

## **ATTACHMENT 5. WORK PLAN**

The goals of the proposed Project are to protect drinking water supplies in the Los Angeles Forebay and collect data that ultimately, would be used to clean up groundwater contamination. The objectives of this Project are to:

1. Identify the potential source(s) of VOCs and perchlorate in groundwater within the Los Angeles Forebay.
2. Develop a better understanding of the groundwater flow system within the Los Angeles Forebay.
3. Assess the horizontal and vertical extent of the regional VOC and perchlorate plumes within the Los Angeles Forebay.

Once the probable contaminant source(s) are identified, the regulatory agency (either DTSC or LARWQCB) can issue orders to potentially responsible parties (PRPs) and require these PRPs to fund further characterization of the contaminant plumes and implement remedial actions under the oversight of the regulatory agency.

### **5.1 SCOPE OF PROPOSED PROJECT**

The following subsections summarize the five tasks that will be completed for this Project. The Task Force will collaboratively implement the Project tasks, with WRD as the Project administrator/manager. **Figure 4.4** depicts the Project area, specifically the Los Angeles Forebay where soil borings will be drilled and groundwater samples will be collected.

#### **TASK 1 – PRE-FIELD ACTIVITIES**

The Task Force will review all available hydrogeological and water quality data in the Los Angeles Forebay to determine the best possible locations to drill soil borings and collect groundwater samples. Before any field activities can be performed, the following subtasks must be performed.

##### **Task 1.1 Procure and Manage Subcontractors**

WRD will procure, contract with, and manage all subcontractors required for this Project, including the consulting firm(s), the drilling company, the laboratory, and the traffic control company. Below is a summary of the tasks to be performed by the subcontractors:

- Consulting Firms – Prepare Health and Safety Plan for all field activities, conduct field oversight of the drilling and groundwater sampling activities, prepare daily field logs and boring logs based on soil cuttings, ensure that the drilling sites have been properly restored, ensure that all investigation-derived waste materials have been removed from the site and properly disposed, and prepare the draft and final reports.
- Drilling Company – Mobilize and set up drilling and sampling equipment at each marked soil boring location, advance soil borings to maximum depths of 400 feet bgs, collect multiple groundwater samples from each borehole, collect groundwater samples from the six existing groundwater monitoring wells associated with the former AAD site, backfill soil borings in accordance with all regulatory requirements, restore the drilling sites to initial conditions.

- Laboratory – Analyze groundwater samples for VOCs by EPA Method 524.2 and perchlorate by EPA Method 314.0 and report all data to WRD.
- Traffic Control Company – Since all the soil boring will be drilled in public right-of-ways, a Traffic Control Plan will be prepared prior to implementation of field activities. The traffic control company will implement the Traffic Control Plan during field activities.

### **Task 1.2 Determine Soil Boring Locations**

Potential soil boring locations will be selected by the Task Force. WRD will verify and mark the final drilling locations in the field. Soil boring locations may be refined based on access constraints. All the soil borings are proposed in public right-of-ways and all required permits will be obtained prior to implementing any field activities, as further discussed in Task 1.3. Up to five soil borings are anticipated for this Project.

### **Task 1.3 Permitting and Notification**

Prior to implementing field activities, all permits required for this Project will be obtained by WRD, including encroachment permits and hydropunch/soil boring permits for each borehole location. Currently, all boreholes are proposed in public right-of-ways and depending on the location, an encroachment permit for each soil boring will be obtained from either the City of Los Angeles, Department of Public Works, Bureau of Engineering or from the City of Vernon. A hydropunch/soil boring permit will be obtained for each soil boring from the County of Los Angeles, Department of Public Health, Environmental Health Division.

#### **Task 1.3.1 Private Property Access**

Although private property access agreements are not anticipated for this Project, soil borings may be drilled on private property if issues are encountered with accessing public right-of-way locations. The Task Force will work with the property owner to establish an access agreement. Copies of all access agreements, if any, will be provided to DWR. At this time, the Task Force is not expecting to encounter issues with establishing access agreements with property owners, since 3 of the 6 existing groundwater monitoring wells associated with the former AAD site were successfully constructed on private properties within the Project area.

