotic species

Vegetation Communities

CLOW= Coast live oak woodland

DEV= Developed

EUC= Eucalyptus woodland

FWS= Freshwater seep

MFS= Mulefat scrub

DCSS= Diegan Coastal sage scrub

DIST = Disturbed habitats

NNG = Non-native grassland

ORN= Ornamental plantings

SWRF= Southern arroyo willow riparian forest

SMC= Southern mixed chaparral

SWS = Southern willow scrub

VNG= Valley needlegrass grassland



## **APPENDIX C**

### **SENSITIVE PLANT SPECIES KNOWN OR POTENTIALLY OCCURRING**



**APPENDIX C**  
**SENSITIVE PLANT SPECIES KNOWN OR POTENTIALLY OCCURRING WITHIN THE**  
**PROPOSED OLIVEHAIN MUNICIPAL WATER DISTRICT RAW WATER PIPELINE**  
**FROM THE SECOND SAND DIEGO AQUEDUCT**  
**TO THE DAVID C. MCCOLLOM WATER TREATMENT PLANT PROJECT SITE**

| Species   | State/Federal Status | CNPS List | Habitat/Blooming Period  | Comments   |
|---|----------------------|-----------|--|--|
| <i>Acanthomintha ilicifolia</i><br>San Diego thornmint                        | SE/FT                | 1B.1      | Annual herb; chaparral, coastal sage scrub, and valley and foothill grasslands, vernal pools; April – June; elevation less than 3,100 feet.  | Not observed. Low potential to occur due to presence of marginally suitable habitat and soils. It is most commonly found within grassy openings in chaparral or sage scrub with broken clay soils.         |
| <i>Adolphia californica</i><br>California adolphia                            | –/–                  | 2.1       | Deciduous shrub; chaparral, coastal sage scrub, and valley and foothill grasslands; December – May; elevation range 148 – 2,428 feet.  | Observed onsite. <i>Adolphia californica</i> was observed in Diegan coastal sage scrub and southern mixed chaparral.   |
| <i>Agave shawii</i><br>Shaw's agave   | –/–                  | 2.1       | Leaf succulent; coastal bluff scrub, coastal scrub; September – May; elevation range 33-246 feet.  | Not observed. Not expect to occur, as this species would have been detected during surveys.  |
| <i>Ambrosia pumila</i><br>dwarf burr ambrosia                                 | –/FE                 | 1B.1      | Perennial rhizomatous herb; chaparral, coastal sage scrub, valley and foothill grassland, creek beds, vernal pools, often in disturbed areas; blooms April–October.; elevation less than 1,400 feet. | Not observed. Not expected to occur, as this species would have been detected during surveys.  |
| <i>Arctostaphylos glandulosa</i> ssp. <i>crassifolia</i><br>Del Mar Manzanita | –/FE                 | 1B.1      | Evergreen shrub; chaparral (maritime, sandy); blooms December – June; elevation range 0 to 1,198 feet.   | Not observed. Not expected to occur, as this species would have been detected during surveys.  |
| <i>Arctostaphylos rainbowensis</i><br>rainbow manzanita                       | –/–                  | 1B.1      | Evergreen shrub; chaparral; blooms December – March; elevation range 738 to 2,198 feet   | Not observed. Not expected to occur, as this species would have been detected during surveys.  |
| <i>Artemisia palmeri</i><br>San Diego sagewort                                | –/–                  | 4.2       | Deciduous shrub; coastal sage scrub, chaparral, riparian forest, riparian scrub, riparian woodland, mesic, sandy areas; blooms May–Sept.; elevation less than 3,000 feet.                            | Observed onsite. <i>Artemisia palmeri</i> was observed in Southern arroyo willow riparian forest.  |
| <i>Astragalus tener</i> var. <i>titi</i><br>coastal dunes milk vetch          | SE/FE                | 1B.1      | Annual herb; coastal bluff scrub, coastal dunes, coastal prairie, often mesic areas; March – May; elevation range 4 – 164 feet.  | Not observed. <i>Astragalus tener</i> var. <i>titi</i> is not likely to occur at this site because the vegetation communities found do not include coastal bluff scrub, coastal dunes, or coastal prairie. |
| <i>Atriplex coulteri</i><br>Coulter's saltbush                                | –/–                  | 1B.2      | Perennial herb; coastal bluff scrub, coastal dunes, coastal sage scrub, valley and foothill grassland/alkali or clay; blooms March-October; elevation 10 – 5000 feet.                                | Not observed. Known to occur in alkali swales. Low potential to occur as it should have been detected during surveys.  |

| Species   | State/Federal Status | CNPS List | Habitat/Blooming Period  | Comments  |
|---|----------------------|-----------|--|---|
| <i>Atriplex pacifica</i><br>south coast saltscale                         | —/—                  | 1B.2      | Annual herb; coastal bluff scrub, coastal dunes, coastal scrub, playas, blooms March–Oct.; elevation range 0-460 feet.   | Not observed, but low potential to occur because vegetation communities where it is most likely to occur were not found at this site.   |
| <i>Atriplex serenana</i> var. <i> davidsonii</i><br>Davidson’s salt scale | —/—                  | 1B.2      | Annual herb; coastal bluff scrub, coastal scrub, alkaline areas; blooms from April to October; elevation range 33 – 656 feet.  | Not observed, but low potential to occur because vegetation communities where it is most likely to occur were not found at this site.   |
| <i>Baccharis vanessae</i><br>Encinitas baccharis                          | SE/FT                | 1B.1      | Deciduous shrub; chaparral (maritime), cismontane woodland (sandstone); blooms August – November; elevation range 197 – 2362 feet.   | Not observed. Not expected to occur, as this species would have been detected during surveys. Vegetation communities where it is most likely to occur were not found at this site.  |
| <i>Bergerocactus emoryi</i><br>golden spined cactus                       | —/—                  | 2.2       | Stem succulent; closed cone coniferous forest, chaparral, coastal scrub (sandy); blooms May – June; elevation range 10 – 1296 feet   | Not observed. This species would have been detected during surveys.   |
| <i>Bloomeria clevelandii</i><br>San Diego Goldenstar                      | —/—                  | 1B.1      | Bulbiferous herb; chaparral, coastal scrub, valley foothill grassland, vernal pool (clay); blooms April – May; elevation range 164 – 1525 feet.  | High potential to occur. This site has highly suitable habitat and soils. During inspection of last season’s wildflowers revealed presence of the a taxon in the genus Bloomeria. This site would need to be observed during the bloom period (April – May) |
| <i>Brodiaea filifolia</i><br>Thread-leaved brodiaea                       | SE/FT                | 1B.1      | Perennial herb (bulbiferous); cismontane woodland, coastal sage scrub, playas, valley and foothill grassland, vernal pools, often clay; blooms March–June; elevation less than 4,000 feet.                 | Moderate potential to occur. Reasonably suitable habitat is present and it has been mapped 2.83 miles north of Elfin Forest Road and San Elijo Road.  |
| <i>Brodiaea orcuttii</i><br>Orcutt’s brodiaea                             | —/—                  | 1B.1      | Perennial herb (bulbiferous); closed cone coniferous forest, chaparral, meadows and seeps, valley and foothill grassland, vernal pools, mesic, clay soil; blooms May–July; elevation less than 5,300 feet. | Moderate potential to occur. Reasonably suitable habitat is present. It has been mapped 2.78 miles north of Elfin Forest Road and San Elijo Road.   |
| <i>Ceanothus cyaneus</i><br>Lakeside ceanothus                            | —/—                  | 1B.2      | Evergreen shrub; closed cone coniferous forest, chaparral; blooms April – June; elevation range from 771 – 2,477 feet.   | Not observed. Not expected to occur, as this species would have been detected during surveys.   |
| <i>Ceanothus verrucosus</i><br>wart-stemmed ceanothus                     | —/—                  | 2.2       | Evergreen shrub; chaparral; blooms from December – May; elevation range from 4 – 1247 feet.  | Observed onsite. <i>Ceanothus verrucosus</i> was observed in freshwater seep and southern mixed chaparral.  |
| <i>Centromadia parryi</i> ssp. <i> australis</i><br>Southern tarplant     | —/—                  | 1B.1      | Annual herb; seasonally moist marshes, swamps, (saline) grassland, silt loam soils; blooms between June-October, elevation less than 700 feet.   | Not observed. Not expected to occur, as this species would have been detected during surveys.   |

| Species  | State/Federal Status | CNPS List | Habitat/Blooming Period   | Comments   |
|--|----------------------|-----------|---|--|
| <i>Centromadia pungens</i> ssp. <i>laevis</i><br>smooth tarplant                   | —/—                  | 1B.1      | Annual herb; chenopod scrub, meadows and seeps, playas, riparian woodland, valley and foothill grassland (alkaline); blooms from April – September; elevation range from 0 – 2,100 feet.                                | Not observed. Not expected to occur, as this species would have been detected during surveys.  |
| <i>Chaenactis glabriuscula</i> var. <i>orcuttiana</i><br>Orcutt's pincushin        | —/—                  | 1B.1      | Annual herb; coastal bluff scrub (sandy), coastal dunes; blooms from January – August; elevation range from 10- 328 feet.   | Not observed. Not expected to occur, as this species would have been detected during surveys.  |
| <i>Chorizanthe orcuttiana</i><br>Orcutt's spineflower                              | SE/FE                | 1B.1      | Annual herb; closed cone coniferous forest, chaparral (maritime), coastal scrub (sandy openings); blooms between March – May; elevation range from 10 – 410 feet.   | Not observed. Vegetation communities where it is most likely to occur were not found at this site.                                       |
| <i>Chorizanthe polygonoides</i> var. <i>longispina</i><br>Long-spined spineflower  | —/—                  | 1B.1      | Clay soils; openings in chaparral, coastal sage scrub, near vernal pools (clay) and montane meadows; blooms from April–July; elevation range from 98 – 5019 feet.   | Not observed. This species would most likely have been detected.   |
| <i>Clarkia delicata</i><br>delicate clarkia  | —/—                  | 1B.2      | Annual herb; chaparral, cismontane woodland; blooms from April-June; elevation range from 771 - 3,284 feet  | Moderate potential to occur. Reasonably suitable habitat is present and a population was found approximately 12 miles from the site.     |
| <i>Comarostaphylis diversifolia</i> spp. <i>diversifolia</i><br>Summer holly       | —/—                  | 1B.2      | Evergreen shrub; chaparral, cismontane woodland; blooms from April-June; elevation range from 98 – 1804 feet.   | Observed onsite. <i>Comarostaphylis diversifolia</i> spp. <i>diversifolia</i> was observed in southern mixed chaparral.                  |
| <i>Coreopsis maritime</i><br>sea dahlia  | —/—                  | 2.2       | Perennial herb; coastal bluff scrub, coastal scrub; blooms from March – May; elevation range from 16 – 492 feet.  | Not observed. Vegetation communities where it is most likely to occur were not found at this site. It has not been documented nearby.    |
| <i>Corethrogyne filaginifolia</i> var. <i>incana</i><br>San Diego sand aster       | —/—                  | 1B.1      | Perennial herb; coastal bluff scrub, chaparral, coastal scrub; blooms from June – September; elevation range from 10 – 377 feet.  | Not observed. Not expected to occur, as remnant specimens would have been detected during surveys and it has not been documented nearby. |
| <i>Corethrogyne filaginifolia</i> var. <i>linifolia</i><br>Del Mar Mesa sand aster | —/—                  | 1B.1      | Perennial herb; coastal bluff scrub, chaparral, coastal scrub, openings in chaparral, coastal sage scrub (sandy), valley and foothill grassland, clay substrate; blooms May -September; elevation less than 2,300 feet. | Not observed. Not expected to occur, as remnant specimens would have been detected during surveys and it has not been documented nearby. |
| <i>Dudleya blochmaniae</i> spp. <i>blochmaniae</i><br>Blochman's dudleya           | —/—                  | 1B.1      | Perennial herb; coastal bluff scrub, chaparral, coastal sage scrub, valley and foothill grassland, rocky outcrops, clay soils; blooms April–June, elevation less than 15 - 1476 feet.                                   | Not observed. Not expected to occur, as specimens would have been detected during surveys and it has not been documented nearby.         |

| Species   | State/Federal Status | CNPS List | Habitat/Blooming Period   | Comments   |
|---|----------------------|-----------|---|--|
| <i>Dudleya brevifolia</i><br>short-leaved dudleya                           | SE/-                 | 1B.1      | Perennial herb; chaparral (maritime, openings), coastal scrub, sandstone; blooms April; elevation range 98 -820 feet.                                 | Not observed. Not expected to occur, as remnant specimens would have been detected during surveys. It has not been documented nearby.  |
| <i>Dudleya variegata</i><br>Variegated dudleya                              | -/-                  | 1B.2      | Perennial herb; openings in chaparral, coastal sage scrub, grasslands, vernal pools; blooms May-June; elevation less than 2,000 feet.                 | Moderate potential to occur onsite. <i>Dudleya variegata</i> has reasonably suitable habitat onsite and it has been documented 6.23 miles from Elfin Forest road and San Elijo road. |
| <i>Dudleya viscid</i><br>sticky dudleya                                     | -/-                  | 1B.2      | Perennial herb; coastal bluff scrub, chaparral, cismontane woodland, coastal scrub (rocky); blooms from May - June; elevation range from 32-1804 feet | Not observed. Not expected to occur, as remnant specimens would have been detected during surveys and it has not been documented nearby.   |
| <i>Ericameria palmeri</i> var. <i>palmeri</i><br>Palmer's goldenbush        | -/-                  | 2.2       | Evergreen shrub; chaparral coastal sage scrub, typically in mesic areas; blooms July-Nov.; elevation less than 2,000 feet.                            | Not observed. It would have been detected onsite.  |
| <i>Eryngium aristulatum</i> var. <i>parishii</i><br>San Diego button-celery | SE/FE                | 1B.1      | Annual/perennial herb; vernal pools, mesic areas of coastal sage scrub and grasslands, blooms April-June; elevation less than 2,000 feet.             | Not observed. Not expected to occur, as remnant specimens would have been detected during surveys, though suitable habitat is present.   |
| <i>Erysimum ammophilum</i><br>sand loving wall-flower                       | -/-                  | 1B.2      | Perennial herb; chaparral (maritime), coastal dunes, coastal sage scrub (sandy openings), blooms February -June ; elevation ranges from 0 - 197 feet. | Not observed. Not expected to occur, as remnant specimens would have been detected during surveys and it has not been documented nearby.   |
| <i>Euphorbia misera</i><br>cliff spurge                                     | -/-                  | 2.2       | Shrub; coastal bluff scrub, coastal scrub, mojavean desert scrub (rocky); blooms December - August.; elevation range 33 -1,640 feet.                  | Not observed. Not expected to occur as it would have been found in field surveys.  |
| <i>Ferocactus viridescens</i><br>San Diego barrel cactus                    | -/-                  | 2.1       | Stem succulent; chaparral, coastal scrub, valley and foothill grassland, vernal pools; blooms from May - June; elevation 10 - 1,476 feet.             | Not observed. Low potential to occur as it would have been observed during field surveys.  |
| <i>Geothallus tuberosus</i><br>Campbell's liverwort                         | -/-                  | 1B.1      | Ephemeral liverwort; vernal pools, coastal scrub (mesic); elevation range 33 - 1969 feet.   | Not observed. Low potential to occur as it would have been observed during field surveys.  |
| <i>Harpagonella palmeri</i><br>Palmer's grapplinghook                       | -/-                  | 4.2       | Annual herb; chaparral, coastal scrub, valley and foothill grassland (clay); blooming period March-May; elevation range 66 -3133 feet.                | Not observed. Need to observe during blooming season or just after.  |
| <i>Hazardia orcuttii</i><br>Orcutt's hazardia                               | ST/FC                | 1B.1      | Evergreen shrub; chaparral (maritime), coastal scrub (clay); blooming from August; elevation range from 262 -279 feet.                                | Not observed. Not expected to occur as it would have been observed during field surveys.   |

| Species   | State/Federal Status | CNPS List | Habitat/Blooming Period   | Comments   |
|---|----------------------|-----------|---|--|
| <i>Heterotheca sessiliflora</i> spp.<br><i>sessiliflora</i><br>beach goldenstar | —/—                  | 1B.1      | Perennial herb; chaparral, coastal dunes, coastal scrub; blooming period from March-December; elevation range from 0 – 4019 feet.   | Not observed. Not expected to occur as it would have been observed during field surveys.   |
| <i>Horkelia truncata</i><br>Ramona horkelia                                     | —/—                  | 1B.3      | Perennial herb; chaparral, cismontane woodland (clay) gabbroic; blooming from May to June; elevation range from 1312 -4265 feet.  | Not observed. Low potential to occur as the vegetation communities that the species is most identified with are not present at this field site.  |
| <i>Isocoma menziesii</i> var. <i>decumbens</i><br>decumbent goldenbush          | —/—                  | 1B.2      | Shrub; chaparral, coastal scrub (sandy) often in disturbed areas; blooming period from April – November; elevation range from 33 -443 feet.   | Not observed. Not expected to occur as it would have been observed during field surveys.   |
| <i>Iva hayesiana</i><br>San Diego marsh elder                                   | —/—                  | 2.2       | Perennial herb; marshes and swamps, playas; blooming period from April-October; elevation range 33 – 1640 feet.   | Not observed. Not expected to occur as remnant specimens would have been found during field surveys.   |
| <i>Lasthenia glabrata</i> spp. <i>coulteri</i><br>Coulter's goldfields          | —/—                  | 1B.1      | Annual herb; marshes and swamps (coastal salt), playas, vernal pools; blooming period February – June; elevation range 3 – 4002 feet.   | Not observed. Not expected to occur since the most suitable habitat is not present.  |
| <i>Lepidium virginicum</i> var. <i>robinsonii</i><br>Robinson's pepperglass     | —/—                  | 1B.2      | Annual herb; coastal sage scrub, chaparral; blooms Jan.–July; elevation less than 1,700 feet.   | Moderate potential to occur onsite. This project site has reasonably suitable habitat and a mapped occurrence was documented in 2008 5.91 miles southeast of the intersection of Elfin Forest road and San Elijo road. |
| <i>Lotus nuttallianus</i><br>Nuttall's lotus                                    | —/—                  | 1B.1      | Annual herb; coastal dunes, coastal scrub (sandy), blooming period March – June; elevation range 0-33 feet.   | Not observed. Not expected to occur since the most suitable habitat is not present.  |
| <i>Monardella hypoleua</i> ssp. <i>lanata</i><br>felt leaved monardella         | —/—                  | 1B.2      | Rhizomatous herb; chaparral, cismontane woodland; blooming period from June – August; elevation range from 984 -5167 feet.  | Not observed. Not expected to occur since the most suitable habitat is not present and the species would have been observed in the field.  |
| <i>Monardella viminea</i><br>Willow monardella                                  | SE/FE                | 1B.1      | Perennial herb; closed-cone coniferous forest, chaparral, coastal sage scrub, riparian scrub, riparian woodlands, sandy seasonal dry washes; blooms June–Aug; elevation 160–1,300 feet. | Not observed. Low potential to occur as remnant specimens would have been observed at the site.  |
| <i>Myosurus minimus</i> ssp. <i>apus</i><br>Little mousetail                    | —/—                  | 3.1       | Annual herb; vernal pools, perennial grasslands; blooms March–June; elevation 70–2,100 feet.  | Not observed. Not expected to occur as suitable habitat is not likely present.   |
| <i>Nama stenocarpum</i><br>mud nama   | —/—                  | 2.2       | Annual, perennial herb; marshes and swamps (lake margins, riverbanks); blooms January to July; elevation range from 16-1640 feet.   | Not observed. Not expected to occur, as remnant specimens would have been detected during surveys.   |

| Species   | State/Federal Status | CNPS List | Habitat/Blooming Period  | Comments   |
|---|----------------------|-----------|--|--|
| <i>Navarretia fossalis</i><br>Spreading navarretia                        | --/FT                | 1B.1      | Annual herb; vernal pools, marshes and swamps, chenopod scrub; blooms April–June; elevation 98–4,265 feet.                                     | Not observed. Not expected to occur since suitable habitat is not present.   |
| <i>Nemacaulis denudata</i> var. <i>denudata</i><br>coast woolly heads     | --/–                 | 1B.2      | Annual herb; coastal dunes; blooming period April–September; elevation range 0–328 feet.   | Not observed. Not expected to occur since suitable habitat is not present.   |
| <i>Opuntia californica</i> var. <i>californica</i><br>snake cholla        | --/–                 | 1B.1      | Stem succulent; chaparral, coastal scrub; blooms from April–May; elevation range from 98–492 feet.   | Not observed. Not expected to occur as this species would have been detected in the field.   |
| <i>Orcuttia californica</i><br>California Orcutt grass                    | SE/FE                | 1B.1      | Annual herb; vernal pools; blooms April–August; elevation 50–2,200 feet.   | Not observed. Not expected to occur as suitable habitat is not present.  |
| <i>Orobanche parishii</i> ssp. <i>brachyloba</i><br>short-lobed broomrape | --/–                 | 4.2       | Perennial herb parasitic; coastal bluff scrub, coastal dunes, coastal scrub; blooms from April – October; elevation range from 10 -1000 feet.  | Not observed. Not expected to occur as this species would have been detected in the field.   |
| <i>Pinus torreyana</i> ssp. <i>torreyana</i><br>Torrey pine               | --/–                 | 1B.2      | Evergreen tree; closed cone conifer forest, chaparral (sandstone); elevation range 246 -525 feet.  | Not observed. Not expected to occur as this species would have been detected in the field. The species has not been documented at this site.   |
| <i>Pogogyne abramsii</i><br>San Diego mesa mint                           | SE/FE                | 1B.1      | Annual herb; vernal pools; blooms from March to July; elevation range from 295–656 feet.   | Not observed. Not expected to occur, as this species would have been detected in the field. Suitable habitat was not found at this site. <i>P. abramsii</i> is only found in association with vernal pools.          |
| <i>Pogogyne nudiuscula</i><br>Otay Mesa mint                              | SE/FE                | 1B.1      | Annual herb; vernal pools; blooms from March to July; elevation range from 295–656 feet.   | Not observed. Not expected to occur, as this species would have been detected in the field. Suitable habitat was not found at this site. <i>P. nudiuscula</i> is only found in association with vernal pools.        |
| <i>Quercus dumosa</i><br>Nuttall's scrub oak                              | --/–                 | 1B.1      | Evergreen scrub; closed cone conifer forest, chaparral, coastal scrub (sandy clay loam); February – April; elevation range from 49 -1312 feet. | Not observed. Not expected to occur as this species would have been detected in the field.   |
| <i>Senecio aphanactis</i><br>chaparral ragwort                            | --/–                 | 2.2       | Annual herb; chaparral, cismontane woodland, coastal scrub; blooms from January–April; elevation range from 49 -2625 feet.                     | Moderate potential to occur. This site holds reasonably suitable habitat for this species. An occurrence of the species was found 14.92 miles northeast of the intersection of Elfin Forest road and San Elijo road. |
| <i>Sphaerocarpos dreweii</i><br>bottle liverwort                          | --/–                 | 1B.1      | Ephemeral liverwort; chaparral, coastal sagescrub (openings/soil); elevation range from 295 -1969 feet,  | Not observed. Low potential to occur as it would have been observed during field surveys.  |

| Species   | State/Federal Status | CNPS List | Habitat/Blooming Period  | Comments  |
|---|----------------------|-----------|--|---|
| <i>Stembodia durantifolia</i><br>purple stemodia      | —/—                  | 2.1       | Perennial herb; Sonoran desert scrub (often mesic sand); blooms from January –December; elevation range from 591 -984 feet.          | Not observed. Not expected to occur as suitable habitat is not present. Sonoran desert scrub does not exist at this field site. |
| <i>Suaeda esteroa</i><br>estuary seablite             | —/—                  | 1B.2      | Perennial herb; marshes and swamps (coastal salt); blooms from May –October; elevation range from 0-16 feet.                         | Not observed. Not expected to occur as suitable habitat is not present. Salt marshes were not found.                            |
| <i>Tetracoccus dioicus</i><br>Parry's tetraococcus    | —/—                  | 1B.2      | Deciduous scrub; chaparral, coastal scrub; blooms from April – May; elevation range from 541 – 3281 feet.                            | Not observed. Not expected to occur as this species would have been observed during field surveys.                              |
| <i>Juncus acutus ssp. leopoldii</i><br>Leopold's rush | —/—                  | 4.2       | Rhizomatous herb; coastal dunes, meadows and seeps, marshes and swamps; blooms from May to June; elevation range from 10-2,953 feet. | Observed onsite. <i>Juncus acutus ssp. leopoldii</i> was found in southern arroyo willow riparian forest.                       |

#### STATUS CODES

##### State/Federal Status

- FE = Federally listed endangered
- FT = Federally listed threatened
- FC = Federally listed species of concern
- SE = State listed endangered
- ST = State listed threatened
- SR = State listed rare

##### California Native Plant Society Status

- 1A = Species presumed extinct.
  - 1B = Species rare, threatened, or endangered in California and elsewhere. These species are eligible for state listing.
  - 2 = Species rare, threatened, or endangered in California but more common elsewhere. These species are eligible for state listing.
  - 3 = Species for which more information is needed. Distribution, endangerment, and/or taxonomic information is needed.
  - 4 = A watch list of species of limited distribution. These species need to be monitored for changes in the status of their populations.
- 0.1 = Seriously endangered in California
  - 0.2 = Fairly endangered in California

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## **APPENDIX D**

### **WILDLIFE SPECIES OBSERVED/DETECTED**



**APPENDIX D  
WILDLIFE SPECIES OBSERVED/DETECTED WITHIN THE  
PROPOSED OLIVENHAIN MUNICIPAL WATER DISTRICT  
RAW WATER PROJECT SITE**

| Common Name  | Scientific Name                           | Status       | Evidence of Occurrence |
|--|---|--------------|------------------------|
| <b>Reptiles</b> (Nomenclature from Collins 1997)                     |   |              |                        |
| Belding's Orange-throated whiptail                                   | <i>Aspidoscelis hyperythrus beldingi</i>  | CSC, Group 2 | 0                      |
| <b>Birds</b> (Nomenclature from American Ornithologists' Union 1998) |   |              |                        |
| Anna's Hummingbird   | <i>Calypte anna</i>                       |              | 0                      |
| White-tailed kite  | <i>Elanus leucurus</i>                    | CFP          | 0                      |
| Mourning Dove  | <i>Zenaida macroura</i>                   |              | 0                      |
| Cooper's Hawk  | <i>Accipiter cooperi</i>                  | Group 1      | 0                      |
| Northern Harrier   | <i>Circus cyaneus</i>                     | CSC, Group 1 | 0                      |
| Osprey   | <i>Pandion haliaetus</i>                  |              | 0                      |
| Red-shouldered Hawk  | <i>Buteo lineatus</i>                     |              | 0                      |
| Red-tailed Hawk  | <i>Buteo jamaicensis</i>                  |              | 0                      |
| American Kestrel   | <i>Falco sparverius</i>                   |              | 0                      |
| California Quail   | <i>Callipepla californica</i>             |              | 0                      |
| Bushtit  | <i>Psaltriparus minimus</i>               |              | 0                      |
| American Crow  | <i>Corvus brachyrhynchos</i>              |              | 0                      |
| Common Raven   | <i>Corvus corax</i>                       |              | 0                      |
| Western Scrub-Jay  | <i>Aphelocoma californica</i>             |              | 0                      |
| Rufous-crowned Sparrow   | <i>Aimophila ruficeps</i>                 | CSC          | 0                      |
| Bell's Sage Sparrow  | <i>Amphispiza belli belli</i>             | CSC          | 0                      |
| Song Sparrow   | <i>Melospiza melodia</i>                  |              | 0                      |
| Spotted Towhee   | <i>Pipilo maculates</i>                   |              | 0                      |
| White-crowned Sparrow  | <i>Zonotrichia leucophrys</i>             |              | 0                      |
| American Goldfinch   | <i>Carduelis tristis</i>                  |              | 0                      |
| Great Horned Owl   | <i>Bubo virginianus</i>                   |              | 0                      |
| House Finch  | <i>Carpodacus mexicanus</i>               |              | 0                      |
| Lesser Goldfinch   | <i>Carduelis psaltria</i>                 |              | 0                      |
| Western Meadowlark   | <i>Sturnella neglecta</i>                 |              | 0                      |
| California Thrasher  | <i>Toxostoma redivivum</i>                |              | 0                      |
| Northern Mockingbird   | <i>Mimus polyglottos</i>                  |              | 0                      |
| Yellow-rumped Warbler  | <i>Dendroica coronate</i>                 |              | 0                      |
| Common Starling  | <i>Sturnus vulgaris</i>                   |              | 0                      |
| California Gnatcatcher   | <i>Polioptila californica californica</i> | FT, CSC      | 0                      |
| Wrentit  | <i>Chamaea fasciata</i>                   |              | 0                      |
| Bewick's Wren  | <i>Thryomanes bewickii</i>                |              | 0                      |
| House Wren   | <i>Troglodytes aedon</i>                  |              | 0                      |
| Rock Wren  | <i>Salpinctes obsoletus</i>               |              | 0                      |
| Hermit Thrush  | <i>Catharus guttatus</i>                  |              | 0                      |
| Western Bluebird   | <i>Sialia Mexicana</i>                    |              | 0                      |
| Black Phoebe   | <i>Sayornis nigricans</i>                 |              | 0                      |
| Cassin's Kingbird  | <i>Tyrannus vociferans</i>                |              | 0                      |
| Say's Phoebe   | <i>Sayornis saya</i>                      |              | 0                      |
| Western Kingbird   | <i>Tyrannus verticalis</i>                |              | 0                      |
| Acorn Woodpecker   | <i>Melanerpes formicivorus</i>            |              | 0                      |
| Lewis's Woodpecker   | <i>Melanerpes lewis</i>                   |              | 0                      |
| Northern Flicker   | <i>Colaptes auratus</i>                   |              | 0                      |
| Nuttall's Woodpecker   | <i>Picoides nuttallii</i>                 |              | 0                      |

| Common Name   | Scientific Name                   | Status                | Evidence of Occurrence |
|---|-----------------------------------|-----------------------|------------------------|
| Ash-throated Flycatcher                                     | <i>Myiarchus cinerascens</i>      |                       | O                      |
| Black-chinned Hummingbird                                   | <i>Archilochus alexandri</i>      |                       | O                      |
| Brown-headed Cowbird  | <i>Molothrus ater</i>             |                       | O                      |
| Black-headed Grosbeak                                       | <i>Pheucticus melanocephalus</i>  |                       | O                      |
| Blue Grosbeak   | <i>Passerina caerulea</i>         |                       | O                      |
| Bullock's Oriole  | <i>Icterus bullockii</i>          |                       | O                      |
| California Towhee   | <i>Pipilo crissalis</i>           |                       | O                      |
| Cliff Swallow   | <i>Petrochelidon pyrrhonota</i>   |                       | O                      |
| Costa's Hummingbird   | <i>Calypte costae</i>             |                       | O                      |
| Common Yellowthroat   | <i>Geothlypis trichas</i>         |                       | O                      |
| Downy Woodpecker  | <i>Picoides pubescens</i>         |                       | O                      |
| European Starling   | <i>Sturnus vulgaris</i>           |                       | O                      |
| Hooded Oriole   | <i>Icterus cucullatus</i>         |                       | O                      |
| Lazuli Bunting  | <i>Passerina amoena</i>           |                       | O                      |
| Least Bell's Vireo  | <i>Vireo b. pusillus</i>          |                       | O                      |
| Mallard   | <i>Anas platyrhynchos</i>         |                       | O                      |
| Northern Rough-winged Swallow                               | <i>Stelgidopteryx serripennis</i> |                       | O                      |
| Oak Titmouse  | <i>Baeolophus inornatus</i>       |                       | O                      |
| Pacific-slope Flycatcher                                    | <i>Empidonax difficilis</i>       |                       | O                      |
| Townsend's Warbler  | <i>Dendroica townsendi</i>        |                       | O                      |
| Willow Flycatcher   | <i>Empidonax traillii</i>         |                       | O                      |
| Yellow-breasted Chat  | <i>Icteria virens</i>             |                       | O                      |
| Yellow Warbler  | <i>Dendroica petechia</i>         |                       | O                      |
| Duck species  |                                   |                       | O                      |
| <b><u>Mammals</u></b> (Nomenclature from Jones et al. 1982) |                                   |                       |                        |
| Coyote  | <i>Canis latrans</i>              |                       | T                      |
| Southern mule deer  | <i>Odocoileus hemionus</i>        | Group 2, MSCP covered | S, T, O (off-site)     |
| Woodrat   | <i>Neotoma sp.</i>                |                       | B                      |
| Desert Cottontail   | <i>Sylvilagus audubonii</i>       |                       | O                      |
| Botta's Pocket Gopher                                       | <i>Thomomys bottae</i>            |                       | B                      |

**Status**

- FE = Federally endangered
- FT = Federally threatened
- SE = State endangered
- CFP = California fully protected species
- CSC = California Department of Fish and Game species of special concern
- Group 1 = Animals with a high level of sensitivity, either because they are threatened or endangered or because they have very specific natural history requirements that must be met (County of San Diego).
- Group 2 = Animals which are becoming less common, but are not yet so rare that extirpation or extinction is imminent without immediate action (County of San Diego).
- \* = Taxa listed with an asterisk fall into one or more of the following categories:
  - Taxa considered endangered or rare under Section 15380(d) of CEQA guidelines
  - Taxa that are biologically rare, very restricted in distribution, or declining throughout their range
  - Population(s) in California that may be peripheral to the major portion of a taxon's range, but which are threatened with extirpation within California
  - Taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands)

**Evidence of Occurrence**

- V = Vocalization
- O = Observed
- T = Tracks
- S = Scat
- B = Burrow

| Common Name                   | Scientific Name                  | Status | Evidence of Occurrence |
|-------------------------------|----------------------------------|--------|------------------------|
| <b>Birds</b>                  |                                  |        |                        |
| Ash-throated Flycatcher       | Myiarchus cinerascens            |        | O                      |
| Black-chinned Hummingbird     | Archilochus alexandri            |        | O                      |
| Brown-headed Cowbird          | Molothrus ater                   |        | O                      |
| Black-headed Grosbeak         | Pheucticus melanocephalus        |        | O                      |
| Blue Grosbeak                 | Passerina caerulea               |        | O                      |
| Bullock's Oriole              | Icterus bullockii                |        | O                      |
| California Towhee             | Pipilo crissalis                 |        | O                      |
| Cliff Swallow                 | Petrochelidon pyrrhonota         |        | O                      |
| Costa's Hummingbird           | Calypte costae                   |        | O                      |
| Common Yellowthroat           | Geothlypis trichas               |        | O                      |
| Downy Woodpecker              | Picoides pubescens               |        | O                      |
| European Starling             | Sturnus vulgaris                 |        | O                      |
| Hooded Oriole                 | Icterus cucullatus               |        | O                      |
| Lazuli Bunting                | Passerina amoena                 |        | O                      |
| Least Bell's Vireo            | Vireo b. pusillus                |        | O                      |
| Mallard                       | Anas platyrhynchos               |        | O                      |
| Northern Rough-winged Swallow | Stelgidopteryx serripennis       |        | O                      |
| Oak Titmouse                  | Baeolophus inornatus             |        | O                      |
| Pacific-slope Flycatcher      | Empidonax difficilis             |        | O                      |
| Townsend's Warbler            | Dendroica townsendi              |        | O                      |
| Willow Flycatcher             | Empidonax traillii               |        | O                      |
| Yellow-breasted Chat          | Icteria virens                   |        | O                      |
| Western Scrub Jay             | Aphelocoma californica           |        | O                      |
| Mourning Dove                 | Zenaida macroura                 |        | O                      |
| Yellow Warbler                | <b><i>Dendroica petechia</i></b> |        | O                      |
| Nuttall's Woodpecker          | Picoides nuttallii               |        | O                      |
| California Towhee             | Pipilo crissalis                 |        | O                      |



## **APPENDIX E**

### **SENSITIVE WILDLIFE SPECIES OBSERVED/DETECTED**



**APPENDIX E**  
**SENSITIVE WILDLIFE SPECIES KNOWN OR POTENTIALLY OCCURRING WITHIN THE**  
**PROPOSED OLIVENHAIN MUNICIPAL WATER DISTRICT RAW WATER PIPELINE**  
**FROM THE SECOND SAN DIEGO AQUEDUCT**  
**TO THE DAVID C. MCCOLLOM WATER TREATMENT PLANT PROJECT SITE**

| Species   | State/Federal/<br>Other Status | County of<br>San Diego | Habitat   | Occurrence/Comments  |
|---|--------------------------------|------------------------|---|--|
| <b><u>Invertebrates</u></b> (Nomenclature from Eriksen and Belk 1999)     |                                |                        |   |  |
| San Diego fairy shrimp<br><i>Branchinecta sandiegonensis</i>              | FE, MSCP<br>covered*           | Group 1                | Vernal pools.   | Not observed and not expected to occur because vernal pools are not present on the proposed project site.                      |
| Riverside fairy shrimp<br><i>Streptocephalus woottoni</i>                 | FE, MSCP<br>covered*           | Group 1                | Vernal pools that are long-lasting (several months).  | Not observed and not expected to occur because vernal pools are not present on the proposed project site.                      |
| Sandy beach tiger beetle<br><i>Cicindela hirticollis gravida</i>          | CDFG Special<br>Animal         | Group 2                | Dune habitat near the ocean with moist sand.  | Not observed and not expected to occur because suitable habitat is not present on the proposed project site.                   |
| Senile tiger beetle<br><i>Cicindela senilis frosti</i>                    | CDFG Special<br>Animal         | Group 2                | Coastal salt marshes and mud flats.   | Not observed and not expected to occur because coastal salt marshes and mudflats are not present on the proposed project site. |
| Globose dune beetle<br><i>Coelus globosus</i>                             | CDFG Special<br>Animal         | Group 1                | Dunes immediately along the coast.  | Not observed and not expected to occur because suitable habitat is not present on the proposed project site.                   |
| Monarch butterfly<br><i>Danaus plexippus</i>                              | CDFG Special<br>Animal         | Group 2                | Found in conifer forests, grasslands, old fields, dune habitat, scrublands, chaparral, orchards, woodlands, and herbaceous and shrub wetlands. Breeds in patches of milkweed. | Suitable habitat for this species is present and this species is likely to occur.  |
| Mimic tryonia (California brackishwater snail)<br><i>Tryonia imitator</i> | CDFG Special<br>Animal         | Group 2                | Subtidal brackishwater habitats such as lagoons and salt marshes. Tolerates wide ranges of salinity.  | Not observed and not expected to occur as brackish water does not occur on the proposed project site.                          |
| <b><u>Fish</u></b>  |                                |                        |   |  |
| Tidewater goby<br><i>Eucyclogobius newberryi</i>                          | FE, CSC*                       | Group 1                | Brackish water habitats along the CA coast. Found in shallow lagoons and lower stream reaches. Still water with high oxygen.  | Not observed and not expected to occur as brackish water does not occur on the proposed project site.                          |

| Species   | State/Federal/<br>Other Status | County of<br>San Diego | Habitat  | Occurrence/Comments  |
|---|--------------------------------|------------------------|--|--|
| <b><u>Amphibians</u></b> (Nomenclature from Collins 1997)                     |                                |                        |  |  |
| Western spadefoot<br><i>Spea hammondi</i>                                     | CSC                            | Group 2                | Vernal pools, floodplains, and alkali flats within areas of open vegetation.   | Suitable habitat for this species is present on the proposed project site.   |
| <b><u>Reptiles</u></b> (Nomenclature from Collins 1997)                       |                                |                        |  |  |
| Southwestern pond turtle<br><i>Actinemys marmorata pallida</i>                | CSC, MSCP covered              | Group 1                | Associated with permanent water or nearly permanent water from sea level to 1830 m (6000 feet). Prefers habitats with basking sites such as floating mats of vegetation, partially submerged logs, rocks, or open mud banks. | Suitable habitat for this species is present on the proposed project site.   |
| Coronado skink<br><i>Eumeces skiltonianus interparietalis</i>                 | CSC                            | Group 2                | Grasslands, open woodlands and forest, broken chaparral. Rocky habitats near streams.  | Suitable habitat for this species is present on the proposed project site and this species is likely to occur.         |
| San Diego horned lizard<br><i>Phrynosoma coronatum blainvillii</i>            | CSC, *                         | Group 2                | Chaparral, coastal sage scrub with fine, loose soil. Partially dependent on harvester ants for forage.   | Suitable habitat for this species is present on the proposed project site.   |
| Belding's Orange-throated whiptail<br><i>Aspidoscelis hyperythra beldingi</i> | CSC                            | Group 2                | Chaparral, coastal sage scrub with coarse sandy soils and scattered brush.   | Observed. A single individual was observed. Suitable habitat for this species is present on the proposed project site. |
| coastal western whiptail<br><i>Aspidoscelis tigris stejnegeri</i>             | CDFG special animal            | Group 2                | Often associated with dense vegetation such as chaparral and sage scrub especially in and around sandy washes and streambeds.  | Suitable habitat for this species is present on the proposed project site.   |
| Rosy boa<br><i>Charina trivirgata</i>   | CDFG special animal            | Group 2                | Distributed in desert and chaparral habitats, especially in areas with dense vegetation and rocky cover such as those associated with coastal canyons and hillsides, desert canyons, washes and mountains.                   | Suitable habitat for this species is present on the proposed project site.   |
| San Diego ringneck snake<br><i>Diadophis punctatus similis</i>                | CDFG special animal            | Group 2                | Found in San Diego County along the coast and Penninsular range and SW San Bernadino County. It prefers moist habitats including wet meadows, rocky hillsides, gardens, chaparral, mixed coniferous forests, and woodlands.  | Suitable habitat for this species is present on the proposed project site.   |
| Coast patch-nosed snake<br><i>Salvadora hexalepis virgultea</i>               | CSC                            | Group 2                | Grasslands, chaparral, sagebrush, desert scrub. Found in sandy and rocky areas.  | Suitable habitat for this species is present on the proposed project site.   |

| Species   | State/Federal/<br>Other Status      | County of<br>San Diego | Habitat   | Occurrence/Comments   |
|---|-------------------------------------|------------------------|---|---|
| two-striped gartersnake<br><i>Thamnophis hammondi</i>                       | CSC                                 | Group 1                | Aquatic habitats, preferably rocky streams with protected pools, cattle ponds, marshes, vernal pools, and other shallow bodies of water lacking large aquatic predators.                    | Suitable habitat for this species is present on the proposed project site.  |
| South coast garter snake<br><i>Thamnophis sirtalis</i> ssp.                 | CSC                                 | Group 2                | Marshes and adjacent meadow-like uplands.   | Suitable habitat for this species is present on the proposed project site.  |
| Northern red-diamond rattlesnake<br><i>Crotalus ruber ruber</i>             | CSC                                 | Group 2                | Desert scrub and riparian, coastal sage scrub, open chaparral, grassland, and agricultural fields.  | Suitable habitat for this species is present on the proposed project site.  |
| <b><u>Birds</u></b> (Nomenclature from American Ornithologists' Union 1998) |                                     |                        |   |   |
| white faced ibis (rookery site)<br><i>Plegadis chihi</i>                    | CDFG Watch<br>List, MSCP<br>Covered | Group 1                | Found in shallow areas of freshwater marshes and wet grass. Colonial nesters, with two known colonies in San Diego County, along Guajome Lake and near a pond in San Luis Rey River valley. | Not observed and not expected to occur because suitable habitat is not present on the proposed project site.  |
| White-tailed kite (nesting)<br><i>Elanus leucurus</i>                       | CFP, *                              | Group 1                | Nest in riparian woodland, oaks, sycamores. Forage in open, grassy areas. Year-round resident.  | Observed flying over project site. Suitable habitat for this species is present on the proposed project site. The riparian areas provide suitable nesting habitat for this species.     |
| Northern harrier (nesting)<br><i>Circus cyaneus</i>                         | CSC                                 | Group 1                | Coastal lowland, marshes, grassland, agricultural fields. Migrant and winter resident, rare summer resident.  | Observed. A single northern harrier was observed near the eastern portion of the proposed project site in late October. This observed individual is likely a migrant/winter resident.   |
| Cooper's hawk (nesting)<br><i>Accipiter cooperi</i>                         | CSC                                 | Group 1                | Mature forest, open woodlands, wood edges, river groves. Parks and residential areas. Migrant and winter visitor.   | Observed flying and foraging within the project site on two occasions. Suitable habitat for this species is present on the proposed project site. This species is likely to be present. |
| light-footed clapper rail<br><i>Rallus longirostris levipes</i>             | FE, SE, MSCP<br>Covered             | Group 1                | Found in southern California in coastal salt marshes, especially those dominated by cordgrass. The Tijuana River estuary is an especially important site.                                   | Not observed and not expected to occur because coastal salt marshes are not present on the proposed project site.   |
| California black rail<br><i>Laterallus jamaicensis coturniculus</i>         | SE                                  | Group 2                | Marsh habitat, negatively associated with nearby urban lands.   | Not observed and not expected to occur because marsh habitat is not present on the proposed project site.   |

| Species  | State/Federal/<br>Other Status  | County of<br>San Diego | Habitat  | Occurrence/Comments   |
|--|---------------------------------|------------------------|--|---|
| western snowy plover<br><i>Charadrius alexandrinus nivosus</i>               | FE, CSC,<br>MSCP<br>Covered     | Group 1                | Nests on beaches, dunes, and salt flats in San Diego County, with the highest concentrations in two areas: Camp Pendelton and Silver Strand. Outside the breeding season they are more widespread but not common along the county's coast. | Not observed and not expected to occur because beaches, dune and salt flats are not present on the proposed project site.   |
| California least tern (nesting colony)<br><i>Sterna antillarum browni</i>    | FE, SE, MSCP<br>Covered         | Group 1                | A ground nesting bird that requires undisturbed stretches of beach and coastline. Adults are highly philopatric to natal colonies, and forage in bays and estuaries near their colonies.   | Not observed and not expected to occur because beaches/coastline are not present on the proposed project site.  |
| burrowing owl<br><i>Athene cunicularia</i>                                   | CSC                             | Group 1                | Found mainly in grassland and open scrub from the seashore to foothills. Strongly associated with California ground squirrel ( <i>Spermophilus beecheyi</i> ) burrows.   | Low probability of occurrence. While some grassland/agricultural areas are present on the western portion of the project site, the abundance of nesting habitat for raptor species in this area (numerous eucalyptus groves) reduce the probability of burrowing owls surviving here. |
| southwestern willow flycatcher<br><i>Empidonax traillii extimus</i>          | FE, SE, MSCP<br>Covered         | Group 1                | Restricted to a few colonies in riparian woodlands scattered throughout southern California. Riparian forests are integral to this species persistence   | Suitable riparian habitat for this species is present on the proposed project site.   |
| least Bell's vireo<br><i>Vireo bellii pusillus</i>                           | FE, SE, CSC,<br>MSCP<br>Covered | Group 1                | Riparian woodland with understory of dense young willows or mulefat and willow canopy. Nests often placed along internal or external edges of riparian thickets (USFWS 1986).  | Suitable riparian habitat for this species is present on the proposed project site.   |
| California horned lark<br><i>Eremophila alpestris actia</i>                  |                                 | Group 2                | Sandy shores, mesas, disturbed areas, grasslands, agricultural lands, sparse creosote bush scrub.  | Suitable habitat for this species is present on the proposed project site. This species is likely present.  |
| Coastal cactus wren<br><i>Campylorhynchus brunneicapillus couesi</i>         | CSC, *                          | Group 1                | Maritime succulent scrub, coastal sage scrub with <i>Opuntia</i> thickets. Rare localized resident.  | Suitable habitat for this species is present within the proposed project site. Large patches of <i>Opuntia</i> were observed within Diegan coastal sage scrub habitat.  |
| Coastal California gnatcatcher<br><i>Poliioptila californica californica</i> | FT, CSC                         | Group 1                | Coastal sage scrub, maritime succulent scrub. Resident.  | Observed. This species was observed in several locations within sage scrub habitat in the proposed project site.  |

| Species   | State/Federal/<br>Other Status | County of<br>San Diego | Habitat  | Occurrence/Comments   |
|---|--------------------------------|------------------------|--|---|
| yellow warbler (nesting)<br><i>Dendroica petechia brewsteri</i>                   | CSC                            | Group 2                | A fairly common summer breeding resident found along mature riparian woodlands that consist of cottonwood, willow, alder, and ash trees. It is restricted to this increasingly patchy habitat.   | Suitable nesting habitat for this species is present within the proposed project footprint.   |
| yellow-breasted chat (nesting)<br><i>Icteria virens</i>                           | CSC                            | Group 1                | Riparian woodland, with dense undergrowth.   | Suitable nesting habitat for this species is present within the proposed project footprint.   |
| Southern California rufous-crowned sparrow<br><i>Aimophila ruficeps canescens</i> | CSC                            | Group 1                | Coastal sage scrub, chaparral, grassland. Resident.  | Observed. This species was observed within the Diegan sage scrub habitat within the buffer area.  |
| Bell's sage sparrow<br><i>Amphispiza belli belli</i>                              | CSC                            | Group 1                | Chaparral, coastal sage scrub. Localized resident.   | Observed. This species was observed within the Diegan sage scrub habitat within the proposed project footprint.   |
| Belding's savannah sparrow<br><i>Passerculus sandwichensis beldingi</i>           | SE, MSCP<br>Covered            | Group 1                | Locally common in open grassy or weedy areas throughout San Diego County.  | Not observed and not expected to occur as this species of mainly associated with salt marshes, which are not present on the proposed project footprint.                             |
| Golden eagle<br><i>Aquila chrysaetos</i>  | Fully Protected                | Group 1                | Nests on cliffs, in boulders or in large trees. Foraging habitat includes grassland, open chaparral and coastal sage scrub.  | Moderate potential for foraging. While some large trees were observed, it is unlikely that this species is nesting here, but may forage here.                                       |
| <b><u>Mammals</u></b> (Nomenclature from Jones et al. 1982)                       |                                |                        |  |   |
| Mexican long-tongued bat<br><i>Choeronycteris mexicana</i>                        | CSC                            | Group 2                | Sightings in San Diego County very rare. This species feeds on fruits, pollen, nectar and possibly insects. The migration of this species from the United States in the summer to Mexico and northern Central America in the winter follows the blooming cycle of plants such as agave and some cacti. | Not expected. The range of this species is typically further east (within Arizona). Agave plants (an important nectar source) were not noted within the proposed project footprint. |
| Pallid bat<br><i>Antrozous pallidus</i>   | CSC                            | Group 2                | Deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect them from high temperatures.   | Suitable habitat is present   |
| Big free-tailed bat<br><i>Nyctinomops macrotis</i>                                | CSC                            | Group 2                | Pinyon-juniper and Douglas fir forests, chaparral and oak forests in rugged, rocky habitats, low-lying arid areas.   | Suitable habitat is present   |

| Species  | State/Federal/<br>Other Status | County of<br>San Diego | Habitat  | Occurrence/Comments   |
|--|--------------------------------|------------------------|--|---|
| Yuma myotis<br><i>Myotis yumanensis</i>                                      | CDFG Special<br>Animal         | Group 2                | Open forests and woodlands with water sources. Forages over water and roosts in caves, mines, buildings, or crevasses.   | Suitable habitat is present   |
| Western red bat<br><i>Lasiurus blossevillii</i>                              | CSC                            | Group 2                | Feeds over grasslands, shrublands, open woodlands, forests, and croplands. Roosts primarily in trees and at times, shrubs, often in edge habitats along streams, fields, or urban areas.   | Suitable habitat is present.  |
| Hoary bat<br><i>Lasiurus cinereus</i>  | CDFG Special<br>Animal         |                        | Winters in coastal southern California, breeding inland and to the north. During migration, found in foothills, deserts, mountains, lowlands, and coastal valleys. Prefers roosts in medium to large trees, hidden by dense foliage above. | Suitable habitat is present.  |
| Western yellow bat<br><i>Lasiurus xanthinus</i>                              | CSC                            |                        | Found in valley foothills riparian, desert riparian, desert wash, and palm oases. Forages among trees and over water. Roosts in trees.   | Suitable habitat is present.  |
| Pocketed free-tailed bat<br><i>Nyctinomops femorosacca</i>                   | CSC                            | Group 2                | Normally roost in crevice in rocks, slopes, cliffs. Lower elevations in San Diego and Imperial Counties. Colonial. Leave roosts well after dark.   | Suitable habitat is present.  |
| San Diego black-tailed jackrabbit<br><i>Lepus californicus bennettii</i>     | CSC                            | Group 2                | Open areas of scrub, grasslands, agricultural fields.  | Suitable habitat for this species is present within the proposed project footprint.   |
| Stephens' kangaroo rat<br><i>Dipodomys stephensi</i>                         | FE, ST                         | Group 1                | Grassland, open areas.   | Suitable habitat for this species is present within the open/disturbed areas of the proposed project footprint.                         |
| pacific pocket mouse<br><i>Perognathus longimembris pacificus</i>            | FE, CSC                        | Group 1                | Coastal dunes, and open coastal sage scrub with extremely fine, sandy soil.  | Not expected. The known range of this species occurs outside of the proposed project footprint.   |
| Dulzura California pocket mouse<br><i>Chaetodipus californicus femoralis</i> | CSC                            | Group 2                | Slopes covered with chaparral and live oaks.   | Suitable habitat for this species is present within the proposed project footprint (slopes with chaparral and live oaks were observed). |
| Northwestern San Diego pocket mouse<br><i>Chaetodipus fallax fallax</i>      | CSC                            | Group 2                | Occurs in coastal sage scrub habitat throughout the county.  | Suitable habitat for this species is present within the proposed project footprint.   |

| Species  | State/Federal/<br>Other Status | County of<br>San Diego | Habitat  | Occurrence/Comments   |
|--|--------------------------------|------------------------|--|---|
| San Diego desert woodrat<br><i>Neotoma lepida intermedia</i> | CSC                            | Group 2                | Coastal sage scrub and chaparral.  | Suitable habitat for this species is present within the proposed project footprint and woodrat nests were observed. |
| American badger<br><i>Taxidea taxus</i>                      | CSC, MSCP<br>Covered           | Group 2                | Coastal sage scrub, mixed chaparral, grassland, oak woodland, chamise chaparral, mixed conifer, pinyon-juniper, desert scrub, desert wash, montane meadow, open areas and sandy soils. | Suitable habitat for this species is present within the proposed project footprint within the level areas.          |
| Mountain lion<br><i>Felis concolor</i>                       |                                | Group 2                | Many habitats.   | Suitable habitat for this species is present within the proposed project footprint.                                 |
| Southern mule deer<br><i>Odocoileus hemionus fuliginata</i>  |                                | Group 2                | Many habitats.   | Observed.   |

## STATUS CODES

### State/Federal Status

- FE = Federally listed endangered  
 FT = Federally listed threatened  
 FPT = Federally proposed threatened  
 SE = State listed endangered  
 ST = State listed threatened

### County of San Diego Status

- Group 1 = Animals with a high level of sensitivity, either because they are threatened or endangered or because they have very specific natural history requirements that must be met.  
 Group 2 = Animals which are becoming less common, but are not yet so rare that extirpation or extinction is imminent without immediate action.

### Other Status

- BEPA = Bald and Golden Eagle Protection Act  
 CFP = California fully protected species  
 CSC = California Department of Fish and Game species of special concern  
 \* = Taxa listed with an asterisk fall into one or more of the following categories:
- Taxa considered endangered or rare under Section 15380(d) of CEQA guidelines
  - Taxa that are biologically rare, very restricted in distribution, or declining throughout their range
  - Population(s) in California that may be peripheral to the major portion of a taxon's range, but which are threatened with extirpation within California
  - Taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands)

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## **APPENDIX F**

### **JURISDICTION DELINEATION OF WETLANDS AND OTHER WATERS**



July 20, 2010

George Briest, Engineering Manager  
Olivenhain Municipal Water District  
1966 Olivenhain Road  
Encinitas, CA 92024

**Re: Unit AA Pipeline Focused Jurisdictional Delineation Letter Report for the Escondido Creek Crossing**

Dear Mr. Briest:

**Introduction**

This jurisdictional delineation letter report (JDLR) discusses the type and amount of jurisdictional aquatic resources occurring within an approximate 0.5 acre component area of the Unit AA Pipeline Project (project), which is proposed by the Olivenhain Municipal Water District (District). The approximate 0.5 acre component area is also synonymous with the limits of the survey area for this focused delineation. This JDLR has been prepared for the District's preferred pipeline alignment based on the limits of potential construction (and area of potential effects) identified during preliminary design.

This JDLR summarizes the methodologies employed in conducting a formal jurisdictional delineation (JD) of waters of the U.S. and State of California, the results of the fieldwork, and existing conditions that occur within the approximate 0.5 acre survey area.

Within the approximate 0.5 acre survey area, there are 0.17 acre of potential jurisdictional waters of the U.S.<sup>1</sup> (composed of approximately 0.03 acre of coastal and valley freshwater marsh, 0.04 acre of southern arroyo willow riparian forest wetland [which includes 0.02 acre of disturbed southern arroyo willow riparian forest], 0.07 acre southern willow scrub and 0.03 acre of other waters [culvert]). An additional 0.01 acre (composed of approximately 0.01 acre of disturbed southern riparian scrub) that would be considered jurisdictional waters of the state exclusively,<sup>2</sup> for a total of 0.18 acre of potential jurisdictional waters occurring within the survey area.

**Purpose of Jurisdictional Delineation and Assessment**

The purpose of performing a JD is to identify the absence or presence (including location, boundaries, and acreages) of jurisdictional waters of the U.S. and state (including wetlands)

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<sup>1</sup> Jurisdictional waters of the U.S. are relevant to both U.S. Army Corps of Engineers (USACE) and California Department of Fish and Game (CDFG) regulatory permitting. Final acreages of jurisdictional waters of the U.S. are based on the jurisdictional determination (JD) process per the March 30, 2007, USACE Jurisdictional Determination Form Guidebook; the June 5, 2007, Approved JD Form; the June 5, 2007, Joint Guidance Memorandum; the December 2, 2008, Guidance Memorandum; and Regulatory Guidance Letter (RGL) 08-02 (if RGL 08-02 is deemed applicable and appropriate [i.e., the permit applicant or other "affected party" can decline to request and obtain an Approved JD and elect to use a Preliminary JD instead] for this jurisdictional determination).

<sup>2</sup> Relevant to CDFG permitting only.

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occurring within the survey area that may be potentially impacted by the project. Once the presence or absence of jurisdictional waters is determined, the results of this JDLR will be verified by the federal and state agencies (e.g., California Department of Fish and Game [CDFG], Regional Water Quality Control Board [RWQCB], and U.S. Army Corps of Engineers [USACE]), under which these waters are regulated.

Where it is determined that there would be permanent and/or temporary impacts to jurisdictional waters (including wetlands) related to the project, this JDLR is intended to support and provide the information necessary for agency documentation. In addition, the District, as the project applicant, would apply for and receive the following requisite authorizations, permits, and compliances, based upon any potential impacts to jurisdictional aquatic resources:

- Determination of regulatory requirements and, if required, authorization under Section 404 of the Clean Water Act (CWA) (as regulated by USACE and the U.S. Environmental Protection Agency [USEPA])<sup>3</sup>
- Certification of compliance under Section 401 of the CWA, if required (as regulated by RWQCB)<sup>4</sup>
- Issuance of Waste Discharge Requirements or waiver under Section 13263 of the 1969 Porter-Cologne Water Quality Act (Porter-Cologne Act) (as regulated by RWQCB)<sup>5</sup>
- California Fish and Game Code (CFG) Chapter 6 Section 1600 *et seq.* (as regulated by CDFG)<sup>6</sup>

### **Project Location and Setting**

The approximately 0.5 acre survey area is in central San Diego County, approximately 25 miles northeast of downtown San Diego, 8 miles east of the Pacific Ocean, 4 miles southwest of the center of the City of San Marcos, and 6 miles southwest of the City of Escondido, California (Attachment A, Figures 1 and 2 [all figures addressed herein are located in Attachment A]). The survey area is approximately 475-feet southeast of the intersection of Harmony Grove Road and Questhaven Road (Figure 2).

### **Overview of the Proposed Project Components Occurring within the Survey Area**

The District plans to construct an approximately 3-mile raw water pipeline (Unit AA pipeline) connecting the Second San Diego Aqueduct to the District's David C. McCollom – Water

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<sup>3</sup> 40 CFR Part 230 (provided USACE determines that some or all of these delineated aquatic features occurring within the survey area present a significant nexus with the Pacific Ocean and are thus under federal jurisdiction as administered by USACE).

<sup>4</sup> CWA Section 401 would only apply to this project if it has been determined by USACE that some or all of these delineated waters occurring within the survey area are jurisdictional waters of the U.S.

<sup>5</sup> If it is determined by USACE that no federal waters occur within the survey area.

<sup>6</sup> California Code of Regulations (CCR) Title 14, Division 1.

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Treatment Plant (DCMWTP). This project would also involve the relocation of approximately 0.5 mile of an existing 10-inch-diameter treated water pipeline that will parallel the Unit AA pipeline. An underground connection would join the Unit AA pipeline to the Second San Diego Aqueduct. The Unit AA pipeline would be placed within a trench within paved public right-of-way following Elfin Forest Road to the southeast. Public road right-of-way would be used in coordination with the County of San Diego. Approximately 300 feet northeast of the intersection where Elfin Forest Road transitions to Harmony Grove Road, the pipeline trench would turn southeast and continue through a developed paved area for 100 feet. The trench would then continue through a disturbed dirt roadway for approximately 200 feet, where the trench would transition to a tunnel passing underneath Escondido Creek for approximately 160 feet. After surfacing southeast of Escondido Creek, the pipeline would transition back to a trench, and would pass under the City of Escondido's sewer outfall. The trench would accommodate the pipeline along an existing easement and dirt road until intersecting Via Ambiente, where the Unit AA pipeline would continue in a trench to the DCMWTP. A flow control facility would be constructed near the Unit AA pipeline's connection with the DCMWTP."

An alternative construction method was considered for the pipeline's crossing of Escondido Creek, whereby a continuous trench would be constructed from Harmony Grove Road across Escondido Creek to Via Ambiente. This alternative would require the removal of an existing degraded culvert crossing instead of a tunnel under the creek and a temporary diversion of Escondido Creek to allow construction of an open trench for pipeline installation within the creek bed. The existing degraded culvert crossing would be replaced with a smaller culvert crossing that could allow approximately 0.10 acre of restoration within the adjacent creek bed. The direct impact footprint for this alternative affects wetlands that the footprint for the tunneling option does not. The conceptual footprint for this trench-and-restoration alternative was used to define the limits of the area of focused delineation."

### **Regulatory Framework**

Wetlands and other aquatic environments/habitats occurring within California are regulated under the following federal and state laws.

#### Federal Regulations

Pursuant to Section 404 of the CWA, USACE is authorized to regulate any activity that would result in the discharge of dredged or fill material into jurisdictional waters of the U.S., which include those waters listed in 33 Code of Federal Regulations (CFR) 328.3 (Definitions). USACE, with oversight by USEPA, has the principal authority to issue CWA Section 404 Permits.

Pursuant to Section 401 of the CWA, RWQCB may certify that any discharge into jurisdictional waters of the U.S. will comply with state water quality standards. RWQCB, as delegated by USEPA, has the principal authority to issue a CWA Section 401 water quality certification or waiver.

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### State Regulations

Pursuant to Section 1600 *et seq.* of the CFGC, CDFG is authorized to regulate any activity that would alter the flow, bed, channel, or bank of streams and lakes. Jurisdictional waters of the state include the channel, bed, or bank of a lake, river, or stream. In practice, CDFG usually extends its jurisdictional limit to the top of the bank of a stream or lake, or to the continuous outer edge of its riparian extent, whichever is wider.

Pursuant to Section 13000 *et seq.* of the California Water Code (Porter-Cologne Act), RWQCB is authorized to regulate any activity that would result in discharges of waste and fill material into waters of the state, including "isolated" waters and wetlands. Waters of the state include any surface or groundwater within the boundaries of the state (California Water Code [CWC] § 13050[e]).

### **Jurisdictional Delineation Methodology**

#### Presurvey Investigations

Prior to conducting the field delineation for potential jurisdictional waters of the U.S. and state (including wetlands), AECOM ecologist Joshua Zinn reviewed historical land use of the project area, local and regional climactic data, and areas with topographical configurations and vegetative signatures occurring within the project area that may suggest the potential or presence of jurisdictional waters of the U.S. and state at the time of the field survey. This information was evaluated by consulting the following available sources:

- 7.5-minute U.S. Geological Survey (USGS) Escondido Quad 1975 (USGS 2004)
- 2008 Aerial Maps of the project area (U.S. Department of Agriculture National Agriculture Imagery Program)
- National Wetlands Inventory Wetlands Mapper (USFWS 2010)
- California Environmental Resources Evaluation System (CERES), California Wetlands Information System Wetland Databases and Inventories (2010)
- Information Center for the Environment, University of California, Davis (2010a)
- Natural Resource Conservation Service (NRCS) Web Soil Survey (2010a)
- National List of Hydric Soils (NRCS 2010b)
- California Soil Resource Lab (U.C. Davis 2010b)
- Soil Survey of San Diego County (Bowman 1973)
- California Watershed Portal (California Environmental Protection Agency 2010)
- California Watershed Network (CWN 2010)
- California State University Sacramento, Office of Water Programs, Water Quality Planning Tool (CSUS 2010)

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- Digital Watershed (USEPA 2010)
- Project Clean Water (PCW 2010)
- National Weather Service Climate Office (NOAA 2010)

### **Field Survey**

On September 11, 2009, AECOM environmental analyst Adam Stephenson and AECOM Environmental Project Manager Michael Page conducted a reconnaissance survey of the proposed 3-mile Unit AA pipeline alignment. Approximately 2.5 miles of the alignment consist of paved roadways. The remaining 0.5 mile of the alignment is unpaved and consists of partially disturbed upland and riparian vegetation (which has been formally delineated [see below]). Site reconnaissance (including waters assessment) over the 2.5 miles of paved roadway revealed all subsurface drainage beneath Elfin Forest Road within the project alignment crossed in culverts. The inlets and outfalls of these culverts were determined to be outside the direct impact area of the proposed project area.

As the District intends to constrain all construction activity to the roadway surface (i.e., direct impact area), it was determined that only the unpaved portion of the alignment near Escondido Creek (e.g., the approximate 0.5 acre survey area) warranted a JD. The approximate 0.5 acre survey area for conducting this focused JD is designated by the limits of potential construction (and area of potential effects), which will be based upon final project design, where the component of the project crosses Escondido Creek (Figure 3).

On April 21, 2010, AECOM ecologist Joshua Zinn conducted a field survey of potentially regulated waters (including wetlands) within the approximate 0.5 acre survey area for the purpose of conducting a focused JD. All acquired field data was obtained by recording the presence (including extents, types, and boundaries) of potential jurisdictional waters using a Trimble XH sub-foot accuracy handheld Global Positioning System (GPS) unit. All acquired field data was submitted to AECOM San Diego's Geographic Information Systems (GIS) specialists for post-field processing. Post-field analysis, utilizing Trimble GPS Analyst (Version 2.1) GIS software, to code, define, designate, and edit all acquired GPS field data, representing potential jurisdictional waters occurring within the project area, was conducted in tandem by an AECOM GIS specialist and the ecologist who performed the fieldwork.

### Field Survey for Waters of the U.S.

The JD and assessment of potentially regulated waters (including wetlands) was conducted within the project area and delineated pursuant to the guidance and criteria outlined in and in accordance with the following:

- 33 CFR 328 (Definition of Waters of the United States)
- Regulatory Guidance Letters (RGL) 88-06 and RGL 05-05
- *The Corps of Engineers Wetlands Delineation Manual* (1987 Manual) (Environmental Laboratory 1987)

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- The *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (2008 Regional Supplement) (Environmental Laboratory 2008)<sup>7</sup>
- *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual* (OHWM Manual) (USACE 2008)<sup>8</sup>

It was determined through a field reconnaissance and assessment, in addition to pre-field surveys, that only the area of focused delineation that contains Escondido Creek and its associated riparian area have the potential for the presence of, at a minimum, two types of potentially federally regulated waters, warranting field assessments composed of (1) formal delineations for potential wetlands based on the three-criteria method outlined in the 1987 Manual and 2008 Regional Supplement (the simultaneous presence of hydrophytic vegetation, hydric soil, and wetland hydrology) to define the type, amount, and extent of wetlands;<sup>9</sup> and (2) formal surveys for field indicators of all potential nonwetland waters of the U.S. (e.g., unvegetated water and drainage features) based on field indicators to define the jurisdictional lateral extent by using indicators of OHWM and relevant guidance and procedural documents.<sup>10</sup>

The JD was conducted in accordance with Part IV (Methods), Section D (Routine Determinations), Subsection 2 (Onsite Inspection Necessary) of the 1987 Manual's "Routine Determinations for Areas Less Than Five Acres in Size." For this delineation, based on federal guidance, it was determined that two transect intervals for the single (and significant) watercourse occurring within the project area would be adequate for field delineation data collection. Obvious upland areas were not mapped as part of this analysis as they did not represent wetland and/or riparian communities that warranted a JD.

Where feasible, the baseline for establishing the transect (and field data point) locations was situated in nonjurisdictional (i.e., upland and/or nonriparian) habitat so that the initial observation points of each transect were likely outside wetland boundaries or on either side of the potential jurisdictional waters (OHWM and/or wetland) and extended across the jurisdictional features to nonjurisdictional habitat on the opposite side. This baseline placement ensured that the outer observation point for each transect was also located in representative nonwetland (or upland) habitat, allowing for accurate demarcation of the limits of potentially jurisdictional areas. One transect, providing a cumulative total of four data points, was completed throughout the project area for the field delineation and this report. In most instances, additional soil pits were dug between observation points to accurately determine the wetland boundary.

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<sup>7</sup> It should be noted that the OHWM Manual and 2008 Regional Supplement are guidance documents for delineating waters in the form of wetlands only. Delineation of the portion of Project Area containing aquatic features utilized 2008 Supplement Data Forms to document the presence/absence of wetland but not the presence of *jurisdictional waters* in the form of wetland and/or OHWM or "other waters" of the U.S.

<sup>8</sup> Datasheets from this field delineation manual were used as guidance documents for this delineation and are not included in this JDLR.

<sup>9</sup> 33 CFR 328.3(b); 40 CFR 230.3(t); the 1987 Manual; and the 2008 Supplement.

<sup>10</sup> 33 CFR 328.3(e); RGL 88-06; RGL 05-05; and the OHWM Manual.

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In accordance with the 1987 Manual and the 2008 Regional Supplement, the following wetland delineation criteria, primary field indicators, and best professional judgment were used for the collection of data pertinent to assessment of the mandatory technical criteria. Field data were recorded in the 2008 Supplement Wetland Determination Data Forms – Arid West Region (Version 2.0), which is appropriate for application of both the 1987 Manual and the 2008 Supplement “routine” method. Copies of the Arid West Region data forms are included in Attachment B.

### *Vegetation*

Only those plant species listed in the *National List of Plant Species that Occur in Wetlands: California (Region 0)* (Reed 1988) that form hydrophytic plant communities within the survey area, or that have the potential for being considered as hydrophytic are addressed herein. This JDLR uses the Holland Code Classification System for vegetation communities (Holland 1986) as modified by Oberbauer et al. (2008). Where vegetation contains a mixture of component and indicator species from two or more Holland vegetation communities, the indicator species that appears with the greatest vegetation coverage is used to identify the vegetation community (Figure 4). The minimum mapping unit for wetland and riparian vegetation used for the field delineation was 0.01 acre.

An area was determined to support hydrophytic vegetation if more than 50 percent of the dominant species was listed as Obligate Wetland (OBL), Facultative Wetland (FACW), or Facultative (FAC) species on the USFWS *National List of Plant Species that Occur in Wetlands: California (Region 0)* (Reed 1988). Vegetation was assessed using the “50/20 Rule” to determine dominant species. By definition, dominant species are the most abundant plant species (when ranked in descending order of abundance and cumulatively totaled) that immediately exceed 50 percent of the total dominance measure (e.g., basal area or areal coverage) for the stratum, plus any additional species that individually comprise 20 percent or more of the total dominance measure for the stratum (Tiner 1999). All observation points were also surveyed for the presence of surface wetland hydrological field indicators, such as inundation, saturation, water marks, drift lines, drainage patterns, and sediment deposits, occurring within a hydrophytic vegetation community.

### *Soils*

Only those soils within the project area that are listed as hydric, have diagnostic hydric properties and/or features, have hydric inclusions, meet the criteria and/or definition for a hydric soil, or have the potential for being hydric by definition are addressed herein (Figure 5). Only those soils occurring within the project area that are listed on the National List of Hydric Soils (NRCS 2010a) are described herein. To determine the presence of hydric soils, subsurface soil taken from soil pits (field data points) was analyzed visually for redoximorphic features using the U.S. Department of Agriculture’s *Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils* (USDA 2006). A field diagnostic test for determining the presence or absence of iron reduction and identifying aquic conditions using  $\alpha$ ,  $\alpha'$  Dipyrldyl was applied in all soil examination areas. The soil test pits were also evaluated for the presence of subsurface wetland hydrology

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indicators such as soil saturation, oxidized root channels, and other hydric soil indicators, such as gleying or depositional material.

### *Hydrology*

Wetland hydrology was assessed through regional and local climatic data and the on- and off-site hydrological influencing factors that primarily focus on the perennial surface water source of Escondido Creek and the creek's topographical and wetness influence in the overall development of its riparian area (including underlying soils) conducive to formation and maintenance of wetland.

### Field Survey for Waters of the State

Potential jurisdictional waters of the state were assessed and delineated within the area of focused delineation pursuant to CFGC Section 1600 *et seq.* The bed and bank of Escondido Creek and associated riparian extent (composed overwhelmingly of native riparian vegetation) were also surveyed and assessed for state jurisdictional lateral extent. Riparian habitats do not always have identifiable hydric soils or clear evidence of wetland hydrology as defined by USACE. Therefore, CDFG wetland boundaries often extend beyond USACE wetland boundaries, which may include only portions of the riparian habitat adjacent to a river, stream, or lake. As such, jurisdictional boundaries for state waters may encompass an area that is greater than that under the jurisdiction of USACE.

For aquatic habitats occurring in California, CDFG essentially relies on the USFWS wetland definition and classification system, which is based on *Classification of Wetland and Deepwater Habitats of the United States* (Cowardin et al. 1979). Therefore, JDs within the survey area have been conducted based on the one-parameter<sup>11</sup> method outlined in CDFG/USFWS guidance documents and classification manual(s) to define their presence and state jurisdictional extent. The Cowardin method requires care to avoid false-positive conclusions (e.g., concluding that an area with no transitional relation to the aquatic system is a wetland based on presence of vegetation equally likely to be found in wetland or nonwetland circumstances).

### **Results**

The findings for each potential jurisdictional water and wetland parameter(s) were recorded for each of the field datapoints taken within the project area (Table 1). Specific findings for hydrophytic vegetation, hydric soils, and wetland hydrology are discussed in detail below.

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<sup>11</sup> For federal jurisdiction, a determination for the presence of wetlands is based on the presence of three criteria occurring simultaneously at the area of investigation and study: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Therefore, for state-regulated wetlands, only one of these three wetland criteria is required to be present for the state to consider an aquatic feature a wetland.

**Table 1**  
**Survey Results for Potential Jurisdictional Waters of the U.S.<sup>a</sup> and State<sup>b</sup>**  
**Occurring within the Project Area**

| Sample Point | Vegetation Community                   | Wetland Hydrology | Hydric Soils | Hydrophytic Vegetation | Potential Federal Waters | Potential State Waters | Comments   |
|--------------|--|-------------------|--------------|------------------------|--------------------------|------------------------|--|
| T1.1         | N/A (Developed)                        | -                 | -            | -                      | no                       | no                     | Pavement-topped portion of culvert crossing.   |
| T1.2         | Coastal and Valley Freshwater Marsh    | +                 | +            | +                      | yes                      | yes                    | Wetland within Escondido Creek which abuts the culvert crossing. Federal status to be confirmed via JD process.  |
| T2.1         | N/A (Developed)                        | -                 | -            | -                      | no                       | no                     | Pavement abutment of service road.   |
| T2.2         | Southern Arroyo Willow Riparian Forest | +                 | +            | +                      | yes                      | yes                    | Disturbed riparian that is not considered as meeting the criteria for jurisdictional waters of the U.S. in the form of wetland but meets CDFG definition of state waters in the form of riparian extent. |

<sup>a</sup> As defined by 33 CFR 328.3, 40 CFF 230.3, the 1987 Manual, and the 2008 Supplement

<sup>b</sup> As defined by CFGC Section 1600 *et seq.* and Title 14 CCR 1.72; CCR 1500 *et seq.*; and Public Resources Code 21000 *et seq.*

### Hydrophytic Vegetation

Four hydrophytic vegetation communities occurring within the survey area, composed of coastal and valley firewater marsh, disturbed southern riparian scrub, southern arroyo willow riparian forest (including disturbed southern arroyo willow riparian forest) and southern willow scrub, were observed (Figure 4). These four hydrophytic vegetation communities and their acreage occurring within the survey area are summarized in Table 2. Hydrophytic plant species associated with these vegetation communities are listed in Table 3. The hydrophytic vegetation communities mapped within the survey area are discussed in detail below.

**Table 2**  
**Hydrophytic Vegetation Communities Occurring**  
**within the Survey Area<sup>a</sup>**

| Vegetation Community <sup>b</sup>      | Acreage within the Survey Area |
|--|--------------------------------|
| Coastal and Valley Freshwater Marsh    | 0.03                           |
| Disturbed Southern Riparian Scrub      | 0.01                           |
| Southern Arroyo Willow Riparian Forest | 0.04                           |
| Southern Willow Scrub                  | 0.07                           |
| <b>Total</b>                           | <b>0.15</b>                    |

<sup>a</sup> In acres. Acreage of the vegetation communities occurring within the survey area was determined by using ArcGIS. All acreages are rounded to the nearest hundredth.

<sup>b</sup> Includes all disturbed riparian and wetland vegetation communities.

**Table 3**  
**Hydrophytic Plant Species Observed within the Survey Area<sup>a</sup>**

| Scientific Name                                   | Common Name         | Region 0 (California) Indicator Status <sup>a</sup> |
|---|---------------------|---|
| <b>Tree Species</b>                               |                     |   |
| <i>Salix gooddingii</i>                           | Goodding's willow   | OBL   |
| <i>Salix lasiolepis<sup>b</sup></i>               | arroyo willow       | FACW  |
| <b>Shrub Species</b>                              |                     |   |
| <i>Baccharis salicifolia</i>                      | mulefat             | FACW  |
| <i>Conium maculatum</i>                           | poison hemlock      | FACW  |
| <i>Isocoma menziesii</i> var. <i>vernonioides</i> | coastal goldenbush  | FACW  |
| <b>Herbaceous Species</b>                         |                     |   |
| <i>Ambrosia psilostachya</i>                      | western ragweed     | FAC   |
| <i>Anemopsis californica</i>                      | yerba mansa         | OBL   |
| <i>Artemisia douglasiana</i>                      | mugwort             | FACW  |
| <i>Apium graveolens</i>                           | wild celery         | FACW  |
| <i>Conyza Canadensis</i>                          | Canadian horseweed  | FAC   |
| <i>Cyperus involucratus</i>                       | umbrella sedge      | OBL   |
| <i>Eleocharis macrostachya</i>                    | spikerush           | FACW  |
| <i>Juncus bufonius</i>                            | toad rush           | FACW  |
| <i>Plantago lanceolata</i>                        | narrowleaf plantain | FAC   |
| <i>Polypogon monspeliensis</i>                    | rabbitsfoot grass   | FACW  |
| <i>Schoenoplectus californicus</i>                | California bulrush  | OBL   |
| <i>Rorippia nasturtium-aquaticum</i>              | water cress         | OBL   |
| <i>Urtica dioica</i>                              | stinging nettle     | FACW  |
| <i>Xanthium strumarium</i>                        | cocklebur           | FAC   |

<sup>a</sup> Based on Reed 1988, OBL wetland species occur almost always (estimated probability >99%) under natural conditions in wetlands; FACW species usually occur in wetlands (estimated probability 67 to 99%) but occasionally are found in nonwetlands; FAC species are equally likely to occur in wetlands or nonwetlands (estimated probability 34 to 66%). If a species does not occur in wetlands in any region, it is not on the National List. Neither the September 2008 Regional Supplement (Environmental Laboratory 2008) nor the December 2008 Regional Supplement (Environmental Laboratory 2008) uses ± facultative values.

<sup>b</sup> This species is not on Reed 1988 (Reed 1988) but appears on the USFWS 1996 National List (USFWS 1997) of Vascular Plant Species that Occur in Wetlands. The 1996 National List is a draft revision of the National List of Plant Species That Occur in Wetlands: 1988 National Summary.

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*Coastal and Valley Freshwater Marsh (Holland Code 52410)*

Typically, coastal and valley freshwater marsh is a community dominated by perennial, emergent monocots that reach 4.3 to 6.6 feet in height. Uniform stands of bulrushes (*Scirpus* spp. and *Schoenoplectus* spp.) or cattails (*Typha* spp.) often characterize this habitat. Freshwater marsh occurs in wetlands that are permanently flooded by standing fresh water (Oberbauer et al. 2008).

Representative areas of freshwater marsh occurring within the survey area are located within and abutting Escondido Creek where water velocity from the flowing creek is adequately slowed down and/or retained for freshwater marsh development.

*Southern Riparian Scrub (Holland Code 63300)*

Typically, southern riparian scrub is dominated in riparian zones by small trees or shrubs, lacking taller riparian trees. This vegetation community grows along creeks, rivers, and other major riverine bodies of water where flood scour occurs. Southern riparian scrub is expanding in the southern California region as a result of increased urban and agricultural run-off (Oberbauer et al. 2008).

The representative area of southern riparian scrub occurring within the survey area can be considered disturbed and is primarily located where past development has occurred within the riparian area of Escondido Creek. This disturbed southern riparian scrub is dominated by coyote bush (*Baccharis pilularis*), coastal goldenbush, nonnative grasses, and other nonnative hydrophytic herbaceous vegetation, such as horseweed.

*Southern Arroyo Willow Riparian Forest (Holland Code 61320)*

Typically, southern arroyo willow riparian forest is similar to southern cottonwood willow riparian forest but has a less developed overstory and lacks cottonwoods and sycamores (Holland 1986). Understories in southern arroyo willow riparian forests usually are composed of shrubby willows and mulefat. The dominant species require moist, bare mineral soil for germination and establishment. This is provided after flood waters recede, leading to uniform-aged stands in this seral type (Holland 1986).

Representative areas of southern arroyo willow riparian forest occurring within the survey area are most notably present (and restricted) within the established riparian area of Escondido Creek. Where the area abutting the southwest portion of the culvert crossing has degraded (eroded away during past storms), southern arroyo willow riparian forest is recolonizing this disturbed area.

*Southern Willow Scrub (Holland Code 63320)*

Typically, this vegetation community is composed of dense, broadleaved, winter-deciduous riparian thickets dominated by several willow species. Most stands are too dense to allow much understory development. This vegetation community is often associated with loose,

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sandy, or fine gravelly alluvium deposited near stream channels during flood flows. This early seral type requires repeated flooding to prevent succession to southern cottonwood willow riparian forest (Holland 1986).

Representative areas of southern willow scrub occurring within the survey area are most notably present within the established outer riparian areas of Escondido creek.

### Soils

The criterion established by the National Technical Committee on Hydric Soils (NTCHS 1995) is “poorly drained or very poorly drained soils that have a frequently occurring water table at less than 1.5 feet from the surface for a significant period (usually more than 2 weeks) during the growing season if permeability is less than 6 inches per hour in any layer within 20 inches.” The NTCHS definition identifies general soil properties that are associated with wetness. Additionally, specific criteria that identify those estimated soil properties unique to hydric soils have been established by NTCHS (1995).<sup>12</sup>

#### *Soboba stony loamy sand, 9 to 30 percent slopes*

One soil series, Soboba stony loamy sand, occurs within the survey area. The soil phase of this series occurring within the survey area is the Soboba stony loamy sand, 9 to 30 percent slopes. This soil phase is not listed as hydric (NRCS 2010b), or as having diagnostic hydric properties and/or hydric features. However, this mapped soil series includes small areas of Tujung, Visalia, and Vista Soil series (and all three of these soils series have soil phases which are listed as hydric by the National List of Hydric Soils [NRCS 2010b]). Additionally, this soil phase can meet the criteria and/or definition for a hydric soil, and/or has the potential for being hydric by definition, see below (Figure 5).<sup>13</sup>

The Soboba series consists of excessively drained, very deep stony loamy sands derived from gravelly and stony granitic alluvium. This soil occurs on alluvial fans with steep slopes and floodplains (Bowman 1973). The Soboba series are Typic Xerorthents (which is an entisol). Entisols are young soils that primarily originate from sediments and alluvium that show little alteration of the parent material from which they were derived, and that exhibit little pedogenesis (soil formation process). Since entisols are associated with fluvial processes, they are by nature dynamic and do not have the ability to develop buried soil horizons, which in turn contribute to *in situ* development of redoximorphic features when conditions are hydric over the appropriate temporal frame.

It should be noted that the USDA Soil Survey of the San Diego Area, California (Bowman 1973) may not reflect current field conditions. It is likely that some soils investigated for that

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<sup>12</sup> Also published in Federal Register (FR) 60:37: 10349 (February 24, 1995).

<sup>13</sup> Specific guidance germane to soils that generally lack hydric field indicators (e.g., entisols) is found in the 2008 Supplement: Chapter 5, page 96, “Problematic hydric soils; Soils with faint or no indicators,” page 88(3); procedure, page 98–99 1–4(b)(3). Areas underlain by Entisol soils could be considered hydric by definition by USACE criteria and guidance when hydrophytic herbaceous vegetation *and* indicators of wetland hydrology are simultaneously present.

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study have been transformed through human intervention since the 1973 soil survey was published. Although this point of investigation is mapped as containing Soboba stony loamy sand, 9 to 30 percent slopes, which is not listed as hydric by the NRCS National List of Hydric Soils, this soil is located within the riparian area of Escondido Creek and is heavily influenced by the creek and the culvert crossing. Guidance for using soil surveys in the arid west region is found in the 2008 Arid West Region (Version 2.0) Supplement: Chapter 3 (Hydric Soil Indicators), page 34, Use of existing soil data; soil surveys, which emphasizes groundtruthing to document the soil survey.

Therefore, hydric soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation. Based on the NTCHS criterion, Soboba stony loamy sand, 9 to 30 percent slopes, meets the definition of a hydric soil within the active floodplain of Escondido Creek and can be considered hydric by definition.

#### Hydrology

The project area is located within the southwest portion of the approximately 210-square-mile San Luis Rey–Escondido Watershed (HUC 18070303), the Carlsbad Hydrologic Unit, and the Escondido Creek Hydrologic Subarea (904.6), which is part of the southern coastal region of the San Diego region of California (Figure 6). Escondido Creek is listed on the CWA 303(d) List as an impaired waterbody. The project area's climate is Mediterranean with a strong coastal maritime influence regulating ambient temperatures. Precipitation averages approximately 15.5 inches a year ranging from 2.23 to 2.5 inches per month, with more than 80 percent of the rain falling between November and March, and temperatures ranging from 48 to 76 degrees Fahrenheit (°F) (NOAA 2010). Escondido Creek provides essentially a year-round source of surface water and supports a high water table in portions of the project area that support permanent wetland development outside of the culvert crossing.

#### **Jurisdictional Waters of the U.S.**

The extent and distribution of the collective area of potential jurisdictional waters of the U.S. occurring within the project area is 0.17 acre (Figure 7, see also Footnote 1 pertaining to the JD process, above). Jurisdictional waters of the U.S. are listed for each wetland habitat in Table 4. Wetlands (or, in this case, desert aquatic-related habitats) have been classified according to *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). This classification system incorporates a hierarchical structure of systems, subsystems, and classes to identify wetland and habitat types. The vegetation occurring within the project area is vegetation typically associated with disturbed areas occurring in this vicinity of California. Photo locations and photos are included in Figures 8 through 13.

**Table 4**  
**Summary of Potential Jurisdictional Waters of the U.S. and State**  
**Occurring within the Project Area**

| Type of Potential Jurisdictional Waters                      | Type of Habitat (Holland 1986)                              | Type of Habitat (Cowardin et al. 1979)   | Area of Aquatic Resource in Project Area (acres) <sup>a</sup> | Regulatory Authority |
|--|---|--|---|----------------------|
| <b>Potential Jurisdictional Waters of the U.S. and State</b> |   |  |   |                      |
| Wetland  | Coastal and Valley Freshwater Marsh (52410)                 | Palustrine; Emergent, Persistent, Permanently Flooded, Fresh                       | 0.03  | CDFG, RWQCB, USACE   |
| Wetland  | Southern Arroyo Willow Riparian Forest (61320) <sup>b</sup> | Palustrine; Forested; Broad-leaved Deciduous, Seasonally Flooded/ Saturated, Fresh | 0.04  |                      |
| Wetland  | Southern Willow Scrub (63320)                               | Palustrine; Scrub/Shrub Broad-leaved, Deciduous, Seasonally Flooded, Fresh         | 0.07  |                      |
| Other Waters (Drainage Features [OHWM])/Culvert              | Disturbed Wetland (11200) <sup>c</sup>                      | Riverine; Artificial Substrate Intermittently Flooded, Fresh                       | 0.03  |                      |
| <b>Total potential USACE Waters</b>                          |   |  | <b>0.17</b>   |                      |
| <b>Potential Jurisdictional Waters of the State</b>          |   |  |   |                      |
| Wetland  | Southern Riparian Scrub (63300)                             | Palustrine; Scrub/Shrub Broad-leaved, Deciduous, Seasonally Flooded, Fresh         | 0.01  | CDFG, RWQCB          |
| <b>Total potential CDFG Waters</b>                           |   |  | <b>0.01</b>   |                      |
| <b>Grand Total Jurisdictional Waters</b>                     |   |  | <b>0.18</b>   |                      |

<sup>a</sup> Jurisdictional waters acreage within the project area was determined by utilizing ArcGIS. All acreages are rounded to the nearest hundredth.

<sup>b</sup> Includes all disturbed riparian and wetland vegetation communities.

<sup>c</sup> The *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) does not provide classifications for abiotic features. These habitat codes are based on Holland's descriptions suggested by Oberbauer et al. (2008).

## Discussion

### Jurisdictional Determination for Potential Waters of the U.S.

All waters (including wetlands) delineated within the project area are considered potential jurisdictional waters of the U.S. (including final acreages and types) prior to a formal JD performed by USACE (with potential oversight by USEPA depending on the relationship of the delineated feature toward Traditionally Navigable Waters [TNW]). The final JD may remove portions of delineated waters from being considered as jurisdictional and/or may include additional waters not initially considered as jurisdictional during the field delineation (and, thus, not included in this JDLR).

