



**STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION**

**REQUEST FOR QUALIFICATIONS NOTICE**

**NUMBER 04A3578**

**Read carefully as the following revisions have been made to this document:**

- **As of 7/1/10, the SOQ Submittal Instructions and General Contract Process Information was revised to include CPA Workpaper Review Program requirements. Please ensure that you download the current version. Refer to section III, paragraph A.**
- **On 7/2/10, this document was revised to modify the contact information for requesting a copy of RFQ and/or Bidders list. Refer to section III, paragraph C.**

**Note:** Address all questions concerning this Request for Qualifications (RFQ) in writing to the attention of Marianne Iniguez-Dayton at [marianne\\_iniguez-dayton@dot.ca.gov](mailto:marianne_iniguez-dayton@dot.ca.gov). You may also reach the analyst by telephone at (916) 227 - 6054. Consultants contacting the District or Division directly seeking information about this RFQ may jeopardize the integrity of the selection process and risk possible disqualification.

Disadvantaged Business Enterprise (DBE) participation applies to this RFQ. The required goal for Underutilized DBE (UDBE) participation in this solicitation is not less than **6.75** percent. The State of California, Department of Transportation (Caltrans) desires to achieve an additional **6.75** percent Race Neutral DBE participation in this solicitation. See section I. F. in this RFQ for requirements.

**I. GENERAL INFORMATION**

- A. Caltrans is soliciting Statements of Qualifications (SOQs) from qualified firms that may lead to the award of a contract for hazardous waste services.
- B. The estimated contract amount is \$3,000,000 - \$4,999,999 .
- C. The estimated contract term is three (3) years.

- D. Interviews will be held in Oakland, CA on September 14, 2010  
Confirmation letters will be sent to those firms short-listed.
- E. Negotiations will be held with the top-ranked firm in Oakland, CA  
during the week of September 27, 2010.
- F. Disadvantaged Business Enterprise Program
  - 1. This solicitation and resultant Agreement is financed in whole or in part with federal funds and therefore subject to Title 49, Code of Federal Regulations, Part 26 (49 CFR 26) entitled "Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs." In compliance with 49 CFR 26, Caltrans set an overall annual DBE goal comprising both race neutral and race conscious elements. To ensure equal participation for Disadvantaged Business Enterprise (DBE) groups specified in 49 CFR 26.5, Caltrans specifies a contract goal for Underutilized DBE (UDBE) participation. The required goal for UDBE participation in this solicitation is not less than 6.75 percent. Caltrans desires to achieve an additional 6.75 percent Race Neutral DBE participation in this solicitation.
  - 2. A UDBE is a DBE firm as defined in 49 CFR 26 that is also one of the following groups: African Americans, Asian-Pacific Americans, Native Americans, or Women. Only UDBE participation will count toward the contract goal for this solicitation. References to DBEs include UDBEs, but references to UDBEs do not include all DBEs. DBE participation will count toward Caltrans' federally mandated overall annual DBE goal. In order to ascertain whether its overall annual DBE goal is being achieved, Caltrans tracks DBE participation on all federal-aid contracts.
  - 3. It is the proposer's responsibility to verify that the UDBE firm is certified as a DBE at due date and time of SOQ submittal. For a list of DBEs certified by the California United Certification Program (CUCP), go to:  
[http://www.dot.ca.gov/hq/bep/find\\_certified.htm](http://www.dot.ca.gov/hq/bep/find_certified.htm)
  - 4. See "Statement of Qualifications Submittal Instructions and General Contract Process Information" for detailed information and references to the required forms. Required forms will be made a part of the Agreement. Failure to meet the UDBE goal or Good Faith Effort requirements and provide required UDBE participation will result in the SOQ submittal being rejected as non-responsive.

- G. Federal and/or State prevailing wage rates may apply. This requirement, if applicable, will be specified in the draft Agreement.
- H. Caltrans does not guarantee, either expressly or by implication, that any work or services will be required under any contract issued as a result of this RFQ.
- I. A Pre-award or Post-award Audit will be performed on any contract issued as a result of this RFQ.

## **II. SCOPE OF WORK/DELIVERABLES**

The work to be performed for this RFQ is described in the Scope of Work/Deliverables and is hereby incorporated as Attachment 1.

## **III. SUBMISSION OF STATEMENTS OF QUALIFICATIONS (SOQs)**

- A. **IMPORTANT:** Download “Statement of Qualifications Submittal Instructions and General Contract Process Information” from <http://Caltrans-opac.ca.gov/aeinfo.htm>. Failure to follow these instructions may result in rejection of your SOQs.
- B. SOQ Package Submittal Instructions

**Read instructions below carefully. You will be required to submit SOQ packages to Sacramento and District 4 (see items 1 and 3 below for required number of copies).**

- 1. Two (2) copies of the SOQ containing all the indicated information shall be submitted. Fax copies will not be allowed. SOQs will be accepted until **3:00 p.m. on August 30, 2010**, and must be directed to:

State of California  
Department of Transportation  
Administration  
Division of Procurement and Contracts, MS #65  
1727 30<sup>th</sup> Street  
Sacramento, CA 95816-7006  
Attention: Marianne Iniguez-Dayton  
Telephone: (916) 227 – 6054

2. If your SOQ package is hand-delivered, you must date and time stamp it immediately upon arrival. The date/time stamp machine is located in the lobby of the first floor to the right of the security guard station at the address noted above. Date/stamp one label for each SOQ package/box submitted. Ask the security guard to call the Division of Procurement and Contracts' reception desk at (916) 227-6000 to have your SOQ package picked up by Contracts' staff.
3. In addition, Five (5) copies of the SOQ containing all indicated information shall be submitted to the District 4. FAX copies will not be allowed. SOQs will be accepted until **3:00 p.m. on August 30, 2010** and must be directed to:

State of California  
Department of Transportation  
District 4  
Office of Consultant Unit, MS 7B  
111 Grand Avenue  
Oakland, CA 94612  
Attention: Romy Fuentes  
Telephone: (510) 622-1649

4. The SOQs must be submitted in a sealed package labeled as follows:
    - RFQ Number: **04A3578**
    - Submittal deadline: **August 30, 2010**
    - "DO NOT OPEN"
  5. SOQ submittals will be considered non-responsive if all copies are not received in the specified locations by the date and time specified in this RFQ.
- C. Request for RFQ Copies and/or Bidders' List

Copies of this RFQ and/or Bidders' List may be obtained at  
[http://www.bidsync.com/DPX?ac=powersearch&srchoid\\_override=307818](http://www.bidsync.com/DPX?ac=powersearch&srchoid_override=307818)

## **SCOPE OF WORK/DELIVERABLES**

### **Hazardous Waste Services**

#### **A. Project Description**

The Consultant shall perform professional and technical Hazardous Waste Site Investigation and Design Services on an "as needed" basis to support site investigation and remedial design work related to District 4 roadway projects. These projects are within the nine (9) Bay Area Counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma.

This contract does not include services related to the implementation of remedial action or environmental clean up, as defined in Chapter 6.85 of the California Health and Safety Code Section 25396.

The Department's Contract Manager shall assign specific projects to the Consultant through the issuance of Task Orders.

Hazardous Waste Services to be performed shall include, but are not limited to, Initial Site Assessments (Phase I), Site Investigations (Phase II), Aerially Deposited Lead Investigation, Limited site assessments and site investigations (Limited Phase I and Phase II), hazardous materials surveys, site characterizations, applying for and complying with regulatory permits, proposing and evaluating remedial alternatives or feasibility studies, development, design and preparation of plans, estimate and specification (PS&E) for hazardous waste removal/clean-up projects, hazardous waste identification, long term soil and/or groundwater monitoring, remedial investigations, and purchase of hazardous wastes radius maps and plans from vendors, who sell these based on "on-line" Geographic Information System and Management Information System.

Consultants who perform design and produce PS&E for hazardous waste remedial/removal/clean-up projects shall not perform actual hazardous waste remediation/clean-up services for the same project.

#### **B. Description of Required Services**

1. The Consultant shall perform activities which may include, but are not limited, to the following:
  - o Environmental Data Resources (EDR) Reports and Surveys
  - o Site Investigation of Soil & Ground Water
  - o Ground Water Monitoring
  - o Feasibility Study, Treat-Ability Study and Design Work
  - o Pre-demolition Inspection Survey
  - o Container Inspection and Material Identification
2. The Consultant shall perform comprehensive services required unless the Scope of Work as specified in the Task Order is expressly limited in scope. All work described in this contract will be performed corresponding to the Milestones described in Task Orders, or as directed by the Department's Contract Manager. The Department's Contract Manager will assign specific work to the Consultant through the issuance of Task Orders.
3. Task Orders may include, but are not limited to, the Capital Project WBS (Work Breakdown Structure) 165 through WBS 285 elements listed below. The standard State Capital Project WBS is available on the Internet at: <http://www.dot.ca.gov/hq/projmgmt/guidance.htm>

| <u>WBS Code</u> | <u>Description</u>                                   |
|-----------------|------------------------------------------------------|
| 165.10.80       | HAZARDOUS WASTE INTIAL SITE ASSESSMENT/INVESTIGATION |
| 165.10.85       | HAZARDOUS WAST E PRELIMINARY SITE INVESTIGATION      |
| 205.05          | REQUIRED PERMITS                                     |
| 205.10          | PERMITS                                              |
| 235.10          | DETAILED SITE INVESTIGATION FOR HAZARDOUS WASTE      |
| 235.10.10       | HAZARDOUS WASTE SITES SURVEY                         |
| 235.10.15       | DETAILED HAZARDOUS WASTE SITE INVESTIGATION          |
| 235.15          | HAZARDOUS WASTE MANAGEMENT PLAN                      |
| 235.20          | HAZARDOUS WASTE PS & E                               |
| 235.35          | LONG TERM MITIGATION MONITORING                      |
| 255.10          | UPDATED PS&E PACKAGE                                 |
| 260.80          | DRAFT CONTRACT READY                                 |
| 270.20.50       | TECHNICAL SUPPORT DURING CONSURTRUCTION              |
| 285.10.15       | TECHNICAL SUPPORT FOR CCO                            |

The Consultant shall only provide incidental non-A&E services, such as office support and meeting support, necessary for the completion of the A&E tasks and/or deliverables covered by the Scope of Work and detailed in executed Task Orders. These incidental services shall only be provided to support the Consultant personnel who are performing A&E services in this contract, and the contract amount spent on such incidental services must be relatively minor when compared to the professional A&E services performed. The Consultant will not be reimbursed for any non-A&E services provided to the Department unless provided in the fashion described herein.

In addition, services to train Department staff shall not be provided by the Consultant under this contract.

- a. The projects are located within District 4's nine (9) Bay Area Counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma. **See attachment A for the list of projects.** The Department reserves the right to add and/or delete projects from this list.
  - b. This list contains major projects that are expected to need hazardous waste services; however, it is not an exclusive list. The Consultant may be required to work on additional transportation improvement projects and other projects such as Safety Projects, Emergency Storm Damage Projects, minor projects, excess parcel assessments, and future projects not contained on the list.
4. The Consultant shall carry out Task Order instructions as received from the Department's Contract Manager and shall cooperate with the Department, other involved agencies, and others working on this project or adjacent projects.
  5. It is not the intent of the foregoing paragraph to relieve the Consultant of professional responsibility for the performance of this contract. In those instances where the Consultant believes a better design or solution to the problem is possible, the Consultant shall promptly verbally notify the Department's Contract Manager of these concerns, together with reasons therefore.

6. The Consultant has total responsibility for the accuracy and completeness of the work prepared by the Consultant or their subconsultants for projects and shall check all such material accordingly. The reports, calculations, and deliverables will be reviewed by the Department for conformity with the requirements in the Task Order. Reviews by the Department do NOT include review or checking of quantitative calculations or the accuracy with which such impacts or results are concluded in the reports. The responsibility for accuracy and completeness of such items remains solely that of the Consultant. The Consultant is required to perform complete Quality Control (QC) and Quality Assurance (QA) for all deliverables under this contract.
7. The Consultant shall maintain a set of project files that shall be indexed in accordance with the Department's Project Development Procedures Manual which can be found at <http://www.dot.ca.gov/manuals.htm>.
8. The Consultant shall throughout the life of the contract retain within Consultant's firm, or through qualified sub-consultants, a staff qualified to perform each of the tasks listed in this Scope of Work/Deliverables.
9. The Project Manager's and key personnel's performance shall be evaluated by the Department, at a minimum annually and at the end of the contract. Evaluation shall be based on the following, but not limited to:
  - a. job performance
  - b. quality of work
  - c. timely submittal of reports, invoices and diaries, and other documents
  - d. early detection of problems and timely resolutions
  - e. requesting timely approval for personnel changes and travel expenditure to control costs
  - f. underutilized disadvantage business enterprise (UDBE) utilization
10. Poor performance and a negative evaluation may result in the replacement of the Project Manager and/or key personnel, or may adversely reflect on the Consultant's performance evaluation. The Project Manager and all key personnel shall be accessible to the Department at all times. The Project Manager shall be responsible for all matters related to the Consultant's personnel and operations.

### C. Detailed Scope of Work

The instruction contained in this Scope of Work and the applicable Task Order will take precedence over any conflicting instructions found in the manuals listed under this **Scope of Work, Section K**.

All work shall be prepared in English units, unless otherwise specified in a Task Order.

The Scope of the Work may include, but is not limited to, the following:

#### 1. Health & Safety

Conditions expected during site investigations and/or sampling/removal fieldwork should not pose health and safety problems. However, if conditions in the subject area warrant health and safety considerations, they will be addressed at the Task Order meeting prior to start of work. The Department's Contract Manager or designee shall be notified at least 24 hours before the commencement of any investigation or fieldwork.

## **2. Field Review**

The Consultant shall conduct a field survey for potential hazardous waste sites of all parcels of land within and adjacent to the project site as specified in the Task Order.