#### **Task 1.3.2 CEQA Compliance**

Since no permanent facilities are proposed as part of this Project, CEQA obligations, environmental-related permits, and entitlements are neither applicable, nor required.

### **Task 1.4 Health and Safety Plan**

Prior to drilling, a Health and Safety Plan for all field activities will be prepared by a consulting firm. The Health and Safety Plan will identify potential hazards associated with all field activities, specify health and safety procedures associated with the field activities, and include a route map to the nearest hospital. The field geologist/consultant will ensure that all field activities are in compliance with the Health and Safety Plan.

### **Task 1.5 Traffic Control Plan**

Prior to drilling, a Traffic Control Plan for all field activities will be prepared by a qualified traffic control company. The Traffic Control Plan will describe potential traffic hazards and specify the required setup for traffic control equipment at the drilling locations. The traffic control company will also be responsible for implementing the Traffic Control Plan at each drilling location.

### **Task 1.6 Utility Clearance and Surveying**

WRD and/or the consultant will contact Underground Services Alert (USA) and coordinate with utility companies to locate any subsurface utilities in the vicinity of the planned soil boring locations. In addition, the drilling crew will hand auger each borehole to a minimum depth of approximately 5 feet below ground surface (bgs) prior to drilling.

Surveying of the soil boring locations will be conducted after the completion field activities by WRD using a hand-held global positioning satellite (GPS) unit.

## **TASK 2 – SOIL BORINGS AND GROUNDWATER SAMPLING**

### **Task 2.1 Borehole Drilling and Logging**

All drilling activities will be conducted by a California-licensed drilling company under the oversight of the field geologist/consultant. The field geologist will prepare a daily field log containing the following:

- Site address and description of location
- Soil boring ID
- Date of reporting
- Weather and site conditions
- Names of field crew
- Method of drilling
- Diameter of borehole
- Depth of borehole at start and end of shift or working day
- Description of strata drilled with depth of transitions encountered
- Depth at which water is encountered
- Depth intervals at which groundwater samples are taken
- Records of components and quantities used or added to the drilling fluid
- Water level at the start of each working day
- Measurement made using field equipment, such as the PID during borehole drilling and electrical conductivity meters during well sampling
- Problems encountered during drilling

A copy of the daily field logs shall be made available to the Task Force and will be included with the final Project report.

Soil boring locations will be marked by WRD. Up to five soil borings will be advanced by a California-licensed drilling company using direct mud rotary drilling techniques. A 6-inch-diameter borehole will be drilled to a maximum depth of approximately 400 feet bgs.

Soil cuttings will be logged by the on-site geologist/consultant at approximately 10-foot intervals to characterize lithology. The field geologist will visually observe soil cuttings and record observations on

borehole logs. Soils will be described according to the American Society for Testing and Materials (ASTM) Standard D2488 and classified by Unified Soil Classification System (USCS) soil type. Soils will be field screened for odors, staining, and organic vapors using a photo-ionization detector (PID). Field visual, olfactory, and PID screening results will be recorded in the daily field logs. The boring logs and daily field logs will be included with the final Project report.

Equipment used for drilling and sampling will be decontaminated prior to use and between boreholes. Drill rods, drill bits, pumps, and other downhole tooling will be decontaminated using a steam cleaner. Non-disposable soil and groundwater sampling equipment will be decontaminated as follows:

- Wash with potable water, using a brush if necessary (or steam clean),
- Wash with Alconox, or a phosphate-free detergent, and potable water solution,
- Rinse with potable water,
- Rinse with distilled or deionized water, and
- Air dry.

After all groundwater samples have been collected from the borehole, the borehole will be grouted to surface and finished to grade to match the existing surface conditions. The field geologist will conduct an inspection after each soil boring is completed to ensure that the drilling site has been restored to its initial condition.

