4.5 FLOODING, HYDROLOGY, AND WATER QUALITY

This section includes a discussion of local flooding and drainage conditions, and factors affecting water quality such as erosion and sedimentation. The section draws from previous analysis of the watershed and lower Arroyo Grande Creek channel, including the Alternatives Study (Swanson 2006), the Halcyon Road Master EIR (Morro Group 2007), and the Arroyo Grande Creek Watershed Management Plan Update prepared by Central Coast Salmon Enhancement (CCSE) (2009). Erosion, and its relationship to water quality, is considered in this section, although it is primarily discussed in the Geology and Soils section.

4.5.1 Existing Conditions

4.5.1.1 Arroyo Grande Creek Watershed Hydrology

Arroyo Grande Creek drains a 157 square mile watershed and is the dominant surface water feature in the project area. Flows in the creek are dominated by two factors, winter rains, and Lopez Dam. Typical of the central coast, large winter storms, which generally occur between October and April, first saturate the soils in the watershed. Once the soil is saturated, stormwater runoff and subsequently creek flows increase significantly. In their assessment of the creek conditions, Swanson (2004) noted that peak flow events are "flashy and are tied closely to the duration and magnitude of winter rainfall."

Lopez Dam, approximately 10 miles upstream from the project area, impounds approximately seventy square miles of the upper watershed (Swanson 2006), which is dominated by the Los Padres National Forest. As of 2001 the reservoir behind the dam had a capacity of approximately 49,000 acre feet and an annual safe yield (the amount of water that the dam can safely provide) of approximately 9,000 acre feet per year (afy). Approximately half of that yield is provided to municipal water suppliers. The remaining yield is for agricultural use, groundwater recharge, and for maintaining natural systems (CCSE 2009).

The lower watershed, approximately 87 square miles, is heavily urbanized, which has led to increased stormwater runoff, erosion of creek banks, and sedimentation of the creek. The project site is in the lower watershed, specifically in the lower Arroyo Grande Valley, where local hydrologic conditions have been substantially altered.

As early as the 1860s, the downstream portions of Arroyo Grande Creek in the project area have been channelized to some degree (CCSE 2009). Historical accounts of the conditions in the lower valley indicate the creek meandered considerably during high flows, and the floodplain was extensive. (CCSE 2009). A map prepared in 1873 (refer to Figure 4.5-1) shows much of the eastern half of the lower valley (between the creek and the Nipomo Mesa) as a series of marshes (JRP Historical Consulting 2009). Signs of the flood plain are also visible in a 1939 aerial photograph (refer to Figure 4.5-1). Historically, Los Berros Creek entered the lower valley from the east and turned immediately to the south and "around" the southern edge of the valley, before joining Arroyo Grande Creek near its outlet at the ocean.

In 1961 two significant man-made changes to the hydrologic conditions of the lower valley were completed. Arroyo Grande Creek was channelized by earthen levees from near its outlet at the Pacific Ocean to approximately three miles upstream. And, Los Berros Creek was diverted and channelized so that upon entering the valley (near Valley Road) it flowed due west directly into the Arroyo Grande Creek channel (refer to Figure 4.5-1).

The channelized portion of Los Berros Creek intersects the channelized Arroyo Grande Creek northeast of the intersection of Halcyon Road and Highway 1. Los Berros Creek drains watershed areas north and east of the project area. Upstream uses are predominately residential and agricultural. Despite the presence of Lopez Dam and the leveed channels, the lower Arroyo Grande Creek Valley is subject to flooding from storm events larger than the 4.6 year event.

4.5.1.2 Flooding and Drainage

The proposed project is located in an area that has experienced extensive flooding in the past. In the first half of the 20th Century, landowners were on their own to protect farmlands from inundation. There were at least seven episodes of severe flooding damage between the years of 1900 and 1960. In 1961, the Arroyo Grande Creek Flood Control Project was organized. The project included various governmental agencies and resulted in the construction of levees along Arroyo Grande Creek from its confluence with Los Berros Creek to the Pacific Ocean. Levees were also constructed along Los Berros Creek from near the edge of the Nipomo Mesa to Arroyo Grande Creek (Swanson 2006). That original project was intended to control a 50-year flood. A 50 year flood has a two percent chance that it could happen in any given year, but occurs approximately once every 50 years.

