STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

REQUEST FOR QUALIFICATIONS NOTICE

NUMBER 08A3186

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

- On 2/26/19, Section I, General Information, Paragraph F, regarding fee and escalation was revised.
- On 10/2/18, Section I, General Information, Paragraph E, regarding financial documents was revised.

Note: Questions concerning this Request for Qualifications (RFQ) must be submitted in writing to the attention of Patricia Nichols at Patricia.Nichols@dot.ca.gov. Questions must be received no later than 10 calendar days after RFQ advertisement. Consultants contacting the District or Division directly seeking information about this RFQ will be disqualified from consideration in the selection process.

Proposers are advised that Caltrans has established a federally mandated overall annual DBE goal comprising both race neutral and race conscious elements to ensure equal participation of DBE groups specified in 49 CFR 26.5. In compliance with 49 CFR 26, Caltrans set a contract goal for DBEs participating in this solicitation expressed as a percentage of the total dollar value of the resultant Agreement. The DBE participation goal for this solicitation is 14 percent (14%). See section I.H. 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 Site Investigation and Design Services. In submitting your Statement of Qualifications (SOQ), you shall comply with the instructions found herein. In addition to those programs that are specified in this solicitation, prospective consultants are encouraged to consider programs that are available, such as those for the use of small businesses, disadvantaged businesses, disabled veteran businesses, new emerging firms, and other businesses covered by State and Federal programs.
B. The estimated contract amount is $1,711,200.00 - $2,780,700.00.

C. The estimated contract term is three (3) years.

D. Interviews will be held in San Bernardino on April 14, 2020. Confirmation letters will be sent to those firms short-listed.

E. The most highly qualified consulting firm will be required to submit an electronic copy of the financial documents listed on the appropriate Financial Documents Submittal Checklist available on the A&E Contract Information website. The most highly qualified consulting firm will be notified of their selection and receive instructions for the electronic submission financial documents.

The most highly qualified consulting firm must submit a complete financial documents package no later than four (4) days after notification of selection. The prime consultant must submit the complete financial documents package in order for Caltrans to have the information necessary to engage in negotiations. The prime consultant is solely responsible for timely and complete submission of financial documents on behalf of the entire proposed team; financial documents will not be accepted from proposed subconsultant firms. Failure to submit a complete financial documents package by the specified due date may result in termination of negotiations with the most highly qualified consulting firm.

F. Negotiations will be held with the top-ranked firm in San Diego during the week of April 27, 2020. The fee for profit shall be 10.1 percent, and the escalation shall be as follows:

<table>
<thead>
<tr>
<th>Period</th>
<th>Escalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/28/2020 - 2/27/2021</td>
<td>0%</td>
</tr>
<tr>
<td>2/28/2021 - 2/28/2022</td>
<td>1.5%</td>
</tr>
<tr>
<td>3/01/2022 - 7/03/2023</td>
<td>3.0%</td>
</tr>
</tbody>
</table>

Notes:
1. Partial year will only occur on the last year of the contract term. All other periods are full years.
2. Increases to the loaded billing rates after contract execution is not authorized for any reason per Article IV, Section 17 and Article XVI, Section 6 of the California Constitution.

G. The scheduled date to complete cost negotiations and submit final cost proposal is June 4, 2020.
H. Disadvantaged Business Enterprise Program

1. This solicitation and resultant Agreement are 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." To ensure equal participation for Disadvantaged Business Enterprise (DBE) groups specified in 49 CFR 26.5, Caltrans specifies a contract goal for DBE participation. The required goal for DBE participation in this solicitation is not less than 14 percent.

2. Only participation by certified DBEs will count toward the contract goal for this solicitation. In order to count toward a contract goal, a firm must be certified as a DBE by the California Unified Certification Program (CUCP) and possess the work codes applicable to the type of work the firm will perform on the Agreement by the SOQ submittal due date. For a list of work codes, go to Office of Civil Rights website.

3. It is the proposer’s responsibility to verify that the DBE firm is certified as a DBE by the specified SOQ submittal due date and time. For a list of DBEs certified by the CUCP, go to Office of Civil Rights website.

4. A DBE must perform a commercially useful function (CUF) for the type of work it will perform on the Agreement as provided in 49 CFR 26.55(c)(1)-(4). A DBE performs a CUF when it is responsible for the execution of a distinct element of the work of the Agreement and is carrying out its responsibilities by actually performing, managing, and supervising the work involved.

5. See “Statement of Qualifications Submittal Instructions and General Contract Process Information 04/15/19” for detailed information and references to the required forms. Required forms will be made a part of the Agreement. Failure to meet the DBE goal or Good Faith Effort requirements and provide required DBE participation at due date and time of SOQ submittal may result in the SOQ submittal being rejected as non-responsive.

I. Federal and/or State prevailing wage rates may apply. This requirement, if applicable, will be specified in the draft Agreement. See SOQ Submittal Instructions, Section I., H. regarding the California Department of Industrial Relations (DIR) Consultant/Contractor Registration Program on the A&E Contract Information website.

J. 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.
K. A Pre-award or Post-award Audit will be performed on any contract issued as a result of this RFQ.

L. Contract boilerplate can be obtained on the A&E Contract Information website.

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. CONFLICT OF INTEREST

A. Conflicts of interest may occur due to direct or indirect financial or business interests in the work to be performed or in any real property acquired for such project. Conflicts of interest can include, but are not limited to, past, existing or planned activities or because of relationships with other persons or firms. If there is a conflict of interest, the proposed team, including both the prime consultants and subconsultants, and individual employees of team members would actually or potentially be unable to render impartial assistance or advice to Caltrans. The proposer’s objectivity or availability in performing the contract work may be impaired due to actual or potential conflicts of interest.

B. If the proposed team determines that any actual or potential conflicts of interest exists, it must identify and describe in detail each conflict of interest to Caltrans, using the Disclosure of Potential Conflict of Interest Form, which can be found on the Caltrans A&E Contract Information website. Along with the description of the actual or potential conflicts of interest, the proposed team shall also offer measures to avoid, neutralize, or mitigate all listed conflicts. The list of conflicts, including conflicts that apply to individuals as well as firms, and the mitigation measures on the Disclosure of Potential Conflict of Interest Form must be submitted as a separate section in the Statement of Qualifications. Disclosure of information will not disqualify a proposed team from competing for a contract. The existence of actual or potential conflicts of interest will be used as a criterion to evaluate team availability during the evaluation and selection process. Caltrans reserves the right to terminate negotiations with the first selected firm and begin negotiations with the next selected firm or to cancel the procurement prior to execution if Caltrans learns that the selected team failed to disclose any actual or potential conflicts, which it knew or should have known about, or if the proposed team provided or omitted information on the disclosure form that results in the information being false or misleading.
C. After award, conflict of interest guidelines and policies shall continue to be monitored and enforced by the Caltrans Contract Manager. Additional information about Conflict of Interest issues can be found in the SOQ Submittal Instructions and General Contract Process Information document 04/15/19 (Section V. Post Government Employment Restrictions and Section VI. Conflict of Interest Concerning Consultant(s)) found on the A&E Contract Information website. The State and Federal contract boilerplates on DPAC’s website also contain information on conflict of interest issues (Exhibit D) and can be found on the A&E Contract Information website.

D. The prime consultant and subconsultants may be proposed on SOQs for other Caltrans A&E on-call contracts; however, the Caltrans Contract Manager may prohibit work on specific project(s) where Caltrans determines that a conflict of interest exists.

IV. SUBMISSION OF STATEMENTS OF QUALIFICATIONS (SOQs)

A. IMPORTANT: Download “Statement of Qualifications Submittal Instructions and General Contract Process Information 04/15/19” from the Procuring A&E Contracts website. 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 8 (San Bernardino) (see items 1, and 3 for required number of copies), as well as an electronic file to Sacramento. See paragraph B.5.

1. One (1) copy 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 April 1, 2020, and must be directed to:

   State of California Department of Transportation
   Administration
   Division of Procurement and Contracts, MS 65
   1727 30th Street
   Sacramento, CA 95816-7006
   Attention: Patricia Nichols
   Telephone: (916) 227 – 6067
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. Five (5) copies of the SOQ containing all the indicated information shall be submitted to District 8. FAX copies will not be allowed. SOQs will be accepted until **3:00 p.m. on April 1, 2020**, and must be directed to:

   State of California  
   Department of Transportation  
   Contract Management, MS 645  
   464 W. 4th Street  
   San Bernardino, CA 92401  
   Attention: Bahar Bakhtar  
   Tel.: 909-383-4276

4. The SOQs must be submitted in a sealed package labeled as follows:

   - RFQ Number 08A3186  
   - Submittal deadline: **April 1, 2020**  
   - “DO NOT OPEN”

5. In addition to the six (6) copies of the SOQ requested in this section IV “Submission of Statements of Qualifications,” electronic submission of a single unprotected (i.e. not password protected) PDF file of the SOQ is required. The electronic submittal will be accepted until **3:00 p.m. on April 1, 2020**.

You will be required to create a Novell Filr account with Caltrans. Send an email message to the Contract Analyst, Patricia Nichols, at Patricia.Nichols@dot.ca.gov containing the information listed below for a link and instructions to complete the self-registration page and submit the SOQ electronically.

   - Your firm’s name  
   - Your email address  
   - The solicitation number for which you would like to submit an SOQ

The file name shall include the contract number, consultant name (max. 25 characters) separated by an underscore (_), ending with the “.pdf” extension.
6. SOQ submittals will be considered non-responsive if all copies, including electronic submittal, are not received in the specified location(s) by the date and time specified in this RFQ.

C. Request for RFQ Copies

Copies of this RFQ may be obtained on the Cal eProcure website.
SCOPE OF WORK/DELIVERABLES
Hazardous Waste Site Investigation and Design Services
for Caltrans, Division of Environmental Planning,
Environmental Engineering Program, District 8
On-Call Contract

FOR ENVIRONMENTAL - HAZARDOUS WASTE: (Hazardous Waste, Hazardous Waste Site Investigation and Design)

A. Purpose of Work.

The Consultant shall perform consultation, research, professional and technical services required for Hazardous Waste Site Investigation and Design Services, including, but not limited to, field sampling, construction materials testing, analysis, reports, plant inspection and work related to testing equipment calibration, on an “as-needed” basis to support the Department of Transportation (Caltrans, Division of Environmental Planning, Environmental Engineering Program, District 8, from 0 phase to 3 phase completion of construction Project, in the maintenance, development and construction of proposed Caltrans transportation facilities.

The Consultant shall provide support when Caltrans lacks the expertise or available resources. All tasks including, but not limited to: field surveys, analysis, reports, and monitoring may be assigned as work under the Contract.

B. Explanation of Work.

The Caltrans Contract Manager shall assign specific work to the Consultant to assist the Caltrans work force through the issuance of Task Orders describing in detail the services to be performed. The Consultant shall only perform work that is assigned in an authorized Task Order. The Contract does not guarantee that a Task Order shall be issued.

The Consultant may provide services to Caltrans including, but not limited to, site investigation, remedial design work related to hazardous waste; Phase I Environmental Site Assessments, 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); risk assessments, hazardous materials surveys; record research and review; field review and survey; historic material research and review; submitting findings in a report; 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; development and preparing cost estimates for remedial activities; hazardous waste identification; long term soil and/or groundwater
monitoring; remediation work plan/preliminary design; remedial investigations; construction-phase design support as requested by the Caltrans Resident Engineer; post-construction monitoring of facility operations; purchase of hazardous wastes radius maps and plans from vendors, who sell these based on "on-line" Geographic Information System and Management Information System related to roadway projects; utilization of a Geographic Information Systems and Management Information System; permit preparation, toxicology studies; evaluation, monitoring, and report of hazardous materials remediation systems impacted with hazardous materials from leaking underground storage tanks (USTs) or other sources; related work pertaining to the study of known or suspected contamination and/or hazardous waste sites; and able to locate and determine any hazards posed by Munitions and Explosives of Concern (MEC) and Material Potentially Presenting an Explosive Hazard (MPPEH) including Unexploded Ordnance (UXO) and Exploded Ordnance (EOD); evaluate chemical and radiological impact in surface and subsurface areas and provide recommendations for handling and/or disposal of potentially impacted soils and materials.

1. Exclusion of Work.

The Contract does not include services related to the implementation of remedial action or environmental cleanup, as defined in Chapter 6.85 of the California Health and Safety Code Section 25396.

The Consultant shall not work on any projects that are in the planning phase (K-phase) and the Consultant shall not be reimbursed for any work performed during this phase of the contract.

The Consultant shall provide support when Caltrans lacks the expertise or available resources.

C. Location of Work.

The work shall be performed on projects to improve the State transportation system throughout the counties of Riverside and San Bernardino in California within the limits of District 8. The specific location within the above-described geographical limits of the work to be performed within this geographic area shall be identified in each Task Order. It may become necessary for Caltrans, Division of Environmental Planning, Environmental Engineering Program, District 8, projects to extend into another adjoining, District or cross the County line. In some instances, data collection may involve regional analysis beyond the counties identified or into adjoining states to properly assess the context and intensity of impacts to the concerned resources. In such instances, the project work shall not extend more than a thirty (30)-mile radius from the District/County, Division of Environmental Planning, District 8 geographic boundary. These services shall be required to be provided domestically within the continental U.S.A.
D. Required Services.

1. Pursuant to an authorized Task Order, the Consultant shall provide Hazardous Waste Site Investigation and Design Services within the geographical jurisdiction of the Contract set forth in “Location of Work” Section, and all necessary personnel, material, transportation, lodging, instrumentation, and the specialized facilities and equipment necessary to satisfy all appropriate agencies and required to ensure compliance with all applicable Federal, State, and Local statutes, laws, codes, regulations, policies, procedures, ordinances, standards, specifications, performance standards, and guidelines, applicable to the Consultant's services and work product. The Consultant shall assist Caltrans, Division of Environmental Planning, Environmental Engineering Program, District 8, to produce a plan by developing a complete and biddable Plans, Specifications and Estimate (PS&E) package.

2. Provided in Attachment A is a list of proposed Caltrans projects; Division of Environmental Planning, Environmental Engineering Program, District 8, however, this list is not exclusive and it does not constitute a commitment that the projects will be initiated or completed or work assigned to the Consultant. Caltrans reserves the right to add or delete from this list of projects that are within the geographical jurisdiction of the Contract set forth in “Location of Work” Section within the Division of Environmental Planning, Environmental Engineering Program, District 8’s jurisdiction.

Caltrans intends to utilize the Contract to complete a specific piece of work as long as it is located within the geographical jurisdiction of the Contract set forth in the “Location of Work” for each of the projects listed in the Contract utilizing the services described in this Scope of Work and as described in a Task Order. In the future, Caltrans may find it necessary to create a separate contract (or contracts) that involves a specific project listed in the Contract and includes part of the work contained in the Contract. Caltrans reserves the right to procure Architectural and Engineering (A&E) services involving the listed projects or unlisted projects (within the geographical jurisdiction of the Contract set forth in “Location of Work” Section) involving in whole or in part the same work using a project-specific agreement if the schedule to complete performance of the specific project extends beyond the term of the Contract or the cost to complete the specific project exceeds the dollar balance remaining in the Contract after accounting for amounts due to the Consultant for work previously performed and for work that is scheduled to be performed in executed task orders.

Should a project-specific agreement be procured under these provisions, the parties mutually agree that, in accordance with Exhibit D, Section III, Termination of the Contract, Caltrans shall terminate for convenience the portion of the Contract that includes the common scope of work identified in the project-
specific agreement per Exhibit D, Section III, Termination of the Contract. Such partial termination for convenience shall be processed by amendment to the Contract. Unless otherwise required by law, regulation, or Caltrans policy or procedure, the Consultant may compete for these project-specific Contracts.

3. In the Contract is a list of proposed personnel classifications for which services are anticipated to be needed by Caltrans during the term of the Contract; however, this is not an exclusive list of the personnel classifications of Hazardous Waste Site Investigation and Design Services that may be requested. Caltrans reserves the right to add/or delete personnel classifications from this list. Consultant personnel will work under the general direction of a Caltrans Senior.

4. Consultant agrees that:
   a. The Consultant Contract Manager or designee shall manage, instruct and supervise all Consultant employees and subcontractors, and shall not allow any other party to manage, instruct and supervise such parties.
   b. Consultant shall employ and discharge its own employees and subcontractors.
   c. Unless approved in writing by the Caltrans Contract Manager, Consultant shall not hire employees or subcontractors to exclusively and only work on Caltrans matters. Consultant may hire employees and subcontractors for a specific Caltrans matter provided such party has the skills and knowledge to work on other matters and they are assigned to other matters from time to time.
   d. The work performed by Consultant, its employees and its subcontractors shall be a regular part of Consultant’s regular and established business.
   e. Consultant shall make all of its own business (including personnel) decisions and bear the risk for its decisions.
   f. Consultant shall provide its own tools, equipment and supplies, and Consultant shall not rely on Caltrans to provide such tools, equipment and supplies. Notwithstanding the foregoing, Caltrans may, during the term of the Agreement, allow Consultant to access selected items of equipment; provide non-employee userids and related access to Caltrans computer systems to Consultant employees and subcontractors; and provide non-employee access cards and other such forms of identification to Consultant employees and subcontractors.
   g. Consultant shall provide its own training to its employees and subcontractors, and Consultant shall not rely upon Caltrans to provide such training.

5. The projects that Caltrans, Division of Planning, Environmental Engineering Program plans to work on are shown Attachment A
6. At the sole discretion of Caltrans, Consultant may be required to provide the required services on safety projects, emergency projects, Emergency Storm Damage Projects, excess parcel assessments, or other current/future transportation projects, including minor projects not listed above, except for those specially excluded above, within the geographical jurisdiction of the Contract set forth in “Location of Work” Section. However, the dollar value of the services not listed in the Contract shall not exceed 10% of the total value of services that are listed and performed in the Contract.

7. The potential projects may vary in scope and size, and may encompass any type of improvement for the State transportation system including, but not limited to, roadway rehabilitation, widening and/or realignment of existing facilities, relocation of existing facilities, and construction of new facilities. The project location, project limits, purpose, expected results, project deliverables, period of performance, project schedule, and scope of work to be performed shall be described in each Task Order.

8. Consultant shall be available, on two (2) days’ written notice:
   a. To meet with Caltrans; to participate in internal Project Development Team (PDT) meetings or other Caltrans meetings.
   b. To attend public meetings (day and evening) where an expert is required.
   c. To participate in any public hearings necessary for a Project.
   d. To provide technical expertise on an “as-needed” basis.

9. Maintaining a stable work force is essential to the successful completion of Caltrans, Division of Environmental Planning, Environmental Engineering Program, District 8, work. Consultant shall implement a personnel retention plan strategy and shall submit a written plan with the Statement of Qualification submittal.

10. The Consultant may be expected to spend time for extended assignments to perform A&E services at Caltrans offices. At the sole discretion and convenience of Caltrans, Caltrans may permit Consultant to use office space, office equipment (such as copiers, printers and telephones) and furniture at various Caltrans (field) offices on a short-term, temporary basis. Consultant will provide its own computers, office supplies, and related work materials. The Consultant, including its Subconsultants, shall include the Field Office Indirect Cost Rate in its cost proposals and use the Field Office Indirect Cost Rate in billing Caltrans for those personnel utilizing Caltrans’ (field) office facilities. The cost rates will reflect the Consultant’s lower costs where Caltrans provides office space, office equipment and furniture. If the Consultant, including its Subconsultants, does not currently have a Field Office Indirect Cost Rate, it will develop and use a Field Office Indirect Cost Rate to reflect an equitable distribution of allowable costs to the contract (as specified in 48 CFR 31.203(f). When working on-site in the Caltrans...
Facilities, the Consultant shall adjust its hours to meet the business needs of Caltrans and shall generally work and be present during Caltrans building business hours (which are 8:00 a.m. - 5:00 p.m.). The business hours can be adjusted in different Task Orders.

11. The Consultant shall perform activities which shall include, but not be limited to, the following:
   a. Environmental Data Resources (EDR) Reports and Surveys.
   b. Site Investigation of Soil & Ground Water.
   c. Ground Water Monitoring.
   d. Feasibility Study, Treatability Study and Design Work.
   e. Pre-demolition Inspection Survey.
   f. Container Inspection and Material Identification.

12. All Site Assessment, Site Investigation, Site survey, groundwater monitoring, and remediation system evaluation, monitoring, and regulatory reporting 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 Caltrans Contract Manager or Caltrans designee prior to the start of work. The Consultant shall notify the Caltrans Contract Manager or Caltrans designee in writing at a minimum one (1) week before it begins any investigative or field work. If the nature of the work requires the presence of the CIH during field work, time for the CIH shall be paid. Costs for development of the Health and Safety Plan shall be paid per the Health and Safety Plan.

13. The Consultant and Subconsultant personnel shall not meet, discuss, nor confer with the public, Caltrans personnel, Agency personnel, State personnel, Federal personnel or any person other than the Caltrans Contract Manager or Caltrans designee, and approved Consultant personnel. Any communications with any person, excluding the Caltrans Contract Manager or Caltrans designee and approved Consultant personnel, require prior written approval from the Caltrans Contract Manager.

14. The Consultant shall not negotiate or make decisions in Caltrans' name. Caltrans shall retain responsibility for initiating and managing all final consultation, both informal and formal, with other consultants; other contractors; Federal, State, and Local resource and regulatory agencies; and other involved agencies, regarding regulatory, project, project impacts, project mitigation proposals, project mitigation, project compensation, project proposals, and any issues. The Consultant shall be available within two (2) working days written notice to provide advice and to participate in such consultations as required in each Task Order, as directed by the Caltrans Contract Manager in coordination with the
Caltrans Task Order Manager, and at the request of Caltrans. Should specific permits or agreements be required, Caltrans may require the Consultant to prepare appropriate information.

15. The Caltrans Contract Manager shall decide the manner in which the coordination of individual matters is undertaken. At the Caltrans Contract Manager’s option in coordination with the Caltrans Task Order Manager, such coordination may be performed by the Consultant’s direct contact personnel, by the Consultant acting on behalf of Caltrans, or by Caltrans only. When coordination efforts require agreements, such agreements shall be obtained by Caltrans.

16. The Consultant shall assist Caltrans in obtaining necessary approvals and permits. The Consultant shall identify all necessary approvals and permits, prepare signature-ready permit applications, and track the status of permit applications, as specified in each Task Order.

E. Workplan Standards Guide Codes.

Task Orders are based on the Caltrans Workplan Standards Guide (WSG). The latest WSG is found in the Guide to Project Delivery Workplan Standards Guide, which is available from the Caltrans’ Publication Unit and on the Internet at http://www.dot.ca.gov/hq/projmgmt/guidance.htm. The WSG references the Work Breakdown Structure (WBS) categories, which are potential and related work activities applicable to the Contract. The WGS references WBS categories which present the potential and related work activities that the Consultant may be required to perform. All revisions to the current version of the Work Breakdown Structure (WBS) shall apply during the life of the Contract. Task Orders may include, but not be limited to, the Capital Project WBS 165 through WBS 285 elements listed below.

The WBS activities below applicable to the Contract are limited to those set forth below:

150.20.10 Hazardous Waste Initial Site Assessment/Investigations
160.30.10 Surveys and Mapping For Environmental Studies
160.30.15 Property Access Rights for Environmental/Engineering studies
165 Perform Environmental Studies and Prepare Draft Environmental Document (DED) (See Note 1)
165.10.35 Water Quality Studies
165.10.80 Hazardous Waste Initial Site Assessments/Investigations
165.10.85 Hazardous Waste Preliminary Site Investigations
  • Prepare Work Plans
  • Prepare Health and Safety Plans
  • Provide Traffic Control
  • Perform Soil Gas Surveys and Surface Geophysics
  • Perform Trenching and Drilling
• Provide Surveys, including using GPS equipment
• Perform Well Installation, Development, and Destruction
• Aerially Deposited Lead Investigation Data Evaluation
• Perform Unexploded Ordinance (UXO) and Munitions and Explosives of Concern (MEC) Survey
• Activity Description
• Perform Soil and Water Sampling
• Perform Statistical Data Evaluation
• Provide Laboratory Sample Handling and Testing, including using mobile Laboratories.
• Perform Quality Assurance/Quality Control for Office, Field and Laboratory Services
• Decontamination and Disposal

185 Base Maps and Plan Sheets for PS&E Development (See Note 2)
185.25.25 Water Well Abandonment Needs Determination (See Note 2)
195 Right Of Way Property Management and Excess Land (See Note 2)
195.40.30 Hazardous Waste and Hazardous Materials
205 Permits and Agreements during PS&E Component (See Note 2)
205.05 Required Permits (See Note 2)
205.10 Permits (See Note 2)
235 Mitigate Environmental Impacts and Clean Up Hazardous Waste
235.05 Environmental Mitigation
235.10 Detailed Site Investigation for Hazardous Waste
235.10.05 Right or Permit for Hazardous Waste Site Investigations (SI)
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
235.25 Hazardous Waste Clean-Up
235.30 Certificate of Sufficiency (See Note 2)
235.35 Long Term Mitigation Monitoring
255.10 Updated PS&E Package (See Note 2)
260.80 Draft Contract Ready (See Note 2)
270.66 Technical Support (See Note 2)
285.10.15 Other Functional Support (See Note 3)

Notes:
1. (Drafted Obtain Right of Entry for Environmental Studies)
2. (related to hazardous waste only)
3. (for CO)
The Consultant shall not work on any projects that are in the planning phase (K-Phase) and the Consultant shall not be reimbursed for any work performed during this phase of a project.

F. General Personnel Requirements.

1. The Consultant’s personnel shall be capable, competent, and experienced in performing the types of work in the Contract with minimal instruction. Personnel skill level should match the specific job classifications, as set forth herein or in the Consultant’s Cost Proposal, Attachment 2, and task complexity. The Consultant’s personnel shall be knowledgeable about, and comply with, all applicable Federal, State, and Local laws and regulations.

2. The Consultant is required to submit a written request and obtain the Caltrans Contract Manager’s prior written approval for any substitutions, additions, alterations, or modifications to the Consultant’s originally proposed personnel and project organization, as depicted on the proposed Consultant’s Organization Chart or the Consultant’s cost proposals. The Consultant personnel shall have the same job classification, as set forth herein or in the Consultant’s Cost Proposal, Attachment 2, not exceed the billing rate, and meet or exceed the qualifications and experience level of the previously assigned personnel, at no additional cost to Caltrans. The Consultant personnel shall have significant experience in the work involving a similar transportation facility for at a minimum two (2) previous projects, unless otherwise approved by the Caltrans Contract Manager.

