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SITE INVESTIGATION WORKPLAN

5/31/01

GOLDEN GATE PETROLEUM
HAYWARD BULK PETROLEUM
DISTRIBUTION FACILITY

Bonkowski & Associates, Inc.
6400 Hollis Street, Suite 4
Emeryville, California 94608

May 31, 2001

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CERTIFICATION
SITE INVESTIGATION WORKPLAN
GOLDEN GATE PETROLEUM
HAYWARD CARDLOCK FACILITY

1565 Industrial Parkway West
Hayward, California

May, 2001

This workplan for Golden Gate Petroleum Hayward Cardlock Facility has been prepared by the staff of Bonkowski & Associates, Inc., and was reviewed and approved by the professionals whose signatures appear below.

The findings, recommendations, specifications, or professional opinions are presented, within the limits prescribed by the Client, after being prepared in accordance with generally accepted engineering practice in Northern California at the time this report was prepared. No other warranty is either expressed is implied.

BONKOWSKI & ASSOCIATES, INC.

Michael S. Bonkowski, RG CEG 1329
Senior Managing Principal
Environmental and Engineering Services

Peter J. Holland
Senior Staff Geologist

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WORKPLAN FOR GOLDEN GATE PETROLEUM
HAYWARD BULK PETROLEUM DISTRIBUTION FACILITY

1565 Industrial Parkway West
Hayward, California

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1.0 INTRODUCTION

This Workplan for the bulk petroleum distribution facility at 1565 Industrial Parkway West in Hayward, California (Figure 1) was prepared on behalf of Golden Gate Petroleum by Bonkowski & Associates, Inc. The plan is submitted to the Alameda County Environmental Health Services (ACEHS) in accordance with the letter directive dated May 7, 2001 (Appendix A). This Workplan develops an investigative approach, which if followed, will help evaluate the lateral extent of petroleum fuel contamination and assess sensitive receptors adjacent to the site.

2.0 PURPOSE OF THE WORKPLAN

Per Article 11, Division 3, Chapter 16, Title 23 of the California Code of Regulations, the purpose of the Workplan is to provide a technical approach to evaluating the lateral and vertical extent of subsurface soil and groundwater contamination resulting from underground storage tank operations at the Golden Gate Petroleum Hayward facility. The technical approach builds upon the investigative efforts of the Interim Remedial Measures Report (Bonkowski & Associates, Inc., 1999).

The ACEHS is requiring Golden Gate Petroleum submit a site investigation Workplan to evaluate the extent of petroleum fuel hydrocarbons laterally and vertically and conduct a sensitive receptor survey. This Workplan was prepared to satisfy the requirements of this request.

3.0 SITE DESCRIPTION

The Hayward Bulk Petroleum Distribution Facility (Site) is located along the north side of Industrial Parkway West in a largely industrial and commercial area. The Site presently has three (3) 20,000 gallon fiberglass underground fuel storage tanks and nine (9) dispenser islands that dispense diesel, unleaded regular, plus unleaded, and premium unleaded regular gasolines (Figure 2). Between November 1998 and January 1999, nine (9) underground storage tanks, dispenser islands and the bulk rack were removed (Figure 3). The Hayward Cardlock has been used for the retail sale of gasoline and petroleum fuel products since about 1960

Groundwater beneath the site occurs at depths that range from 10 to 18 feet below grade, depending upon the underlying lithology. Soils encountered consist primarily of silt, silty clays, and silty sand combinations (Bonkowski & Associates, Inc., 1999).

4.0 BACKGROUND

Between November 1998 and January 1999, nine tanks, dispenser islands, and product lines were removed from the site. Soil samples collected beneath the tanks and dispenser islands showed high concentrations of TPHG, TPHD, BTEX and MTBE. Due to the contaminant concentrations, overexcavation occurred beneath the tanks and the bulk dispenser island. A groundwater sample collected from the tank pit showed concentrations of TPHG, TPHD, and MTBE at 9,800 ppb, 12,000,000 ppb, 6,000 ppb, respectively. About 7,000 cubic yards of soil were excavated during this work effort. Approximately 49,700 gallons of contaminated groundwater containing separate phase hydrocarbons (SPH) were pumped from the excavation.

The nine underground storage tanks that were removed in 1998/1999 included: a 12,000 gallon mid-grade unleaded gasoline (Tank 1), 12,000 gallon red dye diesel (Tank 2), 12,000 gallon premium unleaded gasoline (Tank 3), 4,000 gallon Stoddard solvent (Tank 4), 2,000 gallon kerosene (Tank 5), 1,000 gallon waste oil tank (Tank 6), two 20,000 gallon diesel fuel (Tanks 7 and 8), and a 20,000 gallon unleaded regular gasoline (Tank 9).

