R02656
CHROMIUM
VAULT

Environmental Science & Engineering, Inc.
A CILCORP Company

September 29, 1994

Mr. Brian Oliva, Hazardous Materials Specialist
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502

SUBJECT: THE PROPERTY KNOWN AS CHROMEX, INC., 1400 PARK AVENUE, EMERYVILLE, ALAMEDA COUNTY, CALIFORNIA SAN FRANCISCO BAY REGIONAL WATER QUALITY CONTROL BOARD FILE NO. 2223.09 (SA) ESE PROJECT NO. 6-94-5246

Dear Mr. Oliva:

Environmental Science & Engineering, Inc. (ESE) is pleased to present this proposed Workplan for Phase II Environmental Site Assessment (Workplan) for the subject site (see Figure 1 - Location Map; Attachment 1) on behalf of Emeryville Properties, to comply with the item numbered 2 set forth in the August 26, 1994 Legal Request for Submittal of a Technical Report issued by the San Francisco Bay Regional Water Quality Control Board (Regional Board). The Workplan addresses performance of a Phase II ESA to include soil borings, collection of soil samples, installation of ground water monitoring wells, and the monitoring and sampling of ground water on the site proper; the possible collection of ground water samples from nearby monitoring wells associated with an ongoing investigation at another site; and the preparation of a Phase II ESA report.

A Phase I ESA has been completed and the report was submitted to your office under cover of transmittal dated August 23, 1994.

This Workplan incorporates the findings from past site investigations, as summarized in ESE's Phase I ESA. For purposes of this Workplan, the salient facts pertinent to the proposed investigation are set forth below:

- Excavation of the former vault containing tanks and baths associated with chrome plating operations was performed in association with facility decommissioning in 1992. The excavation was left open for an unknown period of time prior to being backfilled.

- Sampling of native soil within the excavation was apparently not performed in accordance with standard practices for excavation closure or under agency oversight. Limited soil and grab ground water sample data collected at the time of soil excavation indicated that the chlorinated solvents trichloroethene (TCE) and tetrachloroethene (PCE) were present in trace concentrations. Total chromium and lead were also detected in the samples. Stockpiled soil from the excavation was never removed from the site.

- ESE collected samples of the stockpiled soil in July 1994. Analytical results reported detectable TCE and total lead. Hexavalent chromium was not detected. Concentrations of metals were below applicable Title 26 total and soluble threshold limit concentrations. ESE has completed profiling the soil for disposal, and removal of the materials for proper disposal is pending, and scheduled to be completed prior to October 7, 1994.

- Several possible sources of ground water contamination are located cross- or upgradient of the Chromex site. Perhaps the most prominent among them, Electro Coatings, Inc. (ECI), is a known source of halogenated volatile organic compounds (HVOCs) that have impacted area ground water.

SCOPE OF WORK

Task 1 - Conduct Phase II ESA

Based on review of the limited existing documentation for the site, and on ESE's Phase I ESA, ESE recommends further assessment of site soil and ground water to estimate with more precision the direction and magnitude of ground water flow beneath, and to determine the extent to which shallow soil and ground water have been impacted, if at all, by the TCE, PCE, chromium, and lead.

Subtask 1 - Drill Additional Borings and Install Ground Water Monitoring Wells

Because previous soil samples and grab ground water samples reported potentially elevated concentrations of selected organic and inorganic constituents, ESE considers it necessary to investigate the vertical and horizontal extent of those constituents in shallow soil and ground water under and around the former plating facility. To determine the extent of impacted soil at the perimeter of the former vault excavation, Emeryville Properties proposes drilling five soil borings along the perimeter of the former vault excavation at the approximate locations shown in Figure 2 - Site Map (attached). Anticipated depth for each boring will be approximately 15 feet. For the purpose of characterizing site ground water conditions (hydraulic gradient and chemical composition), Emeryville Properties proposes installing three ground water monitoring wells at the approximate locations shown in Figure 2. Anticipated completion depth for each well will be a maximum of 25 feet.