The Alternatives Study found that when channelized by the levees, Arroyo Grande Creek lost the ability to migrate across the broad valley, as it did historically, and therefore sediment buildup has resulted. In addition, over time development upstream from the levee system has increased stormwater runoff, resulting in higher flows and sediment loads in the creek. The levees have settled over time as well, reducing their height.

Maintenance (sediment and vegetation removal) of the channels in recent years has been limited by a lack of funding and stricter environmental regulations developed to protect sensitive species that exist within the Arroyo Grande and Los Berros Creek channels.

Drainage Features

The Arroyo Grande and Los Berros Creek channels are the dominant drainage features in the project area and they convey stormwater that has originated in the watershed above the project site to the Pacific Ocean. Stormwater runoff in the immediate vicinity of the project site infiltrates into the permeable agricultural fields or is captured in the linear drainage features of the agricultural operations. Some of these drainages eventually connect with Arroyo Grande or Los Berros Creek channels, and some simply terminate at property lines, roads, or field limits. There are also storm drains that drain urban lands adjacent to the channels and outflow directly into the Arroyo Grande Creek and Los Berros Creek channels.

Floodplain

Flood Insurance Rate Maps divide flood areas into three zones: Zone A for areas of 100-year flood, base flood elevations not determined; Zone B for areas of 500-year flood; and Zone C for areas of minimal flooding. The National Flood Insurance Program 100-year floodplain is considered to be the base flood condition. This is defined as a flood event of a magnitude that would be equaled or exceeded an average of once during a 100-year period. Floodways are defined as stream channels plus adjacent floodplains that must be kept free of encroachment as much as possible so that 100-year floods can be carried without substantial increases (no more than one foot) in flood elevations. Figure 4.5-2 shows the Federal Emergency Management Act (FEMA) 100-year flood zones in the vicinity of the project area.

Due to the inability of the San Luis Obispo County Flood Control and Water Conservation District (District) to maintain the channel capacity (refer to the Project Description), currently storms greater than a 4.6-year event (one which occurs roughly every five years, but has a 20 percent chance of happening every year) will overtop the channel levees and result in localized flooding. Levee overtopping within the project area occurs first on the southern levee as they are slightly lower than the northern levee, so that floodwaters would affect agricultural properties primarily before residential properties.

Arroyo Grande Creek Lagoon

The lagoon is not in the project area, and would not be managed as a part of the WMP, however due to its location and function, is a critical component of the creek system. The lagoon is located at the most downstream end of the creek. It is bounded on the north by the existing levee and extends south along the north-south trending Oceano dunes. During periods of low flow, the creek does not break through the sandbars on the beach to reach the ocean. The upstream and downstream boundaries of the lagoon vary from year to year depending on creek flows, tides, sediment movement and beaver activity. The length of the creek to lagoon transition zone, the lagoon itself, and the lagoon outlet to the Pacific, is approximately one-half mile long.

4.5.1.3 Water Quality

The issue of surface water quality is important because of the habitat value of the County's creeks and tributaries, including habitat for several endangered or threatened plant and animal species. Surface water entering watercourses from undeveloped areas usually travels over vegetative cover, and erosion and sedimentation is a slow, gradual process. Urbanized areas typically contain pollutants on the ground surface that are harmful to water quality. These include heavy metals, hydrocarbons, detergents, fertilizers, and pesticides that originate from vehicle use and commercial and residential land use activities. For the most part, these pollutants are associated with sediments that collect on roadways and are flushed into the creek system either in dry weather flows during construction or by rainfall. Construction activities also create erosion and cause sediment to be transported off-site by surface water runoff. Therefore, water quality depends mainly on the hydrologic characteristics of the drainage basin, the makeup of the soils in the watershed, and sources of pollution in the watershed.

Sediment Transport

To determine the rate at which sediment was accumulating in the flood control reach (i.e. project area), Swanson included a sediment budget and transport analysis in the Alternatives Study. The analysis included an assessment of potential sediment sources and quantities, and evaluated the ability of the channel to transport sediment. If the quantities of sediment in the creek exceeded the ability of the creek to transport, than it is assumed that the "excess" sediment is either being deposited in the floodplain or in the channel. The analysis proved difficult, and the modeling results suggested that there was potentially 70,000 tons of excess sediment deposited annually. This number was refined considerably after reviewing historical sediment removal activities and re-evaluating erosion rates and the potential of peak flows to discharge sediment. The report concluded that approximately five to fifteen thousand tons (3,300 to 10,000 cubic yards) of sediment may be accumulating in the creek annually. The study also concludes that even during moderate discharge the channel is most likely aggrading as there is not enough energy in the system to transport the sediment, but during high discharge periods, the channel is scouring and removing sediment from the system.