5.0 TECHNICAL APPROACH

From the previously mentioned reports, the contaminants of concern include TPHG, TPHD, BTEX, MTBE, and possibly oxygenates. The highest concentrations of hydrocarbon contaminated soil occurred around the central portion of the site in the vicinity of former Tanks 2, 3, 7, 8 and 9 (Bonkowski & Associates, Inc., 1999). Concentrations of TPHG and TPHD in soil were previously reported (Figures 4 and 5) by Bonkowski & Associates, Inc. (1999). These maps are used to locate and design monitor wells to evaluate the effectiveness of remedial measures, including soil and underground storage tanks removal and SPH recovery, already conducted at the site.

6.0 FIELD INVESTIGATION

Our technical approach is designed to evaluate the lateral and vertical extent of contamination remaining from underground storage tank and pipeline leakage at the site. Bonkowski & Associates, Inc. will install 6 monitor wells at the site to make this assessment. Water level measurements from these wells will be used to determine the horizontal groundwater gradient. Groundwater samples will be tested for TPHD, TPHG, motor oil, BTEX, total lead, all oxygenates and the gasoline additives EDB and 1,2-DCA to evaluate the migration of hydrocarbons in water bearing units. A sensitive receptor survey will be conducted to help evaluate the risk associated with

the contaminants found in groundwater. The data will be evaluated and recommendations will be for additional investigation, monitoring or remediation (if necessary).

Task 1. Health and Safety Plan, Permitting, Underground Utility Location

Prior to conducting any fieldwork, Bonkowski & Associates, Inc. will prepare a Health and Safety plan to conduct the planned scope of work. The Health and Safety Plan will address the requirements of 29 Code of Federal Regulations (CFR) 1910.120 requirements regarding basic 40-hour health and safety training, supervisor training, and annual refresher training. All Bonkowski & Associates, Inc. and subcontractor field personnel will have medical clearances to perform work at sites with hazardous materials. In addition, at least one field worker will be trained and certified in the administration of CPR and first aide.

Permits will be obtained from the Alameda County Health Care Services to install monitor wells. Any additional permits required by law will be obtained from the implementing agency. Underground utilities will be checked by notifying Underground Service Alert and confirmed at each well location using a commercial underground utility locator.

Task 2. Groundwater Monitor Well Installation and Sampling

Six groundwater monitor wells (MW-1 to MW-6) will be installed at the approximate locations shown on Figure 2. The wells will be installed using a truck-mounted drill rig equipped with hollow-stem augers. The monitor wells will be advanced to a depth of 10 feet below the top of the first shallow groundwater. The wells will be constructed using 2-inch diameter schedule 40 PVC casing with threaded ends and factory screening. The casings will extend the full length of the boring, sealed with a bottom plug, and screened from a point 0.5 feet above the bottom of the casing to approximately 5 feet above the highest anticipated groundwater level. The filter packs will extend 24 inches above the top of the well screen, followed by one foot of hydrated bentonite and neat cement to the ground surface. Slot size will be 0.020 inch, and Monterey No. 3 sand will be used for the filter pack. The well heads will be sealed with locking watertight covers. A concrete pad shall be placed around each wellhead and sloped 3% to direct run-off away from the well head.

Soil Logging and Sampling

Soils will be logged every five feet while drilling by a field geologist, or at every major change in lithology according to the Uniform Soils Classification System Description and Identification of Soils Visual-Manual Procedure ASTM Designation D2488-84. Soil samples will be collected at five-foot intervals for chemical analysis. The samples will be collected using a modified California type sampler equipped with laboratory cleaned brass tubes. The sampler will be thoroughly decontaminated prior to the collection of each sample. The decontamination process will consist of scrubbing all

equipment in a bucket containing Alconox and water and rinsing with two consecutive clean water rinse buckets, and final rinsing with deionized water.

The samples will be collected by dropping the sampler down the hollow stem of the auger. A 140-lb. hammer with a 30-inch drop will drive the sampler 18 inches into the soil. The number of blows required to drive the sampler (a maximum of 50 blows) will be recorded by the field geologist. The sampler will then be winched from the soil and brought to the ground surface. The sampler will be opened and the brass tubes removed. The uppermost brass tube sample will be immediately capped with Teflon tape and plastic end caps, and placed on ice in a refrigerator cooler. The samples will be shipped under chain-of-custody to a State Certified analytical laboratory for chemical analysis.

