RW378 (DH)

Treadwell&Rollo
Environmental and
Geotechnical Consultants
501 14th Street, 3rd Floor
Oakland, California 94612
Phone: (510) 874-4500
Fax: (510) 874-4507

FAX TRANSMITTAL

Date: 23 January 2004 Send to fax # 510-337-9335

To: Mr. Barney Chan

From: David Kleesattel At Ext: 541

Project name: 2855 Mandela Pkwy Oakland Project number: 2543.02

Number of pages, including this cover: 9

Notes: Barney - Attached is the draft interim Corrective Action Plan for free-phase product removal at 2855 Mandela Parkway in Oakland. Would you please review & comment. Faye Bevertt wanted to know if you are available next week for a brief meeting to discuss this interim CAP. I will call you to schedule a meeting.

Please call me if you have any questions. Thank you.

Dave Kleesattel

This document will also be mailed to you: ☐ Yes ☐ No

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22 January 2004
Project No. 2543.02

Mr. Barney Chan
Alameda County Health Care Services
1131 Harbor Bay Parkway, 2nd Floor
Alameda, CA 94502

Subject: Draft Interim Corrective Action Plan
2855 Mandela Parkway
Oakland, California

Dear Mr. Chan:

On behalf of the property owners, Treadwell & Rollo, Inc. prepared this Draft Interim Corrective Action Plan (CAP) for the site located at 2855 Mandela Parkway in Oakland, California. The purpose of this draft interim CAP is to present the planned procedures to begin the removal of gasoline (free-phase product) from the groundwater surface and to collect empirical data to demonstrate that the detected free-phase product plume has stabilized (i.e., not expanding). This free-product recovery system will be monitored and evaluated to provide the basis for the final CAP. Because of the relatively slow recovery rates, we anticipate that this interim recovery system will be in place for at least 18 months before the final CAP will be prepared.

This work is being performed by the current property owner and may be funded, in part, by the California State Underground Storage Tank Cleanup Fund (Claim No. 017160) administered by the State Water Resources Control Board.

SITE BACKGROUND AND CONDITIONS

The existing building on the property is a 143,000 square foot, single-story industrial structure. The building is currently occupied by a number of commercial tenants, mainly for warehousing and storage operations. The building was originally constructed in 1941 and operated until approximately 1983 by International Harvester as a truck service and sales facility. A 350-gallon underground gasoline storage tank was removed from the property in 1991 by a previous owner, Cypress Property.

Geologic conditions at the site consist of approximately two to eight feet of relatively sandy fill material underlain by Bay Mud to a depth of at least 24 feet below grade. The clayey Bay Mud appears to include heterogeneous zones of sandier soil and organic matter. The stabilized groundwater depth is approximately eight to ten feet. There are also indications of a localized (i.e., discontinuous) perched water zone at the interface between the fill and the Bay Mud.

Treadwell & Rollo, Inc. *Environmental & Geotechnical Consultants*
501 14th Street, Third Floor, Oakland, CA 94612
Telephone (510) 874-4500 Facsimile (510) 874-4507

Environmental investigations have confirmed the presence of free-phase product (gasoline) within the Bay Mud and significant concentrations of the gasoline constituents benzene, toluene, ethylbenzene, and total xylenes (BTEX) in groundwater beneath a portion of the property, including under the existing building. However, a soil-vapor survey in 1998 detected only relatively low and sporadic benzene concentrations in the shallow soil-gas beneath the building. A sample of perched water was collected in 1999 above an area of groundwater known to contain detectable BTEX concentrations; the perched water samples did not contain detectable BTEX concentrations.

These investigation results suggested that gasoline vapors from the free-phase product and those dissolved in the groundwater are inhibited from upward migration into the fill zone beneath the building because of geologic conditions. These conditions include the low-permeability clayey Bay Mud matrix and the presence of a perched water zone, as well as other factors. A study of the indoor-ambient air quality completed in March 2001, concluded that gasoline vapors, specifically BTEX, are not migrating in significant concentrations from the subsurface into the building.

