

## ***ATTACHMENT 8. QUALITY ASSURANCE***

As discussed in **Attachment 4**, Section 4.5, the Los Angeles Forebay Groundwater Task Force (Task Force) will work collaboratively to complete the Project. The Task Force, which currently consists of regulatory agencies, groundwater agencies, and water purveyors, will meet quarterly beginning in July/August 2012 and will be coordinating/facilitating the Project tasks and evaluating the data collected throughout the Project. Procedural assurances, such as review processes for technical reports, data collection and evaluation, and laboratory analyses, will lead to a more efficient and effective implementation of the Project by the stakeholder agencies.

Quality assurance and quality control (QA/QC) measures will be implemented for each Project Task in order to provide an appropriate level of assurance regarding the reliability and usability of the data generated during the Project. It will be WRD's responsibility to implement the Project Work Plan, including the QA/QC measures. However, the Task Force will have responsibility for assuring that all of the QA/QC procedures are implemented and will have authority to correct identified QA/QC deficiencies in field or analytical procedures. WRD will accomplish such corrections by notifying the Task Force agencies of the identified deficiency and recommending corrective action, so that WRD can implement the corrective action. WRD will perform at least one audit/site visit during field activities, and will review the daily field logs and other field forms, chains of custody (COCs), and laboratory reports for QA/QC.

The following summarize the policies, procedures, and activities for the identification and documentation of the quality of the data generated during the performance of the Project tasks.

### **8.1 QA/QC FOR TASK 1 – PRE-FIELD ACTIVITIES**

Task 1 of the Project includes:

- Determination of soil boring/groundwater sampling locations,
- Procurement and management of subcontractors,
- Acquiring all necessary permits for field activities,
- Preparation of a Health and Safety Plan and Traffic Control Plan, and
- Utility clearance and surveying.

Prior to initiation of the Project, the problem or purpose of the Project will be clearly defined by the Task Force and details of the groundwater sampling program will be developed by the Task Force to ensure that the Project goals and objectives (**Attachment 4**, Section 4.2) are met. The Project Work Plan (**Attachment 5**) describes the data collection activities, including the groundwater sampling locations and depths and analytical techniques. The Health and Safety Plan and the Traffic Control Plan will be prepared and in place prior to the implementation of any field activities in order to establish standardized methodologies for health and safety.

The Task Force stakeholder agencies will collaboratively select the best soil boring/groundwater sampling locations that will help to identify the source(s) of the groundwater contaminants and evaluate the extent of the existing groundwater plumes.

### **8.2 QA/QC FOR TASK 2 – SOIL BORINGS AND GROUNDWATER SAMPLING**

Task 2 of the Project includes:

- Borehole drilling and logging,
- In-situ groundwater sampling,

- Sampling groundwater monitoring wells associated with the former AAD site,
- Traffic control activities, and
- Investigation-derived waste disposal.

An integral part of the QA/QC program on this Project is proper field sampling and documentation procedures. It will be WRD's responsibility to ensure that the quantitative and qualitative needs of the Project have been met. **Attachment 4**, Section 4.2 provides the Project goals and objectives.

Collection, measurement, and processing of field samples will follow procedures discussed in the Project Work Plan (**Attachment 5**). Soils encountered in each of the boreholes 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. WRD is in the process of developing a field manual for the collection of water quality data, which will provide standard operating procedures for groundwater sampling. Additionally, consultants and subcontractors will be required, as appropriate, to provide a copy of their QA/QC procedures as well as Standard Operating Procedures (SOPs) for the field activities proposed in this Project.

Three kinds of field quality control (QC) samples will be collected during this Project:

1. Blanks
2. Duplicates (field and laboratory)
3. Spikes (laboratory)

Blank samples are collected and processed using specially prepared analyte-free water to identify potential sources of contamination in the sampling process that could lead to a positive bias in the data. Duplicates are two or more samples collected and processed so that the samples are as identical in composition as possible in order to provide a measure of data variability introduced during sample collection, processing, and analysis. Spike samples are made by the laboratory by adding solutions containing known amounts of a compound to replicate groundwater samples. Spike recoveries for these analytes are used to evaluate bias of the analytical results related to matrix interferences or methods of sample collection and analysis. The frequency of collection of each QC sample will be determined on the basis of Project needs once the total number of groundwater samples have been finalized.

### **8.3 QA/QC FOR TASK 3 – LABORATORY ANALYSIS**

Task 3 of the Project includes:

- Laboratory analysis of in-situ groundwater samples and
- Laboratory analysis of groundwater samples from the former AAD site wells.