Borings will be drilled using hollow-stem augers by a State-licensed C-57 drilling contractor under the direction of a California Registered Geologist (RG). Soil generated from the borings (soil samples and soil cuttings) will be classified by a geologist in accordance with the Unified Soil Classification System. Additionally, soil color, relative density, moisture content, biologic content and odor, if present, will be noted. These observations and a graphical presentation of the soil borings will be presented in the report of findings discussed below.

Soil samples will be collected during drilling at approximate five-foot intervals to the approximate ground water table by driving a split-spoon sampler, lined with brass sleeves, 18-inches through the center and ahead of the hollow stem augers. The samplers will be driven by dropping a 140-pound hammer 30-inches onto rods attached to the top of the sampler. The number of blows required to drive the sampler each six-inch interval will appear on the geologic boring logs.

The ends of one brass tube collected at each sample interval will be covered with Teflon lined plastic end caps, sealed to the brass sleeve with duct tape, labeled, and placed on ice in a cooler. A portion of the contents of one tube collected at each sample interval will be sealed in a Ziploc bag and set in direct sunlight until moisture droplets appear on the bag. The air in the bag will be field screened for the presence of volatile organic compounds (VOCs) using a photionization detector (PID). PID readings will be recorded on the geologic boring logs. All soil boring and soil sampling will be conducted in accordance with ESE SOP No. 1 for Soil Borings and Soil Sampling with Hollow-Stem Augers in Unconsolidated Formations (Attachment 2).

Soil samples collected from each boring at the approximate 5- and 10-foot depths will be submitted to a State-certified laboratory and analyzed for the following constituents:

- Halogenated volatile organic compounds (HVOCs) using EPA Method 8010;
- The metals chromium and lead (by total) using EPA Method 6010 inductively coupled plasma spectroscopy (ICP); and,
- Hexavalent chromium using EPA Methods 7195, 7196, or 7197.

Analytical results for metals reported to be in excess of 10 times applicable Title 26 soluble threshold limit concentrations (STLCs) will be further analyzed for the respective soluble metals using Title 26 California Waste Extraction Test (CA WET) methodology.

ESE will direct the construction of two-inch diameter monitoring wells in the borings in accordance with California Well Standards and ESE SOP No. 2 for Monitoring Well Installation and Development (Attachment 2). Based on our estimate for depth to ground water, ESE anticipates the wells will be screened from approximately 7-8 feet bgs to a total depth of approximately 23 feet bgs. Blank casing will be used from 8 feet bgs to surface, with emplacement of sand pack, annular seal, and a traffic rated well box in accordance with ESE SOP No. 2.

Subsequent to well installation, ESE will direct the development of the wells in accordance with California Well Standards using surging, bailing, and overpumping techniques.

After the proposed monitoring wells have been appropriately installed and developed, ESE will measure depth to water levels and collect ground water samples from each well in accordance with ESE SOP No. 3. Ground water samples will be analyzed by a State-certified laboratory for the analytes listed above. Additionally, ESE will have a laboratory prepared travel blank analyzed for HVOCs as a measure of sample handling and transport quality assurance and quality control (QA/QC).

Concurrent with ground water sampling, ESE will oversee the surveying of locations and top of casing elevations for the new wells. Top of casing elevations will be used in conjunction with depth to water level measurements to determine ground water elevations to the nearest .01 foot and to prepare ground water elevation contour maps, from which ground water flow direction and gradient for the site will be estimated.

Soil cuttings from borings, decontamination rinsate, and development/purge water from wells will be stored onsite in appropriately labelled DOT-rated 55-gallon drums pending profiling and disposal through a licensed waste hauler.

Subtask 2 - Monitor/Sample Nearby ECI Wells

ESE understands that a monitoring well network associated with a ground water investigation exists for the ECI facility immediately south of the site across Park Street. According to files reviewed for the Phase I ESA, two ground water monitoring wells (MW-1 and MW-19; Figure 2) may provide ground water data applicable to the site (Figure 2 - Site Map). According to the files and notes from the ECI file, ECI's consultant's notes indicated that they were unable to locate MW-19, and speculated that it may have been paved over.

