**Indian Institute of Technology, Madras,**

 **Chennai-600036**

 **Department of Civil Engineering**

Ref. No. CIE/Drilling /2016/SPLX dated 14.7.2016

 To

 DUE DATE: 08.08.2016



Sirs,

1. Quotations are invited **in duplicate (Two bidding covers)for** the **item/s shown as per enclosed Specifications.**

2. The quotations duly sealed and superscribed on the envelope with the reference No. & due date, should be addressed to Dr.Indumathi Nambi, Associate Professor, **EWRE Division, Department of Civil Engineering, Indian Institute of Technology, Chennai-600036, India** and contain in 2 bid system i.e. Technical bid and Commercial bid in two separate envelopes and these two envelopes should be enclosed in a Single envelope so as to reach on or before the due date.

3. The quotation should be valid for (60) Sixty days from the due date and the period of delivery required should also be clearly indicated.

4. If the item is under DGS&D Rate Contract. Rate Contract Number and the price must be mentioned. It may also please be indicated whether the supply can be made direct to us at the Rate contract price. If so, please send copy of the R.C. (Please note that we are not Direct Demanding Officers)

5. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the quotations, wherever applicablesamples if called for, should be submitted free of charges, and collected back at the supplier’s expenses.

6. Firms outside Chennai: Quotations should be for F.O.R. Chennai. If F.O.R. consignor station, freight charges by passenger train/lorry transport must be indicated. If-Ex-Godown, packing forwarding and freight charges must be indicated.

7. Local Firms: Quotations should be for free delivery to this Institute. If quotations are for Ex­godown, delivery charges should be indicated separately.

8. The rate of Sales/General Taxes and percentage of such other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. Where this is not done, no claim for any Sales / General taxes will be admitted at any stage and on any ground whatsoever. The taxes leviable should take into consideration that we are entitled to have Concessional Sales Tax applicable to Non-Government Educational Institutions run with no profit motive for which a concession. Sales Tax Certificates will be issued at the time of final settlement of the bill. The Price should be quoted without Excise Duty; Since IIT Madras is exempt from payment of Excise duty.

 9. Goods should be supplied by carriage paid and insured.

 10. Goods shall not be supplied without an official supply order**.**

 11. PAYMENT: Every attempt will be made to make payment within 30 days from the date of

 receipt of bill/acceptance of goods, whichever is later.

 Yours faithfully,

 For PROJECT CO-ORDINATOR

**REQUEST FOR PROPOSALS TO PERFORM ENVIRONMENTAL DRILLING AND SITE CHARACTERIZATION AT IOCL LUBE PLANT**

**BACKGROUND**

The Indian Institute of Technology in Madras (IITM) has been retained by the Indian Oil Corporation (IOC) in order to perform technical assistance and professional guidance regarding performance of an environmental investigation at the Lube plant in Chennai. IITM has prepared this document in order to request proposals from qualified professional consulting companies capable of implementing the scope of work described in this document in a prompt and timely manner. Following review of the proposals, IITM will select the consulting firm to complete the work. This document presents a list of individual tasks needed to implement the environmental investigation. It is the expectation of IITM and IOC that the bidders will provide a cost to complete each work task, and a total price to complete the entire work scope in full.

**OBJECTIVES AND WORK SCOPE OVERVIEW**

The objectives of the proposed scope of work are to:

* Investigate the vertical and lateral extent of petroleum hydrocarbon impact to the subsurface, if any.
* Assess soil types and geologic conditions beneath the property.
* Evaluate groundwater flow patterns at the site (at two general depth intervals in the subsurface).
* Collect soil and groundwater samples for analyses for the presence of petroleum hydrocarbons.