Based on additional investigations conducted in 2001, the free-phase gasoline appears to be present in a relatively thin, laterally discontinuous zone of organic-rich ("peaty") clay that typically occurs between 6 and 8 feet below the ground surface. The peaty clay zone appears significantly more permeable that the surrounding clay, thereby allowing flow within that unit. The peaty clay zone was not encountered in each soil boring, suggesting that the peaty clay zone is discontinuous. As such, the free-phase gasoline plume configuration is also likely discontinuous, occurring in localized areas rather than beneath the entire site.

The volume of free-phase product contained within the thin peaty clay zone is estimated at approximately 2,500 gallons based on the saturated thickness of the peaty clay zone over an assumed area of about 15,000 square feet. This estimated volume is consistent with the reportedly leaking former 350-gallon UST that was removed from the site.

SCOPE OF WORK

Free-phase product was detected in wells TR-4, TR-5, and TR-6; whereas, monitoring wells TR-7, TR-8, and TR-9 have not contained a measurable thickness or sheen of free-phase gasoline. The source of the free-phase gasoline (the former UST) has been removed and the free-phase product plume does not appear to be migrating. The below scope of work describes planned procedures to recover free -phase product from existing and proposed wells and from a proposed trench.

There are presently six groundwater monitoring wells at the site. Wells TR-4, TR-5, and TR-6 (installed in 1999) are 4-inch diameter wells located within the central-portion of the free-phase product plume where the product layer appears to be thickest. These wells will be used to

recover free-phase product at the site. Additionally, these wells were used to conduct preliminary skimming, product-recovery tests (1999 and 2003). Those tests indicated that free-phase product can be successfully recovered from those wells at a rate of up to 0.5 gallons per day from each well. Based on the current investigation results, these three existing wells appear to be appropriately placed to recover a majority of the free-phase product. The product recovery efficiency from each of these wells will be monitored quarterly to evaluate whether alternative recovery techniques (i.e., in-well absorbents) or additional wells are required. Recommendations will be presented in an annual summary report.

Wells TR-7, TR-8, and TR-9 are 1-inch diameter wells that were placed around the free-phase product plume, approximately 25 to 30 feet from the estimated extent of that plume (Figure 1). These wells will be used to measure the groundwater elevation to calculate the hydraulic gradient, and to monitor the stability of the free-phase product plume. Because these wells are located along the immediate margin of the free-phase product plume, groundwater will not be purged or extracted from these wells so that free-phase product is not artificially drawn towards these monitoring points.

Fluid-Level Measurements

Groundwater levels and free-phase product thickness will be measured at the initiation of this free-phase product recovery program. These data will be used as baseline values. Groundwater elevations will be measured in wells TR-7, TR-8, and TR-9 on a quarterly (once every 3 months) basis. These data will be used to evaluate whether the groundwater elevation affects free-phase product thickness and removal rates. The groundwater elevation data will also be used to calculate the local hydraulic gradient.

Groundwater levels will be measured using an electronic, down-hole water level indicator. Free-phase product thickness will be measured using an electronic oil/water interface probe. These fluid-level indicators are accurate to the nearest 0.01 foot. Water level measurements will be reported to an accuracy of 0.01-foot mean sea level.

Free-Phase Product Recovery from Existing Wells

Under static conditions (non-recovery), free-phase product accumulates in wells TR-4, TR-5, and TR-6. Because the free-phase product apparently flows into the wells from the thin relatively permeable zone at about 7 feet below the ground surface, which is approximately near the top of the groundwater surface, a significant thickness (up to 12 feet) can accumulate in these three wells. Based on the measured free-phase product thickness, a total of approximately 20 gallons accumulates in these three wells under static conditions. Based on the product recovery tests performed in 1999 and 2003, we anticipate that free-phase product will initially flow into each of the three recovery wells at a rate of about 0.1 to 0.5 gallons per day. Therefore, it takes

approximately 3 to 4 weeks for the free-product to reach to equilibrium thickness after the product is removed from the well.

