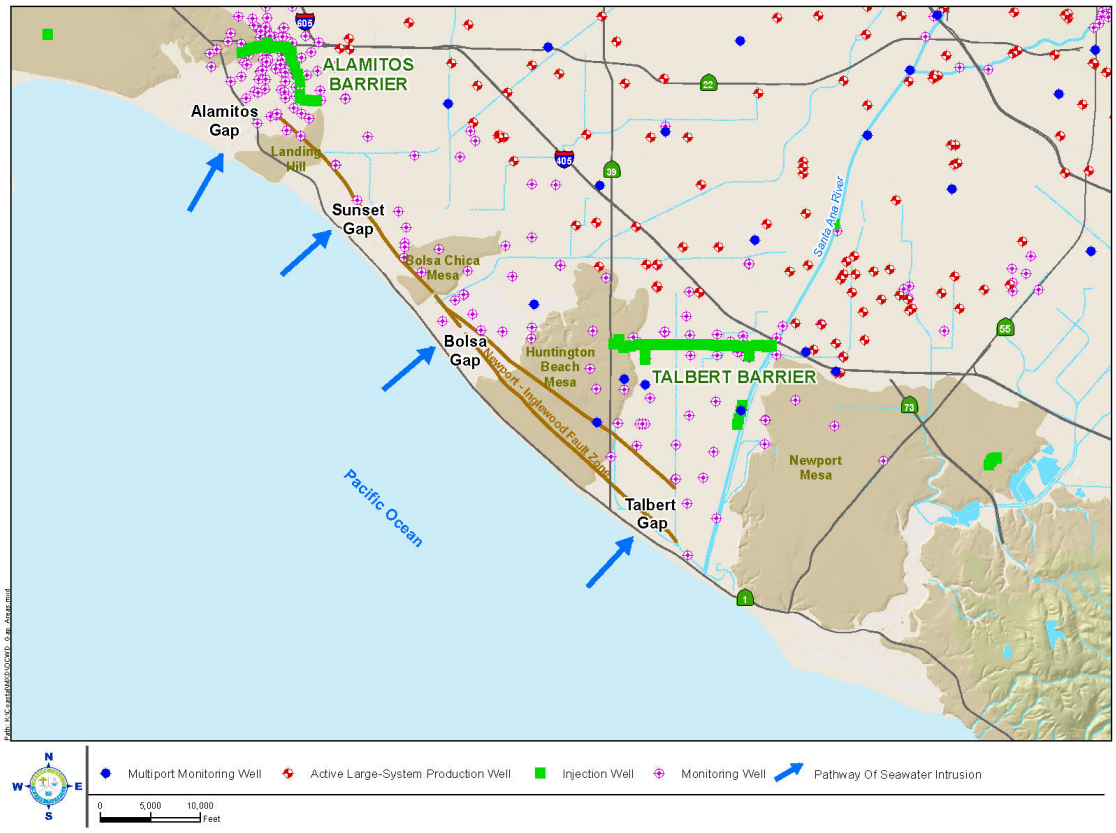
Work Plan (Attachment 5)
Sunset Gap Seawater Intrusion Assessment