Sediment transport through the lagoon reach varied considerably not only due to discharge rates, but also morphology of the lagoon. Because of this, the upper and lowest ends of the lagoon reach proved most effective at discharging sediment.

Water Quality Monitoring

The Central Coast Regional Water Quality Control Board (RWQCB) Central Coast Ambient Water Quality Monitoring Program (CCAMP) includes Arroyo Grande Creek. The program is a water quality and assessment program intended to "*collect, assess, and disseminate scientifically based water quality information to aid decision makers and the public in maintaining, restoring, and enhancing water quality and associated beneficial uses"* (CCAMP 2009). The program includes a number of specific goals including assessing watershed conditions on a five-year basis, assessing long-term water quality trends, and providing water quality information to the public in a useful form to support decision making. In or near the project site, the program includes monitoring stations at the Arroyo Grande Lagoon (monitored in 1998), Arroyo Grande Creek at 22nd Street (monitored from 2001 to 2006) and at Los Berros Creek at Valley Road (monitored from 2002 to 2003).

In some cases nearly 100 parameters used as water quality indicators by the RWQCB or Environmental Protection Agency (EPA) were evaluated. Based on reviews of the data performed by Central Coast Salmon Enhancement, trends in water quality are reflective of the flow patterns in the Creek, where sediment and nutrient loads may increase sharply during high flow storm events, and then reduce to a baseline level soon after. Water quality data suggests that water quality is generally "good" in the creek, with basin criteria being met. However there have been some quality issues identified during monitoring. These include elevated levels of fecal coliform, total dissolved solids (TDS), chloride and sulfate at the 22nd Street site. Boron levels, which could affect irrigation waters, have also been noted as an issue. Monitoring at Valley Road has shown elevated levels of fecal coliform, high levels of nitrates, and high levels of boron and TDS, both of which can affect agricultural irrigation water quality. Dissolved oxygen, oxygen saturation, and pH were noted at levels which could affect cold water fish habitat.

Central Coast Salmon Enhancement has also conducted volunteer monitoring along Arroyo Grande Creek, with results similar to those of the RWQCB.