3. In responding to Caltrans’ Task Order and in consultation with the Caltrans Contract Manager, the Consultant Contract Manager shall identify the specific individuals proposed for the task and their job assignments. The Consultant shall provide documentation that proposed personnel meet the appropriate minimum qualifications as required by the Contract.

4. The Consultant’s personnel shall typically be assigned to and remain on specific Caltrans projects/deliverables until completion and acceptance of the project/deliverables by Caltrans. Personnel assigned by the Consultant shall be available at the start of a Task Order and after acceptance of the project/deliverable by Caltrans.

5. After the Caltrans Contract Manager’s approval of the Consultant’s personnel proposal and finalization of a Task Order, the Consultant may not add, delete or substitute personnel without the Caltrans Contract Manager’s prior written approval.

6. Resumes containing the qualifications and experience of the Consultant’s and Subconsultant’s personnel, which include existing and additional personnel, and
copies of their minimum required certifications, shall be submitted to the Caltrans Contract Manager for review before assignment on a project or Task Order. The resume and copies of current certification for each candidate shall be submitted to the Caltrans Contract Manager within one (1) week of receiving the request.

7. The Caltrans Contract Manager may interview the Consultant’s personnel for the qualifications and experience. The Caltrans Contract Manager’s decision to select the Consultant’s personnel shall be binding to the Consultant and its Subconsultants. The Consultant shall provide adequate qualified personnel to be interviewed by the Caltrans Contract Manager within one (1) week of receiving the request.

8. The Caltrans Contract Manager shall evaluate the adequacy (quality and quantity) of the work performed by the Consultant’s personnel, and determine whether the deliverables satisfy the acceptance tests and criteria. The Caltrans Contract Manager may reject any Consultant personnel who are determined by the Caltrans Contract Manager to lack the minimum qualifications. If at any time the level of performance is below expectations, the Caltrans Contract Manager may direct the Consultant to immediately remove Consultant personnel from the project specified in a Task Order and request that the Consultant provide another qualified person be assigned as needed. The Consultant personnel shall meet the qualifications required by the Contract for performance of the work as demonstrated by a resume and copies of current certifications submitted by the Consultant. Consultant personnel shall receive prior written approval from the Caltrans Contract Manager. Invoices with charges for personnel not pre-approved by the Caltrans Contract Manager for work on the Contract and for each Task Order shall not be reimbursed.

9. The Consultant shall not remove or replace any existing personnel assigned to Task Orders without the prior written consent of the Caltrans Contract Manager. The removal or replacement of personnel without the written approval from the Caltrans Contract Manager shall be violation of the Contract and may result in termination of the Contract per Exhibit D, Section III, Termination of the Contract.

10. When assigned consultant personnel is on approved leave and required by the Caltrans Contract Manager, the Consultant Contract Manager shall provide a temporary substitute employee until the assigned employee returns to work from the approved leave. The Consultant personnel shall have the same job classification, as set forth herein or in the Consultant’s Cost Proposal, Attachment 2, not exceed the billing rate and meet or exceed the qualifications and experience level of the previously assigned personnel, at no additional cost to Caltrans. Consultant personnel shall receive prior written approval from the Caltrans Contract Manager to work on the Contract.
11. Other project personnel who are not identified on the Consultant’s cost proposal, including, but not limited to, field and laboratory technicians, shall also satisfy appropriate minimum qualifications for assigned Task Orders. Caltrans’ prior written approval is required for all personnel not identified on the Consultant’s organization chart or the Consultant’s cost proposals before providing services under the Contract.

12. The Consultant is responsible to provide fully trained personnel to efficiently perform the work. The Consultant’s personnel may be asked to attend certain special training if recommended by the Caltrans Contract Manager. On such occasions, with the approval of the Caltrans Contract Manager, Caltrans shall compensate the Consultant for the Consultant’s actual cost for time spent in training only. All other costs, fees, and expenses associated with the training, including any transportation costs and training fees, shall be the Consultant’s responsibility. In addition, services to train the Caltrans personnel shall not be provided by the Consultant under the Contract.

13. In location(s) where the Consultant personnel is expected to work for extended period(s) of time, the Consultant shall either relocate the personnel or make every effort to hire local persons.

G. Hazardous Waste Site Investigation and Design Personnel Requirements.

1. The Consultant and all subconsultants, shall throughout the life of the Contract, retain within its firm, a staff of people who shall be properly licensed and certified in accordance with the laws of the State of California and qualified to perform all aspects of the required work described in the Contract and all work specified in a Task Order along with any emergencies that may arise during the life of the Contract.
   The Consultant shall be prepared to provide additional personnel, as necessary, during the period performance of the Contract to accommodate the work.

2. Consultant Contract Manager.
   The Consultant Contract Manager shall coordinate work-related matters and Consultant’s operations under the Contract with the Caltrans Contract Manager in coordination with the Caltrans Task Order Manager, Functional Manager, District/Region Area Construction (Claims) Engineer, Resident Engineer, District Surveys Engineer, District Right-of-Way Engineer, District Water Quality Program Manager, and/or District’s Public Information Officer.

   The Consultant Contract Manager shall have a minimum of five (5) years of responsible experience performing the duties as a contract manager for similar Hazardous Waste Site Investigation and Design Services contracts. The
Consultant Contract Manager shall be knowledgeable about all Caltrans policies and procedures. The Consultant Contract Manager shall be an employee of the Consultant.

The Consultant Contract Manager shall be a Registered Professional Engineer, Professional Geologist, or Certified Engineering Geologist licensed in the State of California in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period, to perform the tasks described in the Contract and in the Task Orders and shall have a documented minimum ten (10) years of demonstrated experience acceptable to Caltrans in Hazardous Waste Site Investigation and Design Services work.

In addition to other specified responsibilities, the Consultant Contract Manager shall be responsible for all matters related to the Consultant’s personnel, Subconsultants, Hazardous Waste Site Investigation and Design Services work, and Consultant’s and Sub-Consultants’ operations including, but not limited to, the following:

a. Ensuring that deliverables are clearly defined, acceptance tested and that criteria are specific, measurable, attainable, realistic and time-bound; and that the deliverables satisfy the acceptance tests and criteria.
b. Supervising, reviewing, monitoring, training, and directing the Consultant’s and Sub-Consultants’ personnel.
c. Assigning qualified personnel to complete the required Task Order work as specified on an “as-needed” basis in coordination with the Caltrans Contract Manager.
d. Administering personnel actions for Consultant personnel and ensuring appropriate actions taken for Subconsultant personnel.
e. Maintaining and submitting organized project files for record tracking and auditing.
f. Developing, organizing, facilitating, and attending scheduled coordination meetings, and preparation and distribution of meeting minutes.
g. Implementing and maintaining quality control procedures to manage conflicts, insure product accuracy, and identify critical reviews and milestones.
h. Assuring that all applicable safety measures are in place.
i. Providing invoices in a timely manner and providing monthly Contract expenditures.
j. Reviewing invoices for accuracy and completion before billing to Caltrans.
k. Managing Subconsultants.
l. Managing overall budget for Contract and provide report to the Caltrans Contract Manager.
m. Monitoring and maintaining required DBE or DVBE involvement.
n. Ensuring compliance with the provisions in the Contract and all specific Task Order requirements.
o. Knowledge, experience, and familiarity with prevailing wage issues and requirements in State of California.

3. Consultant Task Order Manager.

For each Task Order, the Consultant shall provide a Consultant Task Order Manager to coordinate the Consultant Task Order operations with the Caltrans Contract Manager in coordination with the Caltrans Task Order Manager.

The Consultant Task Order Manager shall be accessible to the Caltrans Contract Manager in coordination with the Caltrans Task Order Manager, Functional Manager, District/Area Construction (Claims) Engineer, Resident Engineer, District Surveys Engineer, District Right-of-Way Engineer, District Water Quality Program Manager, and/or District’s Public Information Officer at all times during normal Caltrans working hours that Task Order work is underway.

The Consultant Task Order Manager (who may be other than the Consultant Contract Manager) shall be assigned to conduct, or direct the conduct of, all work assigned under a single Task Order. The Consultant Task Order Manager shall be the primary contact for the assigned Task Order and be available as needed for communication with Caltrans.

The Consultant Task Order Manager shall be a Registered Professional Engineer, Professional Geologist, Professional Geophysicist, Certified Industrial Hygienist (CIH), Certified Asbestos Consultant (CAC) licensed in the State of California in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists, American Board of Industrial Hygiene, or California Department of Industrial Relation Division of Occupational Safety and Health (DOSH, Cal/OSHA) at all times during the Contract period, or Historian with a Master Degree in History, to perform the tasks described in the Contract and in the Task Orders, and shall have a documented minimum five (5) years of demonstrated experience acceptable to Caltrans in Hazardous Waste Site Investigation and Design Services work depending on the substance of the Task Order. The appropriate profession(s) for the Consultant Task Order Manager shall be identified in each Task Order.

4. Consultant Personnel and Team Member Qualifications.

Minimum personnel qualifications for MEC, MPPHEH, UXO, and EOD per Department of Defense Explosives Safety Board “Minimum Qualifications for Personnel Conducting Munitions and Explosives of Concern-Related Activites”,
dated September 1, 2015. The Consultant team member shall be capable of assisting the Consultant Contract Manager in all aspects of the required work. The Consultant team members’ required professional qualifications shall be identified in each Task Order.

The Consultant team member shall be capable of assisting the Consultant Contract Manager in all aspects of the required work. The Consultant team member’s required professional qualifications shall be identified in each Task Order.

5. In the Contract, a person who is authorized to review and approve Consultant Hazardous Waste Site Investigation and Design analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, other documents, other items, and deliverables in place of the Consultant Contract Manager shall be hereafter referred to as the Consultant Hazardous Waste Responsible Person. The Consultant Hazardous Waste Responsible Person, shall be an engineer registered in the State of California to sign analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, other documents, other items, and deliverables under the Contract. Consultant Hazardous Waste Responsible Person shall be currently employed by the Consultant or its Subconsultants at the time the deliverables are submitted to Caltrans for consideration under the review and acceptance process.

6. All analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, other documents, other items, and deliverables under the Contract not fully approved by Caltrans bearing the signature of the Consultant Hazardous Waste Responsible Person who is no longer employed by the Consultant or its Subconsultants, shall be replaced by analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, other documents, other items, and deliverables under the Contract bearing the signature of a qualified replacement Consultant Hazardous Waste Responsible Person (engineer registered in the State of California) who is currently employed by the Consultant or its Subconsultants. In such an event, no additional time shall be allowed or cost reimbursed to the Consultant.

7. All of the Consultant’s work shall be conducted under the direction of the Consultant Contract Manager who shall have the appropriate experience as described in the Contract. All analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, other documents, other items,
and deliverables under the Contract requiring the Consultant Hazardous Waste Responsible Person (engineer registered in the State of California)’s signature, shall be produced by the responsible Consultant personnel having appropriate experience, and shall be signed by a Consultant Hazardous Waste Responsible Person.

8. All drilling and sampling shall be under the “Responsible Charge” of a Registered Professional Geologist (R.G.) or Certified Engineering Geologist (C.E.G.), licensed in the State of California in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period, and shall have a documented minimum two (2) years of demonstrated experience acceptable to Caltrans, who may act as the Consultant 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.

9. Other Professional Registration, Licensing, Certifications, and Educational Requirements that may apply are as follows:
   b. Registered Professional Geologist licensed in the State of California in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period.
   c. Certified Engineering Geologist licensed in the State of California in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period.
   d. Certified Hydrogeologist licensed in the State of California in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period.
   e. Registered Professional Land Surveyor (PLS) licensed in the State of California in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period.
   g. Certified Industrial Hygienist.
   h. Registered Professional Geophysicist licensed in the State of California in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period.
   i. Historian with a Master’s 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 Professional Civil Engineer (with experience in environmental engineering) licensed in the State of California in good standing with the
California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period.

k. Certified Asbestos Consultant.
l. Certified Lead Inspector/Assessor.
m. Traffic Control License (C31).
n. Drilling License (C57) (for drilling that exceeds 10 feet or encroaches on groundwater).
o. Hazardous Waste Transporter registered by California Department of Toxic Substance Control.
p. Laboratory Certification by California Department of Public Health Services (Environmental Laboratory Accreditation Program).
q. Certified Mobile Laboratory (Environmental Laboratory Accreditation Program).

10. The Consultant personnel shall be experienced in the use of Caltrans’ engineering drafting/design software and Computer Aid Drafting & Design (CADD) Based Software including MicroStation, AutoCAD Civil 3D, and Computer Aided Civil Engineering and Surveying System (CAiCE, AutoCAD Civil 3D). The Consultant personnel shall be experienced in working with English and metric units. This personnel shall be familiar in working with Caltrans’ coordinate system and datum in transforming the Global Information System field data into Caltrans’ mapping platform for site plan plotting both in English units.

H. Consultant Availability and Work Hours.

1. The typical workday includes all hours worked by the Caltrans’ construction contractor on the project as identified in the Task Order and also as directed by the Caltrans Contract Manager. Unless otherwise specified in the Task Order or directed by the Caltrans Contract Manager, the normal workday shall be Monday through Friday, from 8 a.m. to 5 p.m. or any combination of five (5) consecutive days which may include Saturday and/or Sunday, and the normal workweek shall consist of forty (40) hours. If Saturday and/or Sunday is part of a regular work week as determined by Caltrans, then the Saturday and/or Sunday work shall be treated as work performed on a regular workday and no overtime shall be paid for the first eight (8) hours on Saturday or Sunday. Consultant Contract Manager shall be responsible for providing Consultant personnel who can satisfy the requirements set forth in the Agreement.

If Caltrans determines that the Consultant’s services and work product need to be received outside of normal business hours (including instances where receipt is required to avoid danger to life or property), the Consultant may be directed to provide its services and work product during specific hours during the week (including hours that are outside of normal business hours). Night work may be required on projects involving high traffic areas. The Caltrans’ construction
contractor’s operations may be restricted to specific hours during the week, which shall become the normal workday for Consultant’s personnel. Changes in hours or schedules shall be documented by amendment of Task Orders. Any shift differential rate pay shall be reimbursed in accordance with the applicable Department of Industrial Relations (DIR) determination.

On days when work is not performed by the construction contractor, such as rainy or unsuitable weather days, Consultant’s services shall not be provided unless authorized by the Caltrans Contract Manager in coordination with the Caltrans Task Order Manager, Functional Manager, District/Region Area Construction (Claims) Engineer, Laboratory Supervisor, Headquarters’ Structural Construction Engineer, Resident Engineer, District Landscape Architect, District Surveys Engineer, District Right-of-Way Engineer, District Water Quality Program Manager, District Deputy Director for Program/Project Management, District’s Traffic Operations Units, Project Coordinator, Deputy District Director for Environmental Analysis, District Surveys Office Chief, and/or District’s Public Information Officer.

Caltrans Contract Manager in coordination with the Caltrans Task Order Manager, Functional Manager, District/Region Area Construction (Claims) Engineer, Resident Engineer, District Surveys Engineer, District Right-of-Way Engineer, District Water Quality Program Manager, and/or District’s Public Information Officer shall provide advance notice of one (1) working day(s)/twenty-four(24) hour/eight (8) hours if the Consultant’s services are not required as a result of a cessation of construction activities or if reassignment of personnel is required. If Caltrans fails to provide the required advance notice and the Consultant personnel are not required as a result of cessation of construction activities, Caltrans shall provide a maximum of four (4) hours compensation.

It is anticipated that variations in the Caltrans' construction contract activities will occur. During the contract period, the Caltrans Functional Manager and/or Contract Manager ask the Consultant Contract Manager to may reassign Consultant employees from a project or an office with low activity to assist on another project or office with high activity. The Consultant Contract Manager will be notified at least two (2) working days prior to this reassignment.

2. The Consultant shall obtain approval from the Resident Engineer prior to entering any Caltrans’ project construction site.

3. The Consultant shall obtain approval from the Caltrans Facility Manager prior to conducting activities within a maintenance station or other Caltrans facility.
I. General Requirements.

1. The Consultant shall prepare the required analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, deliverables, backup documents, other documents, and other items required by the Contract according to requirements of the Contract and applicable Caltrans Manuals for the work.

2. As directed and as a first order of work, the Consultant shall prepare and update a comprehensive Critical Path Method (CPM) network diagram, Bar Chart Schedule, Logic Network Schedule, and the Caltrans Work Breakdown Structure (WBS) for each Task Order issued by the Caltrans Contract Manager showing a deliverables schedule as well as other relevant data to monitor project progress, Consultant’s work control, and Caltrans review of work status, if required in the Task Order. The relevant data shall include a list of activities with budgeted cost, milestones, and target date for completion of each activity. The minimum number of task details shall be identified in the Task Order. This workplan shall be updated once a month to show the approved baseline schedule and the actual progress schedule.

Caltrans shall review these documents and return them to the Consultant with notes and comments as soon as possible in order to validate the planning and cost control procedures within the first calendar month of performance period.

3. The Consultant’s timesheet/invoices/expenses shall be subject to the review of the Consultant Contract Manager and the subsequent review and the approval of the Caltrans Contract Manager before submitting timesheets, invoices, or expense reimbursement requests for payment.

4. The Consultant shall begin the required work within two (2) working days after receiving a fully executed Task Order and the issuance of the Notice to Proceed (NTP) from the Caltrans Contract Manager to the Consultant Contract Manager or on the date specified in the Task Order. Some work, however, may require Consultant personnel to mobilize within 24-hour of notifications. Once the work begins, the work shall be prosecuted/performed diligently until all required work has been completed to the satisfaction of the Caltrans Contract Manager or Caltrans designee.

5. The work shall not be performed when conditions prevent a safe and efficient operation, and shall only be performed with written authorization by Caltrans.

6. The Consultant Contract Manager, Consultant Task Order Manager, and Key Personnel shall be accessible to the Caltrans Contract Manager at all times during
normal Caltrans working hours or after hours as required by the Caltrans Contract Manager.

7. The Consultant Contract Manager or designee may advise the Consultant’s Contract Manager of the perceived need to have the Consultant’s employees to work overtime to meet Task Order schedules, and the Consultant’s Contract Manager shall take effective measures to address the Caltrans Contract Manager’s need. All overtime shall be pre-approved by the Caltrans Contract Manager or designee. Overtime pay shall be paid only to persons covered by the Fair Labor Standards Act.

8. All Consultant personnel are required to sign a confidentiality and nondisclosure agreement.

9. The Consultant may not disclose any information to third parties without prior written approval of the Caltrans Contract Manager.

10. The Consultant shall only provide incidental non-Architectural and Engineering (A&E) services, such as Computer Aid Drafting & Design (CADD) support, GIS support, utilities location support, traffic control, office support, field office support, and meeting support, provided (a) such services are necessary for the completion of the A&E tasks and/or deliverables performed by the Consultant described in executed Task Orders and covered by the work in the Contract and (b) the rendering of the services is approved in advance by the Caltrans Contract Manager. These incidental services shall only be provided to support the Consultant’s personnel who are performing A&E services, tasks, and deliverables on the Contract. The Contract amount spent on such incidental services shall be relatively minor when compared to the professional A&E services performed. The Consultant shall not be paid or reimbursed for any incidental non-A&E services provided to Caltrans unless provided in the fashion described in the Contract and included in the executed Task Order. The Consultant is responsible for ensuring that Task Orders only include any incidental non-A&E services.

11. Incidental training services may be provided only if the training involves the specific work product of the Agreement. Such incidental training services are permitted, but only if:

   a. The training involves the specific work product created under the Agreement (and does not involve general A&E training and is not the work product of a previous agreement); and

   b. The total aggregate cost of all training under the Agreement does not exceed 10% of the total authority of the Agreement; and
c. The training is an incidental task within the Agreement and not the purpose for entering into the Agreement.

12. The Consultant shall include the Caltrans Contract Manager in written communications to other Caltrans personnel for any clarification on the scope of work.

J. Coordination.

1. For each Task Order, the Consultant shall carry out instructions received from the Caltrans Contract Manager, and as directed by the Caltrans Contract Manager, shall coordinate activities and work closely with multiple stakeholders including, but not limited to, Caltrans’ various functional units, Caltrans’ project managers, local agencies, various environmental groups, other state agencies, Native American tribal governments, utility companies, railroads, other agencies, other entities with an interest in the project (including, but not limited to, FHWA), other consultants, other contractors, and planning, engineering, and construction firms (and its suppliers and subcontractors) contracted by Caltrans working on the same projects or adjacent projects. In the event an instruction or direction is unclear to the Consultant, the Consultant shall ask the Caltrans Contract Manager to clarify the instruction or direction. The work is a critical element of compatible designs, project planning and construction schedules and shall be accomplished in a timely fashion. Projects having complex and overlapping schedules and therefore project work may have overlapping and parallel (not serial order) schedules or make work discontinues. Projects have complex and overlapping schedules and field work may be intermittent. Task Orders may be written for treatment of unanticipated finds encountered during project work. When unanticipated finds are encountered, a rapid response shall be necessary to avoid costly construction delays.

2. The foregoing paragraph does not relieve the Consultant of professional responsibility during the performance of the Contract. In instances where the Consultant believes a better standard solution to a task being performed or an issue being addressed is possible, the Consultant shall promptly notify the Caltrans Contract Manager of these concerns, together with the reasons therefore. However, Caltrans shall make all final decisions on the interpretation of the instructions, directions, work product and outputs that are described in the Task Order.

3. The Consultant shall be required to work with other Caltrans Functional Units and others (including, but not limited to, Regional Water Quality Control Board - RWQCB, Permitting Agencies,) as directed by the Caltrans Contract Manager.
4. The Consultant shall work closely with the Caltrans Contract Manager and the Caltrans designee identified in the Task Order.

5. The Consultant shall have the capability to send to and receive from Caltrans’ digital electronic mail system and file transfer protocol system including, but not limited to, attachments for word processing, photographs, spreadsheets, and databases.

6. Caltrans shall not reimburse the Consultant for costs to relocate its personnel to the service area of the Contract. Caltrans shall not reimburse the Consultant for per diem costs, unless preapproved by the Caltrans Contract Manager. Caltrans shall not reimburse the Consultant for out-of-state travel without prior written approval from the Caltrans Contract Manager.

7. The Consultant shall obtain the Caltrans Contract Manager’s approval prior to making presentations at non-Caltrans sponsored conferences or workshops for any services provided under the Contract.

8. The Consultant shall notify the Caltrans Contract Manager or Caltrans designee in writing a minimum one (1) week before it begins any field work, unless the Task Order specifies some other notification date.

9. Caltrans shall not incur costs beyond the funding commitments in the Contract and each Task Order. If the Consultant anticipates that funding for work will be insufficient to complete work, the Consultant shall promptly notify the Caltrans Contract Manager.

K. General Equipment Requirements.

1. The Consultant or its Subconsultants shall not incorporate any materials or equipment of a single or sole source origin without the advance written approval of Caltrans.

2. The Consultant may claim reimbursement for providing equipment or supplies. However, such claimed costs shall be in compliance with 48 Code of Federal Regulation (CFR), Chapter 1, Part 31 (Federal Acquisition Regulation - FAR cost principles) and 2 CFR, Part 200, 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.
L. Hazardous Waste Site Investigation and Design Equipment Requirements.

1. Office Equipment and Supplies (Consultant’s Office):

The Consultant shall have and provide adequate office equipment and supplies to complete the work required by the Contract. Such equipment and supplies shall include, but not be limited to, the following:

a. Office Supplies.

b. Computers with appropriate software, printers, plotters, fax machines, calculators, data collectors and their necessary attachments and accessories.

c. Data processing systems, software packages, reference materials, or other tools, including hardware and software, used in providing transportation engineering deliverables. This includes, but not be limited to, the following:
   i. Microsoft Office Software (including, but not limited to, Word, Excel, PowerPoint).
   ii. Adobe Acrobat Professional version 5 or later.
   iii. Processing digital terrain models in Caltrans' approved roadway design format (CAiCE, AutoCAD Civil 3D).
   iv. Coordinate geometry calculations (COGO). This software shall use/create coordinate geometry databases; naming and coding conventions in the Caltrans approved formats (Civil 3D, Microstation)).

d. The Consultant shall provide a computer system for each person working under a Task Order that meets the Caltrans current specifications. Qualified Caltrans IT personnel shall install required software. Caltrans reserves the right to provide the computer equipment and access to computer system on a short-term, temporary basis if such items are beneficial to Caltrans’ interest.

e. Reference material, or other tools, used in providing deliverables.

f. Caltrans shall not purchase any hardware, software, or other equipment (including, but not limited to, batteries, paper, and office supplies) that may be required for the Consultant to perform work required in the Contract. The Caltrans Contract Manager shall approve any Consultant’s request for digital electronic connections and compatibility with current Caltrans Windows-based networks and programs in writing prior to the use and/or installation of any electronic hardware and/or software.

g. In-house printing, reproduction, and delivery services.

h. Computer Aided Drafting equipment and software capable of producing surveying and Hazardous Waste Site Investigation and Design maps, drawings, and documents in the Caltrans approved format (Microstation, CAiCE, AutoCAD Civil 3D).
i.  Personal Protective Equipment (PPE) and field testing safety equipment -
The Prime Consultant and its Subconsultants shall provide their field personnel personal protective equipment and field testing safety equipment, pursuant to SP-5 and SP-6 of the scope of work.

j.  GPS hand-held recording unit with accuracy of six (6) inches for field measurement.