Scope of the Proposed Project

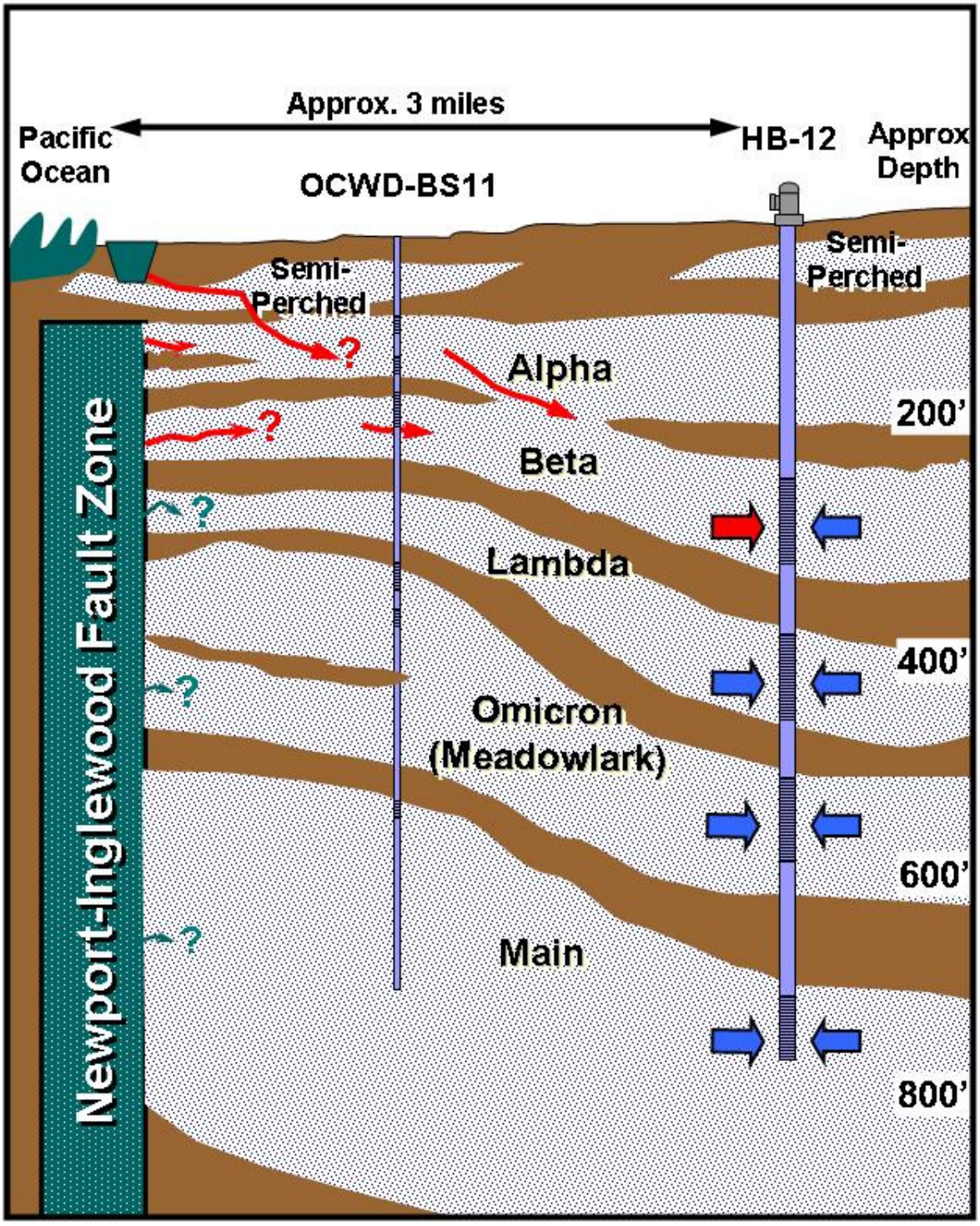
The project is located in the Sunset Gap, which is primarily located in the area of the Naval Weapons Station Seal Beach. The location of the Sunset Gap is shown in Figure 1.

Figure 1
Location Map



The Sunset Gap is a flat, 3-mile wide, low-lying topographic feature that is bounded by Landing Hill to the northwest and Bolsa Chica Mesa to the southeast. Landing Hill and Bolsa Chica Mesa are erosional remnants of Pleistocene-aged alluvial and marine sediments uplifted by the Newport-Inglewood Fault Zone (NIFZ). In general, offset along the NIFZ forms a significant impediment to seawater intrusion; however, the NIFZ is not a complete seawater barrier, as evidenced by increasing chloride concentrations in wells inland of the fault zone. Figure 2 is a schematic cross section in the Sunset Gap.

Figure 2
Sunset Gap Schematic Cross Section



The Sunset Gap Seawater Intrusion Assessment project will identify the direction and rate of movement of saline groundwater, determine the salinity concentration in specific aquifers, provide a baseline from which future salinity changes can be measured, and provide data needed to evaluate the feasibility of seawater intrusion control alternatives.

Seawater intrusion negatively affects groundwater quality and may reduce the availability of local groundwater supplies. This project is necessary to monitor seawater intrusion and collect data needed to assist in future seawater management control.

The overall purpose of the Sunset Gap Seawater Intrusion Project is to develop a better understanding of the lateral and vertical extent of seawater intrusion in the Sunset Gap. This will in turn provide the foundation for informed management decisions regarding controlling seawater intrusion and protection of water quality.

The project objectives for the Sunset Gap Seawater Intrusion Assessment are:

- Identify the direction and rate of movement of saline groundwater in the Sunset Gap
- Determine the salinity concentration in specific aquifers in the Sunset Gap
- Provide a baseline from which future salinity changes can be measured
- Provide data needed to evaluate the feasibility of seawater intrusion control alternatives in the Sunset Gap

To meet these objectives, OCWD has proposed the Sunset Gap Seawater Intrusion Assessment. This assessment will construct four nested monitoring wells. Each of the four monitoring wells will be constructed with five 4-inch diameter PVC casings installed in a single borehole drilled using reverse rotary equipment. Each casing will have a 20-foot long screen installed to monitor water levels and quality at a specific depth.