To accomplish these objectives, the consultant will implement the following work activities:

* Drill and install eight (8) 2-inch diameter groundwater monitoring wells (MW-1A through MW-8A) to a depth of approximately 35 feet below ground surface (bgs) using 8-inch diameter hollow stem augers.
* Drill and install eight (8) 2-inch diameter groundwater monitoring wells (MW-1B through MW-8B) to a depth of approximately 80 feet bgs using 8-inch diameter hollow stem augers.
* During the advancement of two of the 80-foot depth well borings, collect soil samples in 2.5-foot intervals (ie continuous coring) for lithologic comparison and potential chemical analyses using a split spoon sampler equipped with brass or stainless steel liners.
* During the advancement of six of the 80-foot depth well borings, collect soil samples in 5-foot intervals for lithologic comparison and potential chemical analyses using a split spoon sampler equipped with brass or stainless steel liners.
* Develop and sample each newly installed monitoring well. Gauge groundwater levels to the nearest 0.01-vertical feet at the time of well development and sampling.
* Survey the top of casing elevation of each groundwater monitoring well, and complete additional surveying activities needed to accurately depict well locations relative to site features (ie an inclusive base map of the study area).
* Submit 24 soil samples and 16 groundwater samples to a certified laboratory for chemical analysis.
* Compile data and prepare a report of findings.

A detailed description of each activity outlined above is presented in the following subsections of this Request for Proposal (RFP). In responding to this RFP, the consulting firm is certifying that their firm, in conjunction with subcontractors, has the capability to complete the activities exactly as described. IOC and IITM understand that some minor adjustments to the work scope may be appropriate, based on conditions encountered in the subsurface at the time of drilling, since this work scope represents an initial site investigation of the property. However, it is the expectation of IITM and IOC that general procedure for conducting work, including drilling and sampling methods, well construction procedures, laboratory testing methods, surveying, and professional staff qualifications, will be performed precisely as described in this RFP.

**EXPLORATORY SOIL BORINGS**

The consultant and/or their subcontractors must utilize a hollow stem auger drilling rig to advance each exploratory soil boring. Borings MW-1A through MW-8A will be advanced to approximately 35 feet bgs and borings MW-1B through MW-8B will be advanced to approximately 80 feet bgs. Each boring must be completed using 8-inch diameter continuous flight hollow stem augers. A minimum of two personnel will operate the drill rig, and a geologist will be onsite to oversee project work, conduct soil logging, and retain field notes of the work activities performed. The upper 5-feet of the borehole will be cleared using hand tools to ensure that underground utilities are not damaged by drilling operations.

Soil samples are to be collected during the advancement of borings MW-1B through MW-8B using a split spoon sampler (approximately 22-inches in length) equipped with three 6-inch length brass or stainless steel sleeves. The sampler will be driven into native soil using a 140-pound slide hammer. Two of the borings (MW-1B and MW-3B) will be sampled in 2.5-foot intervals (ie continuously), and borings MW-2B and MW-4B through MW-8B will be sampled in 5-foot intervals. During soil sample collection, the drill rig operator will collect ‘blow counts’ (the number of blows required to advance the sampler 6-inches). The blow counts will then be relayed to the geologist for recording on the soil boring log at the appropriate depth interval. The geologist will classify soils onsite using the Unified Soil Classification System. Field observations will include percentages of soils encountered (ie percent clay, silt, sand, gravel), color, toughness, moisture (ie dry, moist, damp, wet), plasticity, etc. The geologist will also field screen soil for volatile organic compounds (VOCs) using a photo-ionization detector (PID); PID readings will be recorded by the geologist on the boring log in parts per million by volume (ppmv).

During drilling, the bottom brass/stainless steel sleeve from each sampled interval will be capped, labeled, and temporarily placed in an ice-chilled cooler. After field screening by PID, three soil samples will be retained for eventual submittal to the laboratory for chemical analysis. The soil samples that will be submitted for chemical analysis will remain on ice, or placed in a refrigerator, until delivery to the analyzing laboratory under proper chain-of-custody. The remaining soil samples that are retained from the borehole should be stored by the consultant (ideally in a dedicated refrigerator) for approximately 60 days, in the event that the samples could be useful in the future.