If the wells exist and are capable of being sampled, ESE will attempt to monitor and sample ground water in those wells, assuming ECI agrees to share monitoring data for the site and permits sampling these wells.

ESE will attempt to reach the appropriate parties at ECI to coordinate this work. If successful in reaching an agreement with ECI, ESE will proceed with monitoring and sampling those wells coincident with the site investigation proposed above. All monitoring and sampling will be performed in accordance with ESE SOP No. 3 for Ground Water Monitoring and Sampling from Monitoring Wells (Attachment 2).

Ground water samples will be transported under chain of custody documentation to a State-certified laboratory, where they will be analyzed for the constituents described above. Results for the initial sampling event will be incorporated with the report of findings addressed below for Subtask 3.

Subtask 3 - Prepare a Report of Findings

Upon receiving analytical results for soil and ground water samples generated as a result of the proposed investigation, ESE will prepare a report of findings documenting field activities and findings. Contents of the report will be consistent with Tri-Regional Board and Alameda County guidelines. The report will contain a detailed discussion of findings, and will present ground water elevation data and analytical results in tabular and graphical form. Laboratory reports, field and boring logs, and other pertinent data will be presented as appendices to the report.

The report will be prepared under the direct supervision of a California RG, and will be submitted to Alameda County. ESE will also submit a copy of the final document to the Regional Board. The pertinent findings of the Phase I ESA and the monitoring and sampling of offsite ECI wells will be incorporated with the report of findings.

Subtask 4 - Initiate a Regular Monitoring and Reporting Program

If ground water is shown to be impacted with one or more of the chemicals of potential concern, a regular monitoring and reporting program should be initiated in accordance with Regional Board requirements. ESE assumes that the initial Phase II ESA and associated report of findings will constitute the first interval of such required monitoring and reporting.

Regular monitoring will consist of monitoring ground water elevations in site wells (and off site wells, if appropriate), estimation of ground water flow direction and gradient, collection of ground water samples and analysis as described, and preparation of a report of findings. Chemicals of potential concern that are not detected during implementation of the Phase II ESA will be dropped from the list of regularly sampled constituents.

Monitoring reports will be submitted to Alameda County and the Regional Board by the 15th day of the month following the end of the sampling event. Recommendations for additional investigation, or a changed scope of monitoring, will be made as appropriate in each report.

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All aspects of the proposed work will be conducted in strict accordance with industry standard practices, ESE SOPs, and applicable regulatory agency guidelines.

If you have any questions or comments regarding this workplan, please direct them to the undersigned at (510) 685-4053.