Because the free-phase product is apparently localized within the shallow thin permeable zone near the water table, groundwater extraction will not enhance free-phase product recovery (i.e., an induced hydraulic cone-of-depression will not enhance product flow into the recovery wells). Therefore, pneumatic product skimming devices (manufactured by Xitech Corporation, New Mexico) which remove free-phase product only will be placed within each of the existing 4-inch diameter wells to recover the free-phase product. These skimmers were successfully used during a pilot study conducted at wells TR-4 and TR-6 in December 2003. The free-phase product skimmers operate using compressed nitrogen, an inert gas, to displace the free product in the well. The free product will flow through double-contained pipes (Teflon® tubes contained within sealed PVC piping) to an aboveground 500-gallon storage tank placed outside of the building (Figure 1). The product conveyance piping will be placed in a shallow trench cut into the concrete floor. After the pipes are placed in the trench, new concrete will be placed in the trench and the floor surface restored. Free-phase product collected in the storage tank will be disposed or recycled approximately every 60 to 90 days.

The free-phase product skimmers will extract product on a frequency (approximately 3 times per day) which allows for optimum recovery. As discussed above, the existing three 4-inch-diameter wells appear to be appropriately placed within the free-phase product plume to recover a majority of the known free-phase product. Several additional wells and a collection trench (discussed below and shown on Figure 1) will also be used to recover the free-phase product.

The product inflow rate will continue to decrease as the mass of free-phase product is reduced. The skimmers will remain in the recovery wells until free product can no longer be removed using this technique. After the skimmers have been removed, techniques to further reduce hydrocarbons will be evaluated. The evaluation will consider installing hydrocarbon absorbents within the 4-inch diameter wells to collect residual thin free-phase product layers or sheen.

Free-Phase Product Recovery from Collection Trench and New Recovery Wells

A collection trench and two additional recovery wells will be constructed in the outside parking area located on the southern corner of the warehouse (Figure 1). The purpose of the collection trench as part of the interim CAP is to evaluate and compare the free-product recovery efficiency of a trench-based system verses a well-based system. Because the free-phase product primarily resides in a thin, discontinuous peat layer, a trench which intercepts a larger area of the peat layer than a well may be an efficient recovery approach. The recovery data collected during the interim CAP period will allow for an evaluation of whether additional trenches would provide a more cost effective, long-term correction action approach.

Two additional recovery wells near the trench area (Figure 1) are also proposed. These wells are located adjacent to the warehouse building because a trench could potentially cause foundation stability problems for the unreinforced brick structure. Therefore, although the results of this interim CAP evaluation may indicate trenches provide a more efficient free-phase product recovery approach, it is unlikely that a collection trench adjacent to the building could be safely constructed at a reasonable cost.

The depth of the collection trench will be approximately 10 feet below the ground surface. After excavation, the trench will be backfilled with about five feet of coarse aggregate drain rock such that the drain rock intercepts the peat layer. This will allow for the free-phase product to enter the trench and into the permeable rock for removal. A vertical, 4-inch diameter standpipe will be place in the trench near the end closest to the building. A pneumatic skimming pump, as in the recovery wells, will be placed in this vertical standpipe to remove the free-phase product from the trench.

The recovered free-phase product from the collection trench, the two additional wells, and TR-5 will be conveyed to the aboveground storage tank through double-contained pipes. The conveyance piping will be placed in a shallow trench connecting the two new wells, existing well TR-5, and the collection trench. This conveyance pipe trench will be approximately 1-foot deep and will be paved with asphalt to match the parking lot surface.