## **Task 2.2 In-Situ Groundwater Sampling**

While advancing the soil borings, discrete-depth groundwater samples will be collected from each borehole using a SimulProbe sampler. Groundwater samples will be collected at 45-foot depth intervals beginning at 220 feet bgs, so samples will be collected at:

1. 220 feet bgs
2. 265 feet bgs
3. 310 feet bgs
4. 355 feet bgs
5. 400 feet bgs (maximum borehole depth)

As shown above, it is anticipated that a maximum of five groundwater samples will be collected from each soil boring. A maximum of two groundwater sampling attempts will be performed at each sample depth. In addition, equipment blanks, mud samples, duplicate samples, and trip blanks will be collected by the field geologist/consultant for quality assurance/quality control (QA/QC) purposes.

## **Task 2.3 Sample Former AAD Site Groundwater Monitoring Wells**

Prior to well purging, depth to water in each of the six groundwater monitoring wells will be measured by the field geologist/consultant using an electronic water level indicator. Depth to water will be measured and recorded to the nearest 0.01 feet. The six monitoring wells will be sampled using low-flow purging equipment operated by the field geologist/consultant. During purging, the field water quality parameters of pH, temperature, conductivity, dissolved oxygen, oxidation-reduction potential, and turbidity will be measured and recorded by the field geologist on groundwater purging and sampling forms. These forms will be reviewed by the Task Force and included in the final Project report. Field monitoring instruments will be calibrated prior to each sampling event.

#### **Task 2.4 Traffic Control**

As discussed in Task 1.5, a qualified traffic control company will prepare a Traffic Control Plan for the entire Project. The field geologist will ensure that all field activities are in compliance with the Traffic Control Plan, as well as the Health and Safety Plan.

#### **Task 2.5 Investigation-Derived Waste Disposal**

Investigation-derived waste (IDW) generated during drilling and groundwater sampling activities will include soil cuttings, drilling mud, decontamination water, purge water, disposable sampling supplies, and personal protective equipment. Soil cuttings, drilling mud, and aqueous wastes will be properly stored in labeled containers and temporarily stored at the drilling/well site pending the results of waste characterization sampling. The consultant will ensure that these wastes will then be profiled and properly disposed at an appropriate off-site facility. Disposable sampling equipment and supplies will be disposed as municipal waste.

### **TASK 3 – LABORATORY ANALYSIS**

Groundwater samples will be collected from the proposed soil borings and from the six existing monitoring wells associated with the former AAD site under the oversight of the field geologist/consultant. All Project data will be evaluated by the Task Force, as discussed in Task 4 below.

#### **Task 3.1 Laboratory Analysis of In-Situ Groundwater Samples**

All groundwater samples collected from the soil borings by the field geologist/consultant will be analyzed for VOCs by EPA Method 524.2 and perchlorate by EPA Method 314.0. The samples will be collected in pre-cleaned 40-milliliter (ml) volatile organic analysis (VOA) containers and other appropriate sample bottles provided by the laboratory. The VOA containers will be completely filled to prevent void space within the container to prevent volatile compounds from escaping. A sample label will be affixed to the side of each groundwater sampling container with the following information: soil boring ID, sample depth, collector name, date, and time of collection. Each labeled container will be stored in an ice chest cooled with ice and delivered to the analytical laboratory under proper chain-of-custody documentation.

#### **Task 3.2 Laboratory Analysis of Groundwater Samples from Former AAD Site Wells**

Groundwater samples will be collected by the field geologist/consultant using low-flow purging and sampling techniques. All non-disposable equipment will be decontaminated between samples. All of the groundwater samples will be analyzed for VOCs by EPA Method 524.2 and perchlorate by EPA Method 314.0. The groundwater samples will be collected in pre-cleaned 40-milliliter (ml) volatile organic analysis (VOA) containers and other sample bottles provided by the laboratory. The VOA containers will be completely filled to prevent void space within the container to prevent volatile compounds from escaping. A sample label will be affixed to the side of each groundwater sampling container with the following information: well ID, collector name, date, and time of collection. Each labeled container will be stored in an ice chest cooled with ice and delivered to the analytical laboratory under appropriate chain-of-custody documentation.

