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via Federal Express

Mr. Sumadhu Arigala
California Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster St., Suite 500
Oakland, California 94612

Subject: Work Plan for Expansion of Existing Groundwater Remedial System on Former Rifkin Property, Emeryville, California

Dear Sum:

Levine·Fricke·Recon Inc. (LFR; formerly Levine·Fricke and Recon Environmental) has prepared this work plan on behalf of the Sherwin-Williams Company (Sherwin-Williams). This work plan presents the scope of work associated with the expansion of the existing groundwater remedial system on the former Rifkin Property in Emeryville, California ("the Site"). The existing groundwater remedial system is currently in operation at the Sherwin-Williams facility adjacent to the Site. The existing groundwater remedial system consists of a groundwater extraction and treatment system (GWETS) operated in conjunction with a slurry wall that serves as a physical hydraulic barrier to contain affected groundwater at the Sherwin-Williams facility.

For the purposes of this work plan, a remedial option has been proposed for immediate implementation at the Site (Figure 1). The selected remedial option consists of an expansion of the existing Sherwin-Williams GWETS to the Site to act as a hydraulic barrier, as well as extraction of contaminated groundwater. This expansion requires the installation of three groundwater extraction wells, conveyance piping for extracted groundwater, supplied air to operate the groundwater extraction pumps, and associated equipment and appurtenances such as well vaults and valves.

The GWETS expansion will be installed during the period of property development after the demolition of the Rifkin building but prior to construction of the surface parking lot.

TASKS

The scope of work associated with the expansion of the existing groundwater remedial system includes the following tasks:

- groundwater flow modeling
- engineering design for GWETS expansion
- extraction well installation and development
- regulatory interface and permitting
- system construction

- start up of expanded GWETS
- disposal of waste soils from well installation
- project management and reporting

Task 1: Groundwater Flow Modeling

The objective of this task is to delineate the required area of capture for the proposed groundwater extraction wells in order to contain the arsenic plume at the Site. The selection of the proposed locations of the groundwater extraction wells was based on the limited access for well placement due to physical constraints and plans for future development of the Site. Existing data will be analyzed and used to create a two-dimensional groundwater flow model. The model will simulate capture areas to evaluate two different extraction well pumping schemes. A short memorandum will be prepared to describe the results of the model simulations and the estimated area of capture for each scheme.

Task 2: Engineering Design for GWETS Expansion

This task includes the following activities:

- layout and design of a conveyance piping network for supplied air and extracted groundwater, which will be connected to the existing GWETS
- specification of pneumatic extraction well pumps, valves, pulse counters, piping, hoses, and other appurtenances
- design of wellheads and junction boxes
- design of connection to existing GWETS
- design of trenches, backfill, and resurfacing as necessary
- design of modifications to the existing GWETS
- preparation of engineering plans and specifications

Task 3: Extraction Well Installation and Development

A subcontractor who locates underground utilities will identify the locations of subsurface structures and utility lines in the vicinity of each proposed well location before drilling activities begin.

Three A-zone extraction wells (EX-4, EX-5, and EX-6) will be completed to a depth of approximately 25 feet below ground surface (bgs) using the hollow-stem auger drilling method. Soil samples will be collected continuously for characterization of subsurface lithology. Soil samples and drill cuttings will be monitored with an organic vapor meter (OVM) to assess for the presence of volatile organic compounds (VOCs) in the soil for health and safety purposes. Drilling and sampling equipment will be steam cleaned before use at each well location.

A-zone extraction wells will be completed with 5-inch-diameter stainless steel casings in 10-inch-diameter boreholes, with a maximum of 20 feet of slotted screen extending from approximately 5 to 25 feet bgs. After a well casing has been placed in a completed borehole, the well annulus opposite the perforated interval will be backfilled with clean sand to approximately 2 feet above the top of the perforations. The grain-size distribution of the sand pack will be selected for compatibility with the selected slot size of the well screen. Approximately 2 feet of bentonite pellets will be placed above the sand pack to isolate the perforated interval from material above and inhibit the entrance of grout into the sand pack. A cement-bentonite grout will be placed in the remainder of the borehole. A locking, traffic-bearing cover will then be placed over the top of the casing to protect the integrity of the well.

Soil cuttings generated during drilling will be stored at the Sherwin-Williams site in 55-gallon drums until an appropriate disposal method can be determined pending analytical results.