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The middle brass tube sample will be logged by the field geologist. The lowest brass tube sample will be tested for vapor headspace analysis. This sample will be placed in a Ziplock bag, sealed and left in the sun for 5 minutes to enhance the volatilization of organics that may be present in the soils. A headspace reading will be taken from the interior of the bag using an organic vapor meter. The measured vapor readings will be recorded on the log of the boring.

Well Development

At least 24-hours after construction the monitor wells will be developed by over pumping and block surging until the discharge water is relatively free of settleable solids. All well development equipment coming into contact with the water will be decontaminated by washing in an Alconox solution followed by tap and deionized water rinses.

Well Survey

The location and elevation of the newly constructed groundwater monitor wells will be surveyed to an accuracy of ± 0.01 feet to a relative location (building, fence post, etc.) or USGS elevation datum. The well survey will be plotted on a base map.

Groundwater Sampling

Groundwater samples will be collected from the wells for chemical analysis. Prior to sampling, the water level elevation will be determined in each well with a power sounder. The wells will be evacuated of 3 well casing volumes with a Grundfos Redi Flow 2 pump and will be sampled when either: the water level returns to at least 80 percent of its static level, or the water quality parameters pH, conductivity, temperature and salinity are within 10% of each other on three consecutive readings. The wells will be sampled using dedicated disposable polyethylene bailers.

Groundwater samples will be collected in containers prepared by the analytical laboratory and sealed to prevent loss of volatile constituents. They will stored on ice

in a refrigerator cooler in accordance with EPA standards, and transported to a State Certified analytical laboratory under chain-of-custody.

Soil and Groundwater Chemical Analyses
Soil, and groundwater samples will be analyzed for TPHD, TPHG, motor oil, BTEX, total lead, all oxygenates an the gasoline additives EDB and 1,2-DCA using modified EPA Methods 8015/8020 and 8260. The total number of samples and their respective analyses are summarized below.

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Proposed Schedule of Analyses

Analyte	Media	Method	Number
Gasoline, Diesel Fuel, Motor Oil, Aromatic Hydrocarbons, Gasoline Additives EDB and 1,2-DCA, and Oxygenates	Soil	EPA 8015/8020 and 8260	6
Gasoline, Diesel Fuel, Motor Oil, Aromatic Hydrocarbons, Gasoline Additives EDB and 1,2-DCA, and Oxygenates	Groundwater	EPA 8015/8020 and 8260	6

Task 3. Sensitive Receptor Survey
Bonkowski & Associates, Inc. will conduct a sensitive receptor survey as required by the ACEHS directive dated May 7, 2001. The survey will include a review of Department of Water Resources files made readily available during one DWR visit, and one visit with the ACEHS and the local water department. The sensitive receptor survey will identify municipal wells, domestic wells, and major surface water resources within 2,000 feet of the site. A field reconnaissance of a distance of 500 feet of the site will be made by a Bonkowski & Associates, Inc. field engineer to "ground truth" the receptor survey. The sensitive receptor survey will identify the feature observed, show its general location on a map, and identify it as a water well, surface water resource or creek, or other man-made object.

Task 4. Data Interpretation
To interpret the extent of contamination at the Hayward facility, Bonkowski & Associates, Inc. will consider: 1) the distribution of subsurface hydrocarbons, 2) the

relative position of the water table, 3) the relative position of surface water resources and water supply wells, and 4) the distribution of hydrostratigraphic units. The distribution of hydrocarbons in the soil and groundwater and the relative position of the groundwater table and surface water will be used to assess whether additional sources of hydrocarbons exist beneath the site, and the extent of contamination across the site. Logging of samples at 5 foot intervals will evaluate the existence of hydrostratigraphic units that could function as contaminant pathways. The combined consideration of all of these data will allow Bonkowski & Associates, Inc. to render and opinion regarding the extent of contamination and evaluate the need to conduct Corrective Actions or groundwater monitoring.

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Task 5. Problem Assessment Report

A technical report will be prepared which describes the field methods, presents the data, and provides our evaluation of the extent of hydrocarbon contamination, and the general site hydrogeology. The report, at a minimum, will include:

- Tabulated results of all previous and to date investigations
- Groundwater elevation and contamination contour maps of TPHG, TPHD, Benzene, MTBE, EDB and TBA
- Site map assessing the lateral extent of groundwater contamination
- Estimated quantity of contamination of soil and groundwater (if possible)
- Compliance with regulatory agency requirements
- Recommendations based upon the site conditions consistent with Chapter 18 Cleanup Fund Regulations, and amendments to Chapter 16 Underground Storage Tank Regulations

Task 6. Quarterly Groundwater Monitoring

Quarterly groundwater samples will be collected from wells MW-1 to MW-6 beginning the quarter subsequent to this investigation. The samples will be tested for TPHG, TPHD, BTEX, MTBE, and oxygenates, or other chemicals of concern identified by the ACEHS. The samples will be collected from each well as described in Task 2.0 (described above).