2.  Field Equipment and Supplies:

Consultant shall have and provide adequate field tools, instruments, equipment, materials, supplies, and safety equipment to complete the required field work and that meet or exceed Caltrans Specifications per the Caltrans Manuals. The tools, instruments, equipment, materials, supplies, and safety equipment required for each Consultant field personnel shall include, but not be limited to, the following, if required by the Task Order:

a.  Sufficient vehicles suitable for the work to be performed and terrain conditions of the project sites. Vehicles shall be fully equipped with all necessary tools, instruments, equipment, materials, supplies, and safety equipment required for the efficient operation of the Consultants’ field personnel, including cellphones. Each vehicle shall have a load carrying capacity of 1500 pounds of materials and equipment. Each Vehicle shall have sufficient ground clearance to safely maneuver through highway construction sites while fully loaded with equipment and materials. Each vehicle shall have overhead flashing amber light(s), visible from all sides (360 degrees), with a driver control switch; locking toolbox; fire extinguisher; and first aid kit. Vehicles without side windows shall not be used. All vehicles shall be clearly marked as to ownership. Each vehicle shall be equipped to meet Caltrans safety requirements.

b.  A laptop computer or tablet with appropriate software. An aircard may be required by Caltrans by written notice.

c.  Communication device: Mobile telephone, cell phone shall be compatible with the current Caltrans cellular phone system.

d.  Hand tools including but not limited to; shovels, gloves, pick, measuring tape, buckets, wheel barrow, heat gun, sledge hammer, concrete and asphalt thermometers, clip board, calculator, peg book, as appropriate for the requested field personnel work.

e.  All necessary safety equipment including fire extinguisher, hard-soled safety footwear, white hard hats, eye protection, hearing protection, and approved safety vests as appropriate for the requested field work to be performed safely and efficiently within operating highway and construction zone environments.

f.  Necessary miscellaneous tools, non-consumables, and supplies including, but not limited to, hammers, and shovels.
g. Traffic cones, at a minimum 25, for traffic control as necessary. Such cones shall be 28 inches, minimum, in height.
h. Traffic control devices (including signs, sign bases, flags, and hand held signs) as required to perform the requested field personnel work.

3. The Consultant shall provide all necessary tools, instruments, equipment, materials, supplies, and safety equipment required to perform the work identified in each Task Order and the Contract accurately, efficiently, and safely. The Consultant’s personnel shall be fully trained in the use of such necessary tools, instruments, equipment, materials, supplies, and safety equipment. The Consultant shall not be reimbursed separately for tools of the trade, which may include, but not be limited to, the above-mentioned equipment.

M. Standards.

1. All work/services under the Contract shall be performed in accordance with all applicable Federal, State, and Local statutes, laws, codes, regulations, policies, procedures, ordinances, standards, specifications, performance standards, and guidelines, including the latest Caltrans regulations, policies, procedures, manuals, standards, specifications, performance standards, directives, guidelines, handbooks, guidance documents, forms, templates, policy memo, methodologies, and other informational or directive publications, including compliance with Federal Highway Administration (FHWA) and State guidelines for implementing those requirements; and any permits, licenses, agreements or certifications that apply to specific Task Orders; the terms and conditions of the Contract; and current Caltrans Manuals and any future revisions. Work not covered by the “Manuals” shall be performed as specified in the Task Order. If no standards exist, Task Orders may call for the development of new standards, so long as these standards do not conflict with the requirements, or amend the Scope of Work under of the Contract.
   a. The Consultant is responsible for obtaining, at its expense, all necessary manuals, reference documents, and other materials.
   b. Caltrans Manuals generally may be purchased from the Publication Distribution Unit. The Publications staff may be reached at (916) 263-0822, and the center is located at the following address:
      State of California
      California Department of Transportation
      Publication Distribution Unit
      1900 Royal Oaks Drive
      Sacramento, CA 95815-3800
   c. Manuals and documents that are not available from the Caltrans Publication Distribution Center or are not available from Caltrans’ Internet web site may be requested from the Caltrans Contract Manager. Caltrans
does not guarantee the availability of publications nor its Internet web pages. Required Manuals include:


d. Caltrans’ regulations, policies, procedures, manuals, standards, specifications, performance standards, directives, guidelines, handbooks, guidance documents, forms, templates, policy memo, methodologies, and other informational or directive publications, are dynamic documents and subject to change. The Consultant is responsible to verify that the latest version or update is used.


The following manuals, documents and links to internet sites are referenced in association with the work in the Contract. The list is not all-inclusive, but is intended to illustrate the types of reference material and sources of information.

a. Caltrans’ Internet Home Webpage:  
   http://www.dot.ca.gov/

b. Caltrans’ Code of Safe Practices:  
   http://www.dot.ca.gov/hq/construc/safety/

c. California Business and Professions Code:  

d. California Code of Regulations:  
   http://www.oal.ca.gov/ccr.htm

e. California Health and Safety Code:  
   http://www.leginfo.ca.gov/cgi-bin/calawquery?codesection=hsc

f. California Public Contract Code:  

g. California Public Resources Code:  

h. Caltrans Highway Design Manual:  
   http://www.dot.ca.gov/hq/oppd/hdm/hdmtoc.htm

i. Manual of Uniform Traffic Control Devices (MUTCD):  
   http://www.dot.ca.gov/hq/traffops/signtech/mutcdsupp  
   http://www.dot.ca.gov/hq/traffops/signtech/mutcdsupp/ca_mutcd.htm  
   http://www.dot.ca.gov/hq/traffops/engineering/mutcd/index.htm

   http://www.dot.ca.gov/hq/traffops/signtech/signdel/trafficmanual.htm
http://www.dot.ca.gov/hq/traffops/signtech/signdel/trafficmanual-current.htm
http://www.dot.ca.gov/hq/traffops/signtech/mutcdsupp
http://www.dot.ca.gov/hq/traffops/signtech/mutcdsupp/ca_mutcd.htm

k. Caltrans Traffic Impact Studies (TIS) Guidelines:
http://www.dot.ca.gov/dist1/d1transplan/tisguide-Dec02.pdf

l. Caltrans Surveys Manual:

m. Caltrans Construction Manual:
http://www.dot.ca.gov/hq/construc/constmanual/

n. Construction Manual:
Chapter 5 Section 1 Project Records and Reports

o. Caltrans Project Development Procedures Manual (PDPM):
http://www.dot.ca.gov/hq/oppd/pdpm/pdpm.htm
http://www.dot.ca.gov/hq/oppd/pdpm/pdpm.htm

p. Project Development Procedures Manual: Chapter 7 - Uniform File System:

q. Project Development Procedures Manual: Chapter 15 - Final Project Development Procedures:

r. Caltrans CADD Users Manual:
http://www.dot.ca.gov/hq/oppd/cadd/usta/caddman/default.htm
http://www.dot.ca.gov/hq/esc/oe/project_plans/index.htm

s. CADD Users Manual Chapter 4.3 As-Built Plans (March 30, 2011)


Construction Staking Handbook:
Construction Staking: Chapter 12 of Caltrans Surveys Manual:

v. Caltrans Standard Plans and Standard Specifications:
Caltrans Specification and Estimate Procedures:
http://www.dot.ca.gov/hq/esc/oe/
http://www.dot.ca.gov/hq/esc/oe/standards.php
http://www.dot.ca.gov/hq/esc/oe/conststand.html
http://www.dot.ca.gov/hq/esc/oe/construction_standards.html
http://www.dot.ca.gov/hq/esc/oe/project_plans/
http://www.dot.ca.gov/hq/esc/oe/project_plans/HTM/06_plans_disclaim_US.htm

w. Standard Plans 2002 Dual Units:
http://www.dot.ca.gov/hq/esc/oe/project_plans/HTM/stdplns-dual-new02.htm
http://www.dot.ca.gov/hq/esc/oe/project_plans/HTM/stdplns-dual-new02.htm

x. Caltrans Standard Special Provisions:
http://www.dot.ca.gov/hq/esc/oe/conststand.html
http://www.dot.ca.gov/hq/esc/oe/construction_standards.html

http://www.dot.ca.gov/hq/oppd/cadd/usta/caddman/default.htm
http://www.dot.ca.gov/hq/oppd/cadd/usta/ppman/default.htm
http://www.dot.ca.gov/hq/oppd/cadd/usta/ppman/toc.htm
http://www.dot.ca.gov/hq/esc/oe/standards.php
http://www.dot.ca.gov/hq/esc/oe/construction_standards.html

z. Project Plan Preparation Manual of Instructions:
http://www.dot.ca.gov/hq/esc/oe/project_plans/index.htm

aa. Caltrans Policy and Guidelines: Cost Estimate:
http://www.dot.ca.gov/hq/oppd/costest/costest.htm

bb. Caltrans Right of Way Manual:
http://www.dot.ca.gov/hq/row

cc. Caltrans Project Management Handbook:
http://www.dot.ca.gov/hq/projmgmt/guidance.htm
dd. Caltrans Storm Water Quality Handbooks, Manuals, Project Planning, and Design Guide:
   Caltrans Storm Water Quality Handbooks:
   Caltrans Storm Water Quality Handbooks and Manuals:
   Caltrans Storm Water Project Planning and Design Guide:
   http://www.dot.ca.gov/hq/oppd/stormwtr/

e. Caltrans Project Management Directives:
   http://pd.dot.ca.gov/pm/ProjectOffice/ProcessGuidance_Directives/Guidance_DirectivesHome.asp

ff. Caltrans Project Risk Management Handbook:
   http://www.dot.ca.gov/hq/projmgmt/guidance_prmhb.htm

gg. Quantitative Risk Analysis section (page 14) of Caltrans Project Risk Management Handbook:

hh. Project Management Institute (PMI) "A Guide to the Project Management Body of Knowledge":
   www.pmi.org

ii. Caltrans Standard Environmental Reference Webpage:
   Caltrans Standard Environmental Reference (SER), Caltrans Environmental Handbook, Volume I, Volume II, Volume III, and Volume IV:
   http://www.dot.ca.gov/ser/
   http://www.dot.ca.gov/ser/envhand.htm

jj. Caltrans Standard Environmental Reference, Biological Resources:

kk. Caltrans PEAR Handbook:
   http://www.dot.ca.gov/ser/pear.htm

ll. Caltrans Quality Control and Assurance for Biological Technical Documents:

mm. Secretary of the Interior’s Professional Qualification Standards:
   http://www.nps.gov/history/local-law/arch_stnds_9.htm

nn. Secretary of the Interior’s Standards and Guidelines for Archaeology and Historic Preservation (Federal Register, Vol. 48, No. 190, September 1983):
   http://www.nps.gov/history/local-law/arch_stnds

oo. Caltrans Technical Publications and Manuals:
   http://www.dot.ca.gov/hq/esc/techpubs/

pp. Caltrans Ready-to-list and Construction Contract Award Guide:
http://www.dot.ca.gov/hq/esc/oe/specifications/rtl_guide
http://www.dot.ca.gov/hq/esc/oe/rtl_guide.html

qq. Caltrans Design Information Bulletins:
http://www.dot.ca.gov/hq/oppd/dib/dibprg.htm

rr. Construction Policy Bulletins (CPBs):

ss. Caltrans Design Memorandum:
http://www.dot.ca.gov/hq/oppd/design/index.htm

tt. Caltrans Cooperative Agreements Manual:
http://www.dot.ca.gov/hq/oppd/coop/index.htm

uu. Caltrans Environmental Handbook:

vv. Caltrans Preliminary Environmental Analysis Report (PEAR) Handbook:
Caltrans PEAR Handbook:
http://www.dot.ca.gov/sr/imm/pear.htm

ww. Caltrans Environmental Policy Memos:
Environmental Policy Memos:
http://www.dot.ca.gov/sr/imm/memos.htm

xx. California Test Methods:
http://www.dot.ca.gov/hq/esc/ctms/index.html

http://www.dot.ca.gov/hq/esc/construction/manuals/OSCCompleteManuals/BCRPMv1_Terms.pdf

http://www.dot.ca.gov/hq/esc/construction/manuals/OSCCompleteManuals/BCRPMv2.pdf

aaa. Caltrans Value Analysis Program:
http://www.dot.ca.gov/hq/oppd/value

bbb. METS Website:
http://www.dot.ca.gov/hq/esc/Translab/

ccc. AASHTO Pavement Design Guidance:
https://bookstore.transportation.org

ddd. Superpave Mix Design Standards:
http://www.asphaltinstitute.org

eee. Federal Highway Administration Title 23, Code of Federal Regulations, 637B:
http://www.fhwa.dot.gov/legsregs/directives/fapg/cfr0637b.htm

fff. Independent Assurance Manual:

**ggg. Office of Structural Materials Practices and Procedures Manual:**

**hhh. Caltrans Falsework Manual:**

**iii. Caltrans Trenching and Shoring Manual:**

**jjj. Caltrans Foundation Manual:**
http://www.dot.ca.gov/hq/esc/construction/manuals/OSCCompleteManuals/Foundation_Terms.pdf

**kkk. Caltrans Prestress Manual:**

**lll. Other applicable Offices of Structure Construction manuals:**
http://www.dot.ca.gov/hq/esc/construction/manuals/

**mmm. Manual of Traffic Controls for Construction and Maintenance Work Zones:**

**nnn. Median Barrier Guidelines.**
(Not available on the internet)

**ooo. AASHTO Policy on Geometric Design of Highways and Structures.**
(Not a Caltrans Publication)

**ppp. Standard Test Methods.**
(Not a Caltrans Publication)

**qqq. Division of Construction Oversight Engineer Field Guidelines.**
Chapter 4 Project Completion.

**rrr. Caltrans Encroachment Permits Manual.**
Chapter 206.2A As-Built Plans and Other Completion Records.

Chapter 17.4 AS BUILT PLANS.
http://www.dot.ca.gov/hq/LocalPrograms/lam/lapm.htm

ttt. Office of Special Funded Projects Information and Procedures Guide.
Chapter 1-9 Project Records.

http://www.fhwa.dot.gov/
http://www.fhwa.dot.gov/


http://www.epa.gov/epaoswer/hazwaste/test/main.htm

xxx. Caltrans Soil and Rock Logging Manual, Classification, and Presentation Manual:

yyy. State of California, Department of Water Resources, California Well Standards/Well Standards Bulletins, in Bulletins 74-81 and 74-90:
http://www.water.ca.gov/groundwater/well_info_and_other/well_standards.cfm
http://www.water.ca.gov/groundwater/well_info_and_other/california_well_standards/well_standards_content.html
http://www.water.ca.gov/groundwater/well_info_and_other/well_standards.cfm


cccc. Caltrans Biological Guide for Consultants:

ffff. Caltrans Project Planning and Design Activities Guide.
nnnn. Caltrans Bridge Memo to Designers.
oooo. Caltrans Bridge Standard Details Sheets.
pppp. Caltrans Bridge Detail Decals.
qqqq. Caltrans Formatted Highway Plan Sheets.
rrrr. Caltrans Formatted Bridge Plan Sheets.

LOCAL MANUALS

tttt. “Site Assessment and Mitigation Manual” (SAM) of the San Diego County Department of Environmental Health (DEH).


xxxx. RWQCB - Region 2 Draft Fact Sheet for Reviewing Wetland and Riparian Projects.
http://www.swrcb.ca.gov/rwqcb2/water_issues/programs/401 certs/fact sheet_wetland_projects_12-1-06.doc


zzzz. U.S. Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys,

U.S. Army Engineers Waterways Experiment Station, Vicksburg, Mississippi.
http://el.erdc.usace.army.mil/wetlands/wlpubs.html

bbbbb. USACE Sacramento District.

ccccc. USACE San Francisco District.


http://www.usace.army.mil/CECW/Pages/rglsindx.aspx

ffffff. Caltrans District 4 Project List:
http://www.dot.ca.gov/dist4/projects.htm

ggggg. “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:
http://www.leginfo.ca.gov/calaw.html
http://www.dtsc.ca.gov/LawsReqsPolicies/Title22/index.cfm
http://crr.oal.ca.gov
https://archive.org/details/gov.ca.ccr.22.3

http://www.epa.gov/osw/hazard/testmethods/sw846/online/index.htm
Title 8 California Code of Regulations, Section 5192 and 1532:
http://www.dir.ca.gov/Title8/5192.html
http://www.dir.ca.gov/Title8/1532.html
http://www.dir.ca.gov/Title8/1532_1.html

http://www.epa.gov/
http://nepis.epa.gov/EPAs/html/Pubs/pubtitleORD.htm
http://www.epa.gov/osa/fem/methcollectns.htm

http://www.epa.gov/
http://www.epa.gov/superfund/cleanup/rifs.htm
http://www.epa.gov/superfund/cleanup/rdra.htm


http://www.dtsc.ca.gov/
http://www.dtsc.ca.gov/PublicationsForms/pubs_index.cfm


“Risk Assessment Guidance for Superfund, Human Health Risk Assessment (RAGS)” Volumes A, B, C, United States Environmental Protection Agency:
http://www.epa.gov/
http://www.epa.gov/oswer/riskassessment/alpha_list.htm
http://www.epa.gov/oswer/riskassessment/ragsa
http://www.epa.gov/oswer/riskassessment/ragsb
http://www.epa.gov/oswer/riskassessment/ragsc

Note: Should read Volumes 1, 2, 3 not A, B, C
http://webstore.ansi.org/
http://www.astm.org/DATABASE.CART/HISTORICAL/E1739-95E1.htm
http://www.astm.org/Standards/E1739.htm
ASTM E 1739-95el
qqqqq. Certification of Asbestos.

N. Field Safety.

In addition to the requirements specified elsewhere in the Contract, the following also shall apply:


2. The field work shall not be performed when conditions prevent a safe and efficient operation, and shall only be performed with written authorization by Caltrans.
3. The Consultant shall provide, at no cost to Caltrans, all safety equipment to perform the required services in a safe manner including, but not limited to: gloves, coveralls, sunscreen, insect repellents, fire extinguisher, hard-soled safety footwear, white hard hats, eye protection, hearing protection, and approved safety vests. The Consultant’s personnel shall wear hard-soled safety footwear, white hard hats, eye protection, hearing protection, and approved safety vests at all times while working in the field.

4. The Consultant shall provide, at no cost to Caltrans, appropriate safety training for all the Consultant’s and the Subconsultant’s office, laboratory, and field personnel, including training required for performing the work in an office setting or in the field to work on and near highways in a safe manner.

5. The Consultant shall be solely responsible for the protection of health and safety of its personnel, Subconsultants, and Subconsultant’s personnel in performance of the Contract.

6. Traffic Control.
   a. If specified in the Task Order, Caltrans shall provide Traffic Control to accomplish the work within Caltrans’ right-of-way. When Caltrans is to provide Traffic Control, the Consultant shall request the Traffic Control in advance of the work to obtain proper clearance. Limited work hours, night work or weekend work may be necessitated by the closure schedule that is approved by Caltrans for work on State freeways or highways. For work outside of Caltrans’ right-of-way, the Consultant shall provide Traffic Control in coordination with the appropriate local jurisdiction and/or private owners.
   b. If the Task Order requires the Consultant to provide traffic control or traffic control devices, the Consultant shall fulfill the following requirements:
      i. Caltrans’ 2018 Standard Specifications (Standard Specifications), which shall include any future revisions to this manual: The Contract cites specific portions of the Standard Specifications. Only the sections of the Standard Specifications cited in the Contract are requirements and are hereby incorporated by this reference as if attached to the Contract. All other portions of the Standard Specifications are not applicable to the Contract. The Standard Specifications is accessible via the internet at http://www.dot.ca.gov/hq/esc/oe/.
      ii. Submit a traffic-handling traffic control plan to the Caltrans Contract Manager coordination with the Caltrans Task Order Manager, Functional Manager, District/Region Area Construction (Claims) Engineer, Laboratory Supervisor, Headquarters’ Structural Construction Engineer, Resident Engineer, District
Landscape Architect, District Surveys Engineer, District Right-of-Way Engineer, District Water Quality Program Manager, District Deputy Director for Program/Project Management, District’s Traffic Operations Units, Project Coordinator, Deputy District Director for Environmental Analysis, District Surveys Office Chief, and/or District’s Public Information Officer for review and comment at a minimum ten (10) working days prior to the start of work. The traffic control plan also needs to be provided to Caltrans Permit Office for review and acceptance.

iii. Comply with the traffic control requirements in the “Standard Specifications” including future revisions to this manual, specifically Section 7 (Public Conveniences, Public Safety) and Section 12 (Temporary Traffic Control), and one or more of the following Caltrans Standard Plans, as applicable: Plan No. T10 (Traffic Control System for Lane Closure on Freeways and Expressways); Plan No. T11 (Traffic Control System for Lane and Complete Closures on Freeways and Expressways); Plan No. T12 (Traffic Control System for Lane Closure on Multiline Conventional Highways); Plan No. T13 (Traffic Control System for Lane Closure on Two Lane Conventional Highways); Plan No. T14 (Traffic Control System for Ramp Closures. (Refer to: http://www.dot.ca.gov/hq/traffops/signtech/signdel/stdplans.htm, http://www.dot.ca.gov/hq/esc/oe/projectPlans/highwayPlans/stdplans.US-customary-units_10/viewable_pdf/2010-Std-Plns-for-Web.pdf).

iv. Obtain the necessary approvals and encroachment permits prior to providing the traffic control or traffic control devices.

v. The Consultant shall provide all labor, equipment, and materials that are required for placing, operating, maintaining, repairing, replacing, transporting and removing of traffic control and traffic control devices.

vi. This work includes furnishing, placing and maintaining required signs, safety equipment, and traffic control and warning devices in accordance with the Manual of Traffic Controls published by Caltrans (http://www.dot.ca.gov/hq/traffops/engineering/, http://www.dot.ca.gov/hq/traffops/signtech/signdel/trafficmanual-current.htm). The manufacturer of products on the list of Prequalified and Tested Signing and Delineation Materials shall furnish the Consultant a Certificate of Compliance in conformance with the provisions in Standard Specifications, Section 6, "Certificates of Compliance," of the Standard Specifications for each type of traffic product supplied. For those categories of materials included on the list of Prequalified and Tested Signing and Delineation Materials, only those products shown within the
listing may be used in the work. Other categories of products, not included on the list of Prequalified and Tested Signing and Delineation Materials, may be used in the work provided they conform to the requirements of the Standard Specifications, Section 6.

vii. Conduct operations so as to offer the least possible obstruction and inconvenience to the public and to have under traffic control no greater length or amount of work than can be prosecuted properly with due regard to the rights of the public. All public traffic shall be permitted to pass through the work area with a minimum of inconvenience and delay.

viii. Implement protective measures that are necessary to prevent accidents or damage or injury to the public. No operations shall create a condition hazardous to traffic or to the public.

ix. If an accident or other incident (related to or not related to the work being done for Caltrans) occurs within, or close to the work being done for Caltrans, the Consultant shall immediately stop work and remove traffic controls from the highway unless public health, welfare and safety is endangered by unfinished work or by removal of the traffic control devices. After free traffic flow is restored, other work required by the Task Order may be resumed.

x. Enter and leave the highway via existing ramps and crossover in the direction of public traffic. There shall be no movement across lanes.

xi. All trucks or other mobile equipment leaving the public traffic lane to enter the work area shall slow down gradually in advance of the turnoff to allow following traffic an opportunity to slow down safely. The Consultant shall use flashing lights on the vehicle to indicate to oncoming traffic of vehicle slowing.

xii. All work requiring traffic control requires the Consultant to apply for and obtain a lane closure number or prepare an adequate Traffic Management Plan (TMP) in coordination with the Caltrans District Traffic Management (DTM), Division of Traffic Operations before the start of any work that may affect traffic. The Consultant shall request lane closure numbers in accordance with the procedures specified in the “Encroachment Permit Projects Traffic Control Procedures” which is found at the following web site: http://www.dot.ca.gov/hq/traffops/developserv/permits/encroachment_permits_manual/index.html. The Consultant shall use the “Request for Transportation Management Plan Datasheet” to request all lane closures necessary to complete the work. The Consultant shall submit the Request for Transportation Management Plan Datasheet to the Caltrans Contract Manager in
coordination with the Caltrans Task Order Manager for review and approval. Once the Caltrans Contract Manager in coordination with the Caltrans Task Order Manager have reviewed the lane closure request, the Consultant shall then fax the “Request for Transportation Management Plan Datasheet” (see Appendix E on http://www.dot.ca.gov/hq/traffops/systemops/tmp_lcs/index.htm) to Caltrans' Division of Traffic Management (DTM). Additional time beyond the minimum seven (7) days advanced notice may be required for obtaining traffic control approval.

xiii. Any damage caused by the Consultant to existing facilities, landscaping or irrigation within the Caltrans’ right-of-way shall be replaced in kind by the Consultant at the Consultant's sole expense.

xiv. Unless otherwise specified in a Lane Closure Chart(s) and/or approved by the District Traffic Manager, Traffic Control shall occur only between 9:00 a.m. and 3:00 p.m., Mondays through Friday except for holidays.

O. Orientation Provided by Caltrans.

Caltrans may provide orientation regarding the requirements for the Contract and each Task Order as deemed necessary by Caltrans. The orientation may consist of a description of Caltrans procedures, practices, and requirements for the specific work to be performed and sharing of project related files and notes. However, if the orientation instructions conflict with the contract or task order requirements, the Contract and the executed Task Order shall prevail over any descriptions provided.

P. Monitoring and Review Procedure.

1. The Caltrans Contract Manager shall have the unilateral right, from time to time, or as requested by the Consultant, to monitor and review the progress and processes of the Consultant related to work performed under the Contract.

2. The performance of the Consultant Contract Manager, key personnel, and team shall be evaluated by the Caltrans Contract Manager, as needed, but no less frequently than annually, and at the expiration of the Contract. Unsatisfactory reviews of specific consultant personnel may result in Caltrans requesting that they be replaced with new personnel; the Consultant shall immediately replace personnel with individuals whose qualifications at a minimum equal those of the personnel replaced at no additional cost to Caltrans. Evaluation includes, but not be limited to, the following:
   b. Quality of Work.
   c. Timely submittal of reports, invoices, daily diaries, and other required documents.
d. Early detection of problems and timely resolutions.
e. Requesting timely approval for personnel changes and travel expenditure.
f. Responsiveness and ability to control costs.
g. DBE or DVBE Participation.
h. Conflicts of interest.

Poor performance and any negative evaluations may result in the request for replacement of the Consultant Contract Manager, key personnel, or any personnel; the need to replace key personnel shall reflect adversely on the Consultant’s performance evaluation, and if warranted, may result in the termination of the Contract per Exhibit D, Section III, Termination of the Contract.