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Determining whether the delineated waters (including wetlands) are in fact jurisdictional and under the regulatory administration of USACE, including the final acreages and types of jurisdictional waters occurring within the project area, is primarily based on the procedural changes and guidance outlined by the following:<sup>14</sup>

- a. The June 5, 2007, USACE/USEPA Memorandum Re: Jurisdiction Following the U.S. Supreme Court Decision in *Rapanos v. United States* on the interpretation of the *Rapanos* Supreme Court case for making a Jurisdictional Determination (JD) for waters of the U.S. (including wetlands) (USEPA/USACE).<sup>15,16</sup> This memorandum provides guidance to USEPA and USACE on implementing the *Rapanos* Supreme Court decision.
- b. The June 5, 2007, USEPA/USACE Memorandum for the Field: Coordination on JDs under CWA in light of *SWANCC* and *Rapanos* Supreme Court decisions.<sup>17</sup> This memorandum outlines procedures that replace the coordination procedures contained in the January 2003 USEPA/USACE guidance implementing the *SWANCC* decision (but leaves the remainder of that guidance unaffected) and articulates new coordination procedures for JDs affected by *Rapanos* (USEPA/USACE).<sup>18</sup>
- c. The May 5, 2007, USACE *Jurisdictional Determination Form Instructional Guidebook* and the Approved JD Form.
- d. The January 28, 2008, Coordination Memorandum. This memorandum outlines the process for coordinating JDs with USEPA and USACE.
- e. The June 26, 2008, USACE RGL 08-02. This RGL explains the differences between Approved JDs and Preliminary JDs and provides guidance on when an Approved JD is required and when a landowner, permit applicant, or other “affected party” can decline to request and obtain an Approved JD and elect to use a Preliminary JD instead.<sup>19</sup>
- f. The December 2, 2008, USACE Guidance Memorandum Clean Water Act Jurisdiction Following the U.S. Supreme Court’s Decision in *Rapanos v. United States* and *Carabell v. United States*. This guidance incorporates revisions to the USEPA/USACE Memorandum originally issued on June 6, 2007, after careful consideration of public comments received and based on the agencies’ experience in implementing the *Rapanos* decision.

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<sup>14</sup> This delineation followed these procedural guidance documents to ascertain the jurisdictional status of all delineated waters (including wetlands) occurring within the six survey areas.

<sup>15</sup> “Clean Water Act Jurisdiction Following the U.S. Supreme Court’s Decision in *Rapanos v. United States* & *Carabell v. United States*” (June 5, 2007).

<sup>16</sup> 126 S. Court 2208 (2006). This case was consolidated with *Carabell v. United States*.

<sup>17</sup> “Memorandum for Director of Civil Works and USEPA Regional Administrators” (June 5, 2007).

<sup>18</sup> “Clean Water Act Jurisdiction Following the U.S. Supreme Court’s Decision in *Rapanos v. United States* & *Carabell v. United States*” (June 5, 2007).

<sup>19</sup> RGL 08-02 outlines that Preliminary JDs cannot be appealed.

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- g. The December 2, 2008, USACE Response To Comments “Clean Water Act Jurisdiction Following The Supreme Court’s Decision in *Rapanos v. United States & Carabell v. United States* Guidance” issued June 5, 2007.
- h. The December 2, 2008, USACE Questions and Answers Regarding the Revised *Rapanos & Carabell* Guidance.

As of this writing, this JD presents 0.17 acre of potential jurisdictional waters of the U.S. The final acreages of jurisdictional waters of the U.S., delineated within the project area, will be based on the JD process per the USACE/USEPA Guidance and procedure for *Rapanos* (see above). For this particular JD, the formal procedure for obtaining a JD requires the submittal of a completed Preliminary JD (for assertion of jurisdictional waters) to USACE (Los Angeles District, San Diego Field Office).<sup>20</sup> The completed Preliminary JD Form is located in Attachment C.

This JDLR and Preliminary JD Form is meant to provide assistance and support to USACE to determine that the 0.17 acre of delineated aquatic features occurring within the survey area “may be” jurisdictional waters of the U.S. and under its regulatory administration.<sup>21</sup> For this JD, a Preliminary JD Form was prepared to present the following:

- 0.17 acre of aquatic features (composed of 0.15 acre of wetland and 0.03 acre of other waters [culvert crossing]) as jurisdictional waters of the U.S. as a “relatively permanent waterway” and wetlands adjacent to an RPW that present a “significant nexus” to a TNW by flowing directly or indirectly into a TNW (the Pacific Ocean).

#### Requisite Permitting for Impacts

If it is determined that impacts to jurisdictional waters of the U.S. and state will occur within the survey area, based upon the proposed project, the following permits will be required

#### *CWA Section 404 Permitting*

Section 404 of the CWA<sup>22</sup> is the primary statute regulating activities in waters of the U.S. Section 404 of the CWA prohibits the discharge of dredged or fill material<sup>23</sup> into waters of the U.S. without a CWA Section 404 permit from the USACE, even if the jurisdictional area is dry when the activity takes place. Activities that require a permit under Section 404 include, but are not limited to, placing fill or riprap, grading, mechanized land clearing, and dredging within waters of the U.S.

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<sup>20</sup> The USACE district engineer retains the discretion to use an Approved JD in any other circumstance where he or she determines that it is appropriate given the facts of the particular case (RGL 08-02 [4][c]).

<sup>21</sup> Sections 4 and 7 of RGL 02-08.

<sup>22</sup> 33 USC § 1251-1387.

<sup>23</sup> The term “fill material” is defined by federal regulations to mean “any material used for the primary purpose of replacing an aquatic area with dry land or of changing the bottom elevation of a waterbody. The term does not include any pollutant discharged into the water primarily to dispose of waste” (33 CFR Part 323.2 [e]), as published in the November 13, 1986 Federal Register. In 2002, the USEPA and USACE agreed on the same definition for “fill material” (FR 67:90:31129-31143) (33 CFR Part 323.2 and 40 CFR Part 232.3).

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*CWA Section 401 Water Quality Certification*

For Section 401 state water quality certification/waiver for an action that may result in degradation of waters of the state under Section 401 of the CWA, RWQCB implements the water quality certification process for any activity that requires a federal permit or license and that may result in the discharge of pollutants into waters of the U.S. (which include wetlands). RWQCB reviews the proposal to determine whether the activity would comply with state water quality objectives and, subsequently, will either issue a certification with conditions or deny the certification. According to the CWA, water quality standards include beneficial uses, water quality objectives, and complying with the USEPA's anti-degradation policy.<sup>24</sup>

In many cases, the conditions of the RWQCB 401 Certification are more stringent than the CWA Section 404 permit. All parties proposing to discharge waste that could affect waters of the state, but do not affect federal waters (which requires a CWA Section 404 permit *and* CWA Section 401 Certification) must file a Report of Waste Discharge with the appropriate RWQCB.<sup>25</sup>

*CFGF Section 1602 Lake and Streambed Alteration Agreement*

CFGF regulates activities that would alter the flow, bed, channel, or bank of streams and lakes. As conditional to this permit, mitigation will be required. By submitting a Notification for a Lake and Streambed Alteration Agreement (SAA) to the appropriate CFGF field office, CFGF will ascertain which or all of the delineated aquatic features occurring within the project area will be under its regulatory administration. The SAA Notification process also allows CFGF to determine which aquatic feature will become a "substantially adversely affected" aquatic resources under CFGF Section 1602(a), and provide guidance on requisite and appropriate compensatory mitigation for any unavoidable impacts to these aquatic resources as a result of the proposed project.

Sincerely,



Joshua Zinn  
Ecologist and Regulatory Specialist

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<sup>24</sup> 40 CFR Part 131.12.

<sup>25</sup> California Water Code Section 13260d.

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Attachment A – Figures:

- Figure 1 – Regional Map
- Figure 2 – Vicinity Map
- Figure 3 – Area of Focused Delineation
- Figure 4 – Vegetation Communities and Other Cover Types
- Figure 5 – Soils
- Figure 6 – Hydrologic Units and Subareas
- Figure 7 – Limits of Potential Jurisdictional Wetlands, Riparian Extents and Other Waters
- Figure 8 – Photopoint Locations
- Figure 9 – Photographs 1 and 2
- Figure 10 – Photographs 3 and 4
- Figure 11 – Photographs 5 and 6
- Figure 12 – Photographs 7 and 8
- Figure 13 – Photographs 9 and 10

Attachment B – Wetland Determination Data Forms – Arid West Region

Attachment C – Preliminary JD Form

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## **References**

Bowman, R.

- 1973 *Soil Survey of the San Diego Area, California*. Prepared by the U.S. Department of Agriculture, Soil Conservation Service and Forest Service in cooperation with the University of California Agricultural Experiment Station; the U.S. Department of the Interior, Bureau of Indian Affairs; and the Department of the Navy, U.S. Marine Corps.

California Environmental Protection Agency (CalEPA)

- 2010 California Watershed Portal. Available at <http://cwp.resources.ca.gov/>.

California Environmental Resources Evaluation System (CERES)

- 2010 Available at <http://www.ceres.ca.gov/>.

California Watershed Network (CWN)

- 2010 Available at <http://www.watershednetwork.org/>.

California State University Sacramento (CSUS) Office of Water Programs

- 2010 Available at <http://www.owp.csus.edu/research/stormwatertools/>.

Cowardin, L., V. Carter, F. Golet, and E. LaRoe

- 1979 *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Department of Interior. U.S. Fish and Wildlife Service. FWS/OBS-79/31. December 1979.

Environmental Laboratory

- 1987 *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1. U.S. Army Engineer Waterways Experiment Station. Vicksburg, Mississippi.
- 2008 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*. September.

Holland, R. F.

- 1986 *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Prepared for California Department of Fish and Game.

National Oceanic and Atmospheric Administration (NOAA)

- 2010 National Weather Service Climate Office. Available at <http://www.nws.noaa.gov/om/>.

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Natural Resource Conservation Service (NRCS)

2010a NRCS 2006 Soils Website. Available at <http://soils.usda.gov/>.

2010b Natural Resource Conservation Service. National List of Hydric Soils.  
Available at <http://soils.usda.gov/use/hydric/>.

National Technical Committee for Hydric Soils (NTCHS)

1995 Criteria for Hydric Soils, USDA-NRCS Hydric Soils of the United States.  
Introduction. Available at <http://www.statlab.iastate.edu/soils/hydric/intro.html>.

Oberbauer, Thomas, Meghan Kelly, and Jeremy Buegge

2008 Draft Vegetation Communities of San Diego County. Based on Preliminary  
Descriptions of the Terrestrial Natural Communities of California, Robert F.  
Holland, Ph.D., October 1986. March.

Project Clean Water (PCW)

2010 Project Clean Water. Available at <http://www.projectcleanwater.org/>.

Reed, P. B., Jr.

1988 *National List of Plant Species that Occur in Wetlands: California (Region 0)*.  
U.S. Fish and Wildlife Service Biological Report 88(26.10).

Tiner, R.

1999 *Wetland Indicators. A Guide to Wetland Identification, Delineation,  
Classification, and Mapping*. Lewis Publishers. Boca Raton, Florida.

U.C. Davis

2010a The Information Center for the Environment. Available at  
<http://ice.ucdavis.edu/>.

2010b California Soil Resource Lab. Available at <http://casoilresource.lawr.ucdavis.edu/drupal/>.

U.S. Army Corps of Engineers (USACE)

2008 *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM)  
in the Arid West Region of the Western United States: A Delineation Manual*.  
Engineering Research and Development Center. August.

U.S. Department of Agriculture (USDA)

2006 *Field Indicators of Hydric Soils in the United States: A Guide for Identifying  
and Delineating Hydric Soils, Version 6.0*. Washington, D.C.

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U.S. Environmental Protection Agency (USEPA)

2010 Digital Watershed. Available at <http://www.iwr.msu.edu/dw/>.

U.S. Fish and Wildlife Service (USFWS)

1997 Revision of the National List of Plant Species That Occur in Wetlands.  
Federal Register: January 17, 1997 (Volume 62, Number 12). St. Petersburg,  
Florida.

2010 National Wetlands Inventory Interactive Wetlands Mapper. Available at  
<http://www.nwi.fws.gov>.

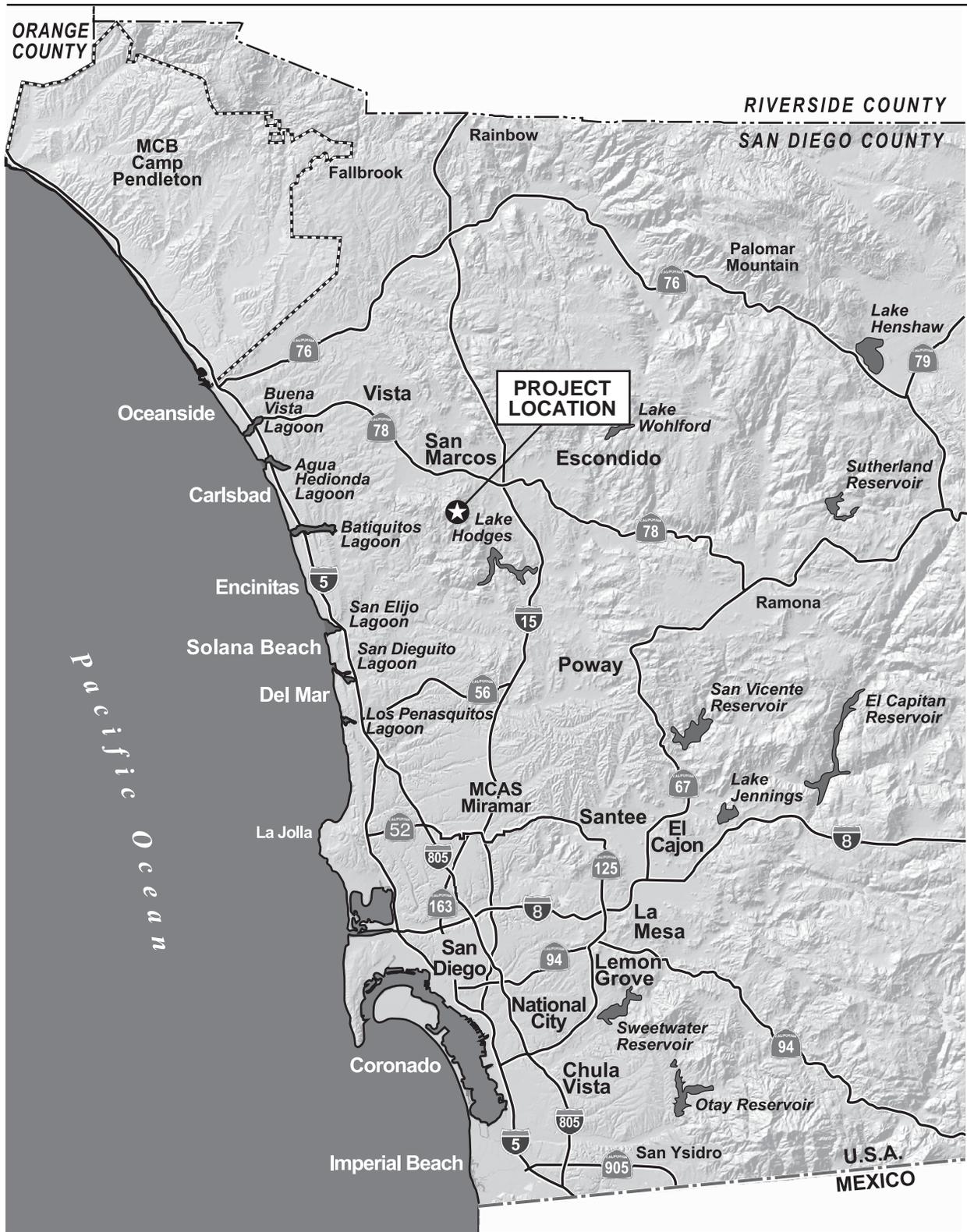
U.S. Geological Survey (USGS)

2004 7.5-minute Escondido Quad 1975. Available at [pubs.usgs.gov](http://pubs.usgs.gov).



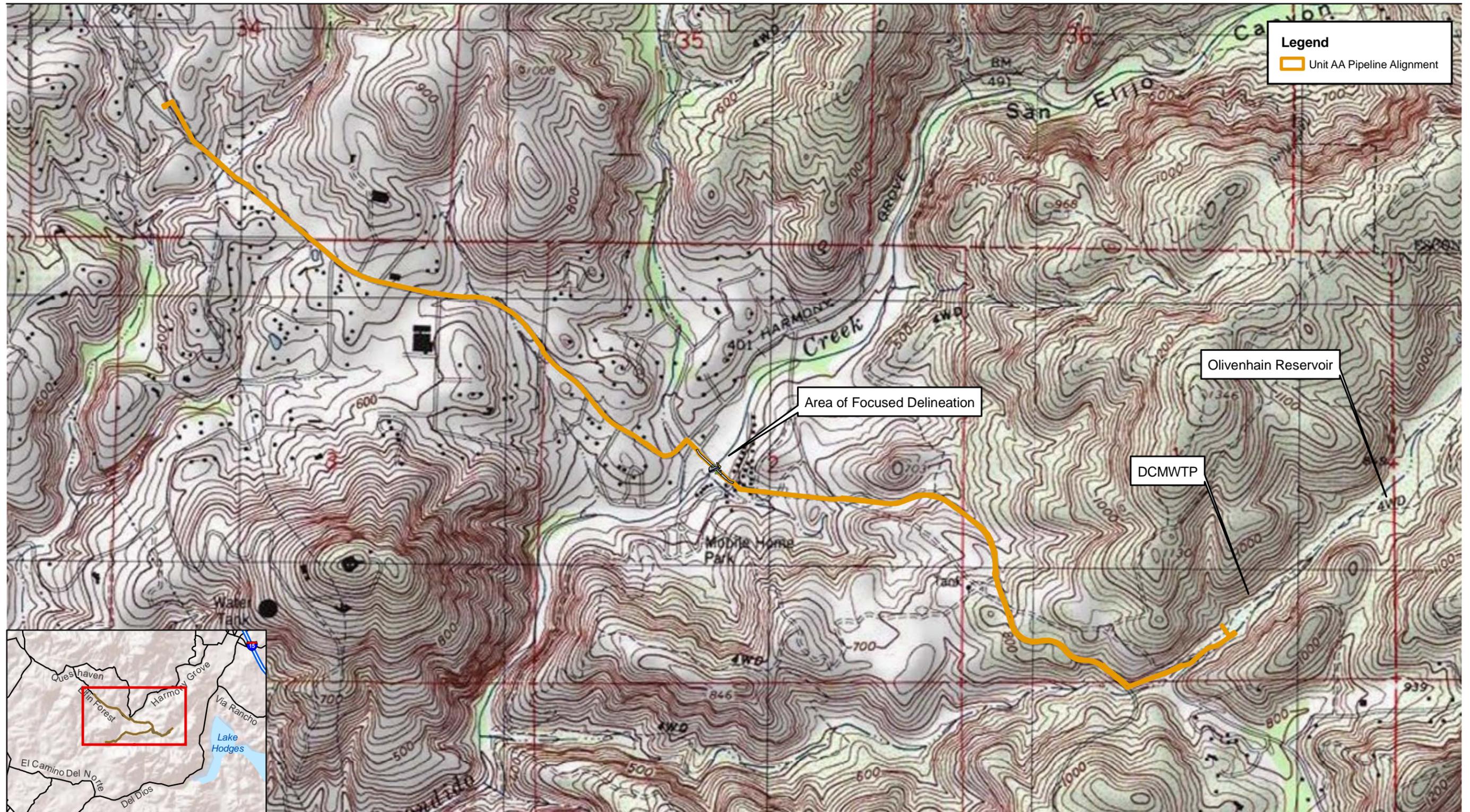
**ATTACHMENT A**  
**FIGURES**





**Figure 1**  
**Regional Map**





**Figure 2**  
Vicinity Map



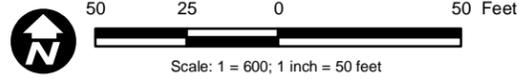


**Legend**

- ⋯ Area of Focused Delineation
- - - USGS Blue-lines

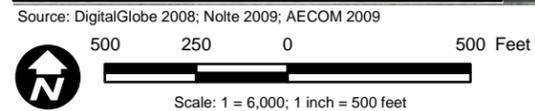
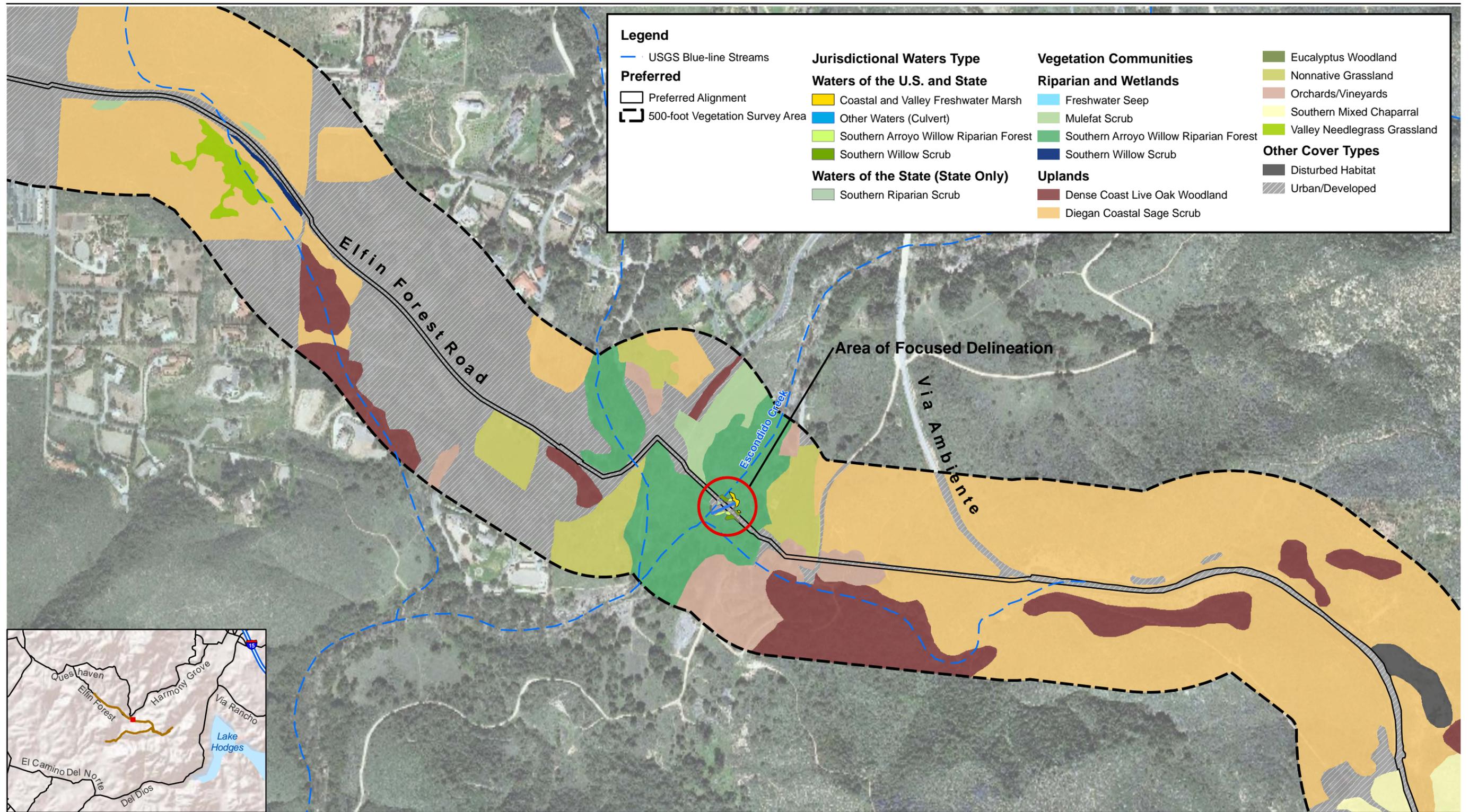


Source: DigitalGlobe 2008; Nolte 2009; AECOM 2009; National Hydrology Dataset 2007



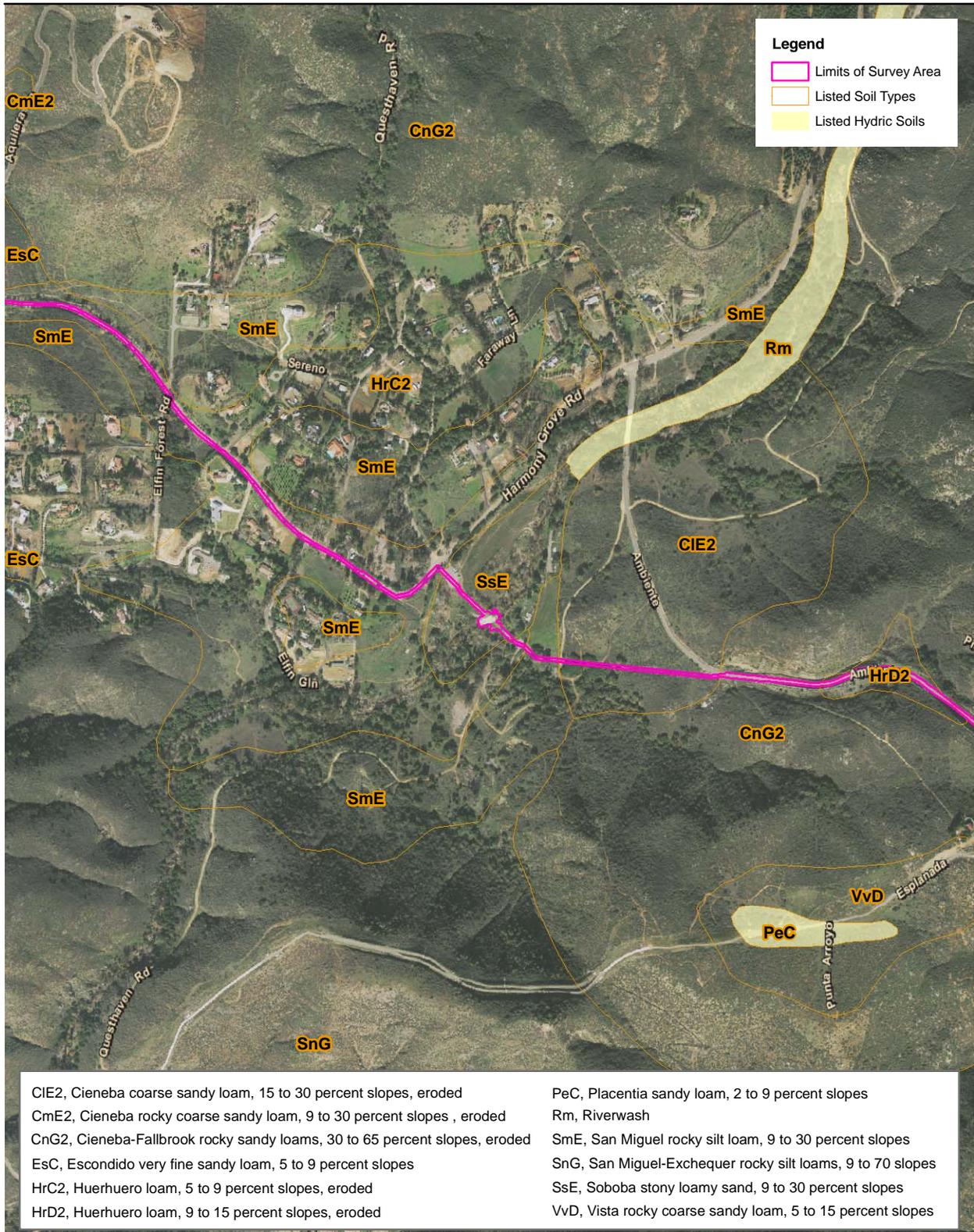
**Figure 3**  
**Area of Focused Delineation**



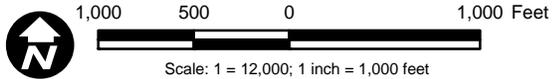


**Figure 4**  
**Vegetation Communities and Other Cover Types - Preferred**





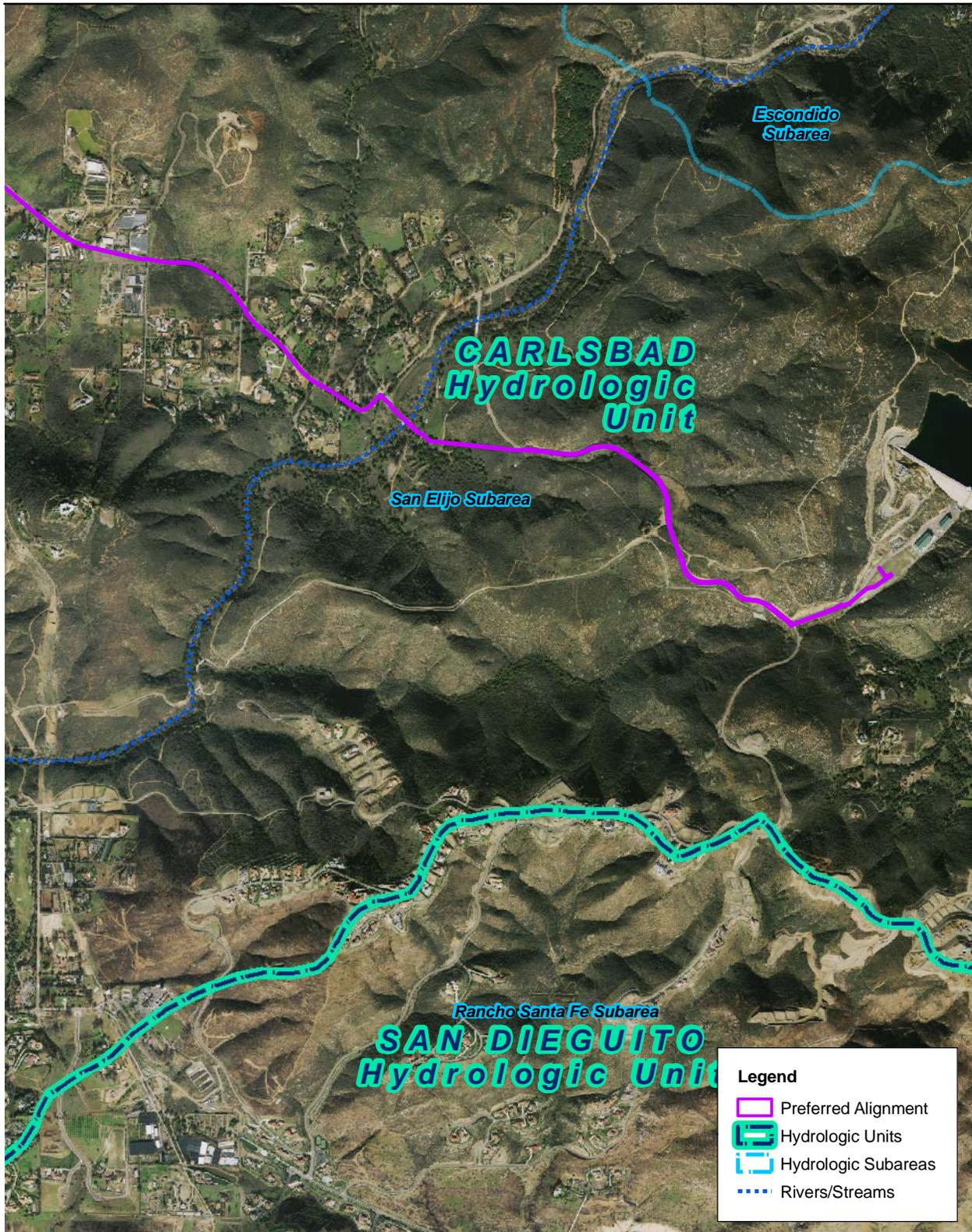
Source: DigitalGlobe 2008; SSURGO 2006; AECOM 2010



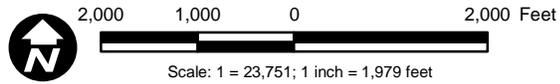
**Figure 5**  
**Soils**

**Unit AA Raw Water Pipeline Project - JDLR**

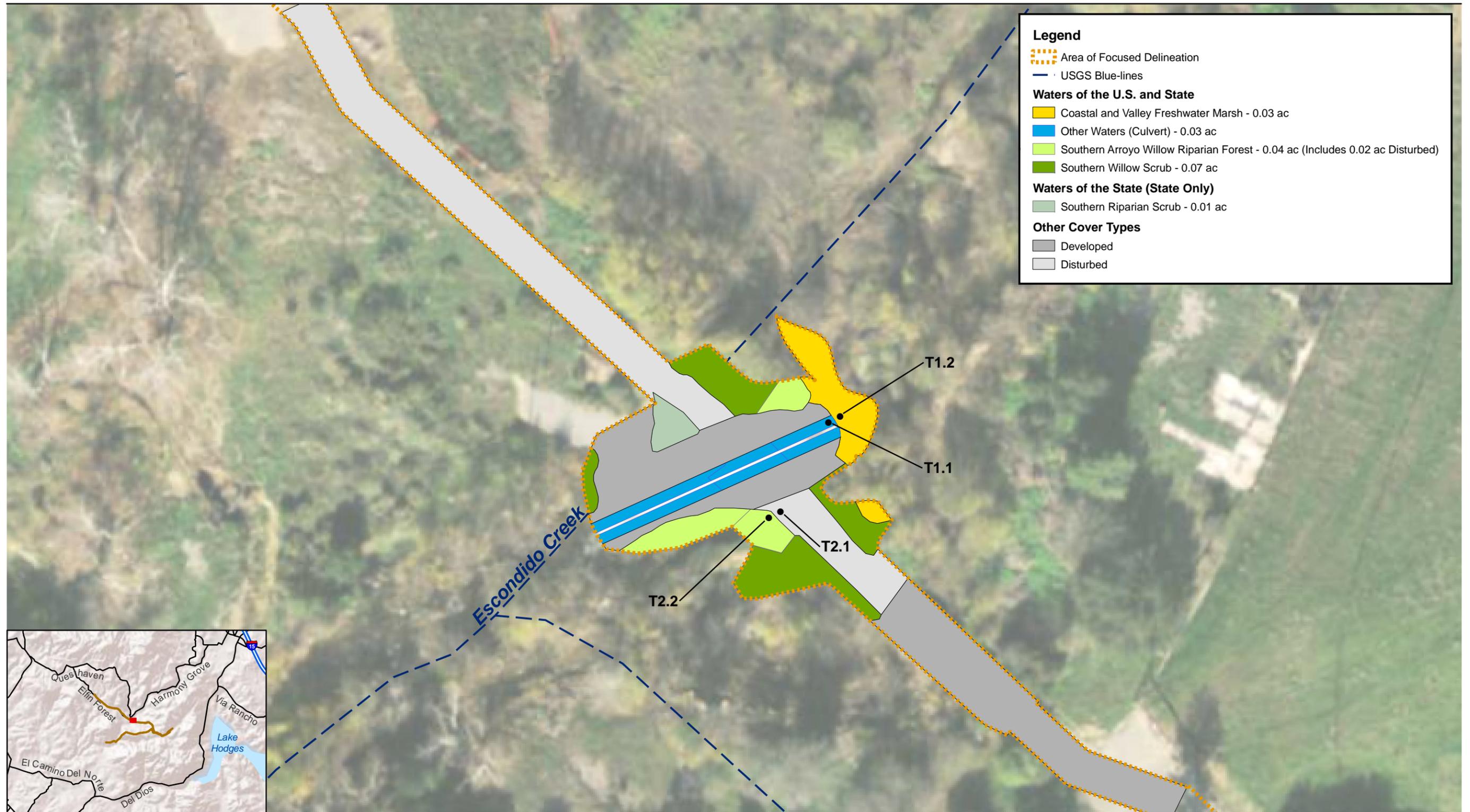
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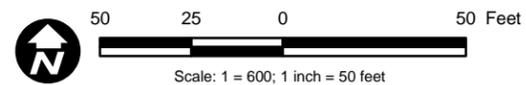
Source: CASIL



**Figure 6**  
**Hydrologic Units and Subareas**

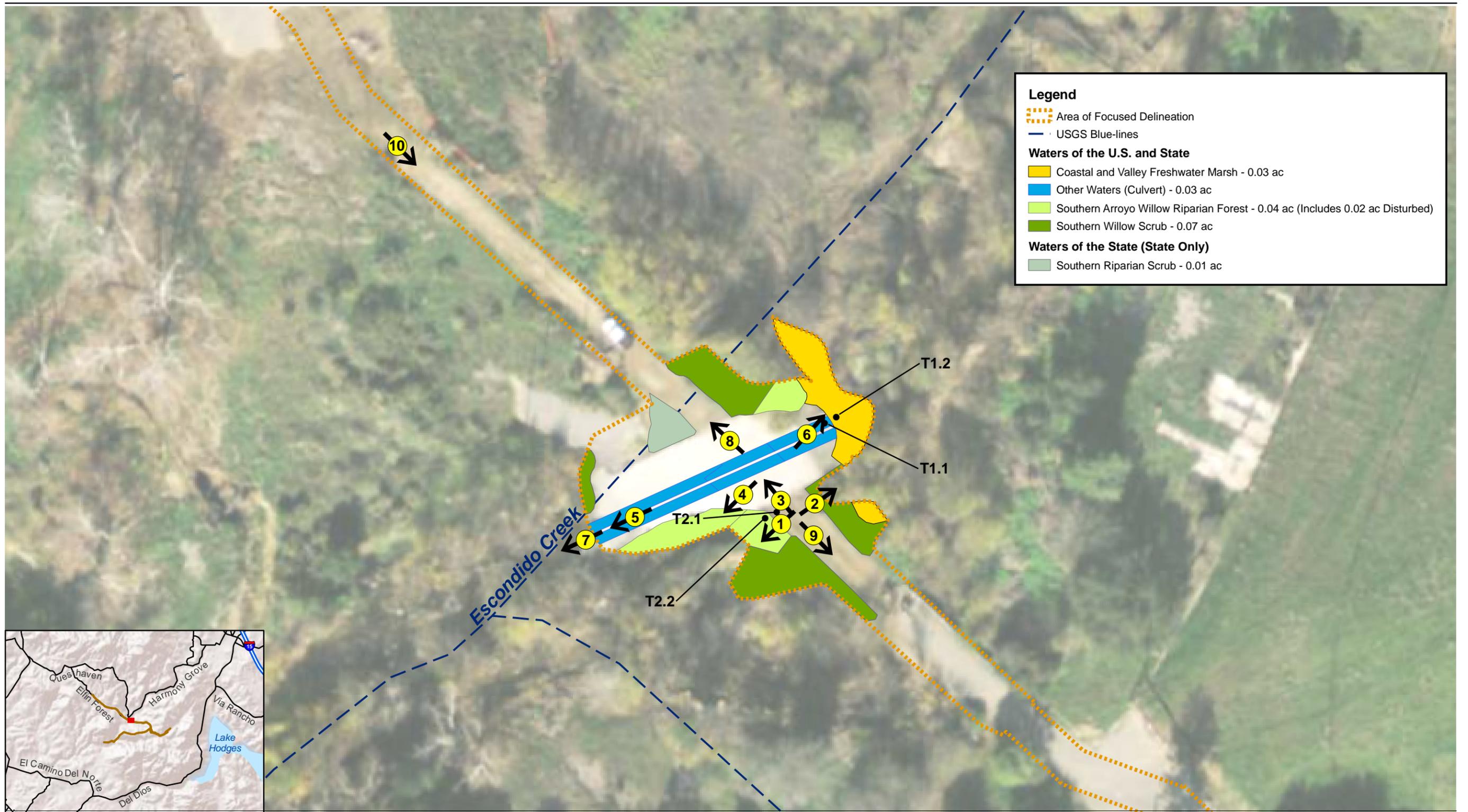


Source: DigitalGlobe 2008; Nolte 2009; AECOM 2009; National Hydrology Dataset 2007

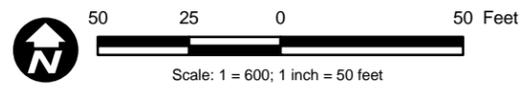


**Figure 7**  
**Limits of Potential Jurisdictional Wetlands,**  
**Riparian Extents and Other Waters**





Source: DigitalGlobe 2008; Nolte 2009; AECOM 2009; National Hydrology Dataset 2007



**Figure 8**  
Photopoint Locations





Photograph 1 - Looking southwest at southern willow riparian forest wetlands. Note field data point T2.2 documenting the occurrence of wetlands.



Photograph 2 – Looking northeast at upstream freshwater marsh covered with debris.

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**Figure 9**  
**Photographs 1 and 2**



Photograph 3 – Looking northwest at compacted dirt service road and damaged culvert crossing in background.



Photograph 4 – Looking southwest downstream at the damaged concrete. Note the colonization of willows in this disturbed area.

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**Figure 10**  
**Photographs 3 and 4**



Photograph 5 – Looking southwest down the length of the existing culverts.



Photograph 6 – Looking northeast at culvert and upstream freshwater marsh covered with debris.

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**Figure 11**  
**Photographs 5 and 6**



Photograph 7 – Looking southwest at the downstream portion of Escondido Creek channel at culvert outlet.



Photograph 8 - Looking northwest at the edge of disturbed southern riparian scrub.

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**Figure 12**  
**Photographs 7 and 8**



Photograph 9 – Looking southeast at compacted dirt service road and across undamaged second set of culverts.



Photograph 10 – Looking southeast from Harmony Grove Road at developed areas, upland, and riparian vegetation near Escondido Creek.

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**Figure 13**  
**Photographs 9 and 10**



**ATTACHMENT B**

**WETLAND DETERMINATION  
DATA FORMS—ARID WEST REGION**



**WETLAND DETERMINATION DATA FORM - Arid West Region**

Project/Site: Unit AA Pipeline/Escondido Creek Crossing City/County: Escondido/San Diego Sampling Date: 04-21-10  
 Applicant/Owner: Olivenhaim Municipal Water District State: CA Sampling Point: T1.1  
 Investigator(s): J. Zinn Section, Township, Range: Section 34, Township 13 S, Range 3 W  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0  
 Subregion (LRR): C - Mediterranean California Lat: 33.072749 Long: -117.162693 Datum: NAD 83  
 Soil Map Unit Name: Soboba stony loamy sand, 9 to 30 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation  Soil  or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation  Soil  or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.**

|   |  |
|---|--|
| Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/><br>Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/><br>Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/> | <b>Is the Sampled Area within a Wetland?</b> Yes <input type="radio"/> No <input checked="" type="radio"/> |
| Remarks: Datapoint taken at top of culvert. Refer to Figure 7 in Attachment A of the JDLR to observe the location of this datapoint and Figures 8 and 11 in Attachment A of the JDLR to observe the associated field photographs.   |  |

**VEGETATION**

| Tree Stratum (Use scientific names.)      | Absolute % Cover                | Dominant Species? | Indicator Status |  |
|---|---------------------------------|-------------------|------------------|--|
| 1. _____                                  |                                 |                   |                  |  |
| 2. _____                                  |                                 |                   |                  |  |
| 3. _____                                  |                                 |                   |                  |  |
| 4. _____                                  |                                 |                   |                  |  |
| Total Cover: _____ %                      |                                 |                   |                  |  |
| Sapling/Shrub Stratum                     | Absolute % Cover                | Dominant Species? | Indicator Status |  |
| 1. _____                                  |                                 |                   |                  |  |
| 2. _____                                  |                                 |                   |                  |  |
| 3. _____                                  |                                 |                   |                  |  |
| 4. _____                                  |                                 |                   |                  |  |
| 5. _____                                  |                                 |                   |                  |  |
| Total Cover: _____ %                      |                                 |                   |                  |  |
| Herb Stratum                              | Absolute % Cover                | Dominant Species? | Indicator Status |  |
| 1. _____                                  |                                 |                   |                  |  |
| 2. _____                                  |                                 |                   |                  |  |
| 3. _____                                  |                                 |                   |                  |  |
| 4. _____                                  |                                 |                   |                  |  |
| 5. _____                                  |                                 |                   |                  |  |
| 6. _____                                  |                                 |                   |                  |  |
| 7. _____                                  |                                 |                   |                  |  |
| 8. _____                                  |                                 |                   |                  |  |
| Total Cover: _____ %                      |                                 |                   |                  |  |
| Woody Vine Stratum                        | Absolute % Cover                | Dominant Species? | Indicator Status |  |
| 1. _____                                  |                                 |                   |                  |  |
| 2. _____                                  |                                 |                   |                  |  |
| Total Cover: _____ %                      |                                 |                   |                  |  |
| % Bare Ground in Herb Stratum <u>100%</u> | % Cover of Biotic Crust _____ % |                   |                  |  |

**Dominance Test worksheet:**  
 Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)  
 Total Number of Dominant Species Across All Strata: 0 (B)  
 Percent of Dominant Species That Are OBL, FACW, or FAC: 0 % (A/B)

**Prevalence Index worksheet:**  
 Total % Cover of: \_\_\_\_\_ Multiply by: \_\_\_\_\_  
 OBL species \_\_\_\_\_ x 1 = 0  
 FACW species \_\_\_\_\_ x 2 = 0  
 FAC species \_\_\_\_\_ x 3 = 0  
 FACU species \_\_\_\_\_ x 4 = 0  
 UPL species \_\_\_\_\_ x 5 = 0  
 Column Totals: \_\_\_\_\_ (A) 0 (B)  
 Prevalence Index = B/A = \_\_\_\_\_

**Hydrophytic Vegetation Indicators:**  
 Dominance Test is >50%  
 Prevalence Index is ≤3.0<sup>1</sup>  
 Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes  No

Remarks: Datapoint taken at outer edge of cement culvert which represents upland.

**SOIL**

Sampling Point: T1.1

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth<br>(inches) | Matrix        |     | Redox Features |     |                   |                  | Texture | Remarks |
|-------------------|---------------|-----|----------------|-----|-------------------|------------------|---------|---------|
|                   | Color (moist) | %   | Color (moist)  | %   | Type <sup>1</sup> | Loc <sup>2</sup> |         |         |
| N/A               | N/A           | N/A | N/A            | N/A |                   |                  | N/A     | N/A     |
|                   |               |     |                |     |                   |                  |         |         |
|                   |               |     |                |     |                   |                  |         |         |
|                   |               |     |                |     |                   |                  |         |         |

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:**

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: Cement culvert  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks: Datapoint taken at cement culvert

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Recent Iron Reduction in Plowed Soils (C6)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): 0  
 Water Table Present? Yes  No  Depth (inches): Unknown  
 Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): 0

Wetland Hydrology Present? Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: There are no wetland hydrology indicators observed at the point of investigation. Escondido Creek is occurring below grade through culvert.

**WETLAND DETERMINATION DATA FORM - Arid West Region**

Project/Site: Unit AA Pipeline/Escondido Creek Crossing City/County: Escondido/San Diego Sampling Date: 04-21-10  
 Applicant/Owner: Olivenhaim Municipal Water District State: CA Sampling Point: T1.2  
 Investigator(s): J. Zinn Section, Township, Range: Section 34, Township 13 S, Range 3 W  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0  
 Subregion (LRR): C - Mediterranean California Lat: 33.072749 Long: -117.162693 Datum: NAD 83  
 Soil Map Unit Name: Soboba stony loamy sand, 9 to 30 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation  Soil  or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation  Soil  or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.**

|   |  |
|---|--|
| Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/><br>Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/><br>Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/> | <b>Is the Sampled Area within a Wetland?</b> Yes <input checked="" type="radio"/> No <input type="radio"/> |
| Remarks: Datapoint taken within marsh that abuts culvert. Refer to Figure 7 in Attachment A of the JDLR to observe the location of this datapoint and Figures 8 and 11 in Attachment A of the JDLR to observe the associated field photographs.                                 |  |

**VEGETATION**

| Tree Stratum (Use scientific names.)      | Absolute % Cover | Dominant Species?               | Indicator Status |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
|---|------------------|---------------------------------|------------------|--|-------------------|--|--------------|--|-------------|----|-------|----|--------------|--|-------|---|-------------|--|-------|---|--------------|--|-------|---|-------------|--|-------|---|----------------|----|-----|--------|--------------------------------------|--|--|--|
| 1. <i>Salix gooddingii</i>                | 25               | Yes                             | OBL              | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>3</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0 %</u> (A/B)  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| 2. _____                                  |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| 3. _____                                  |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| 4. _____                                  |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| Total Cover: <u>25 %</u>                  |                  |                                 |                  | <b>Prevalence Index worksheet:</b><br><table style="width:100%; border-collapse: collapse;"> <tr> <td align="center" colspan="2">Total % Cover of:</td> <td align="center" colspan="2">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td align="center">45</td> <td>x 1 =</td> <td align="center">45</td> </tr> <tr> <td>FACW species</td> <td></td> <td>x 2 =</td> <td align="center">0</td> </tr> <tr> <td>FAC species</td> <td></td> <td>x 3 =</td> <td align="center">0</td> </tr> <tr> <td>FACU species</td> <td></td> <td>x 4 =</td> <td align="center">0</td> </tr> <tr> <td>UPL species</td> <td></td> <td>x 5 =</td> <td align="center">0</td> </tr> <tr> <td>Column Totals:</td> <td align="center">45</td> <td>(A)</td> <td align="center">45 (B)</td> </tr> <tr> <td align="center" colspan="4">Prevalence Index = B/A = <u>1.00</u></td> </tr> </table> | Total % Cover of: |  | Multiply by: |  | OBL species | 45 | x 1 = | 45 | FACW species |  | x 2 = | 0 | FAC species |  | x 3 = | 0 | FACU species |  | x 4 = | 0 | UPL species |  | x 5 = | 0 | Column Totals: | 45 | (A) | 45 (B) | Prevalence Index = B/A = <u>1.00</u> |  |  |  |
| Total % Cover of:                         |                  | Multiply by:                    |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| OBL species                               | 45               | x 1 =                           | 45               |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| FACW species                              |                  | x 2 =                           | 0                |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| FAC species                               |                  | x 3 =                           | 0                |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| FACU species                              |                  | x 4 =                           | 0                |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| UPL species                               |                  | x 5 =                           | 0                |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| Column Totals:                            | 45               | (A)                             | 45 (B)           |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| Prevalence Index = B/A = <u>1.00</u>      |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| <u>Sapling/Shrub Stratum</u>              |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| 1. _____                                  |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| 2. _____                                  |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| 3. _____                                  |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| 4. _____                                  |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| 5. _____                                  |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| Total Cover: _____ %                      |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| <u>Herb Stratum</u>                       |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| 1. <i>Schoenoplectus californicus</i>     | 15               | Yes                             | OBL              | <b>Hydrophytic Vegetation Indicators:</b><br><input checked="" type="checkbox"/> Dominance Test is >50%<br><input checked="" type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| 2. <i>Rorippia nasturtium-aquaticum</i>   | 5                | Yes                             | OBL              |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| 3. _____                                  |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| 4. _____                                  |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| 5. _____                                  |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| 6. _____                                  |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| 7. _____                                  |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| 8. _____                                  |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| Total Cover: <u>20 %</u>                  |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| <u>Woody Vine Stratum</u>                 |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| 1. _____                                  |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| 2. _____                                  |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| Total Cover: _____ %                      |                  |                                 |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |
| % Bare Ground in Herb Stratum <u>80 %</u> |                  | % Cover of Biotic Crust _____ % |                  |  |                   |  |              |  |             |    |       |    |              |  |       |   |             |  |       |   |              |  |       |   |             |  |       |   |                |    |     |        |                                      |  |  |  |

Remarks: Datapoint taken within freshwater marsh.

**SOIL**

Sampling Point: T1.2

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix        |     | Redox Features |   |                   |                  | Texture   | Remarks |
|----------------|---------------|-----|----------------|---|-------------------|------------------|-----------|---------|
|                | Color (moist) | %   | Color (moist)  | % | Type <sup>1</sup> | Loc <sup>2</sup> |           |         |
| 0-1            | 2.5Y/R 1/1    | 100 | N/A            |   |                   |                  | Muck      |         |
| 1-20           | 7.5Y/R 3/1    | 100 | N/A            |   |                   |                  | Sand/Muck |         |
|                |               |     |                |   |                   |                  |           |         |
|                |               |     |                |   |                   |                  |           |         |

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:**

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks: Soboba stony loamy sand, 9 to 30 percent slope presents entisol characteristics and there are often no hydric field indicators present for this soil as outlined by the NTCHS Field Indicators of Hydric Soils in the United States. Guidance for soil lacking hydric indicators is found in the 2008 Arid West Region (Version 2.0) Supplement Chapter 3, page 27 and states that 'a soil that meets the definition of a hydric soil is hydric whether or not it exhibits indicators'. This soil can be considered hydric by definition because both hydrophytic vegetation and wetland hydrology are simultaneously present at the point of investigation. Additional guidance used for soil lacking hydric indicators is found in the 2008 Arid West Region (Version 2.0) Supplement: Chapter 5, page 96, Problematic hydric soils; Soils with faint or no indicators, procedure, pages 98-99 1-4(b)(3[Vegetated Sand and Gravel Bars within Floodplains]).

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Recent Iron Reduction in Plowed Soils (C6)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): 0

Water Table Present? Yes  No  Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): 0

Wetland Hydrology Present? Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Datapoint taken within edge of Escondido Creek.

**WETLAND DETERMINATION DATA FORM - Arid West Region**

Project/Site: Unit AA Pipeline/Escondido Creek Crossing City/County: Escondido/San Diego Sampling Date: 04-21-10  
 Applicant/Owner: Olivenhaim Municipal Water District State: CA Sampling Point: T2.1  
 Investigator(s): J. Zinn Section, Township, Range: Section 34, Township 13 S, Range 3 W  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0  
 Subregion (LRR): C - Mediterranean California Lat: 33.072561 Long: -117.162762 Datum: NAD 83  
 Soil Map Unit Name: Soboba stony loamy sand, 9 to 30 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation  Soil  or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation  Soil  or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.**

|  |  |
|--|--|
| Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/><br>Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/><br>Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>                            | <b>Is the Sampled Area within a Wetland?</b> Yes <input type="radio"/> No <input checked="" type="radio"/> |
| Remarks: <u>Datapoint taken at cement abutment of Questhaven Road just outside riparian forested area. Refer to Figure 7 in Attachment A of the JDLR to observe the location of this datapoint and Figures 8 and 9 through 10 in Attachment A of the JDLR to observe the associated field photographs.</u> |  |

**VEGETATION**

| Tree Stratum (Use scientific names.)                   | Absolute % Cover | Dominant Species?                     | Indicator Status |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
|--|------------------|---------------------------------------|------------------|--|-------------------|--------------|--|-------------|-------|--------------------------------|--------------|-------|--------------------------------|-------------|-------|--------------------------------|--------------|-------|--------------------------------|-------------|-------|--------------------------------|----------------|-----|------------------------------------|--|--|--|
| 1. _____   |                  |                                       |                  | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC: <input type="text" value="0"/> (A)<br><br>Total Number of Dominant Species Across All Strata: <input type="text" value="0"/> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <input type="text" value="0"/> % (A/B)  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| 2. _____   |                  |                                       |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| 3. _____   |                  |                                       |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| 4. _____   |                  |                                       |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| Total Cover: <input type="text" value=""/>             |                  |                                       |                  | <b>Prevalence Index worksheet:</b><br><table style="width:100%; border-collapse: collapse;"> <tr> <td align="center">Total % Cover of:</td> <td align="center">Multiply by:</td> <td></td> </tr> <tr> <td>OBL species</td> <td>x 1 =</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>FACW species</td> <td>x 2 =</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>FAC species</td> <td>x 3 =</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>FACU species</td> <td>x 4 =</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>UPL species</td> <td>x 5 =</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>Column Totals:</td> <td>(A)</td> <td><input type="text" value="0"/> (B)</td> </tr> <tr> <td align="center" colspan="3">Prevalence Index = B/A = <input type="text" value=""/></td> </tr> </table> | Total % Cover of: | Multiply by: |  | OBL species | x 1 = | <input type="text" value="0"/> | FACW species | x 2 = | <input type="text" value="0"/> | FAC species | x 3 = | <input type="text" value="0"/> | FACU species | x 4 = | <input type="text" value="0"/> | UPL species | x 5 = | <input type="text" value="0"/> | Column Totals: | (A) | <input type="text" value="0"/> (B) | Prevalence Index = B/A = <input type="text" value=""/> |  |  |
| Total % Cover of:                                      | Multiply by:     |                                       |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| OBL species  | x 1 =            | <input type="text" value="0"/>        |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| FACW species   | x 2 =            | <input type="text" value="0"/>        |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| FAC species  | x 3 =            | <input type="text" value="0"/>        |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| FACU species   | x 4 =            | <input type="text" value="0"/>        |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| UPL species  | x 5 =            | <input type="text" value="0"/>        |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| Column Totals:   | (A)              | <input type="text" value="0"/> (B)    |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| Prevalence Index = B/A = <input type="text" value=""/> |                  |                                       |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| <u>Sapling/Shrub Stratum</u>                           |                  |                                       |                  | <b>Hydrophytic Vegetation Indicators:</b><br><input checked="" type="checkbox"/> Dominance Test is >50%<br><input checked="" type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)<br><br><sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.   |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| 1. _____   |                  |                                       |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| 2. _____   |                  |                                       |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| 3. _____   |                  |                                       |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| 4. _____   |                  |                                       |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| 5. _____   |                  |                                       |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| 6. _____   |                  |                                       |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| 7. _____   |                  |                                       |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| Total Cover: <input type="text" value=""/>             |                  |                                       |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| <u>Herb Stratum</u>                                    |                  |                                       |                  | <b>Hydrophytic Vegetation Present?</b> Yes <input type="radio"/> No <input checked="" type="radio"/>   |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| 1. _____   |                  |                                       |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| 2. _____   |                  |                                       |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| Total Cover: <input type="text" value=""/>             |                  |                                       |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| <u>Woody Vine Stratum</u>                              |                  |                                       |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| 1. _____   |                  |                                       |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| 2. _____   |                  |                                       |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| Total Cover: <input type="text" value=""/>             |                  |                                       |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |
| % Bare Ground in Herb Stratum <u>100%</u>              |                  | % Cover of Biotic Crust <u>    </u> % |                  |  |                   |              |  |             |       |                                |              |       |                                |             |       |                                |              |       |                                |             |       |                                |                |     |                                    |  |  |  |

Remarks: Datapoint taken at cement abutment of Questhaven Road.

**SOIL**

Sampling Point: T2.1

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth<br>(inches) | Matrix        |     | Redox Features |     |                   |                  | Texture | Remarks |
|-------------------|---------------|-----|----------------|-----|-------------------|------------------|---------|---------|
|                   | Color (moist) | %   | Color (moist)  | %   | Type <sup>1</sup> | Loc <sup>2</sup> |         |         |
| N/A               | N/A           | N/A | N/A            | N/A |                   |                  | N/A     | N/A     |
|                   |               |     |                |     |                   |                  |         |         |
|                   |               |     |                |     |                   |                  |         |         |
|                   |               |     |                |     |                   |                  |         |         |

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.      <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:**

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: Cement culvert  
 Depth (inches): \_\_\_\_\_

**Hydric Soil Present?**    Yes     No

Remarks: Datapoint taken at cement abutment of Questhaven Road.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Recent Iron Reduction in Plowed Soils (C6)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present?    Yes     No     Depth (inches): 0  
 Water Table Present?    Yes     No     Depth (inches): Unknown  
 Saturation Present?    Yes     No     Depth (inches): 0  
 (includes capillary fringe)

**Wetland Hydrology Present?**    Yes     No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: There are no wetland hydrology indicators observed at the point of investigation (which is the service road).

## WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Unit AA Pipeline/Escondido Creek Crossing City/County: Escondido/San Diego Sampling Date: 04-21-10  
 Applicant/Owner: Olivenhaim Municipal Water District State: CA Sampling Point: T2.2  
 Investigator(s): J. Zinn Section, Township, Range: Section 34, Township 13 S, Range 3 W  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0  
 Subregion (LRR): C - Mediterranean California Lat: 33.072561 Long: -117.162762 Datum: NAD 83  
 Soil Map Unit Name: Soboba stony loamy sand, 9 to 30 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation  Soil  or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation  Soil  or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

|  |  |
|--|--|
| Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/><br>Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/><br>Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>  | <b>Is the Sampled Area within a Wetland?</b> Yes <input checked="" type="radio"/> No <input type="radio"/> |
| Remarks: Datapoint taken within southern willow riparian forest that abuts Questhaven Road. Refer to Figure 7 in Attachment A of the JDLR to observe the location of this datapoint and Figures 8 and 9 in Attachment A of the JDLR to observe the associated field photographs. |  |

### VEGETATION

| Tree Stratum (Use scientific names.)   | Absolute % Cover | Dominant Species?   | Indicator Status |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
|--|------------------|---|------------------|--|-------------------|--|--------------|--|-------------|----|-------|----|--------------|----|-------|-----|-------------|---|-------|----|--------------|--|-------|---|-------------|--|-------|---|----------------|----|-----|---------|--------------------------|--|--|------|
| 1. <i>Salix lasiolepis</i>   | 25               | Yes   | FACW             | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC: <span style="background-color: #e0e0e0; padding: 2px;">5</span> (A)<br><br>Total Number of Dominant Species Across All Strata: <span style="background-color: #e0e0e0; padding: 2px;">5</span> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <span style="background-color: #e0e0e0; padding: 2px;">100.0 %</span> (A/B)   |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| 2. <i>Salix gooddingii</i>   | 10               | Yes   | OBL              |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| 3. _____   |                  |   |                  |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| 4. _____   |                  |   |                  |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| Total Cover: <span style="background-color: #e0e0e0; padding: 2px;">35 %</span>                  |                  |   |                  |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| Sapling/Shrub Stratum  |                  |   |                  |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| 1. <i>Baccharis salicifolia</i>  | 15               | Yes   | FACW             | <b>Prevalence Index worksheet:</b><br><table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">Total % Cover of:</td> <td></td> <td style="text-align: right;">Multiply by:</td> <td></td> </tr> <tr> <td>OBL species</td> <td style="text-align: center;">15</td> <td>x 1 =</td> <td style="text-align: center;">15</td> </tr> <tr> <td>FACW species</td> <td style="text-align: center;">70</td> <td>x 2 =</td> <td style="text-align: center;">140</td> </tr> <tr> <td>FAC species</td> <td style="text-align: center;">5</td> <td>x 3 =</td> <td style="text-align: center;">15</td> </tr> <tr> <td>FACU species</td> <td></td> <td>x 4 =</td> <td style="text-align: center;">0</td> </tr> <tr> <td>UPL species</td> <td></td> <td>x 5 =</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Column Totals:</td> <td style="text-align: center;">90</td> <td>(A)</td> <td style="text-align: center;">170 (B)</td> </tr> <tr> <td colspan="2" style="text-align: right;">Prevalence Index = B/A =</td> <td></td> <td style="text-align: center;">1.89</td> </tr> </table> | Total % Cover of: |  | Multiply by: |  | OBL species | 15 | x 1 = | 15 | FACW species | 70 | x 2 = | 140 | FAC species | 5 | x 3 = | 15 | FACU species |  | x 4 = | 0 | UPL species |  | x 5 = | 0 | Column Totals: | 90 | (A) | 170 (B) | Prevalence Index = B/A = |  |  | 1.89 |
| Total % Cover of:  |                  | Multiply by:  |                  |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| OBL species  | 15               | x 1 =   | 15               |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| FACW species   | 70               | x 2 =   | 140              |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| FAC species  | 5                | x 3 =   | 15               |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| FACU species   |                  | x 4 =   | 0                |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| UPL species  |                  | x 5 =   | 0                |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| Column Totals:   | 90               | (A)   | 170 (B)          |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| Prevalence Index = B/A =   |                  |   | 1.89             |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| 2. _____   |                  |   |                  |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| 3. _____   |                  |   |                  |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| 4. _____   |                  |   |                  |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| 5. _____   |                  |   |                  |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| Total Cover: <span style="background-color: #e0e0e0; padding: 2px;">15 %</span>                  |                  |   |                  |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| Herb Stratum   |                  |   |                  |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| 1. <i>Artemisia douglasiana</i>  | 10               | Yes   | FACW             | <b>Hydrophytic Vegetation Indicators:</b><br><input checked="" type="checkbox"/> Dominance Test is >50%<br><input checked="" type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)<br><br><sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.   |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| 2. <i>Apium graveolens</i>   | 10               | Yes   | FACW             |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| 3. <i>Eleocharis macrostachya</i>  | 10               | No  | FACW             |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| 4. <i>Anemopsis californica</i>  | 5                | No  | OBL              |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| 5. <i>Ambrosia psilostachya</i>  | 5                | No  | FAC              |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| 6. _____   |                  |   |                  |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| 7. _____   |                  |   |                  |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| 8. _____   |                  |   |                  |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| Total Cover: <span style="background-color: #e0e0e0; padding: 2px;">40 %</span>                  |                  |   |                  |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| Woody Vine Stratum   |                  |   |                  |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| 1. _____   |                  |   |                  | <b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="radio"/> No <input type="radio"/>   |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| 2. _____   |                  |   |                  |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| Total Cover: <span style="background-color: #e0e0e0; padding: 2px;">%</span>                     |                  |   |                  |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |
| % Bare Ground in Herb Stratum <span style="background-color: #e0e0e0; padding: 2px;">60 %</span> |                  | % Cover of Biotic Crust <span style="background-color: #e0e0e0; padding: 2px;">%</span> |                  |  |                   |  |              |  |             |    |       |    |              |    |       |     |             |   |       |    |              |  |       |   |             |  |       |   |                |    |     |         |                          |  |  |      |

Remarks: Datapoint taken within southern willow riparian forest next to Questhaven Road.

**SOIL**

Sampling Point: T2.2

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth<br>(inches) | Matrix        |     | Redox Features |   |                   |                  | Texture    | Remarks |
|-------------------|---------------|-----|----------------|---|-------------------|------------------|------------|---------|
|                   | Color (moist) | %   | Color (moist)  | % | Type <sup>1</sup> | Loc <sup>2</sup> |            |         |
| 0-20              | 7.5Y/R 4/1    | 100 | N/A            |   |                   |                  | Loamy sand |         |
|                   |               |     |                |   |                   |                  |            |         |
|                   |               |     |                |   |                   |                  |            |         |
|                   |               |     |                |   |                   |                  |            |         |

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.    <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (**LRR C**)
- 1 cm Muck (A9) (**LRR D**)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (**LRR C**)
- 2 cm Muck (A10) (**LRR B**)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

**Hydric Soil Present?**    Yes     No

Remarks: Soboba stony loamy sand, 9 to 30 percent slope presents entisol characteristics and there are often no hydric field indicators present for this soil as outlined by the NTCHS Field Indicators of Hydric Soils in the United States. Guidance for soil lacking hydric indicators is found in the 2008 Arid West Region (Version 2.0) Supplement Chapter 3, page 27 and states that 'a soil that meets the definition of a hydric soil is hydric whether or not it exhibits indicators'. This soil can be considered hydric by definition because both hydrophytic vegetation and wetland hydrology are simultaneously present at the point of investigation. Additional guidance used for soil lacking hydric indicators is found in the 2008 Arid West Region (Version 2.0) Supplement: Chapter 5, page 96, Problematic hydric soils; Soils with faint or no indicators, procedure, pages 98-99 1-4(b)(3[Vegetated Sand and Gravel Bars within Floodplains]).

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (**Nonriverine**)
- Sediment Deposits (B2) (**Nonriverine**)
- Drift Deposits (B3) (**Nonriverine**)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Recent Iron Reduction in Plowed Soils (C6)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) (**Riverine**)
- Sediment Deposits (B2) (**Riverine**)
- Drift Deposits (B3) (**Riverine**)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present?    Yes     No     Depth (inches): 0  
 Water Table Present?    Yes     No     Depth (inches): 0  
 Saturation Present?    Yes     No     Depth (inches): 0  
 (includes capillary fringe)

**Wetland Hydrology Present?**    Yes     No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Datapoint taken within edge of Escondido Creek.

**ATTACHMENT C**  
**PRELIMINARY JD FORM**



**PRELIMINARY JURISDICTIONAL DETERMINATION FORM**  
**U.S. Army Corps of Engineers**  
Basewide Utilities Infrastructure  
Marine Corps Base Camp Pendleton, California

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

**SECTION I: BACKGROUND INFORMATION**

**A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD):** July 1, 2010

**B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:**

George Briest, Engineering Manager  
Olivenhain Municipal Water District  
1966 Olivenhain Road

**C. DISTRICT OFFICE, FILE NAME, AND NUMBER:** Los Angeles District Regulatory Division, Los Angeles Section, South Coast Branch, San Diego Section

**D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:**

Please refer to Introduction and Description of Project located in the Jurisdictional Delineation Letter Report (JDLR).

**(Use the attached table to document multiple waterbodies at different sites)**

State: CA County/parish/borough: San Diego City: Escondido

Center coordinates of site (lat/long in degree decimal format): Lat: 33.072732 Long: -117.162662

UTM: 11N 460133.11 m E 3692145.33 m N

Name of nearest waterbody: Escondido Creek

Identify (estimate) amount of waters in the review area: 0.17 acres

Non-wetland waters: 0.03 acre

Cowardin Class: Riverine

Stream Flow: Permanent

Wetlands: 0.14

Cowardin Class: Palustrine

Name of any waterbodies on the site that have been identified as Section 10 waters: None

Tidal:

Non-Tidal:

**E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):**

Office (Desk) Determination. Date:

Field Determination. Date(s): April 21, 2010

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there "may be" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

- A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):**
- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: See Attachment A (figures) located in the JDLR.
  - Data sheets prepared/submitted by or on behalf of the applicant/consultant. Please see Attachment B of the JDLR (2008 Supplement Wetland Determination Data Forms — Arid West Region [Version 2.0]).
    - Office concurs with data sheets/delineation report.
    - Office does not concur with data sheets/delineation report.
  - Data sheets prepared by the Corps: .
  - Corps navigable waters' study: .
  - U.S. Geological Survey Hydrologic Atlas: .
    - USGS NHD data.
    - USGS 8 and 12 digit HUC maps.
    - U.S. Geological Survey map(s). Cite scale & quad name: 7.5' U.S. Geologic Service (USGS) Escondido Quad 1975 (USGS 2004) topographic quadrangles
  - USDA Natural Resources Conservation Service Soil Survey. Citation: Web Soil Survey.
  - National wetlands inventory map(s). Cite name: NWI Website.
  - State/Local wetland inventory map(s): .
  - FEMA/FIRM maps: FEMA has not designated flood zones within MCBCP. There have been, however, a number of independent flood assessments conducted; including several recently completed hydrologic and hydraulic studies of Escondido Creek occurring within the survey area.
    - 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
    - Photographs:  Aerial (Name & Date): 2008 Aerial Maps of the survey area (Digital Globe 2008)
  - Other (Name & Date): Please see Figures located in Attachment A of the JDLR. The Site Photos were taken April 21, 2010.
  - Previous determination(s). File no. and date of response letter: .
  - Other information (please specify): Please review the Wetland Delineation Report for this project.

**IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.**

\_\_\_\_\_  
 Signature and date of  
 Regulatory Project Manager  
 (REQUIRED)

\_\_\_\_\_  
 Signature and date of  
 person requesting preliminary JD  
 (REQUIRED, unless obtaining  
 the signature is impracticable)

## **PRELIMINARY JURISDICTIONAL DETERMINATION FORM**

**This preliminary JD finds that there "may be" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:**

District Office: **Los Angeles District**  
State: **CA**

File/ORM #  
City/County: **City of Encinitas/San Diego and Orange**

PJD Date: **July 8, 2010**

Person Requesting PJD: **George Briest, Engineering Manager Olivenhaim Municipal Water District**

| <b>Waters Type</b>                              | <b>Habitat</b>                              | <b>Latitude</b> | <b>Longitude</b> | <b>Cowardin Class</b>   | <b>Estimated Amount of Aquatic Resource in Review Area (in acres)</b> | <b>Class of Aquatic Resource</b> |
|---|---|-----------------|------------------|---|---|----------------------------------|
| Wetland   | Coastal and Valley Freshwater Marsh (52410) | 33.072732       | -117.162662      | Palustrine; Emergent, Persistent, Permanently Flooded, Fresh                      | 0.03  | Non-Section 10 Waters            |
| Wetland   | Southern Willow Riparian Forest (61330)     | 33.2858855      | -117.162602      | Palustrine; Forested; Broad-leaved Deciduous, Seasonally Flooded/Saturated, Fresh | 0.04  | Non-Section 10 Waters            |
| Wetland   | Southern Willow Scrub (63320)               | 33.2858855      | -117.162602      | Palustrine; Scrub/Shrub Broad-leaved, Deciduous, Seasonally Flooded, Fresh        | 0.07  | Non-Section 10 Waters            |
| Other Waters (Drainage Features [OHWM])/Culvert | Disturbed Wetland (11200)                   | 33.072657       | -117.162895      | Riverine; Artificial Substrate Intermittently Flooded, Fresh                      | 0.03  | Non-Section 10 Waters            |
| <b>Total</b>                                    |   |                 |                  |   | <b>0.17</b>   |                                  |



**APPENDIX D**

**CULTURAL TECHNICAL REPORT**



**DRAFT**  
**CULTURAL RESOURCES PHASE I SURVEY**  
**AND INVENTORY REPORT FOR THE**  
**PROPOSED OLIVENHAIN MUNICIPAL WATER DISTRICT**  
**UNIT AA RAW WATER PIPELINE PROJECT**  
**FROM THE**  
**SECOND SAN DIEGO AQUEDUCT TO THE**  
**DAVID C. MCCOLLOM WATER TREATMENT PLANT**

**(PROJECT NUMBER 09080154)**

***Prepared for:***

The Olivenhain Municipal Water District  
1966 Olivenhain Road  
Encinitas, CA 92024

Contact: George Briest, Engineering Manager  
760.753.6466

***Prepared by:***

AECOM  
1420 Kettner Boulevard, Suite 500  
San Diego, California 92101

---

Contact: Theodore G. Cooley M.A., R.P.A., Principal Investigator  
619.233.1454

July 2010



## National Archaeological Data Base Information

**Author(s):** Theodore G. Cooley, M.A., R.P.A., Principal Investigator

**Consulting Firm:** AECOM  
1420 Kettner Boulevard, Suite 500  
San Diego, California 92101  
(619) 233-1454

**Report Date:** July 2010

**Report Title:** Cultural Resources Phase I Survey and Inventory, Olivenhain Municipal Water District Raw Water Pipeline Project from the Second Aqueduct to the David C. McCollom Water Treatment Plant, San Diego County, California

**Type of Study:** Phase I Inventory and Field Survey

**New Sites:** None

**Updated Sites:** CA-SDI-5498, CA-SDI-13,832, CA-SDI-13,833, CA-SDI-13,834, CA-SDI-13,835, CA-SDI-13,836, CA-SDI-13,838, and CA-SDI-14,837

**USGS Quadrangle:** Rancho Santa Fe 7.5'

**Acreage:** 66 Acres

**Project Number:** 09080154.01

**Keywords:** 8 prehistoric sites (CA-SDI-5498, CA-SDI-13,832, CA-SDI-13,833, CA-SDI-13,834, CA-SDI-13,835, CA-SDI-13,836, CA-SDI-13,838, and CA-SDI-14,837)



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## EXECUTIVE SUMMARY

A Phase I cultural resources survey and inventory was completed for the Olivenhain Municipal Water District (OMWD), in unincorporated San Diego County to identify cultural resources along two alternative proposed raw water pipeline routes between Olivenhain Reservoir and the Second San Diego Aqueduct and the David C. McCollom Water Treatment Plant. OMWD proposes to construct a 48-inch pipeline along one of these routes to transport raw water from the Second San Diego Aqueduct to the water treatment plant, located adjacent to the Olivenhain Reservoir. The Project is situated in the coastal foothills approximately three miles north of the community of Rancho Santa Fe and 4 miles southeast of the City of San Marcos, along Escondido Creek Valley, in central San Diego County, California. The area of potential effects (APE) for cultural resources consists of a corridor 100 feet wide centered on the centerline of the proposed pipeline installation route in each alternative. This report includes impact assessments and management recommendations for any potentially significant cultural resources to assist OMWD in constructing, operating, and maintaining the project in compliance with the requirements of the California Environmental Quality Act (CEQA).

Seven prehistoric cultural resources have been recorded within, or within proximity of the APE of the Southern Alternative. Five of these resources were observed during the current survey to have been destroyed by previous construction activities with the remaining two substantially disturbed by these same activities. Six of the seven sites have been previously evaluated and determined as not significant resources under CEQA criteria (Mooney-Lettieri 1984; Brian F. Mooney 1992; Cook et al. 1995). Six prehistoric cultural resources have been recorded within, or within proximity of the APE of the Preferred Alternative. Four of these resources were observed during the current survey to have been destroyed by previous construction activities with the remaining sites substantially disturbed by these same activities. All six of these sites have been previously evaluated and determined as not significant resources under CEQA criteria (Mooney-Lettieri 1984; Brian F. Mooney 1992; Cook et al. 1995).

As none of these sites constitute significant cultural resources under CEQA criteria, if the 100-foot-wide APE is adhered to; that is, no earth-disturbing activities occur during construction activities beyond the 100-foot APE width surveyed, then, no impacts to significant cultural resources will occur. If future construction activities are proposed that will occur outside of the currently evaluated APE, then these additional areas will need to be examined and evaluated for potential for impacts to cultural resources that may exist in those areas. It is also recommended that if earth-moving activities during construction reveal buried cultural deposits, work should be

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temporarily halted/diverted at that location, and a qualified archaeologist should be contacted to evaluate the significance of the deposit.

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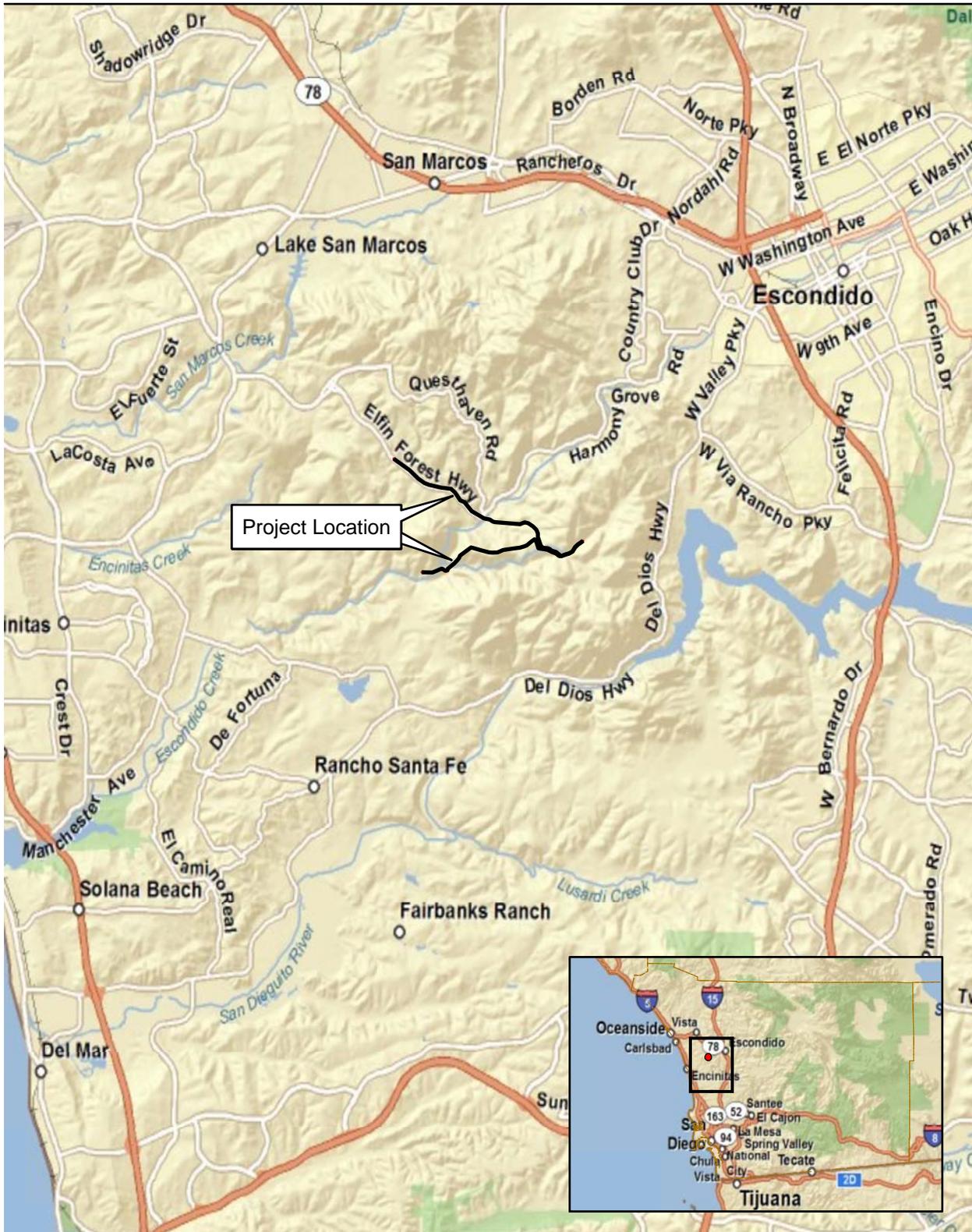
# CHAPTER 1

## INTRODUCTION

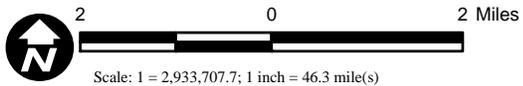
### 1.1 PROJECT DESCRIPTION

A Phase I cultural resources survey and inventory was completed for the Olivenhain Municipal Water District (OMWD), in unincorporated San Diego County to identify cultural resources along two alternative proposed raw water pipeline routes between Olivenhain Reservoir and the Second San Diego Aqueduct and the David C. McCollom Water Treatment Plant. OMWD proposes to construct a 48-inch pipeline along one of these routes to transport raw water from the Second San Diego Aqueduct to the water treatment plant, located adjacent to the Olivenhain Reservoir. The area of potential effects (APE) for cultural resources consists of a corridor 100 feet wide centered on the centerline of the proposed pipeline installation route in each alternative. This report includes impact assessments and management recommendations for any potentially significant cultural resources to assist OMWD in constructing, operating, and maintaining the project in compliance with the requirements of the California Environmental Quality Act (CEQA).

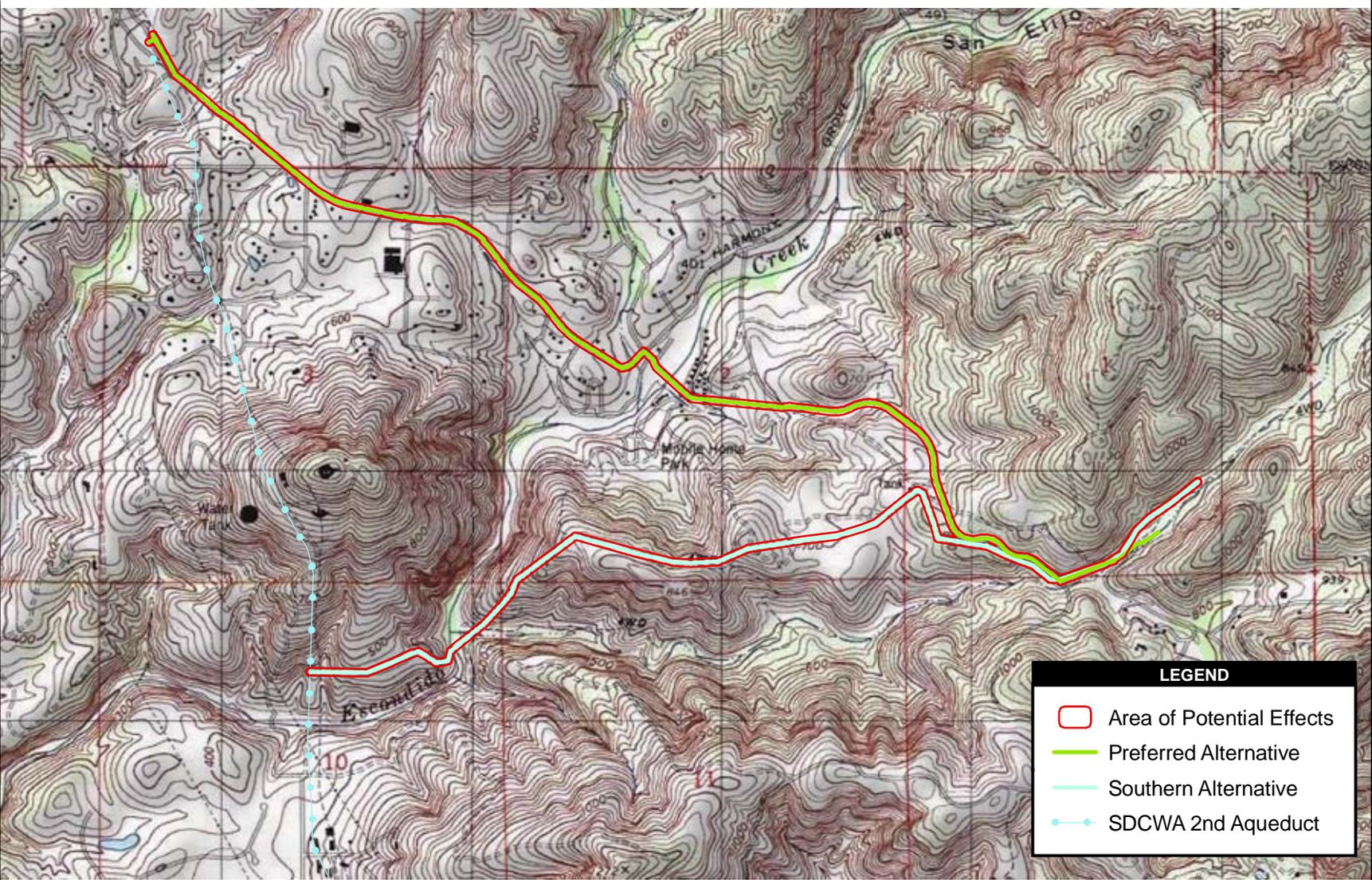
The project is situated in the coastal foothills approximately 3 miles north of the community of Rancho Santa Fe and 4 miles southeast of the city of San Marcos, along Escondido Creek Valley, in central San Diego County, California (Figure 1). The project lies within Section 34, Township 12 S, Range 3 West; and Sections 1, 2, 3, 10, and 11 of Township 13 South, Range 3 West (Figure 2). As is visible on a recent aerial photograph, the project area consists of the rural residential community of Elfin Forest and the heavily vegetated hilltops and slopes, and the sometimes densely vegetated, Escondido Creek watershed drainage system (Figure 3).



Source: ESRI



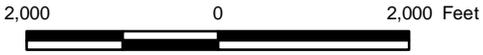
**Figure 1**  
**Project Vicinity**



**LEGEND**

- Area of Potential Effects
- Preferred Alternative
- Southern Alternative
- SDCWA 2nd Aqueduct

Source: USGS 7.5' Topographic Quadrangle Rancho Santa Fe CA 1983



Scale: 1 = 24,000; 1 inch = 2,000 feet

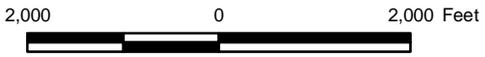
**Figure 2**  
**Project Location**



**LEGEND**

- Area of Potential Effects
- Preferred Alternative
- Southern Alternative
- SDCWA 2nd Aqueduct

Source: ESRI



Scale: 1 = 24,000; 1 inch = 2,000 feet

**Figure 3**  
**Aerial Photo of Project Area**

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## **CHAPTER 2 BACKGROUND**

### **2.1 EXISTING CONDITIONS**

#### **2.1.1 Geography**

The project is situated in the coastal foothills of San Diego County mostly within the watershed of Escondido Creek, which flows toward the coast and roughly bisects the Preferred Alternative alignment. Several unnamed tributary drainages run through the project area and enter Escondido Creek to the southwest of the project. Approximately 3.5 miles farther to the southeast, beyond Escondido Creek, is the San Dieguito River Valley. The project is approximately 8 miles east of the Pacific coastline.

The project area contains a foothill upland dissected by Escondido Creek and small tributaries that have created numerous narrow, steep canyons or ravines (see Figure 2). Elevations range between approximately 900 feet above mean sea level (AMSL) at the eastern end of the project alignments to approximately 320 feet AMSL in the Escondido Creek Valley at the southwestern end of the Southern Alternative. Double Peak reaches an elevation of 1,644 feet, 2 miles to the north of the project and Mt. Whitney an elevation of 1,736 feet, approximately 2.5 miles to the northeast of the project. The closest source of freshwater is Escondido Creek.

#### **2.1.2 Geology and Soils**

The project area contains almost entirely Mesozoic bedrock, either Cretaceous granitic rocks of the Southern California Batholith, or Triassic/Jurassic metavolcanic rocks of the Santiago Peak Volcanics Formation. Also present, in the northwestern area of the project, are small areas of unnamed sedimentary gravel deposits of Cenozoic, Tertiary age (Rogers 1965; Weber 1963).

Within the project area, two general soil associations are principally represented: the Cieneba-Fallbrook association and the Exchequer-San Miguel association. The Cieneba-Fallbrook association, characterized as very rocky with excessively drained to well-drained coarse sandy loams and sandy loams with a sandy clay subsoil over decomposed granodiorite bedrock, 9 to 75 percent slopes, is present over most of the eastern project area. Soil types represented include Cieneba coarse sandy loams, 15 to 30 percent slopes; Cieneba very rocky coarse sandy loams, 30 to 75 percent; and Cieneba-Fallbrook very rocky sandy loams, 30 to 65 percent slopes. These

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soils are associated with the physical and chemical decomposition of the granitic bedrock of the Southern California Batholith in the area. The Exchequer-San Miguel association, characterized as rocky, well-drained silt loams over metavolcanic bedrock with 30 to 70 percent slopes, is present in much of the western half of the project area. Soil types within this association include San Miguel-Exchequer rocky silt loams, 9 to 70 percent, and the San Miguel rocky silt loam, 9 to 30 percent slopes. These soils are associated with the physical and chemical decomposition of the Santiago Peak Volcanics Formation metavolcanic bedrock in the area. Minor occurrences of Vista rocky coarse sandy loam, 5 to 15 percent slopes; Placentia sandy loam, alluvial fan soils with 2 to 9 percent slopes; Visalia sandy loam with 2 to 9 percent slopes; Escondido very fine sandy loam with 5 to 9 percent slopes; and Huerhuero loam soils, eroded with 5 to 9 and 9 to 15 percent slopes, are also present, mostly in the west-central area, adjacent to Escondido Creek. These latter two Huerhuero soils generally develop in sandy marine sediments. Also present along the Escondido Creek bed are Riverwash and Soboba alluvial fan deposit soils (Bowman 1973). These various soil types account for more than 98 percent of the soils present within the project.