The data to be collected through the project include:

- Geologic and geophysical logs from each of the four boreholes
- Groundwater elevation data from each of the individual wells (estimated to be five casings per well, for a total of 20 monitoring points)
- Water quality data from the 20 monitoring points. Water quality analyses will be conducted by OCWD's state-certified Water Quality Laboratory. Selected measurements will be made in the field.
    - Temperature, pH, dissolved oxygen (field parameters)
    - Total dissolved solids (TDS)

- General minerals (chloride, etc…)
- Nitrate, nitrite, ammonia, phosphate
- Volatile organic compounds (VOCs)

Based on available data, OCWD staff believes that saline water occurs in the Beta aquifer at a depth of approximately 260 to 300 feet bgs in the vicinity of the Huntington Beach wells that have shown signs of seawater intrusion. Other aquifers may also be affected by salinity. Potential origins of the seawater intrusion in Sunset Gap include the Huntington Harbor area, Anaheim Bay tidal inlets, and the Alamitos Gap/Landing Hill area. TDS concentrations range from less than 250 milligrams per liter (mg/L) in wells unaffected by seawater intrusion to over 20,000 mg/L in wells near Huntington Harbor.

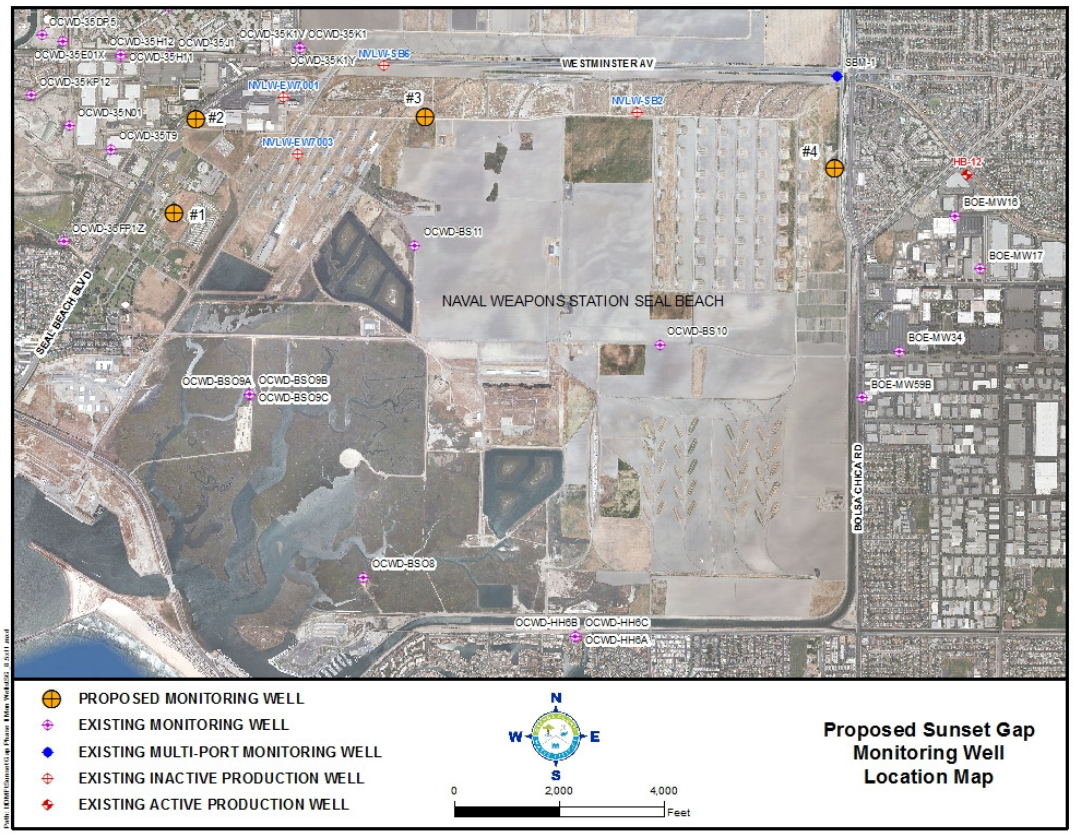
The locations and preliminary casing depths of the four proposed monitoring wells are based on hydrogeologic data from existing wells, including two monitoring wells recently installed by OCWD. Existing data in the vicinity of the Naval Weapons Station Seal Beach indicate that groundwater flows easterly to northeasterly in the Beta aquifer, which shows the greatest inland extent of seawater intrusion. This makes it likely that the source of the intrusion is the Alamitos Gap. Therefore, the two westernmost monitoring wells are proposed closer to the Alamitos Gap where source control measures may be more feasible to prevent future seawater intrusion. The preliminary casing depths for these wells were based on extrapolation of aquifer depths at the nearest wells in the Alamitos Gap. Should the data from these two monitoring wells confirm that seawater intrusion is emanating from the Alamitos Gap in a west-to-east direction, then these wells are optimally located to assist in the design of a potential future extension of the Alamitos Seawater Barrier injection well network.

