TANK PROTECT ENGINEERING
of Northern California, Inc.

April 7, 2000

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Mr. Barney Chan
Hazardous Materials Specialist
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

SUBJECT: PRODUCT PLUME DEFINITION WORKPLAN AT 2345 E. 14th Street, Oakland, CA 94601, FORMER CREDIT AUTO SALES

Dear Mr. Chan:

Tank Protect Engineering of Northern California, Inc. (TPE) is pleased to present this letter formatted work plan concerning further site investigation efforts to be conducted at the above referenced site.

OBJECTIVE

This work plan is being furnished in response to Alameda County Health Care Service Agency (ACHCSA) letter of request addressed to Mr. Stanley Wong, dated March 6, 2000. In that letter, ACHCSA requested submission of a work plan to estimate the boundaries of the free product plume at the site before consideration be given to free product removal.

The objective of this investigation is to more fully characterize the vertical and lateral extent of the free product plume as requested by ACHCSA. Actual free product removal and subsequent remedial actions will be determined by information obtained during completion of this investigation. The proposed investigation involves resurveying of one monitoring well, drilling of three (3)-geoprobe borings for geotechnical core recovery, installation of 12 temporary two (2)-inch PVC piezometers for further vertical

and lateral product definition and measurement, and the preparation of a technical report detailing the findings of the investigation. All work will be conducted under the direction of a California registered geologist.

BACKGROUND

TPE has conducted quarterly monitoring since March 1994. In a March, 1999 letter, ACHCSA stated that the past quarterly monitoring results showed the continual high presence of dissolved gasoline, BTEX components and seasonal free product presence, which indicated that natural bio-remediation was not occurring or occurring at a slow rate. The ACHCSA requested a specific work plan for enhanced bio-remediation along with a time schedule for its implementation.

In September 1999, TPE responded by submittal of REMEDIAL ACTION WORK PLAN FOR CREDIT WORLD AUTO SALES to ACHCSA. The work plan outlined a two-phase remedial approach:

> Phase 1- installation of three (3) 4-inch product recovery wells near MW-1, MW-2, and MW-3.
>
> Phase II- once product was recovered to residual levels, ORC slurry injection through approximately 135-geoprobe location at 12-foot grid spacing throughout the site.

However, after reviewing the most recent monitoring report submitted in December, 1999, ACHCSA responded in a March 6, 2000 letter that it was evident groundwater contamination and concentrations had not decrease over the past 6 six years of monitoring, five years of which have occurred after extensive soil excavation. In addition, the December, 1999 groundwater monitoring event reported free product in MW-1, MW-2, and MW-3. Because of these results, ACHCSA concluded that it appeared that the previously submitted work plan for product removal and ORC geoprobe borings be put on hold, since ORC is not recommended for use in the presence of free product, In addition, the installation of recovery wells only near the three-(3) monitoring wells was also not a reasonable approach.

THE ACHCSA concluded that a more aggressive approach was needed to remove free product before the ORC injection was considered. ACHCSA requested that options be considered which would have a greater impact on free product in the entire site. However, before that was done, ACHCSA directed that a work plan to estimate the boundaries of the free product plume be provided. ACHCSA also decreased site monitoring to semi-annual monitoring, in either the first and third or second and fourth quarters of the year.

SCOPE OF WORK

Health and Safety Plan

Prior to conducting any fieldwork. TPE will implement the site-specific health and safety plan for drilling activities as required by 29 CFR 1910.120. The health and safety plan details field procedures regarding various potential safety hazards that may be encountered during site activities.

Utility Clearance

Prior to conducting any subsurface fieldwork, TPE will conduct a utility clearance of the drilling areas to ensure that subsurface utilities are not intercepted during the drilling activities. Additionally, Underground Service Alert (USA) will be notified prior to drilling.

Permitting

TPE will acquire the necessary drilling permits from the appropriate agencies. All drilling will be performed by a drilling company with the appropriate license for drilling within state of California and approved by all local implementing agencies.

Re-Surveying of TMW-5

Monitoring well TMW-5, located in the central portion of the site, was installed in August 1993. In June 1996 the well top was destroyed during remediation activity at the site. Since that time, TMW-5 has not been used in groundwater flow direction or mean sea level measurements. TMW-5 will be re-surveyed for mean sea level elevation for inclusion into the site groundwater gradient, flow direction and elevation database. A State-licensed surveyor will provide surveying services.