### **2.1.3 Biology**

The combination of soil, steep slopes, and small drainages described above currently supports a variety of vegetation habitats, including coastal sage scrub, southern mixed chaparral, riparian and riparian oak forest, and nonnative grassland, in addition to areas of disturbed habitat impacted by historic and modern development (Beauchamp 1986). Prehistorically, the natural communities covered most of the hillsides, ridges, and canyons, with interspersed areas of mostly native grasslands. Today, in the undisturbed upland areas of the project, vegetation consists, principally, of coastal sage scrub and/or southern mixed chaparral. It does not appear that many areas in the project where these communities are present have burned recently and, consequently, in these areas the vegetation is currently quite dense. Escondido Creek supports a thick growth of riparian oak forest, including sycamore (*Platanus racemosa*), willow (*Salix* sp.), coast live oak (*Quercus agrifolia*), Englemann oaks (*Quercus engelmannii*), and scrub oak (*Quercus dumosa*). While considerable disturbance is evident in some areas of the project, it appears that, prehistorically, the distribution of the various coastal sage scrub, chaparral, riparian, and riparian oak forest communities may have been similar to the present-day distribution. As indicated above, however, over the last 200 years these natural communities have been disturbed by historic development, agriculture, and cattle grazing, and today introduced grasses and other plants (i.e., nonnative grassland) are now present in native grassland areas and in areas where sage scrub was formerly present (Munz 1974; Beauchamp 1986). While riparian plants such as willows and rushes are present along Escondido Creek and some of the small unnamed tributary

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drainages today, prior to historic and modern activities, it seems likely that greater extents of riparian oak forest community with plants such as sycamore (*Platanus racemosa*), Fremont cottonwood (*Populus fremontii*), coast live oak (*Quercus agrifolia*), Englemann oaks (*Quercus engelmannii*), scrub oak (*Quercus dumosa*), and willow (*Salix* sp.), were present along larger drainages such as Escondido Creek.

Prehistorically, animal life around the project area undoubtedly included large to medium-sized mammal species such as grizzly bear (*Ursus horribilis*) and black bear (*Ursus americanus*), mountain lion (*Felis concolor*), bobcat (*Lynx rufus*), mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), badger (*Taxidea taxus*), ringtail (*Bassariscus astutus*), raccoon (*Procyon lotor*), and striped skunk (*Mephitis mephitis*). Numerous species of smaller mammals were also present, including jackrabbit (*Lepus californicus*), brush rabbit (*Sylvilagus bachmani*), cottontail rabbit (*Sylvilagus audubonii*), ground squirrel (*Spermophilus beecheyi*), pocket gopher (*Thomomys bottae*), and several species of mice and rats (Burt and Grossenheider 1976). Other animals included numerous predatory bird species such as red-tailed hawks (*Buteo jamaicensis*) and golden eagle (*Aquila chrysaetos*), and various amphibian and reptile species, including a large variety of lizards and snakes as well as pond turtles (*Clemmys marmorata*) in the Escondido Creek drainage (Peterson 1961; Stebbins 1966).

## **2.2 CULTURAL SETTING**

### **2.2.1 Prehistoric Period**

The following cultural history outlines and briefly describes the known prehistoric cultural traditions. The approximately 10,000 years of documented prehistory of the San Diego region has often been divided into three periods: Early Prehistoric period (San Dieguito tradition/complex); Archaic period (Milling Stone horizon, Encinitas tradition, La Jolla and Pauma complexes; and Late Prehistoric period (Cuyamaca and San Luis Rey complexes).

### **2.2.2 Early Prehistoric Period Complexes**

The Early Prehistoric period encompasses the earliest documented human habitation in the region in the area of the APE. The San Dieguito complex is the earliest reliably dated occupation of the area. The assemblage of artifacts associated with the San Dieguito complex, first identified by Rogers (1939, 1945, 1966), has been studied and elaborated by Warren and True (1961), Warren (1967) and Moriarty (1969, 1987). The complex correlates with Wallace's (1955) Early

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Man horizon, and Warren subsequently defined a broader San Dieguito tradition (1968). Uncalibrated radiocarbon dates for the San Dieguito complex range from sometime before 9,030±350 years before present (B.P.) to between 8,490±400 and 7,620±380 and years B.P. (Warren 1967, 1968). Recent calibrations, however, of the oldest of these dates indicate that they are actually between 10,000 and 11,000 years B.P. (Warren et al. 1998). The earliest component of the Harris Site (CA-SDI-149/316/4935B), a site located in proximity to the project, approximately 3.2 kilometers (2.0 miles) to the southeast, along the San Dieguito River, has been attributed by Warren (1966, 1967; Warren and True 1961; Vaughan 1982) to be characteristic of the San Dieguito complex. Artifacts from the lower levels of the site include leaf-shaped knives, ovoid bifaces, flake tools, choppers, core and pebble hammerstones; several types of scrapers, crescents, and short-bladed shouldered points (Warren and True 1961; Warren 1966).

Quarries attributed to the San Dieguito complex have also been recorded immediately adjacent to the project in the Rancho Cielo area, approximately, 1.6 kilometers (1 mile) to the southeast (Cook 1985), and 3.2 kilometers (2 miles) to the north in the Double Peak area (Smith 1990:109). While most of the evidence for the San Dieguito complex has derived from the coastal region of San Diego County, artifacts that have been attributed to the complex have also recently been found in the Cuyamaca Mountains approximately 45 kilometers (28 miles) southeast of the project (Pigniolo 2005). Some researchers see a San Dieguito complex with a primarily, but not exclusively, hunting subsistence orientation, as distinct from the more gathering-oriented complexes of traits that were to follow (Warren 1967, 1968, 1987; Warren et al. 1998). Others see a more diversified San Dieguito subsistence system as possibly ancestral to, or as a developmental stage for, the subsequent, predominantly gathering-oriented, complex denoted as the La Jolla/Pauma complex (cf. Bull 1983; Ezell 1987; Gallegos 1985, 1987, 1991; Koerper et al. 1991). Little evidence for the San Dieguito complex/Early Man horizon has been discovered in the coastal area, north of San Diego County. Given the presence of sites in adjacent areas associated with this complex, some of the limited lithic scatter sites identified in the project could be associated with this period. The lack of artifacts, however, diagnostic of the San Dieguito complex or radiocarbon results from project sites, dating to period, does not allow for a definite assignment of any of the resources in the project APE to this period.

### **2.2.3 Archaic Period Complexes**

In the southern coastal region, the Archaic period dates from circa 8,600 years B.P. to circa 1,300 years ago (Warren et al. 1998). During the Archaic period, the La Jolla/Pauma complexes have been identified from the content of archaeological site assemblages dating to this period. These assemblages occur at a range of coastal and inland sites, which appears to indicate that a

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relatively stable, sedentary, hunting and gathering complex, possibly associated with one people, was present in the coastal and immediately inland areas of San Diego County for more than 7,000 years. La Jolla/Pauma complex sites are considered to be part of Warren's (1968) Encinitas tradition and Wallace's (1955) Milling Stone horizon. The inland or Pauma complex, aspect of this culture, as defined by True (1958), lacks shellfish remains but is otherwise similar to the La Jolla complex and may, therefore, simply represent a noncoastal expression of the La Jolla complex (True 1980; True and Beemer 1982). The content of these site assemblages is characterized by manos and metates, shell middens, terrestrial and marine mammal remains, burials, rock features, cobble-based tools at coastal sites, and increased hunting equipment and quarry-based tools at inland sites. This artifact assemblage also includes bone tools; doughnut stones; discoidals; stone balls; plummets; biface points/knives; Elko-eared dart points; and beads made of stone, bone, and shell. Beginning approximately 5500 B.P., and continuing during the latter half of the Archaic period, evidence for the use of hunting, and for the gathering and processing of acorns for subsistence, gradually increases through time. The evidence in the archaeological record consists of artifacts such as dart points and mortar and pestle, which are essentially absent during the early Archaic period. The initial and subsequently increasing use of these resources during the middle and late Archaic constitutes a major shift in the subsistence system of prehistoric populations in the southern coastal region. As with the San Dieguito complex, most of the archaeological evidence for the Encinitas tradition/La Jolla/Pauma complexes (Milling Stone horizon) in the county is derived from sites in the coastal areas (e.g., Shumway et al. 1961; Smith and Moriarty 1985; Cooley and Mitchell 1996; Gallegos and Kyle 1998; Cooley et al. 2000). Most frequently, but not exclusively, these sites are associated with coastal valleys, estuaries, and/or embayments that are present along the San Diego coast, south from the San Luis Rey River (Gallegos 1995:200, 2002).

To the east of the project, in the higher elevations in the San Diego mountain areas, sites associated with this period are relatively rare or ephemeral. In the inland mountains and upper elevation foothill areas of San Diego County, evidence for sites attributable to the Archaic Encinitas tradition/La Jolla/Pauma complexes is less common, relative to the complexes that succeed them (e.g., True 1970; May 1971; Laylander and Christenson 1988; Raven-Jennings and Smith 1999; Cooley and Barrie 2004). McDonald (1995:14) recently observed that "Most sites in the Laguna Mountains can be expected to date from late prehistoric or ethnohistoric occupation of the region, and Archaic period remains, while not unknown, are relatively rare." The location of the project within 11 kilometers (7 miles) of the coast places it within the coastal area where sites that date to the Archaic period, and that contain La Jolla or Pauma complex assemblages, are relatively common (Warren et al. 1998). The Harris Site (CA-SDI-149), for example, located near the project along the San Dieguito River to the south, lies approximately 13 kilometers

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(8 miles) from the coast. This site, and others in proximity to it, in addition to the early component mentioned above, also contains stratigraphic components with La Jolla complex assemblages dating to the Archaic period (Warren and True 1961; Warren 1967; Carrico et al. 1993; Cooley 2006). Between the project and the coast, sites dating to the Archaic period are more numerous. Nearby, to the west of the project, around Batiquitos Lagoon, more than 20 sites have been documented spanning the early to middle Archaic period from circa 8200 to 3500 B.P. (Gallegos 1991; Masters and Gallegos 1997). At the mouth of the San Dieguito River, investigations at site CA-SDI-10,238 have produced radiocarbon dates from a shell midden deposit, spanning the middle to early Archaic period from 5790±110 to 7690±60 B.P. (Cooley et al. 2000). The Del Mar Site (CA-SDI-10,940), also located near the mouth of the San Dieguito River, also has a large number of radiocarbon dates that span this period (Cooley 2008). With the presence of numerous sites in adjacent areas associated with, and dating to, the Archaic period, it might be expected that sites from this period would be present in the project APE. The lack of artifacts, however, diagnostic of the La Jolla/Pauma complex or radiocarbon results from project sites dating to this period does not currently allow for a definite assignment of any of the resources in the project APE to this period.

#### **2.2.4 Late Prehistoric Period Complexes**

Similar to the subsistence changes noted above, occurring during the middle and late Archaic period, the end of the Encinitas tradition/La Jolla/Pauma complexes and the beginning of the Late period is seen as marked by evidence for a number of new tool technologies and subsistence shifts in the archaeological record. Compared to those noted for the Archaic period, those occurring at the onset of the Late Prehistoric period are rather abrupt changes. The magnitude of these changes and the short period of time within which they took place seem to indicate a significant change in subsistence practices in San Diego County (circa 1500 to 1300 B.P.). The changes observed include a shift from atlatl and dart to the bow and arrow, a reduction in shellfish gathering in some areas (possibly due to silting of the coastal lagoons), and the storage of crops, such as acorns, by Yuman and Shoshonean peoples in the county area. In addition, new traits such as the production of pottery and cremation of the dead were introduced during the Late Prehistoric period.

An explanation for at least some of these changes involves movements of people during the last 2,000 years. By 2,000 years ago, Yuman-speaking people occupied the Gila/Colorado River drainages of western Arizona (Moriarty 1968) and were apparently migrating westward. Moriarty (1966, 1967) has suggested a preceramic Yuman phase, as evidenced by his analysis of materials recovered from the Spindrift site in La Jolla. Based on a limited number of radiocarbon

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samples, Moriarty concluded that preceramic Yumans penetrated into, and occupied, the San Diego coast circa 2,000 years ago, and that by 1,200 years ago ceramic technology had diffused from the eastern deserts. These Yuman speakers may have shared cultural traits with the people occupying eastern San Diego County before 2000 B.P., but their influence is better documented throughout the county area after 1300 years B.P. with the introduction of small points, ceramics, Obsidian Butte obsidian, and the practice of cremation of the dead.

During Late Prehistoric times, the area of the project would have been within the area commonly associated with the archaeologically defined Cuyamaca complex. True (1970) proposed the concept of the Cuyamaca complex based on excavations within Cuyamaca Rancho State Park and San Diego Museum of Man collections as a vehicle for contrasting southern San Diego County, Late period archaeological assemblages from Meighan's (1954) San Luis Rey complex in the northern county area. It is now widely accepted that the Cuyamaca complex is associated with the Hokan-based, Yuman-speaking peoples (Diegueño/Kumeyaay) and that the San Luis Rey complex is associated with the Takic Shoshonean-speaking peoples (Luiseño). Distinctions between these archaeological complexes include the presence or absence, or differences in the relative occurrence of, certain diagnostic artifacts in site assemblages. Cuyamaca complex sites, for example, generally contain small projectile points, with both Cottonwood Triangular style points and Desert Side-notched points occurring. Desert Side-notched points, on the other hand, are quite rare or absent in San Luis Rey complex sites (Pigniolo 2001). Obsidian Butte obsidian is far more common in Cuyamaca complex sites than in San Luis Rey complex sites. Ceramics, while present during the Late Prehistoric period throughout San Diego County, are more common in the southern or Cuyamaca complex portions of San Diego County, where they occur earlier in time and appear to be somewhat more specialized in form. A variety of vessel types, along with rattles, straight and bow-shaped pipes, and effigies, have been found within the areas of both complexes. Archaeological evidence from San Luis Rey complex sites indicates both inhumation and cremation interment of the dead; however, at Cuyamaca complex sites almost exclusive use of cremation, often in special burial urns for interment, is typical.

As indicated above, relative to Archaic period sites, Late Prehistoric period sites, attributable to the San Luis Rey or Cuyamaca complexes are less common in the near-coastal areas of the county. Observations made by Christenson (1990, 1992) and by Gallegos (2002) about general settlement patterns during the Late Holocene indicate that the ethnographic Kumeyaay preferred site locations in valley areas, followed closely by hillsides and canyons. Gallegos (2002) has noted that research in the north county area indicates that acorn collecting and hunting occurred at the summer-fall camp, usually located near an oak grove. Gallegos (1995:200) states that "For San Diego County, there is temporal patterning, as the earliest sites are situated in coastal valleys

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and around coastal lagoons. Late period sites are also found in coastal settings, but are more common along river valleys and interior locations.” With the presence of sites in areas adjacent to the project, and associated with, and dating to, the Late Prehistoric period (e.g., Cook et al. 1995; Gallegos et al. 2001), sites from this period could be present in the project APE. Most of the sites previously recorded and investigated within the project APE, however, consist of bedrock milling stations or sparse lithic scatters. The lack of artifacts at these sites, diagnostic of the Cuyamaca or San Luis Rey complexes, or radiocarbon results from the sites dating to the period, does not currently allow for a definite assignment of any of the resources recorded in the project APE to this period.

### **2.2.5 Historic Period**

Prehistory ended and historic cultural activities began within what is now San Diego County, between the late 1500s and early 1900s. These cultural activities provide a record of Spanish, Mexican, and American rule, occupation, and land use. An abbreviated history of this area is presented to provide a background on the presence, chronological significance, and historical relationship of cultural resources within the study area.

### **2.2.6 Spanish Period**

The historic period began in California with the early exploration by Juan Cabrillo in 1542. In 1769, an expedition headed by Gaspar de Portolá traveled north from San Diego to extend the Spanish Empire from Baja California into Alta California by seeking out locations for a chain of presidios and missions in the area. The Spanish period extended to 1821 and encompassed early exploration and subsequent establishment of the San Diego presidio, and the San Diego, San Luis Rey, and San Juan Capistrano missions between 1769 and 1821. During this period the introduction of horses, cattle, sheep, pigs, corn, wheat, olives, and other agricultural goods and implements, and a new method of building construction and architectural style also occurred in California. While, apparently, the Spaniards make little mention of them, ethnographers have indicated that two inland coastal Indian villages are located in the vicinity of the project. Kroeber (1925:Plate 57) and Carrico (Trafzer and Carrico 1992:53) indicate an Indian village, *Shikapa*, was located somewhere inland from the coast in the vicinity of the lower San Marcos Creek valley. This valley is located to the north and west of the project, and extends to the west to Batiquitos Lagoon. Kroeber also notes a village, *Hakutl*, located in the vicinity and north of lower Escondido Creek (1925:Plate 57). Although uncertain, both of these general village locations could be within 3 miles of the project. While several recorded archaeological sites

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could possibly be the remains of these villages, no definite locations have, as yet, been agreed upon.

More is known historically about several Diegueño (Ipai) Indian villages, documented to have been located along coastal estuaries in the vicinity of the project. These villages were first noted by the Portola expedition in 1769, as it traveled north up the coast, while crossing several of the local drainages (Carrico 1977:34–35). As the expedition crossed Escondido Creek, they encountered a “group of Kummeyaay from a nearby village” (Carrico 1977:35). Continuing north, they reached Encinitas Creek where they stayed overnight and where another village was noted. The expedition then entered the San Marcos Creek Valley, near Batiquitos Lagoon, where the Spaniards noted an inhabited Indian village in an adjacent valley (Carrico 1977:35). At each of these locations, the Spaniards interacted with a number of the local residents and found them to be quite gregarious. Some confusion, however, apparently exists in the records about the villages noted by the Spaniards at each of these locations. While a village at San Dieguito, to the south, is generally referred to in mission records as San Dieguito, villages located at either the nearby Batiquitos or San Elijo lagoons were also referred to by this name in later mission records (Carrico 1977:35). According to Carrico “The name San Dieguito, unfortunately, occurs in mission records as an alias for San Elijo, Batequitos [sic], and San Benito Palermo, another unspecified village” (1977:35). Although somewhat uncertain, Carrico has identified two of these general village locations with native names, *Ajopunguile* for “Batequitos,” and *Jeyal* for San Elijo (Trafzer and Carrico 1992:53). After 1821, California came under Mexican rule, but Spanish culture and influence remained as the missions continued to operate as they had in the past, and laws governing the distribution of land were also retained for a period of time.

### **2.2.7 Mexican Period**

Following Mexico’s independence from Spain in 1821, the Mexican period began, which lasted until 1848, ending as a result of the Mexican–American War. During this period most Spanish laws and practices continued until shortly before secularization of the Mission San Luis Rey, Mission San Juan Capistrano, and Mission San Diego de Alcalá in the 1830s. Some large grants of land were made prior to 1834, but secularization of mission lands in 1835 and division of the mission’s large grazing holdings made numerous tracts available for redistribution as land grants and ushered in the Rancho Era. After the missions were secularized, many of the natives were forced to work on Mexican ranchos, although those living farther from the ranchos maintained their traditional life styles longer. During this period, Native American populations in California came under increasing pressure as new ranches were established under the land grant system. New grants were made from inland territories still occupied by the Kumeyaay, forcing them to

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acculturate or move away. Oftentimes, the Kumeyaay would relocate away from the intruders and farther into the back country. In several instances, however, former mission neophytes organized pueblos and attempted to live within Mexican law and society. The most successful of these was the Pueblo of San Pasqual, located inland along the San Dieguito River Valley, founded by Kumeyaay who were no longer able to live at the Mission San Diego de Alcalá (Farris 1994; Carrico 2008). With former Presidio soldiers becoming civilian residents, the Pueblo of San Diego was established, transportation routes were expanded, and cattle ranching continued to predominate over other agricultural activities, with trade in hides and tallow increasing during the early part of this period.

### **2.2.8 American Period**

Mexico's defeat in the Mexican–American War in 1848 initiated the American period, when Mexico ceded California to the United States under the Treaty of Guadalupe Hidalgo. Subsequently, land ownership by the Mexicans living in California became a matter of considerable legal wrangling. A Lands Commission was created by the State of California in response to the Act of 1851 (in apparent violation of the treaty), to validate land ownership throughout the state through settlement of land claims. Because of legal costs and a lack of what Americans considered to be sufficient evidence to provide title claims, however, few Mexican ranchos remained intact, and much of the land that once constituted rancho holdings became public land, available for settlement by emigrants to California. The area surrounding the present project alignments was subject to the same dilemmas of land ownership as other parts of San Diego County during the transition from Mexican to American governance. The project area along today's Escondido Creek sat between San Diego alcalde Juan María Osuna's 1840s grant Rancho San Dieguito to the west and English coastal trader Joseph Snook's 1840s grant Rancho Bernardo to the east. In response to the Land Act of 1851, the 8,825-acre Rancho San Dieguito was claimed by Juliana Osuna in 1871 and the 17,763-acre Rancho Bernardo was patented by Snook's widow in 1874 (California State Archives 2007). Only a small number of Mexican-era ranchos continued intact after the Land Act, due to the costs and logistics of proving title claims to the U.S. Government. The discovery of gold in California, population migration following the end of the Civil War, and the Homestead Act of 1862 all drew new settlers to the state during the second half of the nineteenth century.

The discovery of gold in the state, the conclusion of the Civil War, and the subsequent availability of free land through passage of the Homestead Act, all resulted in an influx of people to California and the San Diego region after 1848. California's importance to the country as an agricultural area began in the latter half of the nineteenth century and was subsequently

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supported by the construction of connecting railways for the transportation of people and goods. When California became a part of the United States, homesteading of the land increased, and many of the areas traditionally used for hunting and gathering by local Native American groups were fenced for ranches and farms. Reservations were established to offset this encroachment, but instead forced many natives to adopt a more sedentary life style based on Anglo economics as an alternative to moving to reservations (Carrico 2008). As in other parts of the state, local Native Americans were forced to contend with new laws and policies created by a U.S. government located far away from the local area. They attempted to maintain their associations with the Hispanic community, while attempting to cope with an ever-increasing new Anglo population. During the second half of nineteenth century, deprivations and tribulations were many and adaptation to the new ways of the Anglo settlers was very difficult for the local native population (Carrico 2008).

During the period of the late 1880s, cycles of “boom and bust” reflected by the growth and decline of towns, were characteristic and occurred in response to an ever increasing population, and substantial but unstable economic growth. Thousands of people came to the county to take advantage of the possibilities of the region, but many found that their dreams were not to be realized here and moved on. By the end of the 1880s, the “boom” had become a “bust” and thousands of people left. However, not all of them left and many remained to form the foundations of many small pioneering communities across the county. These families practiced dry farming, planted orchards, raised livestock, built schools and post offices, and created a life for themselves in the valleys and mesas of San Diego County. Gradually, the farming and ranching lifestyle of the post-Civil War period of the late nineteenth century and early twentieth century faded away with the added influence of military development, beginning in 1916–17 during World War I. During World War II, the need to fight a two-ocean war resulted in substantial development in many parts of the state by the military, and thousands of people moved to the state in response to a good climate and defense industry jobs or military transfers. In the 60 years subsequent to World War II, urban development burgeoned along the coast, and the San Diego area has seen a spike in residential population density in recent decades.

### **2.3 ETHNOGRAPHY**

The project is situated within the northernmost extent of the traditional territory of prehistoric Yuman people who inhabited the area at the time of European contact. The southern boundary between the territories of the Shoshonean Luiseño/Juaneño and the Yuman Northern Diegueño has been delineated as extending from the coast, east along Agua Hedionda Creek as far as the northern tip of the valley of San José and Palomar Mountain (Sparkman 1908; Kroeber 1925;

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Bean and Shipek 1978; Shipek 1995). With this delineation, the project lies within the territory defined for the Yuman Northern Diegueño. These people were designated as the Diegueño by the Spaniards, a term derived from the mission with which they came to be associated after 1769, i.e., the San Diego Mission Alcalá. More recently, Shipek (1982) has initiated use of a Yuman language term “Kumeyaay” for the people formerly designated as the Diegueño. The term Diegueño was adopted by early anthropologists (e.g., Kroeber 1925) and further divided into the southern and northern Diegueño. According to Carrico (1998:V-3):

The linguistic and language boundaries as seen by Shipek (1982) subsume the Yuman speakers into a single nomenclature, the Kumeyaay, a name applied previously to the mountain Tipai or Southern Diegueño by Lee (1937), while Almstedt (1974:1) noted that ‘Ipai applied to the Northern Diegueño with Tipai and Kumeyaay for the Southern Diegueño. However, Luomala (1978:592) has suggested that while these groups consisted of over 30 patrilineal clans, no singular tribal name was used and she referred to the Yuman-speaking people as ‘Ipai/Tipa. Other researchers have designated the Kumeyaay living north of the San Diego River as ‘Ipai (Northern Diegueño), and those south of the river and into Baja California as Tipai (Southern Diegueño) (Langdon 1975:64–70; Hedges 1975:71–83).

With a long history in the area, the Kumeyaay at the point of contact in the late 1700s were settled in permanent villages or rancherias. While their exact locations are not certain, several villages, including *Hakutl*, *Shikapa*, *Jeyal* (San Elijo), and *Ajopunguile* (“Batequitos”), are indicated to have been located in the general area of the project (Kroeber 1925) and/or (Carrico [in Trafzer and Carrico] 1992:53).

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## **CHAPTER 3**

### **RECORDS SEARCH RESULTS**

A records search was conducted on October 13, 2009, by the South Coastal Information Center (SCIC), San Diego, California (Appendix A). The purpose of this search was to identify any previously recorded resources within or near the project and to assess the potential for cultural resources in the project APE. Because the Southern Alternative route was previously surveyed and two pipelines were already constructed within the corridor, a narrower search radius was conducted for this alternative. This search was to determine if any additional sites had been recorded in areas immediately adjacent to the previously studied corridor since the pipeline construction. The search consisted of all recorded cultural resources and previously conducted studies within a 1,000-foot radius of the Southern Alternative and within a ½-mile radius of the Preferred Alternative.

#### **3.1 PREVIOUS STUDIES**

The records search indicated that 23 previous cultural resources studies are on file at the SCIC, or at AECOM, that have included portions of one or both of the project alignments. A total of five other studies have occurred within 1,000 feet of the Southern Alternative, and 23 within ½ mile of the Preferred Alternative (Tables 1 and 2). While most of the 23 studies included only minor portions of the APE, several studies were cultural resources inventories or resource evaluation studies conducted for either the OMWD or the San Diego County Water Authority that involved previous pipeline or other facility construction projects within portions of the current APE (e.g., Mooney-Lettieri and Associates 1984; Brian F. Mooney Associates 1992; Cook et al. 1995; Ogden 1995; Wahoff and Underwood 2000, Wahoff and Apple 2002, Wahoff and Willey 2003).

**Table 1. Cultural Resource Studies within, and within a 1,000-Foot Radius of, the Southern Alternative APE**

| <b>NADB#</b> | <b>Author</b>   | <b>Date</b> | <b>Title</b>   |
|--------------|---|-------------|--|
| 1121933      | May, Ronald V.<br>(May 74-01)   | 1974        | <b>The Archaeological Resources of Byron White Lot Split TPM 10697. County of San Diego Environmental Management Impact Division. Submitted to County of San Diego Environmental Review Board.</b>   |
| 1122126      | Consulease<br>(Consulease 75-01)  | 1975        | <b>Environmental Analysis of TPM 11055, TPM 11076, HDPM 4625 Harmony Grove, County of San Diego. Consulease, Inc. Submitted to Byron F. White.</b>   |
| 1122168      | Mooney-Lettieri and Associates, Inc.<br>(MLA 84-05)                       | 1984        | <b>Draft Supplemental Environmental Impact Report for the Rancho Cielo Project. Mooney-Lettieri and Associates, Inc. Submitted to Rancho Cielo Association.</b>  |
| 1122405      | Smith, Brian F.<br>(Smith 91-171)   | 1991        | An Archaeological Survey of the McGrath Subdivision Project. Brian F. Smith and Associates. Submitted to Stevens Planning Group.   |
| 1122580      | Gallegos, Dennis and Ivan Strudwick<br>(Gallego 93-133)                   | 1993        | <b>Survey and Test Report for the Rancho Penasquitos Pipeline (P5E11) County Water Authority, County of San Diego. Gallegos and Associates. Submitted to P &amp; D Technologies.</b>   |
| 1122604      | Cook, John<br>(Cookj 92-39)   | 1992        | Cultural Resources Survey and Significance Evaluation of the Santa Fe Creek Project. Brian F. Mooney. Submitted to Escondido Creek Development, Inc.   |
| 1122771      | County of San Diego<br>(CountySD 92-34)                                   | 1992        | Draft Environmental Impact Report for Santa Fe Creek, San Diego County, California. County of San Diego. Submitted to Escondido Creek Development, Inc.  |
| 1123280      | <b>American Pacific Environmental Consultants<br/>(APEC 80-19)</b>        | <b>1980</b> | <b>Rancho Cielo: Draft Environmental Impact Report – Volumes I &amp; II. American Pacific Environmental Consultants (APEC). Submitted to Rancho Cielo Property Owners.</b>   |
| 1123419      | Shackley, Steven and Stephan Van Wormer<br>(Shackley 89-04)               | 1989        | A Cultural Resources Evaluation and Treatment Plan for SDI-11222 the Israel Adobe Appendix B Cultural Resources Technical Appendix for the Mt. Israel Reservoir Project. Brian F. Mooney. Submitted to Olivenhain Municipal Water District.    |
| 1124157      | Whitney-Desautels, Nancy A.<br>(Desautel 91-04)                           | 1991        | <b>Archaeological and Historical Literature Search and Records Check for Alternative Alignments for Highway 680 San Diego County, California. Scientific Resource Survey, Inc. (SRS). Submitted to Curtis Scott Englehorn and Associates.</b>  |
| 1124967      | RECON<br>(RECON 82-109)   | 1982        | <b>Draft for Elfin Forest Village, County of San Diego, California. Submitted to Joseph Murat and Veronica Murat Trust.</b>  |
| 1126245      | Cook, John, Jerry Schaefer, Drew Palette, and Carol Serr<br>(CookJ 95-44) | 1995        | <b>Cultural Resource Significance and National Register Eligibility Evaluation Program for Proposed Olivenhain Water Storage Project, San Diego, California. Brian F. Mooney Associates. Submitted to Olivenhain Municipal Water District.</b> |
| 1127774      | McFarland, Sharon, and Brian F. Smith<br>(McFarland 00-6)                 | 2000        | <b>An Archaeological Survey for the Sherman and Sons Subdivision Project, San Diego County, California. Brian F. Mooney Associates. Submitted to Sherman and Sons, LLC.</b>  |

| NADB#   | Author   | Date | Title   |
|---------|--|------|---|
| 1128052 | <b>Gallegos, Dennis R. and Nina M. Harris (Gallego 99-260)</b> | 1999 | <b>Cultural Resource Literature Review for the North Coast Transportation Study, Arterial Streets Alternative, San Diego County, California. Gallegos and Associates. Submitted to MLF/San Diego Association of Governments.</b>                              |
| 1129253 | Underwood, Jackson (UnderJ 04-04)                              | 2004 | Addendum 15 Supplemental Cultural Resources Inventory Emergency Storage Project. Olivenhain Reservoir Landscape Area, San Diego County, California. EDAW, Inc. Submitted to San Diego County Water Authority.   |
| 1129276 | <b>Wahoff, Tanya and Jackson Underwood (WahoffT 00-15)</b>     | 2000 | <b>Supplemental Cultural Resources Inventory Emergency Storage Project, Olivenhain Reservoir and Olivenhain to Second Aqueduct Pipeline, San Diego County, California. KEA Environmental, Inc. Submitted to San Diego County Water Authority.</b>             |
| 1129820 | <b>Berryman, Stanley R. (BerrymanS 75-91)</b>                  | 1975 | <b>Archaeological Investigations of Harmony Groves. Berryman Archaeological Consultants. Submitted to Consulate Corporation.</b>  |
| 1129824 | <b>Cook, John R. (Cook 83-100)</b>                             | 1983 | <b>An Archaeological Test/Mitigation of SDI-7980 and W-267. Archaeological Systems Management. Submitted to Ms. Charlene Pavlick, Trustee.</b>  |
| -       | <b>Mooney-Lettieri and Associates</b>                          | 1984 | <b>Cultural Resources Inventory for the Mt. Israel Reservoir. Report submitted to, and on file at, the Olivenhain Municipal Water District.</b>   |
| -       | <b>Brian F. Mooney Associates</b>                              | 1992 | <b>Supplemental Cultural Resource Survey for the Mt. Israel Reservoir Project. Report submitted to, and on file at, the Olivenhain Municipal Water District.</b>  |
| -       | <b>Ogden Environmental and Energy Services Company</b>         | 1995 | <b>San Diego County Water Authority Emergency Water Storage Project Cultural Resources Technical Report for Draft Environmental Impact Statement. Report submitted to the San Diego County Water Authority and U.S. Army Corps of Engineers, Los Angeles.</b> |
| -       | <b>Wahoff, Tanya and Lorraine M. Willey</b>                    | 2003 | <b>Addendum 9 Supplemental Cultural Resources Survey, Emergency Storage Project, Escondido Creek Wetland Mitigation Project, San Diego, County, California. Report submitted to the San Diego County Water Authority.</b>                                     |

Studies encompassing some portion of the project APE are in bold type.

**Table 2. Cultural Resource Studies within, and within a ½-Mile Radius of, the Preferred Alternative APE**

| NADB#   | Author  | Date | Title  |
|---------|---|------|--|
| 1120152 | <b>Berryman, Stanley R. (BerrymanS 75-13)</b> | 1975 | <b>Archaeological Study of McCarty Lot Splits. Berryman Archaeological Consultants. Submitted to North Star Realty.</b>  |
| 1121476 | Scientific Resource Surveys, Inc. (SRS 81-16) | 1981 | Archaeological Test Report II on TMP 13960 (Zupkas Lot Split) Located in the Harmony Grove Area of the County of San Diego, California. Scientific Resource Surveys, Inc. Submitted to Wayne Zupkas. |

| <b>NADB#</b>   | <b>Author</b>  | <b>Date</b> | <b>Title</b>  |
|----------------|--|-------------|---|
| 1121847        | Fink, Gary R.<br>(Fink 76-35)                                      | 1976        | Archaeological Survey for the Proposed San Marcos Landfill, San Diego, California Project No. UJ0190. San Diego County Engineers Department. Submitted to Department of Sanitation & Flood Control.   |
| <b>1121933</b> | <b>May, Ronald V.<br/>(May 74-01)</b>                              | <b>1974</b> | <b>The Archaeological Resources of Byron White Lot Split TPM 10697. County of San Diego Environmental Management Impact Division. Submitted to County of San Diego Environmental Review Board.</b>  |
| 1122123        | City of San Marcos<br>(CitySM 89-01)                               | 1989        | Initial Environmental Assessment Byron White Property Specific Plan, San Marcos. City of San Marcos. Submitted to ABQ Development Corporation.  |
| <b>1122126</b> | <b>Consulease<br/>(Consulease 75-01)</b>                           | <b>1975</b> | <b>Environmental Analysis of TPM 11055, TPM 11076, HDPM 4625 Harmony Grove, County of San Diego. Consulease, Inc. Submitted to Byron F. White.</b>  |
| <b>1122168</b> | <b>Mooney-Lettieri and Associates, Inc<br/>(MLA 84-05)</b>         | <b>1984</b> | <b>Draft Supplemental Environmental Impact Report for the Rancho Cielo Project. Mooney-Lettieri and Associates, Inc. Submitted to Rancho Cielo Association.</b>   |
| 1122197        | P and D Technologies, Inc.<br>(PDTech 90-01)                       | 1990        | San Elijo Ranch Specific Plan Draft Environmental Impact Report P and D Technologies. Submitted to the City of San Marcos.  |
| <b>1122419</b> | <b>Smith, Brian F.<br/>(Smith 92-160)</b>                          | <b>1992</b> | <b>An Archaeological Survey of the Weedman Lot Split Project. Elfin Forest, County of San Diego. Brian F. Smith and Associates. Submitted to Clifford W. Weedman.</b>   |
| 1122613        | Advanced Planning and Research Associates<br>(APRA 78-22)          | 1978        | Archaeological Survey Report, Zupkas Lot Split Near Harmony Grove, California. Advanced Planning and Research Associates. Submitted to Wayne R. Zupkas.   |
| 1122661        | Smith, Brian F.<br>(Smith 90-114)                                  | 1990        | Results of an Archaeological Survey and Evaluation of Cultural Resources within the San Elijo Ranch Specific Plan. Brian F. Smith Associates. Submitted to P and D Technologies.  |
| 1122665        | Smith, Brian F.<br>(Smith 90-118)                                  | 1990        | An Archaeological Survey of the Grismer Lot Split Project, Elfin Forest. County of San Diego. Brian F. Smith Associates. Submitted to Craig Lorenz and Associates.  |
| 1123064        | Smith, Brian<br>(Smith 85-268)                                     | 1985        | An Archaeological Reconnaissance of the 1800-acre Partin-Bennett Project, San Marcos, California. Brian F. Smith. Submitted to Partin-Bennett Brokerage Services, Inc.  |
| <b>1123280</b> | <b>American Pacific Environmental Consultants<br/>(APEC 80-19)</b> | <b>1980</b> | <b>Rancho Cielo: Draft Environmental Impact Report – Volumes I &amp; II. American Pacific Environmental Consultants (APEC). Submitted to Rancho Cielo Property Owners.</b>  |
| 1123419        | Shackley, Steven and Stephan Van Wormer<br>(Shackley 89-04)        | 1989        | A Cultural Resources Evaluation and Treatment Plan for SDI-11222 the Israel Adobe Appendix B Cultural Resources Technical Appendix for the Mt. Israel Reservoir Project. Brian F. Mooney. Submitted to Olivenhain Municipal Water District. |
| 1124129        | Gallegos, Dennis<br>(Gallegos 91-91)                               | 1991        | Historical/Archaeological Survey Report for the Olivenhain MWD Alternative Sites County of San Diego, California. Gallegos & Associates. Submitted to Olivenhain Municipal Water District.  |

| <b>NADB#</b> | <b>Author</b>   | <b>Date</b> | <b>Title</b>   |
|--------------|---|-------------|--|
| 1124157      | <b>Whitney-Desautels, Nancy A. (Desautel 91-04)</b>   | 1991        | <b>Archaeological and Historical Literature Search and Records Check for Alternative Alignments for Highway 680 San Diego County, California. Scientific Resource Survey, Inc. (SRS). Submitted to Curtis Scott Englehorn and Associates.</b>  |
| 1124173      | <b>Harris, Nina M. and Dennis R. Gallegos (Gallegos 99-208)</b>                                       | 1999        | <b>Santa Fe Ridge Cultural Resource Survey, Elfin Forest, County of San Diego, California. Gallegos and Associates. Submitted to Hover Development Company.</b>  |
| 1124967      | <b>RECON (RECON 82-109)</b>   | 1982        | <b>Draft for Elfin Forest Village, County of San Diego, California. Submitted to Joseph Murat and Veronica Murat Trust.</b>  |
| 1125501      | (Smith 90-371)  | 1990        | Results of an Archaeological Survey and Evaluation of Cultural Resources within the San Elijo Ranch Specific Plan. Brian F. Smith and Associates. Submitted to P&D Technologies.   |
| 1125513      | Rosen, Martin (Rosen 01-62)   | 2001        | California Department of Transportation - District 11 Environmental Resource Studies. Martin Rosen. Submitted to Caltrans.   |
| 1126245      | <b>Cook, John, Jerry Schaefer, Drew Pallette, and Carol Serr (CookJ 95-44)</b>                        | 1995        | <b>Cultural Resource Significance and National Register Eligibility Evaluation Program for Proposed Olivenhain Water Storage Project, San Diego, California. Brian F. Mooney Associates. Submitted to Olivenhain Municipal Water District.</b> |
| 1127774      | McFarland, Sharon, and Brian F. Smith (McFarland 00-6)  | 2000        | An Archaeological Survey for the Sherman and Sons Subdivision Project, San Diego County, California. Brian F. Mooney Associates. Submitted to Sherman and Sons, LLC.   |
| 1128052      | <b>Gallegos, Dennis R. and Nina M. Harris (Gallego 99-260)</b>  | 1999        | <b>Cultural Resource Literature Review for the North Coast Transportation Study, Arterial Streets Alternative, San Diego County, California. Gallegos and Associates. Submitted to MLF/San Diego Association of Governments.</b>               |
| 1128071      | <b>Gallegos, Dennis R., Richard Cerrito, Tracy A. Stropes, and Steve Van Wormer (Gallegos 00-279)</b> | 2001        | <b>The Quail Ridge Project Cultural Resource Test Program, San Diego County, California. Gallegos and Associates. Submitted to Helix Environmental Planning, Inc.</b>  |
| 1128550      | Wright, Gail (Wright 03-20)   | 2003        | Negative Cultural Resources Survey Report for Weber Residence - L14358 Log No. 03-08-022; APN 264-042-24 Negative Findings. Gail Wright. Submitted to County of San Diego.   |
| 1128875      | Wright, Gail (Wright 03-34)   | 2003        | Negative Cultural Resources Survey Report for TPM 20764, Log No. 03-08-046 GAO Minor Subdivision APN 264-042-07 Negative Findings. Gail Wright. Submitted to County of San Diego.  |
| 1129253      | Underwood, Jackson (UnderJ 04-04)   | 2004        | Addendum 15 Supplemental Cultural Resources Inventory Emergency Storage Project. Olivenhain Reservoir Landscape Area, San Diego County, California. EDAW, Inc. Submitted to San Diego County Water Authority.                                  |

| NADB#          | Author   | Date        | Title   |
|----------------|--|-------------|---|
| 1129275        | Wahoff, Tanya and Rebecca McCorkle Apple (WahoffT 02-14)   | 2002        | Supplemental Cultural Resources Survey Emergency Storage Project, Olivenhain Dam Visitors Center and Harmony Grove Road Temporary Transportation Improvements, San Diego County, California. KEA Environmental, Inc. Submitted to the San Diego County Water Authority. |
| <b>1129276</b> | <b>Wahoff, Tanya and Jackson Underwood (WahoffT 00-15)</b> | <b>2000</b> | <b>Supplemental Cultural Resources Inventory Emergency Storage Project, Olivenhain Reservoir and Olivenhain to Second Aqueduct Pipeline, San Diego County, California. KEA Environmental, Inc. Submitted to San Diego County Water Authority.</b>                       |
| 1129685        | Smith, Brian F. and Seth A. Rosenberg (SmithB 491)         | 2005        | An Archaeological Survey for the Cielo Azul Project, Harmony Grove, San Diego, California. Brian F. Smith and Associates. Submitted to Dudek and Associates.  |
| <b>1129820</b> | <b>Berryman, Stanley R. (BerrymanS 75-91)</b>              | <b>1975</b> | <b>Archaeological Investigations of Harmony Groves. Berryman Archaeological Consultants. Submitted to Consulate Corporation.</b>  |
| <b>1129824</b> | <b>Cook, John R. (Cook 83-100)</b>                         | <b>1983</b> | <b>An Archaeological Test/Mitigation of SDI-7980 and W-267. Archaeological Systems Management. Submitted to Ms. Charlene Pavlick, Trustee.</b>  |
| 1129948        | Aislin-Kay, Marnie and Christeen Taniguchi (ASLIM 04-18)   | 2004        | Records Search and Site Visit for Cingular Telecommunications Facility Candidate SD-390-13 (Selvig Residence), 19914 Elfin Forest Lane, San Diego County, California. Michael Brandman and Associates.  |
| 1130371        | Mooney & Associates (Mooney 02-46)                         | 2002        | Cultural Resources Survey for the Oak Roase Tentative Map. Escondido, California (TM 5204) Log 00-08-012. Mooney & Associates. Submitted to Raymond Saatjian.   |
| -              | <b>Mooney-Lettieri and Associates</b>                      | <b>1984</b> | <b>Cultural Resources Inventory for the Mt. Israel Reservoir. Report submitted to, and on file at, the Olivenhain Municipal Water District.</b>   |
| -              | <b>Brian F. Mooney Associates</b>                          | <b>1992</b> | <b>Supplemental Cultural Resource Survey for the Mt. Israel Reservoir Project. Report submitted to, and on file at, the Olivenhain Municipal Water District.</b>  |
| -              | <b>Ogden Environmental and Energy Services Co., Inc.</b>   | <b>1995</b> | <b>San Diego County Water Authority Emergency Water Storage Project Cultural Resources Technical Report for Draft Environmental Impact Statement. Report submitted to the San Diego County Water Authority and U.S. Army Corps of Engineers, Los Angeles.</b>           |
| -              | <b>Wahoff, Tanya and Rebecca McCorkle Apple</b>            | <b>2002</b> | <b>Addendum 6 Supplemental Cultural Resources Survey, Emergency Storage Project, Olivenhain Dam and Reservoir Visitor's Overlook, San Diego, County, California. Report submitted to the San Diego County Water Authority.</b>  |
| -              | <b>Wahoff, Tanya and Lorraine M. Willey</b>                | <b>2003</b> | <b>Addendum 9 Supplemental Cultural Resources Survey, Emergency Storage Project, Escondido Creek Wetland Mitigation Project, San Diego, County, California. Report submitted to the San Diego County Water Authority.</b>   |

Studies encompassing some portion of the project APE are in bold type.

### 3.2 PREVIOUS RECORDED CULTURAL RESOURCES WITHIN AND ADJACENT TO THE PROJECT APE

Eighteen cultural resource sites and four isolates have been previously recorded within a 1,000-foot radius of the Southern Alternative APE, and 32 sites and four isolates within a ½-mile radius of the Preferred Alternative APE. The 18 sites within 1,000 feet of the Southern Alternative APE are all prehistoric as are 31 of the 32 sites within ½ mile of the Preferred Alternative APE (Tables 3 and 4). One of the 31 prehistoric sites within ½ mile of the Preferred Alternative APE also contains a historic component consisting of a mortared rock foundation and associated historic trash. The single historic site contains an adobe foundation with associated trash scatter (Table 4). The prehistoric resource types include prehistoric campsites, bedrock milling stations, and lithic scatters (Tables 3 and 4).

**Table 3. Cultural Resources within, and within a 1,000-Foot Radius of, the Southern Alternative APE**

| Trinomial        | Primary #        | Site Type   |
|------------------|------------------|---|
| SDI-5498         | 37-005498        | Sparse Prehistoric Lithic Scatter   |
| SDI-7954         | 37-007954        | Sparse Prehistoric Lithic Scatter   |
| SDI-7962         | 37-007962        | Sparse Prehistoric Lithic Scatter   |
| SDI-7980         | 37-007980        | Moderate to High Density Prehistoric Lithic Scatter                                     |
| SDI-7981         | 37-007981        | Single Feature Prehistoric Bedrock Milling Station with Mortar                          |
| SDI-12578        | 37-012578        | Prehistoric Campsite  |
| SDI-13674        | 37-013674        | Prehistoric Bedrock Milling Site with Six Milling Features                              |
| SDI-13676        | 37-013676        | Single Feature Prehistoric Milling Station/Rock Wall                                    |
| SDI-13690        | 37-013690        | Prehistoric Bedrock Milling Site with Three Milling Features/Sparse Lithic Scatter      |
| SDI-13832        | 37-013832        | Single Feature Prehistoric Bedrock Milling Station                                      |
| <b>SDI-13833</b> | <b>37-013833</b> | <b>Single Feature Prehistoric Bedrock Milling Station</b>                               |
| <b>SDI-13834</b> | <b>37-013834</b> | <b>Single Feature Prehistoric Bedrock Milling Station</b>                               |
| <b>SDI-13835</b> | <b>37-013835</b> | <b>Prehistoric Bedrock Milling Site with Seven Milling Features</b>                     |
| <b>SDI-13836</b> | <b>37-013836</b> | <b>Prehistoric Bedrock Milling Site with Two Milling Features/Sparse Lithic Scatter</b> |
| SDI-13837        | 37-013837        | Prehistoric Bedrock Milling Site with Two Milling Features                              |
| <b>SDI-13838</b> | <b>37-013838</b> | <b>Small Prehistoric Lithic Quarry Site</b>   |
| SDI-13839        | 37-013839        | Sparse Lithic Scatter/Rock Wall   |
|                  | 37-013919        | Prehistoric, Elko Style, Projectile Point   |
|                  | <b>37-013920</b> | <b>Single Metavolcanic Flake</b>  |
|                  | <b>37-013921</b> | <b>Single Metavolcanic Flake</b>  |
| <b>SDI-14837</b> | <b>37-016406</b> | <b>Prehistoric Milling Site with Three Milling Features</b>                             |
|                  | 37-018795        | Single Metavolcanic Flake Tool  |

Resources recorded in the project APE are in bold type.

**Table 4. Cultural Resources within, and within a ½-Mile Radius of, the Preferred Alternative APE**

| <b>Trinomial</b> | <b>Primary #</b> | <b>Site Type</b>  |
|------------------|------------------|---|
| SDI-597          | 37-000597        | Prehistoric Campsite  |
| SDI-4496         | 37-004496        | Lithic Scatter  |
| SDI-4497         | 37-004497        | Lithic Scatter  |
| SDI-4671         | 37-004671        | Prehistoric Campsite  |
| SDI-4674H        | 37-004674        | Adobe Foundation/Trash  |
| SDI-4932         | 37-004932        | Prehistoric Campsite  |
| SDI-5177         | 37-005177        | Single Feature Prehistoric Bedrock Milling Station  |
| <b>SDI-5498</b>  | <b>37-005498</b> | <b>Sparse Prehistoric Lithic Scatter</b>  |
| SDI-7954         | 37-007954        | Sparse Prehistoric Lithic Scatter   |
| SDI-7962         | 37-007962        | Sparse Prehistoric Lithic Scatter   |
| SDI-7980         | 37-007980        | Moderate to High Density Prehistoric Lithic Scatter   |
| SDI-7981         | 37-007981        | Single Feature Prehistoric Bedrock Milling Station with Mortar                              |
| SDI-13674        | 37-013674        | Prehistoric Bedrock Milling Site with Six Milling Features                                  |
| SDI-13676        | 37-013676        | Single Feature Prehistoric Bedrock Milling Station/Rock Wall                                |
| SDI-13690        | 37-013690        | Prehistoric Bedrock Milling Site with Three Milling Features/Sparse Lithic Scatter          |
| SDI-13831        | 37-013831        | Sparse Prehistoric Lithic Scatter   |
| SDI-13832        | 37-013832        | Single Feature Prehistoric Milling Station  |
| <b>SDI-13833</b> | <b>37-013833</b> | <b>Single Feature Prehistoric Bedrock Milling Station</b>                                   |
| <b>SDI-13834</b> | <b>37-013834</b> | <b>Single Feature Prehistoric Bedrock Milling Station</b>                                   |
| <b>SDI-13835</b> | <b>37-013835</b> | <b>Prehistoric Bedrock Milling Site with Seven Milling Features</b>                         |
| <b>SDI-13836</b> | <b>37-013836</b> | <b>Prehistoric Bedrock Milling Site with Two Milling Features and Sparse Lithic Scatter</b> |
| SDI-13837        | 37-013837        | Prehistoric Bedrock Milling Site with Two Milling Features                                  |
| SDI-13839        | 37-013839        | Sparse Lithic Scatter/Rock Wall   |
|                  | 37-013918        | Two Metavolcanic Cores  |
|                  | 37-013919        | Prehistoric, Elko Style, Projectile Point   |
| SDI-14836        | 37-016405        | Single Feature Prehistoric Bedrock Milling Station  |
| SDI-14837        | 37-016406        | Prehistoric Bedrock Milling Site with Three Milling Features                                |
| SDI-14838        | 37-016407        | Sparse Prehistoric Lithic Scatter   |
| SDI-14839        | 37-016408        | Single Feature, Prehistoric, Bedrock Milling Station with Two Mortars                       |
|                  | 37-016409        | Three Fragments of Marine Shell   |
| SDI-15353        | 37-017519        | Prehistoric Campsite  |
| SDI-15354/H      | 37-017520        | Prehistoric Campsite  |
| SDI-15355        | 37-017521        | Sparse Prehistoric Lithic Scatter   |
| SDI-15356        | 37-017522        | Sparse Prehistoric Lithic Scatter   |
|                  | 37-026990        | Single Metavolcanic Flake   |
| SDI-17670        | 37-026991        | Moderate Density Prehistoric Lithic Scatter   |

Resources recorded in the project APE are in bold type.

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## CHAPTER 4 FIELD METHODS

### 4.1 SURVEY METHODS

The field survey of the project was conducted on October 29, November 20, 2009, and June 8, 2010 by Theodore Cooley (M.A., R.P.A.), Stacie Wilson (M.S., R.P.A.), and Brian Spelts (B.A.). Terrain in the project area consisted mostly of thickly vegetated stream valleys and steep ravines. The project area is roughly bisected by the northeast–southwest-trending Escondido Creek stream valley currently containing a flow of water. This valley is thickly vegetated and steep in some areas with mostly narrow and steep-sided adjacent tributary valleys. The Escondido Creek watershed consists of a series of knolls and ridges separated by steep and narrow valleys or ravines. The bottoms of some of these valleys/ravines are V-shaped with steep sides and widths of less than 3 meters. The intervening ridge tops, however, are relatively broad. While the accessible areas on the ridge tops could be surveyed, some of the narrowest valley or ravine bottoms and sides could not.

The APE for cultural resources consisted of a corridor 100 feet wide centered on the centerline of the proposed pipeline installation route. The area surveyed corresponded to the APE. Along the previously surveyed, and substantially disturbed, the Southern Alternative alignment, areas where previously recorded sites were located were spot-checked or were reconnaissance surveyed where disturbance appeared to be less substantial within the APE. For the Preferred Alternative, from the west end of the alignment to Escondido Creek, placement of the pipeline is proposed to be within Elfin Forest Road. Along this portion of the alignment, the survey included accessible areas within 30 feet of both sides of Elfin Forest Road. Including the width of Elfin Forest Road, this resulted in a survey width of approximately 100 feet. From where the alignment leaves Elfin Forest Road and extends, cross-country, across Escondido Creek to Via Ambiente, a 100-foot-wide corridor was surveyed. The previously surveyed remainder of the Preferred Alternative, from Via Ambiente to the treatment plant, was spot-checked in areas where previously recorded sites were located or was reconnaissance surveyed to a width of 50 feet from the centerline (100-foot width) if, or where, disturbance appeared to be less substantial.

The field survey methods consisted of systematic intensive pedestrian survey, reconnaissance survey, or spot-check survey. Intensive pedestrian survey was the preferred method and was utilized in all areas where feasible. Intensive pedestrian survey methods consisted of team members walking in roughly 15-meter spaced transects in any areas where slope, vegetation,

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and/or terrain would allow transects to be maintained. Reconnaissance survey methods consisted of surveying the visible areas where they were present and/or accessible. In general, within the reconnaissance survey areas, if bedrock outcrops were identified that had a potential to contain rock shelters or rock art, then specific attempts were made to reach these outcrops to make a determination if such resources were present. Spot-check survey involved examining particular locations or areas where sites had been previously recorded or where outcrops with potential to contain milling features, rock shelters, or rock art were present. Bedrock outcrops within all surveyed areas were examined thoroughly for evidence of prehistoric milling activity or other discernable human modification.

Intensive pedestrian survey was employed, principally, in the 100-foot-wide corridor across Escondido Creek to Via Ambiente, where vegetation allowed. Reconnaissance survey methods were used in areas that could not be walked through systematically using a 15-meter transect methodology. The areas along Elfin Forest Road were surveyed using whichever method was feasible, given various restrictions including private property access, fences, paved or landscaped surfaces, dogs, and vegetation. The substantially disturbed areas along the eastern one-third of the Preferred Alternative, along Via Ambiente, and along the entirety of the Southern Alternative, were spot-checked surveyed at previously recorded site locations and reconnaissance surveyed in any areas that had not been obviously substantially disturbed by the previous construction activities. While the ground surface was visible in some reconnaissance areas, transect coverage was precluded by property access, dense vegetation, and/or steep terrain.

The scrub and chaparral vegetation, especially, but not exclusively, in the steeper areas is very dense. Along most of the Escondido Creek drainage a thick growth of riparian and/or oak forest plants, including poison oak, willows, and reeds, is present. This riparian strip largely precluded any systematic survey immediately adjacent to the drainage bed. If not precluded by dense vegetation, team members checked all bedrock outcrops and areas disturbed by rodents along and between the transect lines. In the relatively level areas on knoll tops in the central-western areas of the Preferred Alternative, surface visibility ranged from nearly zero to over 80 percent with thick growths of sagebrush and introduced grasses present in some areas. However, the surface visibility of the majority of these areas intensively surveyed ranged from 30 to 70 percent.

A submeter Trimble Global Positioning System (GPS) unit was used to track the survey transects and coverage, as well as to record the cultural resources that were identified within the areas of the project. This unit was also used to relocate previously recorded sites in spot-check survey areas. Notes on resource details were collected to meet or exceed site recordation guidelines

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based on the California Office of Historic Preservation's California Archaeological Inventory Handbook for Completing an Archaeological Site Record and the SCIC recommendations.

## **4.2 SURVEY RESULTS**

No new cultural resources were identified during the current field survey. The locations and vicinities of eight previously recorded prehistoric sites were examined during the survey (Figure 4 in Appendix B - Confidential). Three previously recorded prehistoric isolates were not relocated. At all of these locations, substantial disturbance from previous construction activities was evident.

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## CHAPTER 5 ARCHAEOLOGICAL RESOURCES

### 5.1 ARCHAEOLOGICAL SITES

Within the APE (100-foot width) of the Southern Alternative alignment, seven prehistoric cultural resource sites, CA-SDI-5498, CA-SDI-13,833, CA-SDI-13,834 CA-SDI-13,835, CA-SDI-13,836, CA-SDI-13,838, and CA-SDI-14,837 have been previously recorded. Within the APE (100-foot width) of the Preferred Alternative alignment, five prehistoric cultural resource sites, CA-SDI-5498, CA-SDI-13,832, CA-SDI-13,833, CA-SDI-13,834, and CA-SDI-13,836, have been previously recorded. Four of these resources co-occur within the APE of each alternative. No newly identified prehistoric or historic archaeological sites are present in the APE of either of the alternatives. The previously recorded sites are described below.

#### **Southern Alternative**

##### CA-SDI-5498

This prehistoric resource was originally recorded by Polan et al. (1978) as an extremely light scatter of flakes in an alluvial setting at the confluence of two small drainages. Eckhardt (1980) relocated the site and noted the presence of one utilized flake. Polan et al. speculated that, due to the alluvial setting, buried deposits could be present. Based on survey observations, this site was assessed as having no research value in 1984 (Mooney-Lettieri 1984), and this was reaffirmed in a supplemental study in 1992 (Brian F. Mooney Associates 1992). During the current spot-check survey, with fair to poor ground visibility, no evidence of this site was observed at the location at which it was previously recorded. It is, therefore, presumed to have been destroyed during these construction activities.

##### CA-SDI-13,833

This prehistoric resource was originally recorded as a single bedrock milling feature with one slick (Ogden 1995). The site is located in an area that has been substantially disturbed by grading and possibly blasting during the construction of previous pipelines, roads, and other reservoir-related facilities. This site was excluded from the 1995 testing program on the basis that it appeared to have limited potential for significance (Cook et al. 1995; Ogden 1995). By implication, therefore, the site was interpreted to not be a significant resource under CEQA or

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National Register of Historic Places (NRHP) criteria (Cook et al. 1995). During the current spot-check survey, no evidence of this site was observed at the location at which it was previously recorded. It is, therefore, presumed to have been destroyed during these construction activities.

CA-SDI-13,834

This prehistoric resource was originally recorded as a single bedrock milling feature with one slick (Ogden 1995). The site is located in an area that has been substantially disturbed by grading and possibly blasting during the construction of previous pipelines, roads, and other reservoir-related facilities. This site was excluded from a 1995 testing program on the basis that it appeared to have limited potential for significance (Cook et al. 1995; Ogden 1995). By implication, therefore, the site was interpreted to not be a significant resource under CEQA or NRHP criteria (Cook et al. 1995). During the current survey, no evidence of this site was observed at the location at which it was previously recorded. It is, therefore, presumed to have been destroyed during these construction activities.

CA-SDI-13,835

This prehistoric resource was originally recorded as consisting of two loci containing seven bedrock milling features with a total of 14 slicks, 13 on six features in Locus A and one on one feature in Locus B (Ogden 1995). The site is located along the north side of the Cielo Creek drainage in an area that has been substantially disturbed by grading and possibly blasting during the construction of previous pipelines and reservoir-related facilities. It was noted on the original form that rocks had been pushed down to the edge of the creek bank possibly covering other outcrops containing milling features. In 1995, the site was tested for significance (Cook et al. 1995). This investigation included systematic surface collection and the excavation of six shovel test pits (STPs). Because the results of the STPs were negative, no 1-by-1-m test units were excavated. The surface collection produced no artifacts. Only five milling features were identified during the testing program. These results did not provide sufficient information to indicate a time association for the site. Limited vegetal milling was apparently the only activity of the site occupants. Taken together, these results indicated the site to not be a significant resource under CEQA or NRHP criteria (Cook et al. 1995). During the current spot-check survey one feature in Locus A was reidentified indicating that at least a portion of the site remains intact.

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### CA-SDI-13,836

This prehistoric resource was originally recorded as consisting of two bedrock milling features, each with one slick; two black porphyritic volcanic cores; and 10+ green/gray metavolcanic flakes (Ogden 1995). The site is located in an area that has been substantially disturbed by grading and possibly blasting during the construction of previous pipelines and reservoir-related facilities. In 1995, the site was tested for significance (Cook et al. 1995). This investigation included systematic surface collection and the excavation of seven STPs. Because the results of the STPs were negative, no 1-by-1-m test units were excavated. The surface collection produced 25 pieces of debitage. These results did not provide sufficient information to indicate a time association for the site. Limited vegetal milling and limited flaked stone tool working were the likely activities of the site occupants. Taken together, these results indicated the site to not be a significant resource under CEQA or NRHP criteria (Cook et al. 1995). During the current spot-check survey, no evidence of this site was observed at the location at which it was previously recorded. It is, therefore, presumed to have been destroyed during these construction activities.

### CA-SDI-13,838

This prehistoric resource was originally recorded as consisting of two volcanic cores, 20+ pieces of metavolcanic debitage, and a battered metavolcanic boulder (Ogden 1995). The site is located in an area that has been substantially disturbed by grading during the construction of previous pipelines. In a 1995 site significance evaluation program, the site could not be relocated (Cook et al. 1995). During the current spot-check survey, no evidence of this site was observed at the location at which it was previously recorded. It is, therefore, presumed to have been destroyed during these construction activities.

### CA-SDI-14,837

This prehistoric resource was originally recorded by Victorino and Giacomini (1998) as consisting of three bedrock milling features, each with one slick. The site is located in an area that has been substantially disturbed by grading and possibly blasting during the construction of previous pipelines and reservoir-related facilities. During the current spot-check survey, no evidence of the site was observed at the location at which it was previously recorded. It is, therefore, presumed to have been destroyed during these construction activities.

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## **Preferred Alternative**

### CA-SDI-5498

This prehistoric resource, which lies in the APE of both alternatives, was originally recorded by Polan et al. (1978) as an extremely light scatter of flakes in an alluvial circumstance at the confluence of two small drainages (see survey results under Southern Alternative).

### CA-SDI-13,832

This prehistoric resource was originally recorded as a single bedrock milling feature with one slick (Ogden 1995). The site is located in an area that has been substantially disturbed by grading and possibly blasting during the construction of previous pipelines and reservoir-related facilities. This site was excluded from a 1995 testing program on the basis that it appeared to have limited potential for significance (Cook et al. 1995; Ogden 1995). By implication, therefore, the site was interpreted to not be a significant resource under CEQA or NRHP criteria (Cook et al. 1995). During the current spot-check survey, no evidence of this site was observed at the location at which it was previously recorded. It is, therefore, presumed to have been destroyed during these construction activities.

### CA-SDI-13,833

This prehistoric resource, which lies in the APE of both alternatives, was originally recorded (Ogden 1995) as a single bedrock milling feature with one slick (see survey results under Southern Alternative).

### CA-SDI-13,834

This prehistoric resource, which lies in the APE of both alternatives, was originally recorded (Ogden 1995) as a single bedrock milling feature with one slick (see survey results under Southern Alternative).

### CA-SDI-13,836

This prehistoric resource, which lies in the APE of both alternatives, was originally recorded (Ogden 1995) as consisting of two bedrock milling features, each with one slick; two black

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porphyritic volcanic cores; and 10+ green/gray metavolcanic flakes (see survey results under Southern Alternative).

## **5.2 PREHISTORIC ISOLATES**

Within the APE (100-foot width) of the Southern Alternative alignment, two prehistoric cultural isolates have been previously recorded. Within the APE (100-foot width) of the Preferred Alternative alignment, one prehistoric isolate was previously recorded. No newly identified prehistoric isolates are present in the APE of either of the alternatives. The previously recorded isolates are described below.

### **Southern Alternative**

P-37-013920 consists of one metavolcanic flake. The isolate is located in an area that has been substantially disturbed by grading and possibly blasting during the construction of previous pipelines. During the current spot-check survey, this isolate could not be relocated at the location at which it was previously recorded. It is, therefore, presumed to have been moved or destroyed during these construction activities.

P-37-013921 consists of one metavolcanic flake. The isolate is located in an area that has been substantially disturbed by grading and possibly blasting during the construction of previous pipelines. During the current spot-check survey, this isolate could not be relocated at the location at which it was previously recorded. It is, therefore, presumed to have been moved or destroyed during these construction activities.

### **Preferred Alternative**

P-37-013918 consists of two metavolcanic cores. The isolate is located in an area that has been substantially disturbed by grading during previous roadway construction activities. During the current spot-check survey, this isolate could not be relocated at the location at which it was previously recorded. It is, therefore, presumed to have been moved or destroyed during these construction activities.

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## CHAPTER 6

### NATIVE AMERICAN PARTICIPATION/CONSULTATION

A letter was faxed to the Native American Heritage Commission (NAHC) on November 11, 2009. A response letter from Mr. Dave Singleton of the NAHC, dated November 25, 2009, was received via fax November 25, 2009 (Appendix C). The search of the Sacred Lands File by the NAHC failed to indicate the presence of resources in the project or the immediate surrounding project area. The NAHC response also included a list of local Native American contacts. On December 1, 2009, letters were sent to the local Native American contacts provided by the NAHC, requesting further consultation (Appendix C). To date, responses have been received from five of the contacts: the San Luis Rey Band of Luiseño Indians, the Pala Band of Mission Indians, the Rincon Band of Mission Indians, the Pauma Valley Band of Luiseño Indians, and the Kwaaymii Laguna Band of Mission Indians (Appendix C). The Pauma Valley Band of Luiseño Indians, through voice mail, requested additional information. Subsequent attempts to contact the Band, and determine what information was desired, were unsuccessful. A written response from the Kwaaymii Laguna Band of Mission Indians indicated that they did not have comments on the project. A written response from the Rincon Band of Mission Indians indicated knowledge of several large cultural sites in the area and recommended that cultural monitors be hired for the duration of the project to insure timely notification should inadvertent discoveries of cultural resources, including human bone, occur. A written response from the Pala Band of Mission Indians indicated that, while the project lies outside of the Pala Indian Reservation, and beyond the boundaries of the tribe's Traditional Use Area (TUA), it is in sufficient proximity to the Reservation be of interest to the Tribe. The Tribe, therefore, requested to be apprised of any future project changes, beyond the area indicated; to be kept in the information loop as the project progresses; and would appreciate receiving updates and future documentation generated as a result of the project. They also recommended monitoring by Approved Cultural Monitors during surveys and construction. A written response from California Indian Legal Services San on behalf of the Luis Rey Tribe expressed concern about the protection of unique and irreplaceable cultural resources and sacred sites that may be damaged by construction activities in the Escondido area. Concern was also expressed about the proper and lawful treatment of Native American human remains and sacred items that could be uncovered in the course of project development. The Tribe indicated that it did not oppose the project, but would be opposed to any plans that would affect these resources. The Tribe, therefore, requested and recommended measures to be added to conditions of approval that would prevent impacts to these resources. OMWD is currently reviewing the requests and recommendation made by these groups.

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## CHAPTER 7 IMPACTS, SIGNIFICANCE, AND MANAGEMENT RECOMMENDATIONS

### 7.1 APPLICABLE REGULATIONS

#### 7.1.1 Introduction

The current project falls under state legislative jurisdiction. The lead reviewing agency is OMWD. California state law regarding cultural resources is primarily embodied in Section 15064.5 of CEQA, as amended. CEQA establishes principles for cultural resource preservation and criteria for the identification of important resources.

#### 7.1.2 California Environmental Quality Act (CEQA) Criteria

According to Section 15064.5(a)(3) of CEQA “historical resources” include:

- (1) Resources listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Pub. Res. Code §5024.1, Title 14 CCR, Section 4850 et seq.)
- (2) A resource included as defined in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements Section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- (3) Any object, building, structure, site, area, place, record, or manuscript which... meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code §5024.1, Title 14 CCR, Section 4852) including the following:
  - (A) Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage;
  - (B) Is associated with the lives of persons important in our past;

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- (C) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
  - (D) Has yielded, or may be likely to yield, information important in prehistory or history.

Subsection (b) states that “A project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.” In accordance with item (4) of this subsection, if a substantial adverse change in the significance of an historical resource is identified, then:

A lead agency shall identify potentially feasible measures to mitigate significant changes in the significance of an historical resource. The lead agency shall ensure that any adopted measures to mitigate or avoid significant adverse changes are fully enforceable through permit conditions, agreements, or other measures.

Subsection (c) specifies that “CEQA applies to effects on archaeological sites” while subsections (d) and (e) provide policy and procedures for the treatment of human remains and associated artifacts. Lastly, subsection (f) stipulates that:

... a lead agency should make provisions for historical or unique archaeological resources accidentally discovered during construction. These provisions should include an immediate evaluation of the find by a qualified archaeologist. If the find is determined to be an historical or unique archaeological resource, contingency funding and a time allotment sufficient to allow for implementation of avoidance measures or appropriate mitigation should be available. Work could continue on other parts of the building site while historical or unique archaeological resource mitigation takes place.

To summarize, projects having an effect on archaeological sites fall under the provisions of CEQA (subparagraph (c)). The site is then evaluated to determine if it meets the criteria for listing on the California Register of Historical Resources (subparagraph (a)). If a site qualifies as a unique archaeological resource, then it must be determined if the proposed project might cause a substantial adverse change in the significance of the resource, i.e., a significant effect on the environment (subparagraph (b)). When a significant effect has been identified, then the lead agency shall propose feasible mitigation measures and shall ensure that all adopted measures are fully enforceable (subparagraph (b)(4)).

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## 7.2 INTERPRETATION OF RESOURCE SIGNIFICANCE AND IMPACT IDENTIFICATION

### 7.2.1 Resource Significance

Within the APE of the Southern Alternative, seven prehistoric cultural resource sites, CA-SDI-5498, CA-SDI-13,833, CA-SDI-13,834, CA-SDI-13,835, CA-SDI-13,836, CA-SDI-13,838, and CA-SDI-14,837, were previously recorded. Three prehistoric isolates were also previously recorded within or contiguous to the project APE. Six of the seven sites (CA-SDI-5498, CA-SDI-13,833, CA-SDI-13,834, CA-SDI-13,835, CA-SDI-13,836, and CA-SDI-13,838,) were previously evaluated for importance and found not to be significant resources under CEQA or NRHP criteria (Cook et al. 1995). During the current survey, five of the seven sites (CA-SDI-13,833, CA-SDI-13,834, CA-SDI-13,836, CA-SDI-13,838, and CA-SDI-14,837) appeared to have been completely destroyed by previous roadway, pipeline, and/or reservoir facilities construction activities. The remaining two sites, CA-SDI-5498 and CA-SDI-13,835, while having been substantially disturbed by construction activities, still have areas and/or features remaining intact. The three previously recorded prehistoric isolates are not considered as significant resources and were not relocated during the current survey. While sites CA-SDI-5498 and CA-SDI-13,835 still have areas or features remaining in proximity to the project Southern Alternative APE, these sites have both been previously evaluated for importance and found not to be significant resources under CEQA or NRHP criteria (Mooney-Lettieri 1984; Brian F. Mooney 1992; Cook et al. 1995).

Along the Preferred Alternative, six prehistoric cultural resource sites, CA-SDI-5498, CA-SDI-13,832, CA-SDI-13,833, CA-SDI-13,834, CA-SDI-13,835, and CA-SDI-13,836, were previously recorded within or contiguous to the project APE. One prehistoric isolate has also previously recorded within or contiguous to the project APE. All of these six sites were previously evaluated for importance and found not to be significant resources under CEQA or NRHP criteria (Mooney-Lettieri 1984; Brian F. Mooney 1992; Cook et al. 1995). During the current survey, four of the sites (CA-SDI-13,832, CA-SDI-13,833, CA-SDI-13,834, and CA-SDI-13,836) appeared to have been completely destroyed by previous roadway, pipeline, and/or reservoir facilities construction activities. The remaining sites, CA-SDI-13,835 and CA-SDI-5498, based on the area and features defined when they were originally recorded, and while having been substantially disturbed by construction activities, still have areas and/or features remaining intact. The previously recorded prehistoric isolate is not considered as a significant resource and was not reidentified during the current survey. While sites CA-SDI-5498 and CA-SDI-13,835 still have area and/or features remaining in proximity to the project Preferred

Alternative APE, the sites have been previously evaluated for importance and were found not to be significant resources under CEQA or NRHP criteria (Mooney-Lettieri 1984; Brian F. Mooney 1992; Cook et al. 1995).

## 7.2.2 Impact Identification

Seven prehistoric cultural resources have been recorded within, or within proximity of the APE of the Southern Alternative (Table 5). Five of these resources were observed during the current survey to have been destroyed by previous construction activities with the remaining two substantially disturbed by these same activities. Six of the seven sites have been previously evaluated and determined as not significant resources under CEQA criteria (Mooney-Lettieri 1984; Brian F. Mooney 1992; Cook et al. 1995). Six prehistoric cultural resources have been recorded within, or within proximity of the APE of the Preferred Alternative (Table 5). Four of these resources were observed during the current survey to have been destroyed by previous construction activities with the remaining sites substantially disturbed by these same activities. All six of these sites have been previously evaluated and determined as not significant resources under CEQA criteria (Mooney-Lettieri 1984; Brian F. Mooney 1992; Cook et al. 1995).

**Table 5. Status of Cultural Sites Recorded in the Project Alternatives**

| <b>Trinomial or Primary or Temp Site#</b> | <b>Description</b>  | <b>Project Alternative</b> | <b>Previously Evaluated for Significance under CEQA (Reference[s])</b>                     | <b>Current Condition</b>   |
|---|---|----------------------------|--|----------------------------|
| CA-SDI-5498                               | Prehistoric site – lithic scatter   | Both Alternatives          | Yes – Found Not Significant (Mooney-Lettieri 1984; Brian F. Mooney 1992; Cook et al. 1995) | All or Partially Destroyed |
| CA-SDI-13,832                             | Prehistoric milling station site, – (one milling feature)                   | Preferred Alternative      | Yes – Found Not Significant (Cook et al. 1995)   | Destroyed                  |
| CA-SDI-13,833                             | Prehistoric milling station site, – (one milling feature)                   | Both Alternatives          | Yes – Found Not Significant (Cook et al. 1995)   | Destroyed                  |
| CA-SDI-13,834                             | Prehistoric milling station site, – (one milling feature)                   | Both Alternatives          | Yes – Found Not Significant (Cook et al. 1995)   | Destroyed                  |
| CA-SDI-13,835                             | Prehistoric milling station site, – (5 or 7 milling features)               | Southern Alternative       | Yes – Found Not Significant (Cook et al. 1995)   | Partially Destroyed        |
| CA-SDI-13,836                             | Prehistoric milling feature and lithic scatter site, – (2 milling features) | Alternatives 1 and 2       | Yes – Found Not Significant (Cook et al. 1995)   | Destroyed                  |
| CA-SDI-13,838                             | Prehistoric quarrying and lithic scatter site                               | Southern Alternative       | Yes – Not Relocated/Found Not Significant (Cook et al. 1995)                               | Destroyed                  |
| CA-SDI-14,837                             | Prehistoric milling feature site, – (3 milling features)                    | Southern Alternative       | Unknown  | Destroyed                  |

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As none of these sites constitute significant cultural resources under CEQA criteria, if the 100-foot-wide APE is adhered to, that is, no earth-disturbing activities occur during construction activities beyond the 100-foot APE width surveyed, then no impacts to significant cultural resources will occur. If future construction activities are proposed that will occur outside of the currently evaluated APE, then these additional areas will need to be examined and evaluated for potential for impacts to cultural resources that may exist in those areas.

It is also recommended that if earth-moving activities during construction reveal buried cultural deposits, work should be temporarily halted and diverted to a safe distance from the location, and a qualified archaeologist should be contacted to evaluate the significance of the deposit.

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## CHAPTER 8

### REFERENCES

Almstedt, Ruth

1974 *Bibliography of the Diegueño Indians*. Ballena Press, Ramona.

Bean, Lowell J., and Florence C. Shippek

1978 Luiseño. In *California*, edited by R. F. Heizer, pp. 550–563. Handbook of North American Indians, vol. 8, W. C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Beauchamp, R. Mitchell

1986 *A Flora of San Diego County, California*. Sweetwater River Press, National City.

Bowman, Roy H.

1973 Soil Survey: San Diego, California. U.S. Department of Agriculture Soil Conservation Service and Forest Service.

Brian F. Mooney Associates

1992 *Supplemental Cultural Resource Survey for the Mt. Israel Reservoir Project*. Report submitted to, and on file at, the Olivenhain Municipal Water District.

Bull, Charles

1983 Shaking the Foundations: The Evidence of San Diego Prehistory. *San Diego State University Cultural Resource Management Center Casual Papers* 1(3):15–64. Department of Anthropology, San Diego State University.

Burt, William H., and Richard P. Grossenheider

1976 *A Field Guide to the Mammals of America North of Mexico*. Houghton Mifflin Company, Boston.

California State Archives

2007 Spanish and Mexican Land Grant Maps, 1855–1875. MC 4:4-001. Available at [http://www.ss.ca.gov/archives/level3\\_ussg3.html](http://www.ss.ca.gov/archives/level3_ussg3.html). Retrieved 26 March 2007.

---

Carrico, Richard L.

1977 Portolá's 1769 Expedition and Coastal Native Villages of San Diego County. *The Journal of California Anthropology* 4(1):30–41.

1998 Ethnohistoric Period. In *Prehistoric and Historic Archaeology of Metropolitan San Diego: A Historic Properties Background Study*. Draft document prepared by ASM Affiliates, Inc. for Metropolitan Wastewater Public Works, San Diego, California.

2008 *Strangers in a Stolen Land: Indians of San Diego County from Prehistory to the New Deal*. Sun Belt Publications, San Diego.

Carrico, Richard L., Theodore G. Cooley, and Joyce M. Clevenger

1993 *Archaeological Excavations at the Harris Site Complex, San Diego County, California*. Report prepared by Ogden Environmental and Energy Services Co., and on file at the South Coastal Information Center (SCIC), San Diego State University.

Christenson, Lynne E.

1990 The Late Prehistoric Yuman People of San Diego County, California: Their Settlement and Subsistence System. Unpublished Ph.D. dissertation, Department of Anthropology, Arizona State University, Tempe.

1992 The Late Prehistoric Yuman Settlement and Subsistence System: Coastal Adaptation. In *Essays on the Prehistory of Maritime California*, edited by T. L. Jones, 217–230. Center for Archaeological Research at Davis, Publication Number 10. University of California, Davis.

Cook, John R.

1985 *An Investigation of the San Dieguito Quarries and Workshops near Rancho Santa Fe, California*. Report prepared by Mooney-Lettieri and Associates and on file at the South Coastal Information Center, San Diego State University.

Cook John R., Jerry Schaefer, Drew Palette, and Carol Serr

1995 *Cultural Resource Significance and National Register Eligibility Evaluation Program for the Proposed Olivenhain Water Storage Project, San Diego County, California*. Prepared by Brian F. Mooney Associates. Submitted to the Olivenhain Municipal Water District.

---

Cooley, Theodore G.

2006 Continuing Discoveries of the San Dieguito and Other Cultural Patterns In and Around the C. W. Harris Site (SDI-149). Paper presented at the Annual Meetings of the Society for California Archaeology, San Jose.

2008 Dating at the Spindrift Site Relative to Other La Jolla Sites and the Adjacent San Diego Coastal Area. Paper presented at the Annual Meetings of the Society for California Archaeology, Burbank.

Cooley, Theodore G., and Patricia T. Mitchell

1996 *Limited Data Recovery Investigations at Site CA-SDI-11,767, a La Jolla Complex Site Along the Lower San Diego River Valley, Mission Valley West Light Rail Transit Project, San Diego, California*. Report prepared by Ogden Environmental and Energy Services Co., San Diego, and on file at the South Coastal Information Center (SCIC), San Diego State University, San Diego.

Cooley, Theodore G., and Laura J. Barrie

2004 Archaeological Excavation at the Village of *Pa'Mu*, Ramona Valley, California. *Proceedings of the Society for California Archaeology* 17:43–56.

Cooley, Theodore G., Richard L. Carrico, and Carol Serr

2000 *Data Recovery Excavations Conducted at Archaeological Site CA-SDI-10,238 (SDM-W-36) Locus B, Solana Beach, San Diego County, California*. Report prepared by Mooney & Associates for the City of Solana Beach. On file at ICF Jones & Stokes, San Diego.

Eckhardt, William T.

1980 Site record form, update for site CA-SDI-5498. On file at the South Coastal Information Center (SCIC), San Diego State University, San Diego.

Ezell, Paul H.

1987 The Harris Site - An Atypical San Dieguito Site or Am I Beating a Dead Horse? In, *San Dieguito - La Jolla: Chronology and Controversy*, edited by D. R. Gallegos, pp. 15–22. San Diego County Archaeological Society Research Paper No. 1.

---

Farris, Glenn J.

1994 José Panto, *Capitan of the Indian Pueblo of San Pascual, San Diego County. The Journal of California and Great Basin Anthropology* 16(2): 149–161.

Gallegos, Dennis R.

1985 Batiquitos Lagoon Revisited. *Casual Papers Cultural Resource Management* 2(1). Department of Anthropology, San Diego State University, California.

1987 A Review and Synthesis of Environmental and Cultural Material for the Batiquitos Lagoon Region. In *San Dieguito-La Jolla: Chronology and Controversy*, edited by D. Gallegos, pp. 23–34. San Diego County Archaeological Society Research Paper No. 1.

1991 Antiquity and Adaptation at Agua Hedionda, Carlsbad, California. In *Hunter-Gatherers of Early Holocene Coastal California*, edited by J. M. Erlandson and R. H. Colten., pp. 19–42. Perspectives in California Archaeology, vol. 1, J. E. Arnold, series editor. Institute of Archaeology, University of California, Los Angeles.

1995 A Review and Synthesis of the Archaeological Record for the Lower San Diego River Valley. *Proceedings of the Society for California Archaeology* 8:195–206.

2002 Southern California in Transition: Late Holocene Occupation of Southern San Diego County. In *Catalysts to Complexity: Late Holocene Societies of the California Coast*, edited by J. M. Erlandson and T. L. Jones, pp. 27–40. Cotson Institute of Archaeology, University of California, Los Angeles.

Gallegos, Dennis R., and Carolyn Kyle

1998 *Five Thousand Years of Maritime Subsistence at CA-SDI-48, On Ballast Point, San Diego County, California*. Coyote Press Archives of California Prehistory No. 40.

Gallegos, Dennis R., Richard Cerrito, Tracy A. Stropes, and Steve Van Wormer

2001 *The Quail Ridge Project Cultural Resource Testing Program, San Diego County, California*. Report prepared by Gallegos & Associates and on file at the South Coastal Information Center (SCIC) at San Diego State University, San Diego.

---

Hedges, Kenneth

1975 Notes on the Kumeyaay: A Problem of Identification. *The Journal of California Anthropology* 2(1): 71–83.

Koerper, Henry C., Paul E. Langenwalter II, and Adella Schroth

1991 Early Holocene Adaptations and the Transition Phase Problem: Evidence from the Allan O. Kelly Site, Agua Hedionda Lagoon. In *Hunter-Gatherers of Early Holocene Coastal California*, edited by J. M. Erlandson and R. H. Colton, pp. 43–62. Perspectives in California Archaeology, vol. 1, J. E. Arnold, series editor. Institute of Archaeology, University of California, Los Angeles.

Kroeber, Alfred L.

1925 Handbook of the Indians of California. *Bureau of American Ethnology Bulletin* 78. Washington, D. C.

Langdon, Margaret

1975 Kamia and Kumeyaay: A Linguistic Perspective. *The Journal of California Archaeology* 2(1):64–70.

Laylander, Don, and Lynne E. Christenson

1988 *Results of an Archaeological Data Recovery Program, Corral Canyon Prehistoric Archaeological District, San Diego County, California*. Report prepared for, and on file at, the Cleveland National Forest, Supervisor's Office, San Diego.

Lee, Melicent

1937 *Indians of the Oaks*. Ginn and Company, Boston.

Luomala, Katherine

1978 Tipai-Ipai. In *California*, edited by R. F. Heizer, pp. 592–608. Handbook of North American Indians, vol. 8, W. C. Sturtevant, general editor. Smithsonian Institution, Washington D.C.

Masters, Patricia M., and Dennis R. Gallegos

1997 Environmental Change and Coastal Adaptations in San Diego County during the Middle Holocene. In *Archaeology of the California Coast during the Middle Holocene*, edited by J. M. Erlandson and M. A. Glassow, pp. 11–22. Los Angeles: UCLA Institute of Anthropology.

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May, Ronald V.

1971 *Field Report on the Excavation of the Amargosan-Comeyai Village at 4-SDI-777, Cottonwood Creek, San Diego County, California.* Manuscript on file at the Cleveland National Forest, Supervisor's Office, San Diego.

McDonald, Meg

1995 *Phase II Evaluation of Six Prehistoric Sites in Ames Valley, Cleveland National Forest, San Diego, California.* Report prepared by ASM Affiliates for the U.S. Forest Service, Cleveland National Forest, San Diego California. Report on file at the Cleveland National Forest, Supervisor's Office, San Diego.

Meighan, Clement W.

1954 The Late Complex in Southern California Prehistory. *Southwestern Journal of Anthropology* 10(2):215–227.

Mooney-Lettieri and Associates

1984 *Cultural Resources Inventory for the Mt. Israel Reservoir.* Report submitted to, and on file at, the Olivenhain Municipal Water District.

Moriarty, James R., III

1966 Cultural Phase Divisions Suggested by Typological Change Coordinated with Stratigraphically Controlled Radiocarbon Dating in San Diego. *The Anthropological Journal of Canada* 4(4):20-30.

1967 Transitional Pre-Desert Phase in San Diego County. *Science* 155(3762):553–556.

1968 The Environmental Variations of the Yuman Area of Southern California, Parts I and II. *Anthropological Journal of Canada* 6(2):1–20 and 6(3):9–23.

1969 The San Dieguito Complex: Suggested Environmental and Cultural Relationship. *Anthropological Journal of Canada* 6(3):1–18.

1987 A Separate Origins Theory for Two Early Man Cultures in California. Environmental and Cultural Material for the Batiquitos Lagoon Region. In *San Dieguito-La Jolla: Chronology and Controversy*, edited by Dennis R. Gallegos, pp. 49–60. San Diego County Archaeological Society Research Paper 1.

---

Munz, Philip A.

1974 *A Flora of Southern California*. University of California Press, Berkeley.

Ogden Environmental and Energy Services Co. (Ogden)

1995 *San Diego County Water Authority Emergency Water Storage Project Cultural Resources Technical Report for Draft Environmental Impact Statement*. Report prepared by Ogden Environmental and Energy Services Co., and submitted to, and on file at, the San Diego County Water Authority and the U.S. Army Corps of Engineers, Los Angeles.

Peterson, Roger T.

1961 *A Field Guide to Western Birds*. Houghton Mifflin Company, Boston.

Pigniolo, Andrew R.

2001 Points, Patterns, and People: Distribution of the Desert Side-Notched Point in San Diego. *Proceedings of the Society for California Archaeology* 14:27–40.

2005 A Different Context: San Dieguito in the Mountains of Southern California. *Proceedings of the Society for California Archaeology* 18:255–262.

Polan, Keith, May, Hall, Graff

1978 Site record form for site CA-SDI-5498. On file at the South Coastal Information Center (SCIC), San Diego State University, San Diego.

Raven-Jennings, Shelly, and Brian F. Smith

1999 *Report of Excavations at CA-SDI-4608: Subsistence and Technology Transitions during the Mid-to-Late Holocene in San Diego County*. Report prepared by Brian F. Smith and Associates for the City of Poway. Report on file at the South Coastal Information Center (SCIC), San Diego State University, San Diego.

Rogers, Malcolm J.

1939 *Early Lithic Industries of the Lower Basin of the Colorado River and Adjacent Desert Areas*. San Diego Museum Papers No. 3.

1945 An Outline of Yuman Prehistory. *Southwestern Journal of Anthropology* 1(2):167–198.

- 
- 1966 *Ancient Hunters of the Far West*, edited by R. F. Pourade, pp. 21–108. Copley Press, La Jolla, California.
- Rogers, Thomas H.  
1965 *Geologic Map of California, Santa Ana Sheet*. California Division of Mines and Technology, Sacramento.
- Shipek, Florence C.  
1982 Kumeyaay Socio-Political Structure. *Journal of California and Great Basin Anthropology* 4:2.  
  
1995 Kumeyaay Tribal Boundaries, Alta and Baja California. Manuscript in possession of author.
- Shumway, George, Carl L. Hubbs, and James R. Moriarty  
1961 Scripps Estates Site, San Diego, California: A La Jolla Site Dated 5460 to 7370 Years before the Present. *Annals of the New York Academy of Sciences* 93(3):37–132.
- Smith, Brian F.  
1990 *Results of an Archaeological Survey and Evaluation of Cultural Resources within the San Elijo Ranch Specific Plan*. Report prepared by Brian F. Smith and Associates, and on file at the South Coastal Information Center (SCIC), San Diego State University, San Diego.
- Smith, Brian F., and James R. Moriarty  
1985 *The Excavations at Site W-20, the Sierra del Mar Project. A site Occupied by the La Jolla Complex From 7,140 B.P. (5,190 B.C.) to 2,355 B.P. (400 B.C.) on the Shores of Los Peñasquitos Lagoon near Del Mar, California*. Report prepared by Brian F. Smith and Associates for Dr. Victor Fargo, Fargo Industries. Report on file at the South Coastal Information Center (SCIC), San Diego State University, San Diego.
- Sparkman, Philip S.  
1908 The Culture of the Luiseño Indians. *University of California Publications in American Archaeology and Ethnology* 8(4):187–234.

---

Stebbins, Robert C.

1966 *A Field Guide to Western Reptiles and Amphibians*. Houghton Mifflin Company, Boston.

Trafzer, Clifford E. and Richard L. Carrico

1992 American Indians: The County's First Residents. Chapter 4, in *San Diego: An Introduction to the Region*, edited by P. R. Pryde. Kendall/Hunt Publishing, Dubuque, Iowa.