The other two proposed monitoring well locations were selected to delineate the downgradient lateral and vertical extent of seawater intrusion that has migrated inland beyond any potential future injection barrier alignment. By delineating the extent and magnitude of intrusion, additional remedial measures beyond source control can be considered, such as brackish groundwater extraction and desalination. These proposed monitoring wells will provide salinity concentrations in specific aquifers, direction of flow, and aquifer permeability and thickness, all of which would be needed to assess potential extraction rates for an effective hydraulic containment system. Such a system may be necessary and appropriate rather than allowing a large “plume” of seawater to continue to migrate toward production wells and impact larger portions of the groundwater basin. The preliminary casing depths for these wells were selected to target the most likely aquifers to be impacted be saline groundwater, including the Beta aquifer. As with the other proposed monitoring wells, the final casing and screened interval depths will be determined following careful review of each borehole lithologic log and geophysical log. Aquifer zones with the highest apparent permeability and thickness will be prioritized for screening, as these

represent the zones that would be most capable of transmitting large amounts of saline groundwater.

Figure 3 shows the proposed well locations of the four new monitoring wells.

Figure 3 - Map of Proposed Well Locations
Sunset Gap Seawater Intrusion Assessment



PROJECT ORGANIZATION

OCWD will conduct the Sunset Gap Seawater Intrusion Investigation. The wells will be located, designed and constructed under the supervision of OCWD staff. Water quality samples will be collected by OCWD staff and analyzed at OCWD's state-certified water quality laboratory. OCWD will contract with a licensed well driller for drilling and construction of the monitoring wells.

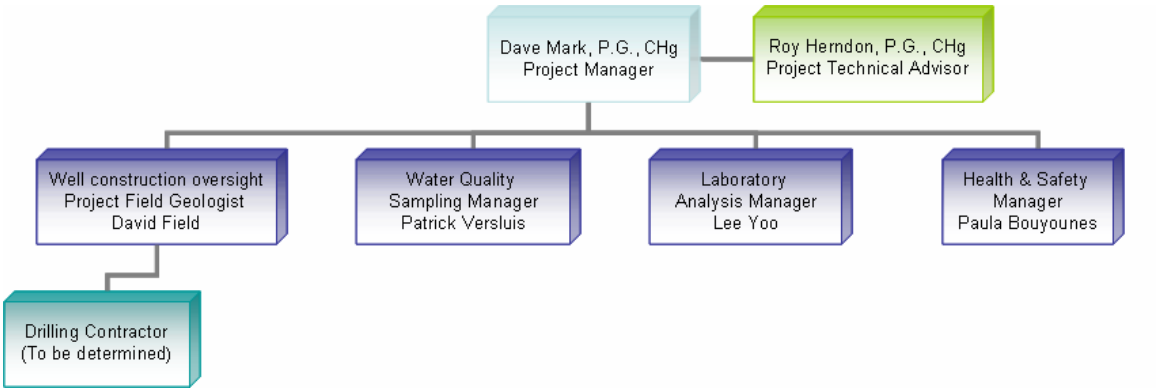
A list of the project manager and key project personnel for the project is shown in the table below.

Name	Position at OCWD	Role On Project
Dave Mark, PG, CHg	Principal Hydrogeologist	Project Manager and Quality Assurance Officer
David Field	Hydrogeologist	Well Construction Oversight/ Project Field Geologist
Paula Bouyounes	Risk and Safety Manager	Health and Safety Director
Patrick Versluis	Principal Environmental Specialist	Water Quality Sampling Manager
Lee Yoo	Laboratory Director	Laboratory Analysis Manager
Roy Herndon, PG, CHg	Chief Hydrogeologist	Project Technical Advisor

Figure 4 shows the organization chart for the project.

Figure 4

Organization Chart for Sunset Gap Seawater Intrusion Assessment



The Project Manager, Dave Mark, has overall responsibility for the implementation of the project. This includes review and approval of well drilling contract bid documents, geological and geophysical log interpretations, well design, the preparation of reports and overall management of the project. He identifies and ensures that adequate resources (i.e., staff training) are met to satisfy the needs of the project. Mr. Mark also ensures that all technical issues identified during the QA review are addressed and documented before beginning data collection activities. Mr. Mark has over 25 years of experience in the field of hydrogeology and has been involved with more than ten well construction projects. Mr. Mark is a Professional Geologist in California and a Certified Hydrogeologist in California.