Figure 4.5-1. Historic Flood Channel Locations

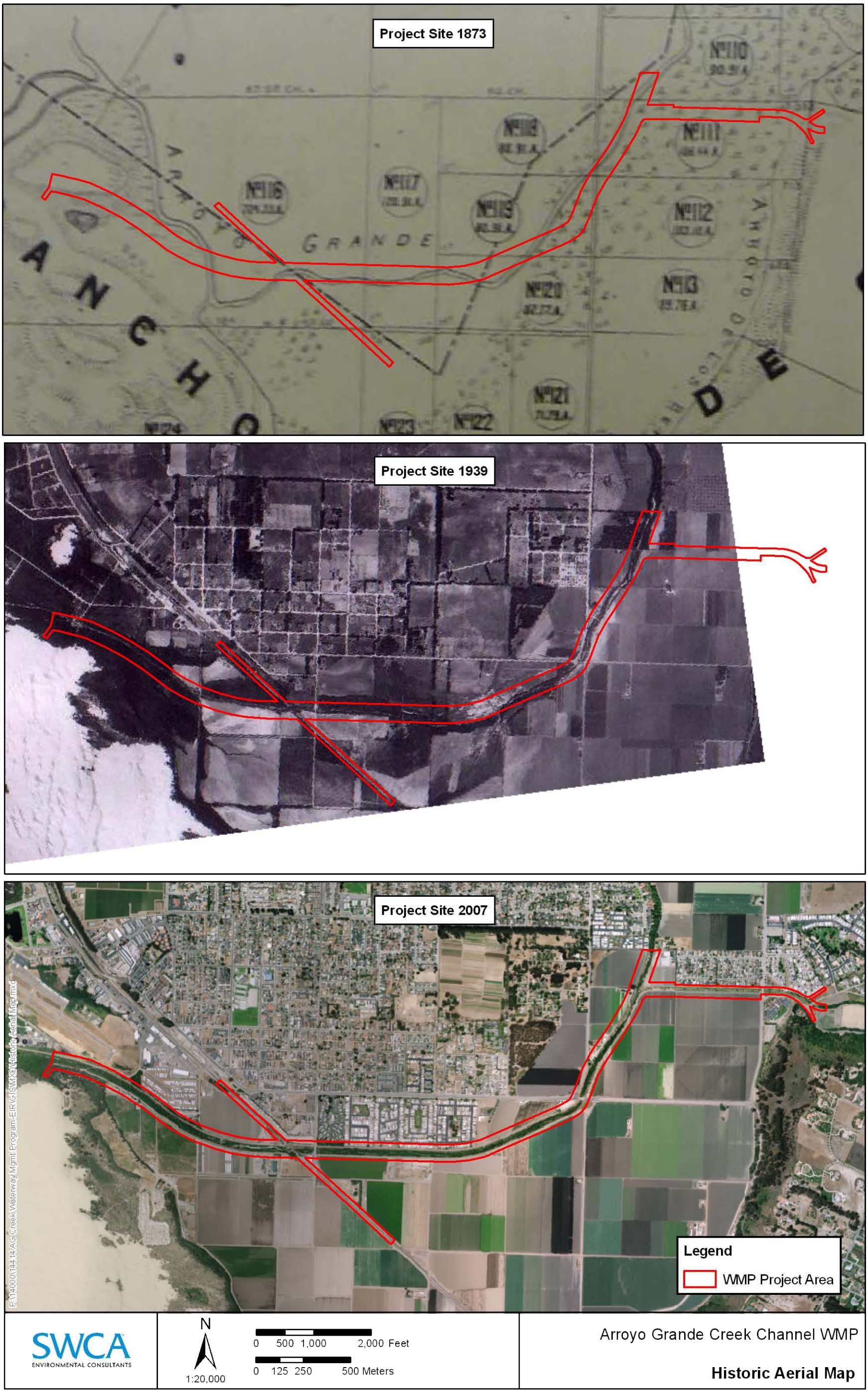

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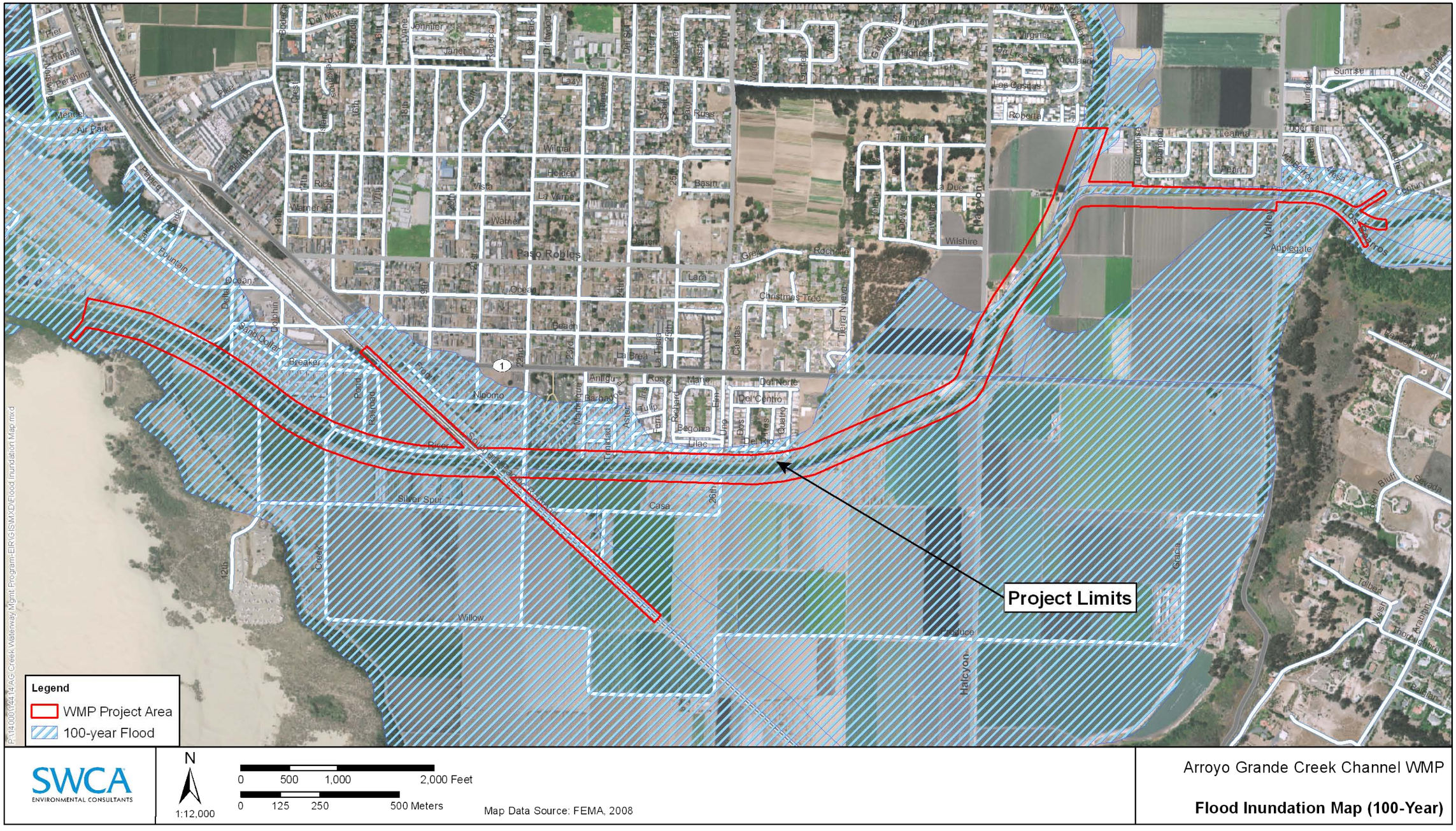
Figure 4.5-2. FEMA 100-Year Inundation Zone