7.0 SCHEDULE

The planned work will be conducted with 30 days of Golden Gate Petroleum's authorization to proceed. Golden Gate Petroleum will require concurrence with this Workplan from the ACEHS, and preapproval from the Cleanup Fund prior to conducting this work. It is anticipated that this field work can be conducted within 60 days of the acceptance of this Workplan by these agencies.

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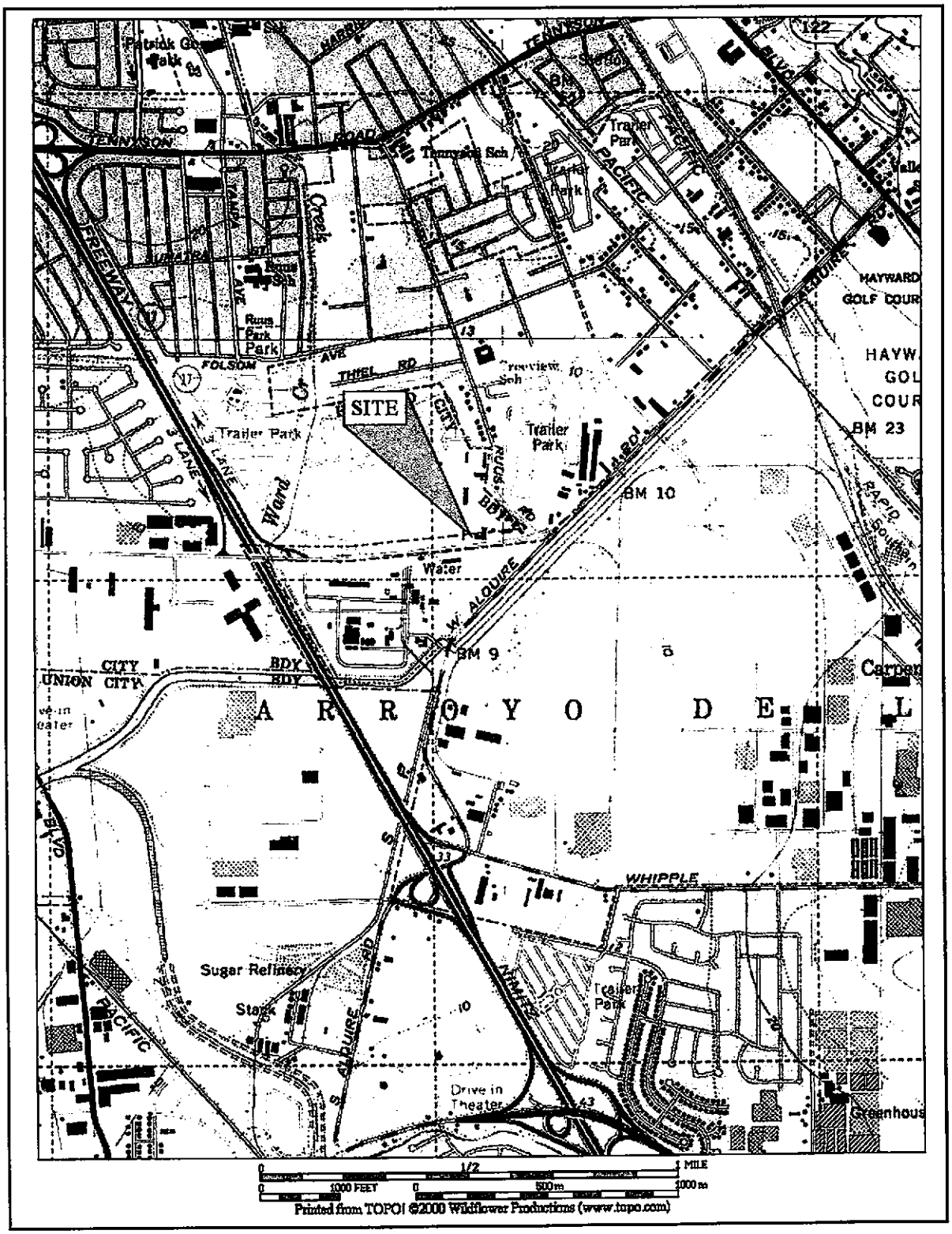