Q. General Materials to be Provided or made available by Caltrans.

Materials (if deemed applicable, necessary, and when available from Caltrans) that may be furnished or made available by Caltrans and where listed in the individual Task Orders and the Contract, are for the Consultant’s use only, shall be returned at the end of the Contract. The Consultant shall use the materials in the execution of the specific work described in the Task Order. These materials may include, but not be limited to, the following:

1. Appropriate background or reference information for each Task Order.
2. Project special provisions, full-size and reduced-size sets of project plans, materials information handout, and construction contract and proposal, as necessary.
3. Caltrans standardized forms.
4. Caltrans shall provide Permits to Enter for private property access. The Consultant shall notify Caltrans, in writing, sufficiently in advance of its need to enter upon private property or facility to perform work. The Consultant’s notice shall specify the date, purpose, duration, location, and the time of day of the Consultant’s activities. The Consultant shall not perform work on property outside of the Caltrans right-of-way until Caltrans has obtained an entry permit from the property owner. The Consultant is responsible for notifying the property owner 48 hours in advance of entering the property, unless otherwise specified in the Permit. The Consultant shall notify the Caltrans Contract Manager within 48 hours if permission has been denied. The Consultant personnel shall carry the Permits to Enter on their person while performing work outside the Caltrans Right-of-Way. No work shall be performed by the Consultant outside the Caltrans Right-of-Way without Permits to Enter. The Consultant shall comply with all conditions imposed by the Caltrans Contract Manager and requirements set forth in the Permit to Enter. The Consultant shall be responsible for any damages that consultant did to owner property at Consultant’s own expense.
5. Appropriate background information, site topographic maps, as-built drawings, blank Caltrans plan sheet overlays, digital electronic seed files, cell libraries, lane
closure request forms, right-of-way alignments and survey limits, preliminary utility location maps, areas where focused studies are needed, Construction Contract Documents, and Shop Drawings, as available, for each Task Order.

6. Digital Electronic templates of Task Order formats.

7. For Contract work on Caltrans’ Right-of-Way, an executed contract constitutes the consultant’s “Encroachment Permit.” The consultant (prime as well as any subconsultants) shall carry a copy of the fully executed contract along with the pertinent Task Order(s) at all times while conducting work for Caltrans within Caltrans’ Right-of-Way.

8. All pertinent correspondence and investigations.

9. The Caltrans Contract Manager may designate a Caltrans Task Order Manager to manage the technical aspects of the Task Order or each specific Task Order.

10. The Caltrans Contract Manager or Caltrans designee shall review all deliverables for compliance, substance, and quality.

R. Hazardous Waste Site Investigation and Design Materials to be Provided or made available by Caltrans.

1. Relevant and existing documents, if any are available, that are applicable to the current project within the project limits.

Note: The Consultant is responsible for the return to Caltrans, in original condition, of all items provided for use under the Contract. The Consultant shall replace, at the Consultant’s sole expense, all lost or damaged Caltrans data or materials.

S. Materials to be Provided by the Consultant.

Unless otherwise specified in the Contract, the Consultant shall provide all materials to complete the required work in accordance with the delivery schedule and cost estimate outlined in each Task Order.

1. The Consultant shall be responsible for obtaining all necessary approvals and permits for Task Order work performed on any property that Caltrans does not own or control, with the exception of private property. The Consultant shall identify all necessary approvals and permits, prepare signature-ready permit applications, and track the status of permit applications, as specified in each Task Order. Also, the Caltrans District NPDES Coordinator shall be notified prior to performance of any work.

2. The Consultant shall provide to its Hazardous Waste Site Investigation and Design Services personnel sets of the following that are applicable to the current project:
c. Materials listed under section “Equipment Requirements”.

3. When performing work within Railroad Company property, the Consultant is required to obtain sufficient and/or adequate insurance coverage that shall comply with the Railroad Company’s requirements when performing work within their jurisdiction. The amount of insurance and types of coverage required by the Railroad Company may be above and beyond that required by Caltrans. The Consultant may be required to provide additional Railroad liability insurance including, but not limited to:
   b. Business Automobile Coverage Insurance.
   c. Worker Compensation and Employers Liability Insurance.
   d. Railroad Protective Liability Insurance.
   e. Umbrella or Excess Insurance.
   f. Pollution Liability Insurance.

T. Product Approval and Payment

1. All analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, deliverables, backup documents, other documents, and other items produced by the Consultant in the performance of the Contract, shall be subject to the approval and acceptance by the Caltrans Contract Manager prior to invoicing and payment for these items.

2. All of the deliverables and tasks provided for acceptance under each Task Order shall comply with the terms, covenants and conditions of the Contract.

3. Upon completion of each deliverable or task, the Caltrans Contract Manager shall either accept or reject the completed work. In the event of non-acceptance due to errors, omissions, or non-compliance with the Caltrans Manuals, as revised as of the time of the Task Order, or the provisions of the Contract, the Consultant shall remedy the errors, omissions, or non-compliance to the satisfaction of the Caltrans Contract Manager at no cost to Caltrans prior to payment. Caltrans shall withhold payment until the work is satisfactorily completed and approved by the Caltrans Contract Manager. Additional cost incurred to correct errors will not be compensated.

4. Caltrans shall not pay the Consultant for the Consultant’s work under the Contract and the charges incurred by the Consultant that does not conform to the requirements specified in the Contract and to the applicable Task Order, and such work shall be corrected at the Consultant’s sole expense at no additional cost to Caltrans.

5. All reviews, inspections and approvals made prior to the final acceptance of deliverables or Task Orders are intended only to provide interim authorizations to proceed and do not constitute final approval of the deliverable or Task Order.
6. Notwithstanding any other provision of the Agreement, until final acceptance of a Task Order under the Agreement, any acceptance or approval means approval to proceed, but it does not mean acceptance or approval of a deliverable or task, and, it does not reduce or eliminate any of Consultant’s duties or responsibilities under the Agreement.

U. General Deliverables.

All deliverables, intermediate work products, and original documents including, but not limited to, original field notes, photographs, reports, documents, plans, data, data files, edits to field data, adjustment calculations, final results, drawings, specifications, estimates, studies, record search, records, books, maps, manuscripts, manuals, digital electronic software developed, databases, background information, spreadsheets, procedural scripts, macros developed, and intellectual properties, developed pursuant to the Contract, shall be subject to the provisions of Exhibit D, sections XIX and XX and shall be sent to Caltrans upon completion of each Task Order deliverable and acceptance/approval of the work by the Caltrans Contract Manager or immediately upon request by the Caltrans Contract Manager. The Consultant shall retain a copy of all documents furnished to Caltrans until expiration of the Contract.

Unless otherwise specified in the Task Order, the deliverables shall conform to the following:

1. Data Format for Unprotected and Modifiable Digital Electronic File Transfers. The Consultant shall deliver unprotected and modifiable digital electronic files meeting the following requirements and as specified in each Task Order:
   a. Alphanumeric information (80 character, ASCII data type).
   b. Reports (Acrobat Writer 5 and above).
   c. Graphs, charts (Acrobat Writer 5 and above).
   d. Compliance with standard naming convention (including, but not limited to, Project ID, County, Route/PM, Date).

2. The Consultant shall work in close liaison with the Caltrans Contract Manager. Time is of the essence. Caltrans shall exercise review and approval functions through the Caltrans Contract Manager at key points, as specified in each Task Order. Milestone reviews shall be performed with the Caltrans Contract Manager for the specific performance, products, and deliverables listed in each Task Order.

3. The Consultant shall prepare a cost estimate showing task, subtask, personnel, personnel hours estimated for each task or subtask, and a schedule of deliverables.

4. All analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, deliverables, backup documents, other documents, and other
items required by the Contract shall be prepared on Caltrans standardized forms. Necessary forms shall be provided by Caltrans for the Consultant’s use.

5. All analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, deliverables, backup documents, other documents, and other items required by the Contract shall be submitted in both hardcopy and unprotected and modifiable digital electronic files in the Caltrans-approved forms and in the Caltrans-approved and designated digital electronic formats (Microsoft Word, Microstation, CAiCE, AutoCAD Civil 3D, PhotoShop, 8 1/2 x 11 in green, plastic, three ring binder), in accordance with the guidelines in the Contract and each Task Order, and shall conform to Caltrans standards and the requirements of the Caltrans Office Engineer at the end of Contract or when requested by the Caltrans Contract Manager or Caltrans designee. The unprotected and modifiable digital electronic files shall include the responsible person’s digital electronic signature and seal. The Consultant shall verify the latest version of software used prior to submittal. The Consultant shall also provide plot parameter (.par) or IPARM (.i) files in accordance with I-Plot standards.

6. At the end of each Task Order or when requested by the Caltrans Contract Manager, the Consultant shall also submit one (1) unprotected and modifiable digital electronic copy of all analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, deliverables, backup documents, other documents, and other items required by the Contract in a specified digital device format (CD, DVD, and/or flash drive). The file formats shall be specified in each Task Order. Appropriate documentation shall accompany each digital device indicating the contents of each file.

7. When the Consultant is required to prepare and submit analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, deliverables, backup documents, other documents, and other items required by the Contract and any approved Task Order to Caltrans or review analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, deliverables, backup documents, other documents, and other items submitted to Caltrans by others, these documents shall be reviewed. They shall be submitted in draft as scheduled and the opportunity provided for Caltrans to provide comments and feedback, prior to final submittal. The specific schedule for Caltrans’ review of the Consultant’s submittals shall be specified in the Task Order.

The Consultant personnel involved in preparation or review of analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports,
graphics, drawings, visual simulations, studies, product, data, manuals, details, deliverables, backup documents, other documents, and other items shall be identified in the prepared or review report.

8. If the Consultant fails to submit the required analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, deliverables, backup documents, other documents, and other items required by the Contract and any approved Task Order, Caltrans shall have the right to withhold payment and/or terminate the Contract in accordance with the termination provisions of the Contract per Exhibit D, Section III, Termination. If the Contract is terminated, the Consultant shall, at Caltrans’ request, return all materials recovered or developed by the Consultant under the Contract including, but not limited to, photos, field notes, computer data files, maps, artifact collections, catalogs, analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, deliverables, backup documents, other documents, and other items required by the Contract.

9. For each Task Order, a milestone submittal schedule shall be prepared by the Consultant and approved by the Caltrans Contract Manager. Milestones may be changed by written agreement between the Caltrans Contract Manager and the Consultant Contract Manager through an amendment to the Task Order.

10. The Consultant shall prepare and update the Caltrans Work Breakdown Structure (WBS) as set forth in the Contract for each Task Order issued by the Caltrans Contract Manager showing a deliverables schedule. It is expected that the Consultant shall complete and meet the agreed upon schedule for each Task Order. Failure to complete the work based on the agreed upon schedule in the Task Order may result in termination of the Task Order or the Contract. Caltrans may have work completed in any way allowed by law, for which the Consultant shall be liable for any additional costs incurred by Caltrans to complete the work. Such costs may be deducted from amounts due to the Consultant in pending or future invoices, or if the Contract is terminated, may be recouped by any means allowed by law.

11. The Consultant shall maintain a separate complete set of project files for each Task Order issued by the Caltrans Contract Manager performed under the Contract. The Consultant shall maintain two (2) sets of these files. One (1) set shall be maintained on site with the Consultant and the other set shall be updated by the Consultant monthly and delivered to the Caltrans Contract Manager in coordination with the Caltrans Task Order Manager. These files shall be indexed in accordance with Caltrans’ Project Development Uniform File System (http://www.dot.ca.gov/hq/oppd/pdpm/chap_pdf/chapt07.pdf). These files shall
be made available to the Caltrans Contract Manager during normal working hours and shall be transferred to Caltrans upon completion of work under the Task Order. If requested by the Caltrans Contract Manager, the Consultant shall provide these project files.

12. Deliverables specified in each Task Order shall be delivered to the attention and address indicated in each Task Order.

13. The Consultant shall be capable of working in either English or Metric units.

14. All deliverables shall be prepared in Imperial English Units unless an exception is approved. The units to be used for deliverables shall be addressed within individual Task Orders.

15. A Task Order may require the Consultant to use software and digital electronic formats other than those indicated in the Contract as needed to accomplish the objectives of the Task Order.

16. Quality Control Plan:
   Prior to the work, the Consultant shall prepare the quality control plan and the minimum standard of work quality and obtain approval from the Caltrans Contract Manager, in effect for each and every Task Order during the entire time the work is being performed under the Contract. The Consultant shall complete the quality control plan and certify at the completion of work that all measures contained therein were satisfied. Caltrans shall perform quality assurance on the quality control plan to assure that quality control was satisfied.

   The Consultant’s quality control plan shall establish a process whereby:
   a. All deliverables are reviewed for accuracy, completeness, and readability before submittal to Caltrans.
   b. Calculations and plans are independently checked, corrected and re-checked.
   c. All job-related correspondence and memoranda are routed and received by affected persons and then filed in the appropriate Task Order file.
   d. Field activities are routinely verified for accuracy and completeness, such that any discovered deficiencies do not become systemic or affect the result of a Task Order deliverable.

   The Consultant shall provide an outline of the quality control program before a specific task begins and shall identify critical quality control reviews within each Task Order. The Caltrans Contract Manager shall periodically request evidence that the quality control/quality assurance plan is functioning. All analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals,
details, deliverables, backup documents, other documents, and other items required by the Contract submitted to the Caltrans Contract Manager for review shall be marked clearly as being fully checked or unchecked, and that the preparation of the material followed the quality control plan established for the work. The Quality Control/Quality Assurance (QC/QA) plan shall contain provisions for the development of appropriate “checklists” to maintain product quality and control. These “checklists” shall be delivered to the Caltrans Contract Manager with the QC/QA plan. The Consultant shall update these documents when directed by the Caltrans Contract Manager. Within thirty (30) calendar days of the Notice to Proceed (NTP), the Consultant shall submit to the Caltrans Contract Manager or Caltrans designee a job specific QC/QA plan and staffing plan.

17. Subject to Caltrans review, approval, and acceptance, the Consultant has total responsibility for and shall verify the accuracy and completeness of the analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, deliverables, backup documents, other documents, and other items required by the Contract prepared by the Consultant or its Subconsultants for the projects as specified in the Contract and in each Task Order. All analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, deliverables, backup documents, other documents, and other items required by the Contract shall be reviewed by Caltrans for conformity with project standards and the requirements in the Task Order and the Contract. The analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, deliverables, backup documents, other documents, and other items required by the Contract are subject to Caltrans’ review, approval, and acceptance. Reviews by Caltrans do NOT include detailed review or checking of major components, quantitative calculations, related details or accuracy of information. The responsibility for accuracy and completeness of such items remains solely that of the Consultant.

18. The Caltrans Contract Manager shall address all questions which may arise as to the quality or acceptability of deliverables furnished and work performed for the Contract.

19. Prepare the analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, deliverables, backup documents, other documents, and other items required by the Contract in accordance with prevailing industry standards and in a form acceptable to the Caltrans Contract Manager. These items shall identify the preparer, the designated reviewers, and the criteria for
acceptance. The deliverables shall satisfy the Caltrans acceptance criteria and tests. The work product shall be complete, of neat appearance, well-organized, technically and grammatically correct, independently checked for error, checked by designated reviewers (Caltrans and Consultant Personnel), dated, and shall conform to industry standards and all applicable Caltrans, State, and Federal Standards, Requirements, and Procedures. All deliverables shall be approved by the Caltrans Contract Manager or Caltrans designee.

The minimum standard of appearance, organization, and content of analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, deliverables, backup documents, other documents, and other items required by the Contract, shall be that of similar types produced by Caltrans and set forth in related Caltrans manuals.

Caltrans and the Consultant shall develop and agree to a schedule for the services and deliverables to be completed and delivered, and where appropriate, for acceptance criteria and acceptance tests that the services and deliverables must satisfy as a prerequisite for approval by Caltrans. All deliverables shall satisfy the Standards set forth in “Standards” Section in order to be accepted for payment.

V. Hazardous Waste Site Investigation and Design Deliverables.

1. The Consultant shall obtain written approval from Caltrans for all analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, deliverables, backup documents, other documents, and other items required by the Contract. If there are no Caltrans standardized forms, the format and content requirements for all analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, deliverables, backup documents, other documents, and other items required by the Contract shall be specified in each Task Order.

2. All Hazardous Waste Site Investigation and Design Services analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, deliverables, backup documents, other documents, and other items required by the Contract performed on computer shall be delivered to Caltrans including, but not limited to, the formats specified below:
   a. Text-based documents shall be submitted as an Adobe Portable Document Format (“pdf”) file using Adobe Acrobat Professional version 5 or later software. The pdf file shall be inclusive of all graphics (e.g. page
orientation, photographs or other images, charts, and tables) and be suitable for printing in final form. The pdf file shall:

i. Contain functioning bookmarks, indexes, tables of contents or other hyperlinks as required by the Task Order.

ii. Be configured (e.g. bookmarks, indexes, table of contents, thumbnails, annotations, signatures, and security settings) as required, or as directed by the Task Order.

iii. Be optimized for use by Adobe Acrobat Reader 10 or newer.

b. Text-based documents shall also be submitted in Microsoft Word format, version 2007. The document shall include all graphics (e.g. photographs, image graphics, charts, and tables). Photographs shall be in “jpeg” file format. Other image graphics shall be in “gif” format unless otherwise specified.

c. All graphics (e.g. photographs or other drawings) shall be submitted separately from the pdf and Microsoft Word documents in archive-type file formats (e.g. photographs and bitmapped drawings as “tif”, Microstation drawings as “dgn”, and vector drawings as “ai”) unless otherwise specified. The intent of this section is for the Consultant to provide Caltrans with a copy of each graphic in an uncompressed file format for archive purposes. The Consultant may suggest alternative formats that are compatible with this goal.

d. Spreadsheet files shall be submitted in Microsoft Excel format, version 2007, or format currently in use by Caltrans.

e. Word processing files shall be submitted in Microsoft Word format, version 2007, or format currently in use by Caltrans.

f. Database files shall be submitted in Microsoft Access format, version 2007, or format currently in use by Caltrans.

g. The Consultant shall not format digital electronic files as “view only” or “read only” unless so specified in the Task Order.

h. Other - As specified in the Task Order.

3. Engineering CADD plot files shall conform to the requirements of Caltrans standards and requirements in the Contract or as specified in the Task Order.

4. As part of the work involved in the preparation of the plans, specifications, estimates (PS&E) and reports, the Consultant shall prepare and furnish work in conjunction with the most recent Caltrans special provisions for items of work for possible inclusion in the plans, which are not currently covered by the "Standard Specifications" and Caltrans approved Special Provisions.

W. Conflict of Interest.

1. All Hazardous Waste Site Investigation and Design Services provided by the Consultant and deliverables produced by the Consultant shall be free of any
conflict of interest and shall be subject to the approval and acceptance of the Caltrans Contract Manager. The consultant shall inform the Caltrans Contract Manager of any ‘perceived’ conflict of interest as soon as discovered.

2. The Consultant shall not receive compensation for any services or products in which the Consultant is found to have a conflict of interest. In the event of non-acceptance due to discovery of conflict of interest, the Consultant shall provide replacement deliverables free of any conflict of interest prior to payment. In the event replacement deliverables are not possible, the Consultant shall not receive compensation for the deliverables containing conflict of interest. Examples of conflict of interest include, but be limited to, the following:

a. 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.

The above conflict of interest scenario is only an example of possible conflicts of interest for the services provided under the Contract, but is not intended to describe all circumstances for potential or actual conflicts.

X. Detailed Scope of Work.

The instruction contained in this Scope of Work and the applicable Task Order shall take precedence over any conflicting instructions found in the manuals listed under the Contract.

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

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

1. Health & Safety:

Conditions expected during Phase I Environmentally Sensitive Area (ESA) or Initial Site Assessment (ISA) field work and site investigations and/or sampling/removal field work should not pose health and safety problems. However, if conditions in the subject area warrant health and safety considerations, the Consultant shall identify the issues and how they shall be addressed at the Task Order negotiation period, in a work plan, and Task Order meeting prior to start of work. The Consultant shall notify the Caltrans Contract Manager or Caltrans designee in writing at a minimum one (1) week before it begins any investigative or field work.

All elements of the site investigation shall meet standards set by Federal, State, and Local regulatory agencies. The Caltrans Contract Manager or Caltrans
designee shall 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) shall be procedurally acceptable to the regulatory agencies. See special provision in the Special Provisions Section, SP-4: Health and Safety for more information.

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/proposed right-of-way as specified in the Task Order.

It is not necessary to confirm the actual presence of hazardous waste in soil or groundwater during the ISA.

3. Owner/Regulatory Coordination and Contacts.

The Consultant shall only contact property owners/operators as directed by the Caltrans Contract Manager or Caltrans designee. The Consultant shall coordinate with other agencies, including, but not limited to, United Stated Federal Environmental Protection Agency (U.S. EPA), California Environmental Protection Agency (Cal-EPA), California Department of Toxic Substances Control (DTSC), Regional Water Quality Control Board (RWQCB), local environmental health agency, utility companies, and others as necessary to complete the Hazardous Waste Services required by the Contract. Contact with other agencies shall only be made at the direction of the Caltrans Contract Manager or Caltrans designee. The Caltrans Contract Manager or Caltrans designee shall notify and invite the Consultant to all regulatory agency meetings related to the Contract. All written correspondence with regulatory agencies written for Caltrans shall be submitted to the Caltrans Contract Manager or Caltrans designee for approval and signature and shall only be sent to the agencies by Caltrans. Consultant shall maintain a record of contacts and provide it to Caltrans at a minimum on a monthly basis. The record shall include the name of the person contacted, date of the contact, location where the contact was made by phone or in person, the subject matter/purpose of the contact, outcome of such contact and the dates of contacts. Consultant shall provide the record of contacts to Caltrans.

4. GIS Database.

Caltrans Headquarters Division of Environmental Analysis has developed a Hazardous Waste GIS Database to track project-level data. The Consultant shall incorporate Aerially Deposited Lead data into the GIS database to provide ready access data. Data shall be entered into a Microsoft Excel spreadsheet provided by
Caltrans. The Microsoft Excel data shall then be imported into the Microsoft Access database.

5. Records Review.

Hazardous Waste and Substances Sites List (known as the Cortese list) contains FINDS, CALSITES, HWIS, LTANK, SWRCB, UTANK, SWIS, AGT25, and A1025. However, the individual agency's lists may be updated more frequently. The Consultant shall review the following published lists of hazardous waste sites:

a. United States Environmental Protection Agency (U.S. EPA).
   i. NPL - National Priority List.
   ii. FINDS - Facility Index System.

b. California Environmental Protection Agency (Cal EPA).

c. California Department of Toxic Substances Control (DTSC).
   i. CALSITES - Abandoned Sites Program Information System.
   ii. HWIS - Hazardous Waste Information System.
   iii. ENVIROSTOR database

d. California State Water Resources Control Board.
   i. LTANK - Leaking Underground Storage Tanks.
   ii. SWRCB - Waste Discharger System.
   iii. UTANK - Underground Tanks.

e. California Integrated Waste Management Board/Department of Resources Recycling and Recovery (CalRecycle).
   i. SWIS - Solid Waste Disposal Facilities.

f. California Air Resources Control Board.
   i. AGT25 - Dischargers of criteria air pollutant (>25 tons).
   ii. A1025 - Dischargers of criteria air pollutants (10 to 25 tons).

g. County/City Department of Environmental Health for each county/city.

h. California Regional Water Quality Control Board (RWQCB) (lists, reports, violations & permits).
   ii. Caltrans (right-of-way maps, aerial photos spill records, and/or ‘as-built’ map files).
   k. Aerial photograph repositories - allow for identification of historical development of site activities.
i. United States Geological Survey 7.5 Minute Topographic Maps provide basis for establishing site location and topographic information.

1. When requested in the Task Order, the Consultant shall also research the records and information sources as follows:
   i. Office of Emergency Services (hazardous materials management plans).
   ii. California Department of Water Resources (maps, well logs, and files).
   iii. California Department of Conservation, Division of Oil and Gas (maps, oil survey maps, well logs, and files) and California Geological Survey (geologic hazards).
   v. Local health departments (site lists, permits, and reports).
   vi. Local fire departments (emergency response activities and hazardous materials storage, business license, plans, site lists, permits, and reports).
   vii. County Recorder's Office (parcel maps and files).
   viii. County Tax Assessor’s Office - Title records, environmental liens or activity and use limitations (deed restrictions).
   ix. County Court House (maps and files).
   x. Utility companies (maps, plans, records).
   xi. Air Pollution Control District (database).
   xii. Real estate records.
   xiii. Property Title Searches.
   xiv. Other databases including, but not limited to, FirstSearch, Environmental Data Resources, and Vista.

Records on the above lists shall be reviewed to determine past and present land uses and to identify known or potential hazardous waste sites on parcels of land within and adjacent to the proposed right-of-way as specified in the Task Order. The Consultant shall research the entire period extending to when the land was undeveloped or agricultural.

The Consultant shall review published data from the United States Geological Survey (USGS), State, and other available maps and reports in order to compile a general geologic map and general hydrologic profile of the right-of-way.


When requested as part of the Task Order the Consultant shall research appropriate sources of historic information to identify historic land uses within the
project area and identify those that used hazardous materials and/or may have generated hazardous waste. Sources including, but not limited to, the following shall be researched, as appropriate:

a. Historic maps.
   i. Sanborn maps.
   ii. United States Geodetic Survey maps.
   iii. Flood control maps.
   iv. Oil survey maps.

b. Photographs.

c. City directories.

d. State, City and County libraries.

e. County Recorder's office.

f. Business License and other business records.

g. Planning departments.

h. Newspapers.

i. State Archives.

j. Historical Societies.

k. Public documents.

The Consultant shall research and analyze material gathered from such sources and prepare a report describing the research and results, focusing on those land uses that were likely to result in the deposit of hazardous waste.

Historic research and reporting are to be undertaken by personnel with minimum qualifications of a Bachelor’s Degree in History and demonstrated competence in local history, primary document, and historic land use research.