## **3. Coordination and Contacts**

The Consultant shall only contact property owners as directed by the Department's Contract Manager or designee. The Consultant shall coordinate with other agencies, such as federal Environmental Protection Agency (EPA), California Environmental Protection Agency (Cal-EPA), Department of Toxic Substances Control (DTSC), Regional Water Quality Control Board (RWQCB), local environmental health agency, and others as necessary to complete the Hazardous Waste Services. CONTACT WITH OTHER AGENCIES SHALL ONLY BE MADE AT THE DIRECTION OF THE DEPARTMENT'S CONTRACT MANAGER or designee. The Department's Contract Manager or designee shall notify and invite the Consultant to all regulatory agency meetings related to this contract. All written correspondence with regulatory agencies shall be submitted to the Department's Contract Manager or designee and sent to the agencies by the Department.

## **4. Initial Site Assessment (WBS 165.10.80)**

The Scope of Work under this section of the contract includes all steps necessary to conduct an Initial Site Assessment (ISA). The ISA is undertaken to identify hazardous and potentially contaminated areas, and hazardous waste problems within and next to existing and proposed right of way, for Department projects. The ISA shall present all pertinent information regarding listed hazardous waste sites and potential hazardous waste sites in the project vicinity. The ISA checklist in the Project Development Procedures Manual, found at <http://www.dot.ca.gov/manuals.htm>, shall not be considered as the ISA. The ISA checklist is for guidance use only. ASTM standards 1527 and/or 1528 can also be used as guidance documents for completion of the ISA.

ISAs may also be used to fulfill the background research requirements of a Preliminary Endangerment Assessment (PEA), following the guidance developed by the California Department of Toxic Substances Control (DTSC). (The background research requirements of the PEA are similar to the ISA except that the preliminary endangerment assessment focuses on impacts to public health and the environment). The data collection portion of the United States Environmental Protection Agency Risk Assessment guidance may also be a required part of the ISA work.

## **5. Preliminary and Detailed Site Investigation (WBS 165.10.85 and 235.10)**

The Scope of Work for site investigations includes such items of work as work plans, Health and Safety Plans, surface geophysical investigations, trenching, drilling, sampling, chemical analysis, and reporting.

The Task Orders that will be issued to the Consultant may include specific drilling & sampling methods, work plans, Health and Safety Plans, soil gas survey, surface geophysics, mobile laboratory and chemical analysis and other site investigation activities. Laboratory Quality Assurance/Quality Control (QA/QC) testing is included as part of this work and will be performed by the contracted laboratory and not a separate item of work.

All elements of the site investigation must meet standards set by local, state, and federal regulatory agencies. The Department's Contract Manager or designee must approve deviations from standards in advance, and in writing. The investigative techniques (drilling methods, sampling plan

and sample handling procedures, and analytical methods and equipment) must be procedurally acceptable to the regulatory agencies.

**a. Surface Water Sampling**

Surface water sampling may be necessary to comply with the RWQCB National Pollutant Discharge Elimination System (NPDES) requirements.

- o Surface water sampling shall be accomplished using grab sampling at locations and depths specified in the Task Order
- o Depending on the type of analysis, the sample bottles should be appropriate for the constituent, such as, plastic (inorganic) or glass (organics), and certified pre-cleaned
- o All samples shall be collected and analyzed for the constituents as specified in the NPDES permit

**b. Aerially Deposited Lead (ADL)**

**a) Soil Sample Collection**

- (i) Prior to obtaining surface samples, the location shall be cleared of debris and/or vegetation. Soil samples shall be obtained in an undisturbed state. ADL site investigations shall be conducted in conjunction with the DTSC Lead Variance requirements. Contact the Department's Contract Manager or the Task Order Manager to check and verify changes in the DTSC Variance requirements.
- (ii) Samples shall be collected and preserved in accordance with the latest edition of US EPA SW-846 Test Methods for Evaluating Solid Wastes, Physical and Chemical Methods. Ziploc® or use re-sealable plastic bags shall not be used as a substitute for industry-accepted containers.
- (iii) The Chain-of-Custody (COC) documents shall be properly and legibly filled out with all the required information. COC forms shall meet the requirements of Section 3.9 (Documentation) of the most recent version of the State of California Environmental Chemistry Laboratory Users Manual included as a reference in the following website link: [http://www.dtsc.ca.gov/AssessingRisk/ECL/hml\\_users\\_manual.cfm](http://www.dtsc.ca.gov/AssessingRisk/ECL/hml_users_manual.cfm).
- (iv) The Consultant shall ensure that the requirements stipulated in the Task Order are met including but not limited to the sampling depth, relative location to freeway, GIS collection, statistical analysis, data evaluation, and construction staging data grouping.

**b) Chemical Analyses**

- (i) ADL soil samples collected at the project site are not homogeneous. ADL tends to be very soluble and total lead levels as low as 100 mg/kg to 150 mg/kg can produce soluble lead levels greater than 5 mg/l, the soluble threshold limit concentration (STLC), using the California Waste Extraction Test (WET). After the total lead analysis is run on a sample and it is determined that a soluble lead test is needed, it is important to run a solubility test on soil/sediment that is representative of the original total lead test.

- (ii) Each sample shall be homogenized adequately in the laboratory and/or in the field. It is the responsibility of the Consultant and its subcontractor to ensure that soil samples are homogenized according to industry practice. An initial sample aliquot sufficient to cover the amount necessary for the total and a WET analysis shall be taken. This aliquot shall be homogenized a second time and the total and soluble (if necessary) run on this aliquot. The homogenization process shall not include grinding the samples.
  - (iii) The soil samples shall be analyzed for total lead concentration for comparison with the TTLC, using Federal Environmental Protection Agency (EPA) Method 6010 or 7000 series. When the total lead concentration is greater than, or equal to 50 mg/kg, the sample shall be tested for soluble lead for comparison with the STLC, using the WET.
  - (iv) The soluble lead analysis using a modified WET with de-ionized water as the extractant (Di-WET) shall be performed when the soluble lead result of the WET is at or above the regulated threshold of 5 mg/l.
  - (v) The Consultant shall ensure that the samples tested for soluble lead (WET) come from the parent sample used to test the total lead.
  - (vi) The lab or the Consultant shall then compare the soluble versus total lead results for the sample set. There should be a high correlation factor using a regression analysis on the data. If the correlation is less than 80 percentile, the lab should re-examine the sample and determine if sample preparation may have caused the poor correlation. If the laboratory determines that samples do not warrant the re-examination and analysis, a justification shall be documented in the report.
  - (vii) The Consultant shall ensure that additional testing including but are not limited to, Toxicity Characteristics Leaching Procedures (TCLP), pH, and Title 22 metals is in compliance with the DTSC Variance requirements.
- c) Statistical Evaluation
  - (i) A statistical analysis of laboratory results shall be provided in accordance with USEPA guidance documents.
  - (ii) The presence of non-detects in the lead analysis data can strongly skew sample data toward low values. Classical statistical methods do not work properly in these cases. Therefore, it may be necessary to transform the data in order to achieve normality. Departures from normality shall be checked using graphical representation such as a histogram. If a data set is skewed, appropriate lognormal or nonparametric statistical methods must be used.
  - (iii) The current version of USEPA's ProUCL software may be used to provide statistical evaluation of the sample population.
  - (iv) Analytical results for total and soluble lead will have results below the method detection limits. Non-detect results should be numerically set at one-half the detection limit or estimated and all results used in calculations.

- (v) Total lead levels are often below 50 mg/kg and a follow up Waste Extraction Test analysis may not be necessary for all samples. Consequently, a project may have, for example, 30 total lead analyses and five (5) Waste Extraction Test analyses. Of the five (5) Waste Extraction Test analyses, three (3) may have lead levels, which exceed the regulatory limit for hazardous waste of 5 mg/l. In this case, three (3) out of 30 samples would not necessarily make the sediment next to the road a hazardous waste. On the other hand, a single very high lead level out of many samples may not be representative of the concentrations of lead in sediment at a project and would not be considered representative of the waste. Good judgment and documentation of the data and how it is used are very important. In general, all sample data should be considered and used when evaluating lead levels and determining if a material is hazardous, and/or if it meets the criteria for re-use within the Department's right-of-way, as defined by a Variance issued by the California Department of Toxic Substance Control to District 4 for the handling ADL soils. The Consultant shall confer with the Department's Contract Manager or designee prior to and during the statistical analysis if clarification is needed.
- (vi) Correlation of Total and Soluble Lead Data - Total lead and soluble lead data are bivariate data with a linear structure. The plot of the data shows basically a straight-line trend except for some randomness. A lack of correlation usually means that the total and soluble constituent samples were not pulled from the same sample aliquot. The correlation coefficient can be used as a quality check of the data. A correlation/regression analysis shall be performed on the data comparing soluble constituent levels to total lead levels.
- (vii) Regression Analysis and Correlation Coefficient Calculation

1. The following correlation coefficient formula (or equivalent) shall be used:

$$r = \frac{(\overline{XY}) - X \times Y}{S_x \times S_y} \times \frac{n}{n-1}$$

Where:  $\overline{XY}$  = the average of products or the average of each soluble lead level multiplied by the matching total lead level.

X = the soluble lead average.

Y = the total lead average.

Sx = the standard deviation of soluble lead.

Sy = the standard deviation of total lead.

n = the number of samples.

2. Perform linear regression analysis, as required in Task Order, using soluble lead concentrations and total lead concentrations.

3. For the linear regression analysis the soluble lead levels vs. the total lead levels shall be graphed and a best-fit straight line shall be derived for the data set. A least squares method shall be used to estimate a straight line. The formula to be used for determining the least squares straight line shall be:
  - The slope of the line = (coefficient) x (standard deviation of the total lead)/(standard deviation of the soluble lead)
  - The intercept of the line = (average total lead concentration) - (line slope) x (average soluble lead level)
4. Once the slope and the intercept are found, the line itself is known and can be plotted in the bivariate plot of the data. This graph can be used to calculate the predicted solubility concentration from the average total concentrations.
5. The regression analysis shall be direction based and shall consider the analytical results for all samples as one data set in the same direction.
6. The regression analysis should have a correlation (r-value) equal or greater than 0.8 (80 percentile). If the correlation coefficient is less than 0.8, the sample procedures should be adjusted and the samples should be re-analyzed for both total and soluble lead concentrations. The linear regression analysis shall be used to predict the soluble lead concentration during the 90% and 95% UCL calculation.

(viii) Upper Confidence Limit Calculation

1. General Consideration
  - a. The data shall be analyzed based on the proposed data grouping stipulated in the Task Order.
  - b. The statistical analysis shall be evaluated for one-tailed 90% and 95% upper confidence limits (UCL). The two-tailed 80% confidence interval is equivalent to the one-tailed 90% UCL as explained in EPA SW-846 Manual, Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods
  - c. The 90% UCL total lead, predicted soluble lead calculation, and DI-WET are used to determine the DTSC Lead Variance applicability or disposal characterization as hazardous waste.
  - d. The 95% UCL total lead and predicted soluble lead calculation are used for relinquishment to the Contractor, or to determine handling and disposal of excess soil. Recommendation and conclusion shall be based upon the statistical analysis results for each group
2. 90% and 95% total and soluble lead UCLs
  - a. 90% and 95% TTLC and STLC UCL calculation shall be performed using the transformed values in accordance with SW-846 guideline (the calculations shall include the appropriate data transformation).

- b. 90% total and soluble lead UCL shall be performed to determine if the soil should be characterized as a California hazardous waste.
- c. 95% total and soluble lead UCL shall be performed to determine the excess soil relinquishment requirements.
- d. Recommendations and conclusions shall be based on the results of the statistical analysis of each grouping as stipulated in the Task Order.
- e. The Consultant shall review and utilize the applicable provisions of the Caltrans Variance for re-use of soils containing aerially deposited lead.
- f. Calculate 90% and 95% UCL for discrete and combined soil layers as appropriate, based on the characteristics of the sample population.

## **6. Ground Water Monitoring (WBS 235.35)**

Water samples may be taken from undeveloped borings made by hollow stem augur, direct push, Cone Penetrometer Test (CPT) systems, temporary wells or from monitoring wells. Samples taken from undeveloped borings shall be obtained with dedicated or decontaminated stainless steel or Teflon bailers or pump tubing within the shell of the boring equipment or temporary slotted casing. Water samples may be obtained from monitoring wells after the well has been developed and purged. Well water shall be monitored for temperature, pH, and conductivity during purging. A minimum of three (3) well volumes shall be purged prior to sampling. Purging shall continue until measurements of temperature, pH, and conductivity have stabilized (reproducible within 10%). This information shall be documented on a well purge log. These requirements may be waived in the case of low yielding wells that would be pumped dry during purging. This monitoring shall be done during development and sampling and no additional compensation shall be allowed. Bailer systems that agitate the water sample excessively are prohibited.

Samples shall be placed in SW-846 required sterilized Volatile Organic Compounds containers, and preserved immediately at 4° C. Water samples shall be delivered to the laboratory within 24 hours of sampling unless specified otherwise in the Task Order. A trip blank shall be included in each ice chest with samples being tested for volatile compounds. When sample preservation in the field is necessary, the laboratory shall supply containers with the added preservative for water samples. Water samples shall be packed or secured in such a manner so as to prevent cross contamination of samples and freezing or breaking of containers. When wells are installed to determine if a chemical product is present, the well shall be sampled to determine if such a free product exists before purging the well to test for dissolved constituents.