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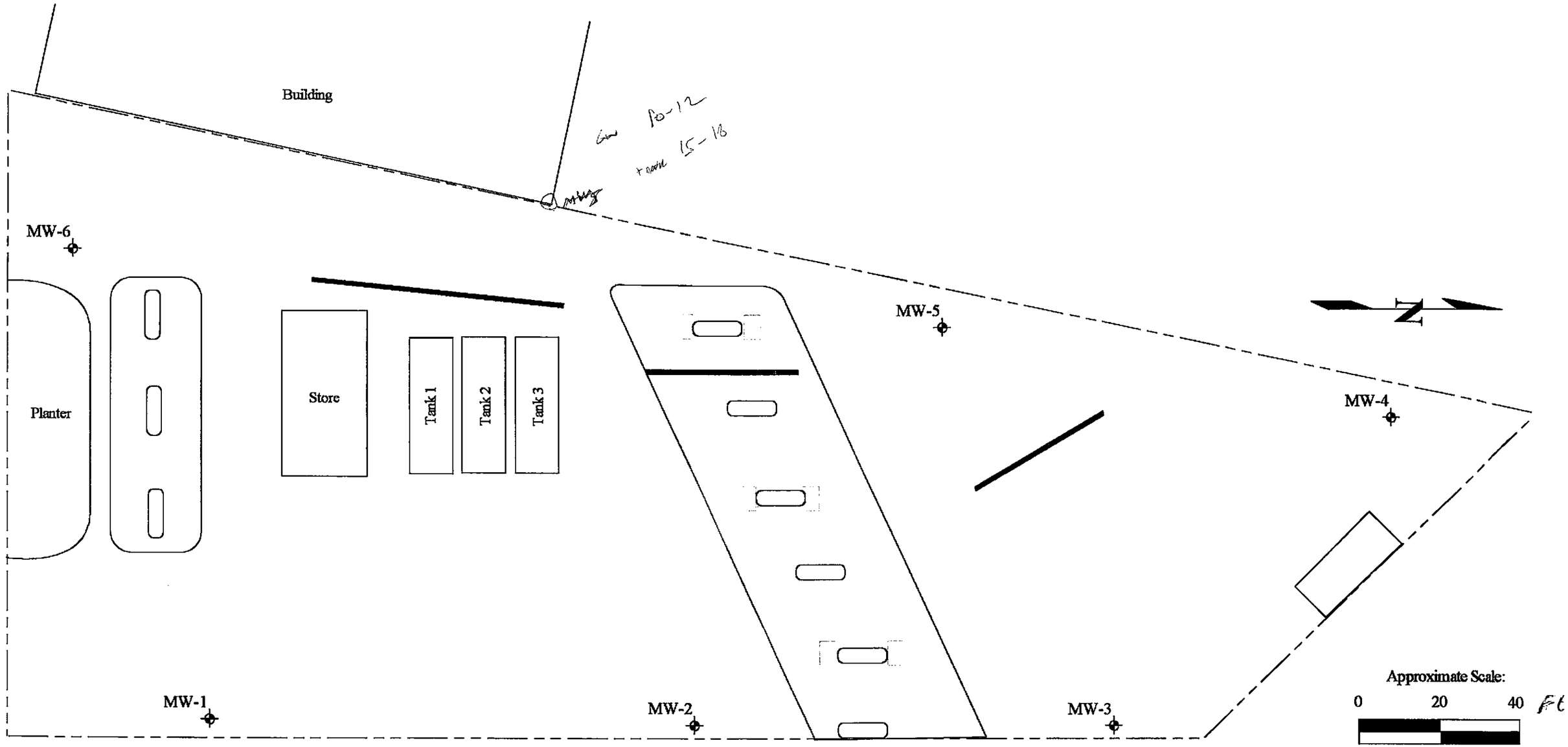
Project No. L98184	Golden Gate Petroleum	SITE LOCATION 1565 INDUSTRIAL PARKWAY WEST HAYWARD, CALIFORNIA	Figure 1
Bonkowski & Associates, Inc.			