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4.5.2 Regulatory Setting

Surface water and groundwater resources and their associated water quality are regulated in California through many different applicable laws, regulations, and ordinances administered by local, state and federal agencies. The United States Army Corps of Engineers (USACE), California Department of Water Resources, Central Coast RWQCB, and the District are the primary agencies responsible for the protection of watersheds, floodplains, and water quality. These agencies ensure that the hydrologic characteristics of surface water and groundwater are considered, so that the existing identified beneficial uses are not impaired. Similarly, water quality regulations are designed to limit the discharge of pollutants to the environment, maintain surface water and groundwater quality, protect fish and wildlife and their habitats, and protect beneficial uses. This section describes regulations relevant to construction of the proposed project.

4.5.2.1 Federal and State Policies and Regulations

Federal and state agencies have jurisdiction over specific activities conducted in or connected to drainages, stream channels, wetlands and other water bodies. The federal government supports a policy of minimizing "the destruction, loss or degradation of wetlands" (Executive Order 11990, May 24, 1977). The USACE and the EPA regulate the placement of dredged and fill material into "waters of the United States," including wetlands, under Section 404 of the Clean Water Act (CWA). For all work subject to a 404 permit, project approval also must be obtained from the RWQCB via either a certification or a waiver under Section 401 of the CWA stating that the project would comply with applicable water quality regulations.

Since 1990, regulations have increasingly emphasized the control of water pollution from non-point sources, which include stormwater systems and runoff from point-source construction sites and industrial areas. In California, the State Water Resources Board (SWRCB) issued a statewide General Permit to regulate runoff from construction sites involving grading and earth moving in areas over one acre. The SWRCB is acting to enforce requirements of the federal CWA, pursuant to regulations issued by the EPA for the National Pollutant Discharge Elimination System (NPDES). This state order requires construction projects covered under the General Permit to use the "best available technology economically achievable," and the "best conventional pollution control technology". Each construction project subject to the permit is required to have a Storm Water Pollution Prevention Plan (SWPPP) prepared, which identifies likely sources of sediment and pollution and incorporates measures to minimize sediment and pollution in runoff water.

The State Department of Water Resources also is responsible for coordinating flood-fighting activities and is authorized to receive requests from public agencies for assistance during floods. Should flooding occur, these agencies would have policies and regulations to address management of flooding hazards.