## **7. Feasibility Studies (WBS 235.15)**

The Consultant may be directed through the issuance of Task Order to select a remedial response at a specified hazardous waste site. The purpose of the study is to analyze alternative remedial actions and recommend a cost-effective approach within the project scope and schedule which addresses public and environmental concerns. Feasibility Studies may include, but are not necessarily limited to:

- a. Preparation of a Feasibility Study work plan
- b. Review and analysis of available data and definition of any additional data requirements for a complete Feasibility Study

- c. Development and evaluation of a limited number of the most feasible remedial options through screening all reasonable alternatives, including the "no action" alternative
- d. Definition and analysis of any and all problems which affect the development and analysis of remedial options
- e. Definition of the technical, environmental, economic and schedule weighting factors for evaluating remedial options
- f. Identification of necessary permits for each remedial option
- g. Initiation or continuation of data acquisition concerning treatability; compatibility, test excavations, pilot studies, of hazardous waste
- h. Development of detailed cleanup parameters
- i. Recommendation of the most cost effective, environmentally acceptable; remedial option given the project scope and schedule
- j. Estimate of cost for remedial options analyzed
- k. Analysis of risk for remedial options
- l. Preparation of a report, which documents the selection process and identifies the recommended remedial option

#### **8. Pilot Tests/Bench Scale Tests (WBS 235.15)**

Pilot Test/Bench Scale Tests shall be performed to provide information on the performance of a recommended treatment option and/or to verify and test process design and process equipment design parameters. Pilot Tests/Bench Scale Tests may include, but are not necessarily limited to:

- Review of remedial investigation data and the Feasibility Study
- Preparation of a Pilot Test or Bench Scale Test work plan
- Performance of physical testing to test and verify reported information, conclusions, and recommendations, and to provide design information such as scale up data and chemical reagents mix data
- Bench Scale tests will be conducted in the laboratory to provide information on a recommended treatment option or options in order to provide data and information on which to base design decisions
- Pilot Tests will be used to test feasibility study report results, conclusions, and recommendations in the field or the laboratory with down-scaled hazardous waste processing equipment (or its equivalent) to verify and test process design and process equipment design parameters
- Limited site investigation activities may be undertaken to facilitate Bench Scale or Pilot Testing
- Laboratory analysis of data gathered during the Bench Scale or Pilot Test; and
- Preparation of a report, which documents the test program

#### **9. Hazardous Waste Management Plan, Removal Action Work plan, and Remedial Action Plan (WBS 235.15)**

The Hazardous Waste Management Plan, Removal Action Work plan, and Remedial Action Plan shall be prepared to describe the selected remediation of a specific hazardous waste site, and shall include preliminary design information, cost estimates, and schedule. These plans may include, but are not necessarily limited to:

- Description of the site
- Review of the remedial investigation and feasibility study
- Description of the selected remedy, including

- Description of the selected technologies and rationale for selection performance expectations
- Site topographic map and preliminary layouts
- Preliminary design criteria
- Preliminary process diagrams
- General operation and maintenance requirements; and
- Long-term monitoring requirements
- Discussion of design and implementation issues.
  - Special technical problems
  - Identification of other project issues or constraints that may have an effect on timing or performance of the remediation
  - Identification of necessary permits and regulatory requirements
- Access, easements, and right of way
- Health and Safety Requirements
  - Community relations activities
- Cost Estimate and Schedule
  - Preliminary remediation cost estimate
  - Preliminary estimate of annual operation and maintenance cost and duration; and
  - Preliminary project schedule

#### **10. Plans, Specifications, and Estimates (WBS 235.20)**

Plans, Specifications, and Estimates shall be prepared following Caltrans standards and requirements as shown in the current Department of Transportation Standard Specifications and Department of Transportation Standard Plans, which can be obtained from <http://www.dot.ca.gov/manuals.htm>, Documentation may include, but are not necessarily limited to:

- Site specific treatment plans and/or remediation layout
- Written specifications for design, equipment and materials
- Special Provisions
- Detailed remediation cost estimate
- Detailed cleanup levels
- Site specific hazardous waste transportation plan
- Site security plan, including fencing, signs, lighting, and access requirements
- Any off-site requirements for storage, treatment, or disposal of hazardous wastes from the site
- Definition of any quality control/quality assurance requirements and preparation of appropriate QA/QC plan
- Preparation of all required permit applications, signature ready
- Detailed scheduling requirements
- Any transportation project order of work requirements
- Air monitoring, dust control requirements, and
- Operation and maintenance plan

#### **11. Construction Bidding Phase (WBS 255.10 & 260.80)**

Procedures for advertising, awarding, and administering the construction contract will be the responsibility of the Department. While the project is being advertised for bids, all questions concerning the intent shall be referred to the Department for resolution. In the event any items requiring interpretation in the drawings or specifications are discovered during the bidding period, said items shall be analyzed by the Consultant for decision by the Department as to the proper

procedure required. Corrective action taken will either be in the form of an addendum prepared by the Consultant and issued by the Department, or by a covering change order prepared by the Department after award of construction contract.

## **12. Construction Support Phase (WBS 270.20.50 & 285.10.15)**

- Construction and implementation of the remedial design will be the responsibility of the Department. During the project construction phase, the Consultant shall be available to work closely with the Resident Engineer (RE) to assist and advise the RE in order to minimize construction conflicts and to expedite project completion.
- The Consultant will receive written notification of the award of a construction contract. Upon such notification, the Consultant will proceed with the construction support phase services required by the Task Order.
- The Consultant shall be available to attend the pre-construction starting meeting with the successful construction contractor upon notification by the Department.
- During construction of the remedial action, the Consultant shall furnish all necessary additional drawings for clarification, correction, and change orders required by errors or omissions of the Consultant. Such drawings shall be requested from the Consultant in writing by the Department and shall be at no additional cost to the Department. The original tracings for the drawings and contract wording for the change orders shall be submitted to the Department for duplication and distribution.
- The Consultant shall be available to visit the job site for on-site review of construction and shall make other visits to the job site as requested by the Department's Contract Manager or designee.
- The Consultant shall bring to the attention of the Department Resident Engineer any defects or deficiencies in the work by the Department's construction contractor that the Consultant may observe.
- The Consultant shall have no authority to issue instructions on behalf of the Department nor to deputize another to do so.
- These provisions shall not be construed as holding the Consultant responsible for failure of the Department's construction contractor to carry out the work in accordance with the construction contract nor the construction means or methods or techniques, sequences, procedures, or safety programs in connection with the construction work.
- The Consultant shall be available to respond in writing to the contractor's inquiries through a Resident Engineer's request.
- The Consultant shall be available to review proposed change orders and make recommendations if requested by the Resident Engineer.

### **13. Post-Construction Monitoring of Remedial Action (WBS 235.35)**

- After construction of the remediation system, the monitoring of remedial action may be required. The Consultant may be requested to assist in monitoring the remediation system or to take physical samples from monitoring equipment.
- Have, or be able to obtain, all the personnel, energy sources, equipment and materials necessary to comply with the provisions of this contract throughout the contract term. Consultant personnel must hold all appropriate California licenses, including, but are not limited to C-57 and/or C-61 licenses.
- Notify the Department's Contract Manager or designee at least 24 hours before the commencement of any fieldwork.

## **D. Work Plan Preparations**

### **1. Basic Work Plan**

For many site investigations, the Department will develop a Task Order, which includes the general scope of the required investigation. The Task Order will specify the number of borings and/or wells, approximate location, depth, sampling methodology, number of samples and test methods to be used. For Task Orders of this nature, the Consultant shall review the work scope and recommend any changes needed to address regulatory requirements, perform work more efficiently, and to improve the overall objectives of the investigation.

The Consultant shall prepare a basic work plan that describes means of accomplishing the Scope of Work outlined in the Task Order. The work plan shall include maps of proposed sampling locations, sampling and analysis methodology, work scheduling, plans for accomplishing the work and for disposing of drill cuttings and any other wastes. The Consultant's Task Order Manager shall sign the work plan. The Consultant shall provide a draft work plan for the Department Task Order Manager or designee to review and comment upon. The final work plan shall address all Department comments. The draft and final work plan will be completed within the completion schedule presented in the Task Order.

The basic work plan preparation is necessary or normally required as part of a Task Order, without additional compensation from the Department. See special provision in Section H, **SP-2** below for more information.

### **2. Detailed Work Plan Preparation**

In more complex situations, a specific project may require development of a detailed site investigation Scope of Work with—or without—subsequent fieldwork. A Task Order will be used to direct the Consultant to prepare the investigation work scope. The Scope of Work developed by the Consultant will include:

- a. Preliminary scoping of investigation including any available ISA information
- b. Review of available information on the site and vicinity
- c. Site visit and review
- d. Evaluation of available area ground water data
- e. Evaluation of available area geology data
- f. Investigation strategy and rationale for number and location of borings and sample analysis
- g. Revision of site investigation objectives as necessary

The Consultant shall provide a draft Scope of Work to the Department's Contract Manager or designee to review and comment upon. The final Scope of Work shall address all Department comments. The draft and final Scope of Work will be completed within the completion schedule presented in the Task Order.

The Scope of Work shall be developed by appropriate professional personnel under the direction of the Consultant's Project Manager. Interpretation of geology, hydro-geologic, and/or hydrologic information shall be completed under the supervision of a California Registered Geologist and/or Certified Engineering Geologist. The Registered Geologist and/or Certified Engineering Geologist that supervised the work shall sign the final work plan.

Once the Scope of Work has been accepted, the Department may issue a separate Task Order for the site investigation. The final Scope of Work will be implemented as part of future site investigation Task Order.

### **3. Health and Safety Plans**

All site investigations will require development of a site-specific Health & Safety Plan. The Consultant shall submit the plan to the Department's Contract Manager or designee at the Task Order meeting or at least one (1) week prior to the start of fieldwork. The Department's Contract Manager or designee shall review the plan prior to the start of work. The Health and Safety Plan shall conform to all regulatory requirements and shall be signed by a Certified Industrial Hygienist.

The plan shall include all of the following elements, unless otherwise specified in the Task Order:

- a. Identification of key personnel for the project, including:
  - i. Site safety officer
  - ii. Specific assignments for the project
  - iii. Health and safety responsibilities
- b. Job hazard analysis for each work assignment at the site.
- c. Summary of risk assessment for the project, including:
  - i. Workers
  - ii. Nearby community
  - iii. Environmental receptors
- d. Air monitoring plan for the project, if applicable, including:
  - i. Ambient air quality
  - ii. Assessment of community exposure
  - iii. Assessment of worker exposure
- e. Personal protective equipment selected for the project
- f. Delineation of work zones on-site and decontamination procedures for personnel and equipment
- g. Listing of general safe work practices for on-site activities
- h. Description of security measures established for the site

- i. Emergency response plans established for the project, including:
  - i. On-site emergencies
  - ii. Off-site emergencies
  - iii. Access for emergency personnel and vehicles
  - iv. Nearby community protection
  - v. Location and direction of emergency care
  - vi. Phone and communication options
- j. Worker training requirements for the project
- k. Medical surveillance program for field staff that complies with Title 8 CCR, Section 5192

The Consultant shall complete all work in accordance with the site Health and Safety Plan as provided to the Department's Contract Manager. The Consultant shall ensure that all employees, while on the project site, comply with the plan requirements. All personnel engaged in field investigation work shall be appropriately trained for such activity at no cost to the Department. Training shall include but are not limited to use of personnel protection equipment (including respirators), decontamination, hazard recognition, and safe operation procedures. The Health and Safety Plan shall be signed and dated by all site workers before beginning Task Order investigative work in accordance with Section H. Special Provision **SP-4**.

The Consultant shall provide certification that provisions of Title 8 CCR Section 5192 have been met for all employees who are on-site when respirator use becomes necessary. If any site personnel are not certified in the use of required personal protective equipment, the Consultant shall take immediate and prudent actions to remove uncertified site personnel from the work location.

Throughout the performance of the site investigation, the Consultant shall, at a minimum, fully comply with Level D protection requirements. The Site Safety Officer (SSO) (See Section H. Special Provision **SP-5**), designated in the Health and Safety Plan shall be responsible for informing the Consultant's work crew and Consultant's Task Order Manager of the need to upgrade to Level C. On-site upgrade to Level C may be determined by PID (Photo Ionization Detector) readings for gasoline contamination, or FID (Flame Ionization Detector) reading for diesel contamination during field activities. The personnel defined in the normal operating costs shall be accounted for when level C protection is needed. The equipment to be either worn, carried, or otherwise required under Level C protection shall be listed in the Health and Safety Plan and be available on site, as described in *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, NIOSH, OSHA, USCG, and EPA, DHHS (NIOSH) publication No. 85-115, 1985 which is found at <http://www.cdc.gov/niosh/85-115.html>. See Section H Special Provision **SP-4** for additional health and safety requirements.

#### 4. Traffic Control Plan

When requested in the Task Order, the Consultant shall provide traffic control plan.

The Consultant shall fulfill all applicable requirements stated in the Task Order. See Section H, Special Provision -13 (SP-13) for traffic control.

## E. FIELD ACTIVITIES

### 1. Soil Gas Survey

When requested, the Consultant shall provide subsurface soil gas sampling and analysis services. The soil gas monitoring service is to include field personnel, equipment, and quantitative and qualitative data to provide rapid and cost effective definition of Volatile Organic Compounds (VOC's) present in the subsurface. A mobile laboratory with gas chromatographic capability shall be available and provide personnel and sampling equipment capable of extracting soil gases and identifying a broad range of VOC's and their concentrations. Gas survey personnel on site shall include a chemist or other experienced professional responsible for equipment operation.