True, Delbert L.

1958 An Early Complex in San Diego County, California. *American Antiquity* 23(3):255–263.

1970 *Investigation of a Late Prehistoric Complex in Cuyamaca Rancho State Park, San Diego County, California*. Monograph 1. Archaeological Survey, University of California, Los Angeles.

1980 The Pauma Complex in Northern San Diego County: 1978. *Journal of New World Archaeology* 3(4):1–30. Institute of Archaeology, University of California, Los Angeles.

True, Delbert L., and Eleanor Beemer

1982 Two Milling Stone Inventories from Northern San Diego County, California. *Journal of California and Great Basin Anthropology* 4(2):233–261.

Vaughan, Sheila J.

1982 *A Replicative Systems Analysis of the San Dieguito Component at the C. W. Harris Site*. Master's thesis, Department of Anthropology, University of Nevada, Las Vegas.

Victorino, K., and B. Giacomini

1998 Site record form for site CA-SDI-14,837. On file at the South Coastal Information Center (SCIC), San Diego State University, San Diego.

Wahoff, Tanya, and Jackson Underwood

2000 *Supplemental Cultural Resources Inventory Emergency Storage Project, Olivenhain Reservoir and Olivenhain to Second Aqueduct Pipeline, San Diego*

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*County, California.* Prepared by KEA Environmental, Inc. and submitted to San Diego County Water Authority. On file at the South Coastal Information Center (SCIC), San Diego State University, San Diego.

Wahoff, Tanya, and Rebecca McCorkle Apple

2002 *Addendum 6 Supplemental Cultural Resources Survey, Emergency Storage Project, Olivenhain Dam and Reservoir Visitor's Overlook, San Diego, County, California.* Report submitted to and on file at the San Diego County Water Authority.

Wahoff, Tanya, and Lorraine M. Willey

2003 *Addendum 9 Supplemental Cultural Resources Survey, Emergency Storage Project, Escondido Creek Wetland Mitigation Project, San Diego, County, California.* Report submitted to, and on file at, the San Diego County Water Authority.

Wallace, William J.

1955 A Suggested Chronology for Southern California Coastal Archaeology. *Southwestern Journal of Anthropology* 11:214–230.

Warren, Claude N.

1966 *The San Dieguito Type Site: M. J. Rogers' 1938 Excavation on the San Dieguito River.* San Diego Museum Papers No. 6, San Diego, California.

1967 The San Dieguito Complex: A Review and Hypothesis. *American Antiquity* 32(2):168–185.

1968 Cultural Tradition and Ecological Adaptation on the Southern California Coast. In *Archaic Prehistory in the Western United States*, edited by C. Irwin-Williams, pp. 1–14. *Eastern New Mexico Contributions in Anthropology* 1(3). Portales, New Mexico.

1987 The San Dieguito and La Jolla: Some Comments. In, *San Dieguito - La Jolla: Chronology and Controversy*, edited by D. R. Gallegos, pp. 73–85. San Diego County Archaeological Society Research Paper No. 1.

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Warren, Claude N., and Delbert L. True

1961 The San Dieguito Complex and Its Place in San Diego County Prehistory. *Archaeological Survey Annual Report, 1960–1961*, pp. 246–291. University of California, Los Angeles.

Warren, Claude N., Gretchen Siegler, and Frank Dittmer

1998 Paleoindian and Early Archaic Periods. In *Prehistoric and Historic Archaeology of Metropolitan San Diego: A Historic Properties Background Study*. Draft report prepared by ASM Affiliates and submitted to Metropolitan Wastewater, San Diego.

Weber, Harold F.

1963 *Geology and Mineral Resources of San Diego County, California*. County Report 3. California Division of Mines and Geology, San Francisco.

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## **APPENDIX A**

### **RECORDS SEARCH CONFIRMATION**





South Coastal Information Center  
 4283 El Cajon Blvd., Suite 250  
 San Diego, CA 92105  
 Office: (619) 594-5682  
 Fax: (619) 594-4483  
 scic@mail.sdsu.edu  
 scic\_gis@mail.sdsu.edu

## CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM RECORDS SEARCH

**Company:** EDAW | Aecom  
**Company Representative:** Cheryl Bowden-Renna  
**Date Processed:** 10/13/2009  
**Project Identification:** OMWD Raw Water Project 09080154.01

**Search Radius:** within designated boundaries

**Historical Resources:** ND  
 Trinomial and Primary site maps have been reviewed. All sites within the project boundaries and the specified radius of the project area have been plotted. Copies of the site record forms have been included for all recorded sites.

**Previous Survey Report Boundaries:** ND  
 Project boundary maps have been reviewed. National Archaeological Database (NADB) citations for reports within the project boundaries and within the specified radius of the project area have been included.

**Historic Addresses:** ND  
 A map and database of historic properties (formerly Geofinder) has been included.

**Historic Maps:** ND  
 The historic maps on file at the South Coastal Information Center have been reviewed, and copies have been included.

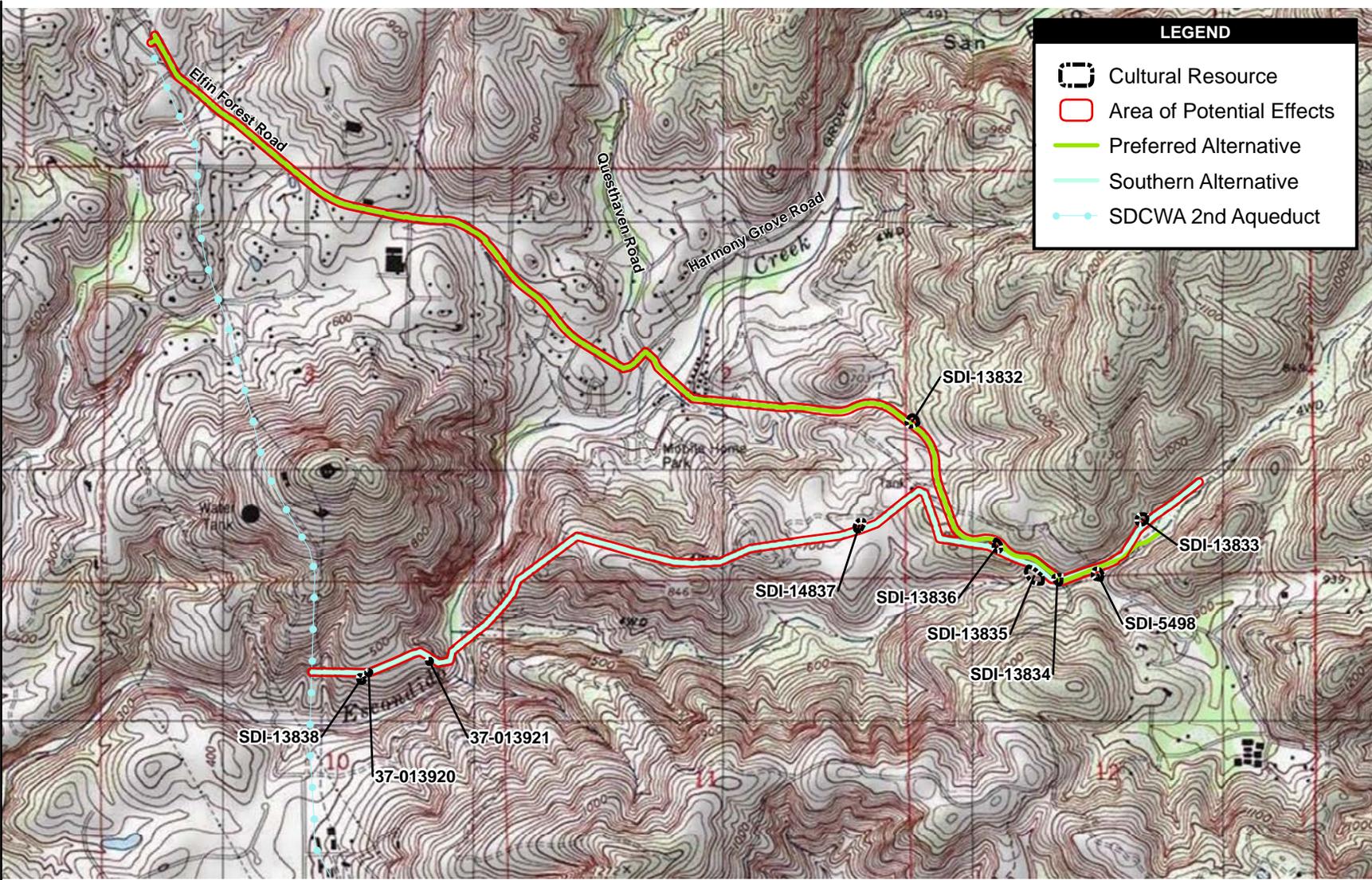
| <b>Summary of SHRC<br/>Approved CHRIS IC<br/>Records Search Elements</b> |     |
|--|-----|
| <b>Address-Mapped GIS Shapes:</b>  | no  |
| <b>GIS Shapes:</b>   | 87  |
| <b>Searchable Pages:</b>   | 41  |
| <b>Other Pages:</b>  | 181 |
| <b>Aerial Photos:</b>  | 0   |
| <b>Quads:</b>  | 1   |
| <b>Hours:</b>  | 1.5 |
| <b>RUSH:</b>   | no  |



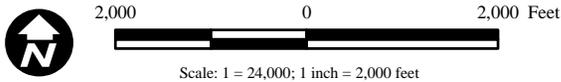
**APPENDIX B**

**CONFIDENTIAL FIGURE 4 AND  
SITE UPDATE FORMS**





Source: USGS 7.5' Topographic Quadrangle Rancho Santa Fe CA 1983



**CONFIDENTIAL**

**Figure 4**  
**Archaeological Resources**



## **APPENDIX C**

### **NATIVE AMERICAN CONSULTATION**



EDAW Inc  
 1420 Kettner Boulevard, Suite 500, San Diego, California 92101  
 T 619.233.1454 F 619.233.0952 www.edaw.com

## Facsimile

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| Please deliver to |  | From             |                     |
|-------------------|--|------------------|---------------------|
| Name              | Dave Singleton                         | Name             | Cheryl Bowden-Renna |
| Firm              | Native American Heritage<br>Commission | Direct line      | 619-233-1454 x 6815 |
| Fax number        | 916-657-5390                           | Date transmitted | 12/9/2009           |
| Phone number      |  | Total pages      | 3                   |
| Subject           | OMWD Raw Water Project                 |                  |                     |
| Project number    | 09080154                               |                  |                     |

We are contacting you to request a sacred lands file check for the OMWD Raw Water Project. The project area is located southwest of Escondido, in north central San Diego County. Attached is a map showing the project area, incorporating a ½-mile radius from the centerline on the following quadrangle:

|                 |          |                                 |
|-----------------|----------|---------------------------------|
| Rancho Santa Fe | T12S R3W | Sections 33, 34, 35             |
|                 | T13S R3W | Sections 1, 2, 3, 4, 10, 11, 12 |

If you have any questions, please do not hesitate to call me at (619) 233-1454.

Sincerely,

Cheryl Bowden-Renna  
 Archaeologist/Associate

STATE OF CALIFORNIA

Arnold Schwarzenegger, Governor

**NATIVE AMERICAN HERITAGE COMMISSION**

915 CAPITOL MALL, ROOM 364  
 SACRAMENTO, CA 95814  
 (916) 653-6251  
 Fax (916) 657-5390  
 Web Site [www.nahc.ca.gov](http://www.nahc.ca.gov)  
 ds\_nahc@pacbell.net



November 25, 2009

Ms. Cheryl Bowden-Renna, Archaeologist/Associate

**EDAW | AECOM**

1420 Kettner Boulevard, Suite 500  
 San Diego, CA 92101

Sent by FAX to: 619-233-0952

No. of Pages: 4

Re: Request for a Sacred Lands File Search and Native American Contacts List for a Proposed QMWD Raw Water Project located southwest of Escondido in north, central San Diego County, California

Dear Ms. Bowden-Renna:

The Native American Heritage Commission (NAHC), the State of California 'Trustee Agency' for the protection and preservation of Native American cultural resources (c.f. CA Public Resources Code §21070), was able to perform a record search of its Sacred Lands File (SLF) for the affected project area (APE) requested. The California Environmental Quality Act (CEQA; CA Public Resources Code Section 21000 – 21177) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR) per the California Code of Regulations §15064.5(b)(c)(f) CEQA guidelines). Section 15382 of the 2007 CEQA Guidelines defines a significant impact on the environment as "a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including ...objects of historic or aesthetic significance." The NAHC SLF search did not indicate the presence of Native American cultural resources within one-half - mile radius of the proposed project (APE).

This letter includes state and federal statutes relating to Native American historic properties of religious and cultural significance to American Indian tribes and individuals as 'consulting parties' under both state and federal law.

Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. Enclosed are the names of the nearest tribes and interested Native American individuals that the NAHC recommends as 'consulting parties,' for this purpose, that may have knowledge of the religious and cultural significance of the historic properties in the project area (e.g. APE). We recommend that you contact persons on the attached list of Native American contacts. Furthermore we suggest that you contact the California Historic Resources Information System (CHRIS) at the Office of Historic Preservation Coordinator's office (at (916) 653-7278, for referral to the nearest Information Center of which there are 10.

Consultation with tribes and interested Native American consulting parties, on the NAHC list, should be conducted in compliance with the requirements of federal NEPA (42 U.S.C. 4321-43351) and Section 106 and 4(f) of federal NHPA (16 U.S.C. 470 [f] *et seq*), and NAGPRA (25 U.S.C. 3001-3013), as appropriate.

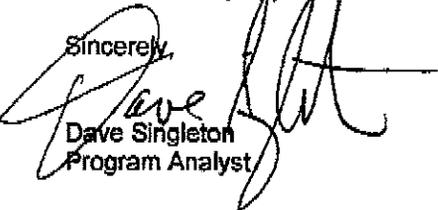
Lead agencies should consider avoidance, as defined in Section 15370 of the California Environmental Quality Act (CEQA) when significant cultural resources could be affected by a project. Also, Public Resources Code Section 5097.98 and Health & Safety Code Section 7050.5 provide for provisions for accidentally discovered archeological resources during construction and

mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery. Discussion of these should be included in your environmental documents, as appropriate.

The response to this search for Native American cultural resources is conducted in the NAHC Sacred Lands Inventory, established by the California Legislature (CA Public Resources Code §5097.94(a) and is exempt from the CA Public Records Act (c.f. California Government Code §6254.10) although Native Americans on the attached contact list may wish to reveal the nature of identified cultural resources/historic properties. Confidentiality of "historic properties of religious and cultural significance" may also be protected the under Section 304 of the NHPA or at the Secretary of the Interior' discretion if not eligible for listing on the National Register of Historic Places. The Secretary may also be advised by the federal Indian Religious Freedom Act (cf. 42 U.S.C, 1996) in issuing a decision on whether or not to disclose items of religious and/or cultural significance identified in or near the APE and possibly threatened by proposed project activity.

If you have any questions about this response to your request, please do not hesitate to contact me at (916) 653-6251.

Sincerely,

  
Dave Singleton  
Program Analyst

Attachment: Native American Contacts List (NOTE: we further recommend that other forms of 'proof of mailing or proof of contact be utilized instead of 'Return Receipt Requested' Certified or Registered Mail.) Further, we suggest a follow-up telephone call to the contacts if the replies are not received or need clarification.

**Native American Contact**  
**San Diego County**  
**November 23, 2009**

Barona Group of the Capitan Grande  
 Edwin Romero, Chairperson  
 1095 Barona Road Diegueno  
 Lakeside , CA 92040  
 sue@barona-nsn.gov  
 (619) 443-6612  
 619-443-0681

Mesa Grande Band of Mission Indians  
 Mark Romero, Chairperson  
 P.O. Box 270 Diegueno  
 Santa Ysabel, CA 92070  
 mesagrandeband@msn.com  
 (760) 782-3818  
 (760) 782-9092 Fax

San Pasqual Band of Mission Indians  
 Allen E. Lawson, Chairperson  
 PO Box 365 Diegueno  
 Valley Center, CA 92082  
 (760) 749-3200  
 (760) 749-3876 Fax

Pauma & Yuima  
 Christobal C. Devers, Chairperson  
 P.O. Box 369 Luiseno  
 Pauma Valley CA 92061  
 paumareservation@aol.com  
 (760) 742-1289  
 (760) 742-3422 Fax

Santa Ysabel Band of Diegueno Indians  
 Johnny Hernandez, Spokesman  
 PO Box 130 Diegueno  
 Santa Ysabel, CA 92070  
 brandietaylor@yahoo.com  
 (760) 765-0845  
 (760) 765-0320 Fax

Rincon Band of Mission Indians  
 Angela Veltrano, Rincon Culture Committee  
 P.O. Box 68 Luiseno  
 Valley Center, CA 92082  
 council@rincontribe.org  
 (760) 749-1051  
 (760) 749-8901 Fax

Kumeyaay Cultural Historic Committee  
 Ron Christman  
 56 Viejas Grade Road Diegueno/Kumeyaay  
 Alpine , CA 92001  
 (619) 445-0385

Kwaaymii Laguna Band of Mission Indians  
 Carmen Lucas  
 P.O. Box 775 Diegueno -  
 Pine Valley , CA 91962  
 (619) 709-4207

**This list is current only as of the date of this document.**

**Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.**

**This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed OMWD Raw Water Project; located southwest of Escondido in north-central San Diego County, California for which a Sacred Lands File search and Native American Contacts list were requested.**

**Native American Contact**  
**San Diego County**  
**November 23, 2009**

**Inaja Band of Mission Indians**  
**Rebecca Osuna, Spokesperson**  
**309 S. Maple Street           Diegueno**  
**Escondido , CA 92025**  
**(760) 737-7628**  
**(760) 747-8568 Fax**

**San Luis Rey Band of Mission Indians**  
**Carmen Mojado, Co-Chair**  
**1889 Sunset Drive           Luiseno**  
**Vista , CA 92081**  
**cjmojado@slrmissionindians.org**  
**(760) 724-8505**  
**(760) 724-2172 - FAX**

**San Luis Rey Band of Mission Indians**  
**Henry Contreras, Most Likely Descendant**  
**1763 Chapulin Lane           Luiseno**  
**Fallbrook , CA 92028**  
**(760) 728-6722 - Home**  
**(760) 908-7625 - Cell**

**Kupa Cultural Center (Pala Band)**  
**Shasta Gaughen, Assistant Director**  
**35008 Pala-Temecula Rd.PMB Box   Luiseno**  
**Pala , CA 92059**  
**cupa@palatribe.com**  
**(760) 891-3590**  
**(760) 742-4543 - FAX**

**San Luis Rey Band of Mission Indians**  
**Russell Romo**  
**12064 Old Pomerado Road   Luiseno**  
**Poway , CA 92064**  
**(858) 748-1586**

**Clint Linton**  
**P.O. Box 507                           Diegueno/Kumeyaay**  
**Santa Ysabel, CA 92070**  
**(760) 803-5694**  
**cjlinton73@aol.com**

**Pauma Valley Band of Luiseño Indians**  
**Bennae Calac, Tribal Council Member**  
**P.O. Box 369                           Luiseno**  
**Pauma Valley CA 92061**  
**bennaecalac@aol.com**  
**(760) 617-2872**  
**(760) 742-3422 - FAX**

**Mel Vernon, Chairperson**  
**San Luis Rey Band of Mission Indians**  
**1044 North Ivy Street           Luiseno**  
**Escondido , CA 92026**  
**melvern@aol.com**  
**(760) 746-8692**  
**(760) 703-1514 - cell**

**This list is current only as of the date of this document.**

**Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.**

**This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed OMWD Raw Water Project; located southwest of Escondido in north-central San Diego County, California for which a Sacred Lands File search and Native American Contacts list were requested.**

December 1, 2009

Edwin Romero, Chairperson  
Barona Group of the Capitan Grande  
1095 Barona Road  
Lakeside, CA 92040

Dear Mr. Romero:

**Subject: OMWD Raw Water Project (09080154)**

Olivenhain Municipal Water District (OMWD) proposes to construct a pipeline along one of two alternative routes in order to transport raw water from the Second San Diego Aqueduct to the District's David C. McCollom Water Treatment Plant adjacent to the Olivenhain Reservoir. The pipeline would be approximately 3 miles long, 36 inches in diameter, and would be installed within a cut and cover trench, except where tunneling is required underneath Escondido Creek and the Escondido sewer outfall. AECOM is conducting a Phase I cultural resources survey and inventory for the OMWD Raw Water project.

The purpose of this letter is to notify you of this project and to solicit your input. We would like to know if you have any questions, comments, or concerns. A project map, a reply form, and a self-addressed stamped envelope have been included for your convenience. Providing comments now does not limit your ability to comment at a later time. Please write or call at your earliest convenience so that we may include your views in our report.

Sincerely,



Stephanie Jow  
Staff Archaeologist

Enclosure: Map  
Response form  
Stamped reply envelope



AECOM  
1420 Kettner Boulevard  
Suite 500  
San Diego, CA 92101  
www.aecom.com

619.233.1454 tel  
619.233.0952 fax

December 1, 2009

Bennae Calac, Tribal Council Member  
Pauma Valley Band of Luiseño Indians  
P.O. Box 369  
Pauma Valley, CA 92061

Dear Ms. Calac:

**Subject: OMWD Raw Water Project (09080154)**

Olivenhain Municipal Water District (OMWD) proposes to construct a pipeline along one of two alternative routes in order to transport raw water from the Second San Diego Aqueduct to the District's David C. McCollom Water Treatment Plant adjacent to the Olivenhain Reservoir. The pipeline would be approximately 3 miles long, 36 inches in diameter, and would be installed within a cut and cover trench, except where tunneling is required underneath Escondido Creek and the Escondido sewer outfall. AECOM is conducting a Phase I cultural resources survey and inventory for the OMWD Raw Water project.

The purpose of this letter is to notify you of this project and to solicit your input. We would like to know if you have any questions, comments, or concerns. A project map, a reply form, and a self-addressed stamped envelope have been included for your convenience. Providing comments now does not limit your ability to comment at a later time. Please write or call at your earliest convenience so that we may include your views in our report.

Sincerely,

Stephanie Jow  
Staff Archaeologist

Enclosure: Map  
Response form  
Stamped reply envelope

December 1, 2009

Ron Christman  
Kumeyaay Cultural Historic Committee  
56 Viejas Grande Road  
Alpine, CA 92001

Dear Mr. Christman:

**Subject: OMWD Raw Water Project (09080154)**

Olivenhain Municipal Water District (OMWD) proposes to construct a pipeline along one of two alternative routes in order to transport raw water from the Second San Diego Aqueduct to the District's David C. McCollom Water Treatment Plant adjacent to the Olivenhain Reservoir. The pipeline would be approximately 3 miles long, 36 inches in diameter, and would be installed within a cut and cover trench, except where tunneling is required underneath Escondido Creek and the Escondido sewer outfall. AECOM is conducting a Phase I cultural resources survey and inventory for the OMWD Raw Water project.

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Sincerely,



Stephanie Jow  
Staff Archaeologist

Enclosure: Map  
Response form  
Stamped reply envelope



AECOM  
1420 Kettner Boulevard  
Suite 500  
San Diego, CA 92101  
www.aecom.com

619.233.1454 tel  
619.233.0952 fax

December 1, 2009

Henry Contreras, Most Likely Descendant  
San Luis Rey Band of Mission Indians  
1763 Chapulin Lane  
Fallbrook, CA 92028

Dear Mr. Contreras:

**Subject: OMWD Raw Water Project (09080154)**

Olivenhain Municipal Water District (OMWD) proposes to construct a pipeline along one of two alternative routes in order to transport raw water from the Second San Diego Aqueduct to the District's David C. McCollom Water Treatment Plant adjacent to the Olivenhain Reservoir. The pipeline would be approximately 3 miles long, 36 inches in diameter, and would be installed within a cut and cover trench, except where tunneling is required underneath Escondido Creek and the Escondido sewer outfall. AECOM is conducting a Phase I cultural resources survey and inventory for the OMWD Raw Water project.

The purpose of this letter is to notify you of this project and to solicit your input. We would like to know if you have any questions, comments, or concerns. A project map, a reply form, and a self-addressed stamped envelope have been included for your convenience. Providing comments now does not limit your ability to comment at a later time. Please write or call at your earliest convenience so that we may include your views in our report.

Sincerely,

Stephanie Jow  
Staff Archaeologist

Enclosure: Map  
Response form  
Stamped reply envelope

December 1, 2009

Shasta Gaughen, Assistant Director  
Kupa Cultural Center (Pala Band)  
35008 Pala-Temecula Rd. PMB Box  
Pala, CA 92059

Dear Ms. Gaughen:

**Subject: OMWD Raw Water Project (09080154)**

Olivenhain Municipal Water District (OMWD) proposes to construct a pipeline along one of two alternative routes in order to transport raw water from the Second San Diego Aqueduct to the District's David C. McCollom Water Treatment Plant adjacent to the Olivenhain Reservoir. The pipeline would be approximately 3 miles long, 36 inches in diameter, and would be installed within a cut and cover trench, except where tunneling is required underneath Escondido Creek and the Escondido sewer outfall. AECOM is conducting a Phase I cultural resources survey and inventory for the OMWD Raw Water project.

The purpose of this letter is to notify you of this project and to solicit your input. We would like to know if you have any questions, comments, or concerns. A project map, a reply form, and a self-addressed stamped envelope have been included for your convenience. Providing comments now does not limit your ability to comment at a later time. Please write or call at your earliest convenience so that we may include your views in our report.

Sincerely,



Stephanie Jow  
Staff Archaeologist

Enclosure: Map  
Response from  
Stamped reply envelope

December 1, 2009

Johnny Hernandez, Spokesman  
Santa Ysabel Band of Diegueno Indians  
P.O. Box 130  
Santa Ysabel, CA 92070

Dear Mr. Hernandez:

**Subject: OMWD Raw Water Project (09080154)**

Olivenhain Municipal Water District (OMWD) proposes to construct a pipeline along one of two alternative routes in order to transport raw water from the Second San Diego Aqueduct to the District's David C. McCollom Water Treatment Plant adjacent to the Olivenhain Reservoir. The pipeline would be approximately 3 miles long, 36 inches in diameter, and would be installed within a cut and cover trench, except where tunneling is required underneath Escondido Creek and the Escondido sewer outfall. AECOM is conducting a Phase I cultural resources survey and inventory for the OMWD Raw Water project.

The purpose of this letter is to notify you of this project and to solicit your input. We would like to know if you have any questions, comments, or concerns. A project map, a reply form, and a self-addressed stamped envelope have been included for your convenience. Providing comments now does not limit your ability to comment at a later time. Please write or call at your earliest convenience so that we may include your views in our report.

Sincerely,



Stephanie Jow  
Staff Archaeologist

Enclosure: Map  
Response form  
Stamped reply envelope

December 1, 2009

Allen E. Lawson, Chairperson  
San Pasqual Band of Mission Indians  
P.O. Box 365  
Valley Center, CA 92082

Dear Mr. Lawson:

**Subject: OMWD Raw Water Project (09080154)**

Olivenhain Municipal Water District (OMWD) proposes to construct a pipeline along one of two alternative routes in order to transport raw water from the Second San Diego Aqueduct to the District's David C. McCollom Water Treatment Plant adjacent to the Olivenhain Reservoir. The pipeline would be approximately 3 miles long, 36 inches in diameter, and would be installed within a cut and cover trench, except where tunneling is required underneath Escondido Creek and the Escondido sewer outfall. AECOM is conducting a Phase I cultural resources survey and inventory for the OMWD Raw Water project.

The purpose of this letter is to notify you of this project and to solicit your input. We would like to know if you have any questions, comments, or concerns. A project map, a reply form, and a self-addressed stamped envelope have been included for your convenience. Providing comments now does not limit your ability to comment at a later time. Please write or call at your earliest convenience so that we may include your views in our report.

Sincerely,



Stephanie Jow  
Staff Archaeologist

Enclosure: Map  
Response from  
Stamped reply envelope



AECOM  
1420 Kettner Boulevard  
Suite 500  
San Diego, CA 92101  
www.aecom.com

619.233.1454 tel  
619.233.0952 fax

December 1, 2009

Clint Linton  
P.O. Box 507  
Santa Ysabel, CA 92970

Dear Mr. Linton:

**Subject: OMWD Raw Water Project (09080154)**

Olivenhain Municipal Water District (OMWD) proposes to construct a pipeline along one of two alternative routes in order to transport raw water from the Second San Diego Aqueduct to the District's David C. McCollom Water Treatment Plant adjacent to the Olivenhain Reservoir. The pipeline would be approximately 3 miles long, 36 inches in diameter, and would be installed within a cut and cover trench, except where tunneling is required underneath Escondido Creek and the Escondido sewer outfall. AECOM is conducting a Phase I cultural resources survey and inventory for the OMWD Raw Water project.

The purpose of this letter is to notify you of this project and to solicit your input. We would like to know if you have any questions, comments, or concerns. A project map, a reply form, and a self-addressed stamped envelope have been included for your convenience. Providing comments now does not limit your ability to comment at a later time. Please write or call at your earliest convenience so that we may include your views in our report.

Sincerely,

Stephanie Jow  
Staff Archaeologist

Enclosure: Map  
Response form  
Stamped reply envelope

December 1, 2009

Carmen Lucas  
Kwaaymii Laguna Band of Mission Indians  
P.O. Box 775  
Pine Valley, CA 91962

Dear Ms. Lucas:

**Subject: OMWD Raw Water Project (09080154)**

Olivenhain Municipal Water District (OMWD) proposes to construct a pipeline along one of two alternative routes in order to transport raw water from the Second San Diego Aqueduct to the District's David C. McCollom Water Treatment Plant adjacent to the Olivenhain Reservoir. The pipeline would be approximately 3 miles long, 36 inches in diameter, and would be installed within a cut and cover trench, except where tunneling is required underneath Escondido Creek and the Escondido sewer outfall. AECOM is conducting a Phase I cultural resources survey and inventory for the OMWD Raw Water project.

The purpose of this letter is to notify you of this project and to solicit your input. We would like to know if you have any questions, comments, or concerns. A project map, a reply form, and a self-addressed stamped envelope have been included for your convenience. Providing comments now does not limit your ability to comment at a later time. Please write or call at your earliest convenience so that we may include your views in our report.

Sincerely,



Stephanie Jow  
Staff Archaeologist

Enclosure: Map  
Response from  
Stamped reply envelope



AECOM  
1420 Kettner Boulevard  
Suite 500  
San Diego, CA 92101  
www.aecom.com

619.233.1454 tel  
619.233.0952 fax

December 1, 2009

Carmen Mojado, Co-Chair  
San Luis Rey Band of Mission Indians  
1889 Sunset Drive  
Vista, CA 92081

Dear Ms. Mojado:

**Subject: OMWD Raw Water Project (09080154)**

Olivenhain Municipal Water District (OMWD) proposes to construct a pipeline along one of two alternative routes in order to transport raw water from the Second San Diego Aqueduct to the District's David C. McCollom Water Treatment Plant adjacent to the Olivenhain Reservoir. The pipeline would be approximately 3 miles long, 36 inches in diameter, and would be installed within a cut and cover trench, except where tunneling is required underneath Escondido Creek and the Escondido sewer outfall. AECOM is conducting a Phase I cultural resources survey and inventory for the OMWD Raw Water project.

The purpose of this letter is to notify you of this project and to solicit your input. We would like to know if you have any questions, comments, or concerns. A project map, a reply form, and a self-addressed stamped envelope have been included for your convenience. Providing comments now does not limit your ability to comment at a later time. Please write or call at your earliest convenience so that we may include your views in our report.

Sincerely,

Stephanie Jow  
Staff Archaeologist

Enclosure: Map  
Response from  
Stamped reply envelope



AECOM  
1420 Kettner Boulevard  
Suite 500  
San Diego, CA 92101  
www.aecom.com

619.233.1454 tel  
619.233.0952 fax

December 1, 2009

Mark Romero, Chairperson  
Mesa Grande Band of Mission Indians  
P.O. Box 270  
Santa Ysabel, CA 92070

Dear Mr. Romero:

**Subject: OMWD Raw Water Project (09080154)**

Olivenhain Municipal Water District (OMWD) proposes to construct a pipeline along one of two alternative routes in order to transport raw water from the Second San Diego Aqueduct to the District's David C. McCollom Water Treatment Plant adjacent to the Olivenhain Reservoir. The pipeline would be approximately 3 miles long, 36 inches in diameter, and would be installed within a cut and cover trench, except where tunneling is required underneath Escondido Creek and the Escondido sewer outfall. AECOM is conducting a Phase I cultural resources survey and inventory for the OMWD Raw Water project.

The purpose of this letter is to notify you of this project and to solicit your input. We would like to know if you have any questions, comments, or concerns. A project map, a reply form, and a self-addressed stamped envelope have been included for your convenience. Providing comments now does not limit your ability to comment at a later time. Please write or call at your earliest convenience so that we may include your views in our report.

Sincerely,

Stephanie Jow  
Staff Archaeologist

Enclosure: Map  
Response form  
Stamped reply envelope



AECOM  
1420 Kettner Boulevard  
Suite 500  
San Diego, CA 92101  
www.aecom.com

619.233.1454 tel  
619.233.0952 fax

December 1, 2009

Rebecca Osuna, Spokesperson  
Inaja Band of Mission Indians  
309 S. Maple Street  
Escondido, CA 92025

Dear Ms. Osuna:

**Subject: OMWD Raw Water Project (09080154)**

Olivenhain Municipal Water District (OMWD) proposes to construct a pipeline along one of two alternative routes in order to transport raw water from the Second San Diego Aqueduct to the District's David C. McCollom Water Treatment Plant adjacent to the Olivenhain Reservoir. The pipeline would be approximately 3 miles long, 36 inches in diameter, and would be installed within a cut and cover trench, except where tunneling is required underneath Escondido Creek and the Escondido sewer outfall. AECOM is conducting a Phase I cultural resources survey and inventory for the OMWD Raw Water project.

The purpose of this letter is to notify you of this project and to solicit your input. We would like to know if you have any questions, comments, or concerns. A project map, a reply form, and a self-addressed stamped envelope have been included for your convenience. Providing comments now does not limit your ability to comment at a later time. Please write or call at your earliest convenience so that we may include your views in our report.

Sincerely,

Stephanie Jow  
Staff Archaeologist

Enclosure: Map  
Response form  
Stamped reply envelope



AECOM  
1420 Kettner Boulevard  
Suite 500  
San Diego, CA 92101  
www.aecom.com

619.233.1454 tel  
619.233.0952 fax

December 1, 2009

Russell Romo  
San Luis Rey Band of Mission Indians  
12064 Old Pomerado Road  
Poway, CA 92064

Dear Mr. Romo:

**Subject: OMWD Raw Water Project (09080154)**

Olivenhain Municipal Water District (OMWD) proposes to construct a pipeline along one of two alternative routes in order to transport raw water from the Second San Diego Aqueduct to the District's David C. McCollom Water Treatment Plant adjacent to the Olivenhain Reservoir. The pipeline would be approximately 3 miles long, 36 inches in diameter, and would be installed within a cut and cover trench, except where tunneling is required underneath Escondido Creek and the Escondido sewer outfall. AECOM is conducting a Phase I cultural resources survey and inventory for the OMWD Raw Water project.

The purpose of this letter is to notify you of this project and to solicit your input. We would like to know if you have any questions, comments, or concerns. A project map, a reply form, and a self-addressed stamped envelope have been included for your convenience. Providing comments now does not limit your ability to comment at a later time. Please write or call at your earliest convenience so that we may include your views in our report.

Sincerely,

Stephanie Jow  
Staff Archaeologist

Enclosure: Map  
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Stamped reply envelope



AECOM  
1420 Kettner Boulevard  
Suite 500  
San Diego, CA 92101  
www.aecom.com

619.233.1454 tel  
619.233.0952 fax

December 1, 2009

Angela Veltrano, Rincon Cultural Committee  
Rincon Band of Mission Indians  
P.O. Box 68  
Valley Center, CA 92082

Dear Ms. Veltrano:

**Subject: OMWD Raw Water Project (09080154)**

Olivenhain Municipal Water District (OMWD) proposes to construct a pipeline along one of two alternative routes in order to transport raw water from the Second San Diego Aqueduct to the District's David C. McCollom Water Treatment Plant adjacent to the Olivenhain Reservoir. The pipeline would be approximately 3 miles long, 36 inches in diameter, and would be installed within a cut and cover trench, except where tunneling is required underneath Escondido Creek and the Escondido sewer outfall. AECOM is conducting a Phase I cultural resources survey and inventory for the OMWD Raw Water project.

The purpose of this letter is to notify you of this project and to solicit your input. We would like to know if you have any questions, comments, or concerns. A project map, a reply form, and a self-addressed stamped envelope have been included for your convenience. Providing comments now does not limit your ability to comment at a later time. Please write or call at your earliest convenience so that we may include your views in our report.

Sincerely,

Stephanie Jow  
Staff Archaeologist

Enclosure: Map  
Response form  
Stamped reply envelope



AECOM  
1420 Kettner Boulevard  
Suite 500  
San Diego, CA 92101  
www.aecom.com

619.233.1454 tel  
619.233.0952 fax

December 1, 2009

Mel Vernon, Chairperson  
San Luis Rey Band of Mission Indians  
1044 North Ivy Street  
Escondido, CA 92026

Dear Mr. Vernon:

**Subject: OMWD Raw Water Project (09080154)**

Olivenhain Municipal Water District (OMWD) proposes to construct a pipeline along one of two alternative routes in order to transport raw water from the Second San Diego Aqueduct to the District's David C. McCollom Water Treatment Plant adjacent to the Olivenhain Reservoir. The pipeline would be approximately 3 miles long, 36 inches in diameter, and would be installed within a cut and cover trench, except where tunneling is required underneath Escondido Creek and the Escondido sewer outfall. AECOM is conducting a Phase I cultural resources survey and inventory for the OMWD Raw Water project.

The purpose of this letter is to notify you of this project and to solicit your input. We would like to know if you have any questions, comments, or concerns. A project map, a reply form, and a self-addressed stamped envelope have been included for your convenience. Providing comments now does not limit your ability to comment at a later time. Please write or call at your earliest convenience so that we may include your views in our report.

Sincerely,

Stephanie Jow  
Staff Archaeologist

Enclosure: Map  
Response from  
Stamped reply envelope

December 1, 2009

Christobal C. Devers, Chairperson  
Pauma & Yuima  
P.O. Box 369  
Pauma Valley, CA 92061

Dear Mr. Devers:

**Subject: OMWD Raw Water Project (09080154)**

Olivenhain Municipal Water District (OMWD) proposes to construct a pipeline along one of two alternative routes in order to transport raw water from the Second San Diego Aqueduct to the District's David C. McCollom Water Treatment Plant adjacent to the Olivenhain Reservoir. The pipeline would be approximately 3 miles long, 36 inches in diameter, and would be installed within a cut and cover trench, except where tunneling is required underneath Escondido Creek and the Escondido sewer outfall. AECOM is conducting a Phase I cultural resources survey and inventory for the OMWD Raw Water project.

The purpose of this letter is to notify you of this project and to solicit your input. We would like to know if you have any questions, comments, or concerns. A project map, a reply form, and a self-addressed stamped envelope have been included for your convenience. Providing comments now does not limit your ability to comment at a later time. Please write or call at your earliest convenience so that we may include your views in our report.

Sincerely,



Stephanie Jow  
Staff Archaeologist

Enclosure: Map  
Response form  
Stamped reply envelope

**CONTACT PROGRAM RESPONSE FORM  
OMWD Raw Water Project (09080154)**

Carmen Lucas  
Kwaaymii Laguna Band of Mission Indians  
P.O. Box 775  
Pine Valley, CA 91962

Please check all that apply:

- Please call me to discuss the project further; my day-time phone number is (\_\_\_\_)\_\_\_\_\_ or my evening phone number is (\_\_\_\_)\_\_\_\_\_
- I have further comments as provided below
- I do not have any comments

**Comments:**

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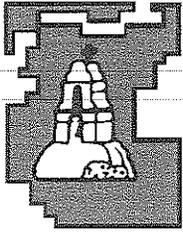
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**Signature:**

  
Carmen Lucas \_\_\_\_\_ Date 30 Dec 09



## PALA BAND OF MISSION INDIANS

Tribal Historic Preservation Office  
35008 Pala Temecula Rd. PMB 445  
Pala, CA 92059

Ph: (760) 891-3591  
Fax: (760) 742-4543

December 23, 2009

Stephanie Jow, Staff Archaeologist  
AECOM  
1420 Kettner Boulevard, Suite 500  
San Diego, CA 92101

Re: OMWD Raw Water Project (09080154)

Dear Ms. Jow:

The Pala Band of Mission Indians Tribal Historic Preservation Office has received your notification of the project referenced above. This letter constitutes our response on behalf of Robert Smith, Tribal Chairman.

We have consulted our maps and determined that the project as described is not within the boundaries of the recognized Pala Indian Reservation. The project is also beyond the boundaries of the territory that the tribe considers its Traditional Use Area (TUA). It is, however, situated in close proximity to the Reservation and information generated would likely be useful in better understanding regional culture and history. Therefore, we request as a courtesy to be kept in the information loop as the project progresses and would appreciate being maintained on the receiving list for project updates, reports of investigations, and/or any documentation that might be generated regarding previously reported or newly discovered sites. Further, if the project boundaries are modified to extend beyond the currently proposed limits, we do request updated information and the opportunity to respond to your changes.

Finally, we recommend that Approved Cultural Monitors be present on-site during all survey and all ground-disturbing activities. If you do not have access to an Approved Cultural Resource Monitor, contact us and we will work with you to identify appropriately trained individuals.

We appreciate involvement with your initiative and look forward to working with you on future efforts. If you have questions or need additional information, please do not hesitate to contact me by telephone at 760-891-3591 or by e-mail at [sgaughen@palatribe.com](mailto:sgaughen@palatribe.com).

Sincerely,

Shasta C. Gaughen, MA  
Tribal Historic Preservation Officer  
Pala Band of Mission Indians

**CONTACT PROGRAM RESPONSE FORM  
OMWD Raw Water Project (09080154)**

Angela Veltrano, Rincon Cultural Committee  
Rincon Band of Mission Indians  
P.O. Box 68  
Valley Center, CA 92082

RECEIVED  
JAN 13 2009

Please check all that apply:

- Please call me to discuss the project further; my day-time phone number is (760) 580-5807 or my evening phone number is ( )
- I have further comments as provided below
- I do not have any comments

**Comments:**

The Rincon Band is aware that several large cultural sites occur within your project area. We recommend cultural monitors be hired for the duration of the project to insure timely notification should there be inadvertent discoveries of cultural resources, including human bone.

Thank you for involving the Rincon Culture Committee on behalf of the Rincon Band.

**Signature:**

*AVeltrano*

Angela Veltrano

Jan 7, 2009

Date

# CALIFORNIA INDIAN LEGAL SERVICES

## Escondido Office

609 South Escondido Boulevard, Escondido, CA 92025 γ Phone 760/746-8941 γ Fax 760/746-1815  
www.calindian.org γ contactCILS@calindian.org

EUREKA  
ESCONDIDO

**Mark A. Vezzola, Staff Attorney**  
760/746-8941, Ext. 121  
mvezzola@calindian.org

BISHOP  
SACRAMENTO

January 8, 2010

AECOM  
Attn: Stephanie Jow  
1420 Kettner Boulevard, Suite 500  
San Diego, CA 92101

RECEIVED  
JAN 13 2010

**Re: Comments on OMWD Raw Water Project (09080154)**

Dear Ms. Jow:

Thank you for your December 1, 2009, correspondence requesting comments from the San Luis Rey Band of Luiseno Indians ("San Luis Rey Band" or "Tribe") regarding the above-referenced project. The San Luis Rey Band is a San Diego County Tribe whose traditional territory includes the current cities of Oceanside, Carlsbad, Vista, San Marcos and Escondido. The Tribe has concerns about the preservation of cultural, archaeological and historical sites within the area affected by the proposed Project.

The San Luis Rey Band's main concern is the protection of unique and irreplaceable cultural resources and sacred sites which may be damaged or destroyed by the construction of a pipeline in the Escondido area. The Tribe is also concerned about the proper and lawful treatment of Native American human remains and sacred items likely to be uncovered in the course of project development given that the proposed pipeline travels through the Tribe's traditional lands. Your request for concerns and/or recommendations is appreciated but the Tribe wishes to see an analysis of what, if any, impacts the project will have on cultural resources.

The Tribe is not opposed to the OMWD project generally, but is fervently opposed to any plans that may damage or destroy any potentially important cultural or sacred sites and human remains that may be located within the project boundaries. In addition, based on the Tribe's ancestral ties to the project area, it is very likely that there are resources that have not been located in previous surveys or data recovery programs, or that are visible on the surface. The amount of disturbance required to meet the objectives of the plan is not clear, however given that many habitation sites are located near water resources, efforts to rehabilitate habitats may impact cultural resources.

Because the project is located in an area where resources may be disturbed, the San Luis Rey Band requests mitigation measures be added and that they be conditions of approval for this project, to ensure that this project is handled in a manner consistent with the requirements of the law and which respects the Tribe's religious and cultural beliefs and practices. The following measures must be included in both the mitigation plans and the conditions of approval for the project.

Comment Letter to Stephanie Jow  
Re: OMWD Raw Water Project (09080154)  
January 8, 2010  
Page 2

The Tribe requests that AECOM be required to enter into a pre-excavation agreement with the Tribe prior to the start of the pipeline construction. This agreement will contain provisions to address the proper treatment of any cultural resources or Native American human remains inadvertently uncovered during the course of the project. Should any remains be uncovered during the development, the San Luis Rey Band will likely be designated the "Most Likely Descendant" (MLD) by the Native American Heritage Commission, as Escondido constitutes their traditional territory, as recognized by the Commission.

The pre-excavation agreement should be entered into prior to any ground-disturbing activities. The agreement will outline, to the satisfaction of the San Luis Rey Band, the roles and powers of the Native American monitors and the archaeologist, in addition to requiring compensation of the monitors by AECOM. Such an agreement is necessary to guarantee the proper treatment of cultural resources or Native American human remains displaced during the project development.

To ensure the proper treatment of any cultural resources or Native American human remains that are uncovered during the course the development, the San Luis Rey Band formally requests that AECOM agree to return these items to the Tribe if any are discovered. Any plans to curate any such items would disregard the respect due to these cultural resources. Instead, any such items or remains should be returned to the San Luis Rey Band. The Tribe considers all cultural items found in this area to belong to their ancestors rather than to the developer(s).

We look forward to working with AECOM to guarantee compliance with the California Environmental Quality Act throughout construction of this pipeline. We thank you for your continuing assistance in protecting our invaluable Luiseño cultural resources.

Sincerely,

CALIFORNIA INDIAN LEGAL SERVICES



Mark A. Vezzola  
Attorneys for the San Luis Rey Band

MAV:tle

cc: Melvin Vernon, Tribal Captain  
Carmen Mojado, Secretary of Government Relations



1420 Kettner Boulevard  
Suite 500  
San Diego, CA 92101  
www.aecom.com

DISTRIBUTION:

# Contact Report Form

**EDAW Contact:**

**Date:**

1/26/09

**Project No.:**

09080154.01.002 OMWD Raw Water

## CONTACT INFORMATION

**Individual Contacted:** Bennaë Calac, Tribal Council Member

**Agency/Organization/**

**Address:**

Pauma Valley Band of Luiseño Indians

**Phone No.:**

(760) 617-2872

## ITEMS DISCUSSED

Ms. Calac called and left a message for S. Jow, requesting more information on the OMWD Raw Water Project.

S. Jow emailed Ms. Calac back on 1/27/09.

## FOLLOW UP



**APPENDIX E**

**TRAFFIC IMPACT STUDY**



FULL TRAFFIC IMPACT STUDY  
**OMWD UNIT AA RAW WATER PIPELINE  
PROJECT**  
County of San Diego, California  
July 19, 2010

*Prepared for:*  
**Olivehain Municipal Water District**

LLG Ref. 3-09-1930

*Prepared by:*  
R.VidhyaShankar, P.E  
Transportation Engineer III

Christopher Mendiara  
Associate Principal

*Under the Supervision of:*  
John Boarman, P.E.  
Principal

**Linscott, Law &  
Greenspan, Engineers**  
4542 Ruffner Street  
Suite 100  
San Diego, CA 92111  
**858.300.8800** T  
858.300.8810 F  
[www.llgengineers.com](http://www.llgengineers.com)



## EXECUTIVE SUMMARY

Linscott, Law & Greenspan Engineers (LLG) has been retained to assess the traffic impacts associated with the proposed Olivenhain Municipal Water District Raw Water Pipeline project in the County of San Diego. The District is a publicly-owned water service agency currently serving the needs of approximately 60,000 people in a 48 square-mile area of North San Diego County which includes the cities of Encinitas, Carlsbad, San Diego, Solana Beach, and San Marcos and the communities of Olivenhain, Leucadia, Elfin Forest, Rancho Santa Fe, Fairbanks Ranch, Santa Fe Valley, and 4S Ranch. The District is a member agency of the San Diego County Water Authority (SDCWA) and the regional Metropolitan Water District of Southern California.

The District proposes to construct and operate a 48-inch pipeline over a distance of approximately three miles, in San Diego County between the City of Encinitas and the Olivenhain Reservoir. The purpose of this pipeline is to provide an alternate source of raw water for treatment of the David C. McCollom Water Treatment Plant (DCMWTP). The District has identified two alternative alignments (Northern and Southern) for the pipeline.

The Northern Alignment begins where the Second San Diego Aqueduct crosses Elfin Forest Road. The pipeline would be placed within an existing public easement following Elfin Forest Road to the southeast. At the sharp turn where Elfin Forest Road transitions to Harmony Grove Road, the alignment would continue south across a wooded area where the pipeline would tunnel underneath Escondido Creek. The alignment would intersect Via Ambiente which it would follow to the DCMWTP. Since a portion of the pipeline in this alternative is proposed to be constructed within Elfin Forest Road, construction traffic is expected to use Elfin Forest Road and hence a traffic study is required.

The Southern Alignment begins just east of Suerte Del Este Road, near the District maintenance entrance. This pipeline would likely parallel two existing pipelines located in a District easement adjacent to the maintenance road. This maintenance road would intersect Via Ambiente, and the pipeline would follow this road to the DCMWTP. The subject traffic study does not analyze this alternative as the pipeline does not traverse through Elfin Forest Road or Harmony Grove Road.

A Full Traffic Impact Study was conducted in accordance with the *County of San Diego Traffic Impact Study Guidelines (June 30, 2009)* to determine the significance of any potential construction impacts.

The project construction is expected to begin in fall 2010 and expected to occur over a 9- to 12-month period. The construction workforce would include employees/ pipeline crews to be involved in the day-to-day construction activities, trucks for equipment/material delivery, and admin/overhead staff to supervise construction activities. A typical day during the peak of the construction period is calculated to generate a maximum of 180 average daily trips (ADT).

Existing weekday AM/PM peak hour turning movement counts and average daily traffic (ADT) counts were commissioned by LLG Engineers and conducted between Tuesday, December 8 and Thursday, December 10.

LLG prepared separate project traffic distributions for truck trips and employee trips. The truck trips were further analyzed for three scenarios – *A*, *B* and *C*. The three scenarios are discussed in further detail in *Section 3.3*.

With the addition of project traffic, all the study area intersections and roadway segments are calculated to operate at level of service (LOS B) or better. Based on the County of San Diego published significance criteria, the proposed project will have no significant impacts. Therefore no mitigation measures are required.

The pipeline is planned to be constructed using both trenching and tunneling methods. During the installation of the pipeline, portions of Elfin Forest Road and Harmony Grove Road may be partially closed for construction. The type and direction of lane closure is not known at this time given the constraints with respect to alignment of the pipeline, location of utilities, terrain etc. Based on discussions with the applicant, at a given time, approximately 100 to 150 feet of roadway will be partially closed and flagger personnel will alternate the flow of traffic on a single-lane of Elfin Forest Road. Given the low volumes on Elfin Forest Road, short-term delays might be expected periodically, but the delays are not expected to be substantial. Normal roadway operations will exist once construction is complete.

LLG recommends that traffic control plans be prepared in accordance with the *Manual of Uniform for Traffic Control Devices (MUTCD, California 2010)* and County Standard Drawings and Department Instructions. The traffic control plan should be approved by the County of San Diego Public Works Division and would include appropriate signs and other warning devices in advance of construction zones, as well as posted notices prior to commencement of construction.

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## APPENDICES

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### APPENDIX

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- A. Intersection and Segment Manual Count Sheets
- B. Existing Intersection Analyses Worksheets
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**FULL TRAFFIC IMPACT STUDY**  
**OMWD UNIT AA RAW WATER PIPELINE PROJECT**

County of San Diego, California  
July 19, 2010

## **1.0 INTRODUCTION**

### **1.1 Purpose of the Report**

Linscott, Law & Greenspan Engineers (LLG) has been retained to assess the traffic impacts associated with the proposed Olivenhain Municipal Water District Raw Water Pipeline project in the County of San Diego. Since the project will be installing pipelines, construction traffic is expected to use local roadways, and temporary lane closures due to the construction are expected, thus requiring a traffic study. The following sections are included in this traffic report.

- Project Description
- Significance Criteria
- Existing Conditions Discussion
- Analysis Approach and Methodology
- Construction Traffic Trip Generation/Distribution/Assignment
- Existing + Project Analyses
- Significance of Impacts and Mitigation Measures

### **1.2 Project Description**

The District is a publicly-owned water service agency currently serving the needs of approximately 68,000 people in a 48 square mile area of North San Diego County which includes the cities and communities of Encinitas, Carlsbad, San Diego, Solana Beach, and San Marcos and the communities of Olivenhain, Leucadia, Elfin Forest, Rancho Santa Fe, Fairbanks Ranch, Santa Fe Valley, and 4S Ranch. The District is a member agency of the San Diego County Water Authority (SDCWA) and the regional Metropolitan Water District of Southern California. The District purchases and imports its raw water from the aqueduct systems owned by SDCWA.

The District proposes to construct and operate a 48-inch pipeline over a distance of approximately three miles, in San Diego County between the City of Encinitas and the Olivenhain Reservoir. The purpose of this pipeline is to provide an alternate source of water for the David C. McCollom Water Treatment Plant (DCMWTP). The main source for the DCMWTP is the Olivenhain Reservoir, which is fed by an existing raw water pipeline from the Second San Diego Aqueduct (the reservoir also receives a small amount of runoff). An agreement between the City of San Diego and the SDCWA will allow SDCWA to transfer water from Lake Hodges to the Olivenhain Reservoir. With this transfer, the water quality in the Olivenhain Reservoir may deteriorate beyond the treatment capacity of the DCMWTP. This new pipeline is intended to mitigate that risk, and to ensure the District's ability to meet its customer's need for high quality municipal water.

The project proposes to construct a new underground 48-inch pipeline extending approximately three miles from the Second San Diego Aqueduct to the DCMWTP. The pipeline would be constructed using both trenching and tunneling methods. The District has identified two alternative alignments (Northern and Southern) for the pipeline.

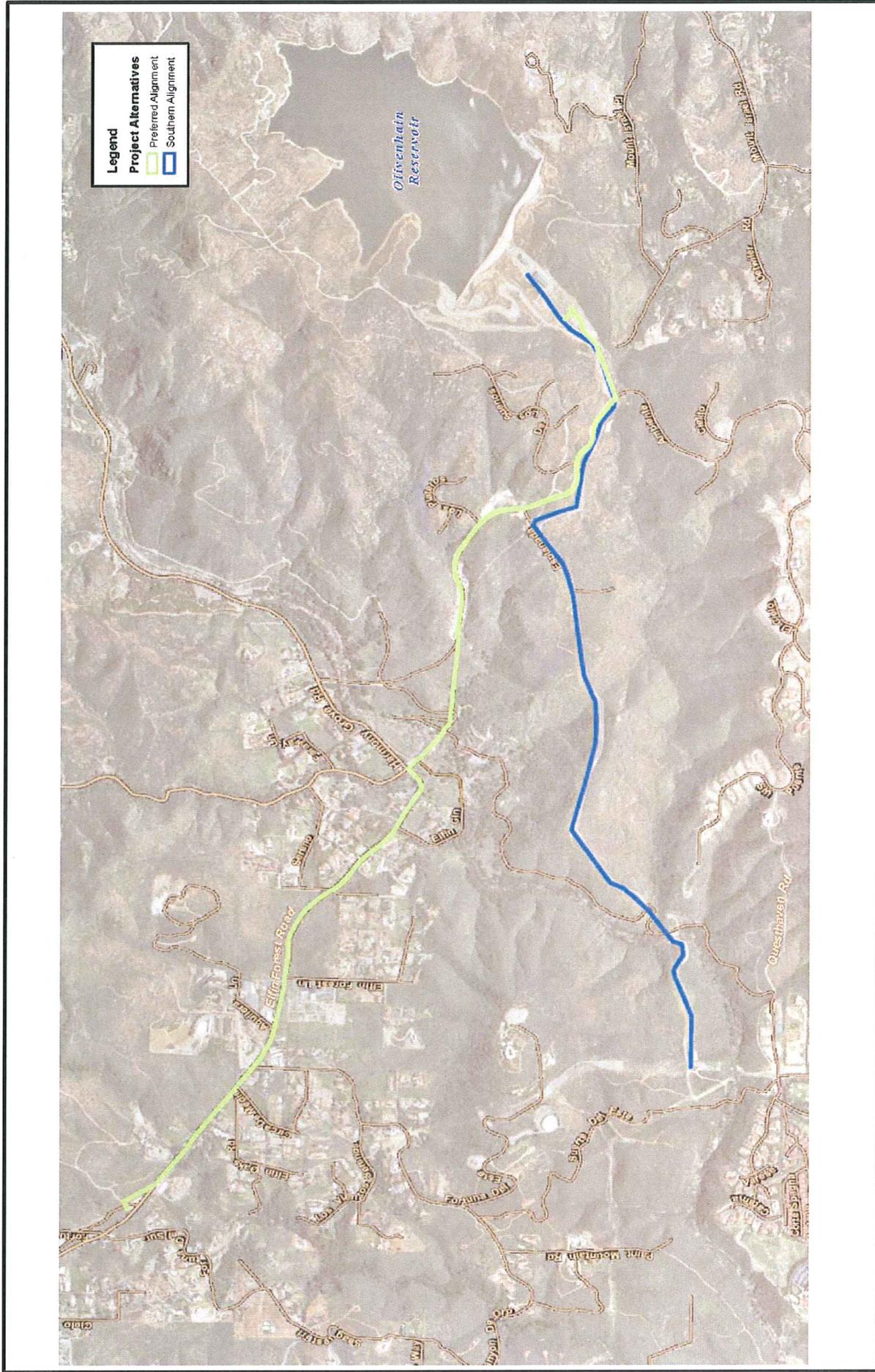
The Northern Alignment begins where the Second San Diego Aqueduct crosses Elfin Forest Road. The pipeline would be placed within an existing public easement following Elfin Forest Road to the southeast. At the sharp turn where Elfin Forest Road transitions to Harmony Grove Road, the alignment would continue south across a wooded area where the pipeline would tunnel underneath Escondido Creek. The alignment would intersect Via Ambiente which it would follow to the DCMWTP. Via Ambiente, south of Elfin Forest Road is gated and can be accessed only by District and authorized personnel. Since a portion of the pipeline in this alternative is proposed to be constructed within Elfin Forest Road, construction traffic is expected to use Elfin Forest Road and hence a traffic study is required.

The Southern Alignment begins just east of Suerte Del Este Road, near the District maintenance entrance. This pipeline would likely parallel two existing pipelines located in a District easement adjacent to the maintenance road. This maintenance road would intersect Via Ambiente, and the pipeline would follow this road to the DCMWTP. The subject traffic study does not analyze this alternative as the pipeline does not traverse through Elfin Forest Road or Harmony Grove Road.

*Figure 1* shows the vicinity map and *Figure 2* shows a more detailed project area map. *Figure 3* shows the proposed pipeline alternatives.







Source: NOLTE, 2010  
 N:\1950\figures\LLG1930 FIG 3



**Figure 3**

**Pipeline Alternatives**

### 1.3 Summary of County of San Diego Significance Criteria

The following criteria were utilized to evaluate potential significant impacts to road segments and intersections, based on the County’s published *Guidelines for Determining Significance (June 30, 2009)*.

#### 1.3.1 Road Segments

Pursuant to the County’s *General Plan Public Facilities Element (PFE)*, new development must provide improvements or other measures to mitigate traffic impacts to avoid:

- a. Reduction in Level of Service (LOS) below "C" for on-site Circulation Element roads;
- b. Reduction in LOS below "D" for off-site and on-site abutting Circulation Element roads; and
- c. "Significantly impacting congestion" on roads that operate at LOS "E" or "F". If impacts cannot be mitigated, the project will be denied unless a statement of overriding findings is made pursuant to the State CEQA Guidelines. The PFE, however, does not include specific guidelines/thresholds for determining the amount of additional traffic that would “significantly impact congestion” on such roads, as that phrase is used in item (c) above.

The County has created the following guidelines to evaluate likely traffic impacts of a proposed project for road segments and intersections serving that project site, for purposes of determining whether the development would "significantly impact congestion" on the referenced LOS E and F roads. The guidelines are summarized in *Table 1*. The thresholds in *Table 1* are based upon average operating conditions on County roadways. It should be noted that these thresholds only establish general guidelines, and that the specific project location must be taken into account in conducting an analysis of traffic impact from new development.

**TABLE 1  
MEASURES OF SIGNIFICANT PROJECT IMPACTS TO CONGESTION ON ROAD SEGMENTS**

| Level of Service | Two-Lane Road | Four-Lane Road | Six-Lane Road |
|------------------|---------------|----------------|---------------|
| LOS E            | 200 ADT       | 400 ADT        | 600 ADT       |
| LOS F            | 100 ADT       | 200 ADT        | 300 ADT       |

*General Notes:*

1. By adding proposed project trips to all other trips from a list of projects, this same table must be used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes any trips must mitigate a share of the cumulative impacts.
2. The County may also determine impacts have occurred on roads even when a project’s traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.

***On-site Circulation Element Roads***—PFE, Transportation, Policy 1.1 states that “new development shall provide needed roadway expansion and improvements on-site to meet demand created by the development, and to maintain a Level of Service C on Circulation Element Roads during peak traffic hours”. Pursuant to this policy, a significant traffic impact would result if:

- The additional or redistributed ADT generated by the proposed land development project will cause on-site Circulation Element Roads to operate below LOS C during peak traffic hours.

**Off-Site Circulation Element Roads**—PFE, Transportation, Policy 1.1 also states that “new development shall provide needed roadway expansion and improvements off-site to meet demand created by the development, and to maintain a Level of Service D on Circulation Element Roads.” “New development that would significantly impact congestion on roads operating at LOS E or F, either currently or as a result of the project, will be denied unless improvements are scheduled to improve the LOS to D or better or appropriate mitigation is provided.” The PFE, however, does not specify what would significantly impact congestion or establish criteria for evaluating when increased traffic volumes would significantly impact congestion. The following significance guidelines provided are the County’s preferred method for evaluating whether or not increased traffic volumes generated or redistributed from a proposed project will “significantly impact congestion” on County roads, operating at LOS E or F, either currently or as a result of the project.

Traffic volume increases from projects that result in one or more of the following criteria will have a significant traffic impact on a road segment, unless specific facts show that there are other circumstances that mitigate or avoid such impacts:

- The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a Circulation Element Road or State Highway currently operating at LOS E or LOS F, or will cause a Circulation Element Road or State Highway to operate at a LOS E or LOS F as a result of the proposed project as identified in *Table 1*, or
- The additional or redistributed ADT generated by the proposed project will cause a residential street to exceed its design capacity.

### 1.3.2 Intersections

This section provides guidance for evaluating adverse environmental effects a project may have on signalized and unsignalized intersections.

**Signalized Intersections**—Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on a signalized intersection:

- The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a signalized intersection currently operating at LOS E or LOS F, or will cause a signalized intersection to operate at a LOS E or LOS F as identified in *Table 2*.

**Unsignalized Intersections**—The operating parameters and conditions for unsignalized intersections differ dramatically from those of signalized intersections. Very small volume increases on one leg or

turn and/or through movement of an unsignalized intersection can substantially affect the calculated delay for the entire intersection. Significance criteria for unsignalized intersections are based upon a minimum number of trips added to a critical movement at an unsignalized intersection.

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on an unsignalized intersection:

- The additional or redistributed ADT generated by the proposed project will add 20 or more peak hour trips to a critical movement of an unsignalized intersection, and cause an unsignalized intersection to operate below LOS D, or
- The additional or redistributed ADT generated by the proposed project will add 20 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS E, or
- The additional or redistributed ADT generated by the proposed project will add 5 or more peak hour trips to a critical movement of an unsignalized intersection, and cause the unsignalized intersection to operate at LOS F, or
- The additional or redistributed ADT generated by the proposed project will add 5 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS F, or
- Based upon an evaluation of existing accident rates, the signal priority list, intersection geometrics, proximity of adjacent driveways, sight distance or other factors, it is found that the generation rate is less than those specified above, and would significantly impact the operations of the intersection.

**TABLE 2  
MEASURES OF SIGNIFICANT PROJECT IMPACTS TO CONGESTION ON INTERSECTIONS**

| Level of service | Signalized   | Unsignalized                              |
|------------------|--|---|
| LOS E            | Delay of 2 seconds   | 20 peak hour trips on a critical movement |
| LOS F            | Delay of 1 second, or 5 peak hour trips on a critical movement | 5 peak hour trips on a critical movement  |

**General Notes:**

1. A critical movement is one that is experiencing excessive queues.
2. By adding proposed project trips to all other trips from a list of projects, these same tables are used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes any trips must mitigate a share of the cumulative impacts.
3. The County may also determine impacts have occurred on roads even when a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.

## 1.4 Summary of Regional Congestion Management Program Requirements

The region's published *Final 2008 Congestion Management Program Update (CMP)* is intended to link land use, transportation and air quality through level of service performance. The CMP requires an Enhanced CEQA Review for projects that are expected to generate more than 2,400 ADT or more

than 200 peak hour trips. As the project trip generation does not exceed the CMP thresholds, a CMP analysis was not conducted.

## 2.0 EXISTING CONDITIONS

The following intersections and segments are included in the study area as they are expected to carry majority of the construction traffic. Further these intersections and segments were selected based on the pipeline alignment along Elfin Forest Road as shown in *Figure 3*.

### Intersections

1. San Elijo Road North/ Elfin Forest Road East (s)
2. San Elijo Road South/ Elfin Forest Road West (s)
3. San Elijo Road South/ Elfin Forest Road East (s)
4. Questhaven Road/ Harmony Grove Road (u)
5. Via Ambiente/ Harmony Grove Road (u)

(s) – Signalized intersection

(u) –Unsignalized intersection

### Street Segments

#### *Elfin Forest Road*

San Elijo Road to Camino Cielo Azul

Camino Cielo Azul to Aguilera Lane

#### *Harmony Grove Road*

Questhaven Road to Via Ambiente

East of Via Ambiente

#### *Via Ambiente*

South of Harmony Grove Road

## 2.1 Existing Transportation Conditions

This section describes the existing study area street system including the existing peak hour intersection volumes with Level of Service (LOS) and existing daily roadway volumes with LOS.

**San Elijo Road** is currently built as a 4-lane divided roadway that connects the City of Carlsbad to the City of San Marcos and San Elijo Hills. The posted speed limit on San Elijo Road is 45 mph east of Rancho Santa Fe Road and 30 mph east of Elfin Forest Road. At the intersection of Elfin Forest Road, San Elijo Road splits into two one-way streets – San Elijo Road North and San Elijo Road South. Bike lanes are provided on San Elijo Road and adjacent land uses are mainly residential.

**Elfin Forest Road** is currently built and classified as a 2-lane Rural Light Collector between San Elijo Road and Harmony Grove Road. According to the *San Dieguito Mobility Network Plan*, Elfin Forest Road from San Marcos City limits to Questhaven Road is classified as a *Light Collector with Intermittent Turn-lanes*. At the intersection of San Elijo Road, Elfin Forest Road splits into two one-way streets – Elfin Road East and Elfin Forest Road West. The adjacent land uses are mainly

residential. The posted speed limit on Elfin Forest Road is 50 mph. Trucks over 7 tons are currently prohibited on Elfin Forest Road between San Elijo Road and Harmony Grove Road. Parking is also prohibited on Elfin Forest Road.

**Harmony Grove Road** is currently built and classified as a 2-lane Rural Light Collector that connects the San Elijo Hills community to the City of Escondido. According to the *San Dieguito Mobility Network Plan*, Harmony Grove Road is classified as a *Light Collector*. The posted speed limit on Harmony Grove Road varies between 30 and 45 mph. Parking is also prohibited on Harmony Grove Road.

**Via Ambiente** is currently built as a 2-lane gated roadway in the project area. Based on field observations, only construction traffic is using Via Ambiente south of Harmony Grove Road. Via Ambiente also serves as the access point for the Olivenhain Dam.

*Figure 4* depicts the existing traffic conditions for the roadway segments and study area intersections.

### **2.1.1 Existing Traffic Volumes**

Existing weekday AM/PM peak hour turning movement counts and average daily traffic (ADT) counts were commissioned by LLG Engineers on December 9, 2009 (Tuesday) and December 10, 2009 (Wednesday). *Appendix A* contains the manual count sheets. *Figure 5* shows the existing peak hour intersection turning movements and ADT volumes.

### **2.1.2 Existing Intersection Operations**

*Table 3* summarizes the existing intersections level of service. As seen in *Table 3*, all the study area intersections are calculated to currently operate at LOS B or better during the AM and PM peak hours.

*Appendix B* contains the existing intersection analysis worksheets.

### **2.1.3 Existing Street Segment Operations**

*Table 4* summarizes the existing roadway segment operations. As seen in *Table 4*, all the study area roadway segments are calculated to currently operate at LOS B on a daily basis.

**TABLE 3  
EXISTING INTERSECTION OPERATIONS**

| Intersection                               | Control Type      | Minor Street    | Peak Hour | Existing           |                  |
|--|-------------------|-----------------|-----------|--------------------|------------------|
|  |                   |                 |           | Delay <sup>a</sup> | LOS <sup>b</sup> |
| 1. San Elijo Road N./ Elfin Forest Road E. | Signal            | NA              | AM        | 12.0               | B                |
|  |                   |                 | PM        | 6.9                | A                |
| 2. San Elijo Road S./ Elfin Forest Road W. | Signal            | NA              | AM        | 9.8                | A                |
|  |                   |                 | PM        | 5.4                | A                |
| 3. San Elijo Road S./ Elfin Forest Road E. | Signal            | NA              | AM        | 11.8               | B                |
|  |                   |                 | PM        | 6.5                | A                |
| 4. Questhaven Road/ Harmony Grove Road     | TWSC <sup>c</sup> | SB <sup>d</sup> | AM        | 9.6                | A                |
|  |                   |                 | PM        | 9.6                | A                |
| 5. Via Ambiente/ Harmony Grove Road        | TWSC              | NB <sup>d</sup> | AM        | 9.0                | A                |
|  |                   |                 | PM        | 10.9               | B                |

**Footnotes:**

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. TWSC – Two-Way Stop Controlled Intersection.
- d. Worst minor street delay reported.

**General Notes:**

NA – Not applicable for signalized intersections.  
SB – Southbound; NB – Northbound.

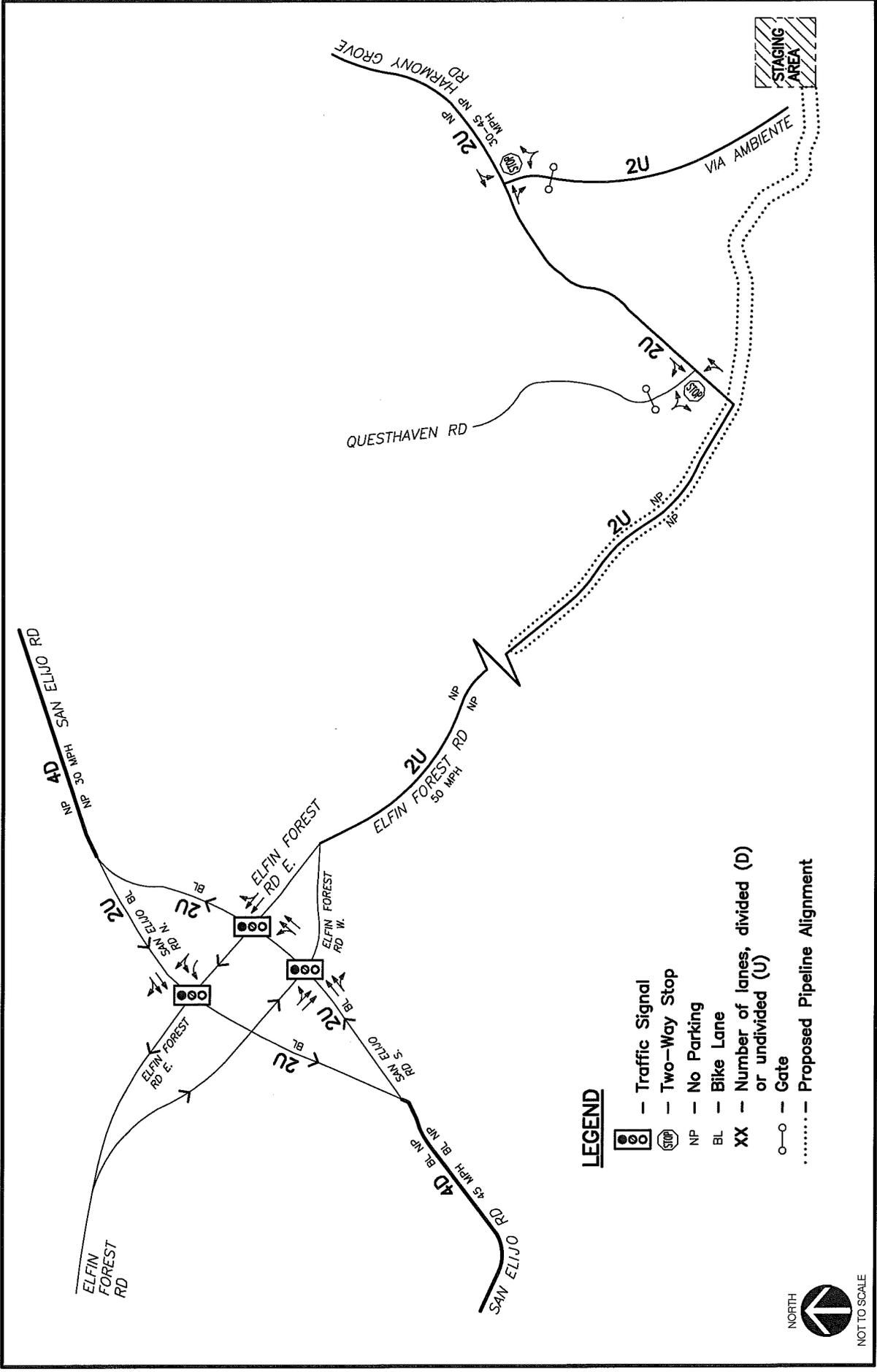
| SIGNALIZED           |     | UNSIGNALIZED         |     |
|----------------------|-----|----------------------|-----|
| DELAY/LOS THRESHOLDS |     | DELAY/LOS THRESHOLDS |     |
| Delay                | LOS | Delay                | LOS |
| 0.0 ≤ 10.0           | A   | 0.0 ≤ 10.0           | A   |
| 10.1 to 20.0         | B   | 10.1 to 15.0         | B   |
| 20.1 to 35.0         | C   | 15.1 to 25.0         | C   |
| 35.1 to 55.0         | D   | 25.1 to 35.0         | D   |
| 55.1 to 80.0         | E   | 35.1 to 50.0         | E   |
| ≥ 80.1               | F   | ≥ 50.1               | F   |

**TABLE 4  
EXISTING STREET SEGMENT OPERATIONS**

| Roadway Segment                     | Lanes | Functional Classification | Capacity (LOS E) <sup>a</sup> | Existing ADT <sup>b</sup> | LOS <sup>c</sup> |
|-------------------------------------|-------|---------------------------|-------------------------------|---------------------------|------------------|
| <b>Elfin Forest Road</b>            |       |                           |                               |                           |                  |
| San Elijo Road to Camino Cielo Azul | 2     | Rural Collector           | 16,200                        | 3,790                     | B                |
| Camino Cielo Azul to Aguilera Lane  | 2     | Rural Collector           | 16,200                        | 3,540                     | B                |
| <b>Harmony Grove Road</b>           |       |                           |                               |                           |                  |
| Questhaven Road to Via Ambiente     | 2     | Rural Collector           | 16,200                        | 3,030                     | B                |
| East of Via Ambiente                | 2     | Rural Collector           | 16,200                        | 3,030                     | B                |
| <b>Via Ambiente</b>                 |       |                           |                               |                           |                  |
| South of Harmony Grove Road         | 2     | Rural Collector           | 16,200                        | 100 <sup>d</sup>          | B                |

**Footnotes:**

- a. Capacity based on *County of San Diego Roadway Classification* at LOS E.
- b. Average Daily Traffic Volumes.
- c. Level of Service.
- d. Given the low peak hour volumes on Via Ambiente, 100 ADT was assumed to be conservative.



**LEGEND**

-  Traffic Signal
-  Two-Way Stop
-  No Parking
-  Bike Lane
-  XX - Number of lanes, divided (D) or undivided (U)
-  Gate
-  ..... Proposed Pipeline Alignment

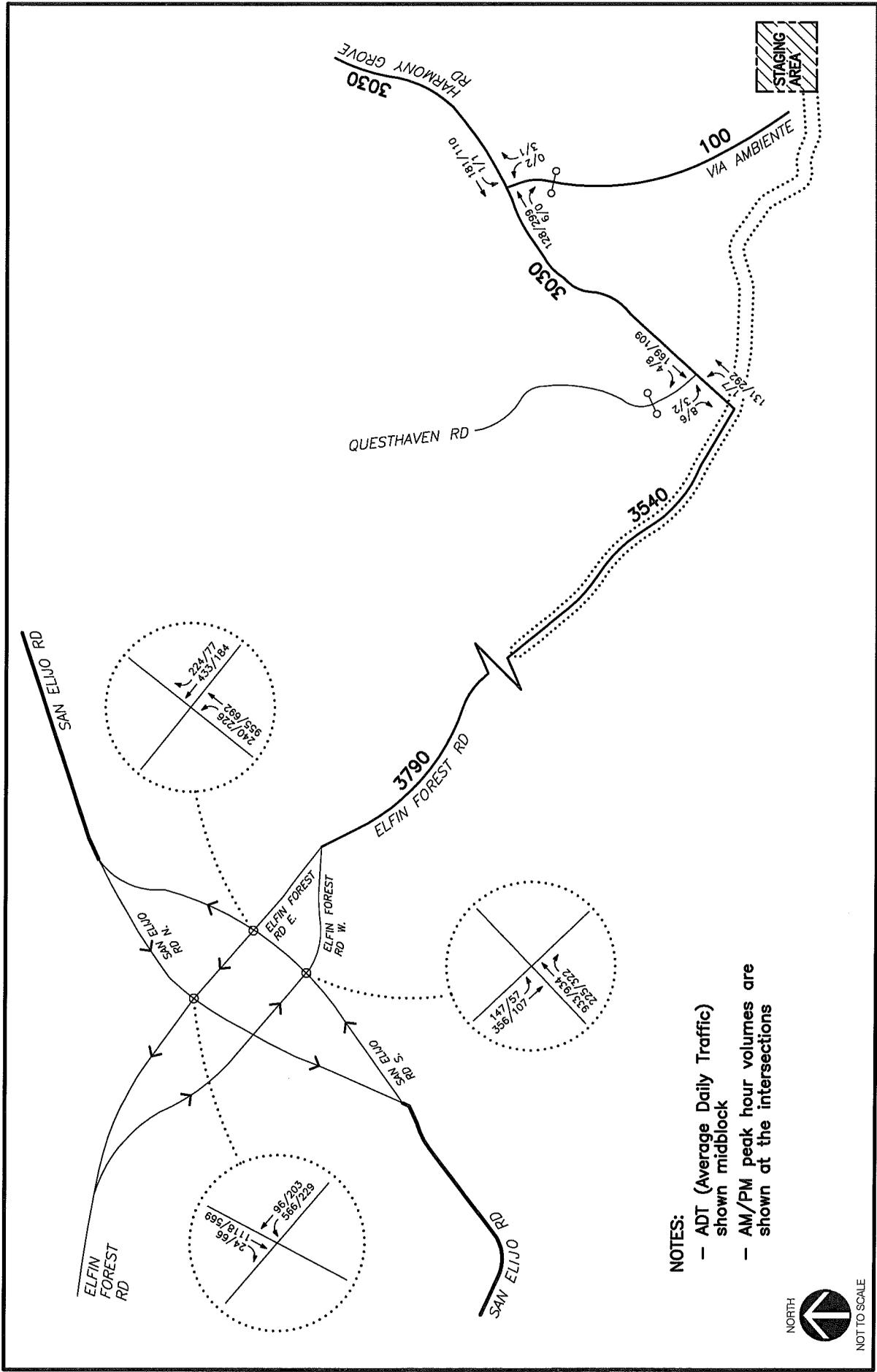


REV. 01/20/2010  
 N:\1930\FIGURES\1161930 FIG 4.DWG

**LINSCOTT  
 LAW &  
 GREENSPAN**  
*engineers*

**Figure 4**

**Existing Conditions Diagram**



- NOTES:**
- ADT (Average Daily Traffic) shown midblock
  - AM/PM peak hour volumes are shown at the intersections



REV. 01/20/2010  
 N:\1930\FIGURES\LLC1930 FIG 5.DWG

**LINSCOTT  
 LAW &  
 GREENSPAN**  
*engineers*

**Figure 5**  
**Existing Traffic Volumes**  
**AM/PM Peak Hours & ADT**  
 OMWD ELFIN FOREST RAW WATER PIPELINE

## 3.0 PROJECT IMPACT ANALYSIS

### 3.1 Analysis Methodology

Level of service (LOS) is the term used to denote the different operating conditions which occur on a given roadway segment under various traffic volume loads. It is a qualitative measure used to describe a quantitative analysis taking into account factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Level of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. Level of service designation is reported differently for signalized intersections, unsignalized intersections and roadway segments.

This traffic study analyzed two scenarios – Existing and Existing + Project. Cumulative analyses were not conducted as the pipeline construction is scheduled to begin in fall 2010 and expected to occur over a 9- to 12-month period and no significant cumulative projects are anticipated to be completed before then in this study area.

#### 3.1.1 Intersections

*Signalized intersections* were analyzed under AM and PM peak hour conditions. Average vehicle delay was determined utilizing the methodology found in Chapter 16 of the *2000 Highway Capacity Manual (HCM)*, with the assistance of the *Synchro* (version 7) computer software. The delay values (represented in seconds) were qualified with a corresponding intersection Level of Service (LOS). Signalized intersection calculation worksheets and a more detailed explanation of the methodology are attached in *Appendix C*.

*Unsignalized intersections* were analyzed under AM and PM peak hour conditions. Average vehicle delay and Levels of Service (LOS) was determined based upon the procedures found in Chapter 17 of the *2000 Highway Capacity Manual (HCM)*, with the assistance of *Synchro* (version 7.0) computer software. Unsignalized intersection calculation worksheets and a more detailed explanation of the methodology are attached in *Appendix C*.

#### 3.1.2 Street Segments

Street segment analysis is based upon the comparison of daily traffic volumes (ADTs) to the County of San Diego's *Roadway Classification, Level of Service, and ADT Table*. This table provides segment capacities for different street classifications, based on traffic volumes and roadway characteristics. The County of San Diego's *Roadway Classification, Level of Service, and ADT Table* is attached in *Appendix C*.

Based on discussions with the District, partial lane closures are planned on Elfin Forest Road and Harmony Grove Road. Based on the County of San Diego roadway classification table, the capacity

for a 2-lane Rural Collector (16,200 ADT at LOS E) was divided in half to estimate the capacity for the 1-lane Elfin Forest Road (8,100 ADT).

### **3.2 Construction Project Trip Generation**

There is a potential for traffic impacts to the adjacent circulation system due to the physical presence of construction related trips during the construction period. These trips include construction worker (employee) trips in passenger vehicles/light trucks, as well as equipment/material delivery trips made in heavy vehicles (trucks) to/from and around the construction site. The formal "LOS" traffic analyses in this report deal with the trips during the construction period.

The construction workforce is expected to include employees and pipeline crews to be involved in the day-to-day construction activities, trucks for equipment/material delivery, and admin/overhead staff to supervise construction activities.

#### ***Employees***

Based on the discussions with the District, the construction is scheduled to begin in fall 2010 and expected to occur over a 9- to 12-month period. The day-to-day construction activities are planned to be divided into three "fronts" or "stations". A typical day during the peak of the construction period would include a 12-person pipeline crew and 3 trucks per front. A maximum of 3 fronts are anticipated at any one time. A total of 36 pipeline crew (12-person crew \* 3 fronts = 36 crew) and 9 trucks (3 trucks \* 3 fronts = 9 trucks) are therefore expected.

In addition to the 36 pipeline crew and 9 trucks, a total of 4 admin staff are also planned for the entire project. These admin staff will coordinate the daily construction activities and will arrive/depart to/from the construction site similar to the pipeline crew.

The construction project trip generation is therefore based on a worst-case scenario including 36 pipeline crew, 9 trucks and 4 admin staff. In addition to these 3 elements, a "miscellaneous" line item for any other construction related trips that may occur is included in the trip generation.

LLG assumed that 80% of the employees (approximately 30 employees) would access the work area during the normal commuter peak hours. This is considered conservative, as the project trip generation does not account for potential carpooling among employees, which could be expected to occur.

#### ***Trucks***

The project traffic also consists of heavy vehicles (trucks). The assumed percent of ADT to occur during the peak hour for truck traffic is 15% as the truck trips are expected to be relatively equally distributed throughout the day.

According to *Highway Capacity Manual 2000*, a passenger car equivalent (PCE) factor of 2.5 for trucks is used to account for the effects of heavy vehicles in the traffic flow. "Passenger Car Equivalence" is defined as the number of passenger cars that are displaced by a single heavy vehicle

of a particular type under the prevailing traffic conditions. Heavy vehicles have a greater traffic impact than passenger cars since:

- They are larger than passenger cars, and therefore, occupy more roadway space; and
- Their performance characteristics are generally inferior to passenger cars, leading to the formation of downstream gaps in the traffic stream (especially on upgrades), which cannot always be effectively filled by normal passing maneuvers.

Exhibit 21-8, Passenger Car Equivalents on Extended General Highway Segments, (*obtained from "Highway Capacity Manual 2000"*) summarizes PCE factors for various types of vehicles. The type of terrain in the project area is "rolling". As seen in *Exhibit 21-8*, the passenger car equivalents are 2.5 for trucks on a rolling terrain (See *Appendix C*).

**Table 5** tabulates the total project traffic generation assuming 3 fronts of construction. The total project is calculated to generate 180 average daily trips (ADT) under these conditions. A typical day would likely have less than 3 fronts under construction and therefore would generate less than 180 ADT.

**TABLE 5  
ESTIMATED CONSTRUCTION PROJECT TRIP GENERATION**

| Type                                  | Number    | PCE      | Daily Trips   |                 | AM Peak Hour    |           | PM Peak Hour |           |
|---------------------------------------|-----------|----------|---------------|-----------------|-----------------|-----------|--------------|-----------|
|                                       |           |          | Rate          | Volume (ADT)    | Volume          |           | Volume       |           |
|                                       |           |          |               |                 | In              | Out       | In           | Out       |
| Pipeline Crew                         | 36        | 1.0      | 2.0 /employee | 72              | 26 <sup>a</sup> | 3         | 3            | 26        |
| Admin Staff                           | 4         | 1.0      | 2.0/employee  | 8               | 2               | 0         | 0            | 2         |
| Miscellaneous                         | 5         | 1.0      | 2.0/type      | 10 <sup>b</sup> | 1               | 0         | 0            | 1         |
| <i>Subtotal Employee Trips</i>        | <i>45</i> | <i>-</i> | <i>-</i>      | <i>90</i>       | <i>29</i>       | <i>3</i>  | <i>3</i>     | <i>29</i> |
| Trucks                                | 9         | 2.5      | 4.0 /truck    | 90              | 7 <sup>c</sup>  | 7         | 7            | 7         |
| <b>Total (Employee + Truck Trips)</b> | <b>54</b> | <b>-</b> | <b>-</b>      | <b>180</b>      | <b>36</b>       | <b>10</b> | <b>10</b>    | <b>36</b> |

**Footnotes:**

- a. To estimate the employee traffic, it is assumed that 80% of the employee traffic (approximately 29 employees) would access the work area during the normal commuter peak hours. The assumed In/Out splits are 90:10 during AM peak hour and 10:90 during the PM peak hour.
- b. A miscellaneous line item for other potential trips that may occur is included to be conservative.
- c. The assumed percentage of truck traffic to occur during the peak hour is 15% (14 trips) as the trucks are anticipated to be relatively equally spread throughout the day, with a little more in the peak hours. The In/Out splits assumed are 50:50 during the AM/PM peak hours. The trip rate of 4.0 per truck assumes 2 round trips for each truck as the frequency of trucks is anticipated to be high during the day. The remainder of the truck trips (90 daily trips – 28 peak hour trips = 62 trips) is expected to occur during the remainder of the day.

**General Notes:**

The trip generation table assumes 3 fronts or station during the construction period.

### 3.3 Project Trip Distribution

LLG prepared separate project traffic distributions for employee trips and truck trips. The following section describes the project traffic distribution in detail.

#### 3.3.1 Truck Trips

Based on coordination with the project team and the District, LLG analyzed various truck traffic distribution scenarios. The following truck traffic distribution scenarios were analyzed:

- *Scenario A*: 100% of truck traffic distributed to/from Harmony Grove Road
- *Scenario B*: 100% of truck traffic distributed to/from Elfin Forest Road
- *Scenario C*: 50% of truck traffic distributed to/from Harmony Grove Road and 50% distributed to/from Elfin Forest Road

Trucks over 7 tons are currently prohibited on Elfin Forest Road. For *Scenarios B and C*, the District shall obtain special permits to allow trucks over 7 tons on Elfin Forest for the temporary construction period. Once construction is complete, the restriction shall be reinforced and normal roadway operations shall exist.

In each of these scenarios, for the purpose of the analysis, 50% of the trucks were distributed to/from the staging area on Via Ambiente and 50% were distributed to/from the proposed pipeline alignment on Elfin Forest Road.

*Figure 6* shows the truck traffic distribution and *Figure 7* shows the truck traffic assignment for *Scenario A* (100% to/from Harmony Grove Road).

*Figure 8* shows the truck traffic distribution and *Figure 9* shows the truck traffic assignment for *Scenario B* (100% to/from Elfin Forest Road).