4.5.2.2 Local Policies and Regulations

Chapter 52 of the County's Land Use Ordinance (Title 22 of the County Code) contains site development standards for the County, including drainage, grading, erosion, and sedimentation control. Sections that are applicable to drainage, grading, erosion, and sedimentation are outlined below.

Section 22.52.020 states that the purpose of the County's standards for grading and excavation is to minimize hazards to life and property; protect against erosion and the sedimentation of

water courses; and to protect the safety, use, and stability of public rights of way and drainage channels.

Section 22.52.080 of the Ordinance states that standards for the control of drainage and drainage facilities are designed to minimize harmful effects of stormwater runoff and resulting inundation and erosion on proposed projects, and to protect neighboring and downstream properties from drainage problems resulting from new development.

Erosion and sedimentation control to protect damaging effects on-site and on adjoining properties is discussed in Section 22.52.090 of the Ordinance. A sedimentation and erosion control plan would be required for the proposed project. The plan must discuss temporary and final measures including:

- Slope surface stabilization including temporary mulching or other stabilization measures to protect exposed areas of high erosion potential during construction and interceptors and diversions at the top of slopes to redirect runoff;

- Erosion and sedimentation control devices such as absorbing structures or devices to reduce the velocity of runoff; and

- Final erosion control measures including mechanical or vegetative measures.

4.5.2.3 County Impaired Water Bodies

Section 303(d) of the federal Clean Water Act, requires States to identify waters that do not meet water quality standards after applying effluent limits for point sources (other than publicly owned treatment works) that are based on the best practicable control technology currently available. States are then required to prioritize waters/watersheds for total maximum daily loads (TMDL) development. States are to compile this information in a list and submit the list to EPA for review and approval. This list is known as the 303(d) list of impaired waters. The SWRCB and RWQCB have ongoing efforts to monitor and assess water quality, to prepare the Section 303(d) list, and to develop TMDLs (RWQCB 2004). Arroyo Grande Creek is not listed as an impaired water body.

4.5.3 Thresholds of Significance

Criteria for evaluating the significance of hydrology and water quality impacts included in the CEQA *Guidelines,* Appendix G, are directed toward identifying substantial changes in drainage patterns, drainage volumes, or violations of water quality standards. Impacts would be considered significant if the proposed project would result in any of the following:

1. Potentially degrade surface or groundwater quality below standards established by the Regional Water Quality Control Board;

2. Substantially interfere with groundwater recharge;

3. Substantially alter the existing drainage pattern of the area such that substantial erosion or sedimentation occurs;

4. Substantially alter the existing drainage pattern or substantially increase the rate or amount of surface runoff in a manner which results in flooding;

5. Create or contribute runoff which would exceed the capacity of stormwater drainage systems; or

6. Substantially add additional sources of polluted runoff to a water body.

4.5.4 Impact Assessment and Methodology

Development adjacent to or near surface waters is subject to specific design and construction conditions in order to ensure the project's stormwater is adequately contained and directed without adversely affecting downstream locations. Typically an impact would occur if the proposed project directed construction runoff or stormwater in the long-term to areas where downstream capacity could be exceeded. Because the proposed project would increase stormwater capacity of the Arroyo Grande and Los Berros Creek channels, the assessment focuses instead on impacts to the drainage system, sediment transport and groundwater recharge.

The determination of water quality significance is based on a review of typical construction site pollutants usually found on job sites that might contribute disproportionate amounts of polluting materials in runoff and effects that long-term management of the channels may have on water quality factors such as temperature and turbidity.

4.5.5 Project-Specific Impacts and Mitigation Measures

4.5.5.1 Flooding and Drainage

The proposed project would increase the flood control capacity of the channel and ultimately provide 20-year flood protection to all properties located within the assessment district. In some cases, as described in the Project Description, those properties have as little as 4.6-year flood protection. The increased stormwater discharge from the Arroyo Grande Creek channel resulting from this project would discharge into the Pacific Ocean, located immediately downstream from the proposed project. Therefore the project would not change drainage patterns in a way that results in increased flooding or exceeding stormwater facilities. Further, because the project would include regular removal of vegetation from outside of the low flow channel buffer, the channel may be less constricted by vegetation, and floodwaters would be less likely to result in small-scale flood events at individual locations.

There are three storm drains identified on the Alternative 3a and 3c conceptual plans. In some case the storm drains would need to be extended due to the expansion of the levee footprint; however, no storm drains would be redirected, removed, or "capped" as a result of this project. Impacts to the flooding patterns and drainage systems would be *less than significant.* No mitigation measures are required.