All groundwater samples collected during the Project will be analyzed for VOCs by EPA Method 524.2 and perchlorate by EPA Method 314.0. MWH Laboratories will provide all the laboratory analytical services in accordance with the Comprehensive Quality Assurance (QA) Manual that was prepared by MWH Laboratories and is dated November 8, 2010. This QA Manual defines the performance criteria and support procedures by which quality analytical data are generated. Standard Operating Procedures (SOPs) for individual analytical methodologies are also included with this QA Manual. The QA Manual provides the documentation framework for ensuring the generation of uniform, comparable, and quality data over time. Additionally, the QA Manual establishes the foundation for the involvement and continuous improvement activities of all MWH laboratory personnel. Opportunities for improvement are showcased with a system of monitoring, auditing, and reviewing processes. A copy of MWH's QA Manual can be provided upon request.

## 8.4 QA/QC FOR TASK 4 – DATA MANAGEMENT AND EVALUATION

Task 4 of the Project includes:

- Data compilation and management,
- Groundwater flow evaluation, and
- Groundwater quality assessment.

The data obtained from the sampling and testing activities will be compiled and used to help identify the source(s) of the groundwater contaminants and evaluate the extent of groundwater plumes within the Project area. Laboratory reports will be reviewed by WRD for the following:

- Data Completeness,
- Chain of Custody,
- Holding Times,
- Sample Preservation,
- Blanks,
- Laboratory Control Samples,
- Matrix Spike/Matrix Spike Duplicates,
- Surrogates/Internal Standards (as applicable), and
- Field Quality Control Samples.

For analytical results, various qualifiers pertaining to the quality of the data may be assigned to certain analytical results by either the laboratory conducting the analysis or WRD. For example, some results may be marked as estimated if the concentration is below the detection limit but may be detected at a lower value by the instrument. Data qualification flags noted by the laboratory will indicate whether results are considered anomalous, estimated, or rejected. Only rejected data are considered unusable for decision-making purposes; however, other qualified data may require further verification, such as reviewing the laboratory's raw data. All qualified results will be reviewed by WRD prior to use of the chemical data set for the evaluation (Task 4).

Detection limits associated with the analytical data will be reviewed before eliminating chemicals from the evaluation because they were not detected. In some cases, the detection limit for a chemical may be greater than the corresponding standards, criteria, or concentrations derived from toxicity reference values; therefore, the chemical may be present at levels greater than these corresponding reference concentrations, which may result in undetected risk. In other cases, a particular detection limit may be significantly higher than positively detected values in other samples in a data set. After considering these cases and any other reasonable reasons why contaminants may not have been detected, chemicals that have not been detected will be eliminated if appropriate. If information exists to indicate that the chemicals are present, they will not be eliminated. The Project report will identify the possibility of undetected or non-sufficiently characterized contaminants and recommend additional sampling as part of further investigation, as appropriate.

A laboratory may identify VOC tentatively identified compounds (TICs) during sample analysis. Both the identity and reported concentration of a TIC are not definitive. Depending on the relative number of TICs compared to non-TICs, options exist to address TICs during the screening evaluation. If a significant number of TICs are identified during the Project, the use of these data in the evaluation (Task 4) will be discussed by the Task Force.

WRD will review the daily field logs, field forms (such as boring logs, groundwater purging and sampling forms), and chain-of-custody forms to evaluate completeness of the field records, appropriateness of the field methods employed, and whether the chain of custody forms were completed correctly.

All data generated on this Project will be reviewed and evaluated by the Task Force agencies in order to calculate groundwater flow in the Project area, 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.

## **8.5 QA/QC FOR TASK 5 – PROJECT ADMINISTRATION AND REPORTING**

Task 5 of the Project includes:

- Public outreach,
- Project administration and management, and
- Report preparation.

All groundwater level and water quality data will be entered into tables to be included in the evaluation and reports, including any necessary qualification flags identified in the laboratory reports. An independent person (i.e., not the person who prepared the data tables) will check every entry on the data tables for completeness and correctness. Similarly, figures (including boring logs) to be published in the draft and final Project reports will be checked by an independent person to verify that all data on the figures (including soil classifications, PID readings, etc. on the boring logs) are correct. All project documentation, including field records, laboratory reports, data review memoranda, and data tables, will be retained in WRD's project files and made available to other parties as needed and appropriate.

WRD personnel working on this Project will include a California Professional Geologist/Certified Hydrogeologist and a Professional Engineer. All WRD personnel performing and overseeing the work to be performed have over 15 years of relevant experience in groundwater investigations and remediation. Other members of the Task Force will have similar certifications and experience.