**MONITORING WELL INSTALLATION**

Each groundwater monitoring well will be constructed inside of 8-inch diameter hollow stem augers. The wells will be constructed using schedule 40 PVC well casing and perforated well screen (0.02-inches in diameter). . Graded sand, of uniform size and slightly larger than 0.02-inches in diameter, will be used as a filter pack for the wells. The filter pack sand will extend approximately two feet above the top of the well screen. Approximately three feet of bentonite is to be placed on top of the filter pack to provide a transition seal for the well; the bentonite placed within wells will then be hydrated with clean water. A neat cement mixture, containing water, Portland cement, and 3-5% bentonite powder, will then be used to backfill the remaining annular space around the well casing up to surface grade. A watertight locking cap will be placed on top of the well casing, and a traffic rated manhole cover (vault box) will be placed over the well and installed flush with the ground surface. Diagrams illustrating the construction details for the monitoring wells are attached to this RFP; minor adjustments to the well construction, in particular well screening interval, could potentially be appropriate based on field information at the time of the investigation. However, the general conceptual idea for these wells should strictly adhere to the specifications of this RFP.

**WELL DEVELOPMENT**

 Well development will occur a minimum of 72 hours after construction of the monitoring wells. Prior to development, the static water level in the wells will be measured using an electronic water level sounder. A minimum of 10 well casing volumes should be evacuated from the well during development (ie if the well casing contains 3 gallons of groundwater under steady state conditions, a minimum of 30 gallons of groundwater should be evacuated during development).

**WELL SAMPLING**

A minimum of 24 hours after the groundwater monitoring wells are developed, the monitoring wells will be purged and groundwater samples will be collected. Prior to sampling, the static groundwater levels will be measured; this data will be used to calculate the well casing volume to be removed, and also used for future computation of groundwater flow direction. The samples will be collected using a disposable bailer, transferred to laboratory-supplied, properly preserved containers, and placed in an ice-chilled cooler. The groundwater samples will be transported under strict chain-of-custody protocol to a certified analytical laboratory for chemical analysis.

**WASTE MANAGEMENT**

Soil and wastewater will be placed in 55-gallon metal barrels / drums, and stored onsite at a location acceptable to IOC. It is imperative that all waste products are properly contained and stored. The drums will be labeled, as appropriate, in order to allow for future identification of waste products without the need to open the drum for inspection. The drummed waste will be transported offsite to appropriately licensed facilities for disposal.

**SURVEYING**

Each groundwater monitoring well will be surveyed for location (x,y coordinates) and elevation (z coordinates). The wells are to be surveyed to a 0.01-foot vertical accuracy. While surveying the wells, site features (such as roads, buildings, and other pertinent structures) needed to provide an accurate base map / site plan will also be surveyed. Survey data will be collected in a format that can be used to prepare an AutoCAD drawing file, which will be provided to IITM upon request. The AutoCAD drawing will form the base map for figures in the report described below.

**LABORATORY ANALYSIS**

Soil samples (18) and groundwater samples (12) will be submitted to IITMadras for onward transmission to an approved, certified analytical laboratory for chemical analysis

**REPORT PREPARATION**

Once all field activities and chemical analyses have been performed, a report will be prepared to document the findings of the investigation. At a minimum, the report will include tabulated soil and groundwater analytical results, at least one CAD-drafted geologic cross section, a base map, figures that illustrate groundwater flow direction using segregated data from the shallow and deep monitoring wells, certified laboratory reports, soil boring logs, well detail diagrams. The report will also provide an interpretive narrative discussion regarding conditions at the site, and recommendations (such as whether additional environmental investigation work is necessary, whether a groundwater monitoring and sampling program is necessary in the future, etc.). The report will initially be submitted DRAFT to IITM. After receiving any comments from IITM, a final copy of the report will be issued.