The Consultant shall fulfill the following requirements:

- Have the capability of sampling through native material of varying densities, engineered fill, asphalt, and concrete in on-road and off-road locations. The Consultant shall provide all necessary equipment
- Drive sample probes to varying depths, with a nominal probe depth of five (5) feet, depending on soil conditions and as specified in the Task Order
- Decontaminate all necessary equipment prior to sampling
- Ensure that all equipment is maintained and operated in conformance with the manufacturer's recommendations
- Supply all electrical power and energy sources required
- Provide a sufficient number of probes so that no equipment is reused without cleaning
- Run ambient air through the entire sampling system from probe (above ground) through the adapter to collect a system blank at the start of each day, after every 10 samples, and before reusing any sampling system component
- Collect soil gas samples from the gas stream being withdrawn from the sample probe. The withdrawal of the soil gas shall be measured on a cubic-centimeter-per-minute basis. An in-line flow meter placed between the sample probe and vacuum pump shall be used to monitor flow rates during sampling. Three (3) to five (5) probe volumes shall be evacuated prior to withdrawing the first soil gas sample for analysis. After purging the sample extraction device with soil gas, a sample shall be collected
- Backfill boreholes with local soil or granulated bentonite after sampling, and replace removed concrete or asphalt with new patch material
- Decontaminate all equipment per Special Provision **SP-6** upon completion of sampling and analysis and before leaving the site
- The Consultant shall maintain a logbook, which contains pertinent sampling, environmental and technical information for each location. This log will be provided to the Department as part of the soil gas survey report. The following information shall be included in the log book:
  - a. Time
  - b. Ambient air and soil temperature
  - c. Sample number
  - d. Sampling depth

- e. Evacuation time between samples
- f. Flow rate (cubic centimeters per minute)
- g. Probe and adapter numbers and volume of the sample probe
- h. Number of sampling points used
- i. Observations (including, but not limited to, ground conditions, presence of concrete or asphalt, paving, soil appearance, surface water, odors, and vegetation).
- j. Backfill procedure and materials
- k. Actual sample location marked on the site map

## 2. Surface Geophysics

The Consultant shall have the capability to mobilize a surface geophysics team for the purpose of acquiring data as specified in the Task Order. The surface geophysical work shall be interpreted by and conducted under the responsible charge of a California Registered Geophysicist, who shall be present during the pre-work site visit and during fieldwork.

The Department's Contract Manager or designee will provide access, specify the area to be investigated, and in consultation with the geophysicist, determine the appropriate method to attain quality resolution of the subsurface features of interest.

The Consultant shall fulfill the following requirements:

- Provide and operate all equipment necessary to perform geophysical surveys (but not limited to ground penetrating radar, magnetic, EM, and utility surveys) to usual maximums for specific equipment under normal conditions. Utility surveys shall be performed on property that can not be cleared by Underground Services Alert (USA) and where critical utilities may be present. Utility surveys are not to be done in lieu of a USA clearance.
- Procure licenses and/or permits necessary to perform the work as specified in the Task Order. See Special Provisions **SP-9** and **SP-12**.
- Ensure that all necessary equipment, materials, and personnel are present and in normal operating condition at the beginning of each workday.
- Ensure that equipment operators have the necessary training and certification to operate and handle geophysical devices.
- Supply all electrical power and any other energy sources required for the Consultant's work at each site.

## 3. Trenching

The Department may require trenching for shallow site investigation purposes. Excavation may be needed to determine shallow subsurface conditions or to excavate and expose subsurface structures such as tanks, pipes, or sumps. The Consultant shall provide backhoe equipment capable of excavating to a depth of 15 feet, shoring, stockpile liner, personnel, sampling equipment, and decontamination equipment.

The Consultant shall fulfill the following requirements:

- Comply with all state, federal, and local laws and regulations regarding trench shoring and worker safety.
- Remove from the site all equipment, unused materials, temporary facilities and other miscellaneous items resulting from or used in the operation and replace or repair any items damaged during the activities.
- Restore the trenching site to pre-work condition unless otherwise directed by the Department's Contract Manager or designee.
- Trenching activities shall be observed and supervised by a site registered geologist or engineering geologist. The subsurface geologic and geo-technical conditions found during trenching shall be logged by the site geologist or engineering geologist. Under normal circumstances, OVA (Organic Vapor Analyzer) or PID (Photo Ionization Detector) measurements shall be taken to monitor the materials excavated and for the health and safety of workers. Material removed from the trench shall be properly collected in containers or stockpiled on plastic sheeting provided by the Consultant. If the materials are non-hazardous, they shall be returned to the trench or otherwise legally disposed of by the Consultant. If contaminated, the material may be returned to the trench or temporarily stored as directed by the Department's Contract Manager or designee and ultimately disposed of in compliance with regulatory requirements. Backfilling of the trench is included in the normal operating costs. See Special Provisions **SP-6** and **SP-7** for decontamination and disposal requirements

#### **4. Drilling, Driven Bailer, Direct Push, Hand Augering, and Sampling Capabilities**

The Consultant shall have the capability to drill through, core, and sample soft or poorly consolidated material, engineered fill, asphalt, portland cement concrete, and waste. The Consultant shall also have the capability to properly drill, construct, and develop wells.

Drill rigs shall have the ability to drill and sample 8-inch-diameter boreholes to a depth of at least 100 feet and 12-inch-diameter boreholes to a depth of at least 50 feet. Drill rigs must also be capable of hydraulically pushing thin-walled soil samplers or driving thick-walled soil samplers or coring sediments. In addition, drill rigs must be capable of obtaining continuous samples of soil through hollow-stem augers by either wire line method, using thin-walled sample tubes or by a 5 foot sample tube used within the lead auger. Soil samples shall be obtained in stainless steel sample tubes. Glass jars may be used for non-volatile samples from containers, stockpiles, and excavations, if approved by the Department's Contract Manager or designee.

The field geologist or engineering geologist shall log all borings. Borings shall be logged in accordance with current *Soil & Rock Logging Classification Manual* (Field Guide), State of California, Department of Transportation, Engineering Service Center, Office of Structural Foundations, which can be found at <http://www.dot.ca.gov/manuals.htm>. Fill materials shall be logged for content, color, texture, and cultural items. At a minimum, samples for logging purposes shall be taken every 5 feet. Field instrument readings shall be noted on the log corresponding to the depth of the sample. When borings are completed as monitoring wells, graphic representation of the well construction shall be added to the log. The Consultant's Task Order Manager or designee (a California Registered Geologist or Certified Engineering Geologist) shall sign the final boring logs.

The driven bailer (hydropunch or equivalent) technique shall use a temporary tool emplacement to obtain undisturbed water samples or product samples from ahead of the lead auger. Drill rigs or cone penetrometer rigs shall have the ability to sample ground water by use of a driven bailer to a depth of 100 feet in unconsolidated material. The sample inlet area shall be in hydraulic contact with the water-bearing zone and sample a discrete water interval. The water samples shall be unaltered and uncontaminated by drilling fluids or cuttings. The sampler shall be chemically inert.

All emplacements shall be overseen, described, and signed in the field log by the field geologist or engineering geologist. The Consultant's Task Order Manager shall also sign the final field log. The field log shall include, but are not limited to, description of materials penetrated, drilling method, drill penetration rate, bit pressure and drill chatter. When the sampling is complete, the sampler shall be retrieved and the borehole backfilled with grout or neat cement during the same day or as directed by the Department's Contract Manager or designee.

Direct push drilling method shall consist of a single or dual tube sampling system with continuous small diameter 1- to 2-inch-diameter steel tubes that are pushed or vibrated into the ground and generate minimal drill cutting waste. Clear acetate sleeves may be used for sample and core collection where samples will not be compromised by incompatibilities between the acetate and chemical contamination in the soil or ground water. Direct push rigs shall have the capability to drill to a depth of 50 feet in unconsolidated materials. This method may be used for soil core lithologic logging, soil vapor sampling, groundwater sampling, product sampling and soil sampling. In cases where soil samples are not required below a depth of 15 feet and access or space is limited, a compact and/or mobile direct push rig may be required. A compact direct push rig shall employ the same technology as a standard direct push rig, but can be used from a smaller platform and is only required to drill to a maximum depth of 15 feet. Dual tube systems must be used when cross-contamination of water-bearing zones is possible or in unconsolidated soil where the borehole will not stay open when the single tube is removed. Direct push drilling systems may be used at: limited-space work areas, under low overhead structures that are less than 10 feet in height, in buildings, on uneven/sloping topography, or on soft terrain such as wetlands. Mobile (for instance, pickup truck mounted) rigs may be needed for aerially deposited lead surveys next to roads. Track-mounted rigs will be required to traverse difficult terrain.

For all drilling methods the Consultant shall have available all necessary equipment to perform the following functions:

- tremie materials into boreholes
- maintain drilling fluids
- mix grout or grout mixtures
- pump grout in one continuous motion, beginning at the bottom of the space to be grouted
- decontaminate drilling sections before reuse; the driller is responsible for bringing all necessary support equipment to the site

Borings that are not turned into monitoring wells shall be backfilled with grout, neat cement or bentonite grout during the same day or as directed by the Department's Contract Manager or designee and as required by permitting agencies. Payment for backfilling is included as part of the cost of drilling.

Hand augering may be used to collect soil samples for laboratory analysis, or for detecting utility lines ahead of other drilling methods. All hand augered borings shall be logged using the unified soil classification system unless this requirement is waived by the Department's Contract Manager or designee. Prevailing wages are required for hand augering work that does not require geologic

logging of each individual borehole. Hand augering for the purpose of collecting soil samples for laboratory analysis when boreholes are logged shall be performed by either a registered, or unregistered professional. All hand augering devices shall be cleaned prior to use in each borehole. All hand auger sampling devices shall be cleaned prior to collection of each sample.

Samples collected for laboratory analysis shall be obtained using a drive hammer sampler equipped with stainless steel sample tubes unless the Department's Contract Manager or designee specifies otherwise (in writing). At the Department's Contract Manager's or designee's direction, samples collected to analyze for non-volatiles may be obtained using methods other than a drive hammer and shall be placed in individual containers for delivery to the laboratory.

The Consultant shall provide containers for waste materials and shall control and collect all drill cuttings and fluids for proper disposal. See Special Provisions **SP-6** and **SP-7** for decontamination and disposal requirements.

## **5. Surveying**

### **a. Third Order Surveys**

Third order surveys may be performed under the supervision of a licensed surveyor as part of a Task Order work scope. When required in the Task Order, locations will be surveyed for X, Y and Z coordinates. Unless specified by the Contract Manager or designee, the horizontal (X and Y) coordinates will be surveyed to the nearest 0.5 foot, with the vertical (Z coordinate) measured to the nearest 0.001 foot. The California Coordinate System coordinate shall be calculated for each location. All vertical measurements will be to mean sea level. When noted in the Task Order survey data shall be submitted in GIS-ready format.

### **b. GPS Requirements**

The Consultant shall provide site boundary and borehole locations within three (3) feet accuracy in either geographic coordinates or California State Plane Coordinates. The locations of drilling shall be provided in one of the following digital formats (as directed by the Contract Manager or designee):

- Arc/Info or ArcView Geographic Information System files
- Trimble SSF or RINEX Global Positioning System files
- Excel spreadsheet format
- Delimited text files

This information shall be submitted in a digital format. If requested by the Department's Contract Manager or designee, Microstation® (CADD) files shall be included in the report

## **6. Well Installation and Development and Temporary Wells**

Monitoring wells may be required to determine if ground water contamination is present, the extent of any contamination, and the general characteristics of subsurface hydrogeological conditions. Monitoring wells shall be designed and constructed to obtain water samples representative of the formation water. The Consultant shall install 2-inch and 4-inch PVC monitoring wells up to 100 feet deep. Monitoring wells shall include the following elements:

- Wells shall be screened and filter packed to match the formation material of the screened zone. Sieve analysis may be required to fulfill this task. A filter bridge of finer sand than used for the filter pack shall be placed above the screen and below the bentonite
- Payment for field sieve analysis is included in the cost of well installation
- Filter pack material shall extend 1.5 to 2.0 feet above the screen, 3/8-inch bentonite pellets shall be placed three (3) to five (5) feet above the filter pack, and cement or cement bentonite grout shall be used to fill the annular space. Well surface completion shall be concrete, which is integral with the concrete annular seal in the upper two (2) feet of the hole. The materials shall be tremied into the annular space around the casing. Filter pack material shall be clean, inert material; bentonite shall be non-beneficiated
- Grout shall be mixed in correct proportions so as to not affect ground water chemistry
- Grout shall consist of approximately 5% bentonite and 95% cement
- Bentonite and/or grout shall not be allowed to free fall down the annular space if greater than 5 feet deep
- Centralizers shall be used when wells are not completed within a hollow stem auger
- Monitoring wells shall not provide a conduit for cross-contamination of water bearing zones
- Wells shall be completed at the surface to prevent damage and tampering. Traffic proof covers or monument covers shall be used. Waterproof well caps shall be used in flush-mounted wells
- Screen lengths shall be appropriate to the monitoring task and shall meet regulatory agency requirements
- Wells shall be designed to meet the appropriate regulatory agency requirements
- Wells shall be completed so as to prevent surface water from entering the well or ground water table
- A third order survey shall be completed by a licensed surveyor as required by the Task Order. All monitoring wells will be surveyed for X, Y and Z coordinates. The California Coordinate System coordinate shall be calculated for each well. Elevations of the groundwater table will be calculated based on the top of casing elevations and depth to water measurements. A reference point (notch or mark) will be placed at the top of casing to ensure consistent and accurate measurements. The elevation of the ground or the top of the concrete slab adjacent to the monitoring well shall also be surveyed, to the nearest 0.1 foot. The groundwater elevation data will be used to determine the direction and gradient of groundwater flow beneath the site
- Wells shall be developed after construction by surging with a vented surge block, or equivalent technology, as approved by the Department's Contract Manager or designee, and pumped to remove sediments
- Wells will be surged and pumped as often as necessary to produce sediment free water samples (with a goal of less than 10 NTU (Nephelometric Turbidity Units). The Consultant shall measure turbidity in NTU once per hour during development and once at the end of development. The Consultant shall keep a well development log documenting development method, temperature, pH, conductivity, NTU, and volume of water produced. Costs of any additional work required to obtain sediment free water

samples during the field contract period are included for well development and no additional compensation shall be allowed

- The Consultant, prior to drilling and installation of wells, shall obtain necessary well permit(s). Wells shall be registered by the Consultant with the Department of Water Resources. Copies of these records shall be included in the final Task Order report
- Boring and well cuttings placed in drums may be stored at the site or transported to a storage site in the vicinity
- Temporary wells may be completed in open holes advanced by hollow stem auger or direct push methods for the purposes of water level measurements and water sample collection. Temporary wells are intended for use in situations where a water sample can not be obtained by driven bailer within one (1) hour due to formation permeability. Temporary wells shall be constructed of 1- or 2-inch diameter PVC, remain in place for as long as it takes to collect a water sample, but no more than 24 hours or as directed by the Contract Manager or designee, and only be used in borings completed to the first water bearing zone. The surface of the temporary well shall be protected from surface water infiltration and vandalism

## **7. Well Destruction**

The Consultant shall destroy PVC wells in accordance with applicable local and state requirements (DWR Bulletins 74-81 and 74-90). Reports of well destruction shall be filed with the Department of Water Resources (per the requirements of California Department of Water Resources, Bulletin 74-81 and Part III section 19, A-1, 2a), and local agencies if required. Copies of these reports shall be included in the draft and final report. The Department will provide site access when necessary. Neat cement (5% bentonite, 95% cement by volume) or sand cement shall be used to decommission wells.