7. General Site Investigation Requirements.

The Consultant shall complete the following requirements:

a. Perform all work in accordance with a site-specific Health and Safety Plan.

b. Provide well construction design, acquire drilling permits, and check for utilities and other underground obstacles including, but not limited to, water, electric, gas, and sewer lines. See special provision in the Special Provisions Section, SP-15: Underground Services Alert (USA) for more information.

c. Ensure that all necessary equipment and materials are present at the site and in good operating condition at the beginning of each workday. The Consultant shall supply backup equipment, as needed on-site for each job. This includes, but not be limited to, extra drill bits, auger flights, cables, fuel, and soil sampling equipment.

d. Have, or be able to obtain, all the personnel, energy sources, equipment and materials necessary to comply with the provisions of the Contract.
throughout the contract term. The Consultant’s (or Subconsultant’) personnel shall hold all appropriate California Contracts State License Board licenses including, but not limited to, C-57 and/or C-61 licenses.

e. Obtain all necessary regulatory and/or Caltrans’ permits, including encroachment permits. (See special provision in the Special Provisions Section, SP-11: Right of Entry and SP-12: Encroachment Permits for more information.)

8. Basic Work Plan Preparation.

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 Task Order Manager shall sign the work plan. The Consultant shall provide a draft work plan for the Caltrans’ Contract Manager to review and comment upon prior to commencing field work. The final work plan shall address all Caltrans comments and shall be resubmitted for final approval by the Caltrans Contract Manager or Caltrans designee. Caltrans may prepare a Work Plan in lieu of having one prepared by the Consultant or specify the scope of work in the Task Order. Caltrans Work Plan shall be attached to or included in the Task Order.


In more complex situations, a specific project may require development of a detailed site investigation work plan. The work plan developed by the Consultant shall include:

a. Preliminary scoping of investigation includes any available ISA information (See “Initial Site Assessments” section).
b. Review of available information on the site and vicinity.
c. Site visit and review.
d. Evaluation of available area groundwater data.
e. Evaluation of available area geology data.
f. Investigation strategy and rationale for number and location of borings, number of borings, and sample analysis.
g. Revision of site investigation objectives as necessary.

The Consultant shall provide a draft work plan for the Caltrans Contract Manager to review and comment prior to commencing field work. The final work plan shall address all Caltrans comments and shall be resubmitted for final approval by the Caltrans Contract Manager or Caltrans designee. Caltrans may prepare a Work Plan in lieu of having one prepared by the Consultant or specify the scope
of work in the Task Order. Caltrans Work Plan shall be attached to or included in the Task Order.

Under the direction of the Consultant Contract Manager, appropriate professional personnel shall develop the work plan. Interpretation of geology, hydrogeologic, and/or hydrologic information shall be completed under the supervision of a California Registered Geologist and/or Certified Engineering Geologist licensed in the State of California in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period. The Registered Geologist and/or Certified Engineering Geologist licensed in the State of California with Hazardous Waste Services experience that supervised the work shall sign the final work plan.

10. Surface Water Sampling.

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

a. Surface water sampling shall be accomplished using grab sampling at locations and depths specified in the Task Order.

b. Depending on the type of analysis, the sample bottles should be appropriate for the constituent, including, plastic (inorganic) or glass (organics), and certified pre-cleaned.

c. All samples shall be collected and analyzed for the constituents as specified in the NPDES permit.

11. Laboratory Sampling Handling Procedures for Aerially Deposited Lead (ADL) Investigation Samples.

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 compliance with the requirements in the latest DTSC Variance (DTSC ADL Variance) requirements issued to Caltrans for management of ADL in soil. Contact the Caltrans Contract Manager or Caltrans designee to check and verify changes in the DTSC Variance (DTSC ADL Variance) requirements.

ii. Samples shall be collected and preserved in accordance with the latest edition of U.S. 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 by the Consultant. 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/upload/1_06_UM.pdf](http://www.dtsc.ca.gov/AssessingRisk/ECL/upload/1_06_UM.pdf)
- [http://www.dtsc.ca.gov/AssessingRisk/ECL/upload/2_06_UM.pdf](http://www.dtsc.ca.gov/AssessingRisk/ECL/upload/2_06_UM.pdf)
- [http://www.dtsc.ca.gov/AssessingRisk/ECL/upload/3_06_UM.pdf](http://www.dtsc.ca.gov/AssessingRisk/ECL/upload/3_06_UM.pdf)
- [http://www.dtsc.ca.gov/AssessingRisk/ECL/upload/5_06_UM.pdf](http://www.dtsc.ca.gov/AssessingRisk/ECL/upload/5_06_UM.pdf)
- [http://www.dtsc.ca.gov/AssessingRisk/ECL/upload/6_06_UM.pdf](http://www.dtsc.ca.gov/AssessingRisk/ECL/upload/6_06_UM.pdf)
- [http://www.dtsc.ca.gov/AssessingRisk/ECL/upload/7_06_UM.pdf](http://www.dtsc.ca.gov/AssessingRisk/ECL/upload/7_06_UM.pdf)

iv. The Consultant shall ensure that the requirements stipulated in the Task Order are met including, but not limited to, the sampling depth, sample relative location to freeway, Global Information System (GIS) collection, approved 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 (ppm) to 150 mg/kg (ppm) may 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 very 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 according to industry practice. It is the responsibility of the Consultant and its Subconsultants 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 method 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 Total Lead Concentrations (TTLC), using Federal United States Environmental Protection Agency (U.S.EPA) Method 6010 or 7000 series. When the total lead concentration is greater than, or equal to 50 mg/kg (ppm), 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 (ppm).

v. The Consultant shall ensure that the samples tested for soluble lead (WET) come from the parent sample used to test the total lead for comparison with the TTLC.

vi. The Toxicity Characteristic Leaching Procedure (TCLP) shall be performed when the results of soluble lead using the WET Method is greater than 1000 kg/mg or the highest TTLC samples.

vii. The laboratory and/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 laboratory and/or the Consultant should re-examine the sample and determine if sample preparation may have caused the poor correlation and/or re-analysis is needed. If the laboratory and/or the Consultant determines that samples do not warrant the re-examination and analysis, a justification shall be documented in the report.

viii. The Consultant shall ensure that additional testing including, but not be limited to, Toxicity Characteristics Leaching Procedures (TCLP), pH, and Title 22 metals is in compliance with the DTSC ADL Variance requirements.

c. Statistical Evaluation.

Testing data obtained in environmental site investigation shall be statistically analyzed according to:

i. A statistical analysis of laboratory results shall be provided in accordance with USEPA guidance documents (such as U.S. EPA ProUCL Methods (latest edition); “Test Method for the Evaluation of Solid Waste, Physical/Chemical Methods”, U.S. Environmental Protection Agency,SW-846 method, U.S. Environmental
ii. Normalizing Data and Handling Nondetects (for SW 846 Statistical Data Analysis).

Incorporate non-detects. The presence of non-detects in the lead analysis data may 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. A natural log (ln(x)) transformation of the data allows calculation of upper confidence intervals for the mean. Departures from normality shall be checked using graphical representation such as a histogram. A histogram of the data set shall be developed to determine if the data are skewed and if transformation is necessary. If a data set is skewed, appropriate lognormal or nonparametric statistical methods shall be used, such as using the transformation procedures described in U.S. EPA-ProUCL software (Summary Statistics option for data with NDs and data without NDs); SW 846; and an ln(x) transformation and a new histogram developed to document the transformation. Upon transformation, normality of data needs to be re-checked. Other methods of transformation that may be necessary include the square-root, arcsine or power series transformation, which may be used when the natural log ln(x) transformation does not yield a mean greater than the variance. The data obtained in environmental site investigation (including Aerially Deposited Lead [ADL]) is frequently nonparametric. If specified in the Task Order, the Consultant shall use the Nonparametric Bootstrap Method to evaluate test data in lieu of the statistical methods outlined in U.S. EPA SW-846.

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 shall 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 (ppm) and a follow up Waste Extraction Test (WET) 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 (WET) analyses. Of the five (5) Waste Extraction Test (WET) 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 Caltrans’ right-of-way, as defined by a Variance issued by the California Department of Toxic Substance Control (DTSC) to Caltrans District for the handling ADL soils. The Consultant shall confer with the Caltrans Contract Manager or Caltrans designee prior to and during the statistical analysis if clarification is needed.

vi. Correlation of Total and Soluble (ADL) Lead Data - Total lead (TTLC) and soluble lead (STLC) 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 may 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

- 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.

- Perform linear regression analysis, as required in Task Order, using soluble lead concentrations (STLC) and total lead concentrations (TTLC). The total lead concentration (TTLC) shall represent the independent variable (x), and the soluble lead concentration (STLC) shall represent the dependent variable (y).

- 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. This estimate is easily (and routinely) done by computer. 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).

- Once the slope and the intercept are found, the line itself is known and m be plotted in the bivariate plot of the data. This graph may be used to calculate the predicted solubility concentration from the average total concentrations.

- The regression analysis shall be direction based and shall consider the analytical results for all samples as one data set in the same direction.

- The regression analysis should have a correlation (r-value) equal or greater than 0.8 (80 percentile). If the analysis indicates a correlation coefficient is less than 0.8, this shall be explained in the report or the sample procedures should be adjusted and the samples should be re-analyzed for both total and soluble lead concentrations. The best time to look at this data is at the laboratory where problems may be resolved quickly and within the Task Order schedule. The linear regression analysis shall be used to predict the
soluble lead concentration (STLC) during the 90% and 95% Upper Confidence Limit (UCL) calculation.

viii. Determine the data distribution and associated management of outliers. The appropriateness of any given method depends significantly on the distribution of the data being analyzed. The following three distributions are considered:

- Normal: the typical bell curve distribution.
- Log-Normal: a positively skewed distribution.
- Gamma: a distribution that looks similar to the log-normal distribution and is difficult to discern from the log-normal distribution for data sets with fewer than 50 samples.

If data follow one of these distributions, then application of a parametric statistical method may be appropriate. If the data do not follow one of these distributions, then a non-parametric method may be appropriate.

ix. Upper Confidence Limit (UCL) Calculation.

- General Consideration.
  - The data shall be analyzed based on the proposed data grouping stipulated in the Task Order.
  - The primary statistical element used to classify ADL-impacted soils is the 95% upper confidence level (UCL) on the mean. Consultant shall select the appropriate method of calculating the 95% UCL, including parametric methods, which are dependent on the distribution of data, and non-parametric methods, which are independent of the distribution of data.
  - 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 U.S. EPA SW-846 Manual, Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods.
  - 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.
  - 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.

- 90% and 95% total (TTLC) and soluble lead (STLC) Upper Confidence Limits (UCLs).
  - 90% and 95% TTLC and STLC UCL calculation shall be performed using the transformed values in accordance with U.S. EPA ProUCL or SW-846 guideline (the calculations shall include the appropriate data transformation).
  - 90% total (TTLC) and soluble lead (STLC) UCL shall be performed to determine if the soil should be characterized as a California hazardous waste and DTSC ADL Variance applicability for on-site soil reuse option.
  - 95% total (TTLC) and soluble lead (STLC) UCL shall be performed to determine the excess soil relinquishment requirements and/or to determine the appropriate handling and disposal of excess soil in accordance with the Health and Safety Code and disposal facility's requirement.
  - Recommendations and conclusions shall be based on the results of the statistical analysis of each grouping as stipulated in the Contract or the Task Order.
  - The Consultant shall review and utilize the applicable provisions of the Caltrans Variance for re-use of soils containing aerially deposited lead.
  - Calculate 90% and 95% UCL for discrete and combined soil layers as appropriate, based on the characteristics of the sample population.
  - If the UCL for TTLC is less than 50 mg/kg (ppm), then the calculation is complete.
  - If the UCL for TTLC is greater than 50 mg/kg (ppm) (for all layers), analyzed as follows:
    - Step 1 - Proceed by eliminating the first layer (i.e. surface layer) and re-calculate the 90% and 95% TTLC UCL for this layer. Calculate the corresponding predicted STLC using the appropriate regression analysis equation.
    - Step 2 - Perform UCL calculation for the remaining combined layers (i.e. 1 foot + 2 feet + 3 feet, etc.). Re-calculate the 90%
and 95% TTLC UCL and the predicted STLC for the remaining combined underlying layers. If the UCL is still greater than 50 mg/kg (ppm) at the combined underlying layers, perform step 3.

- Step 3 - Isolate the top 2 layers (i.e. surface and 1 foot). Considering the values of the two layers as one data set, calculate the 90% and 95% TTLC UCL(s). Calculate the corresponding predicted STLC using the regression analysis equation.

- Step 4 - Perform the UCL calculation for the remaining underlying combined layers (i.e. 2 feet + 3 feet etc.). Re-calculate the UCL for the combined underlying layers and the predicted STLC.

- Step 5 - Repeat the layer elimination process for the total investigative depths until both the 90% and 95% UCL for TTLC is less than 50 mg/kg (ppm).

- Step 6 - When ADL soil is determined to be disposed as hazardous waste, the Consultant is required to perform 95% UCL for TCLP data to evaluate whether the waste is regulated by the State of California or Federally regulated waste.


The Scope of Work under this section of the Contract includes all steps necessary to conduct an Initial Site Assessment (ISA) including, but not limited to, records review, field reconnaissance, interviews, and preparation of investigative report with conclusions and recommendations. 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 Caltrans 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 Caltrans Project Development Procedures Manual, found at http://www.dot.ca.gov/hq/oppd/pdpm/pdpmn.htm, shall not be considered as the ISA or substitute for the ISA. The ISA checklist is for guidance use only. ASTM standards 1527 and/or 1528 may also be used as guidance documents for preliminary screening purposes and 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.


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 shall 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 shall be performed by a state certified laboratory and not a separate item of work.

a. The Consultant shall perform all services required to perform site investigations.


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 not be 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, and other relevant factors 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.

15. **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 not be limited to:


b. Preparation of a Pilot Test or Bench Scale Test work plan.

c. 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.

d. Bench Scale tests shall 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.

e. Pilot Tests shall 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.

f. Limited site investigation activities may be undertaken to facilitate Bench Scale or Pilot Testing.

g. Laboratory analysis of data gathered during the Bench Scale or Pilot Test.

h. Preparation of a report, which documents the test program.


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 not be limited to:

a. Description of the site.

b. Review of the remedial investigation and feasibility study.

c. Description of the selected remedy, including:
i. Description of the selected technologies and rationale for selection performance expectations.

ii. Site topographic map and preliminary layouts.

iii. Preliminary design criteria.

iv. Preliminary process diagrams.

v. General operation and maintenance requirements.

vi. Long-term monitoring requirements.

d. Discussion of design and implementation issues:

i. Special technical problems.

ii. Identification of other project issues or constraints that may have an effect on timing or performance of the remediation.

iii. Identification of necessary permits and regulatory requirements.

e. Access, easements, and right-of-way.

f. Health and Safety Requirements:

i. Community relations activities.

g. Cost Estimate and Schedule:

i. Preliminary remediation cost estimate.

ii. Preliminary estimate of annual operation and maintenance cost and duration.

iii. Preliminary project schedule.

17. Plans, Specifications, and Estimates (WBS 235.20).

Plans, Specifications, and Estimates shall be prepared following Caltrans standards and requirements as shown in the current Caltrans Standard Specifications and Caltrans Standard Plans, which may be obtained from http://www.dot.ca.gov/hq/esc/oe/construction_standards.html. Documentation may include, but not be limited to:

a. Site-specific treatment plans and/or remediation layout.

b. Written specifications for design, equipment and materials.


d. Detailed remediation cost estimate.

e. Detailed cleanup levels.

f. Site-specific hazardous waste transportation plan.

g. Site security plan, including fencing, signs, lighting, and access requirements.

h. Any off-site requirements for storage, treatment, or disposal of hazardous wastes from the site.

i. Definition of any quality control/quality assurance requirements and preparation of appropriate QA/QC plan.

j. Preparation of all required permit applications, signature ready.

k. Detailed scheduling requirements.

l. Any transportation project order of work requirements.

m. Air monitoring, dust control requirements.
n. Operation and maintenance plan.

18. Construction Bidding Phase (WBS 255.10 & 260.80).

Procedures for advertising, awarding, and administering the construction contract shall be the responsibility of Caltrans. While the project is being advertised for bids, all questions concerning the intent shall be referred to Caltrans 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 Caltrans as to the proper procedure required. Corrective action taken shall either be in the form of an addendum prepared by the Consultant and issued by Caltrans, or by a covering change order prepared by Caltrans after award of construction contract.


a. Construction and implementation of the remedial design shall be the responsibility of Caltrans. 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.

b. The Consultant shall receive written notification of the award of a construction contract. Upon such notification, the Consultant shall proceed with the construction support phase services required by the Task Order.

c. The Consultant shall be available to attend the pre-construction starting meeting with the successful construction contractor upon notification by Caltrans.

d. 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 Caltrans and shall be at no additional cost to Caltrans. The original tracings for the drawings and construction contract wording for the construction change orders shall be submitted to Caltrans for duplication and distribution.

e. 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 Caltrans Contract Manager or Caltrans designee.

f. The Consultant shall bring to the attention of the Caltrans Resident Engineer any defects or deficiencies in the work by Caltrans’ construction contractor that the Consultant may observe.

g. The Consultant shall have no authority to issue instructions on behalf of Caltrans nor to deputize another to do so.

h. These provisions shall not be construed as holding the Consultant responsible for failure by Caltrans’ construction contractor to perform its
work in accordance with the construction contract or for the construction means or methods or techniques, sequences, procedures, or safety programs in connection with the construction work.

i. The Consultant shall be available to respond in writing to the construction contractor's inquiries through a Resident Engineer's request.

j. The Consultant shall be available to review proposed change orders and make recommendations if requested by the Resident Engineer.

20. Post-Construction Monitoring of Remedial Action (WBS 235.35)
   a. 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.
   b. Have, or be able to obtain, all the personnel, energy sources, equipment and materials necessary to comply with the provisions of the Contract throughout the Contract term. Consultant (or Subconsultant) personnel shall hold all appropriate California Contracts State License Board licenses including, but not limited to C-57 and/or C-61 licenses.
   c. The Consultant shall notify the Caltrans Contract Manager or Caltrans designee in writing at a minimum one (1) week before it begins any investigative or field work.

Y. Work Plan Preparations.

1. Basic Work Plan Preparation.

For many site investigations, Task Orders shall include the general scope of the required investigation. The Task Order shall specify the number of borings and/or wells, approximate location, Data Quality Objectives, rationale for sampling specific media, depth, sampling methodology, number of samples and test methods to be used, additional sampling points where contaminants may preferentially migrate, analytical parameters, analytical methods, and field screening methods when not specified in the Task Order relative to a contaminant source, surface and subsurface features, depth to groundwater, and site stratigraphy. 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 Task Order
Manager shall sign the work plan. The Consultant shall provide a draft work plan for the Caltrans Contract Manager or Caltrans designee to review and comment upon prior to commencing field work. The final work plan shall address all Caltrans comments and shall be resubmitted for final approval by the Caltrans Contract Manager or Caltrans designee. The draft and final work plan shall 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 Caltrans. See special provision in the Special Provisions Section, SP-2: Non-Detailed/Other Work for more information.

2. Detailed Site-Specific Work Plan Preparation.

In more complex situations, a specific project may require development of a detailed site investigation work plan/Scope of Work with—or without—subsequent field work. A Task Order shall be used to direct the Consultant to prepare the investigation work scope. The work plan/Scope of Work developed by the Consultant shall 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, number of borings, and sample analysis.
g. Revision of site investigation objectives as necessary.

The Consultant shall provide a draft work plan/Scope of Work to the Caltrans Contract Manager or Caltrans designee to review and comment upon prior to commencing field work. The final work plan/Scope of Work shall address all Caltrans comments and shall be resubmitted for final approval by the Caltrans Contract Manager or Caltrans designee. The draft and final work plan/Scope of Work shall be completed within the completion schedule presented in the Task Order. Caltrans may prepare a Work Plan in lieu of having one prepared by the Consultant or specify the scope of work in the Task Order. Caltrans Work Plan shall be attached to or included in the Task Order.

The work plan/Scope of Work shall be developed by appropriate professional personnel under the direction of the Consultant Contract Manager. Interpretation of geology, hydrogeologic, and/or hydrologic information shall be completed under the supervision of a Registered Professional Geologist or Certified Engineering Geologist licensed in the State of California in good standing with
the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period. The Registered Professional Geologist or Certified Engineering Geologist licensed in the State of California with Hazardous Waste Services experience that supervised the work shall sign the final work plan.

Once the work plan/Scope of Work has been accepted, Caltrans may issue a separate Task Order for the site investigation. The final work plan/Scope of Work shall be implemented as part of future site investigation Task Order.


A dynamic detailed work plan (DDWP) may be proposed to delineate impacted areas and achieve project goals when deemed necessary or proven to be cost effective. A dynamic detailed work plan is defined in the Contract as a work plan that provides real time data, in-field resolution of any uncertainty about sample location, and allows for the interpretation of results in the field, performance of additional sampling to complete site characterization and project objectives.


All site investigations shall require development of a site-specific Health and Safety Plan. The Consultant shall submit the plan to the Caltrans Contract Manager or Caltrans designee for review, comment, and approval at the Task Order meeting or at a minimum one (1) week prior to the start of field work. The Caltrans Contract Manager or Caltrans designee shall review the plan prior to the start of work. The Health and Safety Plan shall conform to all Federal, State, and Local regulatory requirements, and shall be signed by a Certified Industrial Hygienist including, but not limited to:

b. U.S. EPA Order 1440.3 - Health and Safety Requirements for Employees engaged in Field Activities.
d. Occupational Safety & Health (OSHA) regulations, particularly in 29 CFR 1910 and 1926.
e. State and Local regulations.
f. Other applicable U.S. EPA guidance and State regulations.

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

a. Objective and Scope of work.
b. Facility description.
c. Description of the known hazards and evaluation of the risks associated with each activity conducted.
d. Identification of key personnel and contact number and alternates for the project, including:
   i. Consultant Contract Manager.
   ii. Site safety officer (SSO).
   iii. Specific assignments for the project.
   iv. Health and safety responsibilities.

e. Job hazard analysis for each work assignment at the site, including administrative and engineering controls.

f. Summary of risk assessment for the project, including:
   i. Workers/Field personnel.
   ii. Nearby community.
   iii. Environmental receptors.

g. Air monitoring plan for the project, if applicable, including:
   i. Ambient air quality and action levels and frequency.
   ii. Assessment of community exposure.
   iii. Assessment of worker exposure.

h. Personal protective equipment selected for the project.

i. Delineation of work zones on-site and decontamination procedures for personnel and equipment.

j. Listing of general safe work practices for on-site activities.

k. Description of security measures established for the site and controlling site access.

l. 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 procedures.
   v. Location, map, and direction of nearest emergency care facilities.
   vi. Phone and communication options.
   vii. Phone numbers of key personnel.
   viii. Alternate field communication options.

m. Worker training requirements for the project.

n. Medical surveillance program for field personnel that complies with Title 8 CCR, General Industry Safety Orders, Section 5192 and Code of Federal Regulations (CFR), Occupation and Safety Health Standards, Hazardous Waste Operations and Emergency Response, Title 29 Section 1910.120.

o. Description of requirements for an environmental surveillance program.

p. Spill containment program.

q. Housekeeping, hygiene facilities, including hand wash station.

r. Worker safety training requirements for the project.

s. Description of decontamination procedures for personnel and equipment.

The Consultant shall complete all work in accordance with the site Health and Safety Plan as provided to the Caltrans 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 and certified for such activity at no cost to Caltrans. Training shall include, but not be 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 the Special Provisions Section, SP-4: Health and Safety.

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 (including, but not limited to, standard white hard hats, eye protection, approved safety vests, and work shoes) at all times while working in the field. The Site Safety Officer (SSO) (See special provision in the Special Provisions Section, SP-5: Site Safety Officer (SSO) for more information.), designated in the Health and Safety Plan shall be responsible for informing the Consultant's work crew and Consultant Task Order Manager of the need to upgrade to Level C. On-site upgrade to Level C may be determined by Photo Ionization Detector (PID) readings for gasoline contamination, or Flame Ionization Detector (FID) 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 the Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, National Institute for Occupational Safety and Health (NIOSH), OSHA, USCG, and U.S. EPA, DHHS (NIOSH) publication No. 85-115, 1985 which is found at http://www.cdc.gov/niosh/85-115.html or http://www.cdc.gov/niosh/docs/85-115/. See special provision in the Special Provisions Section, SP-4: Health and Safety for more information and additional health and safety requirements.

5. **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 special provision in the Special Provisions Section, SP-13: Traffic Control for more information and traffic control requirements.
Z. Field Activities.

1. General.

The Consultant (or the Subconsultants) shall fulfill the following requirements:

a. The Consultant shall provide and operate all traffic safety devices/vehicles, equipment, and all other work items required for or incidental and necessary to perform the field work for the investigation. The Consultant shall ensure that all necessary field materials and equipment are present and are in normal operating condition at the beginning of each workday, including performance of all required equipment maintenance and calibration.

b. Ensure that all equipment is maintained and operated in conformance with the manufacturer's recommendations.

c. Supply all water, electrical power and any other energy sources required for the Consultant's work at each site.

d. Comply with all Federal, State, and Local laws and regulations regarding trench shoring, confined space entry, and worker safety.

e. 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 at no additional cost to Caltrans.

f. Provide personnel, sampling equipment and decontamination equipment.

g. The Consultant shall have the capability to drill, core, and sample all media, including, but not limited to, well indurated, soft or poorly consolidated soil, soil backfill, asphalt concrete, concrete slab, and stockpiled soil. In addition, the drilling activity may include installation/development of monitoring wells.

h. The Consultant shall provide leak tight containers (including, but not limited to, bins, drums, and baker tanks) for storage of generated waste materials, drill cuttings, excavated materials, and liquids to prevent migration of soil and liquids from the work area. The containers shall be removed from the storage location within 60 days after the date of accumulation.

2. Data and Sample Collection.

a. A sample is defined as collection of specific media at a location (including, but not limited to, borehole, drum, and stockpile) and placement in the sample containers that shall be tested for all constituents necessary.

b. The Consultant shall provide new or certified clean containers for the collection of in- and/or ex-situ soil and water samples from borings, waste materials, drill cuttings, excavated materials, stockpiles, surface water,
groundwater, and liquids to determine types and concentrations of
constituents and proper disposal. See special provision in the Special
Provisions Section, SP-6: Decontamination and SP-7: Investigation
Derived Waste Disposal (decontamination water, well development water,
and purge water, and boring cuttings) for more information and
decontamination and disposal requirements.