LEGEND

MW-1 Planned monitor well

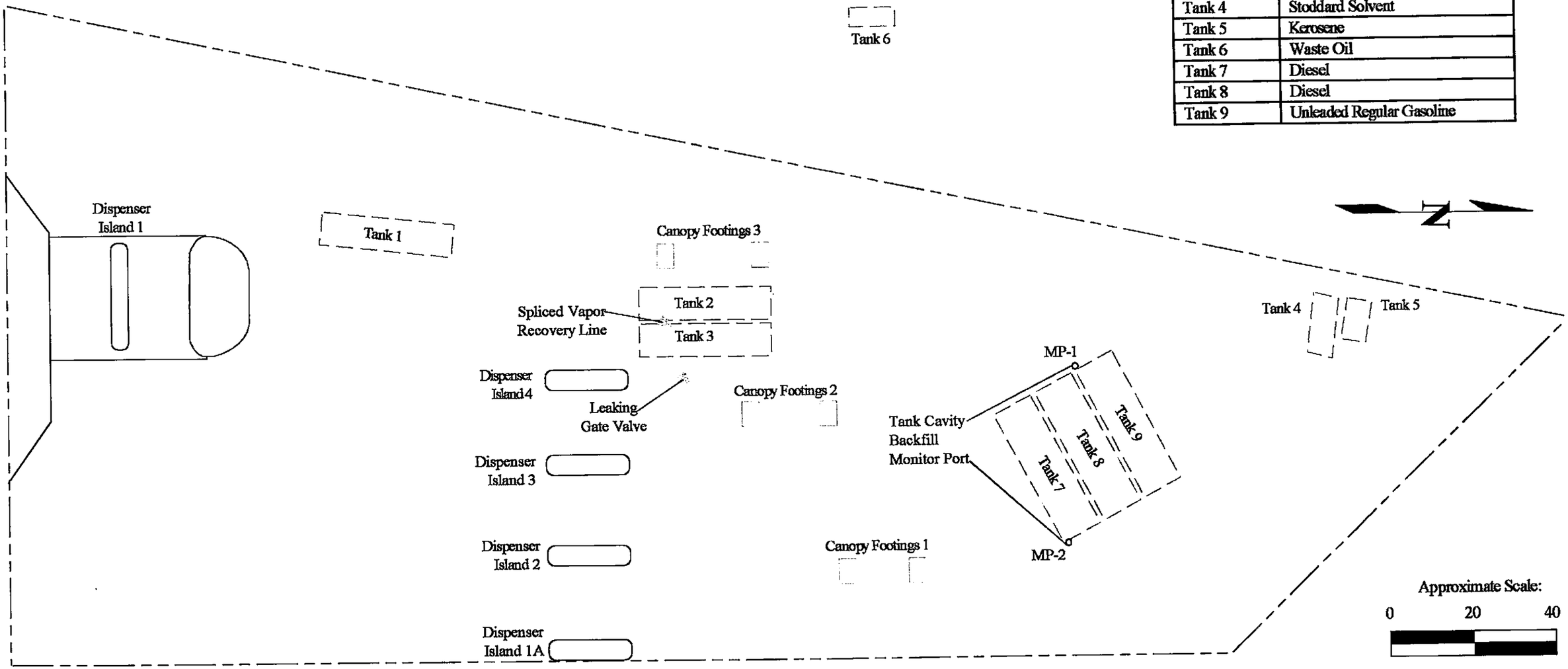
Dispenser Island

Conopy footing

Collector Trench

Project No. L98184	Golden Gate Petroleum	NEW SITE PLAN MAP 1565 INDUSTRIAL PARKWAY WEST HAYWARD, CALIFORNIA	Figure 2
Bonkowski & Associates, Inc.			