*Figure 10* shows the truck traffic distribution and *Figure 11* shows the truck traffic assignment for *Scenario C* (50% to/from Harmony Grove Road and 50% to/from Elfin Forest Road).

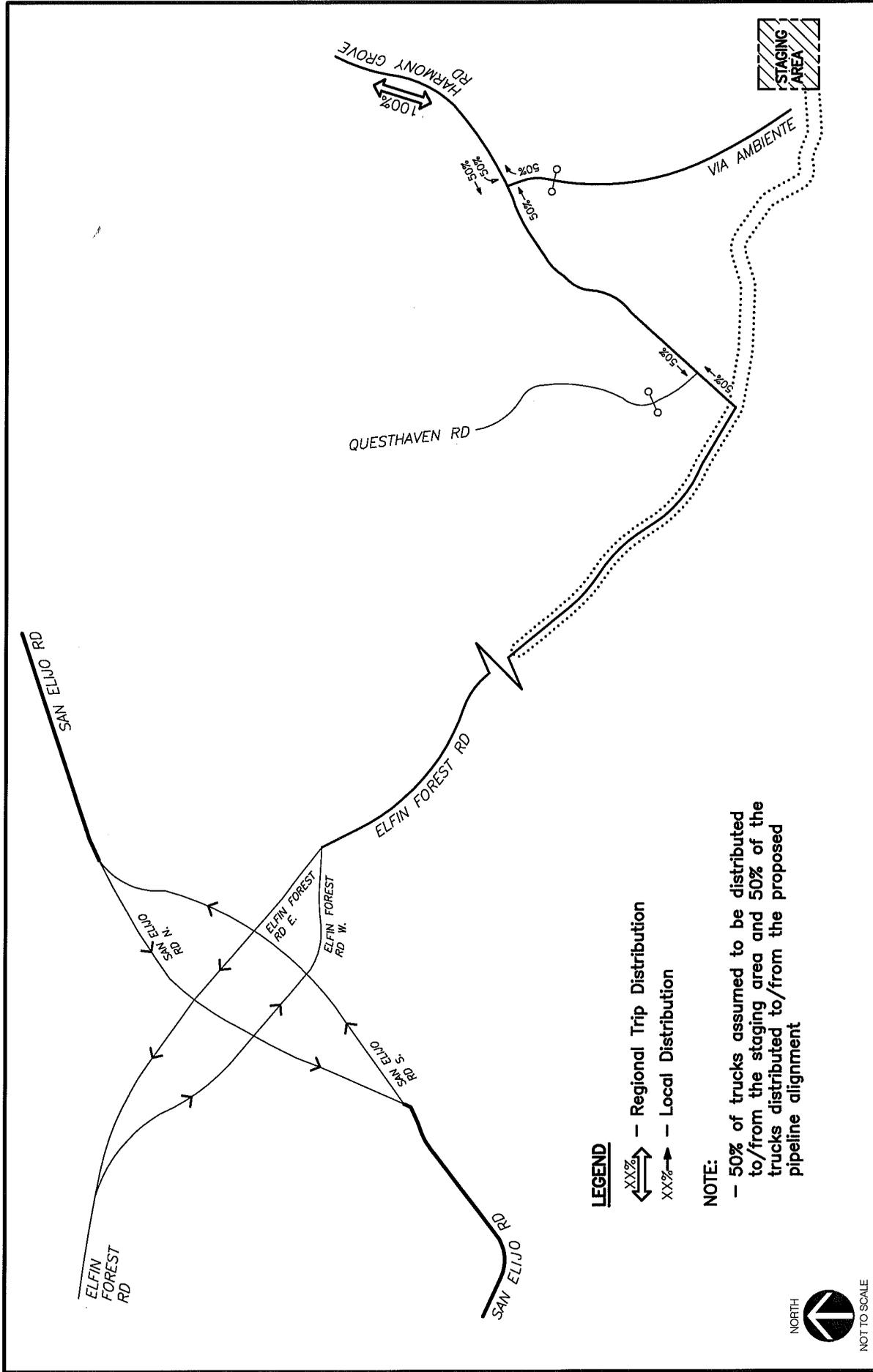
#### 3.3.2 Employee Trips

The employee trips were distributed to both Elfin Forest Road and Harmony Grove Road. For the purpose of the analysis, 100 % of the employee trips were distributed to/from the staging area on Via Ambiente. *Figure 12* shows the employee project traffic distribution and *Figure 13* shows the traffic assignment for the construction employees.

#### 3.3.3 Total Project Trips (Trucks + Employees)

The total project trips were calculated by adding the truck trips and the employee trips.

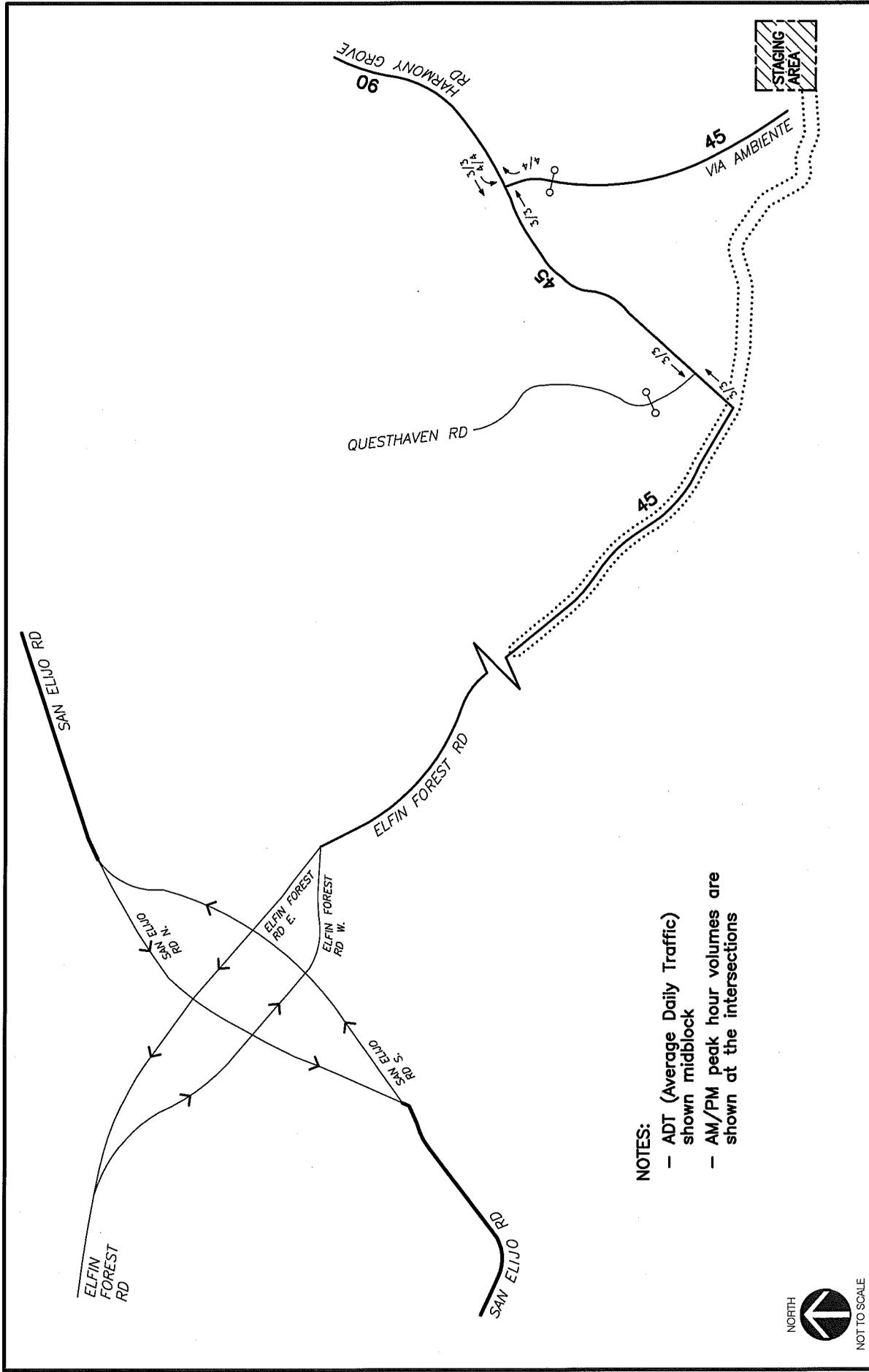
*Figure 14* shows the total project traffic assignment for *Scenario A*. *Figure 15* shows the total project traffic assignment for *Scenario B*. *Figure 16* shows the total project traffic assignment for *Scenario C*.



REV. 05/10/2010  
 N:\1930\FIGURES\LLG1930 FIG 6.DWG

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**Figure 6**  
**Scenario A: Project Traffic Distribution (Trucks)**  
 100% Harmony Grove Road



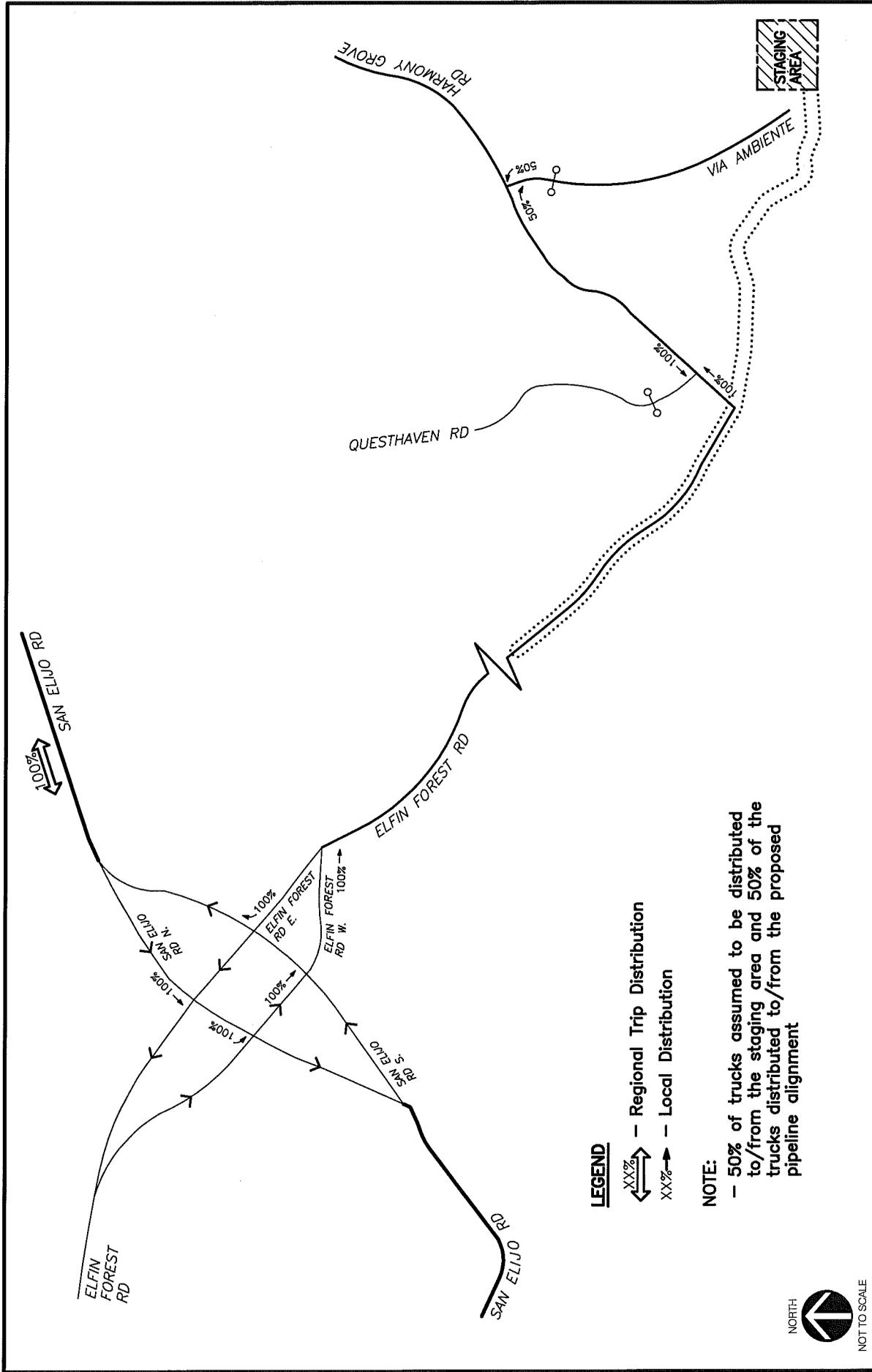
- NOTES:**
- ADT (Average Daily Traffic) shown midblock
  - AM/PM peak hour volumes are shown at the intersections



REV. 06/14/2010  
N:\1950\FIGURES\LLG1930 FIG 7.DWG

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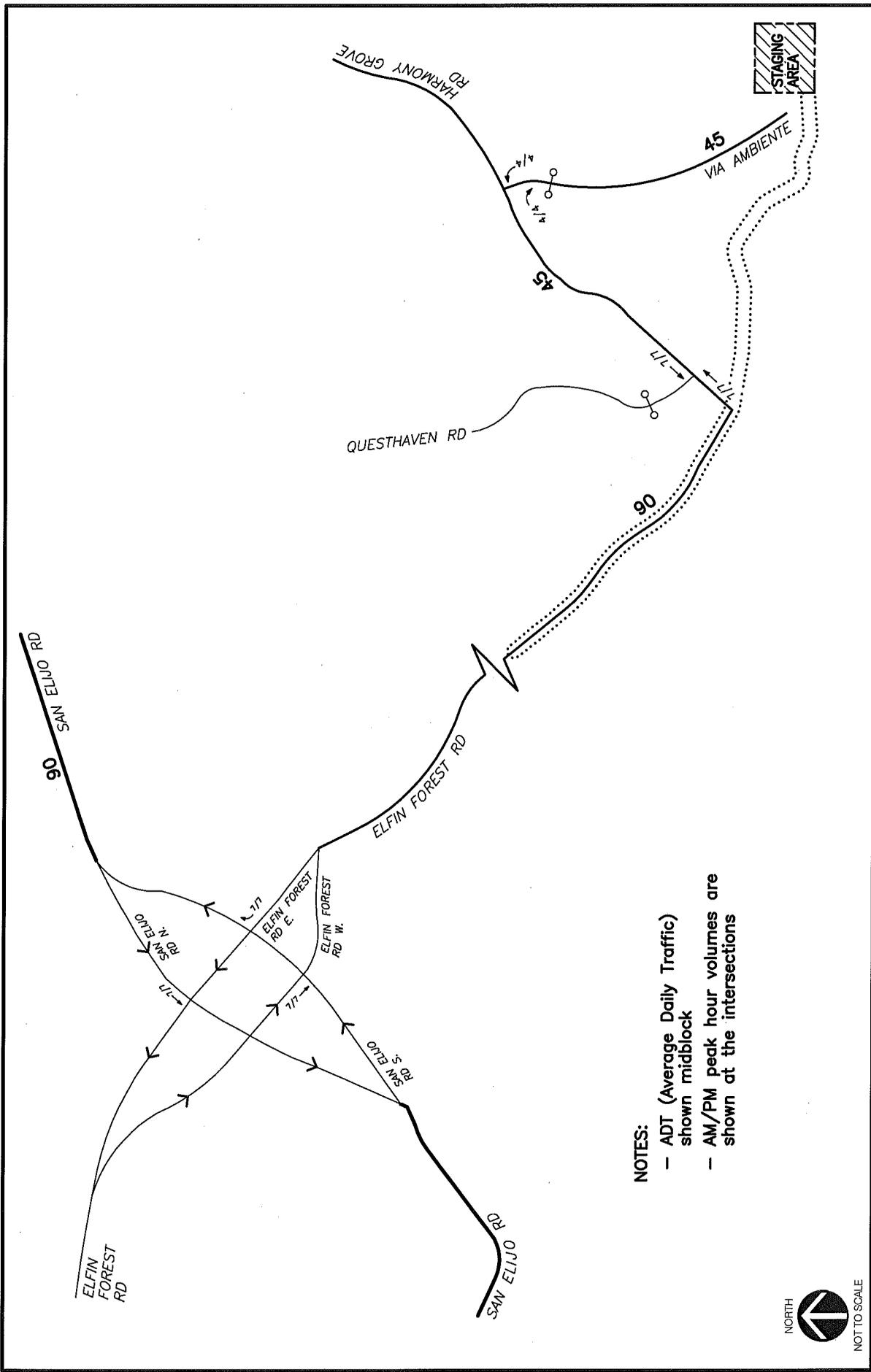
**Figure 7**  
**Scenario A: Project Traffic Assignment (Trucks)**  
AM/PM Peak Hours & ADT  
OMWD ELFIN FOREST RAW WATER PIPELINE



REV. 06/10/2010  
 X:\1350\FIGURES\1161930 FIG 8.DWG

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**Figure 8**  
**Scenario B: Project Traffic Distribution (Trucks)**  
 100% Elfin Forest Road



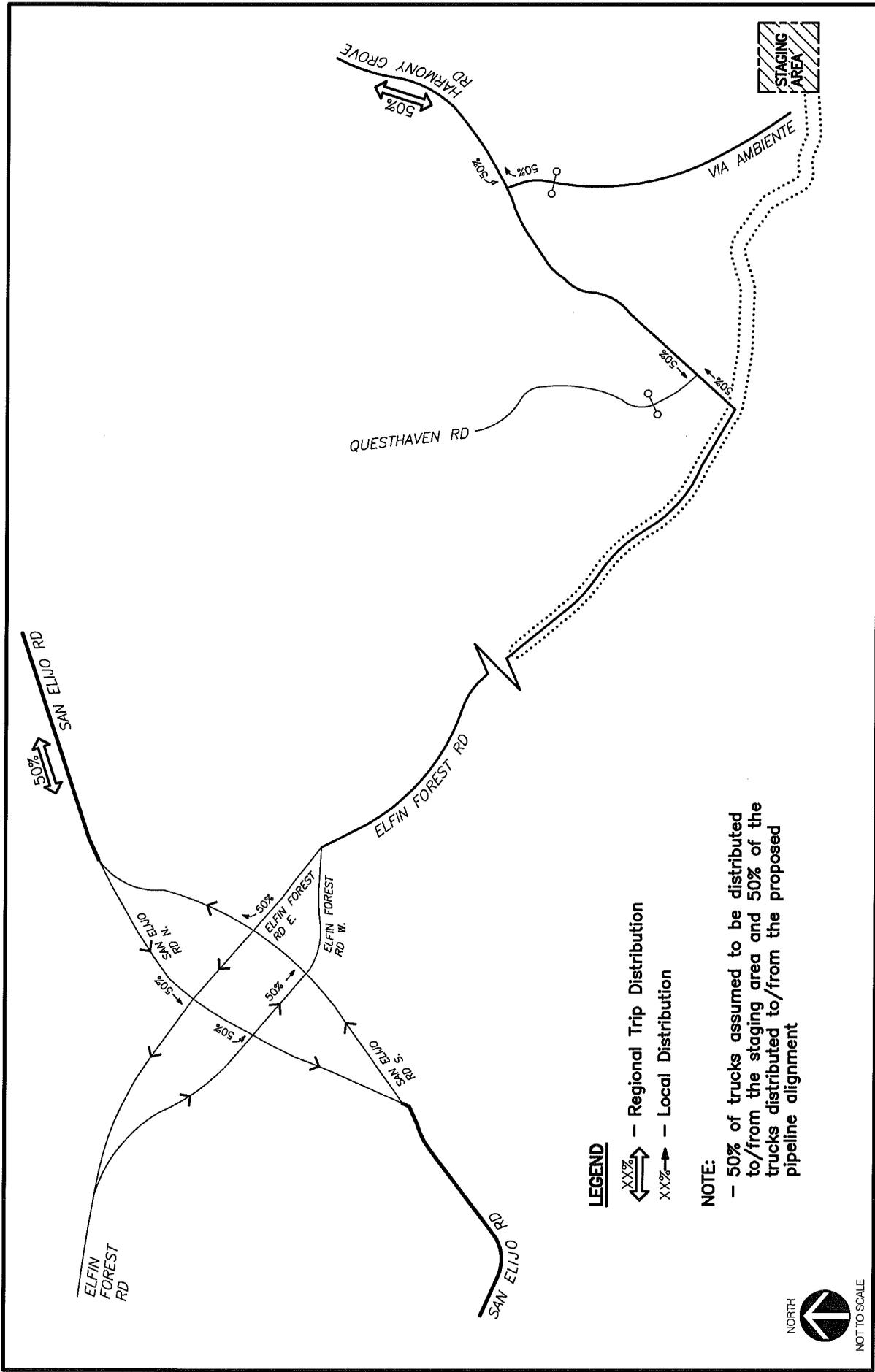
- NOTES:**
- ADT (Average Daily Traffic) shown midblock
  - AM/PM peak hour volumes are shown at the intersections



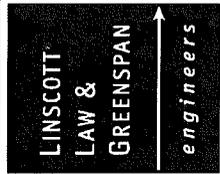
REV. 05/14/2010  
N:\1930\FIGURES\LLG1930 FIG 9.DWG

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**Figure 9**  
**Scenario B: Project Traffic Assignment (Trucks)**  
AM/PM Peak Hours & ADT  
OMWD ELFYN FOREST RAW WATER PIPELINE

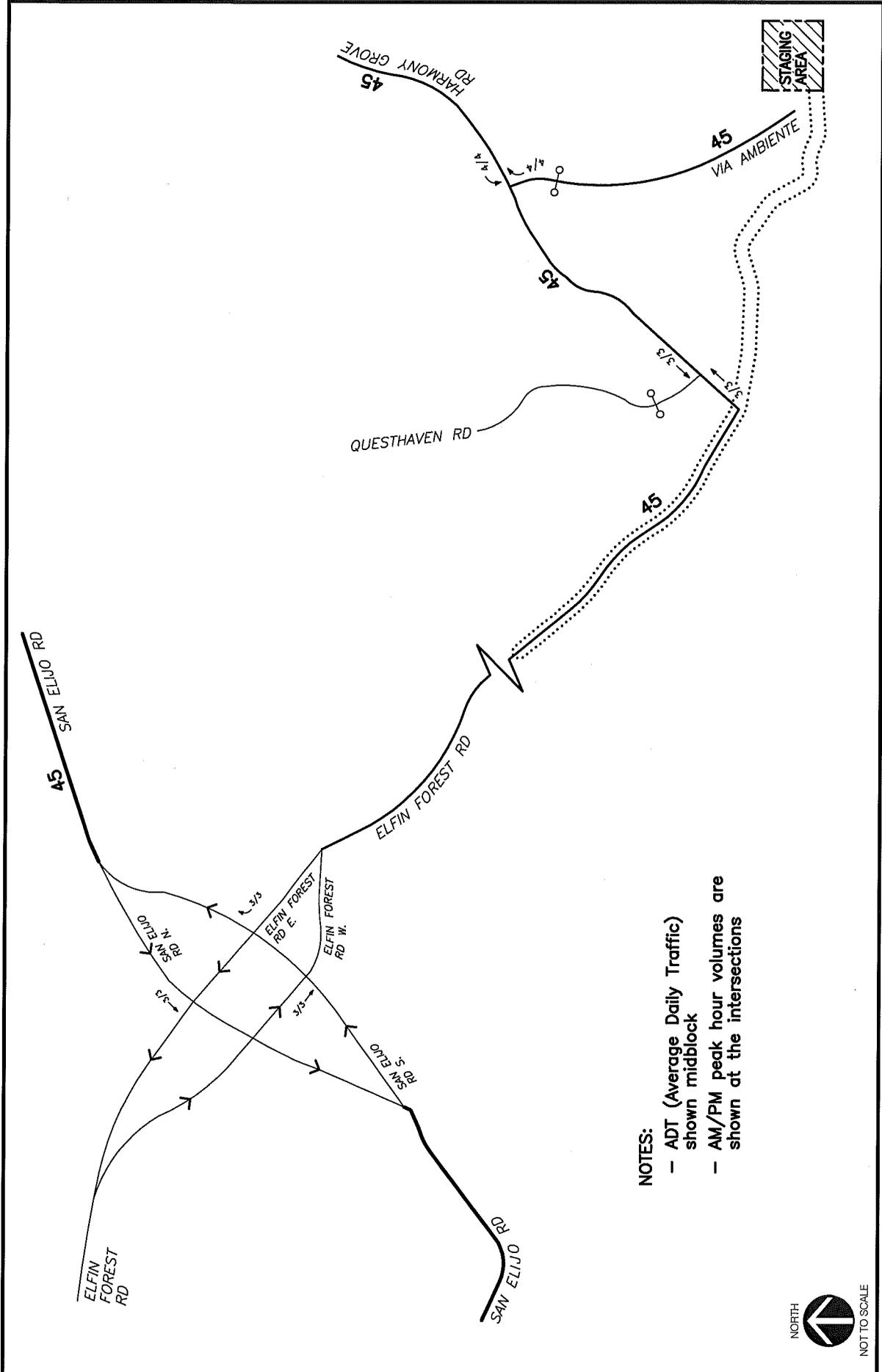


REV. 05/10/2010  
 N:\1950\FIGURES\LLC\1930 FIG 10.DWG



**Figure 10**

**Scenario C: Project Traffic Distribution (Trucks)**  
 50% Harmony Grove Road/ 50% Elfin Forest Road



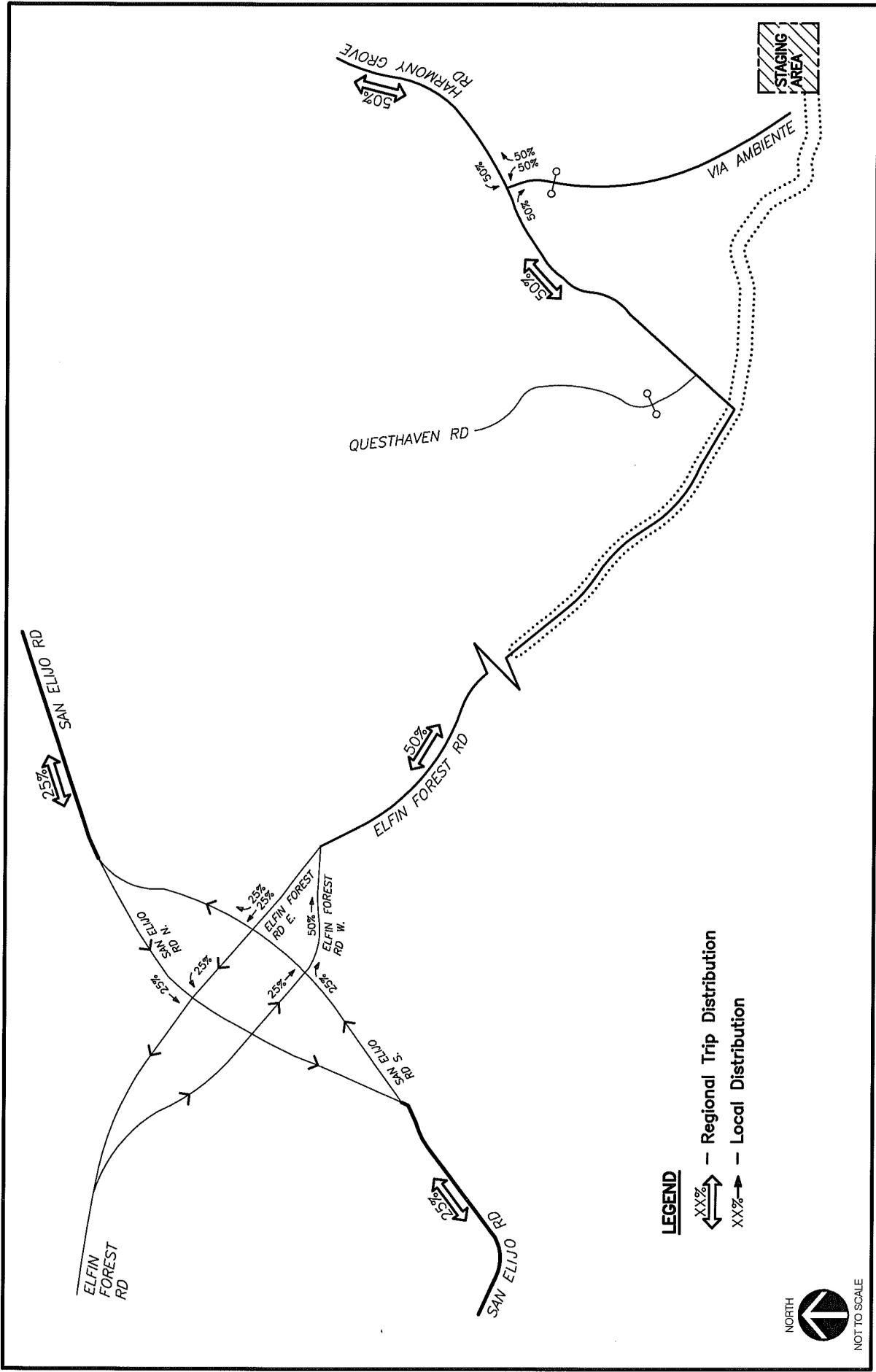
- NOTES:**
- ADT (Average Daily Traffic)  
shown midblock
  - AM/PM peak hour volumes are  
shown at the intersections

REV. 06/14/2010  
 N:\1930\FIGURES\LLG1930 FIG 11.DWG

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**Figure 11**  
**Scenario C: Project Traffic Assignment (Trucks)**  
 AM/PM Peak Hours & ADT  
 OJWD ELFIN FOREST RAW WATER PIPELINE

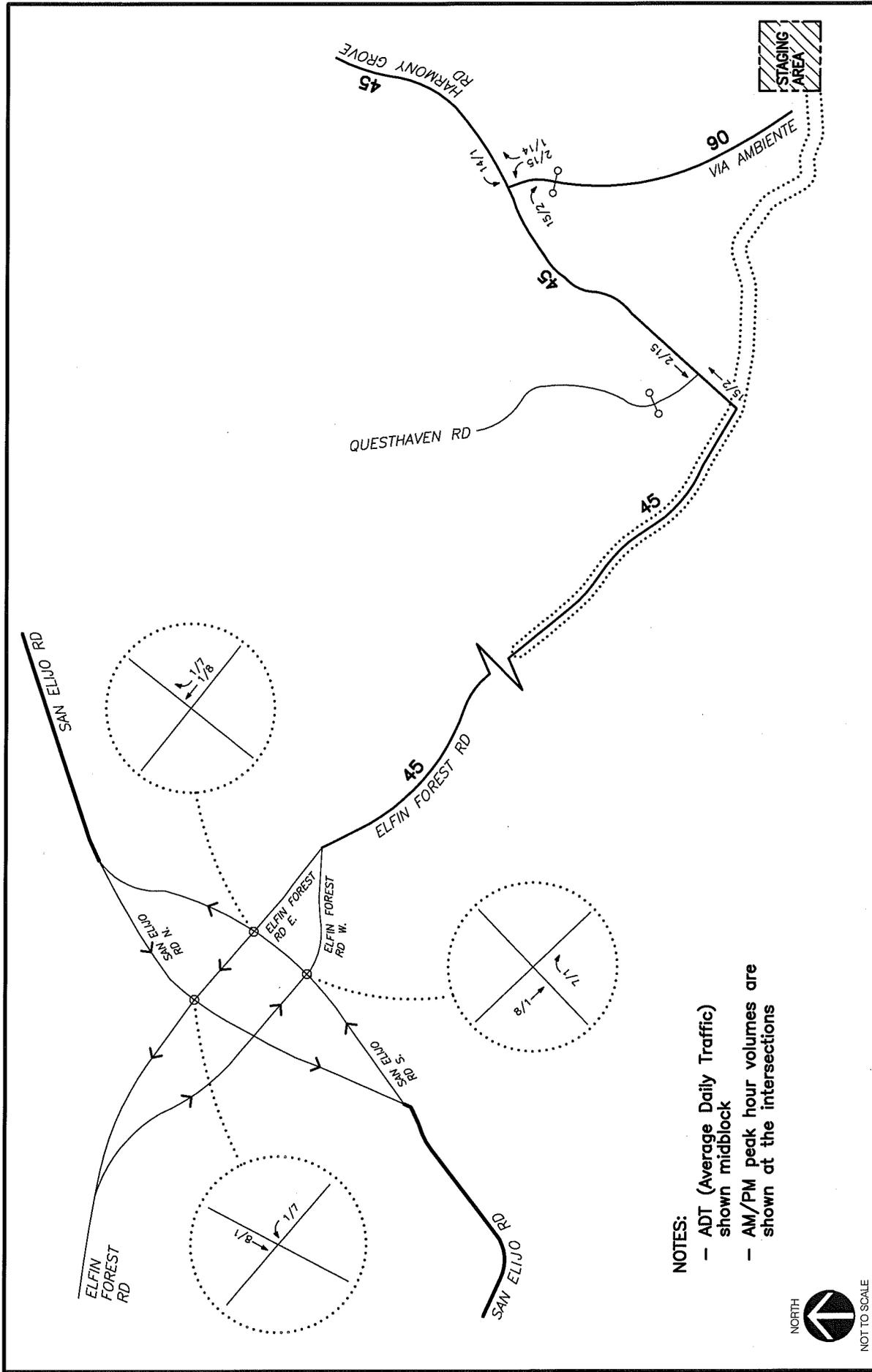


REV. 06/10/2010  
 N:\1530\FIGURES\LLG1930 FIG 12.DWG

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**Figure 12**

**Project Traffic Distribution (Employees)**



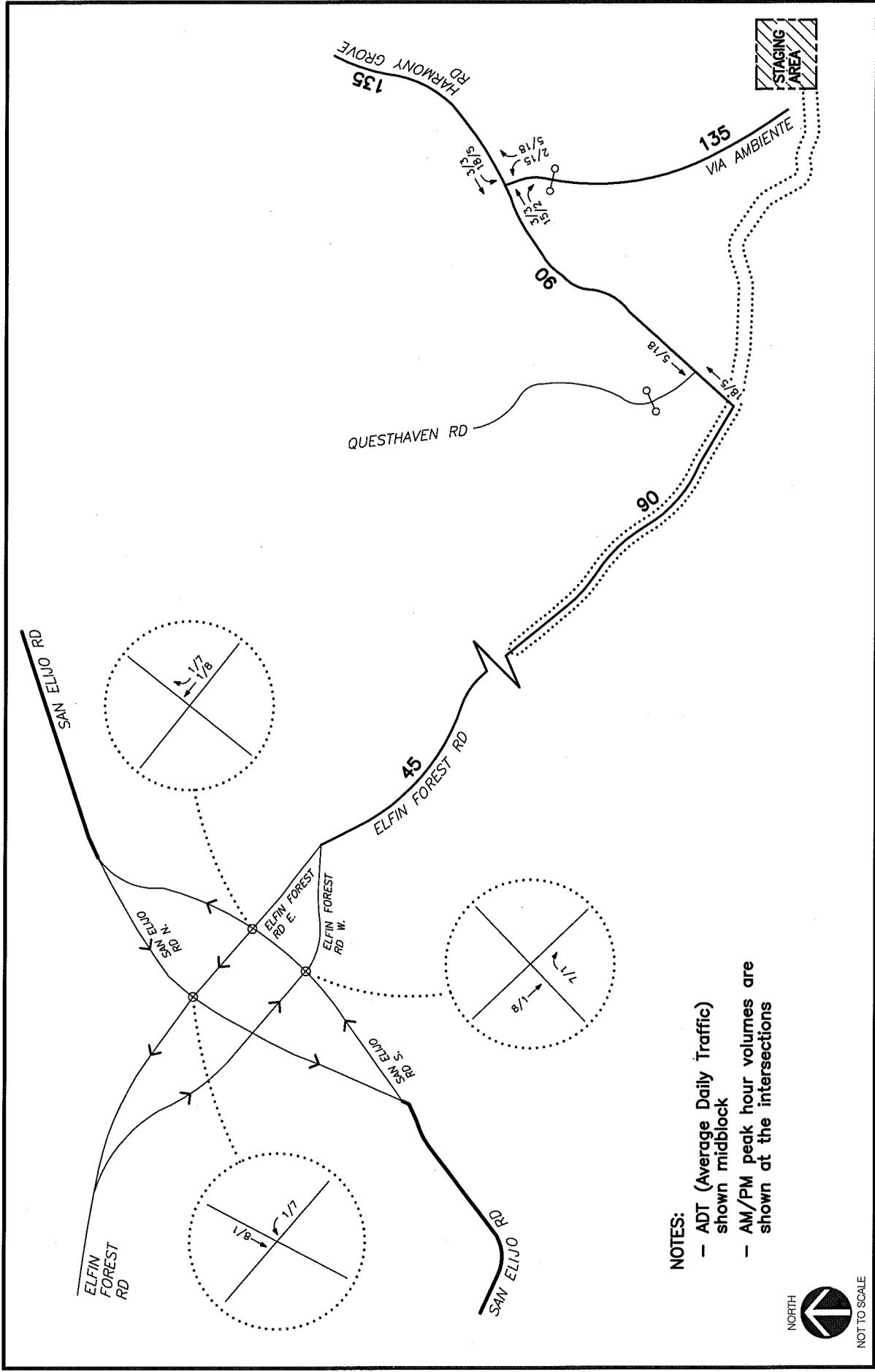
- NOTES:
- ADT (Average Daily Traffic) shown midblock
  - AM/PM peak hour volumes are shown at the intersections



REV. 06/14/2010  
 N:\1990\FIGURES\LLG1930 FIG 13.DWG

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**Figure 13**  
**Project Traffic Assignment (Employees)**  
 AM/PM Peak Hours & ADT  
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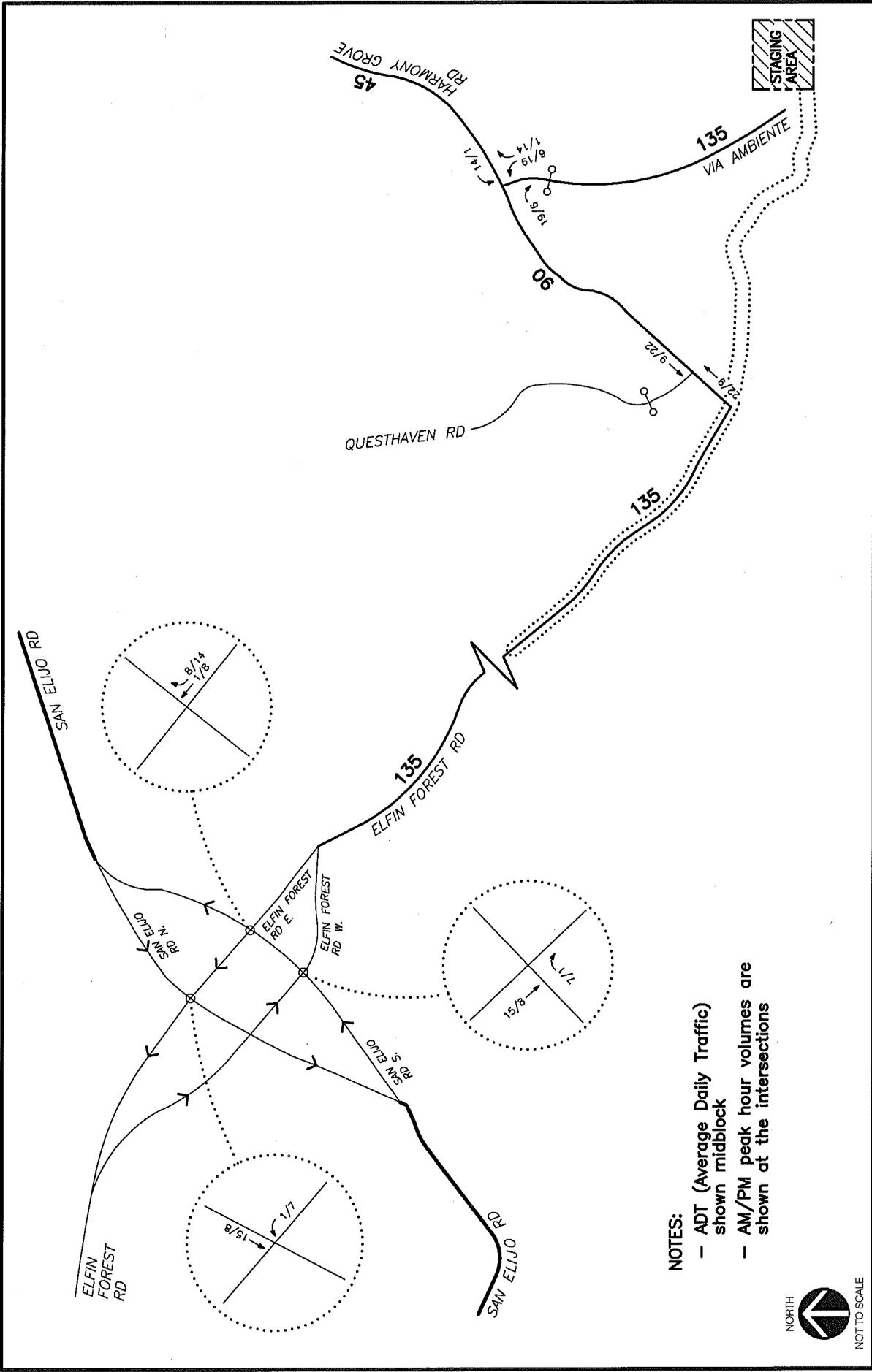
- NOTES:**
- ADT (Average Daily Traffic) shown midblock
  - AM/PM peak hour volumes are shown at the intersections



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 N:\1930\FIGURES\LLG1930 FIG 14.DWG

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**Figure 14**  
**Scenario A: Total Project Traffic Assignment (Employees + Trucks)**  
 AM/PM Peak Hours & ADT  
 OMWD ELFIN FOREST RAW WATER PIPELINE



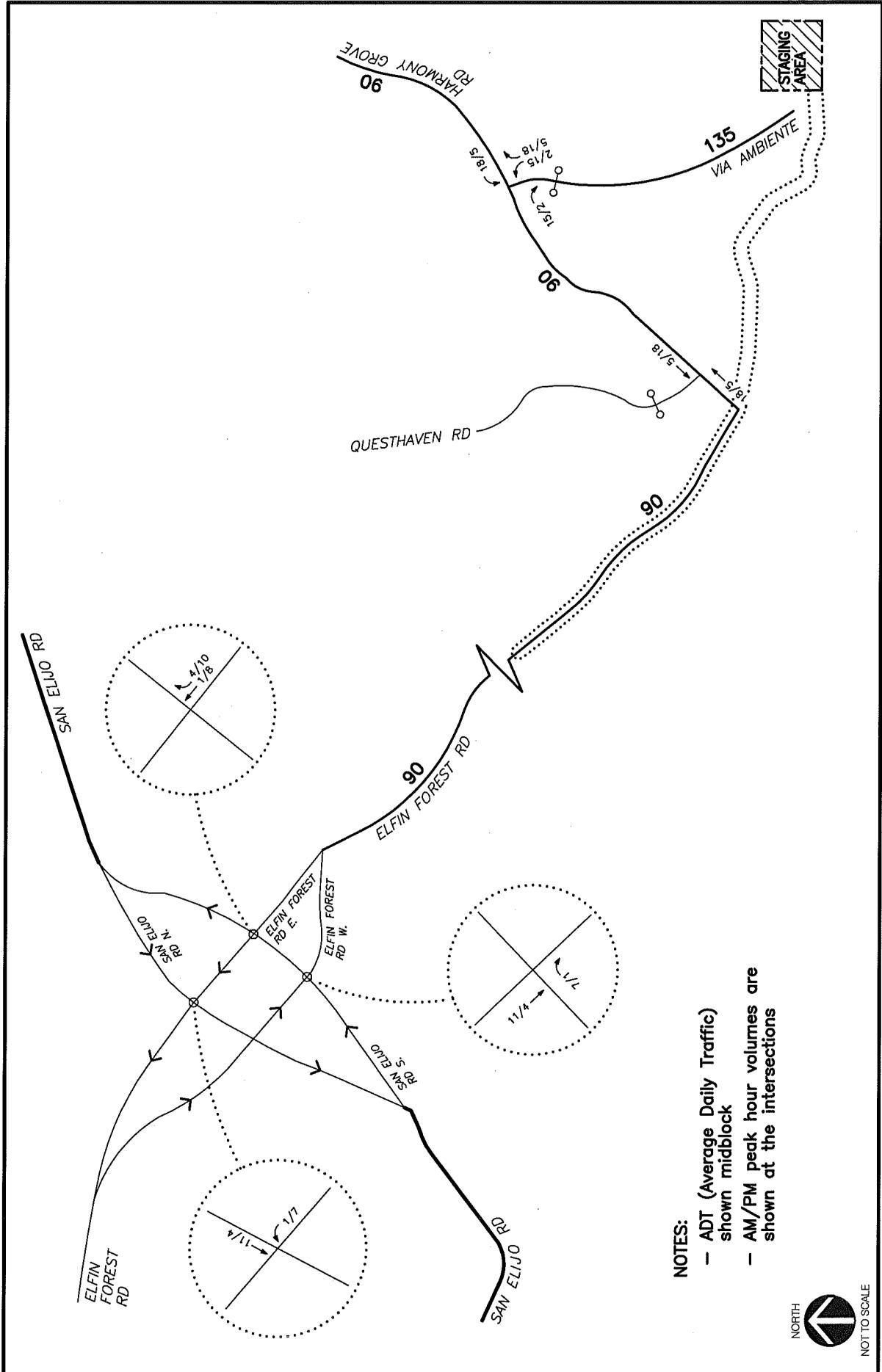
- NOTES:**
- ADT (Average Daily Traffic) shown midblock
  - AM/PM peak hour volumes are shown at the intersections



REV. 06/14/2010  
 N:\1930\FIGURES\LLC1930 FIG 15.DWG

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**Figure 15**  
**Scenario B: Total Project Traffic Assignment (Employees + Trucks)**  
 AM/PM Peak Hours & ADT  
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- NOTES:
- ADT (Average Daily Traffic) shown midblock
  - AM/PM peak hour volumes are shown at the intersections



REV. 06/14/2010  
N:\1530\FIGURES\LLG1930 FIG 16.DWG

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**Figure 16**  
**Scenario C: Total Project Traffic Assignment (Employees + Trucks)**  
AM/PM Peak Hours & ADT  
OMWD ELFIN FOREST RAW WATER PIPELINE

### 3.4 Existing + Project Conditions

This section summarizes the LOS analyses for the addition of project traffic onto the existing background traffic (existing + project) for Scenarios A, B and C. Cumulative analyses were not conducted as the pipeline construction is scheduled to begin in fall 2010 and expected to occur over a 9- to 12-month period and no significant cumulative projects are anticipated to be completed before then.

*Figure 17* shows the existing + project traffic volumes for *Scenario A*. *Figure 18* shows the existing + project traffic volumes for *Scenario B*. *Figure 19* shows the existing + project traffic volumes for *Scenario C*.

#### 3.4.1 Intersection Operations

*Table 6* summarizes the existing + project intersection levels of service for the three scenarios. As seen in *Table 6*, with the addition of project traffic, all the study area intersections are calculated to continue to operate at LOS B or better in the three scenarios. Since the overall intersection operations are calculated as LOS B or better, critical movements at unsignalized intersections were not analyzed.

Based on the County of San Diego's published significance criteria, the proposed project is calculated to have ***no significant impacts*** to the above study area intersections.

*Appendix D* contains the existing + project intersection analyses worksheets.

#### 3.4.2 Segment Operations

*Table 7* summarizes the existing + project roadway segment levels of service on a daily basis (ADT). As seen in *Table 7*, with the addition of project traffic, all the roadway segments are calculated to continue to operate at LOS C or better in the three scenarios.

Based on the County of San Diego's published significance criteria, the proposed project is calculated to have ***no significant impacts*** to the study area segments.

Even though there are no calculated significant impacts, LLG recommends some traffic control measures as discussed in *Section 4.2*.

**TABLE 6  
EXISTING + PROJECT INTERSECTION OPERATIONS**

| Intersection                               | Type              | Minor Street <sup>d</sup> | Peak Hour | Existing           |                  | Existing + Project                         |     |     |                    |   |     |     |       |  |     |     |       |
|--|-------------------|---------------------------|-----------|--------------------|------------------|--|-----|-----|--------------------|---|-----|-----|-------|--|-----|-----|-------|
|  |                   |                           |           |                    |                  | Scenario A<br>(100% to Harmony Grove Road) |     |     |                    | Scenario B<br>(100% to Elfin Forest Road) |     |     |       | Scenario C<br>(50% to Harmony Grove Road + 50% to Elfin Forest Road) |     |     |       |
|  |                   |                           |           | Delay <sup>a</sup> | LOS <sup>b</sup> | Delay                                      | LOS | Δ   | Sig.? <sup>e</sup> | Delay                                     | LOS | Δ   | Sig.? | Delay  | LOS | Δ   | Sig.? |
| 1. San Elijo Road N./ Elfin Forest Road E. | Signal            | NA                        | AM        | 12.0               | B                | 12.1                                       | B   | 0.1 | No                 | 12.1                                      | B   | 0.1 | No    | 12.1   | B   | 0.1 | No    |
|  |                   |                           | PM        | 6.9                | A                | 7.0  | A   | 0.1 | No                 | 7.0                                       | A   | 0.1 | No    | 7.0  | A   | 0.1 | No    |
| 2. San Elijo Road S./ Elfin Forest Road W. | Signal            | NA                        | AM        | 9.8                | A                | 9.9  | A   | 0.1 | No                 | 10.0                                      | A   | 0.2 | No    | 10.0   | A   | 0.2 | No    |
|  |                   |                           | PM        | 5.4                | A                | 5.4  | A   | 0.0 | No                 | 5.5                                       | A   | 0.1 | No    | 5.4  | A   | 0.0 | No    |
| 3. San Elijo Road S./ Elfin Forest Road E. | Signal            | NA                        | AM        | 11.8               | B                | 11.9                                       | B   | 0.1 | No                 | 11.9                                      | B   | 0.1 | No    | 11.9   | B   | 0.1 | No    |
|  |                   |                           | PM        | 6.5                | A                | 6.7  | A   | 0.2 | No                 | 6.7                                       | A   | 0.2 | No    | 6.7  | A   | 0.2 | No    |
| 4. Questhaven Road/ Harmony Grove Road     | TWSC <sup>c</sup> | SB <sup>d</sup>           | AM        | 9.6                | A                | 9.7  | A   | 0.1 | No                 | 9.7                                       | A   | 0.1 | No    | 9.7  | A   | 0.1 | No    |
|  |                   |                           | PM        | 9.6                | A                | 9.7  | A   | 0.1 | No                 | 9.7                                       | A   | 0.1 | No    | 9.7  | A   | 0.1 | No    |
| 5. Via Ambiente/ Harmony Grove Road        | TWSC              | NB <sup>d</sup>           | AM        | 9.0                | A                | 9.5  | A   | 0.5 | No                 | 10.2                                      | B   | 1.2 | No    | 9.5  | A   | 0.5 | No    |
|  |                   |                           | PM        | 10.9               | B                | 11.1                                       | B   | 0.2 | No                 | 11.2                                      | B   | 0.3 | No    | 11.1   | B   | 0.2 | No    |

**Footnotes:**

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. TWSC – Two-Way Stop Controlled Intersection.
- d. Worst minor street approach delay reported.
- e. Sig? = Does the project results in a significant impact. (For County Significance criteria, refer to *Section 1.3* of Traffic Study).

**General Notes:**

Since acceptable LOS D or better operations are calculated, no “critical movement” is identified.  
NA – Not applicable for signalized intersections.

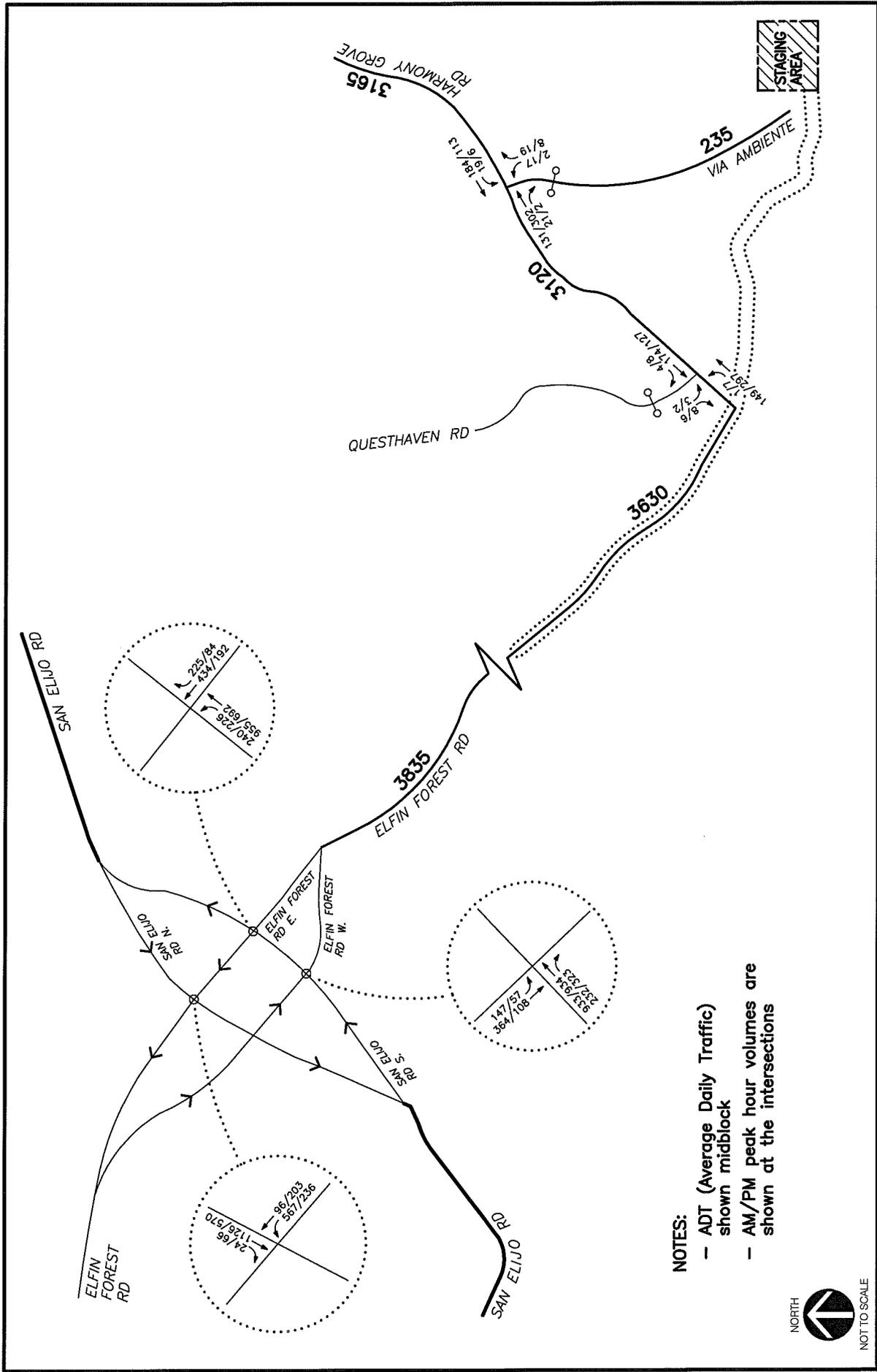
| SIGNALIZED           |     | UNSIGNALIZED         |     |
|----------------------|-----|----------------------|-----|
| DELAY/LOS THRESHOLDS |     | DELAY/LOS THRESHOLDS |     |
| Delay                | LOS | Delay                | LOS |
| 0.0 ≤ 10.0           | A   | 0.0 ≤ 10.0           | A   |
| 10.1 to 20.0         | B   | 10.1 to 15.0         | B   |
| 20.1 to 35.0         | C   | 15.1 to 25.0         | C   |
| 35.1 to 55.0         | D   | 25.1 to 35.0         | D   |
| 55.1 to 80.0         | E   | 35.1 to 50.0         | E   |
| ≥ 80.1               | F   | ≥ 50.1               | F   |

**TABLE 7  
EXISTING + PROJECT STREET SEGMENT OPERATIONS**

| Roadway Segment                     | Lanes | Functional Classification | Capacity (LOS E) <sup>a</sup> | Existing         |                  | Scenario A<br>(100% to Harmony Grove Road) |                    |     |                    | Scenario B<br>(100% to Elfin Forest Road) |                    |     |       | Scenario C<br>(50% to Harmony Grove Road + 50% to Elfin Forest Road) |                    |     |       |
|-------------------------------------|-------|---------------------------|-------------------------------|------------------|------------------|--|--------------------|-----|--------------------|---|--------------------|-----|-------|--|--------------------|-----|-------|
|                                     |       |                           |                               | ADT <sup>b</sup> | LOS <sup>c</sup> | Project ADT                                | Existing + Project |     |                    | Project ADT                               | Existing + Project |     |       | Project ADT  | Existing + Project |     |       |
|                                     |       |                           |                               |                  |                  |  | ADT                | LOS | Sig.? <sup>d</sup> |   | ADT                | LOS | Sig.? |  | ADT                | LOS | Sig.? |
| <b>Elfin Forest Road</b>            |       |                           |                               |                  |                  |  |                    |     |                    |   |                    |     |       |  |                    |     |       |
| San Elijo Road to Camino Cielo Azul | 2     | Rural Collector           | 8,100 <sup>e</sup>            | 3,790            | B                | 45   | 3,835              | C   | No                 | 135                                       | 3,925              | C   | No    | 90   | 3,880              | C   | No    |
| Camino Cielo Azul to Aguilera Lane  | 2     | Rural Collector           | 8,100 <sup>e</sup>            | 3,540            | B                | 90   | 3,630              | C   | No                 | 135                                       | 3,765              | C   | No    | 90   | 3,630              | C   | No    |
| <b>Harmony Grove Road</b>           |       |                           |                               |                  |                  |  |                    |     |                    |   |                    |     |       |  |                    |     |       |
| Questhaven Road to Via Ambiente     | 2     | Rural Collector           | 16,200                        | 3,030            | B                | 90   | 3,120              | B   | No                 | 90  | 3,120              | B   | No    | 90   | 3,120              | B   | No    |
| East of Via Ambiente                | 2     | Rural Collector           | 16,200                        | 3,030            | B                | 135  | 3,165              | B   | No                 | 45  | 3,075              | B   | No    | 90   | 3,120              | B   | No    |
| <b>Via Ambiente</b>                 |       |                           |                               |                  |                  |  |                    |     |                    |   |                    |     |       |  |                    |     |       |
| South of Harmony Grove Road         | 2     | Rural Collector           | 16,200                        | 100              | A                | 135  | 235                | A   | No                 | 135                                       | 235                | A   | No    | 135  | 235                | A   | No    |

**Footnotes:**

- a. Capacity based on *County of San Diego* roadway classification operating at LOS E.
- b. Average Daily Traffic.
- c. Level of Service.
- d. Sig? = Does the project results in a significant impact. For County Significance criteria, refer to *Section 1.3* of Traffic Study.
- e. Reduced capacity (50%) is assumed for a temporary lane closure on Elfin Forest Road.



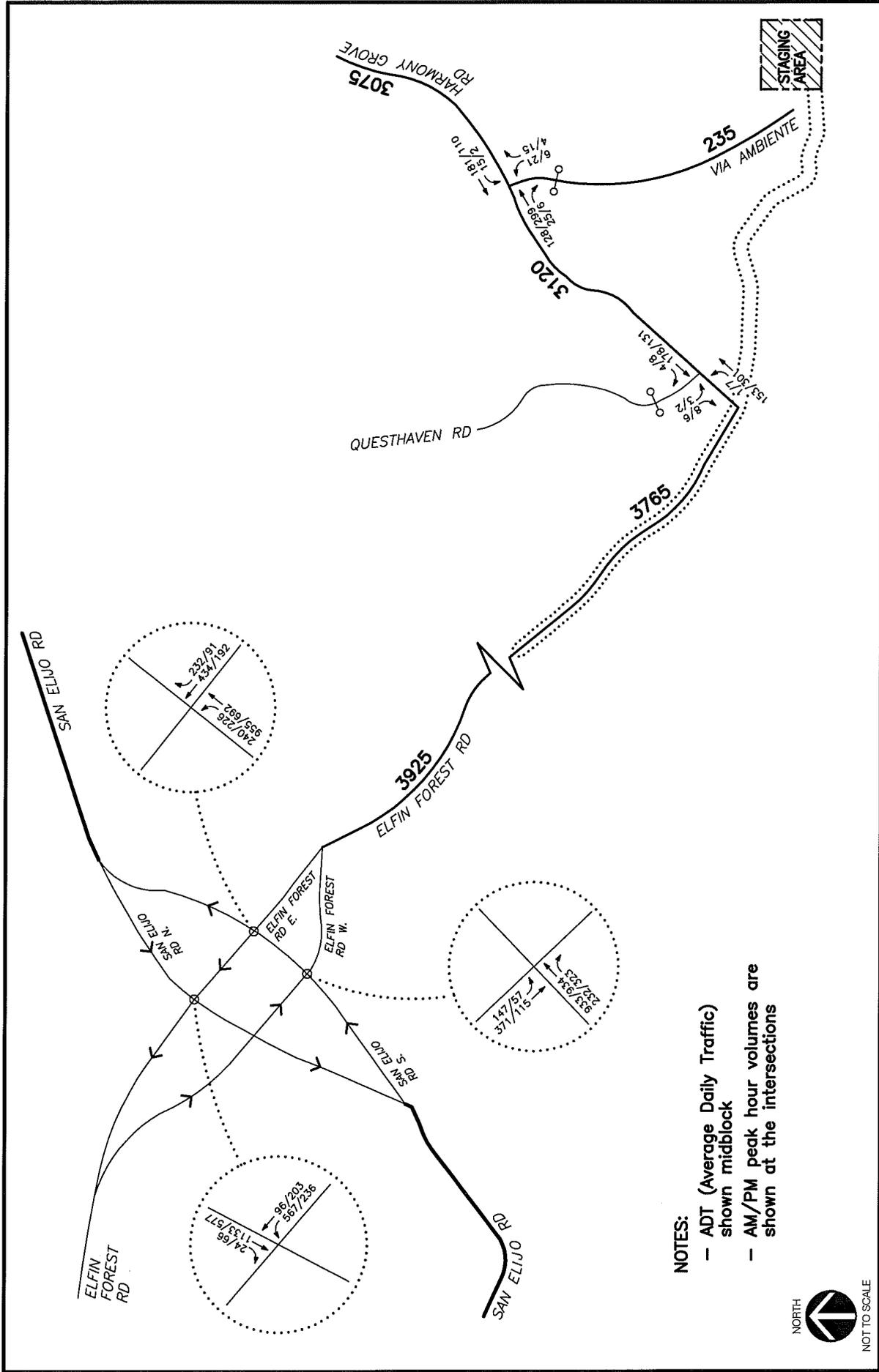
- NOTES:**
- ADT (Average Daily Traffic) shown midblock
  - AM/PM peak hour volumes are shown at the intersections



REV. 06/10/2010  
 N:\1930\FIGURES\LLG1930 FIG 17.DWG

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**Figure 17**  
**Existing + Project (Scenario A) Traffic Volumes**  
**AM/PM Peak Hours & ADT**  
 OMWD ELFIN FOREST RAW WATER PIPELINE

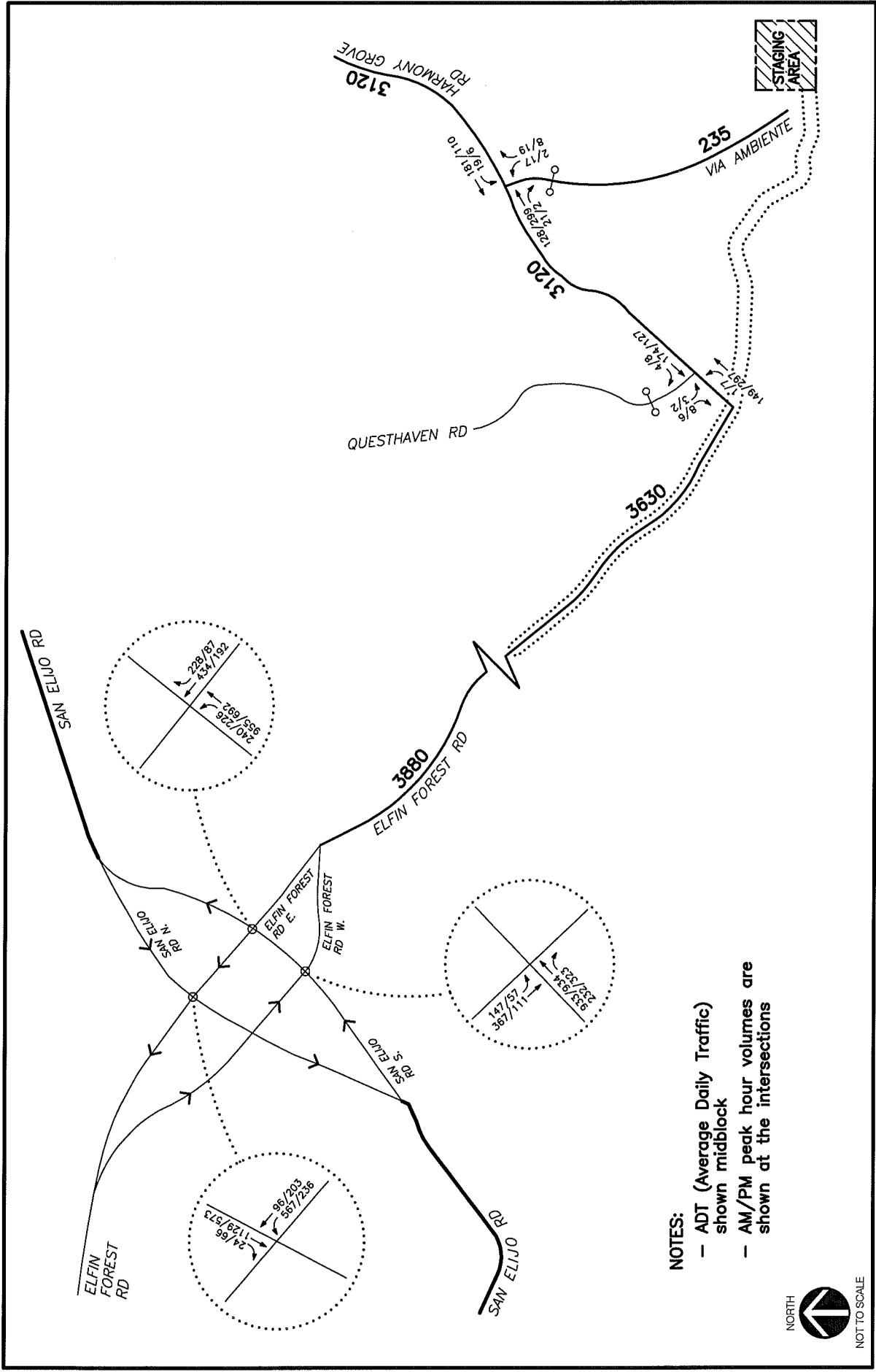


REV. 06/10/2010  
 N:\1930\FIGURES\LLG\9.30 FIG 18.DWG

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**Figure 18**  
**Existing + Project (Scenario B) Traffic Volumes**  
**AM/PM Peak Hours & ADT**  
 OMWD ELFIN FOREST RAW WATER PIPELINE



- NOTES:**
- ADT (Average Daily Traffic) shown midblock
  - AM/PM peak hour volumes are shown at the intersections

**Figure 19**  
**Existing + Project (Scenario C) Traffic Volumes**  
 AM/PM Peak Hours & ADT

OMWD ELFIN FOREST RAW WATER PIPELINE

REV. 05/10/2010  
 N:\1930\FIGURES\LLG1930 FIG 19.DWG

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### 3.5 Traffic Control during construction

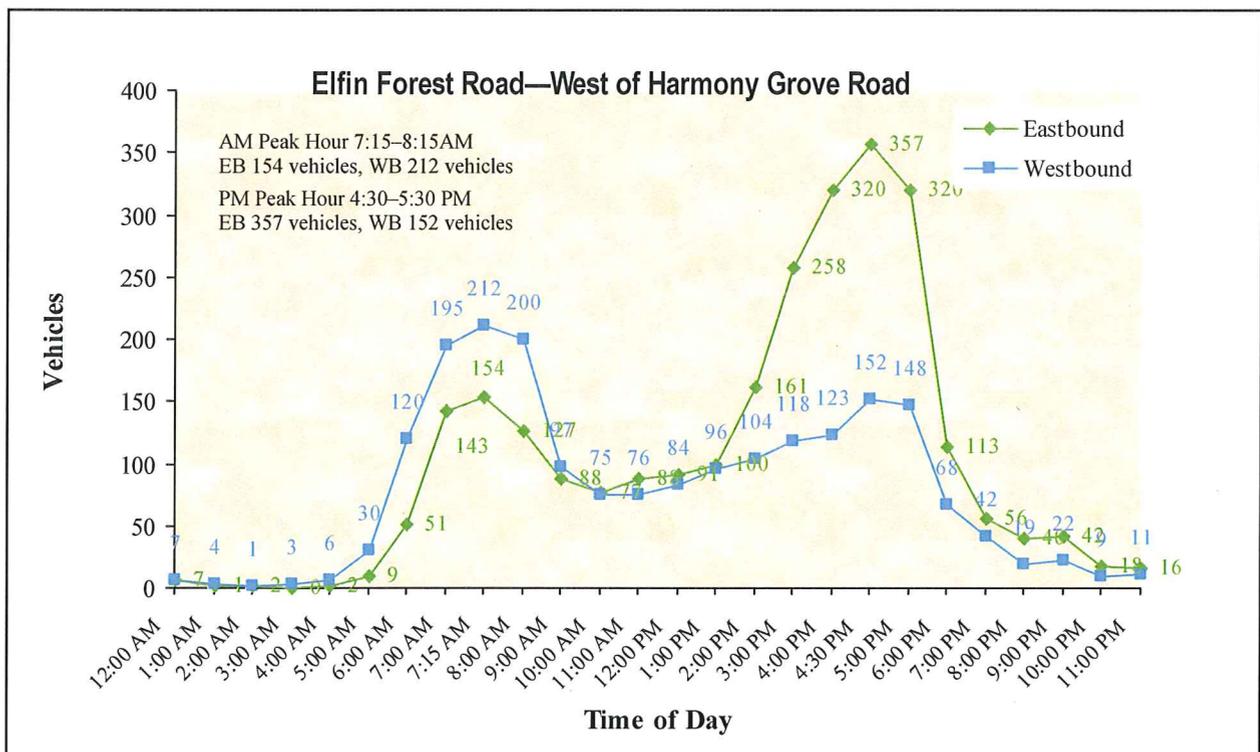
During the installation of the pipeline, portions of Elfin Forest Road and Harmony Grove Road may be partially closed for construction. The direction of lane closure is not known at this time given the construction constrains with respect to alignment of pipeline, location of utilities, terrain etc. At a given time, approximately 100 to 150 feet of roadway will be partially closed at any given time and flagging personnel will control the flow of traffic on a single-lane Elfin Forest Road.

#### 3.5.1 Segment Operations with lane closures

The peak hour data records show that the maximum peak hour volume occurring along Elfin Forest Road is 212 vehicles during the AM peak hour (WB direction) and 357 vehicles during the PM peak hour (EB direction).

*Chart A* shows the 24-hour volume data along Elfin Forest Road (West of Camino Cielo Azul) in both directions.

CHART A  
VOLUME VERSUS TIME OF DAY—ELFIN FOREST ROAD



#### Peak hour Operations

The pipeline construction is anticipated to occur between 7 AM and 4 PM. The existing traffic volumes show that the AM peak hour occurs between 7:15 and 8:15 AM. The peak direction during

the AM peak hour is westbound (WB) and the peak hour traffic volume is 212 vehicles. Based on the existing data collected, the maximum 15-minute volume occurring during the AM peak hour is 58 vehicles in the WB direction. 58 vehicles per 15 minutes translate to approximately 4 vehicles per minute. With the proposed flagging operations on Elfin Forest Road, delays are expected, however the delays are not anticipated to be substantial given the low volumes on Elfin Forest Road.

The PM peak hour currently occurs between 4:30 and 5:30. The construction is anticipated to be complete by 4 PM daily and peak hour traffic is not expected to be impacted by the pipeline construction. However, the highest volume occurring prior to the PM peak hour is 258 vehicles in the EB direction (between 3 and 4 PM). Based on the existing data collected, the maximum 15-minute volume occurring during the PM peak hour is 83 vehicles in the EB direction. 83 vehicles per 15 minutes translate to approximately 6 vehicles per minute. With the proposed flagging operations on Elfin Forest Road, delays are expected, however the delays are not anticipated to be substantial given the low volumes on Elfin Forest Road.

### ***Mid-day Operations***

The 24-hour volume shown in *Chart 1* show that the volumes are relatively low during majority of the day between 9 AM and 2 PM. The maximum volume occurring during the mid-day timeframe is 196 vehicles (between 1 and 2 PM) in both directions combined. Based on the existing volume data, the directional splits are approximately 50/50 in each direction. Assuming 98 vehicles per hour per direction, these volumes translate to 24 vehicles per 15 minutes or approximately 2 vehicles per minute. Considering this low dispersion of traffic, delays are expected with flagging personnel trying to alternate the flow of traffic on a single-lane Elfin Forest Road but the delays are not expected to be substantial.

*Table 7* also shows the street segment operations on Elfin Forest Road with a reduced capacity (1-lane operations). With only 1-lane, Elfin Forest Road is calculated to operate at LOS C.

## 4.0 IMPACT SUMMARY

### 4.1 Impact Summary

The project is calculated to have no direct impacts based on the published *County of San Diego's Guidelines for determining Significance Criteria*.

### 4.2 Summary of Recommended Project Design Features, Impacts and Mitigation

The project is calculated to have no significant impacts based on the County of San Diego's published significance criteria. Hence no mitigation measures are required.

However, LLG recommends the following standard traffic control measures to avoid traffic impacts during the construction period:

- All construction that directly affects movement of traffic along any public street as a result of lane closures, realignments, detours, narrowing, or erection of barriers or other traffic control devices should be detailed in a traffic control plan in accordance with the *Manual of Uniform for Traffic Control Devices (MUTCD, California 2010)* and County Standard Drawings and Department Instructions. The traffic control plan would be approved by the County of San Diego Public Works Division and would include appropriate signs and other warning devices in advance of construction zones, as well as posted notices prior to commencement of construction.
- Along Elfin Forest Road and Harmony Grove Road, a single lane of traffic should always be maintained and traffic shall alternate on a single-lane road controlled by a flagger. Hand-signaling devices, such as STOP/SLOW paddles, lights, and red flags, shall be used to control road users through temporary traffic control zones.
- Flagger stations shall be located far enough in advance of the work space so that approaching road users will have sufficient distance to stop before entering the work space. Based on *MUTCD* standards, 50 mph on Elfin Forest Road requires 425 feet.
- During times when construction activity is not occurring, these roadways would be restored to their normal operating conditions.
- Signs, notices, and other warning devices shall be posted to direct bikes and pedestrians to safe crossing locations at intersections in advance of the construction zones.
- Access to residences, businesses, and institutions shall be maintained at all times during construction.

## 5.0 REFERENCES

Highway Capacity Manual (HCM) 2000

Manual of Uniform for Traffic Control Devices, *MUTCD* 2010 (*California Edition*)

County of San Diego, KIVA Website

## 6.0 LIST OF PREPARERS AND ORGANIZATIONS CONTACTED

### Preparers

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R. VidhyaShankar, P.E, Transportation Engineer III—*Linscott, Law & Greenspan, Engineers*

### Organizations Contacted

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# APPENDIX A

## INTERSECTION AND SEGMENT COUNT SHEETS



TDSSW, Inc.  
PO Box 1544

Lakeside, CA 92040  
(619) 390-8495 Fax (866) 768-1818

File Name : 09183050  
Site Code : 00183050  
Start Date : 12/9/2009  
Page No : 1

Weather : Clear & Dry  
Counted By: D. Wellman  
Board #: D1-1426 N  
Loc: San Elijo Rd S. & Elfin Forest Rd E

| Start Time  | San Elijo Road S. Southbound |      |       |      |            |  | Elfin Forest Road E. Westbound |      |       |      |            |  | San Elijo Road S. Northbound |      |       |      |            |  | Elfin Forest Road E. Eastbound |      |       |      |            |  |
|-------------|------------------------------|------|-------|------|------------|--|--------------------------------|------|-------|------|------------|--|------------------------------|------|-------|------|------------|--|--------------------------------|------|-------|------|------------|--|
|             | Left                         | Thru | Right | Peds | App. Total |  | Left                           | Thru | Right | Peds | App. Total |  | Left                         | Thru | Right | Peds | App. Total |  | Left                           | Thru | Right | Peds | App. Total |  |
|             |                              |      |       |      |            |  |                                |      |       |      |            |  |                              |      |       |      |            |  |                                |      |       |      |            |  |
| 07:00       | 0                            | 171  | 0     | 3    | 171        |  | 61                             | 17   | 1     | 0    | 79         |  | 0                            | 6    | 0     | 0    | 6          |  | 0                              | 0    | 0     | 0    | 0          |  |
| 07:15       | 0                            | 232  | 7     | 3    | 239        |  | 96                             | 9    | 0     | 0    | 105        |  | 0                            | 0    | 0     | 0    | 0          |  | 0                              | 0    | 0     | 0    | 0          |  |
| 07:30       | 19                           | 265  | 6     | 12   | 290        |  | 168                            | 16   | 0     | 1    | 184        |  | 0                            | 0    | 0     | 1    | 0          |  | 0                              | 0    | 0     | 5    | 1          |  |
| 07:45       | 0                            | 324  | 5     | 25   | 329        |  | 193                            | 35   | 0     | 1    | 228        |  | 0                            | 0    | 0     | 2    | 0          |  | 0                              | 0    | 0     | 1    | 0          |  |
| Total       | 19                           | 992  | 18    | 43   | 1029       |  | 518                            | 77   | 1     | 2    | 596        |  | 0                            | 6    | 0     | 3    | 6          |  | 1                              | 0    | 0     | 7    | 1          |  |
| 08:00       | 0                            | 249  | 8     | 1    | 257        |  | 87                             | 21   | 0     | 0    | 108        |  | 0                            | 0    | 0     | 0    | 0          |  | 0                              | 0    | 0     | 2    | 0          |  |
| 08:15       | 0                            | 280  | 5     | 0    | 285        |  | 118                            | 24   | 0     | 0    | 142        |  | 0                            | 0    | 0     | 0    | 0          |  | 0                              | 0    | 0     | 0    | 0          |  |
| 08:30       | 0                            | 208  | 11    | 1    | 219        |  | 109                            | 28   | 0     | 1    | 137        |  | 0                            | 0    | 0     | 0    | 0          |  | 0                              | 0    | 0     | 0    | 0          |  |
| 08:45       | 0                            | 192  | 33    | 1    | 225        |  | 76                             | 32   | 0     | 0    | 108        |  | 0                            | 0    | 2     | 0    | 0          |  | 0                              | 0    | 0     | 0    | 0          |  |
| Total       | 0                            | 929  | 57    | 3    | 986        |  | 390                            | 105  | 0     | 1    | 495        |  | 0                            | 0    | 0     | 2    | 0          |  | 0                              | 0    | 0     | 2    | 0          |  |
| Grand Total | 19                           | 1921 | 75    | 46   | 2015       |  | 908                            | 182  | 1     | 3    | 1091       |  | 0                            | 6    | 0     | 5    | 6          |  | 1                              | 0    | 0     | 9    | 1          |  |
| Approach %  | 0.9                          | 95.3 | 3.7   |      |            |  | 83.2                           | 16.7 | 0.1   |      |            |  | 0.0                          | 100. | 0.0   |      |            |  | 100.                           | 0.0  | 0.0   |      |            |  |
| Total %     | 0.6                          | 61.7 | 2.4   |      |            |  | 29.2                           | 5.8  | 0.0   |      |            |  | 0.0                          | 0.2  | 0.0   |      |            |  | 0.0                            | 0.0  | 0.0   |      |            |  |

| Start Time  | San Elijo Road S. Southbound |      |       |      |            |  | Elfin Forest Road E. Westbound |      |       |      |            |  | San Elijo Road S. Northbound |      |       |      |            |  | Elfin Forest Road E. Eastbound |      |       |      |            |  |
|-------------|------------------------------|------|-------|------|------------|--|--------------------------------|------|-------|------|------------|--|------------------------------|------|-------|------|------------|--|--------------------------------|------|-------|------|------------|--|
|             | Left                         | Thru | Right | Peds | App. Total |  | Left                           | Thru | Right | Peds | App. Total |  | Left                         | Thru | Right | Peds | App. Total |  | Left                           | Thru | Right | Peds | App. Total |  |
|             |                              |      |       |      |            |  |                                |      |       |      |            |  |                              |      |       |      |            |  |                                |      |       |      |            |  |
| 07:00       | 0                            | 171  | 0     | 3    | 171        |  | 61                             | 17   | 1     | 0    | 79         |  | 0                            | 6    | 0     | 0    | 6          |  | 0                              | 0    | 0     | 0    | 0          |  |
| 07:15       | 0                            | 232  | 7     | 3    | 239        |  | 96                             | 9    | 0     | 0    | 105        |  | 0                            | 0    | 0     | 0    | 0          |  | 0                              | 0    | 0     | 0    | 0          |  |
| 07:30       | 19                           | 265  | 6     | 12   | 290        |  | 168                            | 16   | 0     | 1    | 184        |  | 0                            | 0    | 0     | 1    | 0          |  | 0                              | 0    | 0     | 5    | 1          |  |
| 07:45       | 0                            | 324  | 5     | 25   | 329        |  | 193                            | 35   | 0     | 1    | 228        |  | 0                            | 0    | 0     | 2    | 0          |  | 0                              | 0    | 0     | 1    | 0          |  |
| Total       | 19                           | 992  | 18    | 43   | 1029       |  | 518                            | 77   | 1     | 2    | 596        |  | 0                            | 6    | 0     | 3    | 6          |  | 1                              | 0    | 0     | 7    | 1          |  |
| 08:00       | 0                            | 249  | 8     | 1    | 257        |  | 87                             | 21   | 0     | 0    | 108        |  | 0                            | 0    | 0     | 0    | 0          |  | 0                              | 0    | 0     | 2    | 0          |  |
| 08:15       | 0                            | 280  | 5     | 0    | 285        |  | 118                            | 24   | 0     | 0    | 142        |  | 0                            | 0    | 0     | 0    | 0          |  | 0                              | 0    | 0     | 0    | 0          |  |
| 08:30       | 0                            | 208  | 11    | 1    | 219        |  | 109                            | 28   | 0     | 1    | 137        |  | 0                            | 0    | 0     | 0    | 0          |  | 0                              | 0    | 0     | 0    | 0          |  |
| 08:45       | 0                            | 192  | 33    | 1    | 225        |  | 76                             | 32   | 0     | 0    | 108        |  | 0                            | 0    | 2     | 0    | 0          |  | 0                              | 0    | 0     | 0    | 0          |  |
| Total       | 0                            | 929  | 57    | 3    | 986        |  | 390                            | 105  | 0     | 1    | 495        |  | 0                            | 0    | 0     | 2    | 0          |  | 0                              | 0    | 0     | 2    | 0          |  |
| Grand Total | 19                           | 1921 | 75    | 46   | 2015       |  | 908                            | 182  | 1     | 3    | 1091       |  | 0                            | 6    | 0     | 5    | 6          |  | 1                              | 0    | 0     | 9    | 1          |  |
| Approach %  | 0.9                          | 95.3 | 3.7   |      |            |  | 83.2                           | 16.7 | 0.1   |      |            |  | 0.0                          | 100. | 0.0   |      |            |  | 100.                           | 0.0  | 0.0   |      |            |  |
| Total %     | 0.6                          | 61.7 | 2.4   |      |            |  | 29.2                           | 5.8  | 0.0   |      |            |  | 0.0                          | 0.2  | 0.0   |      |            |  | 0.0                            | 0.0  | 0.0   |      |            |  |

| Start Time  | San Elijo Road S. Southbound |      |       |      |            |  | Elfin Forest Road E. Westbound |      |       |      |            |  | San Elijo Road S. Northbound |      |       |      |            |  | Elfin Forest Road E. Eastbound |      |       |      |            |  |
|-------------|------------------------------|------|-------|------|------------|--|--------------------------------|------|-------|------|------------|--|------------------------------|------|-------|------|------------|--|--------------------------------|------|-------|------|------------|--|
|             | Left                         | Thru | Right | Peds | App. Total |  | Left                           | Thru | Right | Peds | App. Total |  | Left                         | Thru | Right | Peds | App. Total |  | Left                           | Thru | Right | Peds | App. Total |  |
|             |                              |      |       |      |            |  |                                |      |       |      |            |  |                              |      |       |      |            |  |                                |      |       |      |            |  |
| 07:00       | 0                            | 171  | 0     | 3    | 171        |  | 61                             | 17   | 1     | 0    | 79         |  | 0                            | 6    | 0     | 0    | 6          |  | 0                              | 0    | 0     | 0    | 0          |  |
| 07:15       | 0                            | 232  | 7     | 3    | 239        |  | 96                             | 9    | 0     | 0    | 105        |  | 0                            | 0    | 0     | 0    | 0          |  | 0                              | 0    | 0     | 0    | 0          |  |
| 07:30       | 19                           | 265  | 6     | 12   | 290        |  | 168                            | 16   | 0     | 1    | 184        |  | 0                            | 0    | 0     | 1    | 0          |  | 0                              | 0    | 0     | 5    | 1          |  |
| 07:45       | 0                            | 324  | 5     | 25   | 329        |  | 193                            | 35   | 0     | 1    | 228        |  | 0                            | 0    | 0     | 2    | 0          |  | 0                              | 0    | 0     | 1    | 0          |  |
| Total       | 19                           | 992  | 18    | 43   | 1029       |  | 518                            | 77   | 1     | 2    | 596        |  | 0                            | 6    | 0     | 3    | 6          |  | 1                              | 0    | 0     | 7    | 1          |  |
| 08:00       | 0                            | 249  | 8     | 1    | 257        |  | 87                             | 21   | 0     | 0    | 108        |  | 0                            | 0    | 0     | 0    | 0          |  | 0                              | 0    | 0     | 2    | 0          |  |
| 08:15       | 0                            | 280  | 5     | 0    | 285        |  | 118                            | 24   | 0     | 0    | 142        |  | 0                            | 0    | 0     | 0    | 0          |  | 0                              | 0    | 0     | 0    | 0          |  |
| 08:30       | 0                            | 208  | 11    | 1    | 219        |  | 109                            | 28   | 0     | 1    | 137        |  | 0                            | 0    | 0     | 0    | 0          |  | 0                              | 0    | 0     | 0    | 0          |  |
| 08:45       | 0                            | 192  | 33    | 1    | 225        |  | 76                             | 32   | 0     | 0    | 108        |  | 0                            | 0    | 2     | 0    | 0          |  | 0                              | 0    | 0     | 0    | 0          |  |
| Total       | 0                            | 929  | 57    | 3    | 986        |  | 390                            | 105  | 0     | 1    | 495        |  | 0                            | 0    | 0     | 2    | 0          |  | 0                              | 0    | 0     | 2    | 0          |  |
| Grand Total | 19                           | 1921 | 75    | 46   | 2015       |  | 908                            | 182  | 1     | 3    | 1091       |  | 0                            | 6    | 0     | 5    | 6          |  | 1                              | 0    | 0     | 9    | 1          |  |
| Approach %  | 0.9                          | 95.3 | 3.7   |      |            |  | 83.2                           | 16.7 | 0.1   |      |            |  | 0.0                          | 100. | 0.0   |      |            |  | 100.                           | 0.0  | 0.0   |      |            |  |
| Total %     | 0.6                          | 61.7 | 2.4   |      |            |  | 29.2                           | 5.8  | 0.0   |      |            |  | 0.0                          | 0.2  | 0.0   |      |            |  | 0.0                            | 0.0  | 0.0   |      |            |  |