Top-of-casing measurements and horizontal location for the new extraction wells will be recorded by a licensed surveyor. Collection of water-level measurements and development of the newly installed wells will occur after well installation. Groundwater levels will be measured from the top of the casing to the groundwater surface using an electronic water-level probe attached to a measuring tape graduated to 0.01-foot intervals.

The newly installed wells will be developed by bailing, swabbing, and pumping to remove sediment from around the well and to enhance hydraulic communication with the surrounding formation.

During well development, approximately 10 well volumes of water will be purged from each well. Specific conductance, pH, and temperature will be measured and observations concerning the quantity and clarity of purged water will be recorded during purging to assist in the evaluation of groundwater quality. After well development, the water level in the well will be measured. All developing and sampling equipment will be steam cleaned before use at each well.

Groundwater generated from well development will be discharged into the existing groundwater treatment system.

Task 4: Regulatory Interface and Permitting

This task includes preparation of permit applications and other documents, coordination with agency representatives, response to agency comments, and addressing regulatory issues that arise during construction and design of the system expansion.

These will include: (1) permits from the Alameda County Flood Control and Water Conservation District (Zone 7) before drilling and installation of the proposed extraction wells begins; and (2) a building permit (if required) from the City of Emeryville. The California Regional Water Quality Control Board (RWQCB) will be notified of the GWETS expansion; however, modification to the NPDES permit is not expected to be required because the overall treatment system flow should not exceed 12 gallons per minute.

Task 5: System Construction

This task includes preparation of bid and contract documents, selection of a general contractor to install the expansion to the existing GWETS, preparation of a health and safety plan, installation of the GWETS expansion at the Site, and monitoring of construction activities.

The general contractor will install the well vaults and junction boxes, pneumatic extraction well pumps and other wellhead components, valves, piping, hoses, and connection to the existing GWETS. A construction engineer will be at the Site for the start of construction work and periodically during field construction activities. The construction engineer will monitor the contractor's work to verify that the requirements of the contract documents are fulfilled.

The construction engineer will prepare construction reports describing the progress of the contractor's work, equipment, personnel, weather conditions, and other pertinent information applicable to construction. The construction engineer will also prepare correspondence to the contractor regarding technical and contractual issues, as necessary. Photographs will be taken to further document the progress of the contractor's work. The resident engineer will review shop drawings and submittal data on materials and equipment supplied by the contractor to confirm that these items comply with the specifications.

Task 6: Start Up of Expanded GWETS

This task will provide for the start up of the expanded GWETS. Engineering technicians will implement necessary modifications to the existing GWETS prior to start up of the expanded GWETS. Necessary modifications may include the installation of additional filters and valves, and the implementation of control modifications at the treatment system.

Upon start up, technicians will observe the condition and flow rate of groundwater extracted from each of the new extraction wells at the Site. Influent samples will be collected from each well and submitted to a California-certified laboratory for analysis. Based on this data, operational parameters at the treatment system will be adjusted to maintain effective treatment of groundwater from the expanded extraction system. Increased operation and maintenance will be required during this initial start-up period.

Task 7: Disposal of Waste Soils from Well Installation

This task will provide for the characterization and disposal of waste soils that will be produced during the construction of the expanded GWETS.

Soil cuttings generated during well installation will be stored on-site in 55-gallon drums. A composite sample will be collected from the drums and analyzed by a California-certified laboratory for characterization. An appropriate disposal method for the soil will be determined based on the analytical results.

This task will not provide for the disposal of waste soils from trenching activities on the Rifkin Property. It is assumed that trenching will be performed in relatively shallow soils above groundwater at the Site and that activities at the Sherwin-Williams facility have not impacted these soils. The waste soil from trenching activities will be utilized for backfill of the piping to be placed in the trench.

Task 8: Project Management and Reporting

This task will allow for project management and reporting associated with the expansion of the GWETS. Typical project management tasks include scheduling, project oversight, client updates, additional regulatory interface, budget management and cost tracking, subcontractor and vendor management, and interface with Chiron Corporation. The reports to be prepared include a GWETS expansion construction report and a start-up report for the expanded GWETS for submittal to the RWQCB.

Please feel free to contact me at (510) 652-4500 or Dave Gustafson of Sherwin-Williams at (216) 566-3144 if you have any comments or questions about this work plan.