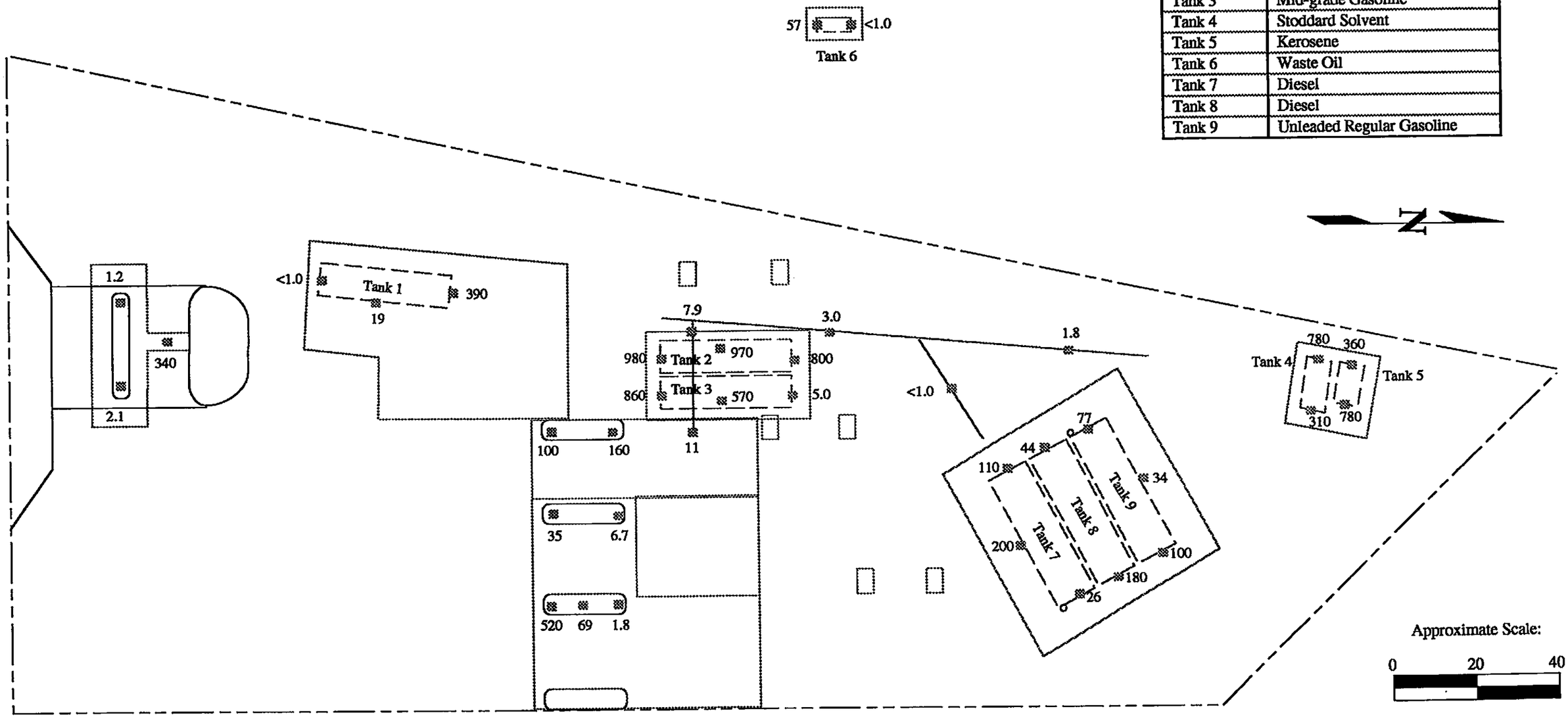
Tank	Contents
Tank 1	Premium Gasoline
Tank 2	Red Diesel
Tank 3	Mid-grade Gasoline
Tank 4	Stoddard Solvent
Tank 5	Kerosene
Tank 6	Waste Oil
Tank 7	Diesel
Tank 8	Diesel
Tank 9	Unleaded Regular Gasoline



Project No. L98184	Golden Gate Petroleum	OLD SITE PLAN MAP 1565 INDUSTRIAL PARKWAY WEST HAYWARD, CALIFORNIA	Figure 3
Bonkowski & Associates, Inc.			

INDUSTRIAL PARKWAY WEST

Tank	Contents
Tank 1	Premium Gasoline
Tank 2	Red Diesel
Tank 3	Mid-grade Gasoline
Tank 4	Stoddard Solvent
Tank 5	Kerosene
Tank 6	Waste Oil
Tank 7	Diesel
Tank 8	Diesel
Tank 9	Unleaded Regular Gasoline