Mean Sea Level Measurement

Since groundwater flow direction may impact the footprint of the free product plume, depth-to-groundwater will be measured for all monitoring wells at the site (MW-1 through TMW-5). Depth-to-groundwater will be subtracted from the top of casing elevation, measured to mean sea level in order to calculate current groundwater gradient and direction using all five (5) monitoring well data points. **Calculated groundwater flow direction will be used to select final temporary piezometer locations for product delineation.**

Geoprobe© Soil Sampling

Three proposed Geoprobe© locations are depicted on Figure 1. The locations were selected to encounter a variety of soil types present in the subsurface as described in previously installed monitoring well and borehole lithologic logs. One-inch diameter steel probes will be directly pushed into the ground. Each probe will be advanced to no greater than 25 feet below ground surface (bgs). Continuous soil core samples will be collected from the Geoprobe© sampler in clear plastic core tubes and sealed with Teflon tape and plastic end caps. The soil samples will be labeled with borehole designation, depth, orientation, time and date of collection, and placed in core boxes or other appropriate storage devices for geotechnical testing in regard to factors which will influence the number and spacing of product recovery wells (i.e. determination of aquifer hydraulic parameters and extraction well capture zone determination). After

sampling, each boring will be backfilled with bentonite and the surface restored to match existing conditions.

A California registered geologist utilizing the Unified Soil Classification System (USCS) will log all drill cores. In addition, all drill cores will be screened utilizing a photoionization detector (PID) or equivalent device capable of evaluating for the presence of petroleum hydrocarbons. These readings and any subjective evidence of petroleum hydrocarbons will be recorded on the boring logs.

Temporary Piezometer Installation

Twelve proposed temporary piezometer locations are depicted on Figure 1. The final selection of locations will be based upon accessibility, the postulated free product footprint as calculated from groundwater gradient direction measurements described above under Mean Sea Level Measurement, and the reoccurring presence of free product in monitoring wells MW-1, MW-2, and MW-3. Each borehole will be advanced to no greater than 25 feet bgs to avoid intersecting the deeper confined aquifer sand. A truck-mounted drilling equipped with 40-inch diameter solid stem augers will be utilized for drilling/ each piezometer will be constructed with threaded 2-inch outer diameter polyvinyl chloride (PVC) casing, with slot widths of 0.010 inches. The casing will be run without completion material. No filter pack or annular seal will be placed between the 2-inch casing and the 4-inch borehole.

During drilling all soil cuttings will be logged by a California registered geologist utilizing the USCS. In addition, all soil cuttings will be screened utilizing a photoionization detector (PID) or equivalent device capable of evaluating for the presence of petroleum hydrocarbons. These readings and any subjective evidence of petroleum hydrocarbons will be recorded on the borings logs.

During 1998 groundwater depth fluctuated from 8 to 17 bgs. To account for seasonal and historic groundwater fluctuations, the slotted casing will be placed in the borehole to extend from approximately five feet to 25 feet bgs. Water samples will not be taken for analytical laboratory analyses. The blank casing will then extend from ground surface to the top of slotted casing. All casing will be new, and sealed in

plastic from the factory. A clean slip on PVC end cap will be placed on top of the well casing to prevent introduction of foreign material. Boreholes will be covered at the surface with wood or metal plate to prevent foot traffic accidents.

Free Product Plume Measurement

Product plume measurements will begin a minimum of 48-hours after temporary piezometer installation to give the groundwater and free product plume time to stabilize and recharge. Product and groundwater depth measurements will be taken with a 1.5-inch diameter oil/water interface probe to the nearest 0.01-foot bgs. Observation will be made as to the presence or absence of free product and hydrocarbon odor.

After all measurements are taken the 2-inch PVC casing will be extracted and the borehole backfilled with neat cement grout or bentonite chips. The surface will then be restored to match existing conditions.

Waste Handling

During all field-drilling operations, sampling tools and downhole equipment will be either steam cleaned prior to use between drilling locations, or dedicated to one specific drilling location without reuse. The rinsate and formation water, and soil cuttings generated during drilling activities will be stored on-site in Department of Transportation (DOC)-approved 55-gallon closed-top steel drums pending evaluation for proper disposal. The used casing will be steam cleaned and disposed as non-hazardous trash.

Reporting

TPE will prepare a Product Plume Definition Report describing the proposed investigation including:

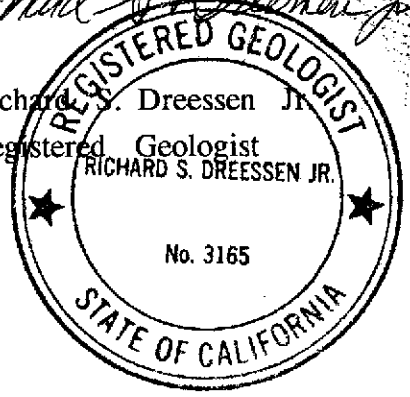
- Details of field procedures and operations
- Geoprobe and piezometer borehole logs
- Conclusions and recommendations for the next action, which may involve free product removal
- Map(s) showing estimated free product areal extent, sampling locations, thickness contours of free product, groundwater flow direction and water level contours
- Detailed time schedule for actions necessary for completing the next proposed stage of remedial work with dates and timeframes for design, permitting, construction, sample collection and analyses, report preparation, and report submittal.
- Health & Safety Plan