The Consultant shall fully describe the well destruction in a report included with the final site investigation report and well destruction log, unless separately requested by the Department's Contract Manager or designee.

## **8. Soil Sampling**

The objective of sampling is to obtain a representative sample of the subsurface soils to determine the level of contamination at a site. The Consultant shall communicate to the laboratory the analyses required on samples and any special criteria for performing analyses. Soil samples shall be obtained using thin and/or thick walled sample barrels with stainless steel inserts (Acetate may be used for direct push core barrels). Soil samples obtained using the Standard Penetrometer Test shall be accomplished according to ASTM D 1586-84. Thin-walled Shelby tube samples shall be obtained in accordance with ASTM D 1587-83. Cost for sample barrels, tubes, Teflon tape, caps, and sealers are included in the cost of sampling. Thin walled samplers shall be pushed into the soil while thick walled samplers may be driven. Continuous coring of unconsolidated materials or rock may be requested in the Task Order.

Soil samples shall be obtained in as undisturbed state as possible. Soil samples shall be obtained in stainless steel sleeves during drilling or hand sampling. The Department's Contract Manager or designee on a case by case basis may revise this requirement. At the discretion of the Department's Contract Manager or designee, glass jars may be used for aerial deposited lead samples and acetate liners may be used for direct push samples where there is no chemical incompatibility. No fluids shall be introduced into sample boring except in special cases approved

by the Department's Contract Manager or designee. Sample tubes shall be capped with Teflon film or aluminum foil and plastic caps, sealed with appropriate taping (not electrical or duct tape), and preserved immediately at 39.2° F. Soil samples shall be delivered to the laboratory for analysis within 24 hours of sampling unless specified otherwise in the Task Order. Soil samples to be analyzed for volatile organic compounds shall be preserved with dry ice. For metals analysis of soil samples, when the total metal concentration is greater than ten times the soluble threshold limit concentration (STLC) the laboratory shall contact the Consultant, who shall contact the Department's Contract Manager or designee for approval before proceeding with the waste extraction test (WET).

In some cases soil samples will be obtained using EPA Method 5035, the Closed-System Purge-and Trap and Extraction for Volatile Organics in Soil and Waste Sample. The Consultant will be directed in the Task Order to collect samples using this procedure and shall be responsible for supplying all equipment and trained personnel for performing Method 5035.

## **9. Water Sampling**

Requirements for filtering shall also be communicated to the laboratory. If a sample is to be filtered before analysis for metals, no preservatives or acid shall be added until after filtration. Samples taken for dissolved metal determination shall be filtered through a 0.45 um filter. Filtration shall not be done for total metal analyses. If filtration is performed, it shall be done in-line or in the field immediately following sampling.

The Consultant shall obtain new samples without expense to the Department if QA/QC data shows any of the following:

- Cross contamination has occurred
- Samples were held too long before analysis
- Samples were compromised while in the custody of the Consultant prior to delivery for analysis
- Any chain of custody violation. Payment will be denied for unapproved chemical testing

## **10. Survey and Testing of Tanks, Structures, and Stored Materials**

The scope of services under this section of the contract includes surveying and testing, as applicable, of above ground or underground storage tanks, structures, stored materials, tank contents and containers to determine whether hazardous waste or other materials are present. Typical surveys would include inspections for fuels and other chemicals in tanks, barrels, and storage containers.

All survey work shall be completed in accordance with a site specific Health and Safety Plan developed by the Consultant and signed by a Certified Industrial Hygienist (CIH) for conditions expected during the survey work. The Health and Safety Plan shall be reviewed by the Department's Contract Manager or designee prior to the start of work. The Department's Contract Manager or designee shall be notified at least 24 hours before the commencement of any investigative or fieldwork. If the nature of the work requires the presence of the CIH during fieldwork, time for the CIH will be paid. Costs for development of the Health and Safety Plan will be paid per the Health and Safety Plan.

The Consultant shall conduct a pre-sampling survey of the designated site. Samples may be collected from aboveground or underground tanks, barrels, or storage containers.

The survey Work Plan shall provide a container-sampling plan including recommended analysis and sampling equipment. The Consultant shall pay particular attention to Health and Safety and recommend any specific sampling safety requirements for unknown materials. After the Work Plan has been submitted and reviewed by the Department, samples from aboveground or underground tanks, barrels, or storage containers shall be analyzed using State-certified laboratory procedures.

If, in the judgment of the Consultant, this work appears to be dangerous or requires more than Level C safety protection, the Consultant shall stop work and contact the Department's Contract Manager and designee.

## F. Laboratory

### 1. General Information

Laboratories performing chemical analyses shall be certified by the California Department of Public Health Environmental Laboratory Accreditation Program (CDPH-ELAP) for the specific laboratory test methods listed in **List of Chemical Analyses** in Section F, 3f. The Consultant shall provide a current CDPH –ELAP certification for all contract test methods throughout the life of the contract. For specific test methods not as yet certified by CDPH, the laboratory may perform laboratory analysis only if presently certified by CDPH for comparable test methods (for example, volatile organics, semi-volatile organics), or if it is a currently certified US EPA Contract laboratory. Water sample analysis shall be considered to include surface water, ground water, rinse water, monitoring and well samples. Standard turnaround time for chemical analysis shall not exceed ten (10) business days.

The Consultant shall be responsible for sample transport from worksite to the laboratory, and for providing decontaminated or new sample containers, labels, appropriate preservation and chain of custody records. Costs of these services and materials are included for laboratory analyses listed in **List of Chemical Analyses** in Section F, 3f.

Remaining and unused portions of samples shall be stored in a chilled state (39.2° F) at the laboratory for 30 days following completion of the last analysis for that group of samples listed on the same chain of custody form. Disposal of samples shall be the responsibility of the laboratory.

Retention of samples beyond the 30-day period and additional laboratory work not listed in **List of Chemical Analyses** in Section F, 3f shall be performed by the Consultant only when the Department's Contract Manager or designee provides a written request to the consultant.

The Consultant and the laboratory provide clear and accurate explanation of analytical results including graphical presentations and summaries of the laboratory data in reports.

### 2. Mobile Laboratory

Mobile laboratories shall be certified by the CDPH-ELAP for analyses which are specified in the Task Order. Mobile laboratory gas chromatograph equipment shall be calibrated on-site at the beginning of each working day as follows: Mobile laboratories shall record gas chromatograph system parameters on the first page of each day's chromatograms. The parameters include the temperatures of the injector, column, and detector; integrator parameters of the injector, peak markers, and baseline offset; column type, length and diameter; and packing material. The name of the operator and the date shall also be included. Any changes to the system parameters shall be documented.

### 3. Quality Assurance/Quality Control (QA/QC)

#### a. Field QA/QC

Field QA/QC procedures shall be reported in summary form for all samples submitted. Field QA/QC procedures shall include the following:

- i. One (1) equipment blank for every chain of custody by pouring de-ionized water onto the sampling device and into a laboratory container
- ii. For water sampling events, one (1) trip blank for every ice chest or sample shipment container. Water samples will require one (1) laboratory prepared trip blank for each individual group of water samples transported to the laboratory. The contents of each ice chest or refrigerated container constitute an individual group of water samples. The trip blank is a clean water sample that shall be opened at the site in the same location as the field sampling. The trip blank shall be analyzed for the same compounds as the other samples

#### b. Laboratory QA/QC

QA/QC shall be performed for each method of analysis with specificity for every appropriate analyte requested and/or representative analytes listed in the test method's QA/QC. QA/QC data shall be reported in summary form for all samples submitted. Laboratory QA/QC procedures specified by each test method shall include the following:

- i. One (1) method blank for every ten (10) samples, batch of samples or type of matrix, whichever is more frequent
- ii. One (1) sample analyzed in duplicate for every ten (10) samples, batch of samples or type of matrix, whichever is more frequent
- iii. One (1) spiked sample for every ten (10) samples, batch of samples or type of matrix, whichever is more frequent, with spike made at ten times the detection limit or at the analyte level

Where the test method does not specify QA/QC procedures, all of the above will apply.

Trip blank(s), laboratory blank(s), spiked samples, and duplicate sample analyses shall be reported on either the laboratory testing report or the QA/QC summary report. Spiked samples shall be reported as percent spike recovery.

#### c. Other QA/QC Requirements

Acetone, methylene chloride, chloroform, and methyl ethyl ketone (MEK) detected in soil and ground water contaminants shall be considered laboratory contaminants. It shall be the lab's responsibility to determine if the laboratory processes introduced these chemicals to the samples.

With the draft Site Investigation report, the Consultant shall submit to the Department the lab's written discussion documenting QA/QC evaluation and analytical checks.

Task Orders which have more than 50 soil or ground water samples shall also include a holding timetable. The holding timetable shall include the sample collection date, the date the sample was received at the laboratory and the dates the sample was extracted and analyzed.

All costs for laboratory QA/QC work and reporting are included in the proposal for each test method listed in **List of Chemical Analyses** in Section F, 3f.

d. QA/QC Report

The QA/QC summary reports shall include:

- temperature of incoming samples
- constituent/analyte
- specific test method
- date (include holding timetable for more than 50 samples)
- detection limit of the specific test method (mg/kg or mg/liter)
- percent accuracy
- percent precision
- signature of laboratory manager or director

e. Geo-tracker Requirements

Some Task Orders will include investigation at sites under State Water Resources Control Board (SWRCB) oversight. Analytical results for these Task Orders will be submitted to the SWRCB Geo-tracker program. Costs to laboratories and Consultants will be compensated based on actual cost.

f. List of Chemical Analyses

|                                            |                                          |
|--------------------------------------------|------------------------------------------|
| (ICAP) U.S. EPA method 6010                | Phenols                                  |
| CA Waste Extraction Test (WET)             | PCB's                                    |
| WET Analysis                               | Polynuclear Aromatic Hydrocarbons        |
| CCR approved EPA series 200 methods        | Organophosphorus Pesticides              |
| EPA 8000 series (GC only)                  | Chlorinated Herbicides                   |
| EPA 8000 series (GC/MS)                    | GC/MS for Volatile Organics              |
| Inorganic element analysis – Extraction    | GC/MS for Fuel Oxygenate Compounds       |
| Inorganic element analysis – element       | Combined GC/MS for Volatile Organics     |
| Volatile organic compounds                 | GC/MS for Semi-volatile Organics         |
| Semivolatile organic compounds             | ICAP any single element. <u>EPA 6010</u> |
| Organochlorine pesticides                  | Any single element, including lead       |
| Oil and Grease                             | Cr, Hexavalent by <u>EPA 7195</u>        |
| Gasoline: <u>Modified EPA 8015</u>         | Polarized Light Microscopy (PLM)         |
| Gasoline Analysis Package: <u>EPA 8015</u> | Phased Contrast Microscopy               |
| Diesel Fuel: <u>Modified EPA 8015</u>      | Transmission Electron Microscopy         |
| TPH Oil: <u>Modified EPA 8015</u>          | ARB Method 435                           |
| Organolead: per Title 22                   | Filtration for dissolved constituents    |
| Nonhalogenated Volatile Organics           | Total and Amenable Cyanide               |
| Aromatic and Halogenated Volatile Organics | Ethylene Glycol                          |

Soil pH  
Turbidity in NTU  
Fish Bioassay  
Total Dissolved Solids  
Total Organic Carbon

Moisture Content  
Specific Gravity  
Sieve Analysis  
Unit Weight (Bulk Density)  
Hydraulic Conductivity

## G. REPORT REQUIREMENTS

### 1. Initial Site Assessment Reports

The Initial Site Assessment (ISA) report shall include but are not necessarily limited to the following:

- a. Title sheet identifying Task Order number, all Expenditure Authorities (EA's) included in the report, project name, project location, contract number, Consultant name, name of author and date prepared
- b. Signature page with signature and title of the Consultant's Task Order Manager
- c. Table of Contents
- d. Investigative Summary - This section shall present and summarize the findings of the investigation
- e. Project Description - This section shall briefly describe the project for which the investigation was undertaken
- f. Background section including
  - i. Aquifer descriptions (depth to ground water, gradient, conductivity, yield, quality and beneficial uses). Public sources such as Department of Water Resources (DWR) reports, area site investigations, and United States Geologic Survey (USGS) reports will be typical sources of this information
  - ii. Geologic units. Geologic and Hydrologic information should be scaled to the freeway project. The shallow subsurface conditions, for less than 50 feet, will have the greatest impact on construction
  - iii. Location and use of ground water monitoring wells in the project vicinity. Public sources such as the Department of Water Resources, Regional Water Quality Control Boards, cities and counties will have well records
- g. Historical background summary
- h. Investigative narrative including
  - i. Investigative methods and evaluation criteria
  - ii. Known hazardous waste sites (include such data as but are not limited to: problem type, Federal or State, impact, schedule for cleanup)
  - iii. Potential hazardous waste sites (name, type of operation, why suspect, potential area of impact)
  - iv. The following information for all known and potential hazardous waste sites:
    - The name, addresses, and telephone number of the business/owner(s) of each such site

- The type of hazardous waste/material containers involved at each site, such as, sludge pits, ponds, underground or aboveground storage tanks, etc
  - Chemicals/hazardous materials that have been stored/used in the past at each site, and the known generators (if available) of that material
  - Permits, violations, plans, records and any other information reviewed
  - Site sketches, site photographs, and descriptive comments to identify important features such as major utilities at each site
  - Site maps for every site with features of concern identified, at a scale of 1:1000 unless otherwise specified in the Task Order, and depicting the relationship between the contamination and the proposed right of way and pertinent project features
- j. Maps including site features, corresponding symbols and physical features such as geologic units, aquifer descriptions, and depth to ground water
- k. A description of how project work will affect, or impinge upon, the suspect site (for example, area of soil contamination in relation to construction excavation)
- l. When requested as part of the Task Order, for prediction of impact on the public, a description of how the suspect site will affect public health and the surrounding environment if that suspected contamination is impacted by the project (for preliminary endangerment assessment work)
- m. A list of sites that are recommended for detailed site investigations. To facilitate scheduling these future site investigations, the sites on this list shall be prioritized—ranked by magnitude of potential hazardous waste problem and estimated expense for follow-up investigations, monitoring and mitigation. The rationale used for this prioritizing of sites shall be fully explained in the report
- n. Description of the magnitude of each hazardous waste problem in terms of length of time and approximate costs for mitigating the problem
- o. Description of future plans, if any, (by the U.S. Environmental Protection Agency, California Department of Toxic Substances Control, Regional Water Quality Control Board, or others) to remediate the hazardous waste sites listed in the ISA
- p. Resumes of staff performing the ISA
- q. Reference list

The Consultant shall describe the ISA development process the Consultant followed and identify individuals or agencies contacted in developing the information included in the ISA. The Consultant shall include a complete list of contact names, phone numbers, dates contacted, and information reviewed. The Consultant shall explain any limitations in the adequacy and/or conclusions reached in the assessment.