## **TASK 4 – DATA MANAGEMENT AND EVALUATION**

### **Task 4.1 Data Compilation and Management**

All water quality data collected from this Project will be organized by WRD in a single database and linked to appropriate programs for data analysis and visualization (e.g. Surfer, ARC-GIS, Earthvision, TecPlot). This database will be shared with the Task Force as part of the data evaluation.

### **Task 4.2 Groundwater Flow Evaluation**

Compiled water level data will be assessed by the Task Force in order to calculate groundwater flow in the Project area. Maps will be prepared to depict the groundwater flow system.

### **Task 4.3 Groundwater Quality Assessment**

The Task Force will assess the water quality data, along with the calculated groundwater flows to help identify the potential source(s) of VOCs and perchlorate in groundwater within the Los Angeles Forebay and assess the extent of the regional VOC and perchlorate plumes. Once the probable source(s) is identified, the regulatory agency (either DTSC or LARWQCB) can issue orders to potentially responsible parties (PRPs) and require these PRPs to fund further characterization of the contaminant plumes and implement remedial actions under the oversight of the regulatory agency.

## **TASK 5 – PROJECT ADMINISTRATION AND REPORTING**

### **Task 5.1 Public Outreach**

Public outreach will include discussion of the Project at WRD's monthly scheduled Groundwater Quality Committee meetings. Upon completion of the Project, the results will be posted on WRD's website and will be presented to stakeholders at a Groundwater Contamination Forum meeting.

### **Task 5.2 Project Administration and Management**

This task includes the tracking of Project scope, budget, and schedule. Periodic Project administration tasks include:

- Quarterly progress reports of Project status
- Quarterly Task Force meetings

The quarterly progress reports will be prepared for grant administrators in accordance with grant requirements. WRD will provide updates on the Project status to the other stakeholder agencies at the quarterly Task Force meetings.

### **Task 5.3 Report Preparation**

The results of Tasks 2, 3, and 4 will be summarized in a Draft Los Angeles Forebay Groundwater Investigation Report that will be prepared by a consulting firm. The draft report will describe field methods used, include maps depicting the locations of the soil borings, the six existing groundwater monitoring wells associated with the former AAD site, and the groundwater flow system, include tabulated summaries of the analytical data and water level data, soil boring logs, daily field logs, and well purging and sampling forms. The draft report will also identify potential source(s) of VOCs and perchlorate in groundwater within the Los Angeles Forebay and discuss the extent of the regional VOC and perchlorate plumes. The draft report will be reviewed by the Task Force. Comments will be

addressed and the Final Los Angeles Forebay Groundwater Investigation Report will be prepared by the consultant.

## **5.2 PROJECT DELIVERABLES**

Project deliverables include the following:

- Local Groundwater Assistance Program Quarterly Progress Reports
- Draft Los Angeles Forebay Groundwater Investigation Report
- Final Los Angeles Forebay Groundwater Investigation Report

The Local Groundwater Assistance Program Quarterly Progress Reports will assist grant administrators in the management of the Project to ensure compliance with the Project schedule (**Attachment 7**). Elements to be included in the Los Angeles Forebay Groundwater Investigation Report are discussed in Section 5.1 above.

All quality assurance measures will be in compliance with those described in **Attachment 8** throughout the Project.

## **5.3 PURPOSE, GOALS, AND OBJECTIVES OF THE PROJECT**

According to the Greater Los Angeles Region IRWMP, groundwater is a significant portion of the region's local supplies and makes up approximately 23% in an average year. Also, groundwater basin water quality is a significant issue in the region and, as a result, a primary objective of the IRWMP is to "protect and improve" groundwater quality. The IRWMP projects an 800,000 acre-feet per year (afy) (approximately 25%) water supply shortfall by 2025 and identifies groundwater supplies as key to meeting existing and future demands.