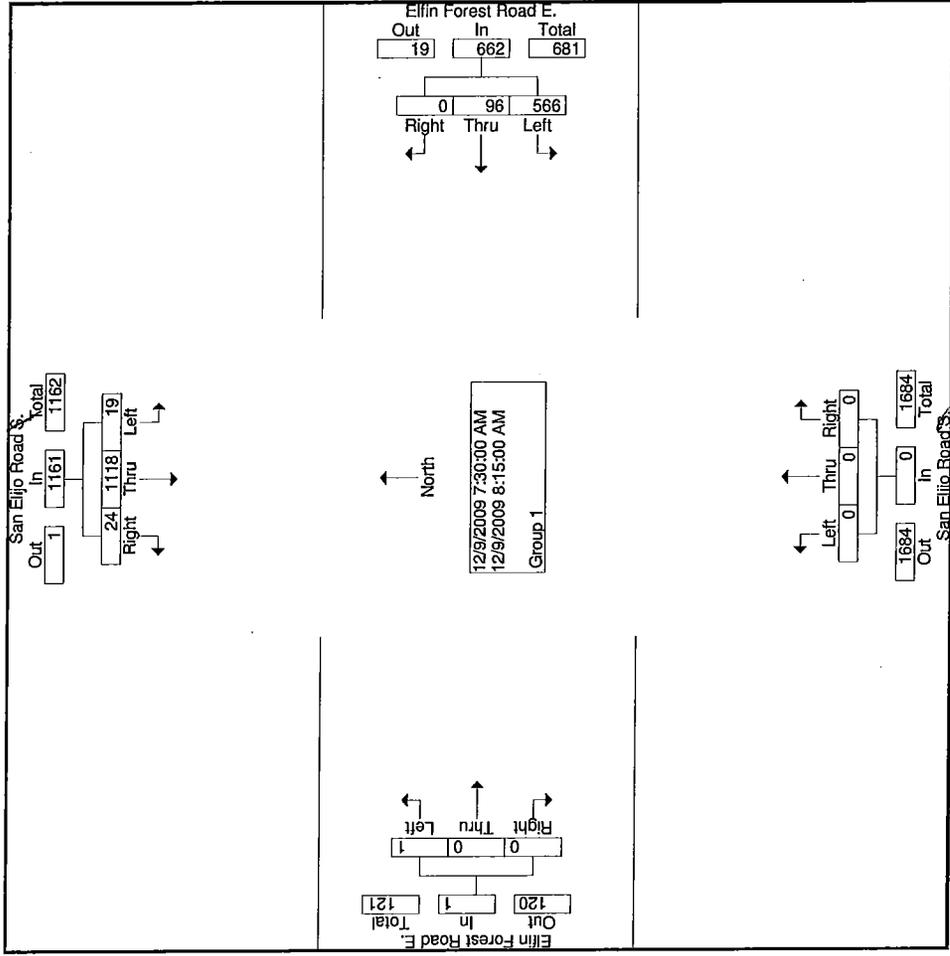
| Start Time  | San Elijo Road S. Southbound |      |       |      |            |  | Elfin Forest Road E. Westbound |      |       |      |            |  | San Elijo Road S. Northbound |      |       |      |            |  | Elfin Forest Road E. Eastbound |      |       |      |            |  |
|-------------|------------------------------|------|-------|------|------------|--|--------------------------------|------|-------|------|------------|--|------------------------------|------|-------|------|------------|--|--------------------------------|------|-------|------|------------|--|
|             | Left                         | Thru | Right | Peds | App. Total |  | Left                           | Thru | Right | Peds | App. Total |  | Left                         | Thru | Right | Peds | App. Total |  | Left                           | Thru | Right | Peds | App. Total |  |
|             |                              |      |       |      |            |  |                                |      |       |      |            |  |                              |      |       |      |            |  |                                |      |       |      |            |  |
| 07:00       | 0                            | 171  | 0     | 3    | 171        |  | 61                             | 17   | 1     | 0    | 79         |  | 0                            | 6    | 0     | 0    | 6          |  | 0                              | 0    | 0     | 0    | 0          |  |
| 07:15       | 0                            | 232  | 7     | 3    | 239        |  | 96                             | 9    | 0     | 0    | 105        |  | 0                            | 0    | 0     | 0    | 0          |  | 0                              | 0    | 0     | 0    | 0          |  |
| 07:30       | 19                           | 265  | 6     | 12   | 290        |  | 168                            | 16   | 0     | 1    | 184        |  | 0                            | 0    | 0     | 1    | 0          |  | 0                              | 0    | 0     | 5    | 1          |  |
| 07:45       | 0                            | 324  | 5     | 25   | 329        |  | 193                            | 35   | 0     | 1    | 228        |  | 0                            | 0    | 0     | 2    | 0          |  | 0                              | 0    | 0     | 1    | 0          |  |
| Total       | 19                           | 992  | 18    | 43   | 1029       |  | 518                            | 77   | 1     | 2    | 596        |  | 0                            | 6    | 0     | 3    | 6          |  | 1                              | 0    | 0     | 7    | 1          |  |
| 08:00       | 0                            | 249  | 8     | 1    | 257        |  | 87                             | 21   | 0     | 0    | 108        |  | 0                            | 0    | 0     | 0    | 0          |  | 0                              | 0    | 0     | 2    | 0          |  |
| 08:15       | 0                            | 280  | 5     | 0    | 285        |  | 118                            | 24   | 0     | 0    | 142        |  | 0                            | 0    | 0     | 0    | 0          |  | 0                              | 0    | 0     | 0    | 0          |  |
| 08:30       | 0                            | 208  | 11    | 1    | 219        |  | 109                            | 28   | 0     | 1    | 137        |  | 0                            | 0    | 0     | 0    | 0          |  | 0                              | 0    | 0     | 0    | 0          |  |
| 08:45       | 0                            | 192  | 33    | 1    | 225        |  | 76                             | 32   | 0     | 0    | 108        |  | 0                            | 0    | 2     | 0    | 0          |  | 0                              | 0    | 0     | 0    | 0          |  |
| Total       | 0                            | 929  | 57    | 3    | 986        |  | 390                            | 105  | 0     | 1    | 495        |  | 0                            | 0    | 0     | 2    | 0          |  | 0                              | 0    | 0     | 2    | 0          |  |
| Grand Total | 19                           | 1921 | 75    | 46   | 2015       |  | 908                            | 182  | 1     | 3    | 1091       |  | 0                            | 6    | 0     | 5    | 6          |  | 1                              | 0    | 0     | 9    | 1          |  |
| Approach %  | 0.9                          | 95.3 | 3.7   |      |            |  | 83.2                           | 16.7 | 0.1   |      |            |  | 0.0                          | 100. | 0.0   |      |            |  | 100.                           | 0.0  | 0.0   |      |            |  |
| Total %     | 0.6                          | 61.7 | 2.4   |      |            |  | 29.2                           | 5.8  | 0.0   |      |            |  | 0.0                          | 0.2  | 0.0   |      |            |  | 0.0                            | 0.0  | 0.0   |      |            |  |

| Start Time | San Elijo Road S. Southbound |      |       |      |            |  | Elfin Forest Road E. Westbound |      |       |      |            |  | San Elijo Road S. Northbound |      |       |      |            |  | Elfin Forest Road E. Eastbound |      |       |      |            |  |
|------------|------------------------------|------|-------|------|------------|--|--------------------------------|------|-------|------|------------|--|------------------------------|------|-------|------|------------|--|--------------------------------|------|-------|------|------------|--|
|            | Left                         | Thru | Right | Peds | App. Total |  | Left                           | Thru | Right | Peds | App. Total |  | Left                         | Thru | Right | Peds | App. Total |  | Left                           | Thru | Right | Peds | App. Total |  |
|            |                              |      |       |      |            |  |                                |      |       |      |            |  |                              |      |       |      |            |  |                                |      |       |      |            |  |
| 07:00      | 0                            | 171  | 0     | 3    | 171        |  | 61                             | 17   | 1     | 0    | 79         |  | 0                            | 6    | 0     | 0    | 6          |  | 0                              | 0    | 0     | 0    | 0          |  |
| 07:15      | 0                            | 232  | 7     | 3    | 239        |  | 96                             | 9    | 0     | 0    | 105        |  | 0                            | 0    | 0     | 0    | 0          |  | 0                              | 0    | 0     | 0    | 0          |  |
| 07:30      | 19                           | 265  | 6     | 12   | 290        |  | 168                            | 16   | 0     | 1    | 184        |  | 0                            | 0    | 0     | 1    | 0          |  | 0                              | 0    | 0     | 5    | 1          |  |
| 07:45      | 0                            | 324  | 5     | 25   | 329        |  | 193                            | 35   | 0     | 1    | 228        |  | 0                            | 0    | 0     | 2    | 0          |  | 0                              | 0    | 0     | 1    | 0          |  |
| Total      | 19                           | 992  | 18    | 43   | 1029       |  | 518                            | 77   | 1     | 2    | 596        |  | 0                            | 6    | 0     | 3    | 6          |  | 1                              | 0    | 0     | 7    | 1          |  |
| 08:00      | 0                            | 249  | 8     | 1    | 257        |  | 87                             | 21   | 0     | 0    | 108        |  | 0                            | 0    | 0     | 0    | 0          |  | 0                              | 0    | 0     | 2    | 0          |  |
| 08:15      | 0                            | 280  | 5     | 0    | 285        |  | 118                            | 24   | 0     | 0    | 142        |  | 0                            | 0    | 0     | 0    | 0          |  | 0                              | 0    | 0     | 0    | 0          |  |
| 08:30      | 0                            | 208  | 11    | 1    | 219        |  | 109                            | 28   | 0     | 1    | 137        |  | 0                            | 0    | 0     | 0    | 0          |  | 0                              | 0    | 0     | 0    | 0          |  |
| 08:45      | 0                            | 192  | 33    | 1    | 225        |  | 76                             | 32   | 0     | 0    | 108        |  | 0                            | 0    | 2     | 0    | 0          |  | 0                              | 0    | 0     | 0    | 0          |  |
| Total      | 0                            | 929  | 57    | 3    | 986        |  | 390                            | 105  | 0     | 1    | 495        |  | 0                            | 0    | 0     | 2    | 0          |  | 0                              | 0    | 0     |      |            |  |

TDSSW, Inc.  
 PO Box 1544  
 Lakeside, CA 92040  
 (619) 390-8495 Fax (866) 768-1818

File Name : 09183050  
 Site Code : 00183050  
 Start Date : 12/9/2009  
 Page No : 2

Weather : Clear & Dry  
 Counted By: D. Wellman  
 Board #: D1-1426  
 Loc: San Elijo Rd S. & Elfin Forest Rd E

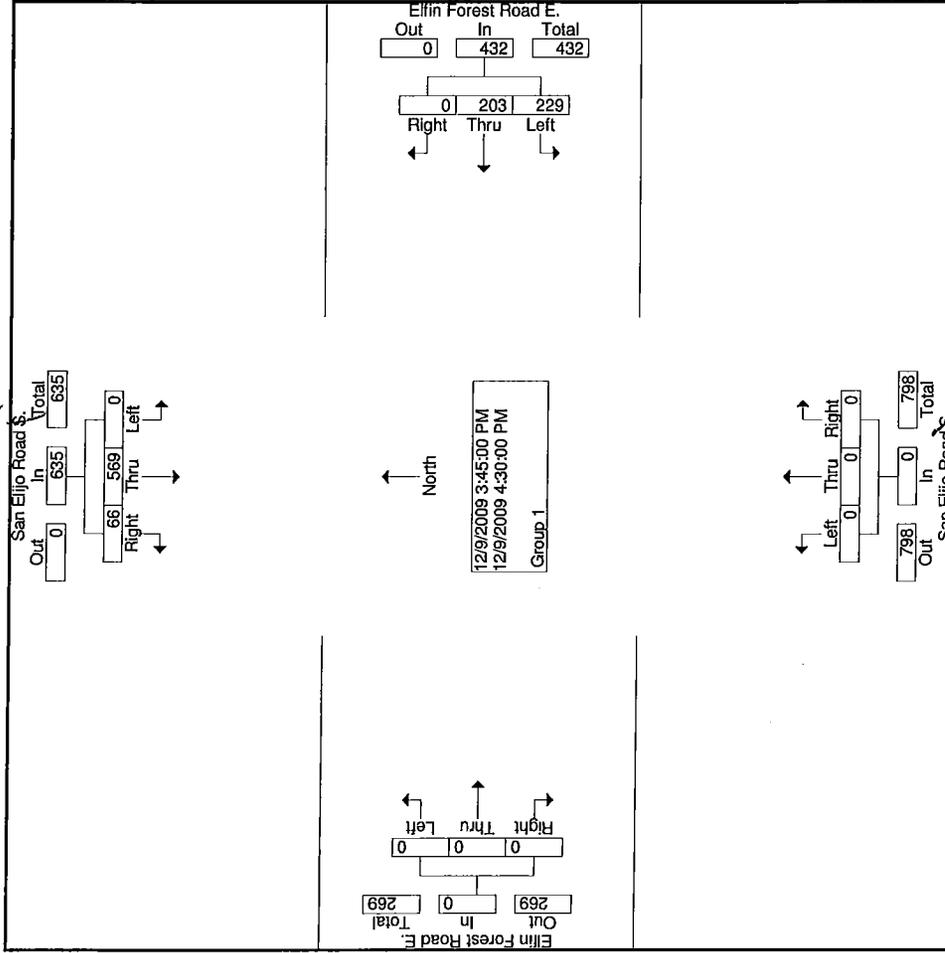




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Weather : Clear & Dry  
 Counted By: D. Wellman  
 Board #: D1-1426  
 Loc: San Elijo Rd S. & Elfin Forest Rd E

File Name : 09183051  
 Site Code : 00158051  
 Start Date : 12/9/2009  
 Page No : 2



N

TDSSW, Inc.  
PO Box 1544

Lakeside, CA 92040  
(619) 390-8495 Fax (866) 768-1818

Weather : Clear & Dry  
Counted By: J. Fort  
Board #: D1-1427 S.  
Loc: San Elijo Rd N. & Elfin Forest Rd W

File Name : 09183010  
Site Code : 00183010  
Start Date : 12/9/2009  
Page No : 1

| Start Time  | San Elijo Road N. Southbound |      |       |      |      |      | San Elijo Road N. Northbound |      |       |      |      |      | Elfin Forest Road W. Eastbound |      |       |      |      |      |            |      |              |      |              |      |            |      |      |
|-------------|------------------------------|------|-------|------|------|------|------------------------------|------|-------|------|------|------|--------------------------------|------|-------|------|------|------|------------|------|--------------|------|--------------|------|------------|------|------|
|             | Left                         |      | Right |      | Peds |      | Left                         |      | Right |      | Peds |      | Left                           |      | Right |      | Peds |      | App. Total |      | Exclu. Total |      | Inclu. Total |      | Int. Total |      |      |
|             | Thru                         | Thru | Thru  | Thru | Thru | Thru | Thru                         | Thru | Thru  | Thru | Thru | Thru | Thru                           | Thru | Thru  | Thru | Thru | Thru | Thru       | Thru | Thru         | Thru | Thru         | Thru | Thru       | Thru | Thru |
| 07:00       | 0                            | 0    | 0     | 0    | 3    | 0    | 0                            | 0    | 0     | 0    | 2    | 0    | 0                              | 132  | 43    | 0    | 175  | 7    | 28         | 0    | 0            | 35   | 5            | 210  | 215        | 210  | 215  |
| 07:15       | 0                            | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 2    | 0    | 0                              | 170  | 54    | 3    | 224  | 18   | 36         | 0    | 3            | 54   | 8            | 278  | 286        | 278  | 286  |
| 07:30       | 0                            | 0    | 0     | 0    | 2    | 0    | 0                            | 0    | 0     | 0    | 3    | 0    | 0                              | 241  | 93    | 2    | 334  | 45   | 27         | 0    | 2            | 72   | 9            | 406  | 415        | 406  | 415  |
| 07:45       | 0                            | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 344  | 83    | 5    | 427  | 76   | 53         | 0    | 0            | 129  | 5            | 556  | 561        | 556  | 561  |
| Total       | 0                            | 0    | 0     | 0    | 5    | 0    | 0                            | 0    | 0     | 0    | 7    | 0    | 0                              | 887  | 273   | 10   | 1160 | 146  | 144        | 0    | 5            | 290  | 27           | 1450 | 1477       | 1450 | 1477 |
| 08:00       | 0                            | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 228  | 46    | 10   | 274  | 31   | 56         | 0    | 0            | 87   | 10           | 361  | 371        | 361  | 371  |
| 08:15       | 0                            | 0    | 0     | 0    | 2    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 158  | 38    | 3    | 196  | 24   | 115        | 0    | 0            | 139  | 5            | 335  | 340        | 335  | 340  |
| 08:30       | 0                            | 0    | 0     | 0    | 3    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 203  | 58    | 5    | 261  | 16   | 132        | 0    | 0            | 148  | 8            | 409  | 417        | 409  | 417  |
| 08:45       | 0                            | 0    | 0     | 0    | 2    | 0    | 0                            | 0    | 0     | 0    | 9    | 0    | 0                              | 179  | 29    | 2    | 208  | 23   | 23         | 0    | 0            | 46   | 13           | 254  | 267        | 254  | 267  |
| Total       | 0                            | 0    | 0     | 0    | 7    | 0    | 0                            | 0    | 0     | 0    | 9    | 0    | 0                              | 768  | 171   | 20   | 939  | 94   | 326        | 0    | 0            | 420  | 36           | 1359 | 1395       | 1359 | 1395 |
| Grand Total | 0                            | 0    | 0     | 0    | 12   | 0    | 0                            | 0    | 0     | 0    | 16   | 0    | 0                              | 1655 | 444   | 30   | 2099 | 240  | 470        | 0    | 5            | 710  | 63           | 2809 | 2872       | 2809 | 2872 |
| Approch %   | 0.0                          | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0                          | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0                            | 78.8 | 21.2  | 0.0  | 74.7 | 33.8 | 66.2       | 0.0  | 0.0          | 25.3 | 2.2          | 97.8 | 97.8       | 97.8 | 97.8 |
| Total %     | 0.0                          | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0                          | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0                            | 58.9 | 15.8  | 0.0  | 74.7 | 8.5  | 16.7       | 0.0  | 0.0          | 25.3 | 2.2          | 97.8 | 97.8       | 97.8 | 97.8 |

| Start Time  | San Elijo Road N. Southbound |      |       |      |      |      | Westbound |      |       |      |      |      | San Elijo Road N. Northbound |      |       |      |      |      | Elfin Forest Road W. Eastbound |      |       |      |      |      |            |      |              |      |              |  |
|-------------|------------------------------|------|-------|------|------|------|-----------|------|-------|------|------|------|------------------------------|------|-------|------|------|------|--------------------------------|------|-------|------|------|------|------------|------|--------------|------|--------------|--|
|             | Left                         |      | Right |      | Peds |      | Left      |      | Right |      | Peds |      | Left                         |      | Right |      | Peds |      | Left                           |      | Right |      | Peds |      | App. Total |      | Exclu. Total |      | Inclu. Total |  |
|             | Thru                         | Thru | Thru  | Thru | Thru | Thru | Thru      | Thru | Thru  | Thru | Thru | Thru | Thru                         | Thru | Thru  | Thru | Thru | Thru | Thru                           | Thru | Thru  | Thru | Thru | Thru | Thru       | Thru | Thru         | Thru | Thru         |  |
| 07:00       | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| 07:15       | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| 07:30       | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| 07:45       | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| Total       | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| 08:00       | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| 08:15       | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| 08:30       | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| 08:45       | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| Total       | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| Grand Total | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| Approch %   | 0.0                          | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0       | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0                          | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0                            | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0        | 0.0  | 0.0          | 0.0  | 0.0          |  |
| Total %     | 0.0                          | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0       | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0                          | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0                            | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0        | 0.0  | 0.0          | 0.0  | 0.0          |  |

| Start Time  | San Elijo Road N. Southbound |      |       |      |      |      | Westbound |      |       |      |      |      | San Elijo Road N. Northbound |      |       |      |      |      | Elfin Forest Road W. Eastbound |      |       |      |      |      |            |      |              |      |              |  |
|-------------|------------------------------|------|-------|------|------|------|-----------|------|-------|------|------|------|------------------------------|------|-------|------|------|------|--------------------------------|------|-------|------|------|------|------------|------|--------------|------|--------------|--|
|             | Left                         |      | Right |      | Peds |      | Left      |      | Right |      | Peds |      | Left                         |      | Right |      | Peds |      | Left                           |      | Right |      | Peds |      | App. Total |      | Exclu. Total |      | Inclu. Total |  |
|             | Thru                         | Thru | Thru  | Thru | Thru | Thru | Thru      | Thru | Thru  | Thru | Thru | Thru | Thru                         | Thru | Thru  | Thru | Thru | Thru | Thru                           | Thru | Thru  | Thru | Thru | Thru | Thru       | Thru | Thru         | Thru | Thru         |  |
| 07:00       | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| 07:15       | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| 07:30       | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| 07:45       | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| Total       | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| 08:00       | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| 08:15       | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| 08:30       | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| 08:45       | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| Total       | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| Grand Total | 0                            | 0    | 0     | 0    | 0    | 0    | 0         | 0    | 0     | 0    | 0    | 0    | 0                            | 0    | 0     | 0    | 0    | 0    | 0                              | 0    | 0     | 0    | 0    | 0    | 0          | 0    | 0            | 0    | 0            |  |
| Approch %   | 0.0                          | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0       | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0                          | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0                            | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0        | 0.0  | 0.0          | 0.0  | 0.0          |  |
| Total %     | 0.0                          | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0       | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0                          | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0                            | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0        | 0.0  | 0.0          | 0.0  | 0.0          |  |

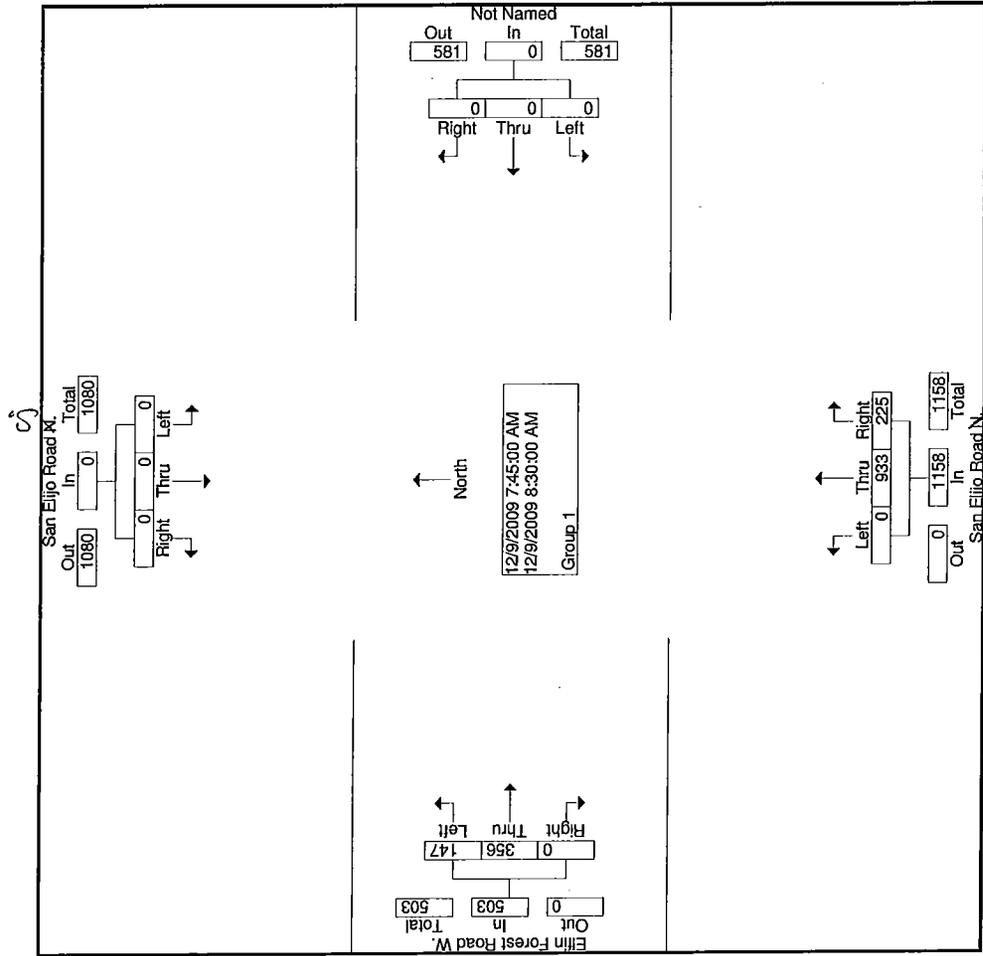
Peak Hour From 07:00 to 08:45 - Peak 1 of 1  
Intersection 07:45  
Volume 0  
Percent 0.0  
Peak Factor 0  
High Int. 6:45:00 AM  
Volume 0  
Peak Factor 0

File Name : 09183010  
 Site Code : 00183010  
 Start Date : 12/9/2009  
 Page No : 2

TDSSW, Inc.  
 PO Box 1544  
 Lakeside, CA 92040  
 (619) 390-8495 Fax (866) 768-1818

Weather : Clear & Dry  
 Counted By: J. Fort  
 Board #: D1-1427

Loc: San Elijo Rd W. & Elfin Forest Rd W



S.

S.

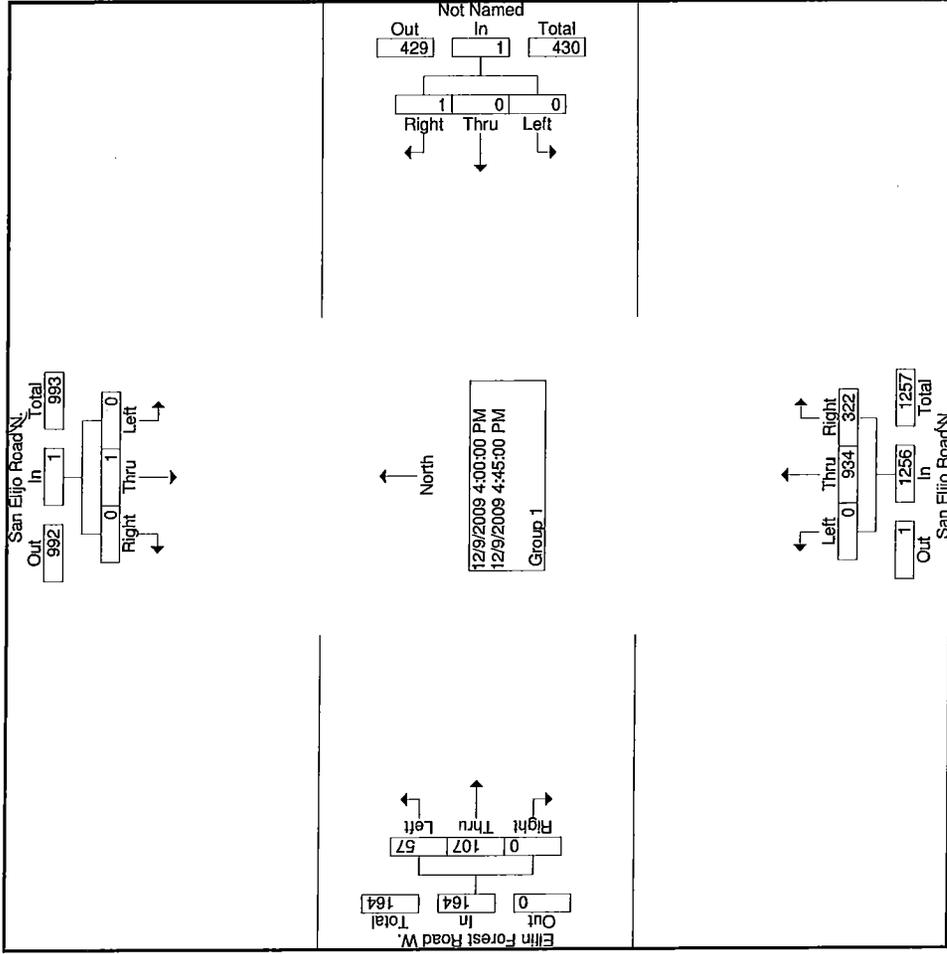


TDSSW, Inc.  
 PO Box 1544  
 Lakeside, CA 92040  
 (619) 390-8495 Fax (866) 768-1818

Weather : Clear & Dry  
 Counted By: J. Fort  
 Board #: D1-1427

Loc: San Elijo Rd N. & Elfin Forest Rd W

File Name : 09183011  
 Site Code : 00183011  
 Start Date : 12/9/2009  
 Page No : 2



TDSSW, Inc.  
PO Box 1544  
Lakeside, CA 92040

File Name : 09183020  
Site Code : 00183020  
Start Date : 12/9/2009  
Page No : 1

Weather : Clear & Dry  
Counted By: Hust  
Board #: D1-1428

Loc: San Elijo Rd N. & Elfin Forest Rd E

| Start Time  | San Elijo Road N. Southbound |      |       |      |            |      | Elfin Forest Road E. Westbound |       |      |            |      |      | San Elijo Road N. Northbound |      |            |      |      |       | Elfin Forest Road E. Eastbound |            |      |      |       |      |            |              |              |            |
|-------------|------------------------------|------|-------|------|------------|------|--------------------------------|-------|------|------------|------|------|------------------------------|------|------------|------|------|-------|--------------------------------|------------|------|------|-------|------|------------|--------------|--------------|------------|
|             | Left                         | Thru | Right | Peds | App. Total | Left | Thru                           | Right | Peds | App. Total | Left | Thru | Right                        | Peds | App. Total | Left | Thru | Right | Peds                           | App. Total | Left | Thru | Right | Peds | App. Total | Exclu. Total | Inclu. Total | Int. Total |
|             | 07:00                        | 0    | 0     | 0    | 3          | 0    | 0                              | 84    | 33   | 3          | 117  | 13   | 110                          | 0    | 6          | 123  | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 12           | 240          | 252        |
| 07:15       | 0                            | 0    | 0     | 34   | 0          | 0    | 86                             | 47    | 0    | 133        | 23   | 152  | 0                            | 3    | 175        | 0    | 0    | 0     | 12                             | 0          | 0    | 0    | 0     | 0    | 49         | 308          | 357          |            |
| 07:30       | 0                            | 0    | 0     | 96   | 0          | 0    | 125                            | 59    | 41   | 184        | 62   | 237  | 0                            | 33   | 299        | 0    | 0    | 0     | 10                             | 0          | 0    | 0    | 0     | 0    | 180        | 483          | 563          |            |
| 07:45       | 0                            | 0    | 0     | 168  | 0          | 0    | 154                            | 58    | 17   | 212        | 94   | 332  | 0                            | 24   | 426        | 0    | 0    | 0     | 13                             | 0          | 0    | 0    | 0     | 0    | 222        | 638          | 860          |            |
| Total       | 0                            | 0    | 0     | 301  | 0          | 0    | 449                            | 197   | 61   | 646        | 192  | 831  | 0                            | 66   | 1023       | 0    | 0    | 0     | 35                             | 0          | 0    | 0    | 0     | 0    | 463        | 1669         | 2132         |            |
| 08:00       | 0                            | 0    | 0     | 10   | 0          | 0    | 75                             | 69    | 9    | 144        | 51   | 213  | 0                            | 2    | 264        | 0    | 0    | 0     | 2                              | 0          | 0    | 0    | 0     | 0    | 23         | 408          | 431          |            |
| 08:15       | 0                            | 0    | 0     | 3    | 0          | 0    | 79                             | 38    | 3    | 117        | 33   | 173  | 0                            | 0    | 206        | 0    | 0    | 0     | 2                              | 0          | 0    | 0    | 0     | 0    | 8          | 323          | 331          |            |
| 08:30       | 0                            | 0    | 0     | 0    | 0          | 0    | 87                             | 96    | 2    | 183        | 17   | 181  | 0                            | 2    | 198        | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 4          | 381          | 385          |            |
| 08:45       | 0                            | 0    | 0     | 2    | 0          | 0    | 54                             | 61    | 0    | 115        | 55   | 145  | 0                            | 0    | 200        | 0    | 0    | 0     | 2                              | 0          | 0    | 0    | 0     | 0    | 4          | 315          | 319          |            |
| Total       | 0                            | 0    | 0     | 15   | 0          | 0    | 295                            | 264   | 14   | 559        | 156  | 712  | 0                            | 4    | 868        | 0    | 0    | 0     | 6                              | 0          | 0    | 0    | 0     | 0    | 39         | 1427         | 1466         |            |
| Grand Total | 0                            | 0    | 0     | 316  | 0          | 0    | 744                            | 461   | 75   | 1205       | 348  | 1543 | 0                            | 70   | 1891       | 0    | 0    | 0     | 41                             | 0          | 0    | 0    | 0     | 0    | 502        | 3096         | 3598         |            |
| Approch %   | 0.0                          | 0.0  | 0.0   | 0.0  | 0.0        | 0.0  | 61.7                           | 38.3  |      | 18.4       | 81.6 | 0.0  |                              | 61.1 | 0.0        | 0.0  | 0.0  |       | 0.0                            | 0.0        | 0.0  | 0.0  | 0.0   | 0.0  | 14.0       | 86.0         |              |            |
| Total %     | 0.0                          | 0.0  | 0.0   | 0.0  | 0.0        | 0.0  | 24.0                           | 14.9  |      | 38.9       | 11.2 | 49.8 | 0.0                          |      | 61.1       | 0.0  | 0.0  | 0.0   |                                | 0.0        | 0.0  | 0.0  | 0.0   | 0.0  | 14.0       | 86.0         |              |            |

| Start Time  | San Elijo Road N. Southbound |      |       |      |            |      | Elfin Forest Road E. Westbound |       |      |            |      |      | San Elijo Road N. Northbound |      |            |      |      |       | Elfin Forest Road E. Eastbound |            |      |      |       |      |            |              |              |            |
|-------------|------------------------------|------|-------|------|------------|------|--------------------------------|-------|------|------------|------|------|------------------------------|------|------------|------|------|-------|--------------------------------|------------|------|------|-------|------|------------|--------------|--------------|------------|
|             | Left                         | Thru | Right | Peds | App. Total | Left | Thru                           | Right | Peds | App. Total | Left | Thru | Right                        | Peds | App. Total | Left | Thru | Right | Peds                           | App. Total | Left | Thru | Right | Peds | App. Total | Exclu. Total | Inclu. Total | Int. Total |
|             | 07:00                        | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| 07:15       | 0                            | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| 07:30       | 0                            | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| 07:45       | 0                            | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| Total       | 0                            | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| 08:00       | 0                            | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| 08:15       | 0                            | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| 08:30       | 0                            | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| 08:45       | 0                            | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| Total       | 0                            | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| Grand Total | 0                            | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| Approch %   | 0.0                          | 0.0  | 0.0   | 0.0  | 0.0        | 0.0  | 0.0                            | 0.0   | 0.0  | 0.0        | 0.0  | 0.0  | 0.0                          | 0.0  | 0.0        | 0.0  | 0.0  | 0.0   | 0.0                            | 0.0        | 0.0  | 0.0  | 0.0   | 0.0  | 0.0        | 0.0          | 0.0          | 0.0        |
| Total %     | 0.0                          | 0.0  | 0.0   | 0.0  | 0.0        | 0.0  | 0.0                            | 0.0   | 0.0  | 0.0        | 0.0  | 0.0  | 0.0                          | 0.0  | 0.0        | 0.0  | 0.0  | 0.0   | 0.0                            | 0.0        | 0.0  | 0.0  | 0.0   | 0.0  | 0.0        | 0.0          | 0.0          | 0.0        |

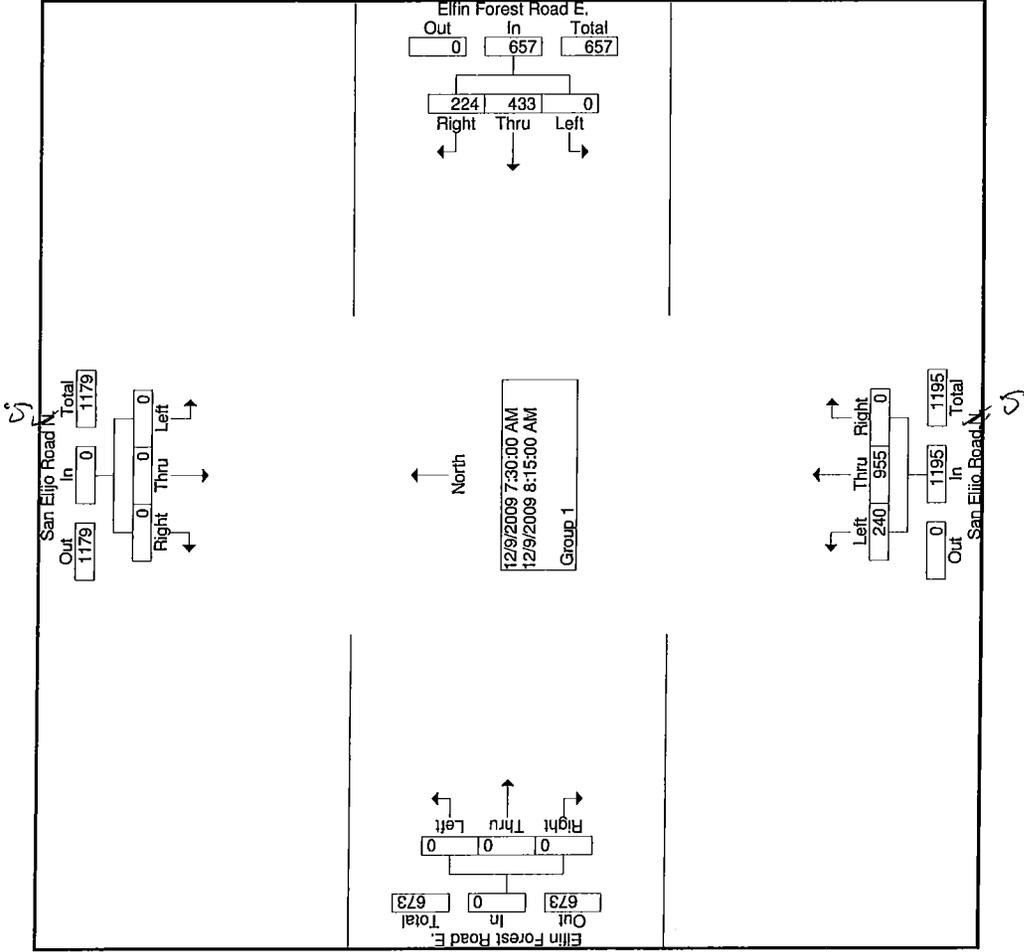
| Start Time  | San Elijo Road N. Southbound |      |       |      |            |      | Elfin Forest Road E. Westbound |       |      |            |      |      | San Elijo Road N. Northbound |      |            |      |      |       | Elfin Forest Road E. Eastbound |            |      |      |       |      |            |              |              |            |
|-------------|------------------------------|------|-------|------|------------|------|--------------------------------|-------|------|------------|------|------|------------------------------|------|------------|------|------|-------|--------------------------------|------------|------|------|-------|------|------------|--------------|--------------|------------|
|             | Left                         | Thru | Right | Peds | App. Total | Left | Thru                           | Right | Peds | App. Total | Left | Thru | Right                        | Peds | App. Total | Left | Thru | Right | Peds                           | App. Total | Left | Thru | Right | Peds | App. Total | Exclu. Total | Inclu. Total | Int. Total |
| 07:00       | 0                            | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| 07:15       | 0                            | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| 07:30       | 0                            | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| 07:45       | 0                            | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| Total       | 0                            | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| 08:00       | 0                            | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| 08:15       | 0                            | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| 08:30       | 0                            | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| 08:45       | 0                            | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| Total       | 0                            | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| Grand Total | 0                            | 0    | 0     | 0    | 0          | 0    | 0                              | 0     | 0    | 0          | 0    | 0    | 0                            | 0    | 0          | 0    | 0    | 0     | 0                              | 0          | 0    | 0    | 0     | 0    | 0          | 0            | 0            | 0          |
| Approch %   | 0.0                          | 0.0  | 0.0   | 0.0  | 0.0        | 0.0  | 0.0                            | 0.0   | 0.0  | 0.0        | 0.0  | 0.0  | 0.0                          | 0.0  | 0.0        | 0.0  | 0.0  | 0.0   | 0.0                            | 0.0        | 0.0  | 0.0  | 0.0   | 0.0  | 0.0        | 0.0          | 0.0          | 0.0        |
| Total %     | 0.0                          | 0.0  | 0.0   | 0.0  | 0.0        | 0.0  | 0.0                            | 0.0   | 0.0  | 0.0        | 0.0  | 0.0  | 0.0                          | 0.0  | 0.0        | 0.0  | 0.0  | 0.0   | 0.0                            | 0.0        | 0.0  | 0.0  | 0.0   | 0.0  | 0.0        | 0.0          | 0.0          | 0.0        |

Peak Hour From 07:00 to 08:45 - Peak 1 of 1  
 Intersection 07:30  
 Volume 0  
 Percent 0.0  
 07:45 Volume 0  
 Peak Factor 0  
 High Int. 6:45:00 AM  
 Volume 0  
 Peak Factor 0

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File Name : 09183020  
 Site Code : 00183020  
 Start Date : 12/9/2009  
 Page No : 2

Weather : Clear & Dry  
 Counted By: Hust  
 Board #: D1-1428  
 Loc: San Elijo Rd N. & Elfin Forest Rd E

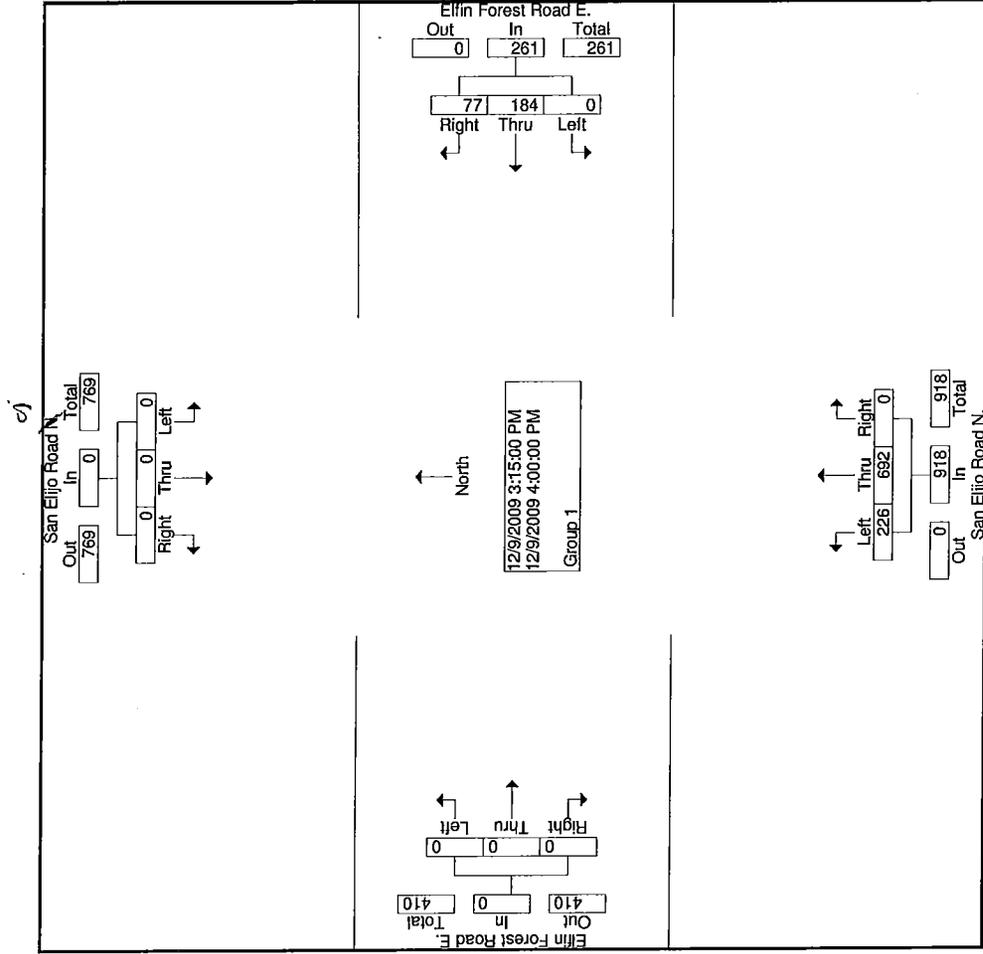




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File Name : 09183021  
 Site Code : 00183021  
 Start Date : 12/9/2009  
 Page No : 2

Weather : Clear & Dry  
 Counted By: C. Hust  
 Board #: D1-1428  
 Loc: San Elijo Rd N. & Elfin Forest Rd E



5

5

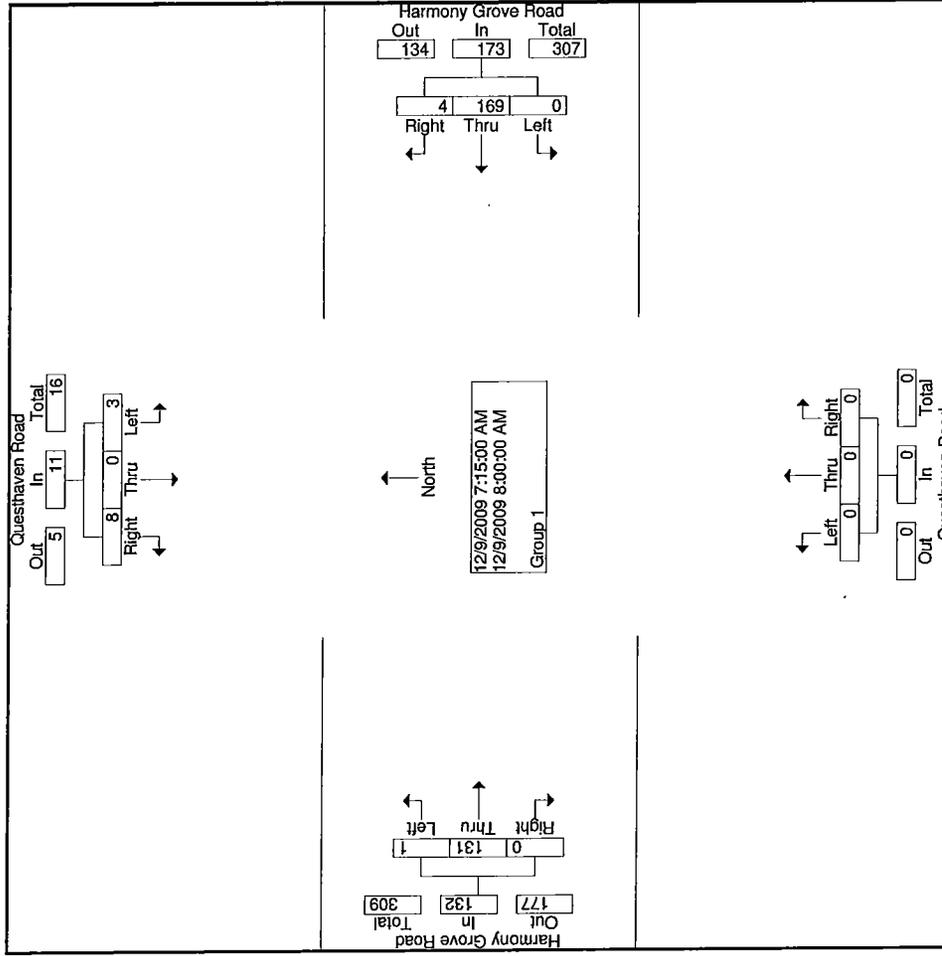


Weather : Clear & Dry  
 Counted By: J. Andrews  
 Board #: D1-1424

Loc: Questhaven Rd & Harmony Grove Rd

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File Name : 09183030  
 Site Code : 00183030  
 Start Date : 12/9/2009  
 Page No : 2



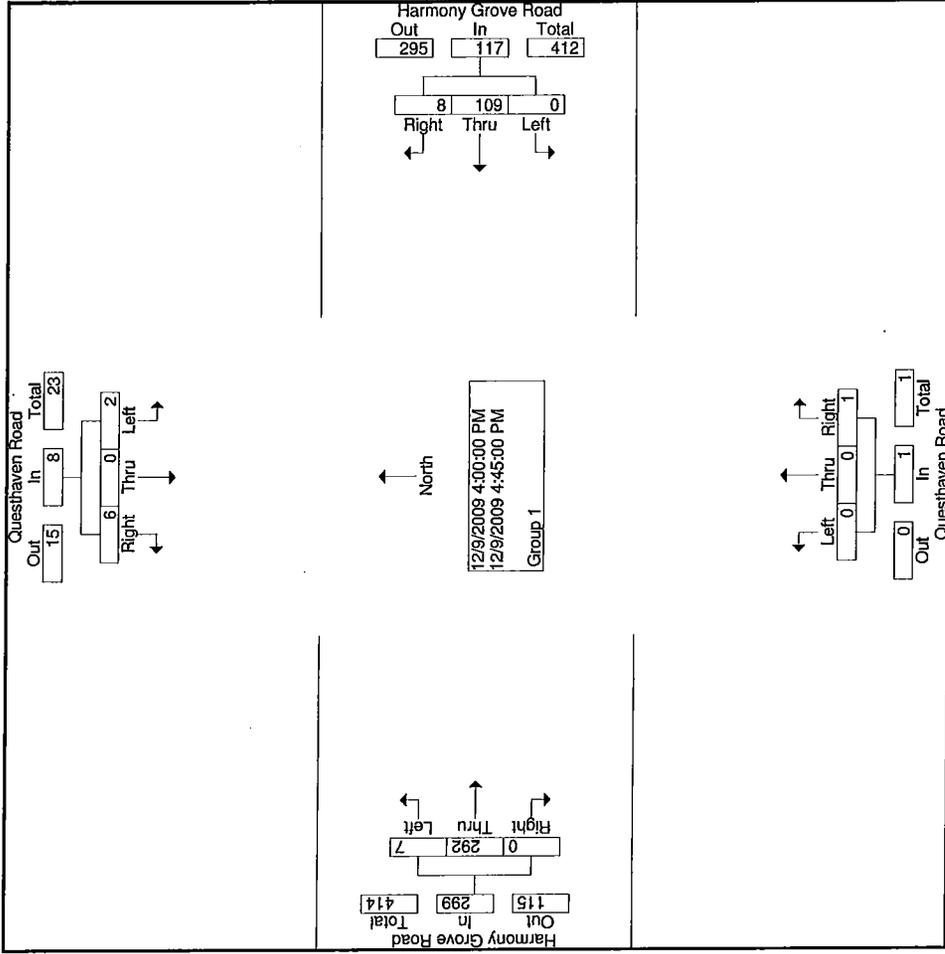


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Weather : Clear & Dry  
 Counted By: J. Andrews  
 Board #: D1-1424

Loc: Questhaven Rd & Harmony Grove Rd

File Name : 09183031  
 Site Code : 00183031  
 Start Date : 12/9/2009  
 Page No : 2



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Weather : Clear & Dry  
Counted By: S. Thiel  
Board #: D1-1429  
Loc: Questhaven Rd & Via Ambiente

File Name : 09183040  
Site Code : 00182040  
Start Date : 12/9/2009  
Page No : 1

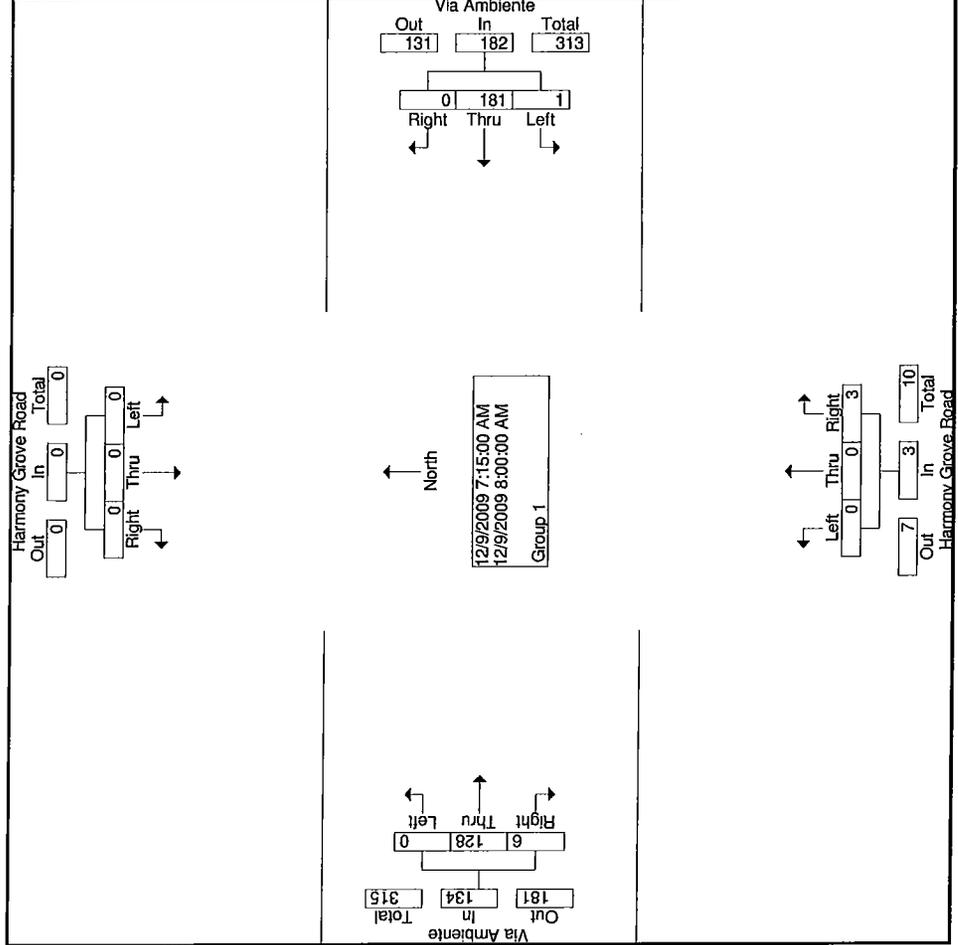
Groups Printed- Group 1

| Start Time  | Harmony Grove Road Southbound |      |       |      | Via Ambiente Westbound |      |      |       | Harmony Grove Road Northbound |            |      |      | Via Ambiente Eastbound |      |            |              |              |            |
|-------------|-------------------------------|------|-------|------|------------------------|------|------|-------|-------------------------------|------------|------|------|------------------------|------|------------|--------------|--------------|------------|
|             | Left                          | Thru | Right | Peds | App. Total             | Left | Thru | Right | Peds                          | App. Total | Left | Thru | Right                  | Peds | App. Total | Exclu. Total | Inclu. Total | Int. Total |
| 07:00       | 0                             | 0    | 0     | 0    | 0                      | 1    | 19   | 0     | 0                             | 20         | 0    | 0    | 0                      | 0    | 12         | 0            | 32           | 32         |
| 07:15       | 0                             | 0    | 0     | 0    | 0                      | 0    | 57   | 0     | 0                             | 57         | 0    | 0    | 0                      | 0    | 27         | 0            | 84           | 84         |
| 07:30       | 0                             | 0    | 0     | 0    | 0                      | 0    | 43   | 0     | 0                             | 43         | 0    | 0    | 0                      | 0    | 30         | 0            | 74           | 74         |
| 07:45       | 0                             | 0    | 0     | 0    | 0                      | 0    | 39   | 0     | 0                             | 39         | 0    | 0    | 0                      | 0    | 47         | 0            | 87           | 87         |
| Total       | 0                             | 0    | 0     | 0    | 0                      | 1    | 158  | 0     | 0                             | 159        | 0    | 0    | 2                      | 0    | 114        | 2            | 277          | 277        |
| 08:00       | 0                             | 0    | 0     | 0    | 0                      | 1    | 42   | 0     | 0                             | 43         | 0    | 0    | 1                      | 0    | 26         | 4            | 74           | 74         |
| 08:15       | 0                             | 0    | 0     | 0    | 0                      | 0    | 38   | 0     | 0                             | 38         | 0    | 0    | 0                      | 0    | 28         | 0            | 66           | 66         |
| 08:30       | 0                             | 0    | 0     | 0    | 0                      | 2    | 40   | 0     | 0                             | 42         | 0    | 0    | 0                      | 0    | 25         | 2            | 69           | 69         |
| 08:45       | 0                             | 0    | 0     | 0    | 0                      | 1    | 31   | 0     | 0                             | 32         | 1    | 0    | 0                      | 0    | 31         | 0            | 64           | 64         |
| Total       | 0                             | 0    | 0     | 0    | 0                      | 4    | 151  | 0     | 0                             | 155        | 1    | 0    | 1                      | 0    | 110        | 6            | 273          | 273        |
| Grand Total | 0                             | 0    | 0     | 0    | 0                      | 5    | 309  | 0     | 0                             | 314        | 1    | 0    | 3                      | 0    | 224        | 8            | 550          | 550        |
| Approch %   | 0.0                           | 0.0  | 0.0   | 0.0  | 0.0                    | 1.6  | 98.4 | 0.0   | 0.0                           | 75.0       | 0.0  | 0.0  | 0.0                    | 0.0  | 96.6       | 3.4          | 100.0        | 100.0      |
| Total %     | 0.0                           | 0.0  | 0.0   | 0.0  | 0.0                    | 0.9  | 56.2 | 0.0   | 0.0                           | 57.1       | 0.2  | 0.0  | 0.5                    | 0.0  | 40.7       | 1.5          | 100.0        | 100.0      |

| Start Time                                  | Harmony Grove Road Southbound |      |       |      | Via Ambiente Westbound |      |       |       | Harmony Grove Road Northbound |            |      |      | Via Ambiente Eastbound |      |            |              |              |            |
|---|-------------------------------|------|-------|------|------------------------|------|-------|-------|-------------------------------|------------|------|------|------------------------|------|------------|--------------|--------------|------------|
|   | Left                          | Thru | Right | Peds | App. Total             | Left | Thru  | Right | Peds                          | App. Total | Left | Thru | Right                  | Peds | App. Total | Exclu. Total | Inclu. Total | Int. Total |
| Peak Hour From 07:00 to 08:45 - Peak 1 of 1 | 0                             | 0    | 0     | 0    | 0                      | 1    | 181   | 0     | 0                             | 182        | 0    | 0    | 3                      | 0    | 128        | 6            | 134          | 319        |
| Intersection 07:15                          | 0.0                           | 0.0  | 0.0   | 0.0  | 0.0                    | 0.5  | 99.5  | 0.0   | 0.0                           | 100.0      | 0.0  | 0.0  | 1.0                    | 0.0  | 95.5       | 4.5          | 100.0        | 100.0      |
| Volume                                      | 0                             | 0    | 0     | 0    | 0                      | 0    | 39    | 0     | 0                             | 39         | 0    | 0    | 1                      | 0    | 45         | 2            | 47           | 87         |
| Percent                                     | 0                             | 0    | 0     | 0    | 0                      | 0    | 39    | 0     | 0                             | 39         | 0    | 0    | 1                      | 0    | 45         | 2            | 47           | 87         |
| Peak Factor                                 | 0                             | 0    | 0     | 0    | 0                      | 0    | 0.798 | 0     | 0                             | 0.798      | 0    | 0    | 1                      | 0    | 0.917      | 0            | 0.917        | 0.917      |
| High Int. 6:45:00 AM                        | 0                             | 0    | 0     | 0    | 0                      | 0    | 57    | 0     | 0                             | 57         | 0    | 0    | 1                      | 0    | 45         | 2            | 47           | 87         |
| Volume                                      | 0                             | 0    | 0     | 0    | 0                      | 0    | 57    | 0     | 0                             | 57         | 0    | 0    | 1                      | 0    | 45         | 2            | 47           | 87         |
| Peak Factor                                 | 0                             | 0    | 0     | 0    | 0                      | 0    | 0.798 | 0     | 0                             | 0.798      | 0    | 0    | 1                      | 0    | 0.917      | 0            | 0.917        | 0.917      |

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Weather : Clear & Dry  
 Counted By: S. Thiel  
 Board #: D1-1429  
 Loc: Questhaven Rd & Via Ambiente



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Lakeside, CA 92040  
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Weather : Clear & Dry  
Counted By: S. Thiel  
Board #: D1-1429  
Loc: Questhaven Rd & Via Ambiente

File Name : 09183041  
Site Code : 00183041  
Start Date : 12/9/2009  
Page No : 1

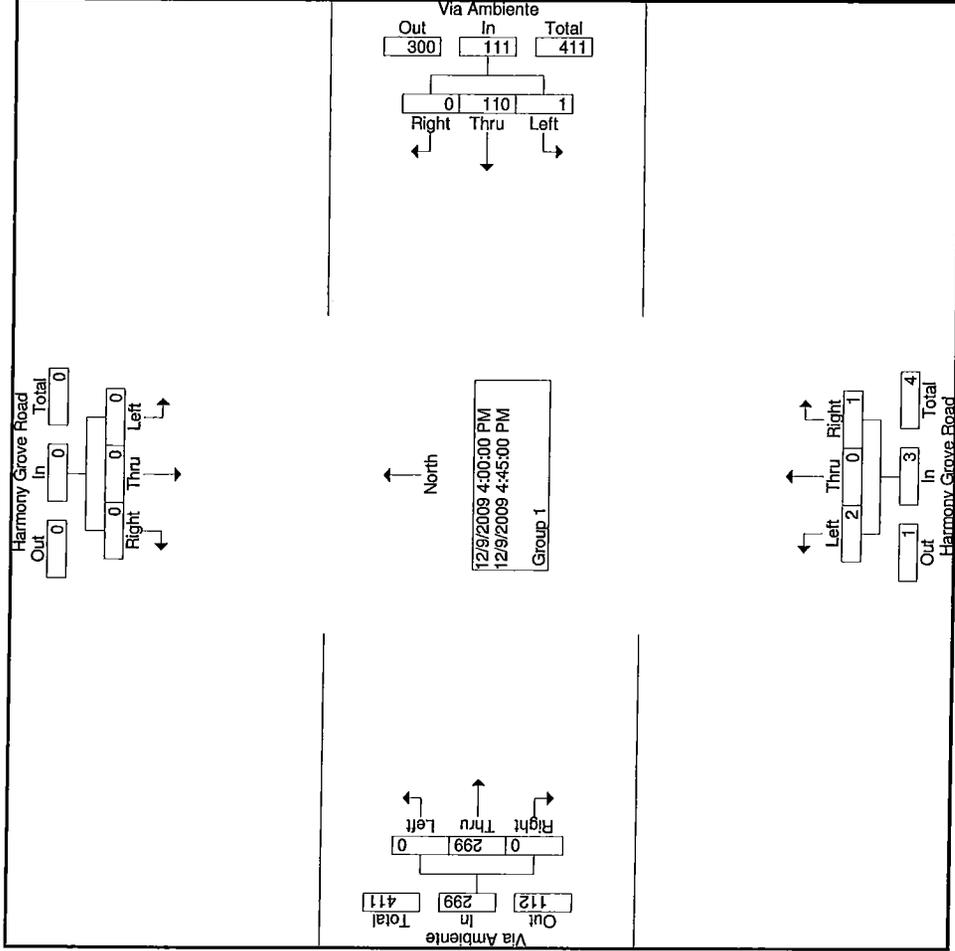
| Start Time  | Harmony Grove Road Southbound |     |       |     |      |     | Via Ambiente Westbound |      |      |       |      |      | Harmony Grove Road Northbound |            |      |      |       |     | Via Ambiente Eastbound |      |            |      |     |       |      |      |      |            |              |     |              |            |
|-------------|-------------------------------|-----|-------|-----|------|-----|------------------------|------|------|-------|------|------|-------------------------------|------------|------|------|-------|-----|------------------------|------|------------|------|-----|-------|------|------|------|------------|--------------|-----|--------------|------------|
|             | Left                          |     | Right |     | Peds |     | App. Total             | Left |      | Right |      | Peds |                               | App. Total | Left |      | Right |     | Peds                   |      | App. Total | Left |     | Right |      | Peds |      | App. Total | Exclu. Total |     | Inclu. Total | Int. Total |
|             | Thru                          | Vol | Thru  | Vol | Thru | Vol |                        | Thru | Vol  | Thru  | Vol  | Thru | Vol                           |            | Thru | Vol  | Thru  | Vol | Thru                   | Vol  |            | Thru | Vol | Thru  | Vol  | Thru | Vol  |            | Thru         | Vol |              |            |
| 15:00       | 0                             | 0   | 0     | 0   | 0    | 0   | 0                      | 20   | 0    | 0     | 0    | 0    | 0                             | 0          | 0    | 0    | 0     | 0   | 0                      | 0    | 0          | 0    | 56  | 0     | 0    | 0    | 56   | 2          | 76           | 78  |              |            |
| 15:15       | 0                             | 0   | 0     | 0   | 0    | 0   | 19                     | 0    | 0    | 1     | 0    | 0    | 1                             | 0          | 0    | 0    | 0     | 0   | 0                      | 0    | 0          | 53   | 0   | 0     | 0    | 53   | 0    | 73         | 73           |     |              |            |
| 15:30       | 0                             | 0   | 0     | 0   | 0    | 0   | 26                     | 0    | 0    | 2     | 0    | 2    | 0                             | 0          | 0    | 0    | 0     | 0   | 0                      | 0    | 64         | 0    | 0   | 0     | 64   | 0    | 92   | 92         |              |     |              |            |
| 15:45       | 0                             | 0   | 0     | 0   | 0    | 0   | 19                     | 0    | 0    | 1     | 0    | 1    | 0                             | 0          | 0    | 0    | 0     | 0   | 0                      | 0    | 50         | 0    | 0   | 0     | 50   | 0    | 70   | 70         |              |     |              |            |
| Total       | 0                             | 0   | 0     | 0   | 0    | 0   | 84                     | 0    | 2    | 4     | 0    | 4    | 0                             | 4          | 0    | 0    | 223   | 0   | 0                      | 0    | 223        | 0    | 0   | 0     | 223  | 2    | 311  | 313        |              |     |              |            |
| 16:00       | 0                             | 0   | 0     | 0   | 0    | 0   | 24                     | 0    | 0    | 0     | 0    | 0    | 0                             | 0          | 0    | 0    | 80    | 0   | 0                      | 0    | 80         | 0    | 0   | 0     | 80   | 0    | 104  | 104        |              |     |              |            |
| 16:15       | 0                             | 0   | 0     | 0   | 0    | 0   | 25                     | 0    | 0    | 0     | 0    | 0    | 0                             | 0          | 0    | 0    | 75    | 0   | 0                      | 0    | 75         | 0    | 0   | 0     | 75   | 0    | 100  | 100        |              |     |              |            |
| 16:30       | 0                             | 0   | 0     | 0   | 0    | 1   | 32                     | 0    | 1    | 0     | 1    | 0    | 2                             | 0          | 0    | 74   | 0     | 0   | 0                      | 74   | 0          | 0    | 0   | 74    | 1    | 109  | 110  |            |              |     |              |            |
| 16:45       | 0                             | 0   | 0     | 0   | 0    | 0   | 29                     | 0    | 0    | 0     | 0    | 0    | 1                             | 0          | 0    | 70   | 0     | 0   | 0                      | 70   | 0          | 0    | 0   | 70    | 0    | 100  | 100  |            |              |     |              |            |
| Total       | 0                             | 0   | 0     | 0   | 0    | 1   | 110                    | 0    | 1    | 1     | 0    | 1    | 3                             | 0          | 0    | 299  | 0     | 0   | 0                      | 299  | 0          | 0    | 0   | 0     | 299  | 1    | 413  | 414        |              |     |              |            |
| Grand Total | 0                             | 0   | 0     | 0   | 0    | 1   | 194                    | 0    | 3    | 5     | 0    | 7    | 0                             | 5          | 0    | 522  | 0     | 0   | 0                      | 522  | 0          | 0    | 0   | 0     | 522  | 3    | 724  | 727        |              |     |              |            |
| Approch %   | 0.0                           | 0.0 | 0.0   | 0.0 | 0.0  | 0.5 | 99.5                   | 0.0  | 28.6 | 0.0   | 71.4 | 0.0  | 100.0                         | 0.0        | 0.0  | 0.0  | 0.0   | 0.0 | 0.0                    | 0.0  | 0.0        | 0.0  | 0.0 | 0.0   | 0.0  | 0.4  | 99.6 |            |              |     |              |            |
| Total %     | 0.0                           | 0.0 | 0.0   | 0.0 | 0.0  | 0.1 | 26.8                   | 0.0  | 0.3  | 0.0   | 0.7  | 1.0  | 0.0                           | 0.0        | 0.0  | 72.1 | 0.0   | 0.0 | 0.0                    | 72.1 | 0.0        | 0.0  | 0.0 | 0.0   | 72.1 | 0.4  | 99.6 |            |              |     |              |            |

| Start Time                                  | Harmony Grove Road Southbound |     |       |     |      |     | Via Ambiente Westbound |      |       |       |     |       | Harmony Grove Road Northbound |            |       |     |       |     | Via Ambiente Eastbound |       |            |      |     |       |       |      |     |            |              |     |              |            |
|---|-------------------------------|-----|-------|-----|------|-----|------------------------|------|-------|-------|-----|-------|-------------------------------|------------|-------|-----|-------|-----|------------------------|-------|------------|------|-----|-------|-------|------|-----|------------|--------------|-----|--------------|------------|
|   | Left                          |     | Right |     | Peds |     | App. Total             | Left |       | Right |     | Peds  |                               | App. Total | Left  |     | Right |     | Peds                   |       | App. Total | Left |     | Right |       | Peds |     | App. Total | Exclu. Total |     | Inclu. Total | Int. Total |
|   | Thru                          | Vol | Thru  | Vol | Thru | Vol |                        | Thru | Vol   | Thru  | Vol | Thru  | Vol                           |            | Thru  | Vol | Thru  | Vol | Thru                   | Vol   |            | Thru | Vol | Thru  | Vol   | Thru | Vol |            | Thru         | Vol |              |            |
| Peak Hour From 15:00 to 16:45 - Peak 1 of 1 | 0                             | 0   | 0     | 0   | 0    | 0   | 0                      | 1    | 110   | 0     | 1   | 111   | 2                             | 0          | 1     | 0   | 3     | 0   | 0                      | 0     | 299        | 0    | 0   | 0     | 299   | 1    | 413 | 414        |              |     |              |            |
| Intersection 16:00                          | 0                             | 0   | 0     | 0   | 0    | 0   | 0                      | 24   | 0     | 0     | 0   | 24    | 0                             | 0          | 0     | 0   | 0     | 0   | 0                      | 0     | 80         | 0    | 0   | 0     | 80    | 0    | 104 | 104        |              |     |              |            |
| Volume                                      | 0                             | 0   | 0     | 0   | 0    | 0   | 110                    | 0    | 110   | 0     | 0   | 110   | 2                             | 0          | 1     | 0   | 3     | 0   | 0                      | 0     | 299        | 0    | 0   | 0     | 299   | 1    | 413 | 414        |              |     |              |            |
| Percent                                     | 0.0                           | 0.0 | 0.0   | 0.0 | 0.0  | 0.0 | 99.1                   | 0.0  | 99.1  | 0.0   | 0.0 | 99.1  | 66.7                          | 0.0        | 33.3  | 0.0 | 100.0 | 0.0 | 0.0                    | 0.0   | 100.0      | 0.0  | 0.0 | 0.0   | 100.0 | 0.0  | 100 | 100        |              |     |              |            |
| 16:30 Volume                                | 0                             | 0   | 0     | 0   | 0    | 0   | 32                     | 0    | 32    | 0     | 0   | 32    | 1                             | 0          | 1     | 0   | 2     | 0   | 0                      | 74    | 0          | 0    | 0   | 74    | 0     | 109  | 109 |            |              |     |              |            |
| Peak Factor                                 | 0                             | 0   | 0     | 0   | 0    | 0   | 1                      | 0    | 1     | 0     | 0   | 1     | 16:30                         | 0          | 16:00 | 0   | 2     | 0   | 0                      | 74    | 0          | 0    | 0   | 74    | 0     | 109  | 109 |            |              |     |              |            |
| High Int. 2:45:00 PM                        | 0                             | 0   | 0     | 0   | 0    | 0   | 32                     | 0    | 32    | 0     | 0   | 32    | 1                             | 0          | 1     | 0   | 2     | 0   | 0                      | 80    | 0          | 0    | 0   | 80    | 0     | 109  | 109 |            |              |     |              |            |
| Volume                                      | 0                             | 0   | 0     | 0   | 0    | 0   | 32                     | 0    | 32    | 0     | 0   | 32    | 1                             | 0          | 1     | 0   | 2     | 0   | 0                      | 80    | 0          | 0    | 0   | 80    | 0     | 109  | 109 |            |              |     |              |            |
| Peak Factor                                 | 0                             | 0   | 0     | 0   | 0    | 0   | 0.841                  | 0.0  | 0.841 | 0.0   | 0.0 | 0.841 | 16:30                         | 0          | 16:00 | 0   | 0.375 | 0.0 | 0.0                    | 0.934 | 0.0        | 0.0  | 0.0 | 0.934 | 0.4   | 99.6 |     |            |              |     |              |            |

TDSSW, Inc.  
 PO Box 1544  
 Lakeside, CA 92040  
 (619) 390-8495 Fax (866) 768-1818

Weather : Clear & Dry  
 Counted By: S. Thiel  
 Board #: D1-1429  
 Loc: Questhaven Rd & Via Ambiente

File Name : 09183041  
 Site Code : 00183041  
 Start Date : 12/9/2009  
 Page No : 2



## TDSSW, Inc. Vehicle Counts

### VehicleCount-190 -- English (ENU)

**Datasets:**

**Site:** [18301] Elfin Forest Road - W/O Camino Cielo Azul  
**Direction:** 8 - East bound A>B, West bound B>A. Lane: 0  
**Survey Duration:** 19:27 Tuesday, December 08, 2009 => 14:31 Sunday, December 13, 2009  
**Zone:** North America  
**File:** 1830113Dec2009.EC0 (Plus)  
**Identifier:** A647KH81 MC56-1 [MC55] (c)Microcom 07/06/99  
**Algorithm:** Factory default (v3.21 - 15275)  
**Data type:** Axle sensors - Paired (Class/Speed/Count)

**Profile:**

**Filter time:** 20:00 Tuesday, December 08, 2009 => 12:00 Thursday, December 10, 2009  
**Included classes:** 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13  
**Speed range:** 0 - 100 mph.  
**Direction:** East (bound)  
**Separation:** All - (Headway)  
**Name:** Default Profile  
**Scheme:** Vehicle classification (Scheme F99)  
**Units:** Non metric (ft, mi, ft/s, mph, lb, ton)  
**In profile:** Vehicles = 2793 / 5487 (50.90%)

**\* Tuesday, December 08, 2009 - Total=108 (Incomplete) , 15 minute drops**

| 0000 | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 |    |   |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----|---|
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 46   | 32   | 13   | 17 | 2 |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 12   | 11   | 6    | 7  | 1 |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 9    | 8    | 2    | 6  | 1 |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 11   | 6    | 4    | 1  | 1 |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 14   | 7    | 1    | 3  | 3 |

**\* Wednesday, December 09, 2009 - Total=2130, 15 minute drops**

| 0000 | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 |   |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| 7    | 1    | 2    | 0    | 2    | 9    | 51   | 143  | 127  | 88   | 77   | 88   | 91   | 100  | 161  | 258  | 320  | 320  | 113  | 56   | 40   | 42   | 18   | 16   |   |
| 2    | 1    | 1    | 0    | 1    | 2    | 8    | 21   | 32   | 25   | 19   | 21   | 17   | 24   | 27   | 59   | 80   | 104  | 34   | 26   | 7    | 11   | 8    | 3    | 2 |
| 1    | 0    | 0    | 0    | 0    | 1    | 8    | 35   | 30   | 23   | 23   | 21   | 22   | 18   | 32   | 62   | 88   | 101  | 31   | 9    | 15   | 15   | 5    | 4    | 0 |
| 1    | 0    | 0    | 0    | 1    | 1    | 15   | 37   | 37   | 17   | 19   | 25   | 25   | 32   | 52   | 83   | 83   | 72   | 27   | 12   | 9    | 8    | 3    | 4    | 0 |
| 3    | 0    | 1    | 0    | 0    | 5    | 20   | 50   | 28   | 23   | 16   | 21   | 27   | 26   | 50   | 54   | 69   | 43   | 21   | 9    | 9    | 8    | 2    | 5    | 0 |

AM Peak 0715 - 0815 (154), AM PHF=0.77 PM Peak 1630 - 1730 (357), PM PHF=0.86

**\* Thursday, December 10, 2009 - Total=555 (Incomplete) , 15 minute drops**

| 0000 | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 |   |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| 2    | 2    | 3    | 2    | 4    | 10   | 51   | 112  | 111  | 87   | 85   | 86   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 2    | 1    | 0    | 0    | 0    | 0    | 9    | 25   | 29   | 23   | 11   | 20   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 0    | 0    | 1    | 0    | 0    | 2    | 9    | 31   | 24   | 23   | 32   | 16   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 0    | 1    | 1    | 1    | 1    | 1    | 12   | 25   | 28   | 19   | 25   | 28   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 0    | 0    | 1    | 1    | 3    | 7    | 21   | 31   | 30   | 22   | 17   | 22   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |

2130  
 + 1658  


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 3788 = 3790



## TDSSW, Inc. Vehicle Counts

### VehicleCount-191 -- English (ENU)

**Datasets:**

**Site:** [18302] Elfin Forest Road - W/O Aguilera Lane  
**Direction:** 8 - East bound A>B, West bound B>A. Lane: 0  
**Survey Duration:** 19:43 Tuesday, December 08, 2009 => 14:32 Sunday, December 13, 2009  
**Zone:** North America  
**File:** 1830213Dec2009.EC0 (Plus)  
**Identifier:** M2869KMY MC56-6 [MC55] (c)Microcom 02/03/01  
**Algorithm:** Factory default (v3.21 - 15275)  
**Data type:** Axle sensors - Paired (Class/Speed/Count)

**Profile:**

**Filter time:** 20:00 Tuesday, December 08, 2009 => 2:00 Friday, December 11, 2009  
**Included classes:** 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13  
**Speed range:** 0 - 100 mph.  
**Direction:** East (bound)  
**Separation:** All - (Headway)  
**Name:** Default Profile  
**Scheme:** Vehicle classification (Scheme F99)  
**Units:** Non metric (ft, mi, ft/s, mph, lb, ton)  
**In profile:** Vehicles = 2657 / 5110 (52.00%)

**\* Tuesday, December 08, 2009 - Total=92 (Incomplete) , 15 minute drops**

| 0000 | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 |   |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 38   | 29   | 10   | 15   |   |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 9    | 11   | 5    | 6    | 1 |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 7    | 6    | 2    | 5    | 1 |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 10   | 6    | 2    | 1    | 1 |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 12   | 6    | 1    | 3    | 2 |

**\* Wednesday, December 09, 2009 - Total=1987, 15 minute drops**

| 0000 | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 |   |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| 5    | 1    | 2    | 0    | 2    | 8    | 52   | 130  | 124  | 89   | 77   | 73   | 86   | 91   | 148  | 239  | 309  | 303  | 103  | 45   | 32   | 36   | 18   | 14   |   |
| 1    | 1    | 1    | 0    | 1    | 2    | 7    | 17   | 31   | 20   | 17   | 16   | 21   | 21   | 23   | 52   | 81   | 94   | 31   | 20   | 6    | 9    | 9    | 3    | 2 |
| 1    | 0    | 0    | 0    | 0    | 1    | 10   | 30   | 28   | 23   | 24   | 19   | 16   | 18   | 31   | 57   | 78   | 89   | 29   | 7    | 10   | 13   | 4    | 3    | 0 |
| 1    | 0    | 0    | 0    | 1    | 2    | 14   | 34   | 30   | 21   | 19   | 20   | 23   | 28   | 46   | 75   | 86   | 75   | 27   | 13   | 10   | 6    | 2    | 4    | 0 |
| 2    | 0    | 1    | 0    | 0    | 3    | 21   | 49   | 35   | 25   | 17   | 18   | 26   | 24   | 48   | 55   | 64   | 45   | 16   | 5    | 6    | 8    | 3    | 4    | 0 |

AM Peak 0715 - 0815 (144), AM PHF=0.73 PM Peak 1630 - 1730 (333), PM PHF=0.89

**\* Thursday, December 10, 2009 - Total=578, 15 minute drops**

| 0000 | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 |   |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| 2    | 2    | 2    | 2    | 2    | 10   | 49   | 109  | 98   | 78   | 77   | 76   | 71   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0 |
| 2    | 1    | 0    | 0    | 0    | 2    | 9    | 22   | 24   | 27   | 11   | 21   | 17   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0 |
| 0    | 0    | 0    | 0    | 0    | 1    | 10   | 26   | 22   | 17   | 27   | 13   | 14   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0 |
| 0    | 1    | 1    | 1    | 1    | 3    | 9    | 27   | 24   | 16   | 24   | 25   | 18   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0 |
| 0    | 0    | 1    | 1    | 1    | 4    | 21   | 34   | 28   | 18   | 15   | 17   | 22   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0 |

AM Peak 0715 - 0815 (111), AM PHF=0.82 PM Peak 1200 - 1300 (71), PM PHF=0.81

**\* Friday, December 11, 2009 - Total=0 (Incomplete) , 15 minute drops**

| 0000 | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 |   |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| 0    | 0    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 0    | 0    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 0    | 0    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 0    | 0    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |

1987  
 + 1550  
 -----  
 3537      ≈ 3540



## TDSSW, Inc. Vehicle Counts

**VehicleCount-194 -- English (ENU)**

**Datasets:**

**Site:** [18303] Harmony Grove Road - Btwn Questhaven Road & Via Ambiente  
**Direction:** 7 - North bound A>B, South bound B>A. Lane: 0  
**Survey Duration:** 20:08 Tuesday, December 08, 2009 => 15:29 Sunday, December 13, 2009  
**Zone:** North America  
**File:** 1830313Dec2009.EC0 (Plus)  
**Identifier:** M2820C6H MC56-6 [MC55] (c)Microcom 02/03/01  
**Algorithm:** Factory default (v3.21 - 15275)  
**Data type:** Axle sensors - Paired (Class/Speed/Count)

**Profile:**

**Filter time:** 21:00 Tuesday, December 08, 2009 => 14:00 Thursday, December 10, 2009  
**Included classes:** 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13  
**Speed range:** 0 - 100 mph.  
**Direction:** North (bound)  
**Separation:** All - (Headway)  
**Name:** Default Profile  
**Scheme:** Vehicle classification (Scheme F99)  
**Units:** Non metric (ft, mi, ft/s, mph, lb, ton)  
**In profile:** Vehicles = 2273 / 4284 (53.06%)

**\* Tuesday, December 08, 2009 - Total=26 (Incomplete) , 15 minute drops**

| 0000 | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 |   |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 12   | 6    | 8    |   |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 1    | 3    | 4    | 1 |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 3    | 1    | 2    | 1 |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 2    | 1    | 0    | 0 |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 6    | 1    | 2    | 1 |

**\* Wednesday, December 09, 2009 - Total=1735, 15 minute drops**

| 0000 | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 |   |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| 3    | 0    | 1    | 0    | 2    | 8    | 47   | 124  | 112  | 81   | 71   | 68   | 62   | 82   | 131  | 218  | 298  | 268  | 79   | 34   | 6    | 20   | 11   | 9    |   |
| 1    | 0    | 0    | 0    | 1    | 2    | 7    | 21   | 29   | 16   | 22   | 18   | 15   | 18   | 22   | 53   | 73   | 83   | 28   | 13   | 3    | 3    | 5    | 1    | 1 |
| 1    | 0    | 0    | 0    | 0    | 2    | 13   | 26   | 29   | 20   | 22   | 14   | 16   | 19   | 31   | 53   | 82   | 77   | 23   | 7    | 2    | 7    | 2    | 1    | 0 |
| 0    | 0    | 0    | 0    | 1    | 2    | 11   | 33   | 23   | 24   | 16   | 18   | 16   | 24   | 37   | 61   | 66   | 66   | 17   | 9    | 1    | 7    | 1    | 3    | 0 |
| 1    | 0    | 1    | 0    | 0    | 2    | 16   | 44   | 31   | 21   | 11   | 18   | 15   | 21   | 41   | 51   | 77   | 42   | 11   | 5    | 0    | 3    | 3    | 4    | 0 |

AM Peak 0730 - 0830 (135), AM PHF=0.77 PM Peak 1615 - 1715 (308), PM PHF=0.93

**\* Thursday, December 10, 2009 - Total=512 (Incomplete) , 15 minute drops**

| 0000 | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 |   |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| 1    | 0    | 0    | 1    | 2    | 9    | 46   | 94   | 95   | 74   | 68   | 56   | 52   | 14   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 1    | 0    | 0    | 0    | 0    | 2    | 7    | 21   | 23   | 18   | 10   | 14   | 10   | 14   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 0    | 0    | 0    | 0    | 0    | 1    | 11   | 24   | 20   | 15   | 17   | 13   | 11   | 0    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 0    | 0    | 0    | 1    | 1    | 2    | 11   | 19   | 23   | 21   | 24   | 15   | 14   | 0    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 0    | 0    | 0    | 0    | 1    | 4    | 17   | 30   | 29   | 20   | 17   | 14   | 17   | 0    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |

AM Peak 0715 - 0815 (96), AM PHF=0.80

1735  
 + 1294  
 -----  
 3029      ⇐ 3080

## TDSSW, Inc. Vehicle Counts

**VehicleCount-195 -- English (ENU)**

**Datasets:**

**Site:** [18303] Harmony Grove Road - Btwn Questhaven Road & Via Ambiente  
**Direction:** 7 - North bound A>B, South bound B>A. Lane: 0  
**Survey Duration:** 20:08 Tuesday, December 08, 2009 => 15:29 Sunday, December 13, 2009  
**Zone:** North America  
**File:** 1830313Dec2009.EC0 (Plus)  
**Identifier:** M2820C6H MC56-6 [MC55] (c)Microcom 02/03/01  
**Algorithm:** Factory default (v3.21 - 15275)  
**Data type:** Axle sensors - Paired (Class/Speed/Count)

**Profile:**

**Filter time:** 21:00 Tuesday, December 08, 2009 => 14:00 Thursday, December 10, 2009  
**Included classes:** 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13  
**Speed range:** 0 - 100 mph.  
**Direction:** South (bound)  
**Separation:** All - (Headway)  
**Name:** Default Profile  
**Scheme:** Vehicle classification (Scheme F99)  
**Units:** Non metric (ft, mi, ft/s, mph, lb, ton)  
**In profile:** Vehicles = 1983 / 4284 (46.29%)

**\* Tuesday, December 08, 2009 - Total=29 (Incomplete) , 15 minute drops**

| 0000 | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 |   |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 9    | 13   | 7    |   |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 4    | 6    | 4    | 2 |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 1    | 5    | 1    | 1 |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 1    | 2    | 1    | 3 |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 3    | 0    | 1    | 0 |

**\* Wednesday, December 09, 2009 - Total=1294, 15 minute drops**

| 0000 | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 |   |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| 6    | 4    | 2    | 2    | 4    | 22   | 106  | 161  | 149  | 73   | 49   | 59   | 65   | 66   | 83   | 82   | 109  | 117  | 54   | 34   | 15   | 17   | 6    | 9    |   |
| 2    | 1    | 1    | 0    | 2    | 3    | 10   | 31   | 46   | 18   | 11   | 12   | 15   | 16   | 22   | 17   | 23   | 28   | 19   | 13   | 3    | 5    | 0    | 2    | 1 |
| 1    | 2    | 1    | 0    | 0    | 4    | 21   | 53   | 37   | 22   | 9    | 19   | 16   | 17   | 15   | 20   | 22   | 34   | 9    | 6    | 4    | 1    | 2    | 2    | 0 |
| 3    | 0    | 0    | 1    | 0    | 6    | 41   | 38   | 35   | 15   | 18   | 14   | 14   | 14   | 26   | 18   | 36   | 30   | 13   | 5    | 4    | 6    | 2    | 3    | 0 |
| 0    | 1    | 0    | 1    | 2    | 9    | 34   | 39   | 31   | 18   | 11   | 14   | 20   | 19   | 20   | 27   | 28   | 25   | 13   | 10   | 4    | 5    | 2    | 2    | 0 |

AM Peak 0715 - 0815 (176), AM PHF=0.83 PM Peak 1630 - 1730 (126), PM PHF=0.88

**\* Thursday, December 10, 2009 - Total=660 (Incomplete) , 15 minute drops**

| 0000 | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 |   |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| 1    | 2    | 0    | 0    | 5    | 17   | 101  | 162  | 136  | 62   | 55   | 48   | 58   | 13   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 1    | 2    | 0    | 0    | 1    | 4    | 9    | 20   | 44   | 14   | 15   | 10   | 16   | 13   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 0    | 0    | 0    | 0    | 1    | 2    | 19   | 55   | 37   | 18   | 11   | 10   | 18   | 0    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 0    | 0    | 0    | 0    | 2    | 4    | 39   | 44   | 29   | 16   | 14   | 13   | 13   | 0    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 0    | 0    | 0    | 0    | 1    | 7    | 34   | 43   | 26   | 14   | 15   | 15   | 11   | 0    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |

AM Peak 0715 - 0815 (186), AM PHF=0.85

## TDSSW, Inc. Vehicle Counts

**VehicleCount-197 -- English (ENU)**

**Datasets:**

**Site:** [18304] Harmony Grove Road - N/O Via Ambiente  
**Direction:** 7 - North bound A>B, South bound B>A. Lane: 0  
**Survey Duration:** 20:24 Tuesday, December 08, 2009 => 15:30 Sunday, December 13, 2009  
**Zone:** North America  
**File:** 1830413Dec2009.EC0 (Plus)  
**Identifier:** A281KSMB MC56-1 [MC55] (c)Microcom 07/06/99  
**Algorithm:** Factory default (v3.21 - 15275)  
**Data type:** Axle sensors - Paired (Class/Speed/Count)

**Profile:**

**Filter time:** 21:00 Tuesday, December 08, 2009 => 14:00 Thursday, December 10, 2009  
**Included classes:** 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13  
**Speed range:** 0 - 100 mph.  
**Direction:** North (bound)  
**Separation:** All - (Headway)  
**Name:** Default Profile  
**Scheme:** Vehicle classification (Scheme F99)  
**Units:** Non metric (ft, mi, ft/s, mph, lb, ton)  
**In profile:** Vehicles = 2284 / 4296 (53.17%)

**\* Tuesday, December 08, 2009 - Total=26 (Incomplete) , 15 minute drops**

| 0000 | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 |   |   |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|---|
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 12   | 6    | 8 | 1 |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 1    | 3    | 4 | 1 |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 3    | 1    | 2 | 1 |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 2    | 1    | 0 | 0 |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 6    | 1    | 2 | 1 |

**\* Wednesday, December 09, 2009 - Total=1732, 15 minute drops**

| 0000 | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 |   |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| 3    | 0    | 1    | 0    | 2    | 8    | 47   | 116  | 110  | 81   | 73   | 63   | 66   | 86   | 125  | 229  | 290  | 268  | 87   | 35   | 6    | 17   | 11   | 8    |   |
| 1    | 0    | 0    | 0    | 1    | 1    | 7    | 19   | 31   | 16   | 23   | 15   | 17   | 21   | 22   | 58   | 71   | 79   | 34   | 11   | 2    | 2    | 5    | 1    | 2 |
| 1    | 0    | 0    | 0    | 0    | 2    | 11   | 26   | 26   | 20   | 21   | 11   | 19   | 19   | 26   | 54   | 77   | 78   | 23   | 10   | 3    | 6    | 1    | 1    | 0 |
| 0    | 0    | 0    | 0    | 1    | 5    | 11   | 29   | 23   | 25   | 17   | 21   | 13   | 20   | 42   | 59   | 66   | 70   | 19   | 7    | 0    | 6    | 2    | 2    | 0 |
| 1    | 0    | 1    | 0    | 0    | 0    | 18   | 42   | 30   | 20   | 12   | 16   | 17   | 26   | 35   | 58   | 76   | 41   | 11   | 7    | 1    | 3    | 3    | 4    | 0 |

AM Peak 0715 - 0815 (128), AM PHF=0.76 PM Peak 1645 - 1745 (303), PM PHF=0.96

**\* Thursday, December 10, 2009 - Total=526 (Incomplete) , 15 minute drops**

| 0000 | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 |   |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| 2    | 0    | 0    | 1    | 2    | 11   | 44   | 95   | 93   | 74   | 70   | 57   | 50   | 27   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 2    | 0    | 0    | 0    | 0    | 2    | 6    | 18   | 26   | 20   | 11   | 12   | 11   | 15   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 0    | 0    | 0    | 0    | 0    | 1    | 9    | 27   | 16   | 13   | 15   | 15   | 11   | 12   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 0    | 0    | 0    | 0    | 1    | 4    | 13   | 20   | 19   | 23   | 25   | 17   | 11   | 0    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 0    | 0    | 0    | 1    | 1    | 4    | 16   | 30   | 32   | 18   | 19   | 13   | 17   | 0    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |

AM Peak 0715 - 0815 (103), AM PHF=0.86

1732  
 + 1293  
 -----  
 3025      ≈ 3030

## TDSSW, Inc. Vehicle Counts

**VehicleCount-196 -- English (ENU)**

**Datasets:**

**Site:** [18304] Harmony Grove Road - N/O Via Ambiente  
**Direction:** 7 - North bound A>B, South bound B>A. Lane: 0  
**Survey Duration:** 20:24 Tuesday, December 08, 2009 => 15:30 Sunday, December 13, 2009  
**Zone:** North America  
**File:** 1830413Dec2009.EC0 (Plus)  
**Identifier:** A281KSMB MC56-1 [MC55] (c)Microcom 07/06/99  
**Algorithm:** Factory default (v3.21 - 15275)  
**Data type:** Axle sensors - Paired (Class/Speed/Count)

**Profile:**

**Filter time:** 21:00 Tuesday, December 08, 2009 => 14:00 Thursday, December 10, 2009  
**Included classes:** 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13  
**Speed range:** 0 - 100 mph.  
**Direction:** South (bound)  
**Separation:** All - (Headway)  
**Name:** Default Profile  
**Scheme:** Vehicle classification (Scheme F99)  
**Units:** Non metric (ft, mi, ft/s, mph, lb, ton)  
**In profile:** Vehicles = 1990 / 4296 (46.32%)

**\* Tuesday, December 08, 2009 - Total=30 (Incomplete) , 15 minute drops**

| 0000 | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 |   |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 10   | 12   | 8    |   |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 4    | 6    | 4    | 2 |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 1    | 4    | 1    | 2 |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 1    | 2    | 2    | 2 |
| -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 4    | 0    | 1    | 0 |

**\* Wednesday, December 09, 2009 - Total=1293, 15 minute drops**

| 0000 | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 |   |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| 6    | 4    | 2    | 2    | 3    | 27   | 110  | 162  | 150  | 68   | 49   | 60   | 65   | 67   | 78   | 83   | 109  | 117  | 50   | 36   | 15   | 15   | 6    | 9    |   |
| 2    | 1    | 1    | 0    | 2    | 5    | 9    | 32   | 45   | 16   | 12   | 12   | 12   | 14   | 21   | 18   | 24   | 27   | 15   | 14   | 2    | 4    | 0    | 2    | 1 |
| 2    | 2    | 1    | 1    | 0    | 4    | 27   | 52   | 35   | 20   | 11   | 18   | 18   | 22   | 19   | 20   | 23   | 31   | 10   | 6    | 4    | 2    | 2    | 2    | 0 |
| 2    | 1    | 0    | 0    | 0    | 6    | 39   | 41   | 35   | 19   | 16   | 12   | 15   | 11   | 24   | 26   | 34   | 32   | 15   | 4    | 5    | 4    | 2    | 3    | 0 |
| 0    | 0    | 0    | 1    | 1    | 12   | 35   | 37   | 35   | 13   | 10   | 18   | 20   | 20   | 14   | 19   | 28   | 27   | 10   | 12   | 4    | 5    | 2    | 2    | 2 |

AM Peak 0715 - 0815 (175), AM PHF=0.84 PM Peak 1630 - 1730 (120), PM PHF=0.88

**\* Thursday, December 10, 2009 - Total=667 (Incomplete) , 15 minute drops**

| 0000 | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 |   |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| 3    | 0    | 0    | 0    | 4    | 21   | 97   | 167  | 135  | 61   | 50   | 50   | 58   | 21   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 1    | 0    | 0    | 0    | 2    | 4    | 8    | 24   | 42   | 11   | 11   | 11   | 16   | 15   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 0    | 0    | 0    | 0    | 0    | 3    | 27   | 53   | 35   | 18   | 13   | 13   | 15   | 6    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 0    | 0    | 0    | 0    | 1    | 4    | 30   | 45   | 28   | 16   | 13   | 11   | 17   | 0    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |
| 2    | 0    | 0    | 0    | 1    | 10   | 32   | 45   | 30   | 16   | 13   | 15   | 10   | 0    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - |

AM Peak 0715 - 0815 (185), AM PHF=0.87

**APPENDIX B**  
**EXISTING INTERSECTION ANALYSIS SHEETS**



# HCM Signalized Intersection Capacity Analysis

## 1: Elfin Forest Road E. & San Elijo Road N.

1/20/2010



| Movement                  | EBL  | EBT  | EBR  | WBL   | WBT    | WBR  | NBL  | NET  | NBR  | SBL  | SBT   | SBR  |
|---------------------------|------|------|------|-------|--------|------|------|------|------|------|-------|------|
| Lane Configurations       |      |      |      |       | ↔↔     |      |      |      |      |      | ↔↔    |      |
| Volume (vph)              | 0    | 0    | 0    | 566   | 96     | 0    | 0    | 0    | 0    | 0    | 1118  | 24   |
| Ideal Flow (vphpl)        | 1900 | 1900 | 1900 | 1900  | 1900   | 1900 | 1900 | 1900 | 1900 | 1900 | 1900  | 1900 |
| Total Lost time (s)       |      |      |      |       | 4.0    |      |      |      |      |      | 4.0   |      |
| Lane Util. Factor         |      |      |      |       | 0.95   |      |      |      |      |      | 0.95  |      |
| Fr <sub>t</sub>           |      |      |      |       | 1.00   |      |      |      |      |      | 1.00  |      |
| Fl <sub>t</sub> Protected |      |      |      |       | 0.96   |      |      |      |      |      | 1.00  |      |
| Satd. Flow (prot)         |      |      |      |       | 3394   |      |      |      |      |      | 3528  |      |
| Fl <sub>t</sub> Permitted |      |      |      |       | 0.96   |      |      |      |      |      | 1.00  |      |
| Satd. Flow (perm)         |      |      |      |       | 3394   |      |      |      |      |      | 3528  |      |
| Peak-hour factor, PHF     | 0.92 | 0.92 | 0.92 | 0.92  | 0.92   | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 |
| Adj. Flow (vph)           | 0    | 0    | 0    | 615   | 104    | 0    | 0    | 0    | 0    | 0    | 1215  | 26   |
| RTOR Reduction (vph)      | 0    | 0    | 0    | 0     | 35     | 0    | 0    | 0    | 0    | 0    | 2     | 0    |
| Lane Group Flow (vph)     | 0    | 0    | 0    | 0     | 684    | 0    | 0    | 0    | 0    | 0    | 1239  | 0    |
| Turn Type                 |      |      |      | Split |        |      |      |      |      |      |       |      |
| Protected Phases          |      |      |      | 8     | 8      |      |      |      |      |      | 6     |      |
| Permitted Phases          |      |      |      |       |        |      |      |      |      |      |       |      |
| Actuated Green, G (s)     |      |      |      |       | 15.9   |      |      |      |      |      | 25.9  |      |
| Effective Green, g (s)    |      |      |      |       | 15.9   |      |      |      |      |      | 25.9  |      |
| Actuated g/C Ratio        |      |      |      |       | 0.32   |      |      |      |      |      | 0.52  |      |
| Clearance Time (s)        |      |      |      |       | 4.0    |      |      |      |      |      | 4.0   |      |
| Vehicle Extension (s)     |      |      |      |       | 3.0    |      |      |      |      |      | 3.0   |      |
| Lane Grp Cap (vph)        |      |      |      |       | 1084   |      |      |      |      |      | 1835  |      |
| v/s Ratio Prot            |      |      |      |       | c0.20  |      |      |      |      |      | c0.35 |      |
| v/s Ratio Perm            |      |      |      |       |        |      |      |      |      |      |       |      |
| v/c Ratio                 |      |      |      |       | 1.04dl |      |      |      |      |      | 0.67  |      |
| Uniform Delay, d1         |      |      |      |       | 14.5   |      |      |      |      |      | 8.8   |      |
| Progression Factor        |      |      |      |       | 1.00   |      |      |      |      |      | 1.00  |      |
| Incremental Delay, d2     |      |      |      |       | 1.2    |      |      |      |      |      | 1.0   |      |
| Delay (s)                 |      |      |      |       | 15.7   |      |      |      |      |      | 9.8   |      |
| Level of Service          |      |      |      |       | B      |      |      |      |      |      | A     |      |
| Approach Delay (s)        |      | 0.0  |      |       | 15.7   |      |      | 0.0  |      |      | 9.8   |      |
| Approach LOS              |      | A    |      |       | B      |      |      | A    |      |      | A     |      |

### Intersection Summary

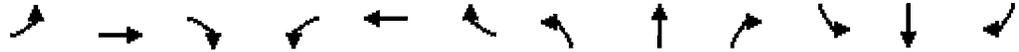
|                                   |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 12.0  | HCM Level of Service | B   |
| HCM Volume to Capacity ratio      | 0.66  |                      |     |
| Actuated Cycle Length (s)         | 49.8  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 57.5% | ICU Level of Service | B   |
| Analysis Period (min)             | 15    |                      |     |

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1: Elfin Forest Road E. & San Elijo Road N.