## **2. Historic Research Report**

Historic research reports that are prepared for Initial Site Assessments shall include the following, in addition to the standard title sheet, table of contents, investigative summary, and project description required for ISA reports:

- a. Survey scope and methods
- b. Results of the research, focusing on properties which used or may have used hazardous materials and/or generated or may have generated hazardous waste

- c. Interpretation of results
- d. Recommendations
- e. Sources consulted
- f. Maps and figures, both historic and recent, depicting properties of interest

Historic research reports shall be prepared and signed by an historian with a Master's Degree in History.

### **3. Site Investigation Reports**

The site investigation report shall include the following items in the format described below:

- a. Title sheet identifying Task Order number, all EAs included in the report, project name, project location, contract number, Consultant name, name of author, and date prepared
- b. Signature page with signature, title and registration number of the geologist or the engineering geologist who is licensed in the State of California and is the Consultant's Task Order Manager for the investigation
- c. Table of Contents
- d. Investigative Summary - This section shall present and summarize the findings of the investigation
- e. Project Description - This section shall provide a brief description of the project for which the site investigation work was undertaken
- f. Introduction -This section shall include the general objectives of the investigation, a short chronology of site activities, previous site work, and items of work completed for the investigation
- g. Investigative Methods -This section shall describe the field methods used for the investigation and any deviations from the work plan
- h. Investigative Results and Field Observations -This section shall include a discussion of the site geology, hydro-geologic conditions observed during the investigation, and chemical test results (to be further described in "Laboratory Testing"). The data shall be presented clearly and concisely, including reference to previous work or results, and shall be summarized in table form
- i. Description of any contacts with regulatory agencies or personnel
- j. Internal Data Validation – The Consultant shall perform data validation for each Task Order
- k. Data Evaluation and Discussion - Site investigation results shall be evaluated in the report. Data evaluation shall include:
  - i. Maps showing the site, feature locations, boring and well locations, vertical and horizontal extent of contamination, contour maps of contaminant concentrations, and hydraulic gradient. All maps shall have title blocks, scale, and north arrow. The Consultant shall obtain the Department's Contract Manager or designee's approval of map scales
  - ii. Cross sections showing subsurface geologic and hydrologic conditions, sample results, and estimated extent of contamination. The Consultant shall estimate the volumes of contaminated soil and ground water present and shall describe fully the assumptions and calculations on which estimates are based
  - iii. Charts showing contamination levels of soil and/or ground water in specific, identifiable locations

- iv. Color photographs that document the site surroundings, the investigation area with flagged boring locations, and any significant geological features. If specified in the Task Order, the Consultant shall provide additional photographs that document the progress of the investigation and any significant areas or activities
- v. Statistical analysis of samples results, estimating trends, contaminant distribution, and average concentration
- vi. Maps, cross sections, and graphs that shall be supported by data and shall be included in the reports
- vii. Summary of laboratory results
- l. Conclusions and Recommendations - This section shall describe the type, extent, and estimated amount of contamination. Recommendations for any necessary additional work to characterize the site and the estimated cost of that work shall be included in this section
- m. Identification of subconsultants and staff performing work, including resumes, if they were not provided in the cost proposal or work plan
- n. Appendices that contain all data used to support the report, such as:
  - i. Well and boring logs for both existing and new well and soil borings. This includes all wells that can influence hydro-geologic conditions of the site, not just wells used to develop cross sections. Both field and final logs shall be included in the report
  - ii. Copies of well permits from the State Department of Water Resources, county regulatory agencies, or other applicable permits
  - iii. Laboratory analysis of each sample tested. Laboratory reports shall include Chain of Custody forms that contain required EPA and Department of Health Services information (See Laboratory Test Report section for reporting requirements)
  - iv. Surveyed elevations and horizontal positions of wells and borings, bench marks and monuments (third order survey). Map showing relative positions and coordinates of these features
- o. Reference list

#### **4. Monitoring Well Reports**

Monitoring well reports shall include a summary of any field activities and observations, water level measurements, groundwater gradient, and a summary of the laboratory results and conclusions from the work. The following shall be included as appendices, as appropriate to the investigation or as specified by the Department's Contract Manager or designee:

- a. Site Background
- b. Base maps with groundwater gradient
- c. Discussion of changes noted from last season or monitoring event. Base maps with contaminant concentrations
- d. Charts of changes in ground water elevation with time, elevation vs. contaminant concentrations
- e. Groundwater sampling field data sheets
- f. Cumulative tables of well elevations, analytical and water data
- g. Laboratory reports (in tabular form)

- h. Chain of Custody forms

## **5. Gas Survey Reports**

When soil gas activities are included in the Task Order the following categories of information shall be included in the report, in addition to the general site investigation reporting requirements:

- a. Data Presentation
  - i. concentration contour map of sample area with the property boundaries indicated and probe location (logged and numbered) shown
  - ii. explanation of data anomalies
- b. Description of Soil Gas Survey
  - i. daily logs of sampling procedures and results
  - ii. chronology of daily sampling and probe hole logs
- c. Quality Assurance/Quality Control (QA/QC) Summary
  - i. description of procedures, results, corrective action taken and effect on data
  - ii. table comparing QA sample results with known QA sample concentrations

## **6. Geophysical Reports**

A California Registered Geophysicist shall sign geophysical reports. When geophysical activities are included in the Task Order, the following additional categories of information shall be presented in the site investigation report:

- a. Data Presentation, including
  - i. survey area with property boundaries
  - ii. mapping at a scale no smaller than 1:1000
  - iii. sampling points for magnetometer surveys measured at no greater than five (5) feet meter intervals, unless the Department's Contract Manager or designee approves greater intervals
  - iv. cross sections along lines of investigation
- b. Description of fieldwork
- c. Interpretation of all data, conclusions, and recommendations for additional work
- d. Excel or ACSII - compatible format computer files of the site investigation and evaluation data including a summary of all supporting data used to compile the report, if requested by the Department's Contract Manager or designee
- e. Raw data if requested by the Department's Contract Manager or designee

## **7. Trenching Reports**

When trenching activities are included in the Task Order the following additional categories of information shall be included in the site investigation report:

- a. Detailed description of the subsurface conditions with color photographs and sketches to illustrate subsurface features
- b. A description of the field activities
- c. A summary table of OVA (Organic Vapor Analyzer) and PID (Photo Ionization Detector) readings, when they were taken, and summary tables of the sample results
- d. A map showing the trench locations and the sampling locations within the trenches, as well as other relevant site features, such as boring and monitoring well locations
- e. An analysis of the subsurface conditions found in the trench and how the results relate to conditions found in any other phase of the investigation

#### **8. Risk Based Corrective Action (RBCA) Reports**

- a. The reporting format shall follow the general Site Investigation format requirements. The contents shall follow ASTM Designation E 1739-5, *Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites* (See Section P, Documents, paragraph j )
- b. Tier 1 or Tier 2 evaluations may be completed as directed in the Task Order
- c. Reporting shall follow ASTM E1739 6.11

#### **9. Laboratory Test Reports**

Complete copies of all laboratory reports, including QA/QC summary reports, shall be placed in an appendix of the laboratory report. Draft copies of raw laboratory data shall be faxed, or electronically submitted, to the Department's Contract Manager or designee when requested. Chromatographs, graphical presentations and summaries of the laboratory data shall be provided with the laboratory reports at no additional cost to the Department. The Consultant shall keep the chromatographs on file and shall provide them upon the Department's request. Laboratory test reports shall contain all of the following information:

- a. Name of analytical laboratory
- b. Address of laboratory
- c. Telephone number of laboratory
- d. Laboratory number for each sample reported
- e. Consultant's number for each sample reported, if applicable
- f. Date sample(s) collected
- g. Date sample(s) received by laboratory
- h. Date of laboratory testing
- i. Brief sample description (such as, but not limited to soil, water, sludge)
- j. Specific test method
- k. Extraction method utilized (if not unique to test method)
- l. Test result for each sample and method (reported in mg/kg or mg/liter as appropriate)
- m. Limit of detection for each test method (reported in mg/kg or mg/liter as appropriate)
- n. Written explanation of higher detection limits, dilution factors, laboratory contaminants, or other unusual results

- o. Samples which failed QA/QC procedures and why
- p. Date of test report
- q. US EPA Region IX's current Preliminary Remedial cleanup Goals (PRG) for industrial sites for the contaminants of concern when requested by the Department's Contract Manager or designee
- r. Signature and title of the director of the laboratory

## **10. Hazardous Waste Management Plan**

The Remedial Action Options Report shall be a separate report, which includes a review of all potentially feasible remedial actions and their costs. The review must be of sufficient depth and breadth for the Department to make an informed decision on the most appropriate remedial technology for a specific hazardous waste problem at a specific site. The development of a Remedial Action Options Report does not include the design of a remedial action or cleanup. The options report shall include:

- a. An analysis of the "do nothing" alternative and analyses of at least two (2) other remedial alternatives. The analysis of each alternative should address time; operation and maintenance requirements; risks to health and environment; cost-effectiveness; level of cleanup; potential economic impact on the responsible party; the physical limitations of the site; and the impact of the cleanup methods on the continuing site activities, future construction activities and use by the Department
- b. Prediction of each treatment alternative's effectiveness on the material in question, and the applicability of the alternative relative to the project life
- c. Reliability of each alternative in terms of its demonstrated degree of effectiveness at other sites and its operation and maintenance requirements
- d. Ability to implement each alternative, in the context of the site conditions, location, and time frame
- e. Discussion of any possible adverse impacts to public and site-worker health and safety presented by alternative treatments
- f. The regulations that will control each alternative and the permits required to implement the alternative
- g. Identification of the public health concerns of the current site conditions, as well as those during and after the treatment or alternative action
- h. Direct and indirect capital costs, including engineering, equipment, labor and materials for the installation and construction of each remedial action alternative

If the Consultant finds that any additional data and information are needed before a remedial action alternative can be chosen and designed, the Consultant shall describe them in the report.

## **11. Survey Reports**

This section describes standard reporting requirements for all types of surveys (for example, asbestos, lead based paint, PCBs, containers, barrels and tanks).

The report shall include but are not limited to:

- a. Title Sheet identifying the Task Order number, project name, project location, contract number, Consultant name, name and/or title of the author, and date prepared
- b. Signature page with signature, title and registration number of the geologist, or engineering geologist, licensed in the State of California, who is the Consultant's Task Order Manager for the investigation. Additionally the certified asbestos or lead inspector responsible for asbestos or lead survey work shall sign the report
- c. Table of Contents
- d. Investigative Summary of Survey - This section shall present and summarize the findings of the survey
- e. Project Description - This section shall provide a brief description of the project for which the survey work was undertaken
- f. Introduction - This section shall describe the general objective of the investigation, a short chronology of the site, previous site work, and items of work completed for the survey investigation
- g. Investigative Results and Observations - This section shall be written in clear concise form and summarized in table form. It shall include a discussion of the following but is not limited to:
  - i. Location of ACM, lead based paint, PCB, barrel(s) and tank(s)
  - ii. Estimated quantities of ACM, PCB, barrel(s) and tank(s)
  - iii. Type of material (tiles, acoustical spray-on and insulation)
  - iv. Condition/distribution of material
  - v. Locations where obvious flaking lead based paint would have to be removed prior to demolition
  - vi. Drawing or plan showing location of the following (at a scale no greater than 1:200, unless otherwise specified in the Task Order)  
Sampling points.
    - ACM - friable or non-friable
    - Containers - barrels, tanks
    - Hazardous materials/waste storage
- h. Photographs of the exterior of structures, of sample locations, of representative surface conditions, and of any significant areas, as requested by the Department's Contract Manager or designee
- i. Chemical Test Results - As stated in Part 4 - Laboratory Test Reports
- j. Naturally-occurring asbestos lab results shall include point counting, as per ARB Method 435, Section 7
- k. The Consultant shall also discuss whether there is a need for National Emissions Standards for Hazardous Air Pollutants (NESHAP) and Air Quality Management District notifications during construction and/or demolition
- l. Appendices - Reports shall contain, or be accompanied by appendices that contain, all data used to support statements of the report, such as

- i. Copies of permits needed to gain access to site (if applicable)
- ii. Laboratory analysis of each sample tested. Lab reports must include Chain of Custody forms that contain required EPA and Department of Health Services information. Refer to Section G.9.Laboratory Testing section reporting requirements

## **12. Aerially Deposited Lead Reports**

Data Evaluation and Discussion – the evaluation and discussion shall include the following:

- (i) Maps showing the site, boring locations, depths, total and soluble lead levels found in each boring. Each map shall include a title block, scale, and north arrow
- (ii) Table of laboratory results showing total and soluble lead levels in soil samples with specific locations identified
- (iii) Statistical evaluation, tables, graphs, including histograms of original data and transformations, and showing the mean, median, standard deviation with 80% (two-tail) or 90% (one-tail) and 95% upper confidence levels
- (iv) Calculated lead distributions using the current statistical method as specified in this Contract or by Caltrans including a diagram showing concentrations expected in each layer of soil and comparison data to Title 22 Criteria and DTSC Variance
- (v) Data supporting all maps, cross sections, and graphs
- (vi) Conclusion and Recommendations – the discussion shall include descriptions of the type, extent, and estimated amount of lead contamination present in the soil and recommendations for material handling based on DTSC Variance requirements or exceptions

## **13. Plans, Specifications and Estimates (PS&E)**

All plans, specifications and quantity calculations shall conform to Department's requirements and shall be made available to the Department at stages specified in the milestones schedule and upon request.