Sincerely,

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

Michael E. Quillin, RG 5315
Senior Hydrogeologist
Manager, Geosciences

REGISTERED GEOLOGIST
MICHAEL E.
QUILLIN
#5315
STATE OF CALIFORNIA

Attachments: 1) Figures 1 and 2
2) ESE Standard Operating Procedures

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ATTACHMENT 1

FIGURES 1 AND 2

SCALE 1:24,000

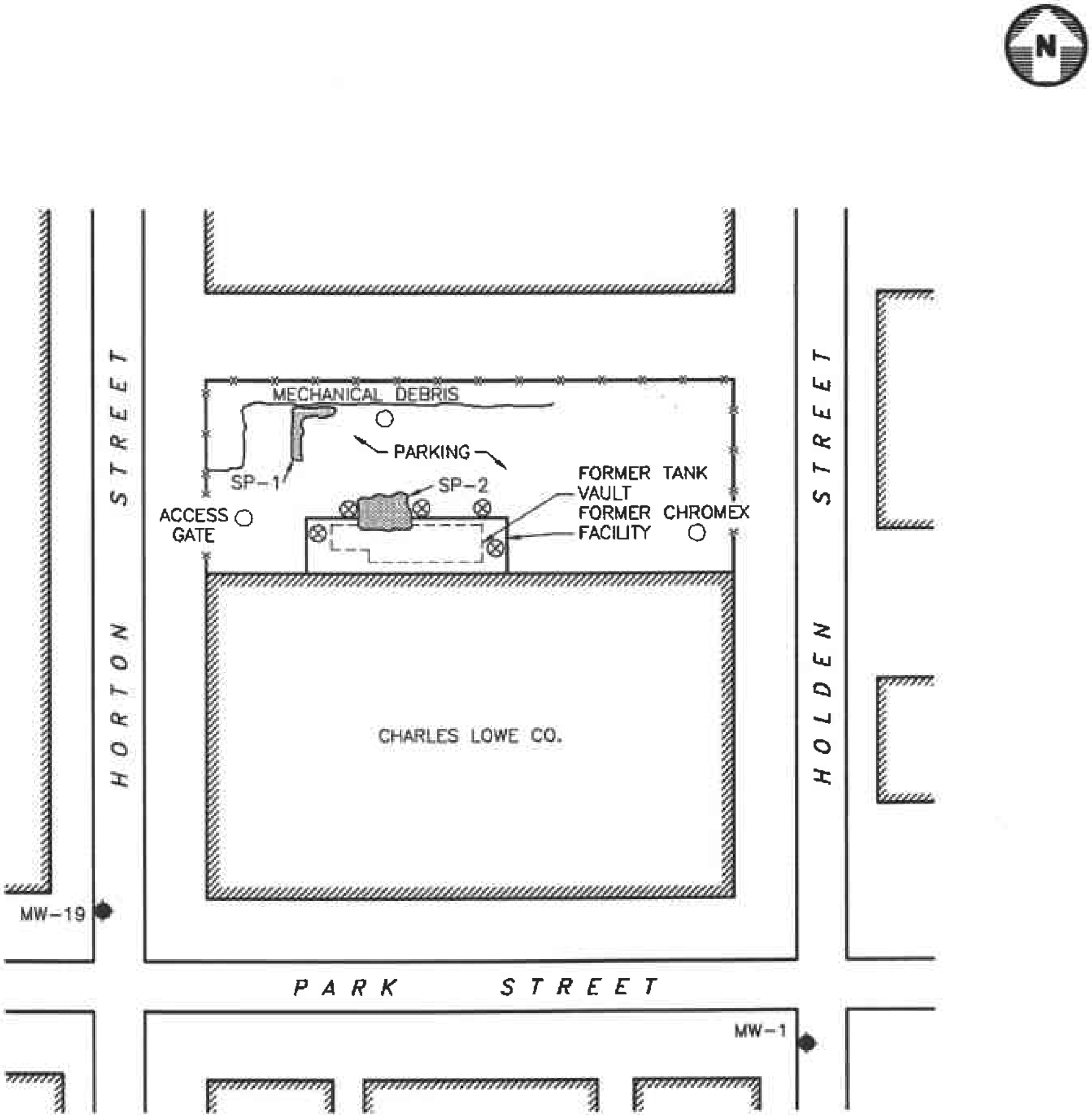
1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

ADAPTED FROM U.S.G.S. OAKLAND WEST, CALIFORNIA, 7.5 MINUTE TOPOGRAPHIC QUADRANGLE MAP, 1959, PHOTOREVISED 1980.

ESE Environmental Science & Engineering, Inc.	DATE 5/94	LOCATION MAP	FIGURE NO. 1
4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	REVISED 8/18/94 CAD FILE 52461001	FORMER CHROMEX FACILITY 1400 PARK AVENUE EMERYVILLE, CALIFORNIA	PROJ. NO. 6-94-5246



LEGEND

- STOCKPILED SOIL
- ○ PROPOSED GROUND WATER MONITORING WELL
- ⊗ PROPOSED SOIL BORING
- ◆ ECI GROUND WATER MONITORING WELL

APPROX. SCALE
0 — 50 FEET

ESE Environmental Science & Engineering, Inc.	DATE 8/4/94	SITE MAP	FIGURE NO. 2
4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	REVISED 9/28/94 CAD FILE 52461003	FORMER CHROMEX FACILITY 1400 PARK AVENUE EMERYVILLE, CALIFORNIA	PROJ. NO. 6-94-5246