The Project Technical Advisor, Roy Herndon, provides technical advice on the project. He assists the team members with specific issues, such as determination of the proper depths at which to screen the wells, issues that arise during drilling, and review of draft reports prepared during the project. Mr. Herndon has over 25 years of experience in the field of hydrogeology and is OCWD's Chief Hydrogeologist. Mr. Herndon is a Professional Geologist in California and a Certified Hydrogeologist in California.

The Project Field Geologist, David Field, has overseen the construction of over 80 wells. He is responsible for securing access to the drilling sites, preparing the bid documents for well drilling, overseeing the drilling and well construction, and preparing the final report. The Project Geologist is also responsible for securing permits needed for the project.

The Water Quality Sampling Manager, Patrick Versluis, is responsible for collection of water quality samples from the wells after the wells have been constructed. This includes coordination with the Project Geologist regarding scheduling sampling and site access, utilization of proper sampling procedures, and coordinating with the OCWD laboratory for bottle preparation and sample delivery. Mr. Versluis has worked in the field of water quality sampling at OCWD for ten years.

The Laboratory Analysis Manager, Lee Yoo, is responsible for overall operations of the state-certified OCWD laboratory and ensuring that the laboratory follows approved EPA analysis methods. Mr. Yoo has worked in the OCWD water quality laboratory for over 20 years, and was the head of the organics water quality section prior to being appointed as the laboratory director.

Environmental compliance will be conducted by Dan Bott, Principal Planner at OCWD. Mr. Bott has worked in the field of environmental compliance, including preparing CEQA documentation for over twenty years. At OCWD he has prepared four Initial Study/Mitigated Negative Declaration documents and also managed the preparation of two Environmental Impact Reports.

The Health & Safety Manager, Paula Bouyounes, is responsible for the establishment and oversight of the health and safety program for OCWD employees. Ms. Bouyounes has worked in the health and safety field for over ten years. A Health and Safety Plan has already been prepared for the project (OCWD, 2012).

The drilling contractor will be responsible for drilling boreholes and constructing the wells in a manner consistent the contract between the drilling contractor and OCWD. OCWD will select the drilling contractor through a public works bidding process. The drilling contractor will be responsible for safety of the drilling and well construction activities, in accordance with OSHA requirements and other applicable laws and regulations.

TASK DESCRIPTIONS

The following tasks have been identified for the Sunset Gap Seawater Intrusion Assessment:

Task 1 - Project management

Task 2 - Reporting

Task 3 - Environmental compliance and permitting

Task 4 - Prepare plans, specifications, bid documents

Task 5 - Construction contracting (bidding, award to lowest responsible bidder)

Task 6 - Well construction

Task 7 - Well development and sampling

Task 8 - Preparation of Final Report

These tasks are described below.

Task 1 – Project Management

This task entails managing the effort to conduct the scope of work, managing the budget and schedule, and the overall effort to successfully complete the project. This task is the responsibility of the Project Manager.

Task 2 – Reporting

This task is the responsibility of the Project Manager and includes preparing the reports required for the grant, in accordance with the grant agreement between the State of California and OCWD. It also includes preparing reports to the OCWD Board of Directors, and internal OCWD reports.

The Project Manager will prepare quarterly progress reports that will be submitted to the Department of Water Resources. The progress reports will include a description of the work completed in the previous quarter, upcoming activities, any issues that have arisen, and projected expenses. The progress reports will include an updated budget-to-actuals report.

Task 3 – Environmental Compliance and Permitting

This task is the responsibility of the Project Field Geologist, in coordination with OCWD's Principal Planner.

Environmental compliance for the project will begin with reviewing the project with respect to the California Environmental Quality Act (CEQA) guidelines and requirements. If the project is consistent with one of the categorical or statutory exemptions from CEQA, then OCWD staff will recommend to the OCWD Board of Directors that a notice of exemption be filed as required by CEQA. OCWD constructed two monitoring wells in the Sunset Gap (wells OCWD-BS10 and OCWD-BS11) in the last two years and the environmental compliance for these two wells was based on a categorical exemption from CEQA.