1/20/2010



| Movement               | EBL  | EBT  | EBR  | WBL   | WBT   | WBR  | NBL  | NBT  | NBR  | SBL  | SBT   | SBR  |
|------------------------|------|------|------|-------|-------|------|------|------|------|------|-------|------|
| Lane Configurations    |      |      |      |       | ↕↕    |      |      |      |      |      | ↕↕    |      |
| Volume (vph)           | 0    | 0    | 0    | 229   | 203   | 0    | 0    | 0    | 0    | 0    | 569   | 66   |
| Ideal Flow (vphpl)     | 1900 | 1900 | 1900 | 1900  | 1900  | 1900 | 1900 | 1900 | 1900 | 1900 | 1900  | 1900 |
| Total Lost time (s)    |      |      |      |       | 4.0   |      |      |      |      |      | 4.0   |      |
| Lane Util. Factor      |      |      |      |       | 0.95  |      |      |      |      |      | 0.95  |      |
| Flt                    |      |      |      |       | 1.00  |      |      |      |      |      | 0.98  |      |
| Flt Protected          |      |      |      |       | 0.97  |      |      |      |      |      | 1.00  |      |
| Satd. Flow (prot)      |      |      |      |       | 3448  |      |      |      |      |      | 3484  |      |
| Flt Permitted          |      |      |      |       | 0.97  |      |      |      |      |      | 1.00  |      |
| Satd. Flow (perm)      |      |      |      |       | 3448  |      |      |      |      |      | 3484  |      |
| Peak-hour factor, PHF  | 0.92 | 0.92 | 0.92 | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 |
| Adj. Flow (vph)        | 0    | 0    | 0    | 249   | 221   | 0    | 0    | 0    | 0    | 0    | 618   | 72   |
| RTOR Reduction (vph)   | 0    | 0    | 0    | 0     | 144   | 0    | 0    | 0    | 0    | 0    | 17    | 0    |
| Lane Group Flow (vph)  | 0    | 0    | 0    | 0     | 326   | 0    | 0    | 0    | 0    | 0    | 673   | 0    |
| Turn Type              |      |      |      | Split |       |      |      |      |      |      |       |      |
| Protected Phases       |      |      |      | 8     | 8     |      |      |      |      |      | 6     |      |
| Permitted Phases       |      |      |      |       |       |      |      |      |      |      |       |      |
| Actuated Green, G (s)  |      |      |      |       | 8.7   |      |      |      |      |      | 12.4  |      |
| Effective Green, g (s) |      |      |      |       | 8.7   |      |      |      |      |      | 12.4  |      |
| Actuated g/C Ratio     |      |      |      |       | 0.30  |      |      |      |      |      | 0.43  |      |
| Clearance Time (s)     |      |      |      |       | 4.0   |      |      |      |      |      | 4.0   |      |
| Vehicle Extension (s)  |      |      |      |       | 3.0   |      |      |      |      |      | 3.0   |      |
| Lane Grp Cap (vph)     |      |      |      |       | 1031  |      |      |      |      |      | 1485  |      |
| v/s Ratio Prot         |      |      |      |       | c0.09 |      |      |      |      |      | c0.19 |      |
| v/s Ratio Perm         |      |      |      |       |       |      |      |      |      |      |       |      |
| v/c Ratio              |      |      |      |       | 0.32  |      |      |      |      |      | 0.45  |      |
| Uniform Delay, d1      |      |      |      |       | 7.9   |      |      |      |      |      | 5.9   |      |
| Progression Factor     |      |      |      |       | 1.00  |      |      |      |      |      | 1.00  |      |
| Incremental Delay, d2  |      |      |      |       | 0.2   |      |      |      |      |      | 0.2   |      |
| Delay (s)              |      |      |      |       | 8.1   |      |      |      |      |      | 6.2   |      |
| Level of Service       |      |      |      |       | A     |      |      |      |      |      | A     |      |
| Approach Delay (s)     |      | 0.0  |      |       | 8.1   |      |      | 0.0  |      |      | 6.2   |      |
| Approach LOS           |      | A    |      |       | A     |      |      | A    |      |      | A     |      |

| Intersection Summary              |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 6.9   | HCM Level of Service | A   |
| HCM Volume to Capacity ratio      | 0.40  |                      |     |
| Actuated Cycle Length (s)         | 29.1  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 36.8% | ICU Level of Service | A   |
| Analysis Period (min)             | 15    |                      |     |
| c Critical Lane Group             |       |                      |     |

HCM Signalized Intersection Capacity Analysis  
 2: Elfin Forest Road W. & San Elijo Road S.

1/20/2010



| Movement               | EBL   | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR   | SBL  | SBT  | SBR  |  |
|------------------------|-------|------|------|------|------|------|------|------|-------|------|------|------|--|
| Lane Configurations    |       | ↑↑   |      |      |      |      |      | ↑↑   |       |      |      |      |  |
| Volume (vph)           | 147   | 356  | 0    | 0    | 0    | 0    | 0    | 933  | 225   | 0    | 0    | 0    |  |
| Ideal Flow (vphpl)     | 1900  | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900  | 1900 | 1900 | 1900 |  |
| Total Lost time (s)    |       | 4.0  |      |      |      |      |      | 4.0  |       |      |      |      |  |
| Lane Util. Factor      |       | 0.95 |      |      |      |      |      | 0.95 |       |      |      |      |  |
| Frt                    |       | 1.00 |      |      |      |      |      | 0.97 |       |      |      |      |  |
| Flt Protected          |       | 0.99 |      |      |      |      |      | 1.00 |       |      |      |      |  |
| Satd. Flow (prot)      |       | 3488 |      |      |      |      |      | 3436 |       |      |      |      |  |
| Flt Permitted          |       | 0.99 |      |      |      |      |      | 1.00 |       |      |      |      |  |
| Satd. Flow (perm)      |       | 3488 |      |      |      |      |      | 3436 |       |      |      |      |  |
| Peak-hour factor, PHF  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 | 0.92 | 0.92 |  |
| Adj. Flow (vph)        | 160   | 387  | 0    | 0    | 0    | 0    | 0    | 1014 | 245   | 0    | 0    | 0    |  |
| RTOR Reduction (vph)   | 0     | 75   | 0    | 0    | 0    | 0    | 0    | 36   | 0     | 0    | 0    | 0    |  |
| Lane Group Flow (vph)  | 0     | 472  | 0    | 0    | 0    | 0    | 0    | 1223 | 0     | 0    | 0    | 0    |  |
| Turn Type              | Split |      |      |      |      |      |      |      |       |      |      |      |  |
| Protected Phases       | 4     | 4    |      |      |      |      |      |      | 2     |      |      |      |  |
| Permitted Phases       |       |      |      |      |      |      |      |      |       |      |      |      |  |
| Actuated Green, G (s)  | 12.4  |      |      |      |      |      |      |      | 25.6  |      |      |      |  |
| Effective Green, g (s) | 12.4  |      |      |      |      |      |      |      | 25.6  |      |      |      |  |
| Actuated g/C Ratio     | 0.27  |      |      |      |      |      |      |      | 0.56  |      |      |      |  |
| Clearance Time (s)     | 4.0   |      |      |      |      |      |      |      | 4.0   |      |      |      |  |
| Vehicle Extension (s)  | 3.0   |      |      |      |      |      |      |      | 3.0   |      |      |      |  |
| Lane Grp Cap (vph)     | 940   |      |      |      |      |      |      |      | 1912  |      |      |      |  |
| v/s Ratio Prot         | c0.14 |      |      |      |      |      |      |      | c0.36 |      |      |      |  |
| v/s Ratio Perm         |       |      |      |      |      |      |      |      |       |      |      |      |  |
| v/c Ratio              | 0.50  |      |      |      |      |      |      |      | 0.64  |      |      |      |  |
| Uniform Delay, d1      | 14.2  |      |      |      |      |      |      |      | 7.0   |      |      |      |  |
| Progression Factor     | 1.00  |      |      |      |      |      |      |      | 1.00  |      |      |      |  |
| Incremental Delay, d2  | 0.4   |      |      |      |      |      |      |      | 0.7   |      |      |      |  |
| Delay (s)              | 14.6  |      |      |      |      |      |      |      | 7.7   |      |      |      |  |
| Level of Service       | B     |      |      |      |      |      |      |      | A     |      |      |      |  |
| Approach Delay (s)     | 14.6  |      | 0.0  |      |      |      | 7.7  |      |       |      | 0.0  |      |  |
| Approach LOS           | B     |      | A    |      |      |      | A    |      |       |      | A    |      |  |

| Intersection Summary              |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 9.8   | HCM Level of Service | A   |
| HCM Volume to Capacity ratio      | 0.59  |                      |     |
| Actuated Cycle Length (s)         | 46.0  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 53.7% | ICU Level of Service | A   |
| Analysis Period (min)             | 15    |                      |     |
| c Critical Lane Group             |       |                      |     |

HCM Signalized Intersection Capacity Analysis  
 2: Elfin Forest Road W. & San Elijo Road S.

1/20/2010



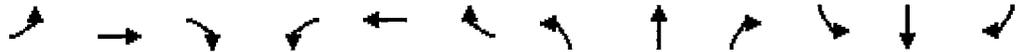
| Movement               | EBL   | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR   | SBL  | SBT  | SBR  |  |
|------------------------|-------|------|------|------|------|------|------|------|-------|------|------|------|--|
| Lane Configurations    |       | ↑↑   |      |      |      |      |      | ↑↑   |       |      |      |      |  |
| Volume (vph)           | 57    | 107  | 0    | 0    | 0    | 0    | 0    | 934  | 322   | 0    | 0    | 0    |  |
| Ideal Flow (vphpl)     | 1900  | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900  | 1900 | 1900 | 1900 |  |
| Total Lost time (s)    |       | 4.0  |      |      |      |      |      | 4.0  |       |      |      |      |  |
| Lane Util. Factor      |       | 0.95 |      |      |      |      |      | 0.95 |       |      |      |      |  |
| Frt                    |       | 1.00 |      |      |      |      |      | 0.96 |       |      |      |      |  |
| Flt Protected          |       | 0.98 |      |      |      |      |      | 1.00 |       |      |      |      |  |
| Satd. Flow (prot)      |       | 3479 |      |      |      |      |      | 3403 |       |      |      |      |  |
| Flt Permitted          |       | 0.98 |      |      |      |      |      | 1.00 |       |      |      |      |  |
| Satd. Flow (perm)      |       | 3479 |      |      |      |      |      | 3403 |       |      |      |      |  |
| Peak-hour factor, PHF  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 | 0.92 | 0.92 |  |
| Adj. Flow (vph)        | 62    | 116  | 0    | 0    | 0    | 0    | 0    | 1015 | 350   | 0    | 0    | 0    |  |
| RTOR Reduction (vph)   | 0     | 54   | 0    | 0    | 0    | 0    | 0    | 49   | 0     | 0    | 0    | 0    |  |
| Lane Group Flow (vph)  | 0     | 124  | 0    | 0    | 0    | 0    | 0    | 1316 | 0     | 0    | 0    | 0    |  |
| Turn Type              | Split |      |      |      |      |      |      |      |       |      |      |      |  |
| Protected Phases       | 4     | 4    |      |      |      |      |      |      | 2     |      |      |      |  |
| Permitted Phases       |       |      |      |      |      |      |      |      |       |      |      |      |  |
| Actuated Green, G (s)  | 5.3   |      |      |      |      |      |      |      | 25.5  |      |      |      |  |
| Effective Green, g (s) | 5.3   |      |      |      |      |      |      |      | 25.5  |      |      |      |  |
| Actuated g/C Ratio     | 0.14  |      |      |      |      |      |      |      | 0.66  |      |      |      |  |
| Clearance Time (s)     | 4.0   |      |      |      |      |      |      |      | 4.0   |      |      |      |  |
| Vehicle Extension (s)  | 3.0   |      |      |      |      |      |      |      | 3.0   |      |      |      |  |
| Lane Grp Cap (vph)     | 475   |      |      |      |      |      |      |      | 2237  |      |      |      |  |
| v/s Ratio Prot         | c0.04 |      |      |      |      |      |      |      | c0.39 |      |      |      |  |
| v/s Ratio Perm         |       |      |      |      |      |      |      |      |       |      |      |      |  |
| v/c Ratio              | 0.26  |      |      |      |      |      |      |      | 0.59  |      |      |      |  |
| Uniform Delay, d1      | 15.0  |      |      |      |      |      |      |      | 3.7   |      |      |      |  |
| Progression Factor     | 1.00  |      |      |      |      |      |      |      | 1.00  |      |      |      |  |
| Incremental Delay, d2  | 0.3   |      |      |      |      |      |      |      | 0.4   |      |      |      |  |
| Delay (s)              | 15.3  |      |      |      |      |      |      |      | 4.1   |      |      |      |  |
| Level of Service       | B     |      |      |      |      |      |      |      | A     |      |      |      |  |
| Approach Delay (s)     | 15.3  |      | 0.0  |      |      |      | 4.1  |      |       |      | 0.0  |      |  |
| Approach LOS           | B     |      | A    |      |      |      | A    |      |       |      | A    |      |  |

| Intersection Summary              |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 5.4   | HCM Level of Service | A   |
| HCM Volume to Capacity ratio      | 0.53  |                      |     |
| Actuated Cycle Length (s)         | 38.8  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 47.4% | ICU Level of Service | A   |
| Analysis Period (min)             | 15    |                      |     |
| c Critical Lane Group             |       |                      |     |

# HCM Signalized Intersection Capacity Analysis

## 3: Elfin Forest E & San Elijo Road S.

1/20/2010



| Movement               | EBL  | EBT  | EBR  | WBL  | WBT   | WBR  | NBL   | NBT   | NBR  | SEL  | SBT  | SBR  |
|------------------------|------|------|------|------|-------|------|-------|-------|------|------|------|------|
| Lane Configurations    |      |      |      |      | ↑↑    |      |       | ↑↑    |      |      |      |      |
| Volume (vph)           | 0    | 0    | 0    | 0    | 433   | 224  | 240   | 955   | 0    | 0    | 0    | 0    |
| Ideal Flow (vphpl)     | 1900 | 1900 | 1900 | 1900 | 1900  | 1900 | 1900  | 1900  | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s)    |      |      |      |      | 4.0   |      |       | 4.0   |      |      |      |      |
| Lane Util. Factor      |      |      |      |      | 0.95  |      |       | 0.95  |      |      |      |      |
| Fr't                   |      |      |      |      | 0.95  |      |       | 1.00  |      |      |      |      |
| Flt Protected          |      |      |      |      | 1.00  |      |       | 0.99  |      |      |      |      |
| Satd. Flow (prot)      |      |      |      |      | 3359  |      |       | 3504  |      |      |      |      |
| Flt Permitted          |      |      |      |      | 1.00  |      |       | 0.99  |      |      |      |      |
| Satd. Flow (perm)      |      |      |      |      | 3359  |      |       | 3504  |      |      |      |      |
| Peak-hour factor, PHF  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph)        | 0    | 0    | 0    | 0    | 471   | 243  | 261   | 1038  | 0    | 0    | 0    | 0    |
| RTOR Reduction (vph)   | 0    | 0    | 0    | 0    | 62    | 0    | 0     | 38    | 0    | 0    | 0    | 0    |
| Lane Group Flow (vph)  | 0    | 0    | 0    | 0    | 652   | 0    | 0     | 1261  | 0    | 0    | 0    | 0    |
| Turn Type              |      |      |      |      |       |      | Split |       |      |      |      |      |
| Protected Phases       |      |      |      |      | 8     |      | 2     | 2     |      |      |      |      |
| Permitted Phases       |      |      |      |      |       |      |       |       |      |      |      |      |
| Actuated Green, G (s)  |      |      |      |      | 15.2  |      |       | 26.7  |      |      |      |      |
| Effective Green, g (s) |      |      |      |      | 15.2  |      |       | 26.7  |      |      |      |      |
| Actuated g/C Ratio     |      |      |      |      | 0.30  |      |       | 0.54  |      |      |      |      |
| Clearance Time (s)     |      |      |      |      | 4.0   |      |       | 4.0   |      |      |      |      |
| Vehicle Extension (s)  |      |      |      |      | 3.0   |      |       | 3.0   |      |      |      |      |
| Lane Grp Cap (vph)     |      |      |      |      | 1023  |      |       | 1875  |      |      |      |      |
| v/s Ratio Prot         |      |      |      |      | c0.19 |      |       | c0.36 |      |      |      |      |
| v/s Ratio Perm         |      |      |      |      |       |      |       |       |      |      |      |      |
| v/c Ratio              |      |      |      |      | 0.64  |      |       | 0.67  |      |      |      |      |
| Uniform Delay, d1      |      |      |      |      | 15.0  |      |       | 8.4   |      |      |      |      |
| Progression Factor     |      |      |      |      | 1.00  |      |       | 1.00  |      |      |      |      |
| Incremental Delay, d2  |      |      |      |      | 1.3   |      |       | 1.0   |      |      |      |      |
| Delay (s)              |      |      |      |      | 16.3  |      |       | 9.4   |      |      |      |      |
| Level of Service       |      |      |      |      | B     |      |       | A     |      |      |      |      |
| Approach Delay (s)     |      | 0.0  |      |      | 16.3  |      |       | 9.4   |      |      | 0.0  |      |
| Approach LOS           |      | A    |      |      | B     |      |       | A     |      |      | A    |      |

| Intersection Summary              |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 11.8  | HCM Level of Service | B   |
| HCM Volume to Capacity ratio      | 0.66  |                      |     |
| Actuated Cycle Length (s)         | 49.9  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 59.2% | ICU Level of Service | B   |
| Analysis Period (min)             | 15    |                      |     |
| c Critical Lane Group             |       |                      |     |

HCM Signalized Intersection Capacity Analysis  
 3: Elfin Forest E & San Elijo Road S.

1/20/2010



| Movement               | EBL  | EBT  | EBR  | WBL  | WBT   | WBR  | NBL   | NBT   | NBR  | SBL  | SBT  | SBR  |
|------------------------|------|------|------|------|-------|------|-------|-------|------|------|------|------|
| Lane Configurations    |      |      |      |      | ↑↑    |      |       | ↑↑    |      |      |      |      |
| Volume (vph)           | 0    | 0    | 0    | 0    | 184   | 77   | 226   | 692   | 0    | 0    | 0    | 0    |
| Ideal Flow (vphpl)     | 1900 | 1900 | 1900 | 1900 | 1900  | 1900 | 1900  | 1900  | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s)    |      |      |      |      | 4.0   |      |       | 4.0   |      |      |      |      |
| Lane Util. Factor      |      |      |      |      | 0.95  |      |       | 0.95  |      |      |      |      |
| Frnt                   |      |      |      |      | 0.96  |      |       | 1.00  |      |      |      |      |
| Flt Protected          |      |      |      |      | 1.00  |      |       | 0.99  |      |      |      |      |
| Satd. Flow (prot)      |      |      |      |      | 3382  |      |       | 3496  |      |      |      |      |
| Flt Permitted          |      |      |      |      | 1.00  |      |       | 0.99  |      |      |      |      |
| Satd. Flow (perm)      |      |      |      |      | 3382  |      |       | 3496  |      |      |      |      |
| Peak-hour factor, PHF  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph)        | 0    | 0    | 0    | 0    | 200   | 84   | 246   | 752   | 0    | 0    | 0    | 0    |
| RTOR Reduction (vph)   | 0    | 0    | 0    | 0    | 64    | 0    | 0     | 58    | 0    | 0    | 0    | 0    |
| Lane Group Flow (vph)  | 0    | 0    | 0    | 0    | 220   | 0    | 0     | 940   | 0    | 0    | 0    | 0    |
| Turn Type              |      |      |      |      |       |      | Split |       |      |      |      |      |
| Protected Phases       |      |      |      |      | 8     |      | 2     | 2     |      |      |      |      |
| Permitted Phases       |      |      |      |      |       |      |       |       |      |      |      |      |
| Actuated Green, G (s)  |      |      |      |      | 7.7   |      |       | 17.1  |      |      |      |      |
| Effective Green, g (s) |      |      |      |      | 7.7   |      |       | 17.1  |      |      |      |      |
| Actuated g/C Ratio     |      |      |      |      | 0.23  |      |       | 0.52  |      |      |      |      |
| Clearance Time (s)     |      |      |      |      | 4.0   |      |       | 4.0   |      |      |      |      |
| Vehicle Extension (s)  |      |      |      |      | 3.0   |      |       | 3.0   |      |      |      |      |
| Lane Grp Cap (vph)     |      |      |      |      | 794   |      |       | 1823  |      |      |      |      |
| v/s Ratio Prot         |      |      |      |      | c0.06 |      |       | c0.27 |      |      |      |      |
| v/s Ratio Perm         |      |      |      |      |       |      |       |       |      |      |      |      |
| v/c Ratio              |      |      |      |      | 0.28  |      |       | 0.52  |      |      |      |      |
| Uniform Delay, d1      |      |      |      |      | 10.3  |      |       | 5.1   |      |      |      |      |
| Progression Factor     |      |      |      |      | 1.00  |      |       | 1.00  |      |      |      |      |
| Incremental Delay, d2  |      |      |      |      | 0.2   |      |       | 0.2   |      |      |      |      |
| Delay (s)              |      |      |      |      | 10.5  |      |       | 5.4   |      |      |      |      |
| Level of Service       |      |      |      |      | B     |      |       | A     |      |      |      |      |
| Approach Delay (s)     |      | 0.0  |      |      | 10.5  |      |       | 5.4   |      |      | 0.0  |      |
| Approach LOS           |      | A    |      |      | B     |      |       | A     |      |      | A    |      |

| Intersection Summary              |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 6.5   | HCM Level of Service | A   |
| HCM Volume to Capacity ratio      | 0.44  |                      |     |
| Actuated Cycle Length (s)         | 32.8  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 39.9% | ICU Level of Service | A   |
| Analysis Period (min)             | 15    |                      |     |
| c Critical Lane Group             |       |                      |     |

HCM Unsignalized Intersection Capacity Analysis  
 4: Harmony Grove Road & Questhaven Road

1/20/2010



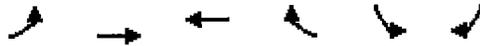
| Movement               | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|------------------------|------|------|------|------|------|------|
| Lane Configurations    |      | ↕    | ↕    |      | ↕    |      |
| Volume (veh/h)         | 1    | 131  | 169  | 4    | 3    | 8    |
| Sign Control           |      | Free | Free |      | Stop |      |
| Grade                  |      | 0%   | 0%   |      | 0%   |      |
| Peak Hour Factor       | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 1    | 142  | 184  | 4    | 3    | 9    |
| Pedestrians            |      |      |      |      |      |      |
| Lane Width (ft)        |      |      |      |      |      |      |
| Walking Speed (ft/s)   |      |      |      |      |      |      |
| Percent Blockage       |      |      |      |      |      |      |
| Right turn flare (veh) |      |      |      |      |      |      |
| Median type            |      | None | None |      |      |      |
| Median storage (veh)   |      |      |      |      |      |      |
| Upstream signal (ft)   |      |      |      |      |      |      |
| pX, platoon unblocked  |      |      |      |      |      |      |
| vC, conflicting volume | 188  |      |      |      | 330  | 186  |
| vC1, stage 1 conf vol  |      |      |      |      |      |      |
| vC2, stage 2 conf vol  |      |      |      |      |      |      |
| vCu, unblocked vol     | 188  |      |      |      | 330  | 186  |
| tC, single (s)         | 4.1  |      |      |      | 6.4  | 6.2  |
| tC, 2 stage (s)        |      |      |      |      |      |      |
| tF (s)                 | 2.2  |      |      |      | 3.5  | 3.3  |
| p0 queue free %        | 100  |      |      |      | 100  | 99   |
| cM capacity (veh/h)    | 1386 |      |      |      | 664  | 856  |

| Direction, Lane #      | EB 1 | WB 1 | SB 1 |
|------------------------|------|------|------|
| Volume Total           | 143  | 188  | 12   |
| Volume Left            | 1    | 0    | 3    |
| Volume Right           | 0    | 4    | 9    |
| cSH                    | 1386 | 1700 | 794  |
| Volume to Capacity     | 0.00 | 0.11 | 0.02 |
| Queue Length 95th (ft) | 0    | 0    | 1    |
| Control Delay (s)      | 0.1  | 0.0  | 9.6  |
| Lane LOS               | A    |      | A    |
| Approach Delay (s)     | 0.1  | 0.0  | 9.6  |
| Approach LOS           |      |      | A    |

| Intersection Summary              |  |       |                        |
|-----------------------------------|--|-------|------------------------|
| Average Delay                     |  | 0.4   |                        |
| Intersection Capacity Utilization |  | 19.1% | ICU Level of Service A |
| Analysis Period (min)             |  | 15    |                        |

HCM Unsignalized Intersection Capacity Analysis  
 4: Harmony Grove Road & Questhaven Road

1/20/2010



| Movement               | EBL  | EBT  | WBT  | WBR  | SEL  | SBR  |
|------------------------|------|------|------|------|------|------|
| Lane Configurations    |      | ↕    | ↕    |      | ↕    |      |
| Volume (veh/h)         | 7    | 292  | 109  | 8    | 2    | 6    |
| Sign Control           |      | Free | Free |      | Stop |      |
| Grade                  |      | 0%   | 0%   |      | 0%   |      |
| Peak Hour Factor       | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 8    | 317  | 118  | 9    | 2    | 7    |
| Pedestrians            |      |      |      |      |      |      |
| Lane Width (ft)        |      |      |      |      |      |      |
| Walking Speed (ft/s)   |      |      |      |      |      |      |
| Percent Blockage       |      |      |      |      |      |      |
| Right turn flare (veh) |      |      |      |      |      |      |
| Median type            |      | None | None |      |      |      |
| Median storage (veh)   |      |      |      |      |      |      |
| Upstream signal (ft)   |      |      |      |      |      |      |
| pX, platoon unblocked  |      |      |      |      |      |      |
| vC, conflicting volume | 127  |      |      |      | 455  | 123  |
| vC1, stage 1 conf vol  |      |      |      |      |      |      |
| vC2, stage 2 conf vol  |      |      |      |      |      |      |
| vCu, unblocked vol     | 127  |      |      |      | 455  | 123  |
| tC, single (s)         | 4.1  |      |      |      | 6.4  | 6.2  |
| tC, 2 stage (s)        |      |      |      |      |      |      |
| tF (s)                 | 2.2  |      |      |      | 3.5  | 3.3  |
| p0 queue free %        | 99   |      |      |      | 100  | 99   |
| cM capacity (veh/h)    | 1459 |      |      |      | 560  | 928  |

| Direction, Lane #      | EB 1 | WB 1 | SB 1 |
|------------------------|------|------|------|
| Volume Total           | 325  | 127  | 9    |
| Volume Left            | 8    | 0    | 2    |
| Volume Right           | 0    | 9    | 7    |
| cSH                    | 1459 | 1700 | 797  |
| Volume to Capacity     | 0.01 | 0.07 | 0.01 |
| Queue Length 95th (ft) | 0    | 0    | 1    |
| Control Delay (s)      | 0.2  | 0.0  | 9.6  |
| Lane LOS               | A    |      | A    |
| Approach Delay (s)     | 0.2  | 0.0  | 9.6  |
| Approach LOS           |      |      | A    |

| Intersection Summary              |  |       |                        |
|-----------------------------------|--|-------|------------------------|
| Average Delay                     |  | 0.3   |                        |
| Intersection Capacity Utilization |  | 31.0% | ICU Level of Service A |
| Analysis Period (min)             |  | 15    |                        |

HCM Unsignalized Intersection Capacity Analysis  
 5: Harmony Grove Road & Via Ambiente

1/20/2010



| Movement               | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|------------------------|------|------|------|------|------|------|
| Lane Configurations    | ↔    |      |      | ↔    |      |      |
| Volume (veh/h)         | 128  | 6    | 1    | 181  | 0    | 3    |
| Sign Control           | Free |      |      | Free | Stop |      |
| Grade                  | 0%   |      |      | 0%   | 0%   |      |
| Peak Hour Factor       | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 139  | 7    | 1    | 197  | 0    | 3    |
| Pedestrians            |      |      |      |      |      |      |
| Lane Width (ft)        |      |      |      |      |      |      |
| Walking Speed (ft/s)   |      |      |      |      |      |      |
| Percent Blockage       |      |      |      |      |      |      |
| Right turn flare (veh) |      |      |      |      |      |      |
| Median type            | None |      |      | None |      |      |
| Median storage (veh)   |      |      |      |      |      |      |
| Upstream signal (ft)   |      |      |      |      |      |      |
| pX, platoon unblocked  |      |      |      |      |      |      |
| vC, conflicting volume |      |      | 146  |      | 341  | 142  |
| vC1, stage 1 conf vol  |      |      |      |      |      |      |
| vC2, stage 2 conf vol  |      |      |      |      |      |      |
| vCu, unblocked vol     |      |      | 146  |      | 341  | 142  |
| tC, single (s)         |      |      | 4.1  |      | 6.4  | 6.2  |
| tC, 2 stage (s)        |      |      |      |      |      |      |
| tF (s)                 |      |      | 2.2  |      | 3.5  | 3.3  |
| p0 queue free %        |      |      | 100  |      | 100  | 100  |
| cM capacity (veh/h)    |      |      | 1436 |      | 654  | 905  |

| Direction Lane #       | EB1  | WB1  | NB1  |
|------------------------|------|------|------|
| Volume Total           | 146  | 198  | 3    |
| Volume Left            | 0    | 1    | 0    |
| Volume Right           | 7    | 0    | 3    |
| cSH                    | 1700 | 1436 | 905  |
| Volume to Capacity     | 0.09 | 0.00 | 0.00 |
| Queue Length 95th (ft) | 0    | 0    | 0    |
| Control Delay (s)      | 0.0  | 0.0  | 9.0  |
| Lane LOS               |      | A    | A    |
| Approach Delay (s)     | 0.0  | 0.0  | 9.0  |
| Approach LOS           |      |      | A    |

| Intersection Summary              |  |       |                        |
|-----------------------------------|--|-------|------------------------|
| Average Delay                     |  | 0.1   |                        |
| Intersection Capacity Utilization |  | 20.3% | ICU Level of Service A |
| Analysis Period (min)             |  | 15    |                        |

HCM Unsignalized Intersection Capacity Analysis  
 5: Harmony Grove Road & Via Ambiente

1/20/2010



| Movement               | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|------------------------|------|------|------|------|------|------|
| Lane Configurations    | ↔    |      |      | ↔    |      |      |
| Volume (veh/h)         | 299  | 0    | 1    | 110  | 2    | 1    |
| Sign Control           | Free |      |      | Free | Stop |      |
| Grade                  | 0%   |      |      | 0%   | 0%   |      |
| Peak Hour Factor       | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 325  | 0    | 1    | 120  | 2    | 1    |
| Pedestrians            |      |      |      |      |      |      |
| Lane Width (ft)        |      |      |      |      |      |      |
| Walking Speed (ft/s)   |      |      |      |      |      |      |
| Percent Blockage       |      |      |      |      |      |      |
| Right turn flare (veh) |      |      |      |      |      |      |
| Median type            | None |      |      | None |      |      |
| Median storage (veh)   |      |      |      |      |      |      |
| Upstream signal (ft)   |      |      |      |      |      |      |
| pX, platoon unblocked  |      |      |      |      |      |      |
| vC, conflicting volume | 325  |      |      |      | 447  | 325  |
| vC1, stage 1 conf vol  |      |      |      |      |      |      |
| vC2, stage 2 conf vol  |      |      |      |      |      |      |
| vCu, unblocked vol     | 325  |      |      |      | 447  | 325  |
| tC, single (s)         | 4.1  |      |      |      | 6.4  | 6.2  |
| tC, 2 stage (s)        |      |      |      |      |      |      |
| tF (s)                 | 2.2  |      |      |      | 3.5  | 3.3  |
| p0 queue free %        | 100  |      |      |      | 100  | 100  |
| cM capacity (veh/h)    | 1235 |      |      |      | 569  | 716  |

| Direction, Lane #      | EB 1 | WB 1 | NB 1 |
|------------------------|------|------|------|
| Volume Total           | 325  | 121  | 3    |
| Volume Left            | 0    | 1    | 2    |
| Volume Right           | 0    | 0    | 1    |
| cSH                    | 1700 | 1235 | 611  |
| Volume to Capacity     | 0.19 | 0.00 | 0.01 |
| Queue Length 95th (ft) | 0    | 0    | 0    |
| Control Delay (s)      | 0.0  | 0.1  | 10.9 |
| Lane LOS               |      | A    | B    |
| Approach Delay (s)     | 0.0  | 0.1  | 10.9 |
| Approach LOS           |      |      | B    |

| Intersection Summary              |       |                      |   |
|-----------------------------------|-------|----------------------|---|
| Average Delay                     |       | 0.1                  |   |
| Intersection Capacity Utilization | 25.7% | ICU Level of Service | A |
| Analysis Period (min)             | 15    |                      |   |

## **APPENDIX C**

### **HCM 2000 SIGNALIZED & UNSIGNALIZED INTERSECTION METHODOLOGY & COUNTY OF SAN DIEGO ROADWAY CLASSIFICATION TABLE**



## 2000 HIGHWAY CAPACITY MANUAL LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

In the 2000 Highway Capacity Manual (HCM), Level of Service for signalized intersections is defined in terms of delay. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Specifically, Level of Service criteria are stated in terms of the average control delay per vehicle for a 15-minute analysis period. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Delay is a complex measure, and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group or approach in question.

| LEVEL OF SERVICE | CONTROLLED DELAY<br>PER VEHICLE<br>(SEC) |    |      |
|------------------|--|----|------|
| A                |  | ≤  | 10.0 |
| B                | 10.1                                     | to | 20.0 |
| C                | 20.1                                     | to | 35.0 |
| D                | 35.1                                     | to | 55.0 |
| E                | 55.1                                     | to | 80.0 |
| F                |  | >  | 80.0 |

Level of Service A describes operations with very low delay, (i.e. less than 10.0 seconds per vehicle). This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

Level of Service B describes operations with delay in the range of 10.1 to 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.

Level of Service C describes operations with delay in the range of 20.1 to 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in the level. The number of vehicles stopping is significant at this level, although many still pass through the intersections without stopping.

Level of Service D describes operations with delay in the range of 35.1 to 55.0 seconds per vehicle. At Level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

Level of Service E describes operations with delay in the range of 55.1 to 80.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

Level of Service F describes operations with delay in excess of 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation (i.e. when arrival flow rates exceed the capacity of the intersection). It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

## 2000 HIGHWAY CAPACITY MANUAL LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

In the 2000 Highway Capacity Manual (HCM), Level of Service for unsignalized intersections is determined by the computed or measured control delay and is defined for each minor movement. Level of Service is not defined for the intersection as a whole. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. The criteria are given in the following table, and are based on the average control delay for any particular minor movement.

| LEVEL OF SERVICE | AVERAGE CONTROL DELAY<br>SEC/VEH |    |      | EXPECTED DELAY TO<br>MINOR STREET TRAFFIC |
|------------------|----------------------------------|----|------|---|
| A                | 0.0                              | ≤  | 10.0 | Little or no delay                        |
| B                | 10.1                             | to | 15.0 | Short traffic delays                      |
| C                | 15.1                             | to | 25.0 | Average traffic delays                    |
| D                | 25.1                             | to | 35.0 | Long traffic delays                       |
| E                | 35.1                             | to | 50.0 | Very long traffic delays                  |
| F                |                                  | >  | 50.0 | Severe congestion                         |

Level of Service F exists when there are insufficient gaps of suitable size to allow a side street demand to safely cross through a major street traffic stream. This Level of Service is generally evident from extremely long control delays experienced by side-street traffic and by queuing on the minor-street approaches. The method, however, is based on a constant critical gap size; that is, the critical gap remains constant no matter how long the side-street motorist waits. LOS F may also appear in the form on side-street vehicles selecting smaller-than-usual gaps. In such cases, safety may be a problem, and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior, which are more difficult to observe in the field than queuing.

In most cases at Two-Way Stop Controlled (TWSC) intersections, the critical movement is the minor-street left-turn movement. As such, the minor-street left-turn movement can generally be considered the primary factor affecting overall intersection performance. The lower threshold for LOS F is set at 50 seconds of delay per vehicle. There are many instances, particularly in urban areas, in which the delay equations will predict delays of 50 seconds (LOS F) or more for minor-street movements under very low volume conditions on the minor street (less than 25 vehicle/hour). Since the first term of the equation is a function only of the capacity, the LOS F threshold of 50 sec/vehicle is reached with a movement capacity of approximately 85 vehicle/hour or less.

This procedure assumes random arrivals on the major street. For a typical four-lane arterial with average daily traffic volumes in the range of 15,000 to 20,000 vehicles per day (peak hour, 1,500 to 2,000 vehicle/hour), the delay equation used in the TWSC capacity analysis procedure will predict 50 seconds of delay or more (LOS F) for many urban TWSC intersections that allow minor-street left-turn movements. **The LOS F threshold will be reached regardless of the volume of minor-street left-turn traffic.** Notwithstanding this fact, most low-volume minor-street approaches would not meet any of the volume or delay warrants for signalization of the *Manual on Uniform Traffic Control Devices* (MUTCD) since the warrants define an asymptote at 100 vehicle/hour on the minor approach. As a result, many public agencies that use the HCM Level of Service thresholds to determine the design adequacy of TWSC intersections may be forced to eliminate the minor-street left-turn movement, even when the movement may not present any operational problem, such as the formation of long queues on the minor street or driveway approach.

# County of San Diego

## DRAFT

August 11, 1998

| TABLE 1  |              |                  |                  |                  |                   |                   |
|--|--------------|------------------|------------------|------------------|-------------------|-------------------|
| AVERAGE DAILY VEHICLE TRIPS  |              |                  |                  |                  |                   |                   |
| CIRCULATION ELEMENT<br>ROADS   |              | LEVEL OF SERVICE |                  |                  |                   |                   |
| CLASS  | X-SECTION    | A                | B                | C                | D                 | E                 |
| Expressway   | 126/146      | <36,000          | <54,000          | <70,000          | <86,000           | <108,000          |
| Prime Arterial   | 102/122      | <22,200          | <37,000          | <44,600          | <50,000           | <57,000           |
| Major Road   | 78/98        | <14,800          | <24,700          | <29,600          | <33,400           | <37,000           |
| Collector  | 64/84        | <13,700          | <22,800          | <27,400          | <30,800           | <34,200           |
| <u>Town Collector</u>  | <u>54/74</u> | <u>&lt;3,000</u> | <u>&lt;6,000</u> | <u>&lt;9,500</u> | <u>&lt;13,500</u> | <u>&lt;19,000</u> |
| Light Collector  | 40/60        | <1,900           | <4,100           | <7,100           | <10,900           | <16,200           |
| Rural Collector  | 40/84        | <1,900           | <4,100           | <7,100           | <10,900           | <16,200           |
| Rural Light<br>Collector   | 40/60        | <1,900           | <4,100           | <7,100           | <10,900           | <16,200           |
| Recreational<br>Parkway  | 40/100       | <1,900           | <4,100           | <7,100           | <10,900           | <16,200           |
| Rural Mountain   | 40/100       | <1,900           | <4,100           | <7,100           | <10,900           | <16,200           |
| NON-CIRCULATION<br>ELEMENT ROADS   |              | LEVEL OF SERVICE |                  |                  |                   |                   |
| CLASS  | X-SECTION    | A                | B                | C                | D                 | E                 |
| Residential<br>Collector   | 40/60        | *                | *                | <4,500           | *                 | *                 |
| Residential<br>Road  | 36/56        | *                | *                | <1,500           | *                 | *                 |
| Residential<br>Cul-de-sac or<br>Loop Road  | 32/52        | *                | *                | < 200            | *                 | *                 |
| * Levels of service are not applicable to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors. |              |                  |                  |                  |                   |                   |

Adjustment for heavy vehicles in the traffic stream applies to three types of vehicles: trucks, RVs, and buses. No evidence indicates any distinct differences in the performance characteristics of trucks and buses on multilane highways; therefore, buses are considered trucks in this method. Finding the heavy-vehicle adjustment factor requires two steps. First, find an equivalent truck factor ( $E_T$ ) and RV factor ( $E_R$ ) for prevailing operating conditions. Second, using  $E_T$  and  $E_R$ , compute an adjustment factor for all heavy vehicles in the traffic stream.

**Extended General Highway Segments**

Passenger-car equivalents can be selected for two conditions: extended general highway segments and specific grades. Values of passenger-car equivalents are selected from Exhibits 21-8 through 21-11. For long segments of highway in which no single grade has a significant impact on operations, Exhibit 21-8 is used to select passenger-car equivalents for trucks and buses ( $E_T$ ) and for RVs ( $E_R$ ).

EXHIBIT 21-8. PASSENGER-CAR EQUIVALENTS ON EXTENDED GENERAL HIGHWAY SEGMENTS

| Factor                   | Type of Terrain |         |             |
|--------------------------|-----------------|---------|-------------|
|                          | Level           | Rolling | Mountainous |
| $E_T$ (trucks and buses) | 1.5             | 2.5     | 4.5         |
| $E_R$ (RVs)              | 1.2             | 2.0     | 4.0         |

A long multilane highway segment can be classified as an extended general highway segment if no grade exceeding 3 percent is longer than 0.5 mi and if grades of 3 percent or less do not exceed 1 mi.

**Specific Grade**

Any grade of 3 percent or less that is longer than 1 mi or a grade greater than 3 percent that is longer than 0.5 mi should be treated as an isolated, specific grade. In addition, the upgrade and downgrade must be treated separately, because the impact of heavy vehicles differs substantially in each.

**Equivalents for Extended General Highway Segments**

For an extended general segment analysis, the terrain of the highway must be classified as level, rolling, or mountainous. These three classifications are discussed below.

**Level Terrain**

Level terrain is any combination of horizontal and vertical alignment that permits heavy vehicles to maintain approximately the same speed as passenger cars. This type of terrain generally includes short grades of no more than 1 to 2 percent.

**Rolling Terrain**

Rolling terrain is any combination of horizontal and vertical alignment that causes heavy vehicles to reduce their speeds substantially below those of passenger cars. However, the terrain does not cause heavy vehicles to operate at crawl speeds for any significant length of time or at frequent intervals.

**Mountainous Terrain**

Mountainous terrain is any combination of horizontal and vertical alignment that causes heavy vehicles to operate at crawl speeds for significant distances or at frequent intervals. For these general highway segments, values of  $E_T$  and  $E_R$  are selected from Exhibit 21-8.

**APPENDIX D**  
**EXISTING + PROJECT INTERSECTION ANALYSIS SHEETS**



# HCM Signalized Intersection Capacity Analysis

1: Elfin Forest Road E. & San Elijo Road N.

6/10/2010



| Movement               | EBL  | EBT  | EBR  | WBL   | WBT    | WBR  | NBL  | NBT  | NBR  | SBL  | SBT   | SBR  |
|------------------------|------|------|------|-------|--------|------|------|------|------|------|-------|------|
| Lane Configurations    |      |      |      |       | ↔↑     |      |      |      |      |      | ↑↔    |      |
| Volume (vph)           | 0    | 0    | 0    | 567   | 96     | 0    | 0    | 0    | 0    | 0    | 1126  | 24   |
| Ideal Flow (vphpl)     | 1900 | 1900 | 1900 | 1900  | 1900   | 1900 | 1900 | 1900 | 1900 | 1900 | 1900  | 1900 |
| Total Lost time (s)    |      |      |      |       | 4.0    |      |      |      |      |      | 4.0   |      |
| Lane Util. Factor      |      |      |      |       | 0.95   |      |      |      |      |      | 0.95  |      |
| Fr't                   |      |      |      |       | 1.00   |      |      |      |      |      | 1.00  |      |
| Flt Protected          |      |      |      |       | 0.96   |      |      |      |      |      | 1.00  |      |
| Satd. Flow (prot)      |      |      |      |       | 3394   |      |      |      |      |      | 3528  |      |
| Flt Permitted          |      |      |      |       | 0.96   |      |      |      |      |      | 1.00  |      |
| Satd. Flow (perm)      |      |      |      |       | 3394   |      |      |      |      |      | 3528  |      |
| Peak-hour factor, PHF  | 0.92 | 0.92 | 0.92 | 0.92  | 0.92   | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 |
| Adj. Flow (vph)        | 0    | 0    | 0    | 616   | 104    | 0    | 0    | 0    | 0    | 0    | 1224  | 26   |
| RTOR Reduction (vph)   | 0    | 0    | 0    | 0     | 34     | 0    | 0    | 0    | 0    | 0    | 2     | 0    |
| Lane Group Flow (vph)  | 0    | 0    | 0    | 0     | 686    | 0    | 0    | 0    | 0    | 0    | 1248  | 0    |
| Turn Type              |      |      |      | Split |        |      |      |      |      |      |       |      |
| Protected Phases       |      |      |      | 8     | 8      |      |      |      |      |      |       | 6    |
| Permitted Phases       |      |      |      |       |        |      |      |      |      |      |       |      |
| Actuated Green, G (s)  |      |      |      |       | 16.0   |      |      |      |      |      | 26.4  |      |
| Effective Green, g (s) |      |      |      |       | 16.0   |      |      |      |      |      | 26.4  |      |
| Actuated g/C Ratio     |      |      |      |       | 0.32   |      |      |      |      |      | 0.52  |      |
| Clearance Time (s)     |      |      |      |       | 4.0    |      |      |      |      |      | 4.0   |      |
| Vehicle Extension (s)  |      |      |      |       | 3.0    |      |      |      |      |      | 3.0   |      |
| Lane Grp Cap (vph)     |      |      |      |       | 1077   |      |      |      |      |      | 1848  |      |
| v/s Ratio Prot         |      |      |      |       | c0.20  |      |      |      |      |      | c0.35 |      |
| v/s Ratio Perm         |      |      |      |       |        |      |      |      |      |      |       |      |
| v/c Ratio              |      |      |      |       | 1.04dl |      |      |      |      |      | 0.68  |      |
| Uniform Delay, d1      |      |      |      |       | 14.7   |      |      |      |      |      | 8.8   |      |
| Progression Factor     |      |      |      |       | 1.00   |      |      |      |      |      | 1.00  |      |
| Incremental Delay, d2  |      |      |      |       | 1.2    |      |      |      |      |      | 1.0   |      |
| Delay (s)              |      |      |      |       | 16.0   |      |      |      |      |      | 9.8   |      |
| Level of Service       |      |      |      |       | B      |      |      |      |      |      | A     |      |
| Approach Delay (s)     |      | 0.0  |      |       | 16.0   |      | 0.0  |      |      |      | 9.8   |      |
| Approach LOS           |      | A    |      |       | B      |      | A    |      |      |      | A     |      |

## Intersection Summary

|                                   |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 12.1  | HCM Level of Service | B   |
| HCM Volume to Capacity ratio      | 0.66  |                      |     |
| Actuated Cycle Length (s)         | 50.4  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 57.7% | ICU Level of Service | B   |
| Analysis Period (min)             | 15    |                      |     |

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 1: Elfin Forest Road E. & San Elijo Road N.

6/10/2010



| Movement               | EBL  | EBT  | EBR  | WBL   | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|------------------------|------|------|------|-------|------|------|------|------|------|------|------|------|
| Lane Configurations    |      |      |      |       | ↕↕   |      |      |      |      |      | ↕↕   |      |
| Volume (vph)           | 0    | 0    | 0    | 236   | 203  | 0    | 0    | 0    | 0    | 0    | 570  | 66   |
| Ideal Flow (vphpl)     | 1900 | 1900 | 1900 | 1900  | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s)    |      |      |      |       | 4.0  |      |      |      |      |      | 4.0  |      |
| Lane Util. Factor      |      |      |      |       | 0.95 |      |      |      |      |      | 0.95 |      |
| Fr't                   |      |      |      |       | 1.00 |      |      |      |      |      | 0.98 |      |
| Flt Protected          |      |      |      |       | 0.97 |      |      |      |      |      | 1.00 |      |
| Satd. Flow (prot)      |      |      |      |       | 3447 |      |      |      |      |      | 3484 |      |
| Flt Permitted          |      |      |      |       | 0.97 |      |      |      |      |      | 1.00 |      |
| Satd. Flow (perm)      |      |      |      |       | 3447 |      |      |      |      |      | 3484 |      |
| Peak-hour factor, PHF  | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph)        | 0    | 0    | 0    | 257   | 221  | 0    | 0    | 0    | 0    | 0    | 620  | 72   |
| RTOR Reduction (vph)   | 0    | 0    | 0    | 0     | 143  | 0    | 0    | 0    | 0    | 0    | 17   | 0    |
| Lane Group Flow (vph)  | 0    | 0    | 0    | 0     | 335  | 0    | 0    | 0    | 0    | 0    | 675  | 0    |
| Turn Type              |      |      |      | Split |      |      |      |      |      |      |      |      |
| Protected Phases       |      |      |      | 8     | 8    |      |      |      |      |      |      | 6    |
| Permitted Phases       |      |      |      |       |      |      |      |      |      |      |      |      |
| Actuated Green, G (s)  |      |      |      |       | 8.8  |      |      |      |      |      |      | 12.4 |
| Effective Green, g (s) |      |      |      |       | 8.8  |      |      |      |      |      |      | 12.4 |
| Actuated g/C Ratio     |      |      |      |       | 0.30 |      |      |      |      |      |      | 0.42 |
| Clearance Time (s)     |      |      |      |       | 4.0  |      |      |      |      |      |      | 4.0  |
| Vehicle Extension (s)  |      |      |      |       | 3.0  |      |      |      |      |      |      | 3.0  |
| Lane Grp Cap (vph)     |      |      |      |       | 1039 |      |      |      |      |      |      | 1480 |
| v/s Ratio Prot         |      |      |      |       | 0.10 |      |      |      |      |      |      | 0.19 |
| v/s Ratio Perm         |      |      |      |       |      |      |      |      |      |      |      |      |
| v/c Ratio              |      |      |      |       | 0.32 |      |      |      |      |      |      | 0.46 |
| Uniform Delay, d1      |      |      |      |       | 7.9  |      |      |      |      |      |      | 6.0  |
| Progression Factor     |      |      |      |       | 1.00 |      |      |      |      |      |      | 1.00 |
| Incremental Delay, d2  |      |      |      |       | 0.2  |      |      |      |      |      |      | 0.2  |
| Delay (s)              |      |      |      |       | 8.1  |      |      |      |      |      |      | 6.2  |
| Level of Service       |      |      |      |       | A    |      |      |      |      |      |      | A    |
| Approach Delay (s)     |      | 0.0  |      |       | 8.1  |      |      | 0.0  |      |      |      | 6.2  |
| Approach LOS           |      | A    |      |       | A    |      |      | A    |      |      |      | A    |

### Intersection Summary

|                                   |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 7.0   | HCM Level of Service | A   |
| HCM Volume to Capacity ratio      | 0.40  |                      |     |
| Actuated Cycle Length (s)         | 29.2  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 37.0% | ICU Level of Service | A   |
| Analysis Period (min)             | 15    |                      |     |
| c Critical Lane Group             |       |                      |     |

HCM Signalized Intersection Capacity Analysis  
 2: Elfin Forest Road W. & San Elijo Road S.

6/10/2010



| Movement                  | EBL   | EBT   | EBR  | WBL  | WBT  | WBR  | NBL  | NBT   | NBR  | SBL  | SBT  | SBR  |
|---------------------------|-------|-------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations       |       | ↑↑    |      |      |      |      |      | ↑↑    |      |      |      |      |
| Volume (vph)              | 147   | 364   | 0    | 0    | 0    | 0    | 0    | 933   | 232  | 0    | 0    | 0    |
| Ideal Flow (vphpl)        | 1900  | 1900  | 1900 | 1900 | 1900 | 1900 | 1900 | 1900  | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s)       |       | 4.0   |      |      |      |      |      | 4.0   |      |      |      |      |
| Lane Util. Factor         |       | 0.95  |      |      |      |      |      | 0.95  |      |      |      |      |
| Fr <sub>t</sub>           |       | 1.00  |      |      |      |      |      | 0.97  |      |      |      |      |
| Fl <sub>t</sub> Protected |       | 0.99  |      |      |      |      |      | 1.00  |      |      |      |      |
| Satd. Flow (prot)         |       | 3489  |      |      |      |      |      | 3434  |      |      |      |      |
| Fl <sub>t</sub> Permitted |       | 0.99  |      |      |      |      |      | 1.00  |      |      |      |      |
| Satd. Flow (perm)         |       | 3489  |      |      |      |      |      | 3434  |      |      |      |      |
| Peak-hour factor, PHF     | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph)           | 160   | 396   | 0    | 0    | 0    | 0    | 0    | 1014  | 252  | 0    | 0    | 0    |
| RTOR Reduction (vph)      | 0     | 74    | 0    | 0    | 0    | 0    | 0    | 37    | 0    | 0    | 0    | 0    |
| Lane Group Flow (vph)     | 0     | 482   | 0    | 0    | 0    | 0    | 0    | 1229  | 0    | 0    | 0    | 0    |
| Turn Type                 | Split |       |      |      |      |      |      |       |      |      |      |      |
| Protected Phases          | 4     | 4     |      |      |      |      |      | 2     |      |      |      |      |
| Permitted Phases          |       |       |      |      |      |      |      |       |      |      |      |      |
| Actuated Green, G (s)     |       | 12.5  |      |      |      |      |      | 25.7  |      |      |      |      |
| Effective Green, g (s)    |       | 12.5  |      |      |      |      |      | 25.7  |      |      |      |      |
| Actuated g/C Ratio        |       | 0.27  |      |      |      |      |      | 0.56  |      |      |      |      |
| Clearance Time (s)        |       | 4.0   |      |      |      |      |      | 4.0   |      |      |      |      |
| Vehicle Extension (s)     |       | 3.0   |      |      |      |      |      | 3.0   |      |      |      |      |
| Lane Grp Cap (vph)        |       | 944   |      |      |      |      |      | 1910  |      |      |      |      |
| v/s Ratio Prot            |       | c0.14 |      |      |      |      |      | c0.36 |      |      |      |      |
| v/s Ratio Perm            |       |       |      |      |      |      |      |       |      |      |      |      |
| v/c Ratio                 |       | 0.51  |      |      |      |      |      | 0.64  |      |      |      |      |
| Uniform Delay, d1         |       | 14.3  |      |      |      |      |      | 7.1   |      |      |      |      |
| Progression Factor        |       | 1.00  |      |      |      |      |      | 1.00  |      |      |      |      |
| Incremental Delay, d2     |       | 0.5   |      |      |      |      |      | 0.8   |      |      |      |      |
| Delay (s)                 |       | 14.7  |      |      |      |      |      | 7.8   |      |      |      |      |
| Level of Service          |       | B     |      |      |      |      |      | A     |      |      |      |      |
| Approach Delay (s)        |       | 14.7  |      |      | 0.0  |      |      | 7.8   |      |      | 0.0  |      |
| Approach LOS              |       | B     |      |      | A    |      |      | A     |      |      | A    |      |

Intersection Summary

|                                   |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 9.9   | HCM Level of Service | A   |
| HCM Volume to Capacity ratio      | 0.60  |                      |     |
| Actuated Cycle Length (s)         | 46.2  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 54.2% | ICU Level of Service | A   |
| Analysis Period (min)             | 15    |                      |     |
| c Critical Lane Group             |       |                      |     |

HCM Signalized Intersection Capacity Analysis  
 2: Elfin Forest Road W. & San Elijo Road S.

6/10/2010



| Movement               | EBL   | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT   | SBR  |
|------------------------|-------|------|------|------|------|------|------|------|------|------|-------|------|
| Lane Configurations    |       | ↑↑   |      |      |      |      |      | ↑↑   |      |      |       |      |
| Volume (vph)           | 57    | 108  | 0    | 0    | 0    | 0    | 0    | 934  | 323  | 0    | 0     | 0    |
| Ideal Flow (vphpl)     | 1900  | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900  | 1900 |
| Total Lost time (s)    |       | 4.0  |      |      |      |      |      | 4.0  |      |      |       |      |
| Lane Util. Factor      |       | 0.95 |      |      |      |      |      | 0.95 |      |      |       |      |
| Fr't                   |       | 1.00 |      |      |      |      |      | 0.96 |      |      |       |      |
| Flt Protected          |       | 0.98 |      |      |      |      |      | 1.00 |      |      |       |      |
| Satd. Flow (prot)      |       | 3479 |      |      |      |      |      | 3403 |      |      |       |      |
| Flt Permitted          |       | 0.98 |      |      |      |      |      | 1.00 |      |      |       |      |
| Satd. Flow (perm)      |       | 3479 |      |      |      |      |      | 3403 |      |      |       |      |
| Peak-hour factor, PHF  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 |
| Adj. Flow (vph)        | 62    | 117  | 0    | 0    | 0    | 0    | 0    | 1015 | 351  | 0    | 0     | 0    |
| RTOR Reduction (vph)   | 0     | 54   | 0    | 0    | 0    | 0    | 0    | 49   | 0    | 0    | 0     | 0    |
| Lane Group Flow (vph)  | 0     | 125  | 0    | 0    | 0    | 0    | 0    | 1317 | 0    | 0    | 0     | 0    |
| Turn Type              | Split |      |      |      |      |      |      |      |      |      |       |      |
| Protected Phases       | 4     | 4    |      |      |      |      |      |      |      |      | 2     |      |
| Permitted Phases       |       |      |      |      |      |      |      |      |      |      |       |      |
| Actuated Green, G (s)  | 5.3   |      |      |      |      |      |      |      |      |      | 25.5  |      |
| Effective Green, g (s) | 5.3   |      |      |      |      |      |      |      |      |      | 25.5  |      |
| Actuated g/C Ratio     | 0.14  |      |      |      |      |      |      |      |      |      | 0.66  |      |
| Clearance Time (s)     | 4.0   |      |      |      |      |      |      |      |      |      | 4.0   |      |
| Vehicle Extension (s)  | 3.0   |      |      |      |      |      |      |      |      |      | 3.0   |      |
| Lane Grp Cap (vph)     | 475   |      |      |      |      |      |      |      |      |      | 2237  |      |
| v/s Ratio Prot         | c0.04 |      |      |      |      |      |      |      |      |      | c0.39 |      |
| v/s Ratio Perm         |       |      |      |      |      |      |      |      |      |      |       |      |
| v/c Ratio              | 0.26  |      |      |      |      |      |      |      |      |      | 0.59  |      |
| Uniform Delay, d1      | 15.0  |      |      |      |      |      |      |      |      |      | 3.7   |      |
| Progression Factor     | 1.00  |      |      |      |      |      |      |      |      |      | 1.00  |      |
| Incremental Delay, d2  | 0.3   |      |      |      |      |      |      |      |      |      | 0.4   |      |
| Delay (s)              | 15.3  |      |      |      |      |      |      |      |      |      | 4.1   |      |
| Level of Service       | B     |      |      |      |      |      |      |      |      |      | A     |      |
| Approach Delay (s)     | 15.3  |      |      |      | 0.0  |      |      |      | 4.1  |      | 0.0   |      |
| Approach LOS           | B     |      |      |      | A    |      |      |      | A    |      | A     |      |

| Intersection Summary              |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 5.4   | HCM Level of Service | A   |
| HCM Volume to Capacity ratio      | 0.53  |                      |     |
| Actuated Cycle Length (s)         | 38.8  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 47.4% | ICU Level of Service | A   |
| Analysis Period (min)             | 15    |                      |     |
| c Critical Lane Group             |       |                      |     |

HCM Signalized Intersection Capacity Analysis  
 3: Elfin Forest E & San Elijo Road S.

6/10/2010



| Movement               | EBL  | EBT  | EBR  | WBL  | WBT   | WBR  | NBL   | NBT   | NBR  | SBL  | SBT  | SBR  |
|------------------------|------|------|------|------|-------|------|-------|-------|------|------|------|------|
| Lane Configurations    |      |      |      |      | ↑↑    |      |       | ↑↑    |      |      |      |      |
| Volume (vph)           | 0    | 0    | 0    | 0    | 434   | 225  | 240   | 955   | 0    | 0    | 0    | 0    |
| Ideal Flow (vphpl)     | 1900 | 1900 | 1900 | 1900 | 1900  | 1900 | 1900  | 1900  | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s)    |      |      |      |      | 4.0   |      |       | 4.0   |      |      |      |      |
| Lane Util. Factor      |      |      |      |      | 0.95  |      |       | 0.95  |      |      |      |      |
| Fr't                   |      |      |      |      | 0.95  |      |       | 1.00  |      |      |      |      |
| Flt Protected          |      |      |      |      | 1.00  |      |       | 0.99  |      |      |      |      |
| Satd. Flow (prot)      |      |      |      |      | 3358  |      |       | 3504  |      |      |      |      |
| Flt Permitted          |      |      |      |      | 1.00  |      |       | 0.99  |      |      |      |      |
| Satd. Flow (perm)      |      |      |      |      | 3358  |      |       | 3504  |      |      |      |      |
| Peak-hour factor, PHF  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph)        | 0    | 0    | 0    | 0    | 472   | 245  | 261   | 1038  | 0    | 0    | 0    | 0    |
| RTOR Reduction (vph)   | 0    | 0    | 0    | 0    | 62    | 0    | 0     | 38    | 0    | 0    | 0    | 0    |
| Lane Group Flow (vph)  | 0    | 0    | 0    | 0    | 655   | 0    | 0     | 1261  | 0    | 0    | 0    | 0    |
| Turn Type              |      |      |      |      |       |      | Split |       |      |      |      |      |
| Protected Phases       |      |      |      |      | 8     |      | 2     | 2     |      |      |      |      |
| Permitted Phases       |      |      |      |      |       |      |       |       |      |      |      |      |
| Actuated Green, G (s)  |      |      |      |      | 15.3  |      |       | 26.7  |      |      |      |      |
| Effective Green, g (s) |      |      |      |      | 15.3  |      |       | 26.7  |      |      |      |      |
| Actuated g/C Ratio     |      |      |      |      | 0.31  |      |       | 0.53  |      |      |      |      |
| Clearance Time (s)     |      |      |      |      | 4.0   |      |       | 4.0   |      |      |      |      |
| Vehicle Extension (s)  |      |      |      |      | 3.0   |      |       | 3.0   |      |      |      |      |
| Lane Grp Cap (vph)     |      |      |      |      | 1028  |      |       | 1871  |      |      |      |      |
| v/s Ratio Prot         |      |      |      |      | c0.20 |      |       | c0.36 |      |      |      |      |
| v/s Ratio Perm         |      |      |      |      |       |      |       |       |      |      |      |      |
| v/c Ratio              |      |      |      |      | 0.64  |      |       | 0.67  |      |      |      |      |
| Uniform Delay, d1      |      |      |      |      | 15.0  |      |       | 8.5   |      |      |      |      |
| Progression Factor     |      |      |      |      | 1.00  |      |       | 1.00  |      |      |      |      |
| Incremental Delay, d2  |      |      |      |      | 1.3   |      |       | 1.0   |      |      |      |      |
| Delay (s)              |      |      |      |      | 16.3  |      |       | 9.5   |      |      |      |      |
| Level of Service       |      |      |      |      | B     |      |       | A     |      |      |      |      |
| Approach Delay (s)     |      | 0.0  |      |      | 16.3  |      |       | 9.5   |      |      | 0.0  |      |
| Approach LOS           |      | A    |      |      | B     |      |       | A     |      |      | A    |      |

Intersection Summary

|                                   |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 11.9  | HCM Level of Service | B   |
| HCM Volume to Capacity ratio      | 0.66  |                      |     |
| Actuated Cycle Length (s)         | 50.0  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 59.2% | ICU Level of Service | B   |
| Analysis Period (min)             | 15    |                      |     |
| c Critical Lane Group             |       |                      |     |

HCM Signalized Intersection Capacity Analysis  
 3: Elfin Forest E & San Elijo Road S.

6/10/2010



| Movement               | EBL  | EBT  | EBR  | WBL  | WBT   | WBR  | NBL   | NBT   | NBR  | SBL  | SBT  | SBR  |
|------------------------|------|------|------|------|-------|------|-------|-------|------|------|------|------|
| Lane Configurations    |      |      |      |      | ↑↑    |      |       | ↑↑    |      |      |      |      |
| Volume (vph)           | 0    | 0    | 0    | 0    | 192   | 84   | 226   | 692   | 0    | 0    | 0    | 0    |
| Ideal Flow (vphpl)     | 1900 | 1900 | 1900 | 1900 | 1900  | 1900 | 1900  | 1900  | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s)    |      |      |      |      | 4.0   |      |       | 4.0   |      |      |      |      |
| Lane Util. Factor      |      |      |      |      | 0.95  |      |       | 0.95  |      |      |      |      |
| Flt                    |      |      |      |      | 0.95  |      |       | 1.00  |      |      |      |      |
| Flt Protected          |      |      |      |      | 1.00  |      |       | 0.99  |      |      |      |      |
| Satd. Flow (prot)      |      |      |      |      | 3378  |      |       | 3496  |      |      |      |      |
| Flt Permitted          |      |      |      |      | 1.00  |      |       | 0.99  |      |      |      |      |
| Satd. Flow (perm)      |      |      |      |      | 3378  |      |       | 3496  |      |      |      |      |
| Peak-hour factor, PHF  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph)        | 0    | 0    | 0    | 0    | 209   | 91   | 246   | 752   | 0    | 0    | 0    | 0    |
| RTOR Reduction (vph)   | 0    | 0    | 0    | 0    | 69    | 0    | 0     | 59    | 0    | 0    | 0    | 0    |
| Lane Group Flow (vph)  | 0    | 0    | 0    | 0    | 231   | 0    | 0     | 939   | 0    | 0    | 0    | 0    |
| Turn Type              |      |      |      |      |       |      | Split |       |      |      |      |      |
| Protected Phases       |      |      |      |      | 8     |      | 2     | 2     |      |      |      |      |
| Permitted Phases       |      |      |      |      |       |      |       |       |      |      |      |      |
| Actuated Green, G (s)  |      |      |      |      | 8.0   |      |       | 17.3  |      |      |      |      |
| Effective Green, g (s) |      |      |      |      | 8.0   |      |       | 17.3  |      |      |      |      |
| Actuated g/C Ratio     |      |      |      |      | 0.24  |      |       | 0.52  |      |      |      |      |
| Clearance Time (s)     |      |      |      |      | 4.0   |      |       | 4.0   |      |      |      |      |
| Vehicle Extension (s)  |      |      |      |      | 3.0   |      |       | 3.0   |      |      |      |      |
| Lane Grp Cap (vph)     |      |      |      |      | 812   |      |       | 1816  |      |      |      |      |
| v/s Ratio Prot         |      |      |      |      | c0.07 |      |       | c0.27 |      |      |      |      |
| v/s Ratio Perm         |      |      |      |      |       |      |       |       |      |      |      |      |
| v/c Ratio              |      |      |      |      | 0.28  |      |       | 0.52  |      |      |      |      |
| Uniform Delay, d1      |      |      |      |      | 10.3  |      |       | 5.3   |      |      |      |      |
| Progression Factor     |      |      |      |      | 1.00  |      |       | 1.00  |      |      |      |      |
| Incremental Delay, d2  |      |      |      |      | 0.2   |      |       | 0.3   |      |      |      |      |
| Delay (s)              |      |      |      |      | 10.5  |      |       | 5.5   |      |      |      |      |
| Level of Service       |      |      |      |      | B     |      |       | A     |      |      |      |      |
| Approach Delay (s)     |      | 0.0  |      |      | 10.5  |      |       | 5.5   |      |      | 0.0  |      |
| Approach LOS           |      | A    |      |      | B     |      |       | A     |      |      | A    |      |

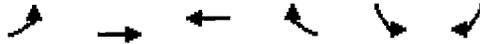
Intersection Summary

|                                   |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 6.7   | HCM Level of Service | A   |
| HCM Volume to Capacity ratio      | 0.44  |                      |     |
| Actuated Cycle Length (s)         | 33.3  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 40.4% | ICU Level of Service | A   |
| Analysis Period (min)             | 15    |                      |     |
| c Critical Lane Group             |       |                      |     |

# HCM Unsignalized Intersection Capacity Analysis

## 4: Harmony Grove Road & Questhaven Road

6/10/2010



| Movement               | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|------------------------|------|------|------|------|------|------|
| Lane Configurations    |      | ↕    | ↕    |      | ↕    |      |
| Volume (veh/h)         | 1    | 149  | 174  | 4    | 3    | 8    |
| Sign Control           |      | Free | Free |      | Stop |      |
| Grade                  |      | 0%   | 0%   |      | 0%   |      |
| Peak Hour Factor       | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 1    | 162  | 189  | 4    | 3    | 9    |
| Pedestrians            |      |      |      |      |      |      |
| Lane Width (ft)        |      |      |      |      |      |      |
| Walking Speed (ft/s)   |      |      |      |      |      |      |
| Percent Blockage       |      |      |      |      |      |      |
| Right turn flare (veh) |      |      |      |      |      |      |
| Median type            |      | None | None |      |      |      |
| Median storage (veh)   |      |      |      |      |      |      |
| Upstream signal (ft)   |      |      |      |      |      |      |
| pX, platoon unblocked  |      |      |      |      |      |      |
| vC, conflicting volume | 193  |      |      |      | 355  | 191  |
| vC1, stage 1 conf vol  |      |      |      |      |      |      |
| vC2, stage 2 conf vol  |      |      |      |      |      |      |
| vCu, unblocked vol     | 193  |      |      |      | 355  | 191  |
| tC, single (s)         | 4.1  |      |      |      | 6.4  | 6.2  |
| tC, 2 stage (s)        |      |      |      |      |      |      |
| tF (s)                 | 2.2  |      |      |      | 3.5  | 3.3  |
| p0 queue free %        | 100  |      |      |      | 99   | 99   |
| cM capacity (veh/h)    | 1380 |      |      |      | 642  | 850  |

| Direction, Lane #      | EB-1 | WB-1 | SB-1 |
|------------------------|------|------|------|
| Volume Total           | 163  | 193  | 12   |
| Volume Left            | 1    | 0    | 3    |
| Volume Right           | 0    | 4    | 9    |
| cSH                    | 1380 | 1700 | 781  |
| Volume to Capacity     | 0.00 | 0.11 | 0.02 |
| Queue Length 95th (ft) | 0    | 0    | 1    |
| Control Delay (s)      | 0.1  | 0.0  | 9.7  |
| Lane LOS               | A    |      | A    |
| Approach Delay (s)     | 0.1  | 0.0  | 9.7  |
| Approach LOS           |      |      | A    |

| Intersection Summary              |  |       |                        |
|-----------------------------------|--|-------|------------------------|
| Average Delay                     |  | 0.3   |                        |
| Intersection Capacity Utilization |  | 19.4% | ICU Level of Service A |
| Analysis Period (min)             |  | 15    |                        |

HCM Unsignalized Intersection Capacity Analysis  
 4: Harmony Grove Road & Questhaven Road

6/10/2010



| Movement               | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|------------------------|------|------|------|------|------|------|
| Lane Configurations    |      | ↕    | ↕    |      | ↕    |      |
| Volume (veh/h)         | 7    | 297  | 127  | 8    | 2    | 6    |
| Sign Control           |      | Free | Free |      | Stop |      |
| Grade                  |      | 0%   | 0%   |      | 0%   |      |
| Peak Hour Factor       | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 8    | 323  | 138  | 9    | 2    | 7    |
| Pedestrians            |      |      |      |      |      |      |
| Lane Width (ft)        |      |      |      |      |      |      |
| Walking Speed (ft/s)   |      |      |      |      |      |      |
| Percent Blockage       |      |      |      |      |      |      |
| Right turn flare (veh) |      |      |      |      |      |      |
| Median type            |      | None | None |      |      |      |
| Median storage (veh)   |      |      |      |      |      |      |
| Upstream signal (ft)   |      |      |      |      |      |      |
| pX, platoon unblocked  |      |      |      |      |      |      |
| vC, conflicting volume | 147  |      |      |      | 480  | 142  |
| vC1, stage 1 conf vol  |      |      |      |      |      |      |
| vC2, stage 2 conf vol  |      |      |      |      |      |      |
| vCu, unblocked vol     | 147  |      |      |      | 480  | 142  |
| tC, single (s)         | 4.1  |      |      |      | 6.4  | 6.2  |
| tC, 2 stage (s)        |      |      |      |      |      |      |
| tF (s)                 | 2.2  |      |      |      | 3.5  | 3.3  |
| p0 queue free %        | 99   |      |      |      | 100  | 99   |
| cM capacity (veh/h)    | 1435 |      |      |      | 541  | 905  |

| Direction Lane #       | EBL  | WBT  | SBL  |
|------------------------|------|------|------|
| Volume Total           | 330  | 147  | 9    |
| Volume Left            | 8    | 0    | 2    |
| Volume Right           | 0    | 9    | 7    |
| cSH                    | 1435 | 1700 | 775  |
| Volume to Capacity     | 0.01 | 0.09 | 0.01 |
| Queue Length 95th (ft) | 0    | 0    | 1    |
| Control Delay (s)      | 0.2  | 0.0  | 9.7  |
| Lane LOS               | A    |      | A    |
| Approach Delay (s)     | 0.2  | 0.0  | 9.7  |
| Approach LOS           |      |      | A    |

| Intersection Summary              |  |       |                        |
|-----------------------------------|--|-------|------------------------|
| Average Delay                     |  | 0.3   |                        |
| Intersection Capacity Utilization |  | 31.3% | ICU Level of Service A |
| Analysis Period (min)             |  | 15    |                        |

HCM Unsignalized Intersection Capacity Analysis  
 5: Harmony Grove Road & Via Ambiente

6/10/2010



| Movement               | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|------------------------|------|------|------|------|------|------|
| Lane Configurations    | 1    |      |      | 1    | 2    | 2    |
| Volume (veh/h)         | 131  | 21   | 19   | 184  | 2    | 8    |
| Sign Control           | Free |      |      | Free | Stop |      |
| Grade                  | 0%   |      |      | 0%   | 0%   |      |
| Peak Hour Factor       | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 142  | 23   | 21   | 200  | 2    | 9    |
| Pedestrians            |      |      |      |      |      |      |
| Lane Width (ft)        |      |      |      |      |      |      |
| Walking Speed (ft/s)   |      |      |      |      |      |      |
| Percent Blockage       |      |      |      |      |      |      |
| Right turn flare (veh) |      |      |      |      |      |      |
| Median type            | None |      |      | None |      |      |
| Median storage (veh)   |      |      |      |      |      |      |
| Upstream signal (ft)   |      |      |      |      |      |      |
| pX, platoon unblocked  |      |      |      |      |      |      |
| vC, conflicting volume |      |      | 165  |      | 395  | 154  |
| vC1, stage 1 conf vol  |      |      |      |      |      |      |
| vC2, stage 2 conf vol  |      |      |      |      |      |      |
| vCu, unblocked vol     |      |      | 165  |      | 395  | 154  |
| tC, single (s)         |      |      | 4.1  |      | 6.4  | 6.2  |
| tC, 2 stage (s)        |      |      |      |      |      |      |
| tF (s)                 |      |      | 2.2  |      | 3.5  | 3.3  |
| p0 queue free %        |      |      | 99   |      | 100  | 99   |
| cM capacity (veh/h)    |      |      | 1413 |      | 601  | 892  |

| Direction, Lane #      | EB 1 | WB 1 | NB 1 |
|------------------------|------|------|------|
| Volume Total           | 165  | 221  | 11   |
| Volume Left            | 0    | 21   | 2    |
| Volume Right           | 23   | 0    | 9    |
| cSH                    | 1700 | 1413 | 813  |
| Volume to Capacity     | 0.10 | 0.01 | 0.01 |
| Queue Length 95th (ft) | 0    | 1    | 1    |
| Control Delay (s)      | 0.0  | 0.8  | 9.5  |
| Lane LOS               |      | A    | A    |
| Approach Delay (s)     | 0.0  | 0.8  | 9.5  |
| Approach LOS           |      |      | A    |

| Intersection Summary              |  |       |                        |
|-----------------------------------|--|-------|------------------------|
| Average Delay                     |  | 0.7   |                        |
| Intersection Capacity Utilization |  | 32.2% | ICU Level of Service A |
| Analysis Period (min)             |  | 15    |                        |

HCM Unsignalized Intersection Capacity Analysis  
 5: Harmony Grove Road & Via Ambiente

6/10/2010



| Movement               | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|------------------------|------|------|------|------|------|------|
| Lane Configurations    | ↩    |      |      | ↩    | ↩    |      |
| Volume (veh/h)         | 302  | 2    | 6    | 113  | 17   | 19   |
| Sign Control           | Free |      |      | Free | Stop |      |
| Grade                  | 0%   |      |      | 0%   | 0%   |      |
| Peak Hour Factor       | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 328  | 2    | 7    | 123  | 18   | 21   |
| Pedestrians            |      |      |      |      |      |      |
| Lane Width (ft)        |      |      |      |      |      |      |
| Walking Speed (ft/s)   |      |      |      |      |      |      |
| Percent Blockage       |      |      |      |      |      |      |
| Right turn flare (veh) |      |      |      |      |      |      |
| Median type            | None |      |      | None |      |      |
| Median storage (veh)   |      |      |      |      |      |      |
| Upstream signal (ft)   |      |      |      |      |      |      |
| pX, platoon unblocked  |      |      |      |      |      |      |
| vC, conflicting volume |      |      | 330  |      | 465  | 329  |
| vC1, stage 1 conf vol  |      |      |      |      |      |      |
| vC2, stage 2 conf vol  |      |      |      |      |      |      |
| vCu, unblocked vol     |      |      | 330  |      | 465  | 329  |
| tC, single (s)         |      |      | 4.1  |      | 6.4  | 6.2  |
| tC, 2 stage (s)        |      |      |      |      |      |      |
| tF (s)                 |      |      | 2.2  |      | 3.5  | 3.3  |
| p0 queue free %        |      |      | 99   |      | 97   | 97   |
| cM capacity (veh/h)    |      |      | 1229 |      | 553  | 712  |

| Direction, Lane #      | EBL  | WBL  | NBL  |
|------------------------|------|------|------|
| Volume Total           | 330  | 129  | 39   |
| Volume Left            | 0    | 7    | 18   |
| Volume Right           | 2    | 0    | 21   |
| cSH                    | 1700 | 1229 | 627  |
| Volume to Capacity     | 0.19 | 0.01 | 0.06 |
| Queue Length 95th (ft) | 0    | 0    | 5    |
| Control Delay (s)      | 0.0  | 0.4  | 11.1 |
| Lane LOS               |      | A    | B    |
| Approach Delay (s)     | 0.0  | 0.4  | 11.1 |
| Approach LOS           |      |      | B    |

| Intersection Summary              |  |       |                        |
|-----------------------------------|--|-------|------------------------|
| Average Delay                     |  | 1.0   |                        |
| Intersection Capacity Utilization |  | 26.0% | ICU Level of Service A |
| Analysis Period (min)             |  | 15    |                        |

HCM Signalized Intersection Capacity Analysis  
 1: Elfin Forest Road E. & San Elijo Road N.

6/10/2010



| Movement                  | EBL  | EBT  | EBR  | WBL   | WBT    | WBR  | NBL  | NBT  | NBR  | SBL  | SBT   | SBR  |
|---------------------------|------|------|------|-------|--------|------|------|------|------|------|-------|------|
| Lane Configurations       |      |      |      |       | ↕↕     |      |      |      |      |      | ↕↕    |      |
| Volume (vph)              | 0    | 0    | 0    | 567   | 96     | 0    | 0    | 0    | 0    | 0    | 1133  | 24   |
| Ideal Flow (vphpl)        | 1900 | 1900 | 1900 | 1900  | 1900   | 1900 | 1900 | 1900 | 1900 | 1900 | 1900  | 1900 |
| Total Lost time (s)       |      |      |      |       | 4.0    |      |      |      |      |      | 4.0   |      |
| Lane Util. Factor         |      |      |      |       | 0.95   |      |      |      |      |      | 0.95  |      |
| Fr <sub>t</sub>           |      |      |      |       | 1.00   |      |      |      |      |      | 1.00  |      |
| Fl <sub>t</sub> Protected |      |      |      |       | 0.96   |      |      |      |      |      | 1.00  |      |
| Satd. Flow (prot)         |      |      |      |       | 3394   |      |      |      |      |      | 3528  |      |
| Fl <sub>t</sub> Permitted |      |      |      |       | 0.96   |      |      |      |      |      | 1.00  |      |
| Satd. Flow (perm)         |      |      |      |       | 3394   |      |      |      |      |      | 3528  |      |
| Peak-hour factor, PHF     | 0.92 | 0.92 | 0.92 | 0.92  | 0.92   | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 |
| Adj. Flow (vph)           | 0    | 0    | 0    | 616   | 104    | 0    | 0    | 0    | 0    | 0    | 1232  | 26   |
| RTOR Reduction (vph)      | 0    | 0    | 0    | 0     | 33     | 0    | 0    | 0    | 0    | 0    | 2     | 0    |
| Lane Group Flow (vph)     | 0    | 0    | 0    | 0     | 687    | 0    | 0    | 0    | 0    | 0    | 1256  | 0    |
| Turn Type                 |      |      |      | Split |        |      |      |      |      |      |       |      |
| Protected Phases          |      |      |      | 8     | 8      |      |      |      |      |      | 6     |      |
| Permitted Phases          |      |      |      |       |        |      |      |      |      |      |       |      |
| Actuated Green, G (s)     |      |      |      |       | 16.0   |      |      |      |      |      | 26.5  |      |
| Effective Green, g (s)    |      |      |      |       | 16.0   |      |      |      |      |      | 26.5  |      |
| Actuated g/C Ratio        |      |      |      |       | 0.32   |      |      |      |      |      | 0.52  |      |
| Clearance Time (s)        |      |      |      |       | 4.0    |      |      |      |      |      | 4.0   |      |
| Vehicle Extension (s)     |      |      |      |       | 3.0    |      |      |      |      |      | 3.0   |      |
| Lane Grp Cap (vph)        |      |      |      |       | 1075   |      |      |      |      |      | 1851  |      |
| v/s Ratio Prot            |      |      |      |       | c0.20  |      |      |      |      |      | c0.36 |      |
| v/s Ratio Perm            |      |      |      |       |        |      |      |      |      |      |       |      |
| v/c Ratio                 |      |      |      |       | 1.04dl |      |      |      |      |      | 0.68  |      |
| Uniform Delay, d1         |      |      |      |       | 14.8   |      |      |      |      |      | 8.9   |      |
| Progression Factor        |      |      |      |       | 1.00   |      |      |      |      |      | 1.00  |      |
| Incremental Delay, d2     |      |      |      |       | 1.3    |      |      |      |      |      | 1.0   |      |
| Delay (s)                 |      |      |      |       | 16.0   |      |      |      |      |      | 9.9   |      |
| Level of Service          |      |      |      |       | B      |      |      |      |      |      | A     |      |
| Approach Delay (s)        |      | 0.0  |      |       | 16.0   |      |      | 0.0  |      |      | 9.9   |      |
| Approach LOS              |      | A    |      |       | B      |      |      | A    |      |      | A     |      |

Intersection Summary

|                                   |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 12.1  | HCM Level of Service | B   |
| HCM Volume to Capacity ratio      | 0.66  |                      |     |
| Actuated Cycle Length (s)         | 50.5  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 57.9% | ICU Level of Service | B   |
| Analysis Period (min)             | 15    |                      |     |

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 1: Elfin Forest Road E. & San Elijo Road N.