- a. Design & Plans
  - i. Construction details for each design shall be prepared on Caltrans plan sheets. Blank reproducible sample plan sheets or electronic copies will be provided by Caltrans.
  - ii. Electronic plan files shall be submitted to the Department's Contract Manager or designee. Compression of the files may be required using PKZip (.zip) version 2.04. Information on zip compression can be found at:

<http://www.winzip.com/>

- iii. Construction details shall be submitted as Microstation 5.\* and above (.dgn) files will use the Caltrans standard tables and conform to the Caltrans CADD user Manual, found at:  
  
<http://www.dot.ca.gov/hq/oppd/cadd/usta/caddman/english/toc.htm>
- iv. Each plan sheet shall bear the State of California registered Professional Engineer registration seal with the signature, license number and registration certificate expirations date of the engineer who is in responsible charge for developing the plan
- v. Each sheet shall be signed by the engineer who prepared the design
- vi. All designs shall be independently checked by a qualified engineer who is registered in the State of California. Each sheet shall be signed by the engineer who performed the independent design check
- vii. The calculations for both the design and the independent design check (indexed with page numbers) shall be submitted as part of the 65%, 90% and 100% submittal requirements. The respective calculations shall bear the State of California Registered Professional Engineer registration seal with the signature, license number and registration certificate expiration date of the Design engineer and independent check engineer
- viii. Electronic files for all details, calculations, studies, and reports shall be submitted at the end of contract or when requested by the Contract Manager or designee
- ix. All electronic software(s) developed, data base generated, spread sheet and intellectual properties develop during the life of this contract shall become the properties of the State of California

b. Project Specifications

- i. The Standard Special Provisions are available for use by the Consultant on the Caltrans web site. The Special Provisions shall be prepared by the Consultant using Microsoft Word. The Department's Contract Manager will supply any Standard Special Provisions to the Consultant that are not available on the internet. Also, the Special Provisions shall be submitted to Caltrans on a zip disk, formatted for the Mac Computer
- ii. The Consultant shall edit the Standard Special Provisions in conformance with the "Guide for the Submittal of Plans, Specifications, and Estimates", which is available on the Caltrans web site, found at:  
  
<http://www.dot.ca.gov/hq/oppd/cadd/usta/ppman/default.htm>
- iii. Included in the Special Provisions shall be a contract item list for each structure along with a contract item list for all the structures. The Special Provisions shall contain a signed signature seal sheet of the Engineer who prepared the Special Provisions, or, of the Engineer under whose direction they were prepared

- iv. The Special Provisions shall be prepared in conformance with Section IV of the State document "Guide for the Submittal of Plans, Specifications, and Estimates" and with "Standards for the Preparation of Contract Special Provisions," found at:

<http://www.dot.ca.gov/hq/esc/oe/standards.php>

c. Project Estimates

- i. A Consultant shall prepare a Cost Estimate in accordance with the requirements of Caltrans Policy and Guidelines, found at :

<http://www.dot.ca.gov/hq/oppd/costest/costest.htm>

- ii. Standard contract pay items are available to the Consultant on the above Caltrans web site. Additional contract pay items can be added to accommodate a specific project
- iii. A Suggested Working Day Schedule shall be prepared along with a total Working Day Schedule for the entire project
- iv. Quantities for all contract items shall be substantiated by calculations. Quantity calculations shall be neat and orderly and shall show all sketches, diagrams, and dimensions necessary to allow them to be independently used by field inspectors

## H. SPECIAL PROVISIONS

**The Consultant shall adhere to the following Special Provisions:**

### **SP-1: Department and Consultant Representation**

- a. The Department's Contract Manager or designee will monitor the work performed by the Consultant under each Task Order. The Department's Contract Manager or designee may consult with and be advised by representatives of the applicable local and/or State regulatory agencies
- b. The Consultant shall always be represented by professional/senior staff personnel who have experience in the performance of the work detailed in the Task Order when work is in progress on the site
- c. The Consultant's Task Order Manager or Field Supervisor shall be present when a subconsultant is performing fieldwork. Fieldwork includes geophysical, asbestos and lead surveys, drilling, trenching, sampling, mobile lab analysis, and drum removal

### **SP-2: Non-Detailed/Other Work**

- a. The Consultant shall perform items of work not mentioned or completely detailed in this contract, those are necessary or normally required as part of a Task Order development process, without additional compensation from the Department. Examples of items of "non-detailed or other work" are work plan development and work plan estimates
- b. The Department may encounter certain site-specific conditions that cannot reasonably be foreseen at the time of the Task Order. Where these conditions clearly impose an unreasonable cost burden on the Consultant due to changed conditions, the Department may amend the Task Order

### **SP-3: Investigation Completion Schedule**

- a. A preliminary investigation completion schedule based on the overall project schedule requirements will be included in the Task Order offered to the Consultant. The Consultant may request a schedule modification if the requested schedule can not be met. The Department's Contract Manager shall review the requested modification and may approve or deny the request. If the Consultant cannot accept the proposed schedule modification, the Task Order will not be offered to the Consultant.
- b. The typical activities/deliverables for completing a site investigation are:
  - i. Task Order meeting/site visit
  - ii. Site investigation work plan
  - iii. Health & Safety plan
  - iv. Begin fieldwork
  - v. Complete fieldwork
  - vi. Task Order progress meetings
  - vii. Draft report
  - viii. Transmit Final report
  - ix. Drum removal/disposal of Investigative-Derived Waste (IDW)
- c. As work progresses, the schedule may be amended and updated as agreed between the Consultant and Department's Contract Manager.

### **SP-4: Health and Safety**

- a. The Consultant shall be solely responsible for the health and safety protection of its employees, subconsultants, and subconsultants' employees in performance of this contract.
- b. The Consultant shall conform to all applicable occupational health and safety standards, rules and regulations established by the State of California and the U.S. Government as applicable.
- c. The site Health and Safety Plan shall be developed by an industrial hygienist, which shall characterize the potential Task Order site hazards. The site Health and Safety Plan will be signed by a Certified Industrial Hygienist. During site investigation activities a site safety officer will be designated and will be responsible for enforcing the Health and Safety Plan.
- d. Before the field investigation begins, a copy of the Health And Safety Plan shall be distributed to all field investigation workers and they shall certify by signing the Health and Safety Plan that they have read, understand, and agree to comply with the site Health and Safety Plan.
- e. Non-compliance by the Consultant or Consultant's personnel with the site Health and Safety Plan is grounds for a stop work order or termination of contract.
- f. The Consultant shall provide safe access to the Task Order worksite for the Department's Contract Manager or designee and representatives of the applicable local and/or state regulatory agencies during normal field investigations work hours. Designated observation areas outside the work zone shall be established for these site visits. The site safety officer shall accompany the representatives while on the site.

**SP-5: Site Safety Officer**

- a. The Consultant shall designate a site safety officer for each site that is under active investigation. The site safety officer shall present the Health and Safety Plan before the start of work. A site safety officer or his designated representative shall be present at all times at each site under active investigation. The site safety officer must be familiar with hazardous waste laws and regulations in California and with Cal/OSHA requirements.
- b. The site safety officer or his designated representative shall be available to accompany the Department's Contract Manager (and/or his representatives) and/or representatives of the applicable regulatory agencies while they are on-site.
- c. The site safety officer shall direct the implementation and operation of the Health and Safety Plan. The site safety officer shall enforce compliance with the Health and Safety Plan by all persons while they are on-site.

**SP-6: Decontamination**

- a. All personnel shall be decontaminated before leaving the site exclusion zone as specified in the site Health and Safety Plan.
- b. The Consultant shall equip, supply, and maintain an on-site decontamination station for the drilling, installation, and sampling equipment. The Consultant shall ensure that this station has the capacity to contain all decontamination fluids used in the decontamination procedure. The Consultant shall collect these fluids in appropriate containers. The Consultant shall manage and dispose of these materials as part of the Task Order in compliance with all applicable regulations and permits.
- c. The Consultant shall wash and clean all equipment before initiating work at the site. This includes drilling machines, pipe, rods, samplers, pumps, casing, screens and any other material brought on-site. Before reuse of any equipment at another drilling location at the site, all equipment shall be decontaminated.
- d. General requirements for decontamination include:
  - i. Auger flights and other tools used in drilling, monitoring, and sampling shall be steam-cleaned before initial use and between boreholes
  - ii. Before each use sampling tubes, stainless steel liners and bailers shall be rinsed in a mixture of Liquinox, or similar non-phosphate product, and clear water, rinsed in clear water, rinsed in distilled water, and air dried
- e. The Consultant shall avoid contamination of the project area and shall not dump waste oil, drilling fluids, rubbish, or other materials on the ground. All equipment, unused materials, temporary facilities, and other miscellaneous items resulting from or used in the operation shall be removed from the site. Any existing facilities damaged during site activities will be replaced or repaired at the Consultant's expense. Site cleanup shall be completed to the satisfaction of the Department's Contract Manager or designee

**SP-7: Disposal (decontamination water, well development and purge water, and boring cuttings)**

- a. The Consultant shall properly collect decontamination water, well development water, purge water, and boring cuttings in containers (such as, but not limited to drums/dumpsters). All containers shall be properly labeled with the Consultant's name and borehole identification. The Consultant shall properly dispose of the containers with contaminated materials within 21 days after results of laboratory chemical analysis from the investigation are available to the Consultant. Soils found to be

clean may be disposed of on the Task Order site, depending on site conditions, or other sites acceptable to the Department's Contract Manager or designee. No liquid or solid wastes shall be allowed to enter storm drains or water ways. Trash, rags, tyvec, or similar materials shall not be disposed of with the cuttings

- b. Failure to remove storage containers within the prescribed 21-day time frame will result in per day liquidated damages as detailed in the applicable Task Order. The Consultant's storage and disposal of contaminated material will be paid by the Department
- c. Task Order work under this contract shall conform to the requirements of National Pollutant Discharge Elimination System (NPDES) Permit for the State of California Department of Transportation Properties, Facilities, and Activities, No. CAS000003, issued by the State Resources Control Board. This permit, hereafter referred to as the "Permit," regulates storm water discharges associated with construction activities

#### **SP-8: Project Diary/Time sheets**

- a. A Project Diary shall be maintained to document the conditions of all work performed under this contract. The diary shall be filled out and signed to affirm its accuracy, shall identify the Consultant's employee who is responsible for project management and include, at minimum, the following:
  - i. Task Order number and contract number
  - ii. Project name and location
  - iii. Name and title of the personnel performing the work, including sub-consultants
  - iii. Name of company performing work
  - iv. Date work is performed
  - v. Actual start and end times of work
  - vi. Description of work being performed
  - vii. Additional notations, observations, or remarks to further characterize the site
  - viii. Clarify work being performed
- b. A copy of the signed project diary must be included with invoices submitted for payment to support all hours shown as billed on the invoice. Copies of actual time sheets and certified payroll records shall be furnished to the Department's Contract Manager to substantiate hours submitted for payment

#### **SP-9: Permit Fees**

All permits (such as well/drilling permits) will be paid at actual cost, with the exception of encroachment permits. See Special Provision **SP-12** concerning encroachment permits.

#### **SP-10: Site Access**

During work hours the Consultant shall provide the Department's Contract Manager (or designees) with safe access to the worksite during the field investigation and shall furnish adequate safety equipment for such visits. The worksite is defined for this special provision as the areas of the site generally outside of the immediate exclusion zone in which such work as drilling is taking place. Equipment shall include hard hats, tyvec coveralls, gloves, and boot covers. The Consultant shall be prepared for a

maximum of six (6) visitors at any one time. All work performed and all materials furnished shall be subject to inspection by the Department's Contract Manager or designee.

#### **SP-11: Right of Entry**

For contract work on property not owned or controlled by the Department, all permits, agreements, and permissions will be obtained by the Department in the advance of Consultant's activities, however;

- a. The Consultant shall not enter property or facilities not owned by the Department without prior permission or permit obtained through the Department
- b. The Consultant shall notify the Department, in writing, in advance of their need to enter said property or facility to perform work
- c. The Consultant's notice shall specify the date, purpose, duration, location, and the time of day of the Consultant's activities
- d. The Consultant shall comply with all reasonable conditions imposed by the Contract Manager and requirements set forth in the permission, permit, or agreement

The conditions of the right of entry agreement to the property will be communicated to the Consultant during the Task Order meeting

#### **SP-12: Encroachment Permits**

For contract work on Department's Right-of-Way, an executed contract constitutes the Consultant's "Encroachment permit." The Consultant (prime as well as any subs) shall carry a copy of the fully executed contract along with the pertinent Task Order(s) at all times while conducting work for the Department within the Department Right-of-Way.

#### **SP-13: Traffic Control**

Traffic control (barricades, portable flashing beacons, and detours) necessary to accomplish the contract work within Department Right-of-Way will be performed by the Department unless the Consultant is directed to provide traffic control in the Task Order. When the Department is to provide the traffic control, the Consultant must request traffic control in advance of the work and obtain proper clearance. Traffic control, which is necessary outside of the Department Right-of-Way, will be the responsibility of the Consultant in coordination with the appropriate local agency.