**SCHEDULE**

Following selection of the consultant, and execution of the contract with this consultant, it is the expectation that field work (drilling) will commence within 30 days. Since all work will be performed on IOCL property, thus requiring limited logistical issues to begin drilling, it is the expectation of IITM and IOCL that work can be initiated promptly.

**QUALIFICATIONS AND STATEMENT OF UNDERSTANDING**

IITM requires that the environmental investigation be performed under the direction of an appropriately qualified geologist or engineer. Personnel involved with all aspects of project work, including soil logging, drill rig personnel, surveyors, field technicians, etc. must also have appropriate academic and/or vocational training in order to perform the work at a professional level.

This RFP includes a Curriculum Vitae (CV) for proposed professional staff who will be assigned to work on the project if the contracted is awarded. This document is to be completed and included with the RFP.

* Bidder shall possess extensive experience in undertaking environmental investigation and cleanup work related to subsurface petroleum releases. Experience in India with performing environmental investigation and well construction using hollow stem auger drilling methods is required.
* The bidder must have completed investigation of a contaminant site in an area not less than 5,000 square meters.
* The consultant team should reflect their range of experience and expertise and expect that IITM representatives will review the qualifications of the consultant team and key personnel.

**FEES FOR PROFESSIONAL SERVICES**

 IITM have identified the following tasks associated with the proposed scope of work. The bidding consultant should provide an itemized cost for each task, and a totaled cost for the entire scope of work.

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| --- | --- | --- |
| **Task** | **Scope of Work** | **Cost (INR)** |
| 1 | Project Planning and Sitevisits |  |
| 2 | Drill and Install 8 shallow monitoring wells |  |
| 3 | Collect soil samples at every two feet |  |
| 4 | Drill and Install 8 deep monitoring wells |  |
| 5 | Collect soil samples at every four feet  |  |
| 6 | Well gauging and development |  |
| 7 | Well gauging and water sampling |  |
| 8 | Surveying |  |
| 9 | Reporting |  |

**PAYMENT TERMS**

* Costs for all services will be on a lump sum basis.
* Prior to initiation of work, 50% of the project sum will be paid to the consultant. The remaining 50% of the project sum will be paid upon issuance of the final report.
* A service charge of 15% will be added to the invoice total.

**GENERAL**

* IITM reserve the right to assess bidder’s capability to execute the work using any criteria.
* IITM reserve the right to select whichever consultant that we wish, without assigning any reason for this selection.
* IITM reserve the right to reject any and all proposals, without assigning any reason for this determination.
* Bidder (and any subcontractors) must currently be willing and able to complete all work at the Site, and possess all licenses and certifications required to perform this work.
* Bidder has an obligation to disclose any potential conflict of interest that impacts their capacity to act in the best interest of IOC, or that may reasonably be perceived as having this effect. Failure to disclose said situations may lead to disqualification of the consultant and/or termination of Contract.
* Bidder should be able to demonstrate that a majority of the work can be completed with locally sourced professional staff and their subcontractors.
* Bidder agrees that content of their proposal is confidential, and should not be shared with any other potential bidders before, during, or after the Contract is awarded.

**PROPOSAL CONTENT AND DEADLINE**

The consultant may prepare and submit the proposal for the above mentioned work in the manner in which they believe best represents their qualifications for project work. At a minimum, however, responses to this RFP must explicitly state that their firm has the capability to complete each work task exactly as described in this RFP. If the consultant wishes to subcontract out certain services, in particular drilling and well construction work IITM require that the subcontractor be identified, and information regarding specialized equipment needed to complete the report should be included in the bid documents. For the drilling, photographs of the drilling rig and tooling proposed for completing the work would be helpful.

**CHANGE ORDERS**

IITM expect that the work can be completed with negligible changes to the description of tasks described in this RFP. We will therefore discourage requests for change orders. In the event that work scope changes that would increase project expenditures become necessary, a change order request must be submitted to IITM in writing. The change order must specify the work task modification, and the cost of this modification. Approval for the cost of the change order must be approved by IITM.