If none of the categorical or statutory exemptions from CEQA apply, OCWD will prepare an Initial Study in accordance with CEQA guidelines. This Initial Study will be prepared to identify and evaluate impacts associated with the project. CEQA requires that all State and local government agencies consider the environmental consequences of projects over which they have discretionary authority before taking action on them. Pursuant to Section 15367 of the State CEQA Guidelines, OCWD is the Lead Agency and has the principal responsibility of approving and implementing the project. Per Section 15063 of the State

CEQA guidelines, the Initial Study would provide OCWD with information to use as a basis for deciding whether to prepare an Environmental Impact Report (EIR), Negative Declaration or Mitigated Negative Declaration (MND) for the project. If OCWD finds that there is no evidence that the project, either as proposed or as modified to include the mitigation measures identified in the Initial Study, may cause a significant effect on the environment, OCWD may prepare a Negative Declaration or Mitigated Negative Declaration for the project. CEQA Guidelines Section 15382 defines a "significant effect on the environment" as a substantial, or potentially substantial adverse change in any of the physical conditions within the area affected by the project including land, air, water, mineral, flora, fauna, ambient noise and object of historic or aesthetic significance.

Permitting requirements for the project include receiving an access permit from the Naval Weapons Station Seal Beach. The Project Field Geologist will also verify that the well drilling contractor obtains the appropriate well construction permits.

To the extent required, the discharge of water produced during well construction, development, and sampling will be covered under an NDPES discharge permit issued by the Santa Ana Regional Water Quality Control Board.

Task 4 - Prepare plans, specifications, bid documents

This task consists of preparing plans, specifications, and the bidding documents for construction of four new monitoring wells. This task is the responsibility of the Project Field Geologist, under the supervision of the Project Manager.

OCWD has executed 31 well construction contracts over the last twenty years and is very experienced with hiring drilling contractors through the public works procurement process.

OCWD staff will prepare the plans and specifications for the four new monitoring wells to be constructed. The plans and specifications will be compiled with the terms and conditions for the contract. OCWD's in-house contracts administrator will assist the Project Field Geologist with preparation of the bidding documents.

Task 5 – Construction contracting (bidding, award to lowest responsible bidder)

This task is the responsibility of the Project Field Geologist, under the supervision of the Project Manager. In this task, the bidding documents prepared in Task 4 will be put out to public bid. OCWD will advertise the bid in accordance with State of California requirements for public works contracts.

The OCWD Board of Directors will review the bidding results and authorize OCWD to enter into a contract with the lowest responsive bidder.

OCWD has a state-licensed surveyor under contract that will be used to survey the elevations of the four monitoring wells.

Except for the contractor hired to construct the new wells and OCWD's on-call surveyor, all other activities will be conducted by OCWD staff.

Task 6 – Well Construction

This task consists of constructing the wells and disposing of investigation derived wastes.

The state-licensed drilling contractor will be responsible for notifying Underground Service Alert prior to beginning well drilling. In general terms, this will include marking the well sites with marking paint and notifying Underground Service Alert one week prior to performing field activities. The drilling contractor will wait the required minimum number of working days before confirming underground utility markings and will maintain facility markings for the duration of the work.

Data collected on subsurface sediment types and characteristics is a key part of this project. The boreholes will be logged by OCWD geologists under the supervision of the Project Manager in accordance with the methods specified in Attachment 8 (Quality Assurance).

Geophysical logs will be completed for each of the four boreholes by a state-licensed geophysicist. The geophysical logging will include short (16-inch) and long (64-inch) normal resistivity logs, a spontaneous potential log, a gamma and guard resistivity log, and a directional deviation survey. The logging will also include focused dual induction logs. This log is a conductivity tool that utilizes medium and deep focused measurements to provide the reciprocal resistivity equivalents and exhibits excellent bed definition in air or mud-filled boreholes drilled in brackish formations. The geophysical logging will be conducted by a qualified geophysical logging firm, which will be contracted by the drilling contractor.

The drilling contractor will be responsible for constructing each of the wells and the wellhead vaults.

Each well shall be designed and constructed using information gleaned from the newly drilled borehole in addition to data from existing wells in the area. During drilling, representative formation sample shall be collected on 5-foot intervals and at changes in lithology. Upon completion of drilling, geophysical logs shall be run in the borehole. After drilling and geophysical logs have been completed, there will be a 24- to 48-hour well design period. During the well design period, lothologic and geophysical logs shall be reviewed and compared to surrounding wells to design the well and correlate individual aquifer zones. Screen, filter pack, and bentonite-sand seal intervals shall be appropriately installed in the borehole so that representative groundwater samples and water levels can be

collected from the individual aquifer zones. Initially, aquifer zones shall be designated based on review of the geophysical logs. However, formation samples will be critical to verify the geophysical logs and to ensure that the target zone is suitable for screen and filter pack installation. A mixture of bentonite and sand shall be used as sealing material between aquifer zones. The seals shall be placed in the borehole adjacent to the natural formation aquitards (i.e. fine-grained sediments). In addition, the filter pack interval shall extend a maximum of 5 feet above and 5 feet below each screen interval with bentonite-sand seals installed between the filter pack zones.