When requested, the Consultant shall provide subsurface soil gas survey sampling
and analysis services. The soil gas survey 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 and vadose zone. A mobile laboratory with gas chromatographic/mass
spectrometer 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 as well as fixed gases. Soil Gas survey personnel
on site shall include a chemist or other experienced professional responsible for
equipment operation. The professionals shall be experienced in probe installation,
and collection and analysis of samples from soil gas probes.

An active soil gas survey shall be conducted in accordance with the most recent
guidance entitled, Advisory - Active Soil Gas Investigations published by the
State of California Department of Toxic Substances Control and Regional Water
Quality Control Board - Los Angeles and San Francisco Regions, April 2012, or
latest revision.

Soil Gas Investigation results are typically included as part of the site
investigation. If soil gas testing is required under a separate cover, the Consultant
shall generate reports according to the requirements outlined in the Contract.
Reports shall include a discussion of field operations, deviations from the
approved work plan, data inconsistencies, and other significant operational
details.

When requested due to insufficient airflow and suspected semi-volatile or low
volatile compounds, a passive soil gas survey may be employed utilizing probes
that remain in the ground for days or weeks to adsorb soil-gas constituents on
sorbent material.

The Consultant (or the Subconsultants) shall fulfill the following requirements:
a. 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.
b. 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.

c. Decontaminate all necessary equipment prior to sampling, upon completion of sampling and analysis, and before leaving the site. See special provision in the Special Provisions Section, SP-6: Decontamination for more information.

d. Provide a sufficient number of probes so that no equipment is reused without cleaning.

e. 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 ten (10) samples, and before reusing any sampling system component.

f. 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 and/or cubic-inch-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.

g. Backfill boreholes with local soil or granulated bentonite after sampling, and replace removed concrete or asphalt with new patch material.

h. Decontaminate all equipment per Special Provision SP-6 upon completion of sampling and analysis and before leaving the site.

i. The Consultant shall maintain a logbook, which contains pertinent sampling, environmental and technical information for each location. This log shall be provided to Caltrans as part of the soil gas survey report. The following information shall be included in the log book:

i. Time.

ii. Ambient air and soil temperature.

iii. Sample number.

iv. Sampling depth.

v. Evacuation time between samples.

vi. Flow rate (cubic centimeters per minute and/or cubic-inch-per-minute).

vii. Probe and adapter numbers and volume of the sample probe.

viii. Number of sampling points used.

ix. Observations (including, but not limited to, ground conditions, presence of concrete or asphalt, paving, soil appearance, surface water, odors, and vegetation).

x. Backfill procedure and materials.

xi. Actual sample location marked on the site map.

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 Registered Professional Geophysicist licensed in the State of California in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period, who shall be present during the pre-work site visit and during field work, and included in a formal report as an appendix to the site investigation report unless directed otherwise by the Caltrans Contract Manager and Caltrans designee.

The Caltrans Contract Manager or Caltrans designee shall 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.

Geophysical surveys results are typically included as part of the site investigation. If Geophysical testing is required under a separate cover, the Consultant shall generate reports according to the requirements outlined in the Contract. Reports shall include a discussion of field operations, deviations from the approved work plan, data inconsistencies, and other significant operational details.

The Consultant shall fulfill the following requirements:

a. Provide and operate all equipment necessary to perform geophysical surveys (including, but not limited to, ground penetrating radar, magnetic survey, electromagnetic (EM), metal detection techniques, utility surveys, and other standard techniques available) to usual maximums for specific equipment under normal conditions to identify the potential for buried objects such as unidentified utilities, drums, underground storage tanks, or other types of buried objects. Utility surveys shall be performed on property that cannot 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.

b. Procure licenses and/or permits necessary to perform the work as specified in the Task Order. See special provision in the Special Provisions Section, SP-9: Permit Fees, SP-11: Right of Entry, and SP-12: Encroachment Permits for more information.

c. Ensure that all necessary equipment, materials, and personnel are present and in normal operating condition at the beginning of each workday.

d. Ensure that equipment operators have the necessary training and certification to operate and handle geophysical devices.
5. **Trenching.**

   a. Caltrans 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, drains, or sumps. The Consultant shall provide backhoe or other earth moving equipment capable of excavating to a depth of 15 feet, shoring, stockpile liner, personnel, sampling equipment, and decontamination equipment.

   b. The Consultant shall fulfill the following requirements:
      
      i. Restore the trenching site to pre-work condition unless otherwise directed by the Caltrans Contract Manager or Caltrans designee.
      
      ii. Trenching activities shall be observed and supervised by a site Registered Professional Geologist or Certified Engineering Geologist licensed in the State of California and CIH. The subsurface geologic and geotechnical conditions found during trenching shall be logged by the site Registered Professional Geologist or Certified Engineering Geologist licensed in the State of California. Under normal circumstances, Organic Vapor Analyzer (OVA) or Photo Ionization Detector (PID) measurements shall be taken to monitor the materials excavated and the breathing zone 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 analytical tests determine that the materials are non-hazardous, they shall be returned to the trench or otherwise legally disposed of by the Consultant. The Consultant shall legally dispose of contaminated and hazardous materials. If contaminated, the material may be returned to the trench or temporarily stored as directed by the Caltrans Contract Manager or Caltrans designee and ultimately disposed of in compliance with regulatory requirements. Backfilling of the trench is included in the normal operating costs. In areas heavily contaminated with VOCs, the Consultant shall check with the local Air Quality Management District prior to excavation to determine if VOCs are at a concentration that may be excavated without remedial action. See special provision in the Special Provisions Section, SP-6: Decontamination and SP-7: Investigation Derived Waste Disposal (decontamination water, well development water, and purge water, and boring cuttings) for more information and decontamination and disposal requirements.

      iii. Non-geologic materials shall be containerized and characterized for appropriate off-site disposal by Consultant.
iv. Geologic Material removed from the trench shall be properly collected in containers or stockpiled on plastic sheeting provided by the Consultant. The Consultant shall take the necessary measures to prevent soil and liquids from migrating away from the stockpile/containers. An inspection should be performed at the start and end of each day.


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 a minimum 100 feet and 12-inch-diameter boreholes to a depth of at a minimum 50 feet. Drill rigs shall also be capable of hydraulically pushing thin-walled soil samplers or driving thick-walled soil samplers or coring sediments. In addition, drill rigs shall 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 five (5) feet (1.5-meter) 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 Caltrans Contract Manager or Caltrans designee.

a. Drilling Equipment.

In addition to the equipment requirements listed in the Contract, for all drilling methods the Consultant shall have available all necessary equipment to perform the following functions:

i. Tremie materials into boreholes.

ii. Maintain drilling fluids.

iii. Mix grout or grout mixtures.

iv. Pump grout in one continuous motion, beginning at the bottom of the space to be grouted.

v. Decontaminate drilling sections before reuse; the driller is responsible for bringing all necessary support equipment to the site.

b. Driven Bailer.

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.

c. Direct Push Drilling.

Direct push drilling method shall consist of a single or dual tube sampling system with continuous small diameter 1- to 2-inch (25.4 mm to 50.4 mm) -diameter stainless steel tubes that are pushed or vibrated into the ground and generate minimal drill cutting waste. Clear acetate sleeves, cellulose acetate butyrate (CAB) liners, polyethylene terephthalate glycol (PETG) liners, or polyvinyl chloride (PVC) liners 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 may be used from a smaller platform and is only required to drill to a maximum depth of 15 feet. Dual tube systems shall 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 (dual tube) 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 shall be required to traverse difficult terrain.

d. Hand Augering.

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 Caltrans Contract Manager or Caltrans designee. Prevailing wages are required for hand augering work that does not require geologic logging of each individual borehole. This
work falls within the “Laborer” classification. 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.

e. Sampling Capabilities.

Samples collected for laboratory analysis shall be obtained using a drive hammer sampler equipped with stainless steel sample tubes unless the Caltrans Contract Manager or Caltrans designee specifies otherwise (in writing). At the Caltrans Contract Manager’s or Caltrans 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 provision in the Special Provisions Section, SP-6: Decontamination and SP-7: Investigation Derived Waste Disposal (decontamination water, well development water, and purge water, and boring cuttings) for more information and decontamination and disposal requirements.

f. Borings/Boring Logs.

The field geologist or engineering geologist shall log all borings. Borings shall be logged in accordance with current Soil and Rock Logging Manual, Classification, and Presentation Manual (Field Guide), State of California, Department of Transportation, Engineering Service Center, Office of Structural Foundations, which may be found at http://www.dot.ca.gov/hq/esc/geotech/sr_logging_manual/srl_manual.html Soil and Fill materials shall be logged for content, color, texture, moisture content, and cultural items. At a minimum, samples for logging purposes shall be taken every five (5) feet or when encountering changes in lithology, staining, or odors. 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 and the location surveyed or recorded using GPS. The Consultant Task Order Manager or designee (Registered Professional Geologist or Certified Engineering Geologist licensed in the State of California) shall sign the final boring logs.
All emplacements shall be overseen, described, and signed in the field log by the field geologist or engineering geologist. The Consultant Task Order Manager shall also review and sign the final field log.

The field log shall include, but not be 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 Caltrans Contract Manager or Caltrans designee.

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 Caltrans Contract Manager or Caltrans designee and as required by permitting agencies and in accordance with the State of California, Department of Water Resources, California Well Standards, in Bulletins 74-81 and 74-90 which may be accessed at http://www.water.ca.gov/groundwater/well_info_and_other/well_standards.cfm. Payment for backfilling is included as part of the cost of drilling.

Sample collection shall be performed in accordance with “Soil Sampling” Section.

Upon refusal, Consultant shall make two (2) additional attempts to collect the soil sample before abandoning the proposed location. The additional attempts shall involve moving laterally away from the borehole location one (1) to five (5) feet to avoid the obstruction and use the hand auger to collect the soil samples. Stockpile sampling shall follow the U.S. EPA Environmental Response Team Guidance: Standard Operating Procedures, Waste Pile Sampling (March 13, 2003).

If the Consultant prefers to use alternate drill rigs or samples, a written notification shall be provided and shall be approved by the Caltrans Contract Manager or Caltrans designee at cost proposal preparation stage and/or initial Task Order meeting prior to the field work.

When proven beneficial and cost effective, other direct push technology (e.g. direct drive, drive point, or push technology) to perform subsurface investigations may be used. When choosing the soil sampling equipment, the Consultant shall consider the ability of the sampler to collect samples for lithological description, geotechnical characterization, or chemical analysis. Potential of a sample contamination with a specific sampler shall be considered. Selection of direct push equipment shall consider the methods for sealing direct push holes to prevent spread of contaminants.
7. Surveying.

a. Third Order Surveys.

Third order surveys may be performed under the supervision of a Registered Professional Land Surveyor (PLS) licensed in the State of California in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period as part of a Task Order work scope. When required in the Task Order, locations shall be surveyed for X, Y and Z coordinates. Unless specified by the Caltrans Contract Manager or Caltrans designee, the horizontal (X and Y) coordinates shall be surveyed to the nearest 1/2 inch, with the vertical (Z coordinate) measured to the nearest 0.1 inch. The California Coordinate System 1983, epic 1991.35 (CCS 83[1991.35]) coordinates shall be calculated for each location. All vertical measurements shall be based on the North American Vertical Datum of 1988 (NAVD 88) or as required in Caltrans Surveys Manual. Unless otherwise specified in the Task Order, all survey data shall be submitted in Microsoft Excel (version 97 or newer) spreadsheet format, ASCII file, and GIS-ready (Arc/Info or ArcView) format, should include description, X, Y and Z data, and be sufficiently accurate to locate the borehole and shall be reported in Decimal Degree format. When noted in the Task Order survey data shall be submitted in GIS-ready format.


The Consultant shall provide site boundary and borehole locations within six (6) inches accuracy in either geographic coordinates North American Datum (both vertical and horizontal datum) or California State Plane Coordinates CCS 83 (1991.35) datum. Unless otherwise specified in the Task Order, the GPS survey data shall be submitted in Microsoft Excel (version 97 or newer) spreadsheet format, ASCII file, and GIS-ready (Arc/Info or ArcView) format, and should include description, X, Y and Z data. The locations of collected field data for each boring, sample, test, and drilling performed shall be provided in one of the following digital electronic formats (as directed by the Caltrans Contract Manager or Caltrans designee):

i. Arc/Info or ArcView Geographic Information System files.
ii. Trimble SSF or RINEX Global Positioning System files.
iii. Microsoft Excel spreadsheet format (version 97 or newer).
iv. Delimited text files.
v. MicroStation (CADD) files.
vi. Microsoft Access database format provided by the Caltrans Contract Manager.

All borings specified in a Task Order possess a unique identity predefined by the Caltrans Contract Manager.

Borehole Naming Convention - Boreholes shall bear names consisting of a 3 or 4 digit unique identification number assigned by the Caltrans Contract Manager followed by a dash and the sequential boring number beginning with "101." (Example: for a set of borings where the assigned Unique ID is 526, the borehole names would be 526-101-0.15, 526-101-0.3, 526-102-0.15, 526-102-0.3, etc.).

This information shall be submitted in a digital electronic format via email, CD-ROM or other digital electronic storage device, along with the final written report. If requested by the Caltrans Contract Manager or Caltrans designee, Microstation (CADD) files shall be included in the report.

8. Well Installation and Development and Temporary Wells (piezometer).

Monitoring wells may be required to determine if ground water contamination is present, the type, concentration, and 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. Consultant shall submit for review and approval, a Work Plan for design and construction of monitoring well to obtain water samples representative of the formation water. Monitoring wells shall include the following elements:

a. Prior to drilling and installation of wells, the Consultant shall obtain necessary well permit(s). Copies of these permits shall be included in the final work plan and final reports.

b. 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.

c. Payment for field sieve analysis is included in the cost of well installation.

d. 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 integrated 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.

e. Grout shall be mixed in correct proportions so as to not affect ground water chemistry.

f. Grout shall consist of approximately 5% bentonite and 95% cement.

g. Bentonite and/or grout shall not be allowed to free fall down the annular space if greater than five (5) feet deep.

h. Centralizers shall be used when wells are not completed within a hollow stem auger.

i. Monitoring wells shall not provide a conduit for cross-contamination of water bearing zones.

j. 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.

k. Screen lengths shall be appropriate to the monitoring task and shall meet regulatory agency requirements.

l. Wells shall be designed to meet the appropriate regulatory agency requirements.

m. Wells shall be completed so as to prevent surface water from entering the well or ground water table.

n. A third order survey shall be completed by a Registered Professional Land Surveyor (PLS) licensed in the State of California in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period as required in the Caltrans Surveys Manual. All monitoring wells shall be surveyed for X, Y and Z coordinates. Horizontal (X and Y) coordinates shall be surveyed to the nearest 1/2 inch, with the vertical, or top of PVC elevations (Z coordinate) measured to the nearest 0.1 inch. The California Coordinate System - CCS 83 (1991.35) coordinates shall be calculated for each well. All vertical measurements shall be based on NAVD 88 datum. Elevations of the groundwater table shall be calculated based on the top of casing elevations and depth to water measurements. A reference point (notch or mark) shall 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 one (1) inch. The groundwater elevation data shall be used to determine the direction and gradient of groundwater flow beneath the site.

o. Wells shall be developed after construction by surging with a vented surge block, or equivalent technology, as approved by the Caltrans Contract Manager or Caltrans designee, and pumped to remove sediments.

p. Wells shall be surged and pumped as often as necessary to produce sediment free water samples (with a goal of less than 10 Nephelometric Turbidity Units (NTUs). The Consultant shall measure turbidity in NTUs once per hour during development and once at the end of development.
The Consultant shall keep a well development log documenting time, development method, temperature, pH, conductivity, NTUs, 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.

q. The Consultant, prior to drilling and installation of wells, shall obtain necessary well permit(s). Wells shall be registered by the Consultant with the California Department of Water Resources. Copies of these records shall be included in the final Task Order report.

r. Boring and well cuttings placed in drums and well development water shall be collected and containerized for off-site disposal may be stored at the site or transported to a storage site in the vicinity.

s. 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 cannot 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 Caltrans Contract Manager or Caltrans 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.


The Consultant shall destroy PVC wells in accordance with applicable state and local requirements (DWR Bulletins 74-81 and 74-90 which are found at http://www.water.ca.gov/groundwater/well_info_and_other/california_well_standards/well_standards_content.html). Reports of well destruction shall be filed with the California Department of Water Resources (per the requirements of California Department of Water Resources, Bulletin 74-81 and Part III section 19, A-1, 2a), which may be accessed at: http://www.water.ca.gov/groundwater/well_info_and_other/well_standards.cfm, and local agencies if required. Copies of these reports shall be included in the
draft and final report. Caltrans shall provide site access when necessary. Neat cement (5% bentonite, 95% cement by volume) or sand cement shall be used to decommission wells. Well abandonment shall not commence until Caltrans approves a Work Plan submitted by the Consultant.

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 Caltrans Contract Manager or Caltrans designee.

10. Soil Sampling.

The objective of soil 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) where appropriate and practical. Soil samples obtained using the Standard Penetrometer Test shall be accomplished according to ASTM D 1586-84 which may be found at http://www.astm.org/Standard/index.shtml or http://webstore.ansi.org. Soil samples obtained using rotary drilling methods and the Standard Penetrometer Test shall be accomplished according to ASTM Standard D1586-11. Thin-walled Shelby tube samples shall be obtained in accordance with ASTM D 1587-83 which may be found at http://www.astm.org/Standard/index.shtml or http://webstore.ansi.org and 1587-08. Soil samples obtained using direct push soil sampling equipment shall be accomplished in accordance with ASTM Standard D6282-98(2005). Cost for equipment and supplies, including, but not limited to, sample barrels, tubes, liners, 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 Caltrans Contract Manager or Caltrans designee on a case-by-case basis may revise this requirement. At the discretion of the Caltrans Contract Manager or Caltrans 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. Reused sampling equipment shall be decontaminated before and after each use with a mild non-phosphate detergent and triple rinsed. The last rinse shall be with deionized water. No fluids shall be introduced into sample boring except in special cases approved by the Caltrans Contract Manager or Caltrans designee. Sample tubes shall be capped with Teflon film or aluminum foil and plastic caps, sealed with appropriate taping (not electrical or duct tape),
marked to indicate depth interval and top/bottom, and preserved immediately at 39°F (4°C). When soil is to be analyzed for other contaminants, preservation shall be in accordance with the procedures specified in U.S. EPA SW-846 for that particular constituent. 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 Caltrans Contract Manager or Caltrans designee for approval before proceeding with the waste extraction test (WET).

In some cases soil samples shall be obtained using U.S. EPA Method 5035, which may be found at http://www.epa.gov/osw/hazard/testmethods/sw846/pdfs/5035.pdf, the Closed-System Purge-and Trap and Extraction for Volatile Organics in Soil and Waste Sample. Consultant shall collect samples for volatile organic compounds (VOC) analysis using soil sample syringes to collect 5-gram aliquots of soil from the target sampling depth. The sub-cored soil sample shall then be extruded from the syringe into pre-labeled 40-mL volatile organic analysis (VOA) vials, containing pre-measured quantities of preservatives (such as methanol and sodium bisulfate) as described in U.S. EPA Method 5035. The vials shall be kept in an upright position at all times to ensure sample remains submerged in the preservative. The Consultant shall 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 U.S. EPA Method 5035. If the Task Order does not require the Consultant to prepare a work plan, sampling locations and depths at which samples are to be collected shall be provided in the Task Order. When sampling locations and depths are not defined in the Task Order, the Consultant shall provide a work plan with the rationale for each sampling location and depth.

It is the Consultant's responsibility to be aware of any special handling procedures, or collection or preservation requirements to obtain high quality, defensible data. Data collection and/or analysis not consistent with the procedures specified in U.S. EPA SW-846, the Contract, and the Task Order shall not receive reimbursement.


Water samples may be taken from surface sources, undeveloped borings made by hollow stem auger, direct push, Cone Penetrometer Test (CPT) systems, temporary wells, or from monitoring wells. Samples taken from undeveloped borings shall be obtained with clean, dedicated or decontaminated stainless steel or Teflon bailers within the hollow stem auger 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 (VOC) containers, and preserved immediately at 39°F (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-free product is present, the well shall be sampled to determine if such a product exists before purging the well to test for dissolved constituents.

The objective of groundwater sampling is to obtain a representative sample of the groundwater to determine the types of contaminants and concentrations. The Consultant shall communicate with the laboratory regarding the analyses required on samples and any special criteria for performing the analyses.

The pre-sampling activities (i.e. measurement of static water level elevation, detection of immiscible layers, well purging), selection and use of sampling equipment, collection of samples, in-situ or field analyses, samples containers, preservation, and handling, chain-of-custody and records management, analytical methods, field and laboratory quality assurance and quality control, documentation for sampling, and evaluation of the groundwater monitoring data shall conform to the California Department of Toxic Substances Control Guidance manual: Representative Sampling of Ground Water for Hazardous Substances, July 1995.

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 Caltrans if Quality Assurance/Quality Control (QA/QC) data shows any of the following:

a. Cross contamination has occurred.
b. Sample collection and handling or analytical tests were not consistent with the procedures specified in U.S. EPA SW-846, the Contract, Task Order, and/or approved work plan.
c. Samples were held too long before analysis.
d. Samples were compromised while in the custody of the Consultant prior to delivery for analysis.
e. Any chain of custody violation. Payment shall be denied for unapproved chemical testing.


The scope of services under this section of the Contract includes surveying, inspection, and testing, as applicable, of above ground or underground storage tanks, buildings, structures, miscellaneous structures, stored materials, tank contents and containers to determine whether hazardous waste or other materials are present. Typical surveys would include Asbestos Containing Materials (ACM) in buildings, bridges, and utilities; Lead-based paint on surfaces of bridges, buildings, and yellow traffic striping; Polychlorinated biphenyls (PCB)-containing materials in transformers, equipment and containers; inspections for fuels and other chemicals in tanks, barrels, and storage containers; and Hazardous materials being used or stored in buildings or structures.

a. Asbestos Survey.

Prior to demolition, the Consultant shall conduct a pre-sampling survey of all accessible areas of structures and facilities to determine the presence of ACM requiring removal.

In the asbestos survey Work Plan, the Consultant shall provide documentation that Consultant’s personnel who conduct asbestos surveys have, as a minimum, current Asbestos Hazard Emergency Response Act (AHERA) training for building inspections and sampling, and that they comply with Title 8, California Code of Regulations certification requirements for asbestos Consultant and site surveillance technicians. After the Work Plan has been submitted and reviewed by Caltrans, representative samples of suspect materials shall be taken, as delineated in the Task Order and Work Plan, and analyzed using State-certified laboratory procedures.
b. Lead-Based Paint Survey.

The Consultant shall conduct a pre-sampling survey of all accessible areas of structures and facilities to determine the presence of lead-based paint and the condition of paint. The use of an XRF analyzer may be used to help identify what materials are to be tested for lead. Samples may be collected from bridges, buildings, yellow traffic striping and other surfaces as directed by the Task Order.

In the survey Work Plan, the Consultant shall provide documentation that personnel who conduct lead surveys have, as a minimum, current Certified Lead Inspector/Assessor training for building inspections and sampling and that they comply with California Department of Public Health Services (Title 17, CCR, Sections 36000 and 36001). After the Work Plan has been submitted and reviewed by Caltrans, samples representative of the suspect painted material (including, but not limited to, wood, steel, asphalt, concrete, dry wall, or other painted materials) shall be analyzed using State-certified laboratory procedures. Paint chip samples may be placed in individual containers, including self-sealing plastic bags, or glass jars.

c. Tanks, Barrels, Storage Containers Survey.

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 Caltrans, 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 Caltrans Contract Manager and Caltrans designee.
AA. Laboratory.

1. General Information.

Laboratories performing chemical analyses shall be certified by the California Department of Public Health Services Environmental Laboratory Accreditation Program (CDPHS-ELAP) for the specific laboratory test methods listed in List of Chemical Analyses. The Consultant shall provide a current CDPHS-ELAP certification and Fields of Testing for all Contract test methods throughout the life of the Contract. For specific test methods not as yet certified by CDPHS-ELAP, the laboratory may perform laboratory analysis only if presently certified by CDPHS-ELAP for comparable test methods (for example, volatile organics, semi-volatile organics or other specific hazardous substances), or if it is a currently certified U.S. EPA Contract laboratory. Water sample analysis shall be considered to include, but not be limited to, surface water, ground water, rinse water, monitoring, well samples, other water sources, and other required contract components. Standard turnaround time for chemical analysis shall not exceed five (5) business days. Expedited laboratory turnaround time may be required at the discretion of the Caltrans Contract Manager and shall be specified in the Task Order.

All laboratory costs shall be borne by the Consultant. Laboratories shall be physically located within the Contract Region in which the Task Order work is being performed. Under extenuating circumstances, laboratories outside the Contract Region in which the Task Order work is being performed may be used with written permission from the Caltrans Contract Manager. The Consultant shall be responsible for sample transport from worksite to the laboratory, 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.

Remaining and unused portions of samples shall be stored in a chilled state 39°F (4°C) 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 Consultant and/or laboratory.

Retention of samples beyond the 30-day period following the last analysis for a sample or set of samples and additional laboratory work not listed in List of Chemical Analyses shall be performed by the Consultant only when the Caltrans Contract Manager or Caltrans designee provides a written request to the Consultant.
The Consultant and the laboratory shall be responsible to provide clear and accurate explanation of analytical results including graphical presentations and summaries of the validated laboratory data in reports.

Consultant shall be responsible for validation of all analytical data and provide a summary of the level of data validation and findings in the report. The data validation procedure shall be based on the principles of the U.S. EPA National Functional Guidelines (U.S. EPA 2008, 2010, 2011) and were designed to ensure completeness and adequacy of the data set. The Consultant shall contact the Caltrans Contract Manager or Caltrans designee to check and verify the level (such as Level I, II, or III) of data validation required for the data quality objective if the level is not specified in the Task Order. The data validation report shall be part of the draft and final investigation report submittals.

2. Caltrans Samples.

Situations may arise that require Caltrans personnel to collect field samples for laboratory analysis. The samples shall primarily be soil samples collected for ADL investigations but may include other constituents of concern and water samples as determined by Caltrans. Caltrans may also require analysis of soil or water samples acquired as split samples.

When requested, the Consultant shall provide new sample containers, labels, and blank chain of custody forms to the Caltrans Contract Manager or Caltrans designee.