#### **SP-14: Hazardous Waste Manifest**

The Department's Contract Manager or the Department's Contract Manager's designated representative will sign all Hazardous Waste Manifests for hazardous waste removed from the site. The Consultant shall not sign the Hazardous Waste Manifest as the generator.

#### **SP-15: Underground Services Alert (USA)**

Before any Task Order work involving disturbance of the ground beyond surface sampling begins, the Consultant shall obtain an inquiry identification number from USA, documentation of which must be given to the Department's Contract Manager or designee. In Northern California the Consultant should call 1-800-642-2444. USA should respond within 48 hours.

## I. Personnel Requirements

1. The Consultant's personnel shall be capable of performing the types of work described above in "Required Services" with minimal instructions.
2. Project Manager – The Consultant's Project Manager shall be a licensed Professional Engineer or a Certified Engineering Geologist in the State of California with at least two (2) years of experience managing consultant contracts. The Consultant's Project Manager shall coordinate with the Department's Contract Manager. The Project Manager shall be accessible to the Department's Contract Manager at all times during normal Department working hours. In addition to other specified responsibilities, the Project Manager shall be responsible for all matters related to the Consultant's personnel and operations, including:
  - a. Reviewing, monitoring, training, and directing personnel
  - b. Assigning personnel to complete the required Task Order work as specified
3. All drilling and sampling must be under the responsible charge of a Certified Engineering Geologist (C.E.G.) or Registered Geologist (R.G.), having two (2) years of experience, who may act as the Consultant's Task Order Manager. The R.G. or C.E.G. shall sign the final boring logs. If requested in the Task Order, the R.G. or C.E.G. shall provide field supervision during the investigation.
4. All survey work shall be completed in accordance with a site specific Health and Safety Plan developed by the Consultant and signed by a Certified Industrial Hygienist (CIH) for conditions expected during the survey work.
5. Other Professional Registration, Licensing, Certifications, and Educational Requirements that may apply are as follows:
  - a. Class A Contractor's License with a Hazardous Waste Certificate
  - b. Professional Geologist in the State of California
  - c. Certified Engineering Geologist in the State of California
  - d. Certified Hydro-geologist in the State of California
  - e. Professional Land Surveyor in the State of California
  - f. Asbestos Hazard Emergency Response Act training
  - g. Certified Industrial Hygienist
  - h. Registered Geophysicist in the State of California
  - i. Historian with a Masters Degree in History, if specified in the Task Order for preparation of a historic land use report or to identify and evaluate historic landscapes while conducting environmental studies.
  - j. Registered Civil Engineer (with experience in environmental engineering experience) in the State of California
  - k. Certified Asbestos Consultant
  - l. Certified Lead Inspector/Assessor
  - m. Traffic Control License (C31)
  - n. Drilling License (C57)
  - o. Hazardous Waste Transporter registered by Department of Toxic Substance Control
  - p. Lab Certification by Department of Health Services (Environmental Laboratory Accreditation Program)
  - q. Certified Mobile Lab (Environmental Laboratory Accreditation Program)

**J. Orientation Provided by the Department**

The Department shall provide orientation for each Task Order as necessary. The orientation shall consist of instructions on Department procedures, practices, and requirements for the work to be performed. The Consultant shall perform the work in conformance with the orientation instructions, in addition to the requirements specified herein and in the Task Order.

**K. Monitoring and Review Procedure**

1. The Department's Contract Manager shall have the right to monitor and review the progress and/or processes of the Consultant.
2. The Consultant shall meet with the Department's Contract Manager a minimum of once per month to review procedures and progress.

**L. Materials to be Furnished by Department**

1. The Department will provide the Consultant the following materials, if and when available, to assist in the completions of a Task Order.
  - a. Project limits
  - b. Right of way alignments and survey limits
  - c. Preliminary Utility location maps, if available
  - d. Areas where focused studies are needed will be specified
  - e. As-builts and Construction Contract Documents
  - f. Shop Drawings
  - g. Pertinent correspondence and investigations

**M. Equipment and Materials to be Furnished by Consultant**

1. Unless otherwise specified herein or in the Task Order, the Consultant shall provide all materials to complete the required work.
2. Office Equipment and Supplies - The Consultant shall have adequate office equipment and supplies to complete the required work. Such equipment and supplies shall include, but are not limited to, the following:
  - a. Computers, printers, plotters, and calculators
  - b. Data processing systems, including software for:
    - i. Processing digital terrain models in the Department's approved roadway design format (CAiCE)
    - ii. Coordinate geometry calculations. This software shall use/create coordinate geometry databases, naming and coding conventions in the Department approved formats (CAiCE)
  - c. Computer Aided Drafting equipment and software capable of producing drawings and documents in the Department's approved format (MicroStation)
3. Personal Protective Equipment (PPE) and field testing safety equipment – The Prime Consultant and its sub-consultants shall provide their field staff personal protective equipment and field testing safety equipment, pursuant to SP-5 and SP-6 of the Scope of Work.

The Consultant shall provide all necessary equipment, tools, instruments and safety equipment required to perform the work identified in this Scope of Work accurately, efficiently, and safely. The Consultant shall not be reimbursed separately for tools of the trade.

The Consultant may claim reimbursement for providing equipment or supplies. However, such claimed costs must be in compliance with 48 Code of Federal Regulation, Chapter 1, Part 31 (Federal Acquisition Regulation - FAR cost principles) and be consistent with the Consultant's company-wide allocation policies and charging practices with all clients including federal government, state governments, local agencies, and private clients.

#### **N. Coordination**

1. Coordination with the Department, other Consultants and other involved agencies will be required to achieve timely delivery of technical reports and documents. Coordination may include, but are not limited to, coordination with the Department and its Consultants, local agencies, and various other agencies.
2. The Department's Contract Manager will decide the manner in which the coordination of individual matters are undertaken. At the Department's Contract Manager's option they may be performed by the Consultant's direct contact, by the Consultant acting through the Department or by the Department only. When coordination efforts require agreements, such agreements shall be obtained through the Department.
3. The Consultant and subconsultant personnel shall not meet, discuss, nor confer with the public, Department personnel, Agency personnel, or any personnel other than the Department's Contract Manager, representatives appointed by the Department's Contract Manager and approved Consultant personnel. Any communication with any personnel excluding the Department's Contract Manager or representative and approved Consultant personnel require prior written approval.

#### **O. Submittals**

Submittals may be required by Department's Contract Manager per Task Order.

#### **P. Documents (Manuals, Guides, Handbooks)**

1. The following documents published by the State and Federal agencies, may be required for use in the performance of this contract. The Consultant will be responsible for obtaining the documents as needed. The documents listed are not all-inclusive, but are intended only to illustrate types of sources.
  - a. "Minimum Standards for Management of Hazardous and Extremely Hazardous Wastes," Title 22, California Code of Regulations, Division 4 and 4.5, including all revisions through Register 85, No. 38 (9-21-85 or latest revision. See <http://www.leginfo.ca.gov/calaw.html> and <http://www.dtsc.ca.gov/LawsRegsPolicies/Title22/index.cfm>
  - b. "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," U. S. Environmental Protection Agency, SW-846, U. S. Environmental Protection Agency, 1987 (or latest edition). See <http://www.epa.gov/osw/hazard/testmethods/sw846/online/index.htm>
  - c. Title 8 California Code of Regulations, Section 5192 and 1532. See <http://www.dir.ca.gov/Title8/5192.html>; <http://www.dir.ca.gov/Title8/1532.html>

- d. "Standard Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, 18th edition, 1992. See <http://www.epa.gov/>
  - e. "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA," OSWER Directive 9335.3-01, Draft, March 1988 (or latest edition). See <http://www.epa.gov/>
  - f. "Leaking Underground Fuel Tank Field Manual: Guidelines for Site Assessment, Cleanup, and Underground Storage Tank Closure," State Water Resources Control Board, October 1989. See [http://www.swrcb.ca.gov/water\\_issues/programs/ust/luft\\_manual.shtml](http://www.swrcb.ca.gov/water_issues/programs/ust/luft_manual.shtml)
  - g. "Preliminary Endangerment Assessment Guidance Manual," State of California, Environmental Protection Agency, Department of Toxic Substances Control, January 1994 (or latest edition). See <http://www.dtsc.ca.gov/>
  - h. ASTM Guideline E 1527-05, Standard Practice Environmental Site Assessments: Phase I Environmental Site Assessment Process. See <http://www.astm.org/Standard/index.shtml> and <http://webstore.ansi.org/>
  - i. "Risk Assessment Guidance for Superfund, Human Health Risk Assessment (RAGS)" Volumes A, B, C, United States Environmental Protection Agency. See <http://www.epa.gov/>
  - j. "Standard Guide for Risk-Based Corrective Action applied at Petroleum Release Sites," ASTM E 1739-95. See <http://webstore.ansi.org/> and <http://www.astm.org/Standard/index.shtml>
  - k. Caltrans Environmental Handbook. See <http://www.dot.ca.gov/manuals.htm> or <http://www.dot.ca.gov/ser/envhand.htm>
  - l. Federal Highway Administration (FHWA) Guidance for Consultants: Procedures for the Protection of Historic Properties - Section 106 Process, and Guide for Consultants: Procedures for Completing the Natural Environment Study and Related Biological Reports. See <http://www.fhwa.dot.gov/>; <http://www.environment.fhwa.dot.gov/guidebook/index.asp>
  - m. Caltrans Traffic Manual. See <http://www.dot.ca.gov/manuals.htm>
  - n. Caltrans CADD User Manual. See <http://www.dot.ca.gov/hq/oppd/cadd/usta/caddman/english/toc.htm>
  - o. Caltrans Manual of Uniform Traffic Control Devices. See <http://www.dot.ca.gov/manuals.htm>
  - p. Caltrans Standard Plans and Specifications. See <http://www.dot.ca.gov/manuals.htm>
  - q. Caltrans Guidance Manual: Storm Water Monitoring Protocols. See <http://www.dot.ca.gov/manuals.htm>
  - r. "US Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste," 3<sup>rd</sup> Edition (SW-846). See <http://www.epa.gov/wastes/hazard/testmethods/index.htm>
2. Department documents are available from the Caltrans Publication Distribution Center at 1900 Royal Oaks Dr., Sacramento, CA 95815.
3. Since manuals, guidelines and standards are developing documents, it will be the responsibility of the Consultant to verify that the latest version or update has been received.

## Q. Deliverables

1. Unless otherwise specified in the Task Order, the deliverables shall also conform to the requirements in this **Scope of Work, Section P** and as specified herein.

2. The Consultant will provide environmental engineering support services for the project in close liaison with the Department. The Department will exercise review and approval functions through the Department's Contract Manager or designee at key points in the transportation modeling and analysis process. Milestone reviews will be performed by the Department for the specific products and deliverables listed in each Task Order. The Department's Contract Manager will conduct these reviews in addition to the informal weekly and formal monthly project progress meetings.
3. If the Consultant fails to submit the required deliverable items set forth in this section, the Department shall have the right to withhold payment, and/or terminate this contract.
4. All work described in this contract will be performed under Task Orders corresponding to the milestones described below in section of the **Scope of Work**. The Task Orders will contain the specific statement of work to be performed under that Task Order. The Task Orders will also include the project milestone to be achieved by the Task Order in addition to any other milestones needed to assure timely performance and fiscal responsibility regarding this project.
  - a. All Task Orders will be negotiated between the Department's Contract Manager and Consultant's Project Manager
  - b. The Consultant shall submit a cost proposal for each Task Order to the Department's Contract Manager for review. The cost proposal shall include, at a minimum, the following information: The names of the individuals proposed for work on this task, the individuals' classifications, the duties the individual will perform along with the activity codes for such duties, the estimated hours for each individual under each duty or activity, the wage rates for each individual, and estimate of allowable direct costs other than labor, an estimate of DBE utilization under this task, Scope of Work and a summation of total costs proposed for the Task Order
  - c. Other information may be included at the request of the Department's Contract Manager

**R. Standards:**

1. All work shall be performed in accordance with current Department of Transportation (Caltrans) Manuals and their current revisions or in accordance with accepted professional standards as specified in the Task Order. If no standards exist, Task Orders may call for the development of new standards.
2. The Department's Contract Manager or designee shall decide all questions which may arise as to the quality or acceptability of deliverables furnished and work performed for this contract.
3. The minimum standard of work quality shall be that of similar work performed by the Department.
4. It is not the intent of the foregoing paragraphs to relieve the Consultant of professional responsibility for choosing the standards for most appropriate method of chemical analyses under the performance of this contract. In those instances where the Consultant believes a better method is recommended, the Consultant shall promptly notify the Department's Contract Manager or designee of these concerns, together with reasons therefore.

## **S. Product Approval and Payment**

1. All deliverables, plots, reports, charts, and documents produced by the Consultant as specified by the Task Order shall be subject to the approval and acceptance by the Department's Contract Manager or designee.
2. In the event of non-acceptance due to errors or omissions, the Consultant shall make corrections at their own expenses and at no additional cost to the Department prior to payment. **Schedule**

### **1. Work Breakdown Structure**

- a. The Consultant shall prepare and maintain a schedule using the Work Breakdown Structure (WBS) as outlined in the State's GUIDE TO CAPITAL PROJECT WORK BREAKDOWN STRUCTURE (WBS). See <http://www.dot.ca.gov/manuals.htm>

### **2. Milestones**

- a. The products shall be delivered in accordance with milestones to be assigned per Task Order
- b. A milestone change shall be stated in each Task Order. Milestones may be changed by written agreement between the Department's Contract Manager or designee and the Consultant's Project Manager. Prior to concluding such agreement, the Department's Contract Manager will obtain the necessary internal Department approvals

## **U. Availability and Work Hours**

1. The Consultant shall begin the required work within three (3) working days after receiving a fully executed Task Order. Once the work begins, the work shall be prosecuted diligently until all required work has been completed satisfactorily
2. Unless otherwise specified in the Task Order or directed by the Department's Contract Manager, the normal workweek shall consist of 40 hours
3. Overtime may be required. However, overtime shall be worked only when directed in writing by the Department's Contract Manager and specifically required by the Task Order