The elevations of the new groundwater monitoring wells will be surveyed by a surveyor licensed in the State of California in order to provide reference data for measuring groundwater elevations. At a minimum, the elevation of the ground surface next to the protective casing will be surveyed to the nearest 0.10 foot, and the elevation of the measuring point on the well riser will be surveyed to the nearest 0.01 foot.

Cleanup of the well construction sites will be the responsibility of the drilling contractor and will include complete removal and disposal of all solids, liquids and substances either used or generated during mobilization, demobilization, well drilling, construction, and development operations.

The drilling contractor will be responsible for disposal of investigation derived wastes, including drill cuttings generated during the conductor, pilot, and final borehole drilling. Disposal will include collection and analysis of soil disposal samples. Two samples will be collected from each well boring (one from the conductor casing boring and one from the well boring). The disposal samples will be submitted to a California-certified analytical laboratory for volatile organic compound analysis by EPA Method 8260, total recoverable petroleum hydrocarbons by EPA Method 8015, and total threshold limit concentration (TTLC) metals by EPA Method 6010. The drilling contractor will submit the analysis to the Project Field Geologist prior to the disposal of any drill cuttings. Additional metals analyses may be necessary after the Project Field Geologist and Project Manager review the analytical results.

Any materials suspected by the Project Field Geologist and Project Manager of being contaminated due to ambient conditions will be submitted to a California-certified laboratory for analysis by the drilling contractor. The drilling contractor will properly dispose of any sample, which contains levels of contaminants in excess of federal and state disposal standards.

Task 7 – Well development and sampling

This task includes well development and sampling the newly constructed wells.

Development shall proceed from the shallowest to deepest casing for all steps. The contractor shall install ¾- to one-inch pipe to the bottom of each casing and

flush with a minimum of three well volumes with potable water. Upon completion of flushing, the casing shall be airlifted using the well casing as the educator pipe. Using proper airline submergence, the casings shall be airlifted at the maximum possible rate periodically shutting the air off and allowing the water column to surge downward into the screen interval. Airlift surging shall continue until the discharge is clear and free from sediment. Upon completion of airlift surging, each casing shall be pumped at a steady rate of approximately 5 gallons per minute using a submersible pump until the discharge is clean and free of sediment and the field parameters are consistent. At the end of development pumping, the geologist shall collect groundwater samples for laboratory analysis.

Depth to groundwater will be measured on a quarterly basis and water quality samples will be collected on a quarterly basis. This sampling frequency will occur for the first year after the wells are completed. Data will be reviewed after each sampling event. Additionally, separate from the grant-funded project, following one year of data collection, the groundwater elevation and water quality data will be reviewed to determine the future sampling frequency. At a minimum, it is anticipated that samples would be collected at least as frequently as semi-annually for years two and three (separate from the grant-funded project).

Well development is the responsibility of the drilling contractor. The Project Field Geologist will ensure that well development is completed in accordance with the contract documents.

Well sampling is the responsibility of the Water Quality Sampling Manager.

Laboratory analysis is the responsibility of the Laboratory Analysis Manager.

Task 8 – Preparation of Final Report

This task consists of preparing the final report for the project. The final report will document the well construction activities, including the work completed as part of tasks 1 through 7. The final report will include geologic logs of the four monitoring wells, as built diagrams, and water quality data from the sampling of the wells.

INTENDED USAGE OF DATA

Data will be compiled and maintained by OCWD. Monitoring and preventing the encroachment of seawater into fresh groundwater zones along coastal Orange County is a major basin management issue. Seawater encroachment also represents a key factor in determining the basin operating range in terms of the maximum accumulated overdraft.

OCWD conducts a comprehensive monitoring program of the groundwater basin to properly manage water supplies and to safeguard the basin's water quality. Ongoing data collection after the end-date of the grant agreement will be managed by OCWD staff. After the well construction is completed and four quarterly samples are collected for the grant-funded work, OCWD will continue to sample the wells. OCWD staff will regularly review the data from the four wells

and adjust the sampling frequency as needed. For example, if the water quality or groundwater elevation data show significant variability between samples, OCWD staff will consider increasing the sample frequency to collect data more rapidly.