<u>Groundwater Recharge</u>

Generally natural recharge of groundwater supplies occurs due to the infiltration of precipitation, the surface and subsurface flow of creeks, and flood events. Groundwater recharge may also occur as a result of the percolation of irrigation water which is not consumed by crops. Winter rains provide direct irrigation for crops in the Arroyo Grande Valley, but groundwater is used to supplement rainfall.

One option to provide 20-year protection identified in the Alternatives Study included developing off-channel flood storage areas where floodwaters could be directed during high flow events.

The report proposed that storage of up to approximately 620 acre-feet (af) of stormwater may be necessary to provide protection from a 20-year storm. The stored floodwaters would then be pumped back into the channel after flows had decreased. This is the same level of protection resulting from implementation of the proposed project.

As a result of the proposed project those floodwaters would no longer overtop the levee and would instead reach the ocean, which would theoretically reduce recharge of the local groundwater basin. However, the potential of flood waters to recharge groundwater in the lower Arroyo Grande Valley south of the levees is limited by three factors:

1. Flood events usually occur after (and partially because) soils are already saturated and can no longer absorb water;

2. Even in the dry season the water table is relatively near the surface both adjacent to the levee (Fugro 2009) and below at the southern end of the valley (Swanson 2006), leaving little capacity for recharge; and

3. The southern end of the valley (the Cienaga Valley) may already be flooded when the Arroyo Grande Creek channel levees overtop due to flows in the old Los Berros Creek channel and presence of clay soils.

Floodwaters associated with the 2001 flood did not percolate into the groundwater, but rather inundated agricultural lands in the southern valley for many months due to the already saturated soils (Swanson 2006).

The proposed project would not require significant groundwater resources although it may be used for dust control during construction periods. Due to the factors described above groundwater recharge would not be reduced significantly as a result of the proposed project. Impacts to groundwater levels and recharge would be *less than significant.* No mitigation would be required.

4.5.5.2 Water Quality

Construction Activities

Construction activities can impair water quality temporarily due to the potential for sediment, petroleum products, construction materials and miscellaneous wastes to be discharged into receiving waters or the storm drainage system. Soils and associated contaminants that enter stream channels can increase turbidity, stimulate growth of algae, increase sedimentation of aquatic habitat and introduce compounds that are potentially harmful or toxic to aquatic organisms. Construction materials such as fuels, oils, paints and concrete are potentially harmful to fish and other aquatic life if released into the environment.

Project components including the sediment management, levee raise Alternative 3a and 3c, and the UPRR bridge raise may all result in construction-related impacts to water quality as they will require significant movement of soil and use of heavy machinery in and around the creek channels. According to the Preliminary Geotechnical Engineering Report prepared by Fugro (2009) for the proposed project, some of the project components, including the levee raises may require dewatering that would temporarily lower surface and groundwater levels to facilitate excavations. Groundwater would be discharged back into the creek subsequently. Discharge of turbid waters or water with an altered temperature back into the channel could impact water

quality. Baker tanks may be used as desiltation devices to settle out sediments prior to discharge.

WQ Impact 1 **Construction activities would significantly impact water quality due to the exposure of large areas of soil to erosive forces, the need to dewater during construction, and due to the presence of fuel, oil, and other pollutants on site for construction purposes.**

Mitigation Measures

Implement GS/mm-4 through GS/mm-6.

Residual Impact

With implementation of the mitigation described in the Geology and Soils section of this EIR, this impact would be considered *less than significant*. No additional mitigation is required.

Long-Term Management Activities

Long-term sediment and vegetation management activities would result in flood control channels that contain less vegetative cover overall; however, riparian cover of the low flow channel would remain and over time be enhanced through the management as described in the WMP. Vegetation management would be performed primarily with handtools and therefore the possibility of heavy machinery leaking or spilling fuel or other contaminates into the channel is low. Levee slopes could also be exposed during periods when significant vegetation is removed to maintain channel capacity and the roughness coefficient goals discussed in the Project Description. Further, based on the timing of the various project components, the erosion control and SWPPP recommended (GS/mm4 through6) may not be in effect.