The Central Basin and West Coast Basin provide nearly a third of the water supply to the overlying residents and businesses in 43 cities in southern Los Angeles County. Over 240,000 afy are pumped from the basins for municipal and industrial use, which represents approximately 10% of groundwater supplies the Greater Los Angeles Region. It is critical for the WRD to properly manage this groundwater resource to ensure its future availability. Part of this responsibility is to carry out detailed investigations to identify and manage threats to the drinking water aquifers from surface contamination sources, as discussed in **Attachment 4**. These investigations meet WRD's mission statement and the goals and objectives described in WRD's 2003 Strategic Plan (summarized in **Attachment 3**). The proposed Project meets the GWMP's need to protect groundwater resources on several levels:

- Identifying the potential source(s) of groundwater contamination
- Defining the extent of groundwater contamination
- Agency collaboration

Through previous subsurface investigations conducted at the former AAD site in the City of Vernon, the lead regulatory agency, DTSC, confirmed that the high concentrations of VOCs and perchlorate in groundwater beneath the former AAD site are not related to historic AAD activities. Since there are no responsible parties identified, there are limited State funds available to further investigate the extent of the groundwater contamination. The purpose of this Project is to identify the potential source(s) of VOCs and perchlorate in the groundwater within the Los Angeles Forebay and assess the extent of these regional VOC and perchlorate plumes. The Task Force will evaluate the data collected from this Project and determine the potential source(s) of the VOC and perchlorate contamination in groundwater. Once these probable source(s) are identified, the regulatory agency (either DTSC or LARWQCB) can issue orders to

potentially responsible parties (PRPs) and require these PRPs to fund further characterization of the contaminant plumes and implement remedial actions under the oversight of the regulatory agency.

A Task Force consisting of local, State, and Federal agencies in the Los Angeles area (WRD, City of Vernon, DTSC, LARWQCB, USEPA, USGS, and CDPH) will be working collaboratively on this Project to characterize the existing groundwater contamination and identify the potential source(s) of the high concentrations of VOCs and perchlorate in groundwater in the Los Angeles Forebay. The Task Force will meet quarterly to discuss the status of field activities, evaluate the data collected, and pool limited resources to address a common goal: the protection and preservation of groundwater resources. Additionally, an MOU (see **Appendix A**) between these same agencies provides the framework for the parties to share data in order to expedite cleanup of high-priority groundwater contaminated sites within the Central Basin and West Coast Basin.

This Project has the potential to form a basis for a model approach to dealing with similar cases not only in the Central Basin and West Coast Basin, but statewide and nationwide. It will show how multiple agencies with common goals can work together to address a problem affecting regional groundwater and protect drinking water resources.

#### **5.4 PERFORMANCE OF THE PROJECT**

The performance of the Project will be closely monitored by WRD by having, at a minimum, quarterly Task Force meetings, although more frequent communications and meetings will be necessary at times. The Task Force agencies will work closely together during the initial phases to determine the optimal locations of the proposed soil borings.

The quarterly Task Force meetings will allow for proactive management of the Project budget and schedule. Also, the Task Force meetings will allow the stakeholder agencies to collaborate and provide feedback on the field activities and data collection efforts. Future work will be coordinated by the Task Force based on the results of this Project.

Additionally, the Groundwater Contamination Forum (per MOU in **Appendix A**) will continue to meet 3 to 4 times per year to provide updates and share newly available data at individual contaminated sites throughout the Central Basin and West Coast Basin. Some of these contaminated sites may be located within the Project area or the Los Angeles Forebay. The Project goals, objective, and benefits will be presented at the Forum meetings to confirm that work to date and work to be completed is on schedule. WRD will also present detailed updates on the Project tasks. This strategy of beneficial and regular communications with the key stakeholders, along with scheduled deliverables will ensure that the Project's goals and objectives are enhancing management of the Central Basin and West Coast Basin.

The project deliverables are the Draft and Final Los Angeles Forebay Groundwater Investigation Reports, which will be developed based on the implementation of the Work Plan. Successful completion of these reports will mark successful completion of the Project. Also, the Project will result in a better understanding of the regional VOC and perchlorate plumes in the Los Angeles Forebay. The primary goal of the Project is to identify the potential source(s) of these contaminant plumes.

The data collected will be in a format that is compatible with WRD's existing database and GIS, so the Project data can be incorporated into the overall mission of the District: *To provide, protect and preserve high quality groundwater through innovative, cost-effective and environmentally sensitive basin management practices for the benefit of residents and businesses of the Central and West Coast Basins.*