Free-Phase Product Disposal

All free-phase product removed from the subsurface will be disposed or recycled offsite at a licensed facility. The product will be containerized as it is removed from the wells, and stored onsite in approved fuel-storage containers placed in the flammable storage cabinet until recycling is ranged. The free-phase product will be handled according to requirements specified in a hazardous materials permit obtained from the local fire department.

REPORTING

Status reports will be prepared and submitted to the ACHCS on a quarterly (i.e., once every 3 months) basis for the first year of this monitoring program. The fourth monitoring report will provide a summary of the previous year's activities and will present recommended modifications to the monitoring program based on empirical data collected and analyzed. The quarterly monitoring reports will include all monitoring data presented in tabular format, a summary of the free-phase product volume removed, and will include a groundwater gradient map.

IMPLEMENTATION SCHEDULE

The implementation of the interim CAP will be conducted in a phased approach to minimize disrupting building tenants operations, and to allow for initial reimbursement of funds from the Underground Storage Tank Cleanup Fund. The initial work phase will begin in February 2004 with the subsequent phases occurring as tenant schedules allow. Based on tentative scheduling, we anticipate that construction of the infrastructure needed for the interim CAP will be will be completed by mid-2004. Descriptions of the interim CAP phases are presented below.

Phase 1. Installation of Conveyance Piping Inside the Warehouse

The portion of the warehouse where existing recovery wells TR-4 and TR-6 are located (shown on Figure 1) will be vacant in February 2004 and available for installing the pneumatic supply and free-product conveyance pipelines. Cutting the existing floor slab, installing and testing the conveyance piping and restoring the warehouse floor will take approximately one week. The conveyance piping will connect to the well vaults and will be extended through the building exterior wall for connection to the aboveground storage tank. The conveyance piping will be capped until the other phases described below are completed and the free-phase product recovery system is ready for connection and start up.

Phase 2. Installation of Collection Trench and Two Recovery Wells

The tenant who uses the parking area where the proposed trench and new recovery wells are located will make this area available for construction by April 2004. At that time, the collection trench, two recovery wells, and the free-product conveyance pipeline trench and pipelines will be installed. Additionally, the area where the aboveground storage tank will be located will be prepared for placing the tank when delivered. We anticipate that this construction work can be completed within one to two weeks. To expedite construction, necessary building permits and well installation permits will be applied for in February 2004 with and anticipated construction start date of April 1, 2004.

Phase 3. Acquisition of Recovery Equipment and System Startup

After the recovery system infrastructure is installed and the State Underground Storage Tank Cleanup Fund has reimbursed the property owner for initial cleanup costs (for the previous investigation costs), the free-phase product recovery equipment (skimmers, controls, and storage tank) will be acquired and placed on the site. Immediately following equipment installation and testing, the recovery system will be started. The initial reimbursement request will be submitted to the Tank Cleanup Fund in February 2004. According to the fund administrators, they project a reimbursement date of approximately four months after submittal of the initial request.

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Therefore we anticipate acquiring the free-phase product recovery system equipment by the end of June 2004. The equipment acquisition, installation, testing, and system startup will take 3 to 4 weeks. Therefore, we are projecting that the free-phase product recovery system will be in operation by August 2004.

APPROVAL LETTER

We look forward to meeting with you to discuss this proposed interim CAP. For the purpose of the Underground Storage Tank Cleanup Fund reimbursement requirements, we request a letter from the Alameda County Health Care Services approving this plan and requiring implementation of this interim CAP.

Thank you for your time and review of this project. If you have any questions regarding this Draft Interim Corrective Action Plan, please call David Kleesattel at (510) 874-4500, extension 541.

Sincerely,
TREADWELL & ROLLO, INC.

David R. Kleesattel, R.G.
Senior Geologist

Michael P. McGuire, P.E.
Principal Engineer

Attachments: Figure 1. Site Plan

cc: Ms. Faye Beverett
Mr. Richard C. Jacobs, Esq.