ATTACHMENT 2

ESE STANDARD OPERATING PROCEDURES

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
CONCORD, CALIFORNIA OFFICE

STANDARD OPERATING PROCEDURE NO. 1 FOR SOIL BORINGS AND SOIL SAMPLING WITH HOLLOW-STEM AUGERS IN UNCONSOLIDATED FORMATIONS

Environmental Science & Engineering, Inc. (ESE) typically drills soil borings using a truck-mounted, continuous-flight, hollow-stem auger drill rig. The drill rig is owned and operated by a drilling company possessing a valid State of California C-57 license. The soil borings are conducted under the direct supervision and guidance of an experienced ESE geologist. The ESE geologist logs each borehole during drilling in accordance with the Unified Soil Classification System (USCS). Additionally, the ESE geologist observes and notes the soil color, relative density or stiffness, moisture content, odor (if obvious) and organic content (if present). The ESE geologist will record all observations on geologic boring logs.

Soil samples are collected during drilling at a minimum of five-foot intervals by driving an 18-inch long Modified California Split-spoon sampler (sampler), lined with new, thin-wall brass sleeves, through the center of and ahead of the hollow stem augers, thus collecting a relatively undisturbed soil sample core. The brass sleeves are typically 2-inches in diameter and 6-inches in length. The sampler is driven by dropping a 140-pound hammer 30-inches onto rods attached to the top of the sampler. Soil sample depth intervals and the number of hammer blows required to advance the sampler each six-inch interval are recorded by the ESE geologist on geologic boring logs. The ends of one brass sleeve are covered with Teflon sheeting, then covered with plastic end caps. The end caps are sealed to the brass sleeve using duct tape. Each sample is then labeled and placed on ice in a cooler for transport under chain of custody documentation to the designated analytical laboratory. A portion of the remaining soil in the sampler is placed in either a new Ziploc® bag or a clean Mason Jar® and set in direct sunlight to enhance the volatilization of any Volatile Organic Compounds (VOCs) present in the soil. After approximately 15-minutes that sample is screened for VOCs using a photoionization detector (PID). The PID measurements will be noted on the geologic boring logs. The PID provides qualitative data for use in selecting samples for laboratory analysis. Soil samples from the saturated zone (beneath the ground-water table) are collected as described above, are not screened with the PID, and are not submitted to the analytical laboratory. The samples from the saturated zone are used for descriptive purposes. Soil samples from the saturated zone may be retained as described above for physical analyses (grain size, permeability and porosity testing).

If the soil boring is not going to be completed as a well, then the boring is typically terminated upon penetrating the saturated soil horizon or until a predetermined interval of soil containing no evidence of contamination is penetrated. This predetermined interval is typically based upon site specific regulatory or client guidelines. The boring is then backfilled using either neat cement, neat cement and bentonite powder mixture (not exceeding 5% bentonite), bentonite pellets, or a sand and cement mixture (not exceeding a 2:1 ratio of sand to cement). However, if the boring is to be completed as a monitoring well, then the boring is continued until either a competent, low estimated-permeability, lower confining soil layer is found or 10 to 15-feet of the saturated soil horizon is penetrated, whichever occurs first. If a low estimated-permeability soil layer is found, the soil boring will be advanced approximately five-feet into that layer to evaluate its competence as a lower confining layer, prior to the termination of that boring.

All soil sampling equipment is cleaned between each sample collection event using an Alconox® detergent and tap water solution followed by a tap water rinse. Additionally, all drilling equipment and soil sampling equipment is cleaned between borings, using a high pressure steam cleaner, to prevent cross-contamination. All wash and rinse water is collected and contained onsite in Department of Transportation approved containers (typically 55-gallon drums) pending laboratory analysis and proper disposal/recycling.