Caltrans shall be responsible for sample collection, sample container labeling, preservation of the sample, and filling out the chain of custody form. The Consultant shall be responsible for arranging sample transport from the project site or Caltrans office to the designated laboratory and maintaining chain of custody.

3. Mobile Laboratory.

Mobile laboratories shall be certified by the CDPHS-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.

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 shall be collected by pouring de-ionized water onto the sampling device and into a laboratory container.

ii. For water or soil sampling events, one (1) trip blank for every ice chest or sample shipment container. Water samples shall require one (1) laboratory prepared trip blank for each individual group of water samples transported to the laboratory. Soil samples collected by U.S. EPA Method 5035 shall require vials containing the same preservative that the soil samples are preserved in (including, one (1) vial with methanol, two (2) vials with sodium bisulfate, or all three). The contents of each ice chest or refrigerated container constitute an individual group of water or soil samples. The trip blank is a clean water or soil 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.

iii. A trip or travel blank consists of sample containers, which are filled in the laboratory with purified water, taken into the field, and added to each cooler before it is transported to the laboratory. These travel blanks are especially important for volatile samples in which other samples containing high concentration of contaminants of interest may leak in the cooler and contaminate other samples. Travel blanks are generally not used for other contaminants.

iv. Field blanks consist of purified water such as High Performance Liquid Chromatography or pesticide grade water or pesticide grade water which is taken into the field and transferred from the water container to the individual sample containers in the field as a check on contamination in the atmosphere at the site. If the purified water is also poured through sampling equipment before being added to the sample containers, the field blanks may also substitute for equipment blanks. Field blanks, when deemed necessary shall be collected at the frequency of one per sampling day.

v. When deemed necessary, or at the request of the Caltrans Contract Manager or Caltrans designee, background samples may be collected from the site. Background samples are to be collected in the exact manner as the regular samples. Background samples may be used as a quality control sample, especially for non-aqueous samples, to look for sampling or laboratory effects on
concentration. The more common use for background samples is to establish a background concentration for parameters, which occur in the area of the site, and distinguish between site-specific related contamination and naturally occurring or anthropogenic contaminant levels.

vi. Background samples shall be collected for each medium investigated. These samples shall be collected at or near the site but not in areas likely to be influenced by contamination from the site or operations from nearby sites. These samples shall be collected from locations up gradient or up-stream of any suspected contamination or source areas. A minimum of four (4) locations to determine the average concentration that is not a result of releases from the site. The number and locations may be determined in the field or pre-selected prior to field work. The minimum number or samples may be increased at the discretion of the Caltrans Contract Manager or Caltrans designee. Under no circumstances are the samples collected in areas of potential contamination to be considered as background samples.

vii. When deemed necessary or at the request of Caltrans, the Consultant shall collect field replicate samples. Field replicates may either be co-located samples or split samples. Replicates shall be collected at a minimum frequency of five (5) percent (%), with a minimum of one (1) duplicate per day, whichever is greater.

b. Laboratory QA/QC.

Quality Assurance/Quality Control (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 if more frequent, with spike made at ten (10) times the detection limit or at the analyte level.

Where the test method does not specify QA/QC procedures, all of the above shall 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/samples shall be considered laboratory contaminants. It shall be the laboratory’s responsibility to determine if the laboratory processes introduced these chemicals to the samples or if they are valid detections. The mere presence of common laboratory contaminants in the sample is not sufficient to conclude that the detections are the result of laboratory contamination. An evaluation of the data is necessary to support any such claims. If the detections are the result of laboratory contamination, measures shall be taken by the laboratory to correct the problem. A discussion of suspected laboratory contamination, the evaluation, determination, and corrective measures taken shall be included in the report.

With the draft Site Investigation report, the Consultant shall submit to Caltrans the laboratory’s written discussion documenting QA/QC evaluation and analytical checks.

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

The discussion in the report shall provide information on the guidance used to evaluate analytical results.

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

The detection limits used shall be at or below the regulatory limits and/or action levels whichever is lower. Analytical methods used for each sample and matrix shall be specified in the report.


The QA/QC summary reports shall include:
i. Temperature of incoming samples.

ii. Constituent/analyte.

iii. Specific test method.

iv. Date (include holding timetable for more than 50 samples).

v. Detection limit of the specific test method (mg/kg or mg/liter).

vi. Percent accuracy.

vii. Percent precision.

viii. Signature of laboratory manager or director.

e. GeoTracker Requirements.

Some Task Orders shall include investigation at sites under State Water Resources Control Board (SWRCB) oversight. Analytical results, data and reports for these Task Orders shall be submitted by the Consultant to the SWRCB GeoTracker program which may be accessed at http://www.waterboards.ca.gov/ust/electronic_submittal/. Caltrans shall obtain a third party authorization for the purpose of uploading the groundwater information. Costs to laboratories and Consultants shall be compensated based on actual cost.

f. List of Chemical Analyses.

i. (ICAP) U.S. EPA method 6010.

ii. Any single element, including lead.

iii. ARB Method 435.

iv. Aromatic and Halogenated Volatile Organics.

v. CA Waste Extraction Test (WET).


vii. Chlorinated Herbicides.

viii. Combined GC/MS for Volatile Organics.


xi. U.S. EPA 8000 series (GC only).

xii. U.S. EPA 8000 series (GC/MS).

xiii. Ethylene Glycol.

xiv. Filtration for dissolved constituents.

xv. Fish Bioassay.


xviii. GC/MS for Fuel Oxygenate Compounds.

xix. GC/MS for Semi-volatile Organics.

xx. GC/MS for Volatile Organics.

xxi. Hydraulic Conductivity.

xxiii. Inorganic element analysis - element.
xxiv. Inorganic element analysis - Extraction.
xxv. Moisture Content.
xxvi. Nonhalogenated Volatile Organics.
xxvii. Oil and Grease.
xxviii. Organochlorine pesticides.
xxix. Organolead: per Title 22.
xxx. Organophosphorus Pesticides.
xxxi. PCB’s.
xxxii. Phased Contrast Microscopy.
xxxiii. Phenols.
xxxiv. Polaris Light Microscopy (PLM).
xxxv. Polynuclear Aromatic Hydrocarbons.
xxxvi. Semivolatile organic compounds.
xxxvii. Sieve Analysis.
xxviii. Soil pH.
xxix. Specific Gravity.
xl. Total and Amenable Cyanide.
xli. Total Dissolved Solids.
xlii. Total Organic Carbon.
xliii. TPH Oil: Modified U.S. EPA 8015.
xlv. Turbidity in NTUs.
xlvi. Unit Weight (Bulk Density).
xlvii. Volatile organic compounds.
xlviii. WET Analysis.
xlix. Lead.

BB. Report Requirements.

1. Reporting Format.

See minimum reporting requirement based on the type of investigation. The Consultant shall follow the reporting format specified below:

a. Title sheet shall identify the Contract and Task Order numbers, all Expenditure Authorizations (EA’s) and Project Numbers (EFIS) included in the report, project name, project location (shown in Postmile), Consultant name, name and title of author, and date prepared.

b. Signature page shall include signature, title, professional registration seal, registration number, and expiration date of the Registered Geologist, Professional Engineer, or Certified Engineering Geologist licensed in the State of California in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times.
during the Contract period responsible for the report and is the Consultant
Task Order Manager.
c. Table of Contents.
d. Executive/Investigative Summary - This section shall present and
summarize the findings of the report/investigation.
e. Project Description - This section shall provide a brief description of the
project for which the work was undertaken, the objective(s) of the work, a
short chronology of the site activities, a summary of the previous site work
and item of work completed for the work.
f. Site Description including physical setting (geology, hydrogeology,
hydrology, topography of site), location, legal description, site and vicinity
characteristics, current use of the property, structures, roads, use of
adjacent properties, maps, and copies of aerial photos.
g. Investigative Methods - This section shall describe in detail the field
methods used for the investigation work and any deviation from the work
plan. This section shall also include a description of the investigative
methodology employed including test procedures employed for the
investigation purpose.
h. Investigative Results and Field Observations - This section shall include a
discussion of the conditions observed during the investigation, including
site geology, historic data, hydrogeologic conditions, observed during the
investigation, laboratory analytical results, and chemical test results (to be
further described in “Laboratory” and “Laboratory Test Reports”
Sections). The data shall be presented clearly and concisely, including
reference to previous work or results, and shall be summarized in table
form.
i. Field deviation - includes discussion to address field deviation from the
scope of the Task Order/work plan and the justification for the deviation.
j. Field and Laboratory QA/QC information/discussion - Laboratory Data
Validation Report shall be required for all Task Orders. Description of the
measures that were implemented to ensure high quality and defensible
data was obtained. Both field and laboratory procedures and any
corrective action taken to correct problems need to be discussed.
k. Decontamination Procedures - description of the procedure for reusable
equipment and analytical results of equipment blanks.
l. Chain of Custody forms.
m. Discussion regarding the effects of contamination found in the laboratory
QA/QC samples and method blanks.
n. Conclusions and Recommendations - This section shall describe the type,
lateral and vertical extent, estimated amount, and concentration of
contamination present in the soil, soil vapor, surface water, and/or ground
water. Regulatory concentration limits and level of any detected
contamination shall be clearly identified and the impact of such limits to
the project assessed. Recommendations shall be provided, clearly
describing the next phase of investigation or no further investigation required, and the rationale for the recommendation. Recommendations for any necessary additional work to characterize the site and the estimated cost of that work shall be included in this section.

o. Appendices - Reports shall contain, or be accompanied by appendices that contain, all data used to support statements of the report including, but not limited to:

i. Well and boring logs for both existing and new well and soil borings. This includes all wells that may influence hydrogeologic 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 California Department of Water Resources, county regulatory agencies, or other applicable permits.

iii. Laboratory analysis of each sample tested. Laboratory reports shall include copies of completed and signed Chain of Custody forms that contain required U.S. EPA and California Department of Public Health Services information, Laboratory incoming sample receipt form, and test report cover letter signed by the Laboratory Quality Assurance Officer or responsible personnel. The Laboratory reports shall include a narrative of any laboratory quality assurance test discrepancy with an evaluation of the reliability and usability of the data. (See “Laboratory Test Reports” Section for reporting requirements).

iv. Tables containing the data for each type of contaminant and media sampled.

v. Maps, cross-sections, photographs.

vi. 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.

vii. Reference List.

2. Initial Site Assessment (ISA) Reports /Phase I Environmental Site Assessment (ESA, Phase I ESA) Report.

The reporting format shall conform to what is specified in ASTM Standard E1527-05 or its latest revision and Caltrans Initial Site Assessment Guidance Documents to identify the recognized environmental conditions from present and past activities for selected sites and adjacent properties.

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

a. Title sheet shall identify the Contract and Task Order numbers, all Expenditure Authorizations (EA’s) and Project Numbers (EFIS) included
in the report, project name, project location (shown in Postmile), Consultant name, name and title of author, and date prepared.

b. Signature page shall include signature, title, professional registration seal, registration number, and expiration date of the Registered Geologist, Professional Engineer, or Certified Engineering Geologist licensed in the State of California in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period responsible for the report and is the Consultant 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 provide a brief description of the project for which the investigation work was undertaken, the objective(s) of the work, a short chronology of the site activities, a summary of the previous site work and item of work completed for the work.

f. Background section including:

i. Aquifer descriptions (depth to ground water, gradient, flow direction, conductivity, yield, quality and beneficial uses). Public sources such as California Department of Water Resources (DWR) reports, area site investigations, and United States Geologic Survey (USGS) reports shall be typical sources for this information.

ii. Geologic units. Geologic and Hydrologic information should be scaled to the freeway project. The shallow subsurface conditions, for less than five (5) feet, shall have the greatest impact on construction. However, this does not preclude the Consultant from providing information on subsurface conditions greater than 50 feet in the vadose and saturated zones.

iii. Location and use of ground water monitoring wells in the project vicinity. Public sources such as the California Department of Water Resources, Regional Water Quality Control Boards, cities, and counties will have well records.

iv. A detailed description of contaminated sites identified in the records review, including the source, type and concentrations of contaminants, lateral and vertical extent of contamination, and active or past remedial actions including impact to the regional groundwater contamination, if any.

g. Historical background summary.

h. Investigative narrative including:

i. Investigative methods and evaluation criteria.

ii. Known hazardous waste sites (include data including, but 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, including, but not limited to, sludge pits, ponds, underground or aboveground storage tanks, other container, and other variables.
   - 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.

i. Maps including site features, topography, corresponding symbols, locations of all borings and wells, and physical features such as geologic units, aquifer descriptions, and depth to ground water. All maps shall have title blocks, scale and north arrow. The Consultant shall obtain the Caltrans Contract Manager’s approval of map scales.

j. 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).

k. The Consultant may be required to perform preliminary endangerment assessment (PEA) work. If the suspected contamination is impacted by the project, a description of how the suspect site will affect public health and the surrounding environment shall be required.

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 personnel 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.


Historic research reports that are prepared for Initial Site Assessments (ISAs) 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.

4. Phase II Site Investigation Reports.

The site investigation report at a minimum shall include the following items in the format described:
a. Title sheet shall identify the Contract and Task Order numbers, all Expenditure Authorizations (EA’s) and Project Numbers (EFIS) included in the report, project name, project location (shown in Postmile), Consultant name, name and title of author, and date prepared.
b. Signature page shall include signature, title, professional registration seal, registration number, and expiration date of the Registered Professional Geologist, Professional Engineer, or Certified Engineering Geologist licensed in the State of California in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period responsible for the report and is the Consultant 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, the objective(s) of the work, a short chronology of the site activities, a summary of the previous site work and item of work completed for the work.

f. Introduction -This section shall include the general objectives of the investigation, a short chronology of site activities, a summary of the previous site work, and items of work completed for the investigation.

g. Site Description including physical setting (geology, hydrogeology, hydrology, topography of site), location, legal description, site and vicinity characteristics, current use of the property, structures, roads, use of adjacent properties, maps, and copies of aerial photos.

h. Investigative Methods - This section shall describe in detail the field methods used for the investigation work and any deviations from the work plan.

i. Investigative Results and Field Observations -This section shall include a discussion of the conditions observed during the investigation, including site geology, historic data, hydrogeologic conditions observed during the investigation, laboratory analytical results, and chemical test results (to be further described in “Laboratory” and “Laboratory Test Reports” Sections). The data shall be presented clearly and concisely, including reference to previous work or results, and shall be summarized in table form.

j. Field deviation - includes discussion to address field deviation from the scope of the Task Order/work plan and the justification for the deviation.

k. Field and Laboratory QA/QC information/discussion - Laboratory Data Validation Report shall be required for all Task Orders. The Laboratory Data Validation Report shall include a description of the measures that were implemented to ensure that high quality and defensible data was obtained, and a discussion of both field and laboratory procedures and any corrective action taken to correct problems.

l. Discussion regarding the effects of contamination found in the laboratory QA/QC samples and method blanks.

m. Description of any contacts with regulatory agencies or personnel.
n. Internal Data Validation - The Consultant shall perform data validation for each Task Order. Data validation shall be performed in conformance with U.S. EPA Region IX Data Validation Guidance.

o. Data Evaluation and Discussion - Site investigation results shall be evaluated in the report. Data evaluation shall include:
   i. Maps showing the site, topography, 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 Caltrans Contract Manager’s or Caltrans designee’s approval of map scales.
   ii. Site maps with sample points and depths indicated, concentrations that exceed action levels and/or regulatory limits noted and depth and contaminant specific concentration contours demonstrating source areas, including the locations of any field tests.
   iii. Cross sections showing subsurface structural features, geologic and hydrologic conditions, sampling 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.
   iv. Charts showing contamination levels of soil, soil vapor, surface water, and/or ground water in specific, identifiable locations.
   v. Consultant shall use Trimble Pathfinder Pro XR or XRS or comparable GPS unit to record the locations. Positions shall have a horizontal accuracy of less than one meter. Features shall be collected as point, line or area features based on need including: 1. Trimble format raw data files (.ssf) and 2. corrected data files (.cor). Corrected data shall be submitted in two (2) formats: 1) Point data as latitude/longitude, WGS 1984 datum and decimal-degree units, and 2) US State Plane 1983, for the appropriate CA zone, and have units of meters.
   vi. Data that has a spatial reference and is included in mapping for the project shall be delivered in shapefile format. Coordination shall be made with the Caltrans GIS specialist in order to receive basemap data for the subject mapping, and to address coordinate system and attribute requirements for the shapefiles. The final product delivered to Caltrans shall include a standard writeable CD labeled with project information and CD contents that includes the final report, maps, GPS information and tables.
   vii. 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 or requested by the Caltrans Contract Manager, the Consultant shall
provide additional photographs that document the progress of the investigation and any significant areas or activities.

viii. Statistical analysis of sampling results, estimating trends, contaminant distribution, and average concentration.

ix. Maps, cross sections, and graphs that shall be supported by data and shall be included in the reports.

x. Summary of laboratory results.

xi. Table summarizing all sampling results, including sample location, media, sample depth, field and laboratory identification numbers, and analytical results.

xii. GPS data collection and results.

p. Conclusions and Recommendations - This section shall describe the type, lateral and vertical extent, estimated amount, and concentration of contamination present in the soil, soil vapor, surface water, and/or ground water. Regulatory concentration limits and level of any detected contamination shall be clearly identified and the impact of such limits to the project assessed. Recommendations shall be provided, clearly describing the next phase of investigation or no further investigation required, and the rationale for the recommendation. Recommendations for any necessary additional work to characterize the site and the estimated cost of that work shall be included in this section.

q. Identification of Consultant and Subconsultants personnel performing work, including resumes, if this information was not provided in the cost proposals or work plan.

r. Appendices- Reports shall contain, or be accompanied by appendices that contain, all data used to support statements of the report including, but not limited to:

i. Well and boring logs for both existing and new well and soil borings. This includes all wells that may influence hydrogeologic 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 California Department of Water Resources, county regulatory agencies, or other applicable permits.

iii. Laboratory analysis of each sample tested. Laboratory reports shall include copies of completed and signed Chain of Custody forms that contain required U.S. EPA and California Department of Public Health Services information. Laboratory incoming sample receipt form and test report cover letter signed by the Laboratory Quality Assurance Officer or responsible personnel. The Laboratory reports shall include a narrative of any laboratory quality assurance test discrepancy with an evaluation of the reliability and usability of the data. (See “Laboratory Test Reports” section for reporting requirements).
iv. Tables containing the data for each type of contaminant and media sampled.
v. Maps, cross-sections, photographs.
vi. 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.
s. Reference list.

5. Groundwater Monitoring Well Installation Reports.

The monitoring well installation reports shall include the following items specific to drilling activities:
a. Summary of Procedures - drilling, construction, development and sampling procedures, including type and size of drilling rig, screen, casing, and equipment used for collecting samples, and other drilling procedure documents.
b. Maps - includes a map showing well locations and adjacent pertinent structures.
c. Well Data - includes monitoring well as-built construction diagrams, well construction details, diameter and total depth of borings and wells installed, drilling fluids used, well logs with soil description, daily well drilling details, wellhead elevations, wellhead completion information, grout mixture, methods of grout emplacement, casing length, screened intervals and depth, locations of centralizers, sanitary seals, and filter pack material.
d. X, Y and Z survey data.
e. A Registered Geologist or Certified Engineering Geologist licensed in the state of California in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period shall certify that the well was installed in compliance with all appropriate regulatory requirements.

6. 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. Analytical results for samples taken from permanent monitoring wells shall be uploaded to the State Water Resources Control Board GeoTracker digital electronic reporting system. The following shall be included as appendices, as appropriate to the investigation or as specified by the Caltrans Contract Manager or Caltrans 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.
i. Purge water disposal documentation.
j. Geotracker submittal confirmation number.

7. Soil Gas Survey Reports/Soil Gas Investigation Reporting Requirements.

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. Title sheet shall identify the Contract and Task Order numbers, all Expenditure Authorizations (EA’s) and Project Numbers (EFIS) included in the report, project name, project location (shown in Postmile), Consultant name, name and title of author, and date prepared.

b. Signature page shall include signature, title, professional registration seal, registration number, and expiration date of the Registered Geologist, Professional Engineer, or Certified Engineering Geologist licensed in the State of California in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period responsible for the report and is the Consultant Task Order Manager.

c. Executive Summary - Summarize the findings of the report.

d. Data Evaluation - Detailed description of field activities, any deviations from the work plan, analytical methods used, laboratory analytical results, source areas, lateral and vertical extent of vapor contaminant plume, special distribution of volatile organic compounds (VOCs) in the subsurface and recommendations for additional work.

e. Maps showing location of the soil vapor probes, other relevant site features, such as boring and monitoring well locations, boring logs, vapor probe construction diagrams, cross sections incorporating information from the vapor sampling, and iso-concentration maps. Maps and cross sections shall include title blocks, scales, and north arrows.

f. 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.

g. Description of Soil Gas Survey/Daily Work Description Summary.
i. Daily logs of sampling procedures and results.
ii. Chronology of daily sampling and probe hole logs.
iii. Documentation of borehole filling procedures.

h. Quality Assurance/Quality Control (QA/QC) Summary.
   i. description of procedures, results, corrective action taken and
effect on data, field and laboratory, leak check, purge volume test,
surrogates, vacuum test, duplicate samples, blanks, etc.
ii. table comparing QA sample results with known QA sample
centurations.

i. Decontamination Procedures - description of the procedure for reusable
equipment and analytical results of equipment blanks.

j. Log Book.
   i. Sample date and time.
   ii. Ambient air and soil temperature.
   iii. Weather conditions.
   iv. Sample number.
   v. Sample depth.
   vi. Evacuation time between samples.
   vii. Flow rate (cubic centimeters per minute).
   viii. Probe and adapter numbers and volume of the sample probe.
   ix. Number of purge volumes, leak check test compounds; surrogates
used, locations of duplicate samples.
   x. Number of sampling points.
   xi. Observations (including, but not limited to: ground conditions,
presence of concrete, or asphalt paving, soil appearance, surface
waters, odors, vegetation).
   xii. Backfill procedure and materials.
   xiii. Digital Electronic data deliverables submitted in the format
specified by the regulating agency.

8. Geophysical Reports.

A Registered Professional Geophysicist licensed in the State of California in good
standing with the California State Board for Professional Engineers, Land
Surveyors, and Geologists at all times during the Contract period shall sign
gеophysical 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 and Data Evaluation shall be presented in a manner that
may be interpreted by a layperson including the use of common language
to describe anomalies, use of graphics, and explanations of how the
geophysical tool works. Specific information Specific information
includes:
   i. Maps showing the survey area with property or site boundaries.
ii. Mapping at a scale no smaller than 1:1000.

iii. Identification of sampling points for magnetometer surveys measured at no greater than five (5) feet intervals, unless the Caltrans Contract Manager or Caltrans designee approves greater intervals.

iv. Cross sections along lines of investigation illustrating subsurface conditions, delineating the boundaries, man-made objects, and others as appropriate.

v. QA/QC - instrument calibration, verification, corrections, interferences.

b. Description of field work.

c. Interpretation of all data, conclusions, and recommendations for additional work.

d. Microsoft Excel or ASCII-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 Caltrans Contract Manager or Caltrans designee.

e. Raw data if requested by the Caltrans Contract Manager or Caltrans designee.

f. A thorough discussion of field work and any deviations from the work plan. Limitations of the geophysical methods and equipment employed.

9. 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 trench and subsurface conditions with color photographs and sketches to illustrate subsurface features.

b. A description of the field activities, type of equipment used for excavation of trench, area used to store excavated materials, backfill operations, implementation of Health and Safety Plan.

c. A summary table of OVA (Organic Vapor Analyzer) and PID (Photo Ionization Detector) readings, when they were taken, measurement times, and summary tables of the sample results.

d. A map showing the trench locations, trench logs showing sampling locations within the trenches, as well as other relevant site features, such as boring and monitoring well locations, stratigraphy, changes in lithology, and structural features, and cross sections incorporating information from the trench log and sampling. Maps, logs, and cross sections shall include title blocks, scales, and north arrows.

e. Data Evaluation shall provide 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.

f. Copies of required permits for trench excavation.
10. Risk Based Corrective Action (RBCA) Reports.


b. Tier 1 or Tier 2 evaluations may be completed as directed in the Task Order.


11. 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 Caltrans Contract Manager or Caltrans designee when requested. Chromatographs, graphical presentations and summaries of the laboratory data shall be provided with the laboratory reports at no additional cost to Caltrans. The Consultant shall keep the chromatographs on file and shall provide them upon Caltrans’ 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 (including, 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. U.S. EPA Region IX’s current Preliminary Remedial cleanup Goals (PRG) for industrial sites for the contaminants of concern when requested by the Caltrans Contract Manager or Caltrans designee.

r. Signature and title of the director of the laboratory.


The Remedial Action Options Report shall be a separate report, which includes a review of all potentially feasible remedial actions and their potential costs. The review shall be of sufficient depth and breadth for Caltrans 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 a minimum of 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 Caltrans.

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 may be chosen and designed, the Consultant shall describe them in the report.
13. Survey Reports.

This section describes standard reporting requirements for all types of surveys (including, but not limited to, asbestos, lead-based paint, PCBs, containers, barrels, tanks, and any other survey type required by the Contract).

The report shall include, but not be limited to:

a. Title Sheet shall identify the Contract and Task Order numbers, all Expenditure Authorizations (EA’s) and Project Numbers (EFIS) included in the report, project name, project location (shown in Postmile), Consultant name, name and title of author, and date prepared.

b. Signature page shall include signature, title, professional registration seal, registration number, and expiration date of the Registered Professional Geologist, Professional Engineer, or Certified Engineering Geologist licensed in the State of California in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period responsible for the report and is the Consultant 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, the objective(s) of the work, a short chronology of the site activities, a summary of the previous site work and item of work completed for the work.