6/10/2010



| Movement                  | EBL  | EBT  | EBR  | WBL   | WBT   | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR   |
|---------------------------|------|------|------|-------|-------|------|------|------|------|------|------|-------|
| Lane Configurations       |      |      |      |       | ↕↕    |      |      |      |      |      | ↕↕   |       |
| Volume (vph)              | 0    | 0    | 0    | 236   | 203   | 0    | 0    | 0    | 0    | 0    | 577  | 66    |
| Ideal Flow (vphpl)        | 1900 | 1900 | 1900 | 1900  | 1900  | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900  |
| Total Lost time (s)       |      |      |      |       | 4.0   |      |      |      |      |      | 4.0  |       |
| Lane Util. Factor         |      |      |      |       | 0.95  |      |      |      |      |      | 0.95 |       |
| Fr <sub>t</sub>           |      |      |      |       | 1.00  |      |      |      |      |      | 0.98 |       |
| Fl <sub>t</sub> Protected |      |      |      |       | 0.97  |      |      |      |      |      | 1.00 |       |
| Satd. Flow (prot)         |      |      |      |       | 3447  |      |      |      |      |      | 3485 |       |
| Fl <sub>t</sub> Permitted |      |      |      |       | 0.97  |      |      |      |      |      | 1.00 |       |
| Satd. Flow (perm)         |      |      |      |       | 3447  |      |      |      |      |      | 3485 |       |
| Peak-hour factor, PHF     | 0.92 | 0.92 | 0.92 | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  |
| Adj. Flow (vph)           | 0    | 0    | 0    | 257   | 221   | 0    | 0    | 0    | 0    | 0    | 627  | 72    |
| RTOR Reduction (vph)      | 0    | 0    | 0    | 0     | 139   | 0    | 0    | 0    | 0    | 0    | 16   | 0     |
| Lane Group Flow (vph)     | 0    | 0    | 0    | 0     | 339   | 0    | 0    | 0    | 0    | 0    | 683  | 0     |
| Turn Type                 |      |      |      | Split |       |      |      |      |      |      |      |       |
| Protected Phases          |      |      |      | 8     | 8     |      |      |      |      |      |      | 6     |
| Permitted Phases          |      |      |      |       |       |      |      |      |      |      |      |       |
| Actuated Green, G (s)     |      |      |      |       | 8.9   |      |      |      |      |      |      | 12.5  |
| Effective Green, g (s)    |      |      |      |       | 8.9   |      |      |      |      |      |      | 12.5  |
| Actuated g/C Ratio        |      |      |      |       | 0.30  |      |      |      |      |      |      | 0.43  |
| Clearance Time (s)        |      |      |      |       | 4.0   |      |      |      |      |      |      | 4.0   |
| Vehicle Extension (s)     |      |      |      |       | 3.0   |      |      |      |      |      |      | 3.0   |
| Lane Grp Cap (vph)        |      |      |      |       | 1043  |      |      |      |      |      |      | 1482  |
| v/s Ratio Prot            |      |      |      |       | c0.10 |      |      |      |      |      |      | c0.20 |
| v/s Ratio Perm            |      |      |      |       |       |      |      |      |      |      |      |       |
| v/c Ratio                 |      |      |      |       | 0.32  |      |      |      |      |      |      | 0.46  |
| Uniform Delay, d1         |      |      |      |       | 7.9   |      |      |      |      |      |      | 6.0   |
| Progression Factor        |      |      |      |       | 1.00  |      |      |      |      |      |      | 1.00  |
| Incremental Delay, d2     |      |      |      |       | 0.2   |      |      |      |      |      |      | 0.2   |
| Delay (s)                 |      |      |      |       | 8.1   |      |      |      |      |      |      | 6.3   |
| Level of Service          |      |      |      |       | A     |      |      |      |      |      |      | A     |
| Approach Delay (s)        |      | 0.0  |      |       | 8.1   |      |      | 0.0  |      |      |      | 6.3   |
| Approach LOS              |      | A    |      |       | A     |      |      | A    |      |      |      | A     |

### Intersection Summary

|                                   |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 7.0   | HCM Level of Service | A   |
| HCM Volume to Capacity ratio      | 0.40  |                      |     |
| Actuated Cycle Length (s)         | 29.4  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 37.2% | ICU Level of Service | A   |
| Analysis Period (min)             | 15    |                      |     |
| c Critical Lane Group             |       |                      |     |

HCM Signalized Intersection Capacity Analysis  
 2: Elfin Forest Road W. & San Elijo Road S.

6/10/2010



| Movement               | EBL   | EBT   | EBR  | WBL  | WBT  | WBR  | NBL  | NBT   | NBR  | SBL  | SBT  | SBR  |
|------------------------|-------|-------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations    |       | ↑↑    |      |      |      |      |      | ↑↑    |      |      |      |      |
| Volume (vph)           | 147   | 371   | 0    | 0    | 0    | 0    | 0    | 933   | 232  | 0    | 0    | 0    |
| Ideal Flow (vphpl)     | 1900  | 1900  | 1900 | 1900 | 1900 | 1900 | 1900 | 1900  | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s)    |       | 4.0   |      |      |      |      |      | 4.0   |      |      |      |      |
| Lane Util. Factor      |       | 0.95  |      |      |      |      |      | 0.95  |      |      |      |      |
| Fr't                   |       | 1.00  |      |      |      |      |      | 0.97  |      |      |      |      |
| Flt Protected          |       | 0.99  |      |      |      |      |      | 1.00  |      |      |      |      |
| Satd. Flow (prot)      |       | 3490  |      |      |      |      |      | 3434  |      |      |      |      |
| Flt Permitted          |       | 0.99  |      |      |      |      |      | 1.00  |      |      |      |      |
| Satd. Flow (perm)      |       | 3490  |      |      |      |      |      | 3434  |      |      |      |      |
| Peak-hour factor, PHF  | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph)        | 160   | 403   | 0    | 0    | 0    | 0    | 0    | 1014  | 252  | 0    | 0    | 0    |
| RTOR Reduction (vph)   | 0     | 74    | 0    | 0    | 0    | 0    | 0    | 37    | 0    | 0    | 0    | 0    |
| Lane Group Flow (vph)  | 0     | 489   | 0    | 0    | 0    | 0    | 0    | 1229  | 0    | 0    | 0    | 0    |
| Turn Type              | Split |       |      |      |      |      |      |       |      |      |      |      |
| Protected Phases       | 4     | 4     |      |      |      |      |      | 2     |      |      |      |      |
| Permitted Phases       |       |       |      |      |      |      |      |       |      |      |      |      |
| Actuated Green, G (s)  |       | 12.6  |      |      |      |      |      | 25.8  |      |      |      |      |
| Effective Green, g (s) |       | 12.6  |      |      |      |      |      | 25.8  |      |      |      |      |
| Actuated g/C Ratio     |       | 0.27  |      |      |      |      |      | 0.56  |      |      |      |      |
| Clearance Time (s)     |       | 4.0   |      |      |      |      |      | 4.0   |      |      |      |      |
| Vehicle Extension (s)  |       | 3.0   |      |      |      |      |      | 3.0   |      |      |      |      |
| Lane Grp Cap (vph)     |       | 948   |      |      |      |      |      | 1909  |      |      |      |      |
| v/s Ratio Prot         |       | c0.14 |      |      |      |      |      | c0.36 |      |      |      |      |
| v/s Ratio Perm         |       |       |      |      |      |      |      |       |      |      |      |      |
| w/c Ratio              |       | 0.52  |      |      |      |      |      | 0.64  |      |      |      |      |
| Uniform Delay, d1      |       | 14.3  |      |      |      |      |      | 7.1   |      |      |      |      |
| Progression Factor     |       | 1.00  |      |      |      |      |      | 1.00  |      |      |      |      |
| Incremental Delay, d2  |       | 0.5   |      |      |      |      |      | 0.8   |      |      |      |      |
| Delay (s)              |       | 14.8  |      |      |      |      |      | 7.9   |      |      |      |      |
| Level of Service       |       | B     |      |      |      |      |      | A     |      |      |      |      |
| Approach Delay (s)     |       | 14.8  |      |      | 0.0  |      |      | 7.9   |      |      | 0.0  |      |
| Approach LOS           |       | B     |      |      | A    |      |      | A     |      |      | A    |      |

| Intersection Summary              |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 10.0  | HCM Level of Service | B   |
| HCM Volume to Capacity ratio      | 0.60  |                      |     |
| Actuated Cycle Length (s)         | 46.4  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 54.4% | ICU Level of Service | A   |
| Analysis Period (min)             | 15    |                      |     |
| c Critical Lane Group             |       |                      |     |

# HCM Signalized Intersection Capacity Analysis

## 2: Elfin Forest Road W. & San Elijo Road S.

6/10/2010



| Movement               | EBL   | EBT   | EBR  | WBL  | WBT  | WBR  | NBL  | NBT   | NBR  | SBL  | SBT  | SBR  |
|------------------------|-------|-------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations    |       | ↑↑    |      |      |      |      |      | ↑↑    |      |      |      |      |
| Volume (vph)           | 57    | 115   | 0    | 0    | 0    | 0    | 0    | 934   | 323  | 0    | 0    | 0    |
| Ideal Flow (vphpl)     | 1900  | 1900  | 1900 | 1900 | 1900 | 1900 | 1900 | 1900  | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s)    |       | 4.0   |      |      |      |      |      | 4.0   |      |      |      |      |
| Lane Util. Factor      |       | 0.95  |      |      |      |      |      | 0.95  |      |      |      |      |
| Flt                    |       | 1.00  |      |      |      |      |      | 0.96  |      |      |      |      |
| Flt Protected          |       | 0.98  |      |      |      |      |      | 1.00  |      |      |      |      |
| Satd. Flow (prot)      |       | 3482  |      |      |      |      |      | 3403  |      |      |      |      |
| Flt Permitted          |       | 0.98  |      |      |      |      |      | 1.00  |      |      |      |      |
| Satd. Flow (perm)      |       | 3482  |      |      |      |      |      | 3403  |      |      |      |      |
| Peak-hour factor, PHF  | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph)        | 62    | 125   | 0    | 0    | 0    | 0    | 0    | 1015  | 351  | 0    | 0    | 0    |
| RTOR Reduction (vph)   | 0     | 53    | 0    | 0    | 0    | 0    | 0    | 49    | 0    | 0    | 0    | 0    |
| Lane Group Flow (vph)  | 0     | 134   | 0    | 0    | 0    | 0    | 0    | 1317  | 0    | 0    | 0    | 0    |
| Turn Type              | Split |       |      |      |      |      |      |       |      |      |      |      |
| Protected Phases       | 4     | 4     |      |      |      |      |      | 2     |      |      |      |      |
| Permitted Phases       |       |       |      |      |      |      |      |       |      |      |      |      |
| Actuated Green, G (s)  |       | 5.4   |      |      |      |      |      | 25.5  |      |      |      |      |
| Effective Green, g (s) |       | 5.4   |      |      |      |      |      | 25.5  |      |      |      |      |
| Actuated g/C Ratio     |       | 0.14  |      |      |      |      |      | 0.66  |      |      |      |      |
| Clearance Time (s)     |       | 4.0   |      |      |      |      |      | 4.0   |      |      |      |      |
| Vehicle Extension (s)  |       | 3.0   |      |      |      |      |      | 3.0   |      |      |      |      |
| Lane Grp Cap (vph)     |       | 483   |      |      |      |      |      | 2231  |      |      |      |      |
| v/s Ratio Prot         |       | c0.04 |      |      |      |      |      | c0.39 |      |      |      |      |
| v/s Ratio Perm         |       |       |      |      |      |      |      |       |      |      |      |      |
| v/c Ratio              |       | 0.28  |      |      |      |      |      | 0.59  |      |      |      |      |
| Uniform Delay, d1      |       | 15.0  |      |      |      |      |      | 3.8   |      |      |      |      |
| Progression Factor     |       | 1.00  |      |      |      |      |      | 1.00  |      |      |      |      |
| Incremental Delay, d2  |       | 0.3   |      |      |      |      |      | 0.4   |      |      |      |      |
| Delay (s)              |       | 15.3  |      |      |      |      |      | 4.2   |      |      |      |      |
| Level of Service       |       | B     |      |      |      |      |      | A     |      |      |      |      |
| Approach Delay (s)     |       | 15.3  |      |      | 0.0  |      |      | 4.2   |      |      | 0.0  |      |
| Approach LOS           |       | B     |      |      | A    |      |      | A     |      |      | A    |      |

### Intersection Summary

|                                   |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 5.5   | HCM Level of Service | A   |
| HCM Volume to Capacity ratio      | 0.54  |                      |     |
| Actuated Cycle Length (s)         | 38.9  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 47.6% | ICU Level of Service | A   |
| Analysis Period (min)             | 15    |                      |     |
| c Critical Lane Group             |       |                      |     |

HCM Signalized Intersection Capacity Analysis  
 3: Elfin Forest E & San Elijo Road S.

6/10/2010



| Movement               | EBL  | EBT  | EBR  | WBL  | WBT   | WBR  | NBL   | NBT   | NBR  | SBL  | SBT  | SBR  |
|------------------------|------|------|------|------|-------|------|-------|-------|------|------|------|------|
| Lane Configurations    |      |      |      |      | ↑↑    |      |       | ↑↑    |      |      |      |      |
| Volume (vph)           | 0    | 0    | 0    | 0    | 434   | 232  | 240   | 955   | 0    | 0    | 0    | 0    |
| Ideal Flow (vphpl)     | 1900 | 1900 | 1900 | 1900 | 1900  | 1900 | 1900  | 1900  | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s)    |      |      |      |      | 4.0   |      |       | 4.0   |      |      |      |      |
| Lane Util. Factor      |      |      |      |      | 0.95  |      |       | 0.95  |      |      |      |      |
| Flt                    |      |      |      |      | 0.95  |      |       | 1.00  |      |      |      |      |
| Flt Protected          |      |      |      |      | 1.00  |      |       | 0.99  |      |      |      |      |
| Satd. Flow (prot)      |      |      |      |      | 3354  |      |       | 3504  |      |      |      |      |
| Flt Permitted          |      |      |      |      | 1.00  |      |       | 0.99  |      |      |      |      |
| Satd. Flow (perm)      |      |      |      |      | 3354  |      |       | 3504  |      |      |      |      |
| Peak-hour factor, PHF  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph)        | 0    | 0    | 0    | 0    | 472   | 252  | 261   | 1038  | 0    | 0    | 0    | 0    |
| RTOR Reduction (vph)   | 0    | 0    | 0    | 0    | 62    | 0    | 0     | 38    | 0    | 0    | 0    | 0    |
| Lane Group Flow (vph)  | 0    | 0    | 0    | 0    | 662   | 0    | 0     | 1261  | 0    | 0    | 0    | 0    |
| Turn Type              |      |      |      |      |       |      | Split |       |      |      |      |      |
| Protected Phases       |      |      |      |      | 8     |      | 2     | 2     |      |      |      |      |
| Permitted Phases       |      |      |      |      |       |      |       |       |      |      |      |      |
| Actuated Green, G (s)  |      |      |      |      | 15.3  |      |       | 26.7  |      |      |      |      |
| Effective Green, g (s) |      |      |      |      | 15.3  |      |       | 26.7  |      |      |      |      |
| Actuated g/C Ratio     |      |      |      |      | 0.31  |      |       | 0.53  |      |      |      |      |
| Clearance Time (s)     |      |      |      |      | 4.0   |      |       | 4.0   |      |      |      |      |
| Vehicle Extension (s)  |      |      |      |      | 3.0   |      |       | 3.0   |      |      |      |      |
| Lane Grp Cap (vph)     |      |      |      |      | 1026  |      |       | 1871  |      |      |      |      |
| v/s Ratio Prot         |      |      |      |      | c0.20 |      |       | c0.36 |      |      |      |      |
| v/s Ratio Perm         |      |      |      |      |       |      |       |       |      |      |      |      |
| v/c Ratio              |      |      |      |      | 0.65  |      |       | 0.67  |      |      |      |      |
| Uniform Delay, d1      |      |      |      |      | 15.0  |      |       | 8.5   |      |      |      |      |
| Progression Factor     |      |      |      |      | 1.00  |      |       | 1.00  |      |      |      |      |
| Incremental Delay, d2  |      |      |      |      | 1.4   |      |       | 1.0   |      |      |      |      |
| Delay (s)              |      |      |      |      | 16.4  |      |       | 9.5   |      |      |      |      |
| Level of Service       |      |      |      |      | B     |      |       | A     |      |      |      |      |
| Approach Delay (s)     |      | 0.0  |      |      | 16.4  |      |       | 9.5   |      |      | 0.0  |      |
| Approach LOS           |      | A    |      |      | B     |      |       | A     |      |      | A    |      |

Intersection Summary

|                                   |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 11.9  | HCM Level of Service | B   |
| HCM Volume to Capacity ratio      | 0.66  |                      |     |
| Actuated Cycle Length (s)         | 50.0  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 59.5% | ICU Level of Service | B   |
| Analysis Period (min)             | 15    |                      |     |
| c Critical Lane Group             |       |                      |     |

# HCM Signalized Intersection Capacity Analysis

## 3: Elfin Forest E & San Elijo Road S.

6/10/2010



| Movement               | EBL  | EBT  | EBR  | WBL  | WBT   | WBR  | NBL   | NBT   | NBR  | SBL  | SBT  | SBR  |
|------------------------|------|------|------|------|-------|------|-------|-------|------|------|------|------|
| Lane Configurations    |      |      |      |      | ↑↑    |      |       | ↑↑    |      |      |      |      |
| Volume (vph)           | 0    | 0    | 0    | 0    | 192   | 91   | 226   | 692   | 0    | 0    | 0    | 0    |
| Ideal Flow (vphpl)     | 1900 | 1900 | 1900 | 1900 | 1900  | 1900 | 1900  | 1900  | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s)    |      |      |      |      | 4.0   |      |       | 4.0   |      |      |      |      |
| Lane Util. Factor      |      |      |      |      | 0.95  |      |       | 0.95  |      |      |      |      |
| Fr't                   |      |      |      |      | 0.95  |      |       | 1.00  |      |      |      |      |
| Flt Protected          |      |      |      |      | 1.00  |      |       | 0.99  |      |      |      |      |
| Satd. Flow (prot)      |      |      |      |      | 3369  |      |       | 3496  |      |      |      |      |
| Flt Permitted          |      |      |      |      | 1.00  |      |       | 0.99  |      |      |      |      |
| Satd. Flow (perm)      |      |      |      |      | 3369  |      |       | 3496  |      |      |      |      |
| Peak-hour factor, PHF  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph)        | 0    | 0    | 0    | 0    | 209   | 99   | 246   | 752   | 0    | 0    | 0    | 0    |
| RTOR Reduction (vph)   | 0    | 0    | 0    | 0    | 75    | 0    | 0     | 59    | 0    | 0    | 0    | 0    |
| Lane Group Flow (vph)  | 0    | 0    | 0    | 0    | 233   | 0    | 0     | 939   | 0    | 0    | 0    | 0    |
| Turn Type              |      |      |      |      |       |      | Split |       |      |      |      |      |
| Protected Phases       |      |      |      |      | 8     |      | 2     | 2     |      |      |      |      |
| Permitted Phases       |      |      |      |      |       |      |       |       |      |      |      |      |
| Actuated Green, G (s)  |      |      |      |      | 8.0   |      |       | 17.3  |      |      |      |      |
| Effective Green, g (s) |      |      |      |      | 8.0   |      |       | 17.3  |      |      |      |      |
| Actuated g/C Ratio     |      |      |      |      | 0.24  |      |       | 0.52  |      |      |      |      |
| Clearance Time (s)     |      |      |      |      | 4.0   |      |       | 4.0   |      |      |      |      |
| Vehicle Extension (s)  |      |      |      |      | 3.0   |      |       | 3.0   |      |      |      |      |
| Lane Grp Cap (vph)     |      |      |      |      | 809   |      |       | 1816  |      |      |      |      |
| v/s Ratio Prot         |      |      |      |      | c0.07 |      |       | c0.27 |      |      |      |      |
| v/s Ratio Perm         |      |      |      |      |       |      |       |       |      |      |      |      |
| v/c Ratio              |      |      |      |      | 0.29  |      |       | 0.52  |      |      |      |      |
| Uniform Delay, d1      |      |      |      |      | 10.3  |      |       | 5.3   |      |      |      |      |
| Progression Factor     |      |      |      |      | 1.00  |      |       | 1.00  |      |      |      |      |
| Incremental Delay, d2  |      |      |      |      | 0.2   |      |       | 0.3   |      |      |      |      |
| Delay (s)              |      |      |      |      | 10.5  |      |       | 5.5   |      |      |      |      |
| Level of Service       |      |      |      |      | B     |      |       | A     |      |      |      |      |
| Approach Delay (s)     |      | 0.0  |      |      | 10.5  |      |       | 5.5   |      |      | 0.0  |      |
| Approach LOS           |      | A    |      |      | B     |      |       | A     |      |      | A    |      |

### Intersection Summary

|                                   |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 6.7   | HCM Level of Service | A   |
| HCM Volume to Capacity ratio      | 0.44  |                      |     |
| Actuated Cycle Length (s)         | 33.3  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 40.6% | ICU Level of Service | A   |
| Analysis Period (min)             | 15    |                      |     |
| c Critical Lane Group             |       |                      |     |

# HCM Unsignalized Intersection Capacity Analysis

## 4: Harmony Grove Road & Questhaven Road

6/10/2010



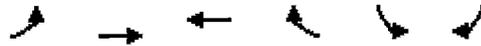
| Movement               | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|------------------------|------|------|------|------|------|------|
| Lane Configurations    |      | ↔    | ↔    |      | ↔    |      |
| Volume (veh/h)         | 1    | 153  | 178  | 4    | 3    | 8    |
| Sign Control           |      | Free | Free |      | Stop |      |
| Grade                  |      | 0%   | 0%   |      | 0%   |      |
| Peak Hour Factor       | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 1    | 166  | 193  | 4    | 3    | 9    |
| Pedestrians            |      |      |      |      |      |      |
| Lane Width (ft)        |      |      |      |      |      |      |
| Walking Speed (ft/s)   |      |      |      |      |      |      |
| Percent Blockage       |      |      |      |      |      |      |
| Right turn flare (veh) |      |      |      |      |      |      |
| Median type            |      | None | None |      |      |      |
| Median storage (veh)   |      |      |      |      |      |      |
| Upstream signal (ft)   |      |      |      |      |      |      |
| pX, platoon unblocked  |      |      |      |      |      |      |
| vC, conflicting volume | 198  |      |      | 364  | 196  |      |
| vC1, stage 1 conf vol  |      |      |      |      |      |      |
| vC2, stage 2 conf vol  |      |      |      |      |      |      |
| vCu, unblocked vol     | 198  |      |      | 364  | 196  |      |
| tC, single (s)         | 4.1  |      |      | 6.4  | 6.2  |      |
| tC, 2 stage (s)        |      |      |      |      |      |      |
| tF (s)                 | 2.2  |      |      | 3.5  | 3.3  |      |
| p0 queue free %        | 100  |      |      | 99   | 99   |      |
| cM capacity (veh/h)    | 1375 |      |      | 635  | 846  |      |

| Direction Lane #       | EBL  | WBT  | SBL  |
|------------------------|------|------|------|
| Volume Total           | 167  | 198  | 12   |
| Volume Left            | 1    | 0    | 3    |
| Volume Right           | 0    | 4    | 9    |
| cSH                    | 1375 | 1700 | 775  |
| Volume to Capacity     | 0.00 | 0.12 | 0.02 |
| Queue Length 95th (ft) | 0    | 0    | 1    |
| Control Delay (s)      | 0.1  | 0.0  | 9.7  |
| Lane LOS               | A    |      | A    |
| Approach Delay (s)     | 0.1  | 0.0  | 9.7  |
| Approach LOS           |      |      | A    |

| Intersection Summary              |  |       |                        |
|-----------------------------------|--|-------|------------------------|
| Average Delay                     |  | 0.3   |                        |
| Intersection Capacity Utilization |  | 19.6% | ICU Level of Service A |
| Analysis Period (min)             |  | 15    |                        |

HCM Unsignalized Intersection Capacity Analysis  
 4: Harmony Grove Road & Questhaven Road

6/10/2010



| Movement               | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|------------------------|------|------|------|------|------|------|
| Lane Configurations    |      | ↔    | ↔    |      | ↔    |      |
| Volume (veh/h)         | 7    | 301  | 131  | 8    | 2    | 6    |
| Sign Control           |      | Free | Free |      | Stop |      |
| Grade                  |      | 0%   | 0%   |      | 0%   |      |
| Peak Hour Factor       | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 8    | 327  | 142  | 9    | 2    | 7    |
| Pedestrians            |      |      |      |      |      |      |
| Lane Width (ft)        |      |      |      |      |      |      |
| Walking Speed (ft/s)   |      |      |      |      |      |      |
| Percent Blockage       |      |      |      |      |      |      |
| Right turn flare (veh) |      |      |      |      |      |      |
| Median type            |      | None | None |      |      |      |
| Median storage (veh)   |      |      |      |      |      |      |
| Upstream signal (ft)   |      |      |      |      |      |      |
| pX, platoon unblocked  |      |      |      |      |      |      |
| vC, conflicting volume | 151  |      |      |      | 489  | 147  |
| vC1, stage 1 conf vol  |      |      |      |      |      |      |
| vC2, stage 2 conf vol  |      |      |      |      |      |      |
| vCu, unblocked vol     | 151  |      |      |      | 489  | 147  |
| tC, single (s)         | 4.1  |      |      |      | 6.4  | 6.2  |
| tC, 2 stage (s)        |      |      |      |      |      |      |
| tF (s)                 | 2.2  |      |      |      | 3.5  | 3.3  |
| p0 queue free %        | 99   |      |      |      | 100  | 99   |
| cM capacity (veh/h)    | 1430 |      |      |      | 535  | 900  |

| Direction, Lane #      | EBL  | WBL  | SBL  |
|------------------------|------|------|------|
| Volume Total           | 335  | 151  | 9    |
| Volume Left            | 8    | 0    | 2    |
| Volume Right           | 0    | 9    | 7    |
| cSH                    | 1430 | 1700 | 769  |
| Volume to Capacity     | 0.01 | 0.09 | 0.01 |
| Queue Length 95th (ft) | 0    | 0    | 1    |
| Control Delay (s)      | 0.2  | 0.0  | 9.7  |
| Lane LOS               | A    |      | A    |
| Approach Delay (s)     | 0.2  | 0.0  | 9.7  |
| Approach LOS           |      |      | A    |

| Intersection Summary              |  |       |                        |
|-----------------------------------|--|-------|------------------------|
| Average Delay                     |  | 0.3   |                        |
| Intersection Capacity Utilization |  | 31.5% | ICU Level of Service A |
| Analysis Period (min)             |  | 15    |                        |

HCM Unsignalized Intersection Capacity Analysis  
 5: Harmony Grove Road & Via Ambiente

6/10/2010



| Movement               | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|------------------------|------|------|------|------|------|------|
| Lane Configurations    | ↑    |      |      | ↑    | ↑    |      |
| Volume (veh/h)         | 128  | 25   | 15   | 181  | 6    | 4    |
| Sign Control           | Free |      |      | Free | Stop |      |
| Grade                  | 0%   |      |      | 0%   | 0%   |      |
| Peak Hour Factor       | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 139  | 27   | 16   | 197  | 7    | 4    |
| Pedestrians            |      |      |      |      |      |      |
| Lane Width (ft)        |      |      |      |      |      |      |
| Walking Speed (ft/s)   |      |      |      |      |      |      |
| Percent Blockage       |      |      |      |      |      |      |
| Right turn flare (veh) |      |      |      |      |      |      |
| Median type            | None |      |      | None |      |      |
| Median storage (veh)   |      |      |      |      |      |      |
| Upstream signal (ft)   |      |      |      |      |      |      |
| pX, platoon unblocked  |      |      |      |      |      |      |
| vC, conflicting volume |      |      | 166  |      | 382  | 153  |
| vC1, stage 1 conf vol  |      |      |      |      |      |      |
| vC2, stage 2 conf vol  |      |      |      |      |      |      |
| vCu, unblocked vol     |      |      | 166  |      | 382  | 153  |
| tC, single (s)         |      |      | 4.1  |      | 6.4  | 6.2  |
| tC, 2 stage (s)        |      |      |      |      |      |      |
| tF (s)                 |      |      | 2.2  |      | 3.5  | 3.3  |
| p0 queue free %        |      |      | 99   |      | 99   | 100  |
| cM capacity (veh/h)    |      |      | 1412 |      | 613  | 893  |

| Direction-Lane #       | EB 1 | WB 1 | NB 1 |
|------------------------|------|------|------|
| Volume Total           | 166  | 213  | 11   |
| Volume Left            | 0    | 16   | 7    |
| Volume Right           | 27   | 0    | 4    |
| cSH                    | 1700 | 1412 | 701  |
| Volume to Capacity     | 0.10 | 0.01 | 0.02 |
| Queue Length 95th (ft) | 0    | 1    | 1    |
| Control Delay (s)      | 0.0  | 0.7  | 10.2 |
| Lane LOS               |      | A    | B    |
| Approach Delay (s)     | 0.0  | 0.7  | 10.2 |
| Approach LOS           |      |      | B    |

| Intersection Summary              |  |       |                        |
|-----------------------------------|--|-------|------------------------|
| Average Delay                     |  | 0.7   |                        |
| Intersection Capacity Utilization |  | 31.9% | ICU Level of Service A |
| Analysis Period (min)             |  | 15    |                        |

HCM Unsignalized Intersection Capacity Analysis  
 5: Harmony Grove Road & Via Ambiente

6/10/2010



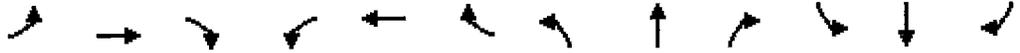
| Movement               | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|------------------------|------|------|------|------|------|------|
| Lane Configurations    | ↔    |      |      | ↔    | ↔    |      |
| Volume (veh/h)         | 299  | 6    | 2    | 110  | 21   | 15   |
| Sign Control           | Free |      |      | Free | Stop |      |
| Grade                  | 0%   |      |      | 0%   | 0%   |      |
| Peak Hour Factor       | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 325  | 7    | 2    | 120  | 23   | 16   |
| Pedestrians            |      |      |      |      |      |      |
| Lane Width (ft)        |      |      |      |      |      |      |
| Walking Speed (ft/s)   |      |      |      |      |      |      |
| Percent Blockage       |      |      |      |      |      |      |
| Right turn flare (veh) |      |      |      |      |      |      |
| Median type            | None |      |      | None |      |      |
| Median storage (veh)   |      |      |      |      |      |      |
| Upstream signal (ft)   |      |      |      |      |      |      |
| pX, platoon unblocked  |      |      |      |      |      |      |
| vC, conflicting volume |      |      | 332  |      | 452  | 328  |
| vC1, stage 1 conf vol  |      |      |      |      |      |      |
| vC2, stage 2 conf vol  |      |      |      |      |      |      |
| vCu, unblocked vol     |      |      | 332  |      | 452  | 328  |
| tC, single (s)         |      |      | 4.1  |      | 6.4  | 6.2  |
| tC, 2 stage (s)        |      |      |      |      |      |      |
| tF (s)                 |      |      | 2.2  |      | 3.5  | 3.3  |
| p0 queue free %        |      |      | 100  |      | 96   | 98   |
| cM capacity (veh/h)    |      |      | 1228 |      | 564  | 713  |

| Direction Lane #       | EBT  | WBT  | NBT  |
|------------------------|------|------|------|
| Volume Total           | 332  | 122  | 39   |
| Volume Left            | 0    | 2    | 23   |
| Volume Right           | 7    | 0    | 16   |
| cSH                    | 1700 | 1228 | 618  |
| Volume to Capacity     | 0.20 | 0.00 | 0.06 |
| Queue Length 95th (ft) | 0    | 0    | 5    |
| Control Delay (s)      | 0.0  | 0.2  | 11.2 |
| Lane LOS               |      | A    | B    |
| Approach Delay (s)     | 0.0  | 0.2  | 11.2 |
| Approach LOS           |      |      | B    |

| Intersection Summary              |  |       |                        |
|-----------------------------------|--|-------|------------------------|
| Average Delay                     |  | 0.9   |                        |
| Intersection Capacity Utilization |  | 26.1% | ICU Level of Service A |
| Analysis Period (min)             |  | 15    |                        |

HCM Signalized Intersection Capacity Analysis  
 1: Elfin Forest Road E. & San Elijo Road N.

6/10/2010



| Movement               | EBL  | EBT  | EBR  | WBL   | WBT    | WBR  | NBL  | NBT  | NBR  | SBL  | SBT   | SBR  |
|------------------------|------|------|------|-------|--------|------|------|------|------|------|-------|------|
| Lane Configurations    |      |      |      |       | ↔↔     |      |      |      |      |      | ↔↔    |      |
| Volume (vph)           | 0    | 0    | 0    | 567   | 96     | 0    | 0    | 0    | 0    | 0    | 1129  | 24   |
| Ideal Flow (vphpl)     | 1900 | 1900 | 1900 | 1900  | 1900   | 1900 | 1900 | 1900 | 1900 | 1900 | 1900  | 1900 |
| Total Lost time (s)    |      |      |      |       | 4.0    |      |      |      |      |      | 4.0   |      |
| Lane Util. Factor      |      |      |      |       | 0.95   |      |      |      |      |      | 0.95  |      |
| Frt                    |      |      |      |       | 1.00   |      |      |      |      |      | 1.00  |      |
| Flt Protected          |      |      |      |       | 0.96   |      |      |      |      |      | 1.00  |      |
| Satd. Flow (prot)      |      |      |      |       | 3394   |      |      |      |      |      | 3528  |      |
| Flt Permitted          |      |      |      |       | 0.96   |      |      |      |      |      | 1.00  |      |
| Satd. Flow (perm)      |      |      |      |       | 3394   |      |      |      |      |      | 3528  |      |
| Peak-hour factor, PHF  | 0.92 | 0.92 | 0.92 | 0.92  | 0.92   | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 |
| Adj. Flow (vph)        | 0    | 0    | 0    | 616   | 104    | 0    | 0    | 0    | 0    | 0    | 1227  | 26   |
| RTOR Reduction (vph)   | 0    | 0    | 0    | 0     | 34     | 0    | 0    | 0    | 0    | 0    | 2     | 0    |
| Lane Group Flow (vph)  | 0    | 0    | 0    | 0     | 686    | 0    | 0    | 0    | 0    | 0    | 1251  | 0    |
| Turn Type              |      |      |      | Split |        |      |      |      |      |      |       |      |
| Protected Phases       |      |      |      | 8     | 8      |      |      |      |      |      |       | 6    |
| Permitted Phases       |      |      |      |       |        |      |      |      |      |      |       |      |
| Actuated Green, G (s)  |      |      |      |       | 16.0   |      |      |      |      |      | 26.5  |      |
| Effective Green, g (s) |      |      |      |       | 16.0   |      |      |      |      |      | 26.5  |      |
| Actuated g/C Ratio     |      |      |      |       | 0.32   |      |      |      |      |      | 0.52  |      |
| Clearance Time (s)     |      |      |      |       | 4.0    |      |      |      |      |      | 4.0   |      |
| Vehicle Extension (s)  |      |      |      |       | 3.0    |      |      |      |      |      | 3.0   |      |
| Lane Grp Cap (vph)     |      |      |      |       | 1075   |      |      |      |      |      | 1851  |      |
| v/s Ratio Prot         |      |      |      |       | c0.20  |      |      |      |      |      | c0.35 |      |
| v/s Ratio Perm         |      |      |      |       |        |      |      |      |      |      |       |      |
| v/c Ratio              |      |      |      |       | 1.04dl |      |      |      |      |      | 0.68  |      |
| Uniform Delay, d1      |      |      |      |       | 14.8   |      |      |      |      |      | 8.8   |      |
| Progression Factor     |      |      |      |       | 1.00   |      |      |      |      |      | 1.00  |      |
| Incremental Delay, d2  |      |      |      |       | 1.3    |      |      |      |      |      | 1.0   |      |
| Delay (s)              |      |      |      |       | 16.0   |      |      |      |      |      | 9.8   |      |
| Level of Service       |      |      |      |       | B      |      |      |      |      |      | A     |      |
| Approach Delay (s)     |      | 0.0  |      |       | 16.0   |      |      | 0.0  |      |      | 9.8   |      |
| Approach LOS           |      | A    |      |       | B      |      |      | A    |      |      | A     |      |

**Intersection Summary**

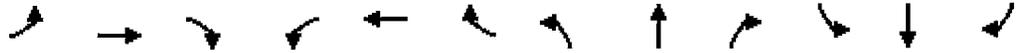
|                                   |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 12.1  | HCM Level of Service | B   |
| HCM Volume to Capacity ratio      | 0.66  |                      |     |
| Actuated Cycle Length (s)         | 50.5  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 57.8% | ICU Level of Service | B   |
| Analysis Period (min)             | 15    |                      |     |

dl Defacto Left Lane. Recode with 1 though lane as a left lane.  
 c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 1: Elfin Forest Road E. & San Elijo Road N.

6/10/2010



| Movement               | EBL  | EBT  | EBR  | WBL   | WBT   | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR   |
|------------------------|------|------|------|-------|-------|------|------|------|------|------|------|-------|
| Lane Configurations    |      |      |      |       | ↕↕    |      |      |      |      |      | ↕↕   |       |
| Volume (vph)           | 0    | 0    | 0    | 236   | 203   | 0    | 0    | 0    | 0    | 0    | 573  | 66    |
| Ideal Flow (vphpl)     | 1900 | 1900 | 1900 | 1900  | 1900  | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900  |
| Total Lost time (s)    |      |      |      |       | 4.0   |      |      |      |      |      | 4.0  |       |
| Lane Util. Factor      |      |      |      |       | 0.95  |      |      |      |      |      | 0.95 |       |
| Frts                   |      |      |      |       | 1.00  |      |      |      |      |      | 0.98 |       |
| Flt Protected          |      |      |      |       | 0.97  |      |      |      |      |      | 1.00 |       |
| Satd. Flow (prot)      |      |      |      |       | 3447  |      |      |      |      |      | 3484 |       |
| Flt Permitted          |      |      |      |       | 0.97  |      |      |      |      |      | 1.00 |       |
| Satd. Flow (perm)      |      |      |      |       | 3447  |      |      |      |      |      | 3484 |       |
| Peak-hour factor, PHF  | 0.92 | 0.92 | 0.92 | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  |
| Adj. Flow (vph)        | 0    | 0    | 0    | 257   | 221   | 0    | 0    | 0    | 0    | 0    | 623  | 72    |
| RTOR Reduction (vph)   | 0    | 0    | 0    | 0     | 141   | 0    | 0    | 0    | 0    | 0    | 16   | 0     |
| Lane Group Flow (vph)  | 0    | 0    | 0    | 0     | 337   | 0    | 0    | 0    | 0    | 0    | 679  | 0     |
| Turn Type              |      |      |      | Split |       |      |      |      |      |      |      |       |
| Protected Phases       |      |      |      | 8     | 8     |      |      |      |      |      |      | 6     |
| Permitted Phases       |      |      |      |       |       |      |      |      |      |      |      |       |
| Actuated Green, G (s)  |      |      |      |       | 8.8   |      |      |      |      |      |      | 12.5  |
| Effective Green, g (s) |      |      |      |       | 8.8   |      |      |      |      |      |      | 12.5  |
| Actuated g/C Ratio     |      |      |      |       | 0.30  |      |      |      |      |      |      | 0.43  |
| Clearance Time (s)     |      |      |      |       | 4.0   |      |      |      |      |      |      | 4.0   |
| Vehicle Extension (s)  |      |      |      |       | 3.0   |      |      |      |      |      |      | 3.0   |
| Lane Grp Cap (vph)     |      |      |      |       | 1035  |      |      |      |      |      |      | 1486  |
| v/s Ratio Prot         |      |      |      |       | c0.10 |      |      |      |      |      |      | c0.19 |
| v/s Ratio Perm         |      |      |      |       |       |      |      |      |      |      |      |       |
| v/c Ratio              |      |      |      |       | 0.33  |      |      |      |      |      |      | 0.46  |
| Uniform Delay, d1      |      |      |      |       | 7.9   |      |      |      |      |      |      | 6.0   |
| Progression Factor     |      |      |      |       | 1.00  |      |      |      |      |      |      | 1.00  |
| Incremental Delay, d2  |      |      |      |       | 0.2   |      |      |      |      |      |      | 0.2   |
| Delay (s)              |      |      |      |       | 8.1   |      |      |      |      |      |      | 6.2   |
| Level of Service       |      |      |      |       | A     |      |      |      |      |      |      | A     |
| Approach Delay (s)     |      | 0.0  |      |       | 8.1   |      |      | 0.0  |      |      |      | 6.2   |
| Approach LOS           |      | A    |      |       | A     |      |      | A    |      |      |      | A     |

### Intersection Summary

|                                   |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 7.0   | HCM Level of Service | A   |
| HCM Volume to Capacity ratio      | 0.40  |                      |     |
| Actuated Cycle Length (s)         | 29.3  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 37.1% | ICU Level of Service | A   |
| Analysis Period (min)             | 15    |                      |     |
| c Critical Lane Group             |       |                      |     |

# HCM Signalized Intersection Capacity Analysis

## 2: Elfin Forest Road W. & San Elijo Road S.

6/10/2010



| Movement               | EBL   | EBT   | EBR  | WBL  | WBT  | WBR  | NBL  | NBT   | NBR  | SBL  | SBT  | SBR  |
|------------------------|-------|-------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations    |       | ↑↑    |      |      |      |      |      | ↑↑    |      |      |      |      |
| Volume (vph)           | 147   | 367   | 0    | 0    | 0    | 0    | 0    | 933   | 232  | 0    | 0    | 0    |
| Ideal Flow (vphpl)     | 1900  | 1900  | 1900 | 1900 | 1900 | 1900 | 1900 | 1900  | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s)    |       | 4.0   |      |      |      |      |      | 4.0   |      |      |      |      |
| Lane Util. Factor      |       | 0.95  |      |      |      |      |      | 0.95  |      |      |      |      |
| Fr't                   |       | 1.00  |      |      |      |      |      | 0.97  |      |      |      |      |
| Flt Protected          |       | 0.99  |      |      |      |      |      | 1.00  |      |      |      |      |
| Satd. Flow (prot)      |       | 3489  |      |      |      |      |      | 3434  |      |      |      |      |
| Flt Permitted          |       | 0.99  |      |      |      |      |      | 1.00  |      |      |      |      |
| Satd. Flow (perm)      |       | 3489  |      |      |      |      |      | 3434  |      |      |      |      |
| Peak-hour factor, PHF  | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph)        | 160   | 399   | 0    | 0    | 0    | 0    | 0    | 1014  | 252  | 0    | 0    | 0    |
| RTOR Reduction (vph)   | 0     | 74    | 0    | 0    | 0    | 0    | 0    | 37    | 0    | 0    | 0    | 0    |
| Lane Group Flow (vph)  | 0     | 485   | 0    | 0    | 0    | 0    | 0    | 1229  | 0    | 0    | 0    | 0    |
| Turn Type              | Split |       |      |      |      |      |      |       |      |      |      |      |
| Protected Phases       | 4     | 4     |      |      |      |      |      | 2     |      |      |      |      |
| Permitted Phases       |       |       |      |      |      |      |      |       |      |      |      |      |
| Actuated Green, G (s)  |       | 12.5  |      |      |      |      |      | 25.8  |      |      |      |      |
| Effective Green, g (s) |       | 12.5  |      |      |      |      |      | 25.8  |      |      |      |      |
| Actuated g/C Ratio     |       | 0.27  |      |      |      |      |      | 0.56  |      |      |      |      |
| Clearance Time (s)     |       | 4.0   |      |      |      |      |      | 4.0   |      |      |      |      |
| Vehicle Extension (s)  |       | 3.0   |      |      |      |      |      | 3.0   |      |      |      |      |
| Lane Grp Cap (vph)     |       | 942   |      |      |      |      |      | 1914  |      |      |      |      |
| v/s Ratio Prot         |       | c0.14 |      |      |      |      |      | c0.36 |      |      |      |      |
| v/s Ratio Perm         |       |       |      |      |      |      |      |       |      |      |      |      |
| v/c Ratio              |       | 0.51  |      |      |      |      |      | 0.64  |      |      |      |      |
| Uniform Delay, d1      |       | 14.3  |      |      |      |      |      | 7.1   |      |      |      |      |
| Progression Factor     |       | 1.00  |      |      |      |      |      | 1.00  |      |      |      |      |
| Incremental Delay, d2  |       | 0.5   |      |      |      |      |      | 0.7   |      |      |      |      |
| Delay (s)              |       | 14.8  |      |      |      |      |      | 7.8   |      |      |      |      |
| Level of Service       |       | B     |      |      |      |      |      | A     |      |      |      |      |
| Approach Delay (s)     |       | 14.8  |      |      | 0.0  |      |      | 7.8   |      |      | 0.0  |      |
| Approach LOS           |       | B     |      |      | A    |      |      | A     |      |      | A    |      |

### Intersection Summary

|                                   |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 10.0  | HCM Level of Service | A   |
| HCM Volume to Capacity ratio      | 0.60  |                      |     |
| Actuated Cycle Length (s)         | 46.3  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 54.3% | ICU Level of Service | A   |
| Analysis Period (min)             | 15    |                      |     |
| c Critical Lane Group             |       |                      |     |

HCM Signalized Intersection Capacity Analysis  
 2: Elfin Forest Road W. & San Elijo Road S.

6/10/2010



| Movement               | EBL   | EBT   | EBR  | WBL  | WBT  | WBR  | NBL  | NBT   | NBR  | SBL  | SBT  | SBR  |
|------------------------|-------|-------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations    |       | ↑↑    |      |      |      |      |      | ↑↑    |      |      |      |      |
| Volume (vph)           | 57    | 111   | 0    | 0    | 0    | 0    | 0    | 934   | 323  | 0    | 0    | 0    |
| Ideal Flow (vphpl)     | 1900  | 1900  | 1900 | 1900 | 1900 | 1900 | 1900 | 1900  | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s)    |       | 4.0   |      |      |      |      |      | 4.0   |      |      |      |      |
| Lane Util. Factor      |       | 0.95  |      |      |      |      |      | 0.95  |      |      |      |      |
| Fr't                   |       | 1.00  |      |      |      |      |      | 0.96  |      |      |      |      |
| Flt Protected          |       | 0.98  |      |      |      |      |      | 1.00  |      |      |      |      |
| Satd. Flow (prot)      |       | 3480  |      |      |      |      |      | 3403  |      |      |      |      |
| Flt Permitted          |       | 0.98  |      |      |      |      |      | 1.00  |      |      |      |      |
| Satd. Flow (perm)      |       | 3480  |      |      |      |      |      | 3403  |      |      |      |      |
| Peak-hour factor, PHF  | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph)        | 62    | 121   | 0    | 0    | 0    | 0    | 0    | 1015  | 351  | 0    | 0    | 0    |
| RTOR Reduction (vph)   | 0     | 54    | 0    | 0    | 0    | 0    | 0    | 49    | 0    | 0    | 0    | 0    |
| Lane Group Flow (vph)  | 0     | 129   | 0    | 0    | 0    | 0    | 0    | 1317  | 0    | 0    | 0    | 0    |
| Turn Type              | Split |       |      |      |      |      |      |       |      |      |      |      |
| Protected Phases       | 4     | 4     |      |      |      |      |      | 2     |      |      |      |      |
| Permitted Phases       |       |       |      |      |      |      |      |       |      |      |      |      |
| Actuated Green, G (s)  |       | 5.3   |      |      |      |      |      | 25.5  |      |      |      |      |
| Effective Green, g (s) |       | 5.3   |      |      |      |      |      | 25.5  |      |      |      |      |
| Actuated g/C Ratio     |       | 0.14  |      |      |      |      |      | 0.66  |      |      |      |      |
| Clearance Time (s)     |       | 4.0   |      |      |      |      |      | 4.0   |      |      |      |      |
| Vehicle Extension (s)  |       | 3.0   |      |      |      |      |      | 3.0   |      |      |      |      |
| Lane Grp Cap (vph)     |       | 475   |      |      |      |      |      | 2237  |      |      |      |      |
| v/s Ratio Prot         |       | c0.04 |      |      |      |      |      | c0.39 |      |      |      |      |
| v/s Ratio Perm         |       |       |      |      |      |      |      |       |      |      |      |      |
| v/c Ratio              |       | 0.27  |      |      |      |      |      | 0.59  |      |      |      |      |
| Uniform Delay, d1      |       | 15.0  |      |      |      |      |      | 3.7   |      |      |      |      |
| Progression Factor     |       | 1.00  |      |      |      |      |      | 1.00  |      |      |      |      |
| Incremental Delay, d2  |       | 0.3   |      |      |      |      |      | 0.4   |      |      |      |      |
| Delay (s)              |       | 15.3  |      |      |      |      |      | 4.1   |      |      |      |      |
| Level of Service       |       | B     |      |      |      |      |      | A     |      |      |      |      |
| Approach Delay (s)     |       | 15.3  |      |      | 0.0  |      |      | 4.1   |      |      | 0.0  |      |
| Approach LOS           |       | B     |      |      | A    |      |      | A     |      |      | A    |      |

| Intersection Summary              |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 5.4   | HCM Level of Service | A   |
| HCM Volume to Capacity ratio      | 0.53  |                      |     |
| Actuated Cycle Length (s)         | 38.8  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 47.5% | ICU Level of Service | A   |
| Analysis Period (min)             | 15    |                      |     |
| c Critical Lane Group             |       |                      |     |

# HCM Signalized Intersection Capacity Analysis

## 3: Elfin Forest E & San Elijo Road S.

6/10/2010



| Movement               | EBL  | EBT  | EBR  | WBL  | WBT   | WBR  | NBL   | NBT   | NBR  | SBL  | SBT  | SBR  |
|------------------------|------|------|------|------|-------|------|-------|-------|------|------|------|------|
| Lane Configurations    |      |      |      |      | ↑↓    |      |       | ↑↓    |      |      |      |      |
| Volume (vph)           | 0    | 0    | 0    | 0    | 434   | 228  | 240   | 955   | 0    | 0    | 0    | 0    |
| Ideal Flow (vphpl)     | 1900 | 1900 | 1900 | 1900 | 1900  | 1900 | 1900  | 1900  | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s)    |      |      |      |      | 4.0   |      |       | 4.0   |      |      |      |      |
| Lane Util. Factor      |      |      |      |      | 0.95  |      |       | 0.95  |      |      |      |      |
| Frt                    |      |      |      |      | 0.95  |      |       | 1.00  |      |      |      |      |
| Flt Protected          |      |      |      |      | 1.00  |      |       | 0.99  |      |      |      |      |
| Satd. Flow (prot)      |      |      |      |      | 3356  |      |       | 3504  |      |      |      |      |
| Flt Permitted          |      |      |      |      | 1.00  |      |       | 0.99  |      |      |      |      |
| Satd. Flow (perm)      |      |      |      |      | 3356  |      |       | 3504  |      |      |      |      |
| Peak-hour factor, PHF  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph)        | 0    | 0    | 0    | 0    | 472   | 248  | 261   | 1038  | 0    | 0    | 0    | 0    |
| RTOR Reduction (vph)   | 0    | 0    | 0    | 0    | 62    | 0    | 0     | 38    | 0    | 0    | 0    | 0    |
| Lane Group Flow (vph)  | 0    | 0    | 0    | 0    | 658   | 0    | 0     | 1261  | 0    | 0    | 0    | 0    |
| Turn Type              |      |      |      |      |       |      | Split |       |      |      |      |      |
| Protected Phases       |      |      |      |      | 8     |      | 2     | 2     |      |      |      |      |
| Permitted Phases       |      |      |      |      |       |      |       |       |      |      |      |      |
| Actuated Green, G (s)  |      |      |      |      | 15.3  |      |       | 26.7  |      |      |      |      |
| Effective Green, g (s) |      |      |      |      | 15.3  |      |       | 26.7  |      |      |      |      |
| Actuated g/C Ratio     |      |      |      |      | 0.31  |      |       | 0.53  |      |      |      |      |
| Clearance Time (s)     |      |      |      |      | 4.0   |      |       | 4.0   |      |      |      |      |
| Vehicle Extension (s)  |      |      |      |      | 3.0   |      |       | 3.0   |      |      |      |      |
| Lane Grp Cap (vph)     |      |      |      |      | 1027  |      |       | 1871  |      |      |      |      |
| v/s Ratio Prot         |      |      |      |      | c0.20 |      |       | c0.36 |      |      |      |      |
| v/s Ratio Perm         |      |      |      |      |       |      |       |       |      |      |      |      |
| v/c Ratio              |      |      |      |      | 0.64  |      |       | 0.67  |      |      |      |      |
| Uniform Delay, d1      |      |      |      |      | 15.0  |      |       | 8.5   |      |      |      |      |
| Progression Factor     |      |      |      |      | 1.00  |      |       | 1.00  |      |      |      |      |
| Incremental Delay, d2  |      |      |      |      | 1.4   |      |       | 1.0   |      |      |      |      |
| Delay (s)              |      |      |      |      | 16.4  |      |       | 9.5   |      |      |      |      |
| Level of Service       |      |      |      |      | B     |      |       | A     |      |      |      |      |
| Approach Delay (s)     |      | 0.0  |      |      | 16.4  |      |       | 9.5   |      |      | 0.0  |      |
| Approach LOS           |      | A    |      |      | B     |      |       | A     |      |      | A    |      |

### Intersection Summary

|                                   |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 11.9  | HCM Level of Service | B   |
| HCM Volume to Capacity ratio      | 0.66  |                      |     |
| Actuated Cycle Length (s)         | 50.0  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 59.3% | ICU Level of Service | B   |
| Analysis Period (min)             | 15    |                      |     |
| c Critical Lane Group             |       |                      |     |

# HCM Signalized Intersection Capacity Analysis

## 3: Elfin Forest E & San Elijo Road S.

6/10/2010



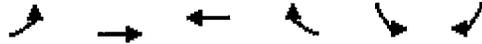
| Movement               | EBL  | EBT  | EBR  | WBL  | WBT   | WBR  | NBL   | NBT   | NBR  | SBL  | SBT  | SBR  |
|------------------------|------|------|------|------|-------|------|-------|-------|------|------|------|------|
| Lane Configurations    |      |      |      |      | ↑↑    |      |       | ↑↑    |      |      |      |      |
| Volume (vph)           | 0    | 0    | 0    | 0    | 192   | 87   | 226   | 692   | 0    | 0    | 0    | 0    |
| Ideal Flow (vphpl)     | 1900 | 1900 | 1900 | 1900 | 1900  | 1900 | 1900  | 1900  | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s)    |      |      |      |      | 4.0   |      |       | 4.0   |      |      |      |      |
| Lane Util. Factor      |      |      |      |      | 0.95  |      |       | 0.95  |      |      |      |      |
| Fr't                   |      |      |      |      | 0.95  |      |       | 1.00  |      |      |      |      |
| Flt Protected          |      |      |      |      | 1.00  |      |       | 0.99  |      |      |      |      |
| Satd. Flow (prot)      |      |      |      |      | 3373  |      |       | 3496  |      |      |      |      |
| Flt Permitted          |      |      |      |      | 1.00  |      |       | 0.99  |      |      |      |      |
| Satd. Flow (perm)      |      |      |      |      | 3373  |      |       | 3496  |      |      |      |      |
| Peak-hour factor, PHF  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  | 0.92 | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph)        | 0    | 0    | 0    | 0    | 209   | 95   | 246   | 752   | 0    | 0    | 0    | 0    |
| RTOR Reduction (vph)   | 0    | 0    | 0    | 0    | 72    | 0    | 0     | 59    | 0    | 0    | 0    | 0    |
| Lane Group Flow (vph)  | 0    | 0    | 0    | 0    | 232   | 0    | 0     | 939   | 0    | 0    | 0    | 0    |
| Turn Type              |      |      |      |      |       |      | Split |       |      |      |      |      |
| Protected Phases       |      |      |      |      | 8     |      | 2     | 2     |      |      |      |      |
| Permitted Phases       |      |      |      |      |       |      |       |       |      |      |      |      |
| Actuated Green, G (s)  |      |      |      |      | 8.0   |      |       | 17.3  |      |      |      |      |
| Effective Green, g (s) |      |      |      |      | 8.0   |      |       | 17.3  |      |      |      |      |
| Actuated g/C Ratio     |      |      |      |      | 0.24  |      |       | 0.52  |      |      |      |      |
| Clearance Time (s)     |      |      |      |      | 4.0   |      |       | 4.0   |      |      |      |      |
| Vehicle Extension (s)  |      |      |      |      | 3.0   |      |       | 3.0   |      |      |      |      |
| Lane Grp Cap (vph)     |      |      |      |      | 810   |      |       | 1816  |      |      |      |      |
| v/s Ratio Prot         |      |      |      |      | c0.07 |      |       | c0.27 |      |      |      |      |
| v/s Ratio Perm         |      |      |      |      |       |      |       |       |      |      |      |      |
| v/c Ratio              |      |      |      |      | 0.29  |      |       | 0.52  |      |      |      |      |
| Uniform Delay, d1      |      |      |      |      | 10.3  |      |       | 5.3   |      |      |      |      |
| Progression Factor     |      |      |      |      | 1.00  |      |       | 1.00  |      |      |      |      |
| Incremental Delay, d2  |      |      |      |      | 0.2   |      |       | 0.3   |      |      |      |      |
| Delay (s)              |      |      |      |      | 10.5  |      |       | 5.5   |      |      |      |      |
| Level of Service       |      |      |      |      | B     |      |       | A     |      |      |      |      |
| Approach Delay (s)     |      | 0.0  |      |      | 10.5  |      |       | 5.5   |      |      | 0.0  |      |
| Approach LOS           |      | A    |      |      | B     |      |       | A     |      |      | A    |      |

### Intersection Summary

|                                   |       |                      |     |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay         | 6.7   | HCM Level of Service | A   |
| HCM Volume to Capacity ratio      | 0.44  |                      |     |
| Actuated Cycle Length (s)         | 33.3  | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 40.4% | ICU Level of Service | A   |
| Analysis Period (min)             | 15    |                      |     |
| c Critical Lane Group             |       |                      |     |

HCM Unsignalized Intersection Capacity Analysis  
 4: Harmony Grove Road & Questhaven Road

6/10/2010



| Movement               | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|------------------------|------|------|------|------|------|------|
| Lane Configurations    |      | ↔    | ↔    |      | ↔    |      |
| Volume (veh/h)         | 1    | 149  | 174  | 4    | 3    | 8    |
| Sign Control           |      | Free | Free |      | Stop |      |
| Grade                  |      | 0%   | 0%   |      | 0%   |      |
| Peak Hour Factor       | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 1    | 162  | 189  | 4    | 3    | 9    |
| Pedestrians            |      |      |      |      |      |      |
| Lane Width (ft)        |      |      |      |      |      |      |
| Walking Speed (ft/s)   |      |      |      |      |      |      |
| Percent Blockage       |      |      |      |      |      |      |
| Right turn flare (veh) |      |      |      |      |      |      |
| Median type            |      | None | None |      |      |      |
| Median storage (veh)   |      |      |      |      |      |      |
| Upstream signal (ft)   |      |      |      |      |      |      |
| pX, platoon unblocked  |      |      |      |      |      |      |
| vC, conflicting volume | 193  |      |      |      | 355  | 191  |
| vC1, stage 1 conf vol  |      |      |      |      |      |      |
| vC2, stage 2 conf vol  |      |      |      |      |      |      |
| vCu, unblocked vol     | 193  |      |      |      | 355  | 191  |
| tC, single (s)         | 4.1  |      |      |      | 6.4  | 6.2  |
| tC, 2 stage (s)        |      |      |      |      |      |      |
| tF (s)                 | 2.2  |      |      |      | 3.5  | 3.3  |
| p0 queue free %        | 100  |      |      |      | 99   | 99   |
| cM capacity (veh/h)    | 1380 |      |      |      | 642  | 850  |

| Direction Lane #       | EB   | WB   | SB   |
|------------------------|------|------|------|
| Volume Total           | 163  | 193  | 12   |
| Volume Left            | 1    | 0    | 3    |
| Volume Right           | 0    | 4    | 9    |
| cSH                    | 1380 | 1700 | 781  |
| Volume to Capacity     | 0.00 | 0.11 | 0.02 |
| Queue Length 95th (ft) | 0    | 0    | 1    |
| Control Delay (s)      | 0.1  | 0.0  | 9.7  |
| Lane LOS               | A    |      | A    |
| Approach Delay (s)     | 0.1  | 0.0  | 9.7  |
| Approach LOS           |      |      | A    |

| Intersection Summary              |  |       |                        |
|-----------------------------------|--|-------|------------------------|
| Average Delay                     |  | 0.3   |                        |
| Intersection Capacity Utilization |  | 19.4% | ICU Level of Service A |
| Analysis Period (min)             |  | 15    |                        |

HCM Unsignalized Intersection Capacity Analysis  
 4: Harmony Grove Road & Questhaven Road

6/10/2010



| Movement               | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|------------------------|------|------|------|------|------|------|
| Lane Configurations    |      | ↕    | ↕    |      | ↕    |      |
| Volume (veh/h)         | 7    | 297  | 127  | 8    | 2    | 6    |
| Sign Control           |      | Free | Free |      | Stop |      |
| Grade                  |      | 0%   | 0%   |      | 0%   |      |
| Peak Hour Factor       | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 8    | 323  | 138  | 9    | 2    | 7    |
| Pedestrians            |      |      |      |      |      |      |
| Lane Width (ft)        |      |      |      |      |      |      |
| Walking Speed (ft/s)   |      |      |      |      |      |      |
| Percent Blockage       |      |      |      |      |      |      |
| Right turn flare (veh) |      |      |      |      |      |      |
| Median type            |      | None | None |      |      |      |
| Median storage (veh)   |      |      |      |      |      |      |
| Upstream signal (ft)   |      |      |      |      |      |      |
| pX, platoon unblocked  |      |      |      |      |      |      |
| vC, conflicting volume | 147  |      |      |      | 480  | 142  |
| vC1, stage 1 conf vol  |      |      |      |      |      |      |
| vC2, stage 2 conf vol  |      |      |      |      |      |      |
| vCu, unblocked vol     | 147  |      |      |      | 480  | 142  |
| tC, single (s)         | 4.1  |      |      |      | 6.4  | 6.2  |
| tC, 2 stage (s)        |      |      |      |      |      |      |
| tF (s)                 | 2.2  |      |      |      | 3.5  | 3.3  |
| p0 queue free %        | 99   |      |      |      | 100  | 99   |
| cM capacity (veh/h)    | 1435 |      |      |      | 541  | 905  |

| Direction, Lane #      | EB 1 | WB 1 | SB 1 |
|------------------------|------|------|------|
| Volume Total           | 330  | 147  | 9    |
| Volume Left            | 8    | 0    | 2    |
| Volume Right           | 0    | 9    | 7    |
| cSH                    | 1435 | 1700 | 775  |
| Volume to Capacity     | 0.01 | 0.09 | 0.01 |
| Queue Length 95th (ft) | 0    | 0    | 1    |
| Control Delay (s)      | 0.2  | 0.0  | 9.7  |
| Lane LOS               | A    |      | A    |
| Approach Delay (s)     | 0.2  | 0.0  | 9.7  |
| Approach LOS           |      |      | A    |

| Intersection Summary              |  |       |                        |
|-----------------------------------|--|-------|------------------------|
| Average Delay                     |  | 0.3   |                        |
| Intersection Capacity Utilization |  | 31.3% | ICU Level of Service A |
| Analysis Period (min)             |  | 15    |                        |

HCM Unsignalized Intersection Capacity Analysis  
 5: Harmony Grove Road & Via Ambiente

6/10/2010



| Movement               | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|------------------------|------|------|------|------|------|------|
| Lane Configurations    | ↔    |      |      | ↔    | ↔    |      |
| Volume (veh/h)         | 128  | 21   | 19   | 181  | 2    | 8    |
| Sign Control           | Free |      |      | Free | Stop |      |
| Grade                  | 0%   |      |      | 0%   | 0%   |      |
| Peak Hour Factor       | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 139  | 23   | 21   | 197  | 2    | 9    |
| Pedestrians            |      |      |      |      |      |      |
| Lane Width (ft)        |      |      |      |      |      |      |
| Walking Speed (ft/s)   |      |      |      |      |      |      |
| Percent Blockage       |      |      |      |      |      |      |
| Right turn flare (veh) |      |      |      |      |      |      |
| Median type            | None |      |      | None |      |      |
| Median storage (veh)   |      |      |      |      |      |      |
| Upstream signal (ft)   |      |      |      |      |      |      |
| pX, platoon unblocked  |      |      |      |      |      |      |
| vC, conflicting volume |      |      | 162  |      | 389  | 151  |
| vC1, stage 1 conf vol  |      |      |      |      |      |      |
| vC2, stage 2 conf vol  |      |      |      |      |      |      |
| vCu, unblocked vol     |      |      | 162  |      | 389  | 151  |
| tC, single (s)         |      |      | 4.1  |      | 6.4  | 6.2  |
| tC, 2 stage (s)        |      |      |      |      |      |      |
| tF (s)                 |      |      | 2.2  |      | 3.5  | 3.3  |
| p0 queue free %        |      |      | 99   |      | 100  | 99   |
| cM capacity (veh/h)    |      |      | 1417 |      | 606  | 896  |

| Direction, Lane #      | EB1  | WB1  | NB1  |
|------------------------|------|------|------|
| Volume Total           | 162  | 217  | 11   |
| Volume Left            | 0    | 21   | 2    |
| Volume Right           | 23   | 0    | 9    |
| cSH                    | 1700 | 1417 | 818  |
| Volume to Capacity     | 0.10 | 0.01 | 0.01 |
| Queue Length 95th (ft) | 0    | 1    | 1    |
| Control Delay (s)      | 0.0  | 0.8  | 9.5  |
| Lane LOS               |      | A    | A    |
| Approach Delay (s)     | 0.0  | 0.8  | 9.5  |
| Approach LOS           |      |      | A    |

| Intersection Summary              |  |       |                        |
|-----------------------------------|--|-------|------------------------|
| Average Delay                     |  | 0.7   |                        |
| Intersection Capacity Utilization |  | 31.9% | ICU Level of Service A |
| Analysis Period (min)             |  | 15    |                        |

# HCM Unsignalized Intersection Capacity Analysis

## 5: Harmony Grove Road & Via Ambiente

6/10/2010



| Movement               | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|------------------------|------|------|------|------|------|------|
| Lane Configurations    | ↔    |      |      | ↔    | ↔    |      |
| Volume (veh/h)         | 299  | 2    | 6    | 110  | 17   | 19   |
| Sign Control           | Free |      |      | Free | Stop |      |
| Grade                  | 0%   |      |      | 0%   | 0%   |      |
| Peak Hour Factor       | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 325  | 2    | 7    | 120  | 18   | 21   |
| Pedestrians            |      |      |      |      |      |      |
| Lane Width (ft)        |      |      |      |      |      |      |
| Walking Speed (ft/s)   |      |      |      |      |      |      |
| Percent Blockage       |      |      |      |      |      |      |
| Right turn flare (veh) |      |      |      |      |      |      |
| Median type            | None |      |      | None |      |      |
| Median storage (veh)   |      |      |      |      |      |      |
| Upstream signal (ft)   |      |      |      |      |      |      |
| pX, platoon unblocked  |      |      |      |      |      |      |
| vC, conflicting volume | 327  |      |      | 459  | 326  |      |
| vC1, stage 1 conf vol  |      |      |      |      |      |      |
| vC2, stage 2 conf vol  |      |      |      |      |      |      |
| vCu, unblocked vol     | 327  |      |      | 459  | 326  |      |
| tC, single (s)         | 4.1  |      |      | 6.4  | 6.2  |      |
| tC, 2 stage (s)        |      |      |      |      |      |      |
| tF (s)                 | 2.2  |      |      | 3.5  | 3.3  |      |
| p0 queue free %        |      |      |      |      |      |      |
| cM capacity (veh/h)    | 1232 |      |      | 557  | 715  |      |

| Direction, Lane #      | EBT  | WBT  | NBT  |
|------------------------|------|------|------|
| Volume Total           | 327  | 126  | 39   |
| Volume Left            | 0    | 7    | 18   |
| Volume Right           | 2    | 0    | 21   |
| cSH                    | 1700 | 1232 | 631  |
| Volume to Capacity     | 0.19 | 0.01 | 0.06 |
| Queue Length 95th (ft) | 0    | 0    | 5    |
| Control Delay (s)      | 0.0  | 0.5  | 11.1 |
| Lane LOS               | A    |      | B    |
| Approach Delay (s)     | 0.0  | 0.5  | 11.1 |
| Approach LOS           | B    |      |      |

| Intersection Summary              |       |                      |   |
|-----------------------------------|-------|----------------------|---|
| Average Delay                     | 1.0   |                      |   |
| Intersection Capacity Utilization | 25.9% | ICU Level of Service | A |
| Analysis Period (min)             | 15    |                      |   |

## **APPENDIX F**

### **URBEMIS MODELING INPUTS AND OUTPUT**





1/27/2010 10:10:30 PM

|                                    |      |       |       |      |       |      |       |      |      |      |          |
|------------------------------------|------|-------|-------|------|-------|------|-------|------|------|------|----------|
| Asphalt 09/06/2010-06/10/2011      | 2.45 | 14.49 | 9.17  | 0.00 | 0.01  | 1.26 | 1.27  | 0.00 | 1.16 | 1.17 | 1,261.26 |
| Paving Off-Gas                     | 0.06 | 0.00  | 0.00  | 0.00 | 0.00  | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 | 0.00     |
| Paving Off Road Diesel             | 2.35 | 14.20 | 8.05  | 0.00 | 0.00  | 1.25 | 1.25  | 0.00 | 1.15 | 1.15 | 1,104.54 |
| Paving On Road Diesel              | 0.02 | 0.23  | 0.08  | 0.00 | 0.00  | 0.01 | 0.01  | 0.00 | 0.01 | 0.01 | 32.33    |
| Paving Worker Trips                | 0.03 | 0.06  | 1.04  | 0.00 | 0.01  | 0.00 | 0.01  | 0.00 | 0.00 | 0.01 | 124.39   |
| Building 09/06/2010-06/10/2011     | 3.30 | 15.14 | 12.26 | 0.01 | 0.02  | 0.96 | 0.98  | 0.01 | 0.88 | 0.89 | 1,899.65 |
| Building Off Road Diesel           | 3.08 | 12.96 | 8.91  | 0.00 | 0.00  | 0.87 | 0.87  | 0.00 | 0.80 | 0.80 | 1,293.74 |
| Building Vendor Trips              | 0.17 | 2.08  | 1.44  | 0.00 | 0.01  | 0.08 | 0.10  | 0.00 | 0.08 | 0.08 | 378.34   |
| Building Worker Trips              | 0.06 | 0.11  | 1.91  | 0.00 | 0.01  | 0.01 | 0.02  | 0.00 | 0.01 | 0.01 | 227.58   |
| Demolition 09/06/2010-06/10/2011   | 1.22 | 8.37  | 5.95  | 0.00 | 0.64  | 0.61 | 1.25  | 0.13 | 0.56 | 0.70 | 912.99   |
| Fugitive Dust                      | 0.00 | 0.00  | 0.00  | 0.00 | 0.63  | 0.00 | 0.63  | 0.13 | 0.00 | 0.13 | 0.00     |
| Demo Off Road Diesel               | 1.14 | 7.68  | 4.68  | 0.00 | 0.00  | 0.59 | 0.59  | 0.00 | 0.54 | 0.54 | 700.30   |
| Demo On Road Diesel                | 0.04 | 0.63  | 0.22  | 0.00 | 0.00  | 0.02 | 0.03  | 0.00 | 0.02 | 0.02 | 88.30    |
| Demo Worker Trips                  | 0.03 | 0.06  | 1.04  | 0.00 | 0.01  | 0.00 | 0.01  | 0.00 | 0.00 | 0.01 | 124.39   |
| Fine Grading 09/06/2010-06/10/2011 | 2.85 | 22.87 | 12.61 | 0.00 | 20.01 | 1.23 | 21.23 | 4.18 | 1.13 | 5.31 | 2,171.53 |
| Fine Grading Dust                  | 0.00 | 0.00  | 0.00  | 0.00 | 20.00 | 0.00 | 20.00 | 4.18 | 0.00 | 4.18 | 0.00     |
| Fine Grading Off Road Diesel       | 2.82 | 22.81 | 11.56 | 0.00 | 0.00  | 1.22 | 1.22  | 0.00 | 1.13 | 1.13 | 2,047.14 |
| Fine Grading On Road Diesel        | 0.00 | 0.00  | 0.00  | 0.00 | 0.00  | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 | 0.00     |
| Fine Grading Worker Trips          | 0.03 | 0.06  | 1.04  | 0.00 | 0.01  | 0.00 | 0.01  | 0.00 | 0.00 | 0.01 | 124.39   |

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|   |              |              |              |             |              |             |              |             |             |              |                 |
|---|--------------|--------------|--------------|-------------|--------------|-------------|--------------|-------------|-------------|--------------|-----------------|
| Mass Grading 09/06/2010-06/10/2011                | 2.45         | 19.06        | 10.58        | 0.00        | 20.01        | 1.09        | 21.09        | 4.18        | 1.00        | 5.18         | 1,977.23        |
| Mass Grading Dust                                 | 0.00         | 0.00         | 0.00         | 0.00        | 20.00        | 0.00        | 20.00        | 4.18        | 0.00        | 4.18         | 0.00            |
| Mass Grading Off Road Diesel                      | 2.42         | 19.00        | 9.53         | 0.00        | 0.00         | 1.08        | 1.08         | 0.00        | 1.00        | 1.00         | 1,852.84        |
| Mass Grading On Road Diesel                       | 0.00         | 0.00         | 0.00         | 0.00        | 0.00         | 0.00        | 0.00         | 0.00        | 0.00        | 0.00         | 0.00            |
| Mass Grading Worker Trips                         | 0.03         | 0.06         | 1.04         | 0.00        | 0.01         | 0.00        | 0.01         | 0.00        | 0.00        | 0.01         | 124.39          |
| Time Slice 1/3/2011-6/10/2011<br>Active Days: 115 | <u>11.45</u> | <u>74.96</u> | <u>48.80</u> | <u>0.01</u> | <u>40.68</u> | <u>4.86</u> | <u>45.55</u> | <u>8.50</u> | <u>4.47</u> | <u>12.98</u> | <u>8,222.58</u> |
| Asphalt 09/06/2010-06/10/2011                     | 2.30         | 13.72        | 8.99         | 0.00        | 0.01         | 1.21        | 1.22         | 0.00        | 1.11        | 1.12         | 1,261.24        |
| Paving Off-Gas                                    | 0.06         | 0.00         | 0.00         | 0.00        | 0.00         | 0.00        | 0.00         | 0.00        | 0.00        | 0.00         | 0.00            |
| Paving Off Road Diesel                            | 2.20         | 13.45        | 7.96         | 0.00        | 0.00         | 1.20        | 1.20         | 0.00        | 1.10        | 1.10         | 1,104.54        |
| Paving On Road Diesel                             | 0.02         | 0.21         | 0.07         | 0.00        | 0.00         | 0.01        | 0.01         | 0.00        | 0.01        | 0.01         | 32.33           |
| Paving Worker Trips                               | 0.03         | 0.05         | 0.97         | 0.00        | 0.01         | 0.00        | 0.01         | 0.00        | 0.00        | 0.01         | 124.38          |
| Building 09/06/2010-06/10/2011                    | 3.07         | 14.28        | 11.67        | 0.01        | 0.02         | 0.91        | 0.94         | 0.01        | 0.84        | 0.85         | 1,899.63        |
| Building Off Road Diesel                          | 2.86         | 12.32        | 8.57         | 0.00        | 0.00         | 0.83        | 0.83         | 0.00        | 0.77        | 0.77         | 1,293.74        |
| Building Vendor Trips                             | 0.15         | 1.86         | 1.33         | 0.00        | 0.01         | 0.07        | 0.09         | 0.00        | 0.07        | 0.07         | 378.35          |
| Building Worker Trips                             | 0.05         | 0.10         | 1.77         | 0.00        | 0.01         | 0.01        | 0.02         | 0.00        | 0.01        | 0.01         | 227.55          |
| Demolition 09/06/2010-06/10/2011                  | 1.12         | 7.84         | 5.75         | 0.00        | 0.64         | 0.57        | 1.21         | 0.13        | 0.53        | 0.66         | 912.98          |
| Fugitive Dust                                     | 0.00         | 0.00         | 0.00         | 0.00        | 0.63         | 0.00        | 0.63         | 0.13        | 0.00        | 0.13         | 0.00            |
| Demo Off Road Diesel                              | 1.05         | 7.22         | 4.58         | 0.00        | 0.00         | 0.55        | 0.55         | 0.00        | 0.50        | 0.50         | 700.30          |
| Demo On Road Diesel                               | 0.04         | 0.56         | 0.20         | 0.00        | 0.00         | 0.02        | 0.02         | 0.00        | 0.02        | 0.02         | 88.30           |
| Demo Worker Trips                                 | 0.03         | 0.05         | 0.97         | 0.00        | 0.01         | 0.00        | 0.01         | 0.00        | 0.00        | 0.01         | 124.38          |

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|                                    |      |       |       |      |       |      |       |      |      |      |          |
|------------------------------------|------|-------|-------|------|-------|------|-------|------|------|------|----------|
| Fine Grading 09/06/2010-06/10/2011 | 2.67 | 21.43 | 12.01 | 0.00 | 20.01 | 1.15 | 21.15 | 4.18 | 1.05 | 5.23 | 2,171.51 |
| Fine Grading Dust                  | 0.00 | 0.00  | 0.00  | 0.00 | 20.00 | 0.00 | 20.00 | 4.18 | 0.00 | 4.18 | 0.00     |
| Fine Grading Off Road Diesel       | 2.64 | 21.37 | 11.04 | 0.00 | 0.00  | 1.14 | 1.14  | 0.00 | 1.05 | 1.05 | 2,047.14 |
| Fine Grading On Road Diesel        | 0.00 | 0.00  | 0.00  | 0.00 | 0.00  | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 | 0.00     |
| Fine Grading Worker Trips          | 0.03 | 0.05  | 0.97  | 0.00 | 0.01  | 0.00 | 0.01  | 0.00 | 0.00 | 0.01 | 124.38   |
| Mass Grading 09/06/2010-06/10/2011 | 2.29 | 17.70 | 10.38 | 0.00 | 20.01 | 1.02 | 21.03 | 4.18 | 0.94 | 5.12 | 1,977.21 |
| Mass Grading Dust                  | 0.00 | 0.00  | 0.00  | 0.00 | 20.00 | 0.00 | 20.00 | 4.18 | 0.00 | 4.18 | 0.00     |
| Mass Grading Off Road Diesel       | 2.26 | 17.64 | 9.42  | 0.00 | 0.00  | 1.02 | 1.02  | 0.00 | 0.94 | 0.94 | 1,852.84 |
| Mass Grading On Road Diesel        | 0.00 | 0.00  | 0.00  | 0.00 | 0.00  | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 | 0.00     |
| Mass Grading Worker Trips          | 0.03 | 0.05  | 0.97  | 0.00 | 0.01  | 0.00 | 0.01  | 0.00 | 0.00 | 0.01 | 124.38   |

Phase Assumptions

Phase: Demolition 9/6/2010 - 6/10/2011 - Roadway Demolition

Building Volume Total (cubic feet): 199155

Building Volume Daily (cubic feet): 1500

On Road Truck Travel (VMT): 20.83

Off-Road Equipment:

1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 1 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

Phase: Fine Grading 9/6/2010 - 6/10/2011 - Backfill

Total Acres Disturbed: 17

Maximum Daily Acreage Disturbed: 1

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

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Off-Road Equipment:

- 1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
- 2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
- 1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 9/6/2010 - 6/10/2011 - Trenching/Excavation

Total Acres Disturbed: 17

Maximum Daily Acreage Disturbed: 1

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

- 1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
- 1 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
- 1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 9/6/2010 - 6/10/2011 - Paving

Acres to be Paved: 4.25

Off-Road Equipment:

- 1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day
- 1 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day
- 1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 9/6/2010 - 6/10/2011 - Pipeline Construction

Off-Road Equipment:

- 1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day
- 2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
- 1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

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3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day



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|                                    |      |       |       |      |       |      |       |       |      |       |          |
|------------------------------------|------|-------|-------|------|-------|------|-------|-------|------|-------|----------|
| Asphalt 09/06/2010-06/10/2011      | 2.45 | 14.49 | 9.17  | 0.00 | 0.01  | 1.26 | 1.27  | 0.00  | 1.16 | 1.17  | 1,261.26 |
| Paving Off-Gas                     | 0.06 | 0.00  | 0.00  | 0.00 | 0.00  | 0.00 | 0.00  | 0.00  | 0.00 | 0.00  | 0.00     |
| Paving Off Road Diesel             | 2.35 | 14.20 | 8.05  | 0.00 | 0.00  | 1.25 | 1.25  | 0.00  | 1.15 | 1.15  | 1,104.54 |
| Paving On Road Diesel              | 0.02 | 0.23  | 0.08  | 0.00 | 0.00  | 0.01 | 0.01  | 0.00  | 0.01 | 0.01  | 32.33    |
| Paving Worker Trips                | 0.03 | 0.06  | 1.04  | 0.00 | 0.01  | 0.00 | 0.01  | 0.00  | 0.00 | 0.01  | 124.39   |
| Building 09/06/2010-06/10/2011     | 3.30 | 15.14 | 12.26 | 0.01 | 0.02  | 0.96 | 0.98  | 0.01  | 0.88 | 0.89  | 1,899.65 |
| Building Off Road Diesel           | 3.08 | 12.96 | 8.91  | 0.00 | 0.00  | 0.87 | 0.87  | 0.00  | 0.80 | 0.80  | 1,293.74 |
| Building Vendor Trips              | 0.17 | 2.08  | 1.44  | 0.00 | 0.01  | 0.08 | 0.10  | 0.00  | 0.08 | 0.08  | 378.34   |
| Building Worker Trips              | 0.06 | 0.11  | 1.91  | 0.00 | 0.01  | 0.01 | 0.02  | 0.00  | 0.01 | 0.01  | 227.58   |
| Fine Grading 09/06/2010-06/10/2011 | 3.55 | 28.20 | 15.77 | 0.00 | 20.01 | 1.54 | 21.54 | 4.18  | 1.41 | 5.59  | 2,689.34 |
| Fine Grading Dust                  | 0.00 | 0.00  | 0.00  | 0.00 | 20.00 | 0.00 | 20.00 | 4.18  | 0.00 | 4.18  | 0.00     |
| Fine Grading Off Road Diesel       | 3.51 | 28.13 | 14.47 | 0.00 | 0.00  | 1.53 | 1.53  | 0.00  | 1.41 | 1.41  | 2,533.84 |
| Fine Grading On Road Diesel        | 0.00 | 0.00  | 0.00  | 0.00 | 0.00  | 0.00 | 0.00  | 0.00  | 0.00 | 0.00  | 0.00     |
| Fine Grading Worker Trips          | 0.04 | 0.08  | 1.30  | 0.00 | 0.01  | 0.00 | 0.01  | 0.00  | 0.00 | 0.01  | 155.49   |
| Mass Grading 09/06/2010-06/10/2011 | 2.99 | 23.15 | 12.01 | 0.00 | 60.01 | 1.33 | 61.34 | 12.53 | 1.23 | 13.76 | 2,157.82 |
| Mass Grading Dust                  | 0.00 | 0.00  | 0.00  | 0.00 | 60.00 | 0.00 | 60.00 | 12.53 | 0.00 | 12.53 | 0.00     |
| Mass Grading Off Road Diesel       | 2.96 | 23.09 | 10.96 | 0.00 | 0.00  | 1.33 | 1.33  | 0.00  | 1.22 | 1.22  | 2,033.43 |
| Mass Grading On Road Diesel        | 0.00 | 0.00  | 0.00  | 0.00 | 0.00  | 0.00 | 0.00  | 0.00  | 0.00 | 0.00  | 0.00     |
| Mass Grading Worker Trips          | 0.03 | 0.06  | 1.04  | 0.00 | 0.01  | 0.00 | 0.01  | 0.00  | 0.00 | 0.01  | 124.39   |
| Trenching 09/06/2010-06/10/2011    | 2.63 | 22.99 | 10.92 | 0.00 | 0.01  | 1.06 | 1.07  | 0.00  | 0.98 | 0.98  | 2,410.02 |
| Trenching Off Road Diesel          | 2.59 | 22.92 | 9.61  | 0.00 | 0.00  | 1.06 | 1.06  | 0.00  | 0.97 | 0.97  | 2,254.53 |
| Trenching Worker Trips             | 0.04 | 0.08  | 1.30  | 0.00 | 0.01  | 0.00 | 0.01  | 0.00  | 0.00 | 0.01  | 155.49   |

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|                                    |              |              |              |             |              |             |              |              |             |              |                  |
|------------------------------------|--------------|--------------|--------------|-------------|--------------|-------------|--------------|--------------|-------------|--------------|------------------|
| Time Slice 1/3/2011-6/10/2011      | <u>14.02</u> | <u>97.46</u> | <u>58.24</u> | <u>0.01</u> | <u>80.05</u> | <u>5.82</u> | <u>85.88</u> | <u>16.73</u> | <u>5.36</u> | <u>22.08</u> | <u>10,417.99</u> |
| Active Days: 115                   |              |              |              |             |              |             |              |              |             |              |                  |
| Asphalt 09/06/2010-06/10/2011      | 2.30         | 13.72        | 8.99         | 0.00        | 0.01         | 1.21        | 1.22         | 0.00         | 1.11        | 1.12         | 1,261.24         |
| Paving Off-Gas                     | 0.06         | 0.00         | 0.00         | 0.00        | 0.00         | 0.00        | 0.00         | 0.00         | 0.00        | 0.00         | 0.00             |
| Paving Off Road Diesel             | 2.20         | 13.45        | 7.96         | 0.00        | 0.00         | 1.20        | 1.20         | 0.00         | 1.10        | 1.10         | 1,104.54         |
| Paving On Road Diesel              | 0.02         | 0.21         | 0.07         | 0.00        | 0.00         | 0.01        | 0.01         | 0.00         | 0.01        | 0.01         | 32.33            |
| Paving Worker Trips                | 0.03         | 0.05         | 0.97         | 0.00        | 0.01         | 0.00        | 0.01         | 0.00         | 0.00        | 0.01         | 124.38           |
| Building 09/06/2010-06/10/2011     | 3.07         | 14.28        | 11.67        | 0.01        | 0.02         | 0.91        | 0.94         | 0.01         | 0.84        | 0.85         | 1,899.63         |
| Building Off Road Diesel           | 2.86         | 12.32        | 8.57         | 0.00        | 0.00         | 0.83        | 0.83         | 0.00         | 0.77        | 0.77         | 1,293.74         |
| Building Vendor Trips              | 0.15         | 1.86         | 1.33         | 0.00        | 0.01         | 0.07        | 0.09         | 0.00         | 0.07        | 0.07         | 378.35           |
| Building Worker Trips              | 0.05         | 0.10         | 1.77         | 0.00        | 0.01         | 0.01        | 0.02         | 0.00         | 0.01        | 0.01         | 227.55           |
| Fine Grading 09/06/2010-06/10/2011 | 3.32         | 26.44        | 15.15        | 0.00        | 20.01        | 1.44        | 21.45        | 4.18         | 1.33        | 5.51         | 2,689.31         |
| Fine Grading Dust                  | 0.00         | 0.00         | 0.00         | 0.00        | 20.00        | 0.00        | 20.00        | 4.18         | 0.00        | 4.18         | 0.00             |
| Fine Grading Off Road Diesel       | 3.29         | 26.37        | 13.94        | 0.00        | 0.00         | 1.44        | 1.44         | 0.00         | 1.32        | 1.32         | 2,533.84         |
| Fine Grading On Road Diesel        | 0.00         | 0.00         | 0.00         | 0.00        | 0.00         | 0.00        | 0.00         | 0.00         | 0.00        | 0.00         | 0.00             |
| Fine Grading Worker Trips          | 0.04         | 0.07         | 1.21         | 0.00        | 0.01         | 0.00        | 0.01         | 0.00         | 0.00        | 0.01         | 155.47           |
| Mass Grading 09/06/2010-06/10/2011 | 2.84         | 21.74        | 11.81        | 0.00        | 60.01        | 1.26        | 61.27        | 12.53        | 1.16        | 13.70        | 2,157.80         |
| Mass Grading Dust                  | 0.00         | 0.00         | 0.00         | 0.00        | 60.00        | 0.00        | 60.00        | 12.53        | 0.00        | 12.53        | 0.00             |
| Mass Grading Off Road Diesel       | 2.81         | 21.69        | 10.85        | 0.00        | 0.00         | 1.26        | 1.26         | 0.00         | 1.16        | 1.16         | 2,033.43         |
| Mass Grading On Road Diesel        | 0.00         | 0.00         | 0.00         | 0.00        | 0.00         | 0.00        | 0.00         | 0.00         | 0.00        | 0.00         | 0.00             |
| Mass Grading Worker Trips          | 0.03         | 0.05         | 0.97         | 0.00        | 0.01         | 0.00        | 0.01         | 0.00         | 0.00        | 0.01         | 124.38           |
| Trenching 09/06/2010-06/10/2011    | 2.48         | 21.29        | 10.61        | 0.00        | 0.01         | 0.99        | 1.00         | 0.00         | 0.91        | 0.92         | 2,410.00         |
| Trenching Off Road Diesel          | 2.45         | 21.22        | 9.41         | 0.00        | 0.00         | 0.99        | 0.99         | 0.00         | 0.91        | 0.91         | 2,254.53         |
| Trenching Worker Trips             | 0.04         | 0.07         | 1.21         | 0.00        | 0.01         | 0.00        | 0.01         | 0.00         | 0.00        | 0.01         | 155.47           |

Phase Assumptions

Phase: Fine Grading 9/6/2010 - 6/10/2011 - Backfill and Grading

Total Acres Disturbed: 17

Maximum Daily Acreage Disturbed: 1

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 9/6/2010 - 6/10/2011 - Grubbing and Clearing

Total Acres Disturbed: 17

Maximum Daily Acreage Disturbed: 3

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Crawler Tractors (147 hp) operating at a 0.64 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 9/6/2010 - 6/10/2011 - Trenching/Excavation

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

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1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 9/6/2010 - 6/10/2011 - Paving

Acres to be Paved: 4.25

Off-Road Equipment:

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 9/6/2010 - 6/10/2011 - Pipeline Construction

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day







**AECOM**

**OLIVENHAIN**  
Municipal Water District