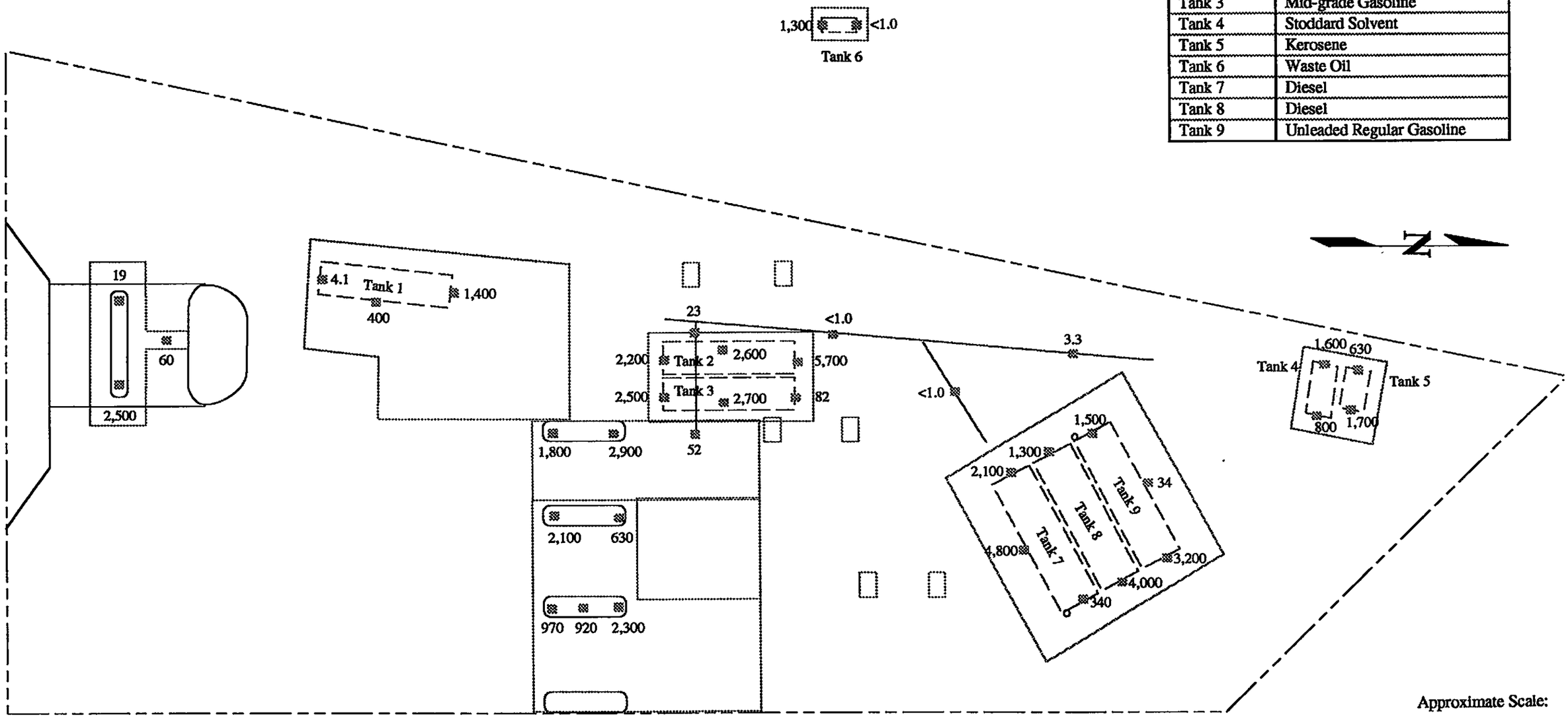


Legend

$\overset{100}{\blacksquare}$ TPHG Concentration in Soil (mg/kg)

Project No. L98184	Golden Gate Petroleum	TPHG CONCENTRATION IN SOIL 1565 INDUSTRIAL PARKWAY WEST HAYWARD, CALIFORNIA	Figure 4
Bonkowski & Associates, Inc.			

Tank	Contents
Tank 1	Premium Gasoline
Tank 2	Red Diesel
Tank 3	Mid-grade Gasoline
Tank 4	Stoddard Solvent
Tank 5	Kerosene
Tank 6	Waste Oil
Tank 7	Diesel
Tank 8	Diesel
Tank 9	Unleaded Regular Gasoline



Approximate Scale:

0 20 40

Legend

100 TPHD Concentration in Soil (mg/kg)

Project No. L98184	Golden Gate Petroleum	TPHD CONCENTRATION IN SOIL 1565 INDUSTRIAL PARKWAY WEST HAYWARD, CALIFORNIA	Figure 5
Bonkowski & Associates, Inc.			

INDUSTRIAL PARKWAY WEST

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

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RECEIVED
MAY 10 2001

May 7, 2001

Mr. Terri Penny
Operation Coordinator
Golden Gate Petroleum
501 Shell Avenue
Martinez, CA 94553

Re: Required investigations at Hayward Cardlock, 1565 Industrial Parkway West, Hayward, CA

Dear Mr. Terri:

This office has tried to make contact with your company's representative regarding several Underground Storage Tanks (USTs), which were removed in 1998 from the above referenced site. Having talked to Mr. Kevin Cline and others of Golden Gate Petroleum, I realized that your company's office has moved to Martinez and Mr. Harvey Brook left the company about a year ago. However, as you are aware, after the UST removal, there were several soil and grab groundwater samples, collected from the site, which revealed existence of contaminants due to unauthorized release from the former USTs. The groundwater and soil samples were analyzed for Total Petroleum Hydrocarbons as Gasoline (TPHG), Methyl Tertiary Butyle Ether (MTBE), benzene, toluene, ethylbenzene, and total xylenes (BTEX). The analytical results of the water samples revealed up to 140,000 parts per billion (ppb) TPHG, 1520ppb benzene, 230ppb ethylbenzene, 250ppb toluene, 220ppb total xylenes, and 260,000ppb MTBE. The analytical results of the soil samples identified up to 100,000 ppm MTBE, 980ppm TPHG, 5,700ppm TPHD, and 18,000ppb, 1,800ppb, 27,000ppb, 54,000ppb levels of BTEX respectively.

I understand that you were unaware of correspondences by this office due to change in office address as