Sincerely,

Mark D. Knox

Mark D. Knox, P.E.
Principal Engineer

Enclosure

cc: Dennis Mishek, RWQCB
Steve Morse, RWQCB
Susan Hugo, Alameda County Health Agency
Ric Notini, Chiron
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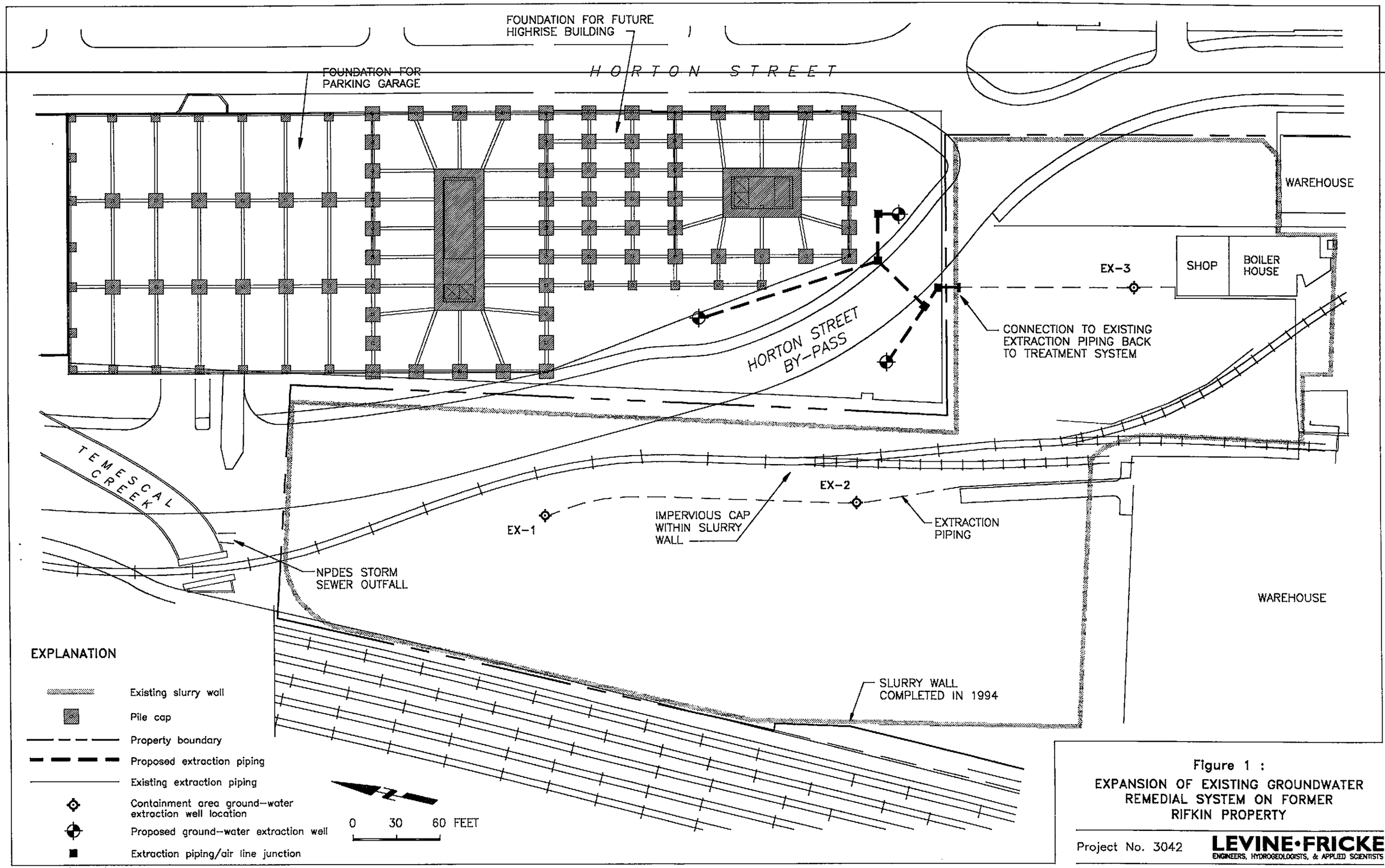

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Figure 1 :
EXPANSION OF EXISTING GROUNDWATER REMEDIAL SYSTEM ON FORMER RIFKIN PROPERTY

Project No. 3042

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS, & APPLIED SCIENTISTS