Environmental Science & Engineering, Inc. (ESE) typically installs ground-water monitoring wells in unconsolidated sediments drilled using a truck-mounted hollow-stem auger drill rig. The design and installation of all monitoring wells is performed and supervised by an experienced ESE geologist. Figure A - Typical ESE Monitoring Well Construction Diagram (attached) graphically displays a typical ESE well completion. Prior to the construction of the well, the portion of the borehole that penetrates a lower confining layer (if any) is filled with bentonite pellets. The monitoring well is then constructed by inserting polyvinylchloride (PVC) pipe through the center of the hollow stem augers. The pipe (well-casing) is fastened together by joining the factory threaded pipe ends. ESE typically uses two-inch or four-inch diameter pipe for ground-water monitoring wells. The diameter of the borehole is typically 6-inches greater than that of the diameter of the well-casing, but is at least four-inches greater than that of the well casing. The lowermost portion of the well-casing will be factory perforated (typically having slot widths of 0.010-inch or 0.020-inch). The slotted portion of the well-casing will extend from the bottom of the boring up to approximately five-feet above the occurrence of ground water. A PVC slip or threaded cap will be placed at the bottom end of the well-casing, and a locking expandable well cap will be placed over the top (or surface) end of the well-casing. A sand pack (typically No. 2/12 or No. 3 Monterey sand) will be placed in the borehole annulus, from the bottom of the well-casing up to one to two-feet above the top of the slotted portion, by pouring the clean sand through the hollow stem augers. One to two-feet of bentonite pellets will be placed on top of the sand pack. The bentonite pellets will then be hydrated with three to four-gallons of potable water, to protect the sand pack from intrusion during the placement of the sanitary seal. The sanitary seal (grout) will consist of either neat cement, a neat cement and bentonite powder mixture (containing no more than 5% bentonite), or a neat cement and sand mixture (containing no more than a 2:1 sand to cement ratio). If, the grout seal is to be greater than 30-feet in depth or if standing water is present in the boring on top of the bentonite pellet seal, then the grout mixture will be tremied into the boring from the top of the bentonite seal using either a hose, pipe or the hollow-stem augers, which serve as a tremie. The well will be protected at the surface by a water tight utility box. The utility box will be set into the grout mixture so that it is less than 0.1-foot above grade, to prevent the collection of surface water at the well head. If the well is set within the public right of way, then the utility box will be Department of Transportation (DOT) traffic rated, and the top of the box will be set flush to grade. If the well is constructed in a vacant field a brightly painted metal standpipe may be used to protect the well from traffic. If a standpipe is used, it will be held in place with a grout mixture and will extend one to two-feet above ground surface. All well completion details will be recorded by the ESE geologist on the geologic boring logs.

Subsequent to the solidification of the sanitary seal of the well (a minimum of 72 hours), the new well will be developed by an ESE geologist or field technician. Well development will be performed using surging, bailing and overpumping techniques. Surging is performed by raising and lowering a surge block through the water column within the slotted interval of the well casing. The surge block utilized has a diameter just smaller than that of the well casing, thus, forcing water flow through the sand pack due to displacement and vacuum caused by the movement of the surge block. Bailing is performed by lowering a bailer to the bottom of the well and gently bouncing the bailer off of the well end cap, then removing the full bailer and repeating the procedure. This will bring any material (soil or PVC fragments) that may have accumulated in the well into suspension for removal. Overpumping is performed by lowering a submersible pump to the bottom of each well and pumping at the highest sustainable rate without completely evacuating the well casing. Effective well development will settle the sand pack surrounding the well-casing, which will improve the filtering properties of the sand pack and allow water to flow more easily through the sand pack; improve the communication between the aquifer and the well by aiding the removal of any smearing of fine sediments along the borehole penetrating the aquifer; and, remove fine sediments and any foreign objects (PVC fragments) from the well casing. The ESE geologist or technician will monitor the ground water purged from the well during development for clarity, temperature, pH and conductivity. Development of the well will proceed until the well produces relatively clear, sand-free water with stable temperature, pH and conductivity measurements. At a minimum, 10 well-casing volumes of ground water will be removed during the development process. Measurements of temperature, conductivity, pH and volume of the purged water and observations of purge water clarity and sediment content will be recorded on the ESE Well Development Data Forms. All equipment used during the well development procedure will be cleaned using an Alconox® detergent and tap water solution followed by a tap water rinse prior to use in each well. All ground water purged during the well development process and all equipment rinse water will be collected and contained onsite in DOT approved containers (typically 55-gallon drums) pending analytical results and proper disposal or recycling.