Routine sampling of the wells will continue for many years through funding provided in OCWD's General Fund. This funding from OCWD will include sample collection, water quality analysis at OCWD's laboratory, data quality assurance and quality control, data entry and data management through OCWD's data management system (WRMS – Water Resources Management System), and routine maintenance on the wells. Financial resources to provide funding come through OCWD's assessment of a fee referred to as the 'Replenishment Assessment'. OCWD's enabling legislation grants OCWD the powers to assess this fee for pumping from the groundwater basin.

By identifying the direction and rate of movement of saline groundwater, determining the salinity concentration in specific aquifers, providing a baseline from which future salinity changes can be measured, and providing data needed to evaluate the feasibility of seawater intrusion control alternatives, the Sunset Gap Seawater Intrusion Assessment project supports the groundwater quality objectives of OCWD's critical basin monitoring programs. This monitoring program is outlined in Section 3 of OCWD's 2009 Groundwater Management Plan (GWMP) and the Water Quality Management goals and objectives outlined in Section 5 of the GWMP.

In addition to supporting implementation of OCWD's GWMP, the Sunset Gap Seawater Intrusion Assessment also supports implementation of the Integrated Water Management Plan for the Santa Ana River Watershed (SAWPA, 2010). The Santa Ana Integrated Water Management Plan includes a goal of attaining water quality standards and a goal of maintaining salt balance. To meet these goals, the Plan includes strategies and tactics that include protecting good quality groundwater, monitoring, assessment, and reporting. The data collected from the four new monitoring wells in the Sunset Gap will assist in meeting these goals and strategies.

As described in the GWMP, OCWD adopted a Groundwater Quality Protection Policy in May 1987, in recognition of the threat posed by groundwater contamination. The objectives of the policy are to:

- Maintain groundwater quality suitable for all existing and potential beneficial uses;
- Prevent degradation of groundwater quality;
- Assist regulatory agencies in identifying the sources of contamination to assure cleanup by the responsible parties;
- Maintain or increase the basin's usable storage capacity; and

- Inform the general public, regulatory agencies and Producers of the condition of the groundwater basin and of water quality problems as they are discovered.

The data collected from the four new monitoring wells constructed in the Sunset Gap Seawater Intrusion Assessment will assist with meeting these policy objectives as follows:

- Provide data to define the geologic stratigraphy and hydrogeologic conditions in the Sunset Gap;
- Provide the basis for evaluating the potential flowpaths of seawater intrusion and thereby prevent degradation of groundwater quality and maintain groundwater quality suitable for beneficial uses;
- Provide data to formulate alternatives to prevent seawater intrusion, to the extent needed.
- By preventing degradation of groundwater quality, the basin's usable storage capacity will be maintained;
- By providing information regarding alternatives to prevent seawater intrusion, it may be possible to prevent seawater intrusion under conditions with greater pumping, thereby increasing the basin's useable storage.

Alternatives to prevent seawater intrusion include:

- Reduced pumping near the coast;
- Construction and operation of a seawater intrusion barrier whereby high quality water is injected to create a hydraulic barrier;
- Construction and operation of a pumping system to depress groundwater elevations such that seawater cannot migrate inland beyond the area of depressed groundwater elevations;
- Construction of an impermeable barrier that prevents migration of seawater due to the low hydraulic conductivity materials in the barrier.

The data from the four new monitoring wells need to be collected and integrated with data from other wells into an updated conceptual model for the Sunset Gap to determine if seawater intrusion poses a threat to water quality in the groundwater basin. If the lateral and vertical extent of seawater intrusion poses a threat to water quality, alternatives will be developed and evaluated. Data from the Sunset Gap Seawater Intrusion Assessment is critical to the determination of whether seawater intrusion threatens water quality and the development of feasible alternatives.

DISSEMINATION OF INFORMATION TO PUBLIC AND STAKEHOLDERS

After completion of the project, OCWD will share the information with the groundwater producers in the groundwater basin. OCWD meets each month with the groundwater producers to discuss basin management issues. The professional management staff from 19 large water retailers that pump groundwater from the basin attend these meetings held at OCWD's office in Fountain Valley on the second Wednesday of each month.

OCWD will also present the results of the project at a publicly noticed meeting of the OCWD Board of Directors. As part of this public meeting, the agenda for the board meeting is posted on the OCWD web site and the final report for the project will be posted on the OCWD web site (www.ocwd.com).

OCWD will also share the results of the project with the Seal Beach Naval Weapons Station.

REFERENCES

Orange County Water District Groundwater Management Plan. Prepared by OCWD. Available at www.ocwd.com. 2009

Orange County Water District. Site Specific Health and Safety Plan, Sunset Gap Seawater Intrusion Assessment. 2012.

Santa Ana Watershed Integrated Water Management Plan. Prepared by the Santa Ana Watershed Project Authority. Available at www.sawpa.org. 2010.