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 Field Observations - This section shall include a discussion of the conditions observed during the investigation, including site geology, historic data, hydrogeologic conditions, observed during the investigation, laboratory analytical results and chemical test results (to be further described in “Laboratory” and “Laboratory Test Reports” Sections). The data shall be presented clearly and concisely including reference to previous work or results, and shall be summarized in table form. It shall include, but not be limited to, a discussion of at least the following items:

i. Location of items including, but not limited to, Asbestos Containing Material (ACM), lead-based paint, Polychlorinated biphenyls (PCB), barrel(s), tank(s), and other potential hazardous materials.
ii. Estimated quantities of items including, but not limited to, ACM, PCB, barrel(s), tank(s), and other potential hazardous materials.

iii. Type of material (including, but not limited to, 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 - including, but not limited to, barrels, and 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 Caltrans Contract Manager or Caltrans designee.

i. Chemical Test Results - As stated in - “Laboratory” and “Laboratory Test Reports” Sections.

j. Naturally-occurring asbestos laboratory results shall include point counting, as per California Air Resources Board (ARB) Method 435, Section 7, which may be found at http://www.arb.ca.gov/toxics/asbestos/tm435/tm435.htm.

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 including, but not limited to:
   i. Copies of permits needed to gain access to site (if applicable).
   ii. Laboratory analysis of each sample tested. Laboratory reports shall include copies of completed and signed Chain of Custody forms that contain required U.S. EPA and California Department of Public Health Services information. Laboratory incoming sample receipt form and test report cover letter signed by the Laboratory Quality Assurance Officer or responsible personnel. The Laboratory reports shall include a narrative of any laboratory quality assurance test discrepancy with an evaluation of the reliability and usability of the data. (See “Laboratory Test Reports” section for reporting requirements.

m. The Survey Report shall include a discussion of waste disposal requirements, including waste classification, packaging requirements,
USDOT transportation requirements, manifesting and generator ID requirements.


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

a. Title sheet shall identify the Contract and Task Order numbers, all Expenditure Authorizations (EA’s) and Project Numbers (EFIS) included in the report, project name, project location (shown in Postmile), Consultant name, name and title of author, and date prepared.

b. Signature page shall include signature, title, professional registration seal, registration number, and expiration date of the Registered Geologist, Professional Engineer, or Certified Engineering Geologist licensed in the State of California in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period responsible for the report and is the Consultant Task Order Manager.

c. Table of Contents.

d. Executive/Investigative Summary - This section shall present and summarize the findings of the report/investigation.

e. Project Description - This section shall provide a brief description of the project for which the work was undertaken, the objective(s) of the work, a short chronology of the site activities, a summary of the previous site work and item of work completed for the work.

f. Investigative Methods -This section shall describe in detail the field methods used for the investigation work and any deviations from the work plan.

g. Investigative Results and Field Observations - This section shall include a discussion of the sediment conditions observed during the investigation, including site geology, historic data, hydrogeologic conditions observed, during the investigation, laboratory analytical results, and chemical test results (to be further described in “Laboratory” and “Laboratory Test Reports” Sections). The data shall be presented clearly and concisely, including reference to previous work or results, and shall be summarized in table form.

h. Data Evaluation and Discussion - Site investigation results shall be evaluated in the report. The data evaluation and discussion shall include, but not be limited to, 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. The Caltrans Contract Manager shall approve map scale. Map sheets supplied by the Caltrans
Contract Manager shall have the Engineer's stamp removed from the maps used in the report.

ii. Table of laboratory results showing total and soluble lead levels in soil samples with specific locations identified. Extraction ratio for total versus soluble shall be included.

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 limit (UCL) percentiles of the total lead and soluble lead distributions (as specified in the Task Order) shall be calculated and presented.

iv. Calculated lead distributions using the current statistical method as specified in the Contract or by Caltrans including a diagram showing concentrations expected in each layer of soil, a graph showing the total versus soluble lead levels and a least squares (or other method) regression line, a determination of the concentration and show the total and soluble lead concentrations that would be expected in each layer of soil depending on how the various levels of soil were segregated, and comparison data to California Code of Regulations (CCR) Title 22 Criteria and DTSC ADL Variance. The statistical results shall be clearly described in the text.

v. Data supporting all maps, cross sections, photographs, and graphs shall be included in the reports.

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 ADL Variance requirements or exceptions.

i. Identification of Consultant and Subconsultants personnel performing work, including resumes, if this information was not provided in the cost proposals or work plan.

j. Laboratory analysis of each sample tested. Laboratory reports shall include copies of completed and signed Chain of Custody forms that contain required U.S. EPA and California Department of Public Health Services information, Laboratory incoming sample receipt form and test report cover letter signed by the Laboratory Quality Assurance Officer or responsible personnel. The Laboratory reports shall include a narrative of any laboratory quality assurance test discrepancy with an evaluation of the reliability and usability of the data. (See “Laboratory Test Reports” Section for reporting requirements).

k. At a minimum one representative typical cross-section shall be prepared showing average statistical lead concentrations (80% UCL and 95% UCL) for both TTLC and STLC data, relative to the depth and distance from the edge of roadway pavement.
15. Soil Boring Reports.

Reports shall include the following specific documentation:

a. Summary of Procedures - description of type of augers used and sample collection procedures.
b. Maps showing boring locations and adjacent structures.
c. Soil boring data.
d. Soil boring logs with soil classification and certifying signature.
e. Soil boring details, including surface elevations, number of borings, depths, diameter, backfill materials, and methods of grout emplacement after sampling.
f. Field QA/QC and Laboratory Data Validation Report.


All plans, specifications and quantity calculations shall conform to Caltrans’ requirements and shall be made available to Caltrans at stages specified in the Task Order milestones schedule, or upon request by the Caltrans Contract Manager.

   i. Construction details for each design shall be prepared on Caltrans plan sheets. Blank reproducible sample plan sheets or digital electronic copies shall be provided by Caltrans.
   ii. Digital Electronic plan files shall be submitted to the Caltrans Contract Manager or Caltrans designee. Compression of the files may be required using PKZip (.zip) version 2.04. Information on zip compression may be accessible at: [http://www.winzip.com](http://www.winzip.com).
   iii. Construction details shall be submitted as Microstation 5.* and above (.dgn) files shall 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](http://www.dot.ca.gov/hq/oppd/cadd/usta/caddman/english/toc.htm).
   iv. Each plan sheet shall bear the Registered Professional Engineer licensed in the State of California registration seal in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period 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 Registered Professional Engineer licensed in the State of California in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period. 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 Registered Professional Engineer licensed in the State of California registration seal in good standing with the California State Board for Professional Engineers, Land Surveyors, and Geologists at all times during the Contract period with the signature, license number and registration certificate expiration date of the Design engineer and independent check engineer.

viii. All analytical results, plans, designs, specifications, estimates, notes, calculations, analysis, reports, graphics, drawings, visual simulations, studies, product, data, manuals, details, deliverables, backup documents, other documents, and other items required by the Contract shall be submitted in both hardcopy and unprotected and modifiable digital electronic files in the Caltrans-approved forms and in the Caltrans-approved and designated digital electronic formats, in accordance with the guidelines in the Contract and each Task Order, and shall conform to Caltrans standards and the requirements of the Caltrans Office Engineer at the end of Contract or when requested by the Caltrans Contract Manager or Caltrans designee. The unprotected and modifiable digital electronic files shall include the responsible person’s digital electronic signature and seal. The Consultant shall verify the latest version of software used prior to submittal. The Consultant shall also provide plot parameter (.par) or IPARM (.i) files in accordance with I-Plot standards.

ix. All digital electronic software(s) developed, database generated, spreadsheet, and intellectual properties developed during the life of the Contract shall become the property of Caltrans.

b. Project Specifications.
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.


iii. Included in the Special Provisions shall be a construction contract item list for each structure along with a construction 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.


c. Project Estimates.


ii. Standard construction contract pay items are available to the Consultant on the Caltrans Policy and Guidelines web site. Additional construction contract pay items may 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 construction 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.

CC. Special Provisions.

The Consultant shall adhere to the following Special Provisions:

1. SP-1: Caltrans and Consultant Representation.

a. The Caltrans Contract Manager or Caltrans designee shall monitor the work performed by the Consultant under each Task Order. The Caltrans
Contract Manager or Caltrans designee may consult with and be advised by representatives of the applicable State and/or Local regulatory agencies for the purpose of directing the Consultants’ work about hazardous waste site investigation standards and cleanup goals necessary for the performance of the Contract.

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 Task Order Manager or the Consultant’s Field Supervisor shall be present when a Subconsultant is performing field work. Field work includes geophysical, asbestos survey, lead survey, drilling, trenching, sampling, mobile laboratory analysis, and drum removal.

2. SP-2: Non-Detailed/Other Work

a. The Consultant shall perform items of work not mentioned or completely detailed in the Contract, those are necessary or normally required as part of a Task Order development process, without additional compensation from Caltrans. Examples of items of “non-detailed or other work” are work plan development and work plan estimates.

b. Caltrans 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, Caltrans may amend the Task Order to add the additional requirements and costs in accordance with the Contract and address unforeseen and changed conditions at the project site.

3. SP-3: Investigation Completion Schedule.

a. A preliminary investigation completion schedule based on the overall project schedule requirements shall be included in the Task Order offered to the Consultant. The Consultant may request a schedule modification if the requested schedule cannot be met. The Caltrans 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 field work.
   v. Complete field work.
   vi. Task Order progress meetings.
   vii. Draft report.
viii. Transmit Final report.
c. As work progresses, the schedule may be amended and updated as agreed between the Consultant and the Caltrans Contract Manager.

4. SP-4: Health and Safety.

For the Initial Site Assessment, Site Investigations, Surveys, Inspections and Testing, and any field work, the Consultant shall apply the following:

a. The Consultant shall be solely responsible for the health and safety protection of its employees, Subconsultants, and Subconsultants’ employees in performance of the Contract. The Consultant shall require all Subconsultant’s Health and Safety Plan to be consistent with the Health and Safety Plan prepared for the Task Order. Caltrans assumes no responsibility for the health and safety of the Consultant or its Subconsultant employees or other non-State employees.

b. All work performed by the Consultant shall conform to all applicable occupational health and safety rules, statutes, laws, codes, regulations, policies, procedures, ordinances, standards, specifications, performance standards, and guidelines, established by the State of California and the U.S. Government as applicable and safety instructions issued by Caltrans in the performance of the Contract. The Consultant shall be responsible for implementation of measures needed for the protection of field personnel.

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 shall be signed by a Certified Industrial Hygienist. During site investigation activities, a site safety officer (SSO) shall be designated and shall 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 personnel 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, the Consultant’s personnel, or Subconsultant’s personnel with the site Health and Safety Plan is grounds for suspension of the work without cost to Caltrans during that time, or for termination of Contract per Exhibit D, Section III, Termination of the Contract.

f. The Consultant shall provide safe access to the Task Order worksite for the Caltrans Contract Manager or Caltrans designee and representatives of the applicable state and/or local 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 (SSO) shall accompany the representatives while on the site.

g. All hazardous materials survey work may require the presence of the Certified Industrial Hygienist (CIH) who developed and approved the Health and Safety Plan.

5. **SP-5: Site Safety Officer (SSO).**

a. The Consultant shall designate a Task Order specific site safety officer (SSO) for each Task Order and site that is under active investigation. The site safety officer (SSO) shall present the Health and Safety Plan and provide and implement pre-field work safety awareness training in accordance with the Health and Safety Plan before the start of work. A site safety officer (SSO) or designated representative shall be present at all times at each site under active investigation. The site safety officer (SSO) shall be familiar with and shall be responsible for implementing the hazardous waste laws and regulations in California and with California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA) and Federal OSHA requirements.

b. The site safety officer (SSO) or designated representative shall be available to accompany and provide safe access to the work-site for the Caltrans Contract Manager or Caltrans designee and/or representatives of the applicable Federal, State, and/or Local regulatory agencies during normal work hours or while they are on-site. Designated observation areas outside the work zone shall be established for these site visits.

c. The site safety officer (SSO) shall direct the implementation and operation of the Health and Safety Plan. The site safety officer (SSO) shall enforce compliance with the Health and Safety Plan by all persons while they are on-site.

6. **SP-6: Decontamination.**

a. All personnel and equipment 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 to remove all residuals 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 shall be replaced or repaired at the Consultant's expense. Site cleanup shall be completed to the satisfaction of the Caltrans Contract Manager or Caltrans designee.

7. SP-7: Investigation Derived Waste Disposal (decontamination water, well development water, purge water, and boring cuttings).

   a. The Consultant shall properly collect decontamination water, well development water, purge water, and boring cuttings in water tight containers including, but not limited to, drums/dumpsters, other containers. 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 at a permitted facility located in California within 21 days after results of laboratory chemical analysis from the investigation are available to the Consultant. Soils found to be clean/non-contaminated may be disposed of at an appropriate permitted disposal facility in California on the Task Order site, depending on site conditions, or other sites acceptable to the Caltrans Contract Manager or Caltrans designee. No liquid or solid wastes shall be allowed to enter storm drains or water ways. Trash, rags, tyvec, disposable PPE, or similar materials shall not be disposed of with the cuttings.

   b. Failure to remove storage containers within the prescribed 21-day time frame shall result in per-day liquidated damages as detailed in the applicable Task Order and not pay the Consultant until storage containers are removed. Caltrans may have such work completed in any way allowed by law, for which the Consultant shall be liable for any additional costs incurred by Caltrans to complete the work. Such costs may be deducted from amounts due to the Consultant in pending or future
invoices, or if the Contract is terminated, may be recouped by any means allowed by law. The Consultant’s storage and disposal of contaminated material shall be paid by Caltrans.

c. Task Order work under the 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, Order No. 99-06-DWQ, No. CAS000003, issued by the State Water Resources Control Board. This permit, hereafter referred to as the “Permit,” regulates storm water discharges associated with construction activities.

d. For ADL investigations, Consultant may use judgment to determine if IDW soil and water are non-hazardous waste and may be disposed on-site (soil placed back in borehole or spread around borehole, decontamination and ground water poured onto ground and allowed to infiltrate) as specified in the U.S. EPA publication OSWER Directive 9345.3-02 entitled "Management of Investigation-Derived Waste During Site Inspections". If Consultant determines that IDW are hazardous waste, then the IDW shall be disposed as specified in the Contract.

8. SP-8: Project Diary/Time sheets.

a. A Project Diary shall be maintained and prepared by the Consultant Contract Manager and/or the Consultant Project Engineer to document the conditions of all work performed under the Contract and a specific Task Order. 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. Contract and Task Order numbers, all Expenditure Authorization (EA’s) and Project Numbers (EFIS), and date prepared.

ii. Project name and location (shown in Postmile).

iii. Name and title of the personnel performing the work, including Subconsultants.

iv. Name of Consultant or Subconsultant performing work.

v. Date work is performed.

vi. Actual start and end times of work.

vii. Description of work being performed.

viii. Additional notations, observations, or remarks (such as field deviations from Task Order or work plan and rationale) to further characterize the site.

ix. Clarify work being performed.

b. The Consultant is required to submit a daily field notes to the Caltrans Task Order Manager with the required information incorporated.

c. A copy of the signed project diary shall be included with invoices submitted for payment to support all hours shown as billed on the invoice.
Copies of actual time sheets (signed) and certified payroll records shall be furnished to the Caltrans Contract Manager to substantiate hours submitted for payment.

9. **SP-9: Permit Fees.**

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

10. **SP-10: Site Access.**

During work hours the Consultant shall provide the Caltrans Contract Manager (or Caltrans designees) with safe access to the worksite during the field investigation and shall furnish, at no cost to its employees, Caltrans employees, and visitors, adequate safety equipment and personal protective equipment for such visits at the project site. The worksite is defined for these purposes as the areas of the site generally outside of the immediate exclusion zone in which such work as drilling is taking place. Mandated minimum safety equipment and Personal Protective Equipment shall include hard hats, safety vests, eye protection, tyvec coveralls, gloves, and boot covers. The Consultant shall be prepared to furnish these appropriate safety equipment and personal protective equipment 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 Caltrans Contract Manager or Caltrans designee.

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

For Contract work on property not owned or controlled by Caltrans, all permits, agreements, and permissions shall be obtained by Caltrans in the advance of Consultant’s activities, however:

a. The Consultant shall not enter property or facilities not owned by Caltrans without prior permission or permit obtained through Caltrans.

b. The Consultant shall notify Caltrans, in writing, in advance of their need to enter upon private 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 conditions imposed by the Caltrans Contract Manager and requirements set forth in the Permit To Enter.

The conditions of the Permit to Enter to the property shall be communicated to the Consultant during the Task Order meeting.
12. SP-12: Encroachment Permits.

For Contract work on Caltrans’ Right-of-Way, an executed contract constitutes the consultant’s “Encroachment Permit.” The Consultant (prime as well as any Subconsultants) shall carry a copy of the fully executed Contract along with the pertinent Task Order(s) at all times while conducting work for Caltrans within Caltrans’ Right-of-Way.


Traffic control (barricades, portable flashing beacons, and detours) necessary to accomplish the Contract work within Caltrans’ right-of-way shall be performed by the Caltrans unless the Consultant is directed to provide traffic control in the Task Order. When Caltrans is to provide the traffic control, the Consultant shall request traffic control in advance of the work and obtain proper clearance. Traffic control, which is necessary outside of Caltrans’ right-of-way, shall be the responsibility of the Consultant in coordination with the appropriate local agency.


The Caltrans Contract Manager or Caltrans designee shall sign all Hazardous Waste Manifests for hazardous waste removed from the site. The Consultant shall not sign the Hazardous Waste Manifest as the waste generator.

15. 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 shall be given to the Caltrans Contract Manager or Caltrans designee prior to the start of any field work. The information shall be documented in the final report. In Northern and Southern California the Consultant should call 1-800-642-2444, 1-800-227-2600, or 811. USA should respond within 48 hours.

16. SP-16: Cost.

The Consultant shall bear the cost of meeting the conditions of the Special Provisions (SP). The Consultant shall provide all technical personnel, labor, material, equipment, tools, field and office support services and incidental items necessary to accomplish any or all of the items of work.
DD. Remediation System Evaluation, Monitoring, and Reporting.

1. Introduction.
   a. The purpose of these services is to evaluate, monitor, and report on remediation systems installed to mitigate past releases from underground storage tanks, indiscriminate dumping of wastes or other sources. Mitigation or treatment processes shall vary and may include physical, chemical, thermal and biological.
   b. The purpose of these services is to maintain compliance with applicable laws and regulatory agencies. Applicable Federal laws and regulations may include, but not be limited to, Comprehensive Environmental Resource Compensation and Liability Act (CERCLA), Superfund Amendment and Reauthorization Act (SARA), and Resource Conservation and Recovery Act (RCRA). State and Local laws and regulations may include, but not be limited to those of the following agencies:
      i. Regional Water Quality Control Board.
      ii. Department of Toxics Substance Control.
      iii. Integrated Waste Management Board.
      iv. Local Air Pollution Control Districts.
      v. Local Environmental Health Department.
   c. The scope of environmental remediation services that may be carried out under a Task Order encompasses the methods and activities necessary to evaluate, monitor, and report on the operation of the installed remediation systems to the appropriate regulatory agency. Using professional judgment, the Consultant shall recommend any repairs or modifications identified during the system monitoring and evaluation in the report to ensure that reports prepared for regulatory agencies are complete and representative of system operation.

2. General Requirements.
   a. The Consultant shall review the Plans and Specifications, along with any Evaluation Monitoring Plan, that are provided by Caltrans for any remediation system prior to evaluating, monitoring, or reporting on the operation of any remediation system to regulatory agencies.
   b. Caltrans shall rely on the Consultant’s expertise in recognizing problematic issues and make recommendations to address those issues.
   c. The Consultant shall perform all work in accordance with Federal, State, and Local statutes and regulations.
   d. Recommended remedies shall conform to environmental permits, decision document requirements and other applicable legal requirements.
   e. The Consultant shall identify all necessary approvals and permits, prepare signature-ready permit applications, and track the status of permit applications, as specified in each Task Order.
f. The Consultant shall document and report on monitoring activities when requested by the Caltrans Contract Manager, and shall evaluate and advise Caltrans personnel on how to perform certain activities including operation, maintenance, repair, and reporting, as required.

g. Monitoring activities shall be planned and implemented in a manner that protects existing site utilities, structures, surface features, service operations, monitoring and other types of wells and other the general site environment. This includes the protection of trees, shrubs, and other vegetation.

h. The Consultant shall conduct all activities with the intent of reducing the amount of pollution generated.

i. Specific areas to be focused on are generation of solid waste, use of hazardous materials, use of ozone depleting chemicals, generation of hazardous waste and use of energy and water.

3. Specific Requirements.
   a. The Consultant shall be capable of and provide engineering support with sufficient resources (either through in-house personnel or Subconsultant’s personnel) to perform all required or requested activities including, but not limited to:
      i. Assure compliance with Federal, State, and Local laws and coordinate with Federal, State, and Local regulatory agencies when applicable.
      ii. Evaluate and monitor system performance.
      iii. Prepare reports for Caltrans and/or regulatory agencies.
      iv. Analyze and track system operation and performance.
      v. Recommend system enhancement.
      vi. Identify maintenance needs of remediation system, components and media.
      vii. Collect environmental samples, analyze samples, and interpret the results in accordance with Federal, State, and Local regulatory requirements and protocols.
      viii. Furnish site-specific health and safety plans.
      ix. Electronically submit laboratory data (in compliance with AB 2886) to the State Water Resources Control Board (SWRCB Geotracker) on behalf of Caltrans.
      x. Final reports shall include a confirmation number provided by the SWRCB that signifies the data was received.
      xi. Obtain or maintain required permits.
      xii. Provide field reviews and reconnaissance of the remediation enclosure.
      xiii. Furnish and deliver all materials necessary to perform monitoring.
      xiv. Provide technical support to ensure the systems operate at optimum performance.
xv. Provide remediation recommendations with the goal of achieving site closure and No Further Action from the regulatory agencies as cost-efficiently as possible.

b. Specific remediation systems and remedial actions that the Consultant may encounter include, but not be limited to:
   i. Containment.
   ii. Soil vapor extraction.
   iii. Enhanced bioremediation.
   iv. Pump and treat.
   v. Ozone sparging.
   vi. Air sparging.
   vii. Bioventing.
   viii. Natural attenuation.
   ix. Excavation.

c. The Consultant shall evaluate, and may occasionally make recommendations to revise elements of a remediation system as necessary, for effective and/or efficient performance of the system. Any recommended modifications shall be in concurrence with regulatory permit(s) and requirements and existing plans and specifications.

d. The Consultant shall provide engineering support to ensure that installed remediation systems are monitored for optimum system performance. The Consultant may be requested to develop manuals to operate and maintain new or modified systems and components.

e. When required, the Consultant shall develop and update a long-term operation and maintenance plan to maintain the effectiveness of the remediation systems.

f. The Consultant shall provide engineering or geologic support to evaluate and assess the remediation of impacted media, to document performance of the remediation technologies or comply with regulatory requirements.

g. The Consultant shall report results, conclusions, and recommendations to Caltrans and/or regulatory agencies. The Consultant shall collect samples from any media necessary to document system performance.

h. The Consultant shall interpret and evaluate data to determine the appropriate level of treatment and determine if any modifications to the system or operating parameters as required by subsurface conditions or regulatory agency direction are needed.

i. When conducting engineering evaluation of a treatment technology or remediation method, the Consultant may develop and implement a sampling plan for the treatment facilities and/or the zone of remediation.

4. Sampling.

a. The Consultant shall supply:
   i. An example of how the samples are to be collected including what laboratory will be performing the sample analysis.
ii. For each sample location, the constituents and pollutant parameters for which chemical analyses will be obtained.

iii. The method(s) of chemical analysis to be used.

iv. A description of the quality assurance (QA) and quality control (QC) procedures including the specific QA/QC samples to be taken.

v. An estimate of analysis cost of sufficient detail to allow Caltrans to make decisions on the value of each sampling point.

vi. All sampling activities shall have a quality assurance program to verify data credibility. Data may be for field and laboratory work.

5. Reporting.
   a. As specified by the Task Order, Evaluation and Monitoring reports may include:
      i. Narratives and maps of geologic cross sections and groundwater tables.
      ii. Summary of all activities actually performed during evaluation and monitoring including field data collection, chemical testing, and remediation system monitoring.
      iii. Regulatory criteria standards and cleanup goals for the subject site.
      iv. Summary of the results of site activities.
      v. Chemical sampling and analysis data.
      vi. Remediation and monitoring system modification capabilities, performance, operational information, system failures, and adjustments made to the remediation system during the reporting period.
      vii. Comparison of the results to applicable cleanup levels and relevant historical groundwater monitoring and chemical data.
      viii. Conclusions and recommendations with regard to the results of evaluation and monitoring activities conducted at the site.
     ix. Recommendations and explanations regarding future monitoring, remedial action or closure at the site identified in Task Orders.

EE. Remediation System Design.

1. The Consultant shall provide professional engineering services to design remediation systems as specified in a remedial action plan or similar document. This includes preparation of plans and specifications of such quality and detail that the remediation may be constructed from those plans and specifications.

2. Specific remediation systems that the Consultant may be tasked to design include, but not be limited to:
   a. Containment.
   b. Soil vapor extraction.
c. Enhanced bioremediation.
d. Pump and treat.
e. Ozone sparging.
f. Bioventing.
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<th>Project ID</th>
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<td>08-1600-0167 Mountain View Street Improvement Project at I-10</td>
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<tr>
<td>1K740</td>
<td>08-1900-0095 METHACRYLATE BRIDGE DECKS, REPLACE JOINT SEALS, SLOPE PAVING REPAIR AND MINOR SCOUR MITIGATION REPAIR</td>
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<td>08-1900-0100 METHACRYLATE BRIDGE DECKS, REPLACE JOINT SEALS AND SOFFIT AND COLUMN REPAIR</td>
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<td>1H180</td>
<td>08-1600-0170 RIV 91 INTERCHANGE MODIFICATIONS</td>
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<td>1F400</td>
<td>08-1400-0215 UPGRADE BRIDGE RAILS AND WIDEN 2 BRIDGES</td>
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<td>08-1800-0020 ASSET MANAGEMENT PROJ W/ PAVEMENT AS ANCHOR. THE SATELLITE ASSETS ARE: LIGHTING REHAB, OHSS SIGN PANEL REPLACEMENT, OHSS REHAB, UPGRADE CURB RAMPS, IMPROVE ROADSIDE SAFETY. REPL existing approach slabs &amp; POLYESTER OVERLAY</td>
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<td>08-1800-0200 MILL &amp; OVERLAY PAVEMENT, REPLACE/REHAB CULVERTS, SIGN PANELS, SIGN STRUCTURES &amp; LIGHTING &amp; UPGRADE CURB RAMPS</td>
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