WQ Impact 2 **Long-term sediment and vegetation management activities may impact surface water quality due to the reduction of vegetation, exposure of areas of soil to erosive forces, and due to the presence of fuel, oil, and other pollutants on site for sediment removal purposes.**

Mitigation Measures

Implement BR/mm 5, 7, 8, 9, and 13.

WQ/mm-1 *Prior to commencement of annual vegetation and sediment management the County shall prepare an erosion control and water quality protection plan that details measures to be taken during annual monitoring and maintenance efforts that would minimize water quality impacts. This plan would borrow heavily from the SWPPP and shall include measures such as:*

1. *Maintaining vegetation outside of the buffer area if it is providing protection and shade of the low-flow channel;*

2. *Minimizing equipment operation in the channels;*

3. *Prohibiting refueling within or adjacent to the channels;*

4. *Identifying appropriate species to be planted on levee slopes to provide erosion control that are compatible with biological resources mitigation and the desired channel roughness coefficient.*

Residual Impact

With implementation of mitigation, this impact would be considered *less than significant with mitigation*. Amend after bio and WMP complete.

Sediment Transport

Prior to the levee construction, sediment in the creek was either transported to the ocean or settled into the broad floodplain during flood events. Channel aggradation was not common. The project includes raising the levees and the creation and maintenance of secondary channels within the levees. The secondary channel would allow the channel to act more like a natural system and more effectively transport sediment through the flood control reach and into the ocean. The levee would reduce the possibility that sediment would reach the floodplain. As a result of the proposed project, it is likely that more sediment will be entrained by the creek flows and less will settle out and be deposited in the creek bed. Modeling done specifically for the lagoon area indicate that the proposed project would increase sediment transport during periods when flow rates are 4000 cubic feet per second (cfs) or greater but would potentially transport a similar amount or less when flow rates are less than 4,000 cfs (Figure 4.10 of the Alternatives Study). Therefore, increased sedimentation of surface water is only likely during very high flow events which do not occur annually. During these events large volumes of sediment are already being transported.

The WMP requires that the sediment volumes in the channels are monitored annually to identify how much material has been removed by management activities and how much has been deposited during the rainy season. Excess sediment deposition would be removed as necessary during management activities. The proposed project would not increase sediment loads in surface water significantly, and would not result in increased deposition of sediment in the channel. Impacts related to sediment transport are less *than significant*. No mitigation is required.

4.5.6 Cumulative Impacts

Typical flooding, hydrology, and water quality impacts resulting from development include expanded impervious surfaces, increased discharge of stormwater or sediment into a drainage system, or development within a floodplain which may reduce the floodplain capacity and affect upstream or downstream land uses. These impacts may contribute cumulatively along with other projects to result in significant impacts. However the proposed project is a construction and maintenance project designed to increase flood control capacity. No impervious surfaces are proposed, and no significant alteration to the location or extent of existing natural and manmade drainage systems is proposed.

Mitigation measures above address the potential for construction-related contamination of stormwater to a less than significant level. Because construction is short-term, there would be no cumulative impacts. The project is not expected to reduce groundwater recharge or affect groundwater patterns individually or cumulatively. Increased sedimentation of surface water would occur only during period of high flows in the creek when sediment transport is already substantial.

Long-term sediment and vegetation management activities would potentially affect water quality as it pertains to sensitive species and habitat. These issues are considered in the Biological Resources section of the EIR. The Arroyo Grande Creek Watershedway Management Plan Update (2009) prepared by Central Coast Salmon Enhancement identifies a number of reasonably foreseeable projects that, along with the proposed project, could have a significantly cumulative negative or beneficial impact to the Arroyo Grande Creek watershed. These include increasing the capacity of Lopez Dam, proposed urban development at the Laetitia Vineyard, and habitat enhancement projects such as barrier removal, erosion control, and removal of nonnative species from the creek and its tributaries.

Projects that potentially have a direct effect on Arroyo Grande Creek are generally highly regulated. The projects described above would all require permits from resource agencies including the USFWS, USACE, and the RWQCB. These agencies ensure that impacts to water quality and habitat are limited. The proposed project is also subject to regulations by all of these agencies and therefore would not contribute cumulative impacts to water quality or alterations of the local hydrologic conditions. Cumulative impacts to Flooding, Hydrology, and Water Quality are *less than significant*. No mitigation beyond that already discussed in this EIR is required.

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