Very Truly Yours,

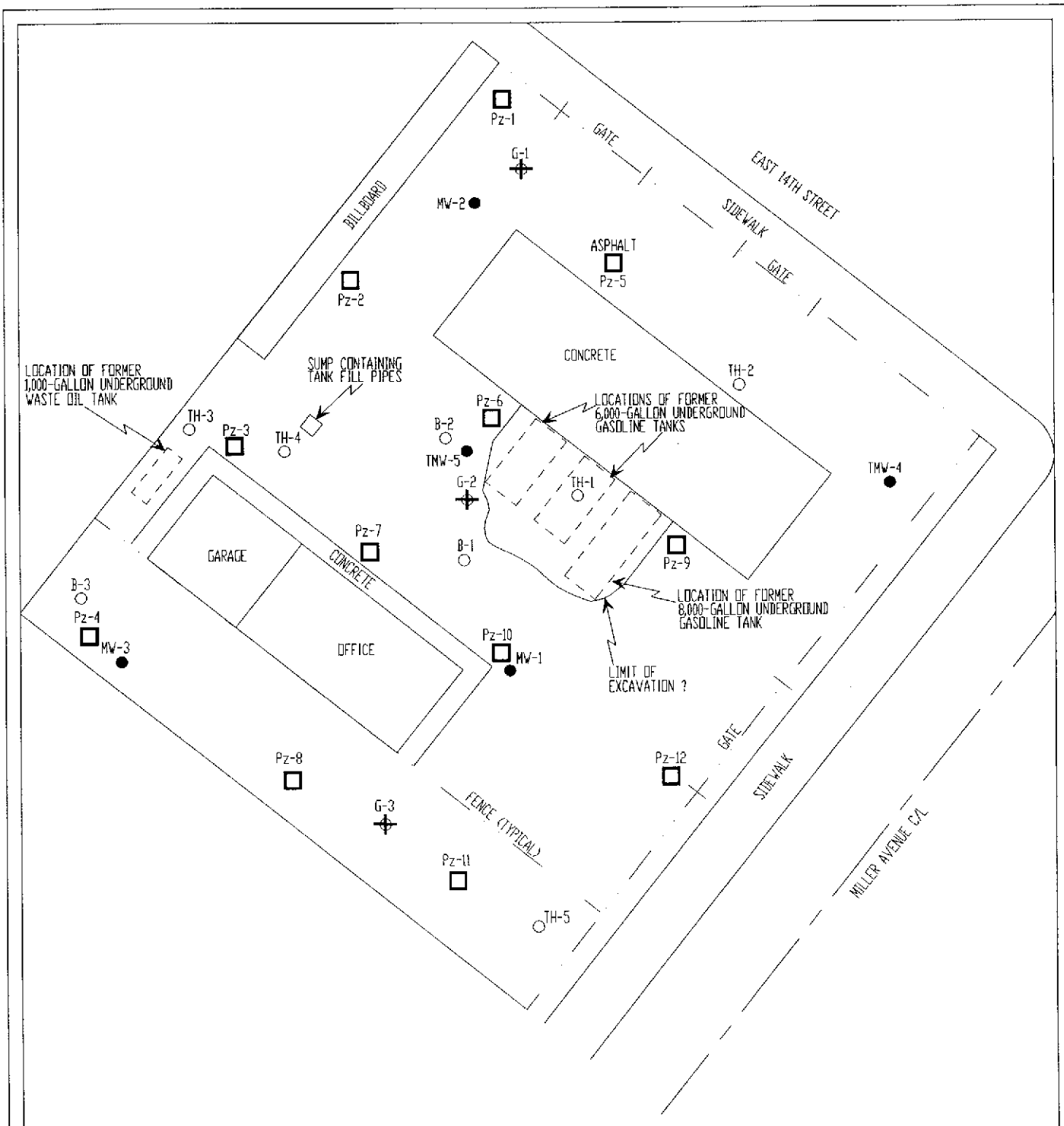
TANK PROTECT ENGINEERING, INC.

Jeff Farhoomand, M.S.
Principal Engineer

Richard S. Dreessen Jr.
Registered Geologist



Attachment: Figure 1- Site Plan with Proposed Geoprobe© and Temporary Monitoring Well Locations



LEGEND

- TMW-4 ● NAME AND LOCATION OF MONITORING WELL INSTALLED BY TPE
- MW-1 ● NAME AND LOCATION OF MONITORING WELL INSTALLED BY OTHERS
- B-1 ○ NAME AND APPROXIMATE LOCATION OF SOIL BORING DRILLED BY OTHERS
- G-1 ⊕ PROPOSED GEOPROBE LOCATION
- Pz-1 □ PROPOSED TEMPORARY PIEZOMETER LOCATIONS

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SCALE IN FEET

TANK PROTECT ENGINEERING

SITE PLAN

PROPOSED GEOPROBE AND TEMPORARY PIEZOMETER LOCATIONS

CREDIT WORLD AUTO SALES
2345 E. 14TH STREET
OAKLAND, CA 94601

DATE	04/07/00
FIGURE	1
FILE #	267-0T
DRAWN BY	RD
CHECKED BY	VK