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
CONCORD, CALIFORNIA OFFICE

STANDARD OPERATING PROCEDURE NO. 3
FOR GROUND-WATER MONITORING AND SAMPLING FROM MONITORING WELLS

Environmental Science & Engineering, Inc. (ESE) typically performs ground-water monitoring at project sites on a quarterly basis. As part of the monitoring program an ESE staff member will first gauge the depth to water and free product (if present) in each well, then collect ground-water samples from each well. Depth to water measurements are taken by lowering an electric fiberglass tape measure into the well and recording the occurrence of water in feet below a fixed datum set on the top of the well-casing. If free-phase liquid hydrocarbons (free product) are known or suspected to be present in the well, then an electric oil/water interface probe is used to determine the depth to the occurrence of ground-water and the free product in feet below the fixed datum on the top of the well-casing. Depth to water and depth to product measurements are measured and recorded within an accuracy of 0.005-foot. The electric tape and the electric oil/water interface probe are washed with an Alconox® detergent and tap water solution then rinsed with tap water between uses in different wells.

Ground-water samples are collected from a well subsequent to purging a minimum of three to four well-casing volumes of ground water from the well, if the well bails dry prior to the removal of the required minimum volume, then the samples are collected upon the recovery of the ground water in that well to 80% of its initial static level. Ground water is typically purged from monitoring wells using either a hand-operated positive displacement pump, constructed of polyvinylchloride (PVC); a new (precleaned), disposable polyethylene bailer; or, a variable-flow submersible pump, constructed of stainless steel and Teflon®. The hand pumps and the submersible pumps are cleaned between each use with an Alconox® detergent and tap water solution followed by a tap water rinse. During the well purging process the conductivity, pH and temperature of the ground water are monitored by the ESE staff member. Ground-water samples are collected from the well subsequent to the stabilization of the of the conductivity, pH and temperature of the purge water, and the removal of four well-casing volumes of ground-water (unless the well bails dry). The parameters are deemed to have stabilized when two consecutive measurements are within 10% of each other, for each respective parameter. The temperature, pH, conductivity and purge volume measurements, and observations of water clarity and sediment content will be documented by the ESE staff member on ESE Ground-Water Sampling Data Forms.

Ground-water samples are collected by lowering a new (precleaned), disposable polyethylene bailer into the well using new, disposable nylon cord. The filled bailer is retrieved, emptied, then filled again. The ground water from this bailer is decanted into appropriate laboratory supplied glassware and/or plastic containers (if sample preservatives are required, they are added to the empty containers at the laboratory prior to the sampling event). The containers are filled carefully so that no headspace is present to avoid volatilization of the sample. The filled sample containers are then labeled and placed in a cooler with ice for transport under chain of custody documentation to the designated analytical laboratory. The ESE staff member will document the time and method of sample collection, and the type of sample containers and preservatives (if any) used. These facts will appear on the ESE Ground-Water Sampling Data Forms. ESE will collect a duplicate ground-water sample from one well for every ten wells sampled at each site. The duplicate will be a blind sample (its well designation will be unknown to the laboratory). The duplicate sample is for Quality Assurance and Quality Control (QA/QC) purposes, and provides a check on ESE sampling procedures and laboratory sample handling procedures. When VOCs are included in the laboratory analyses, ESE will include a trip blank, if required, in the cooler with the ground-water samples for analysis for the identical VOCs. The trip blank is supplied by the laboratory and consists of deionized water. The trip blank is for QA/QC purposes and provides a check on both ESE and laboratory sample handling and storage procedures. Since disposable bailers are used for sample collection, and are not reused, no equipment blank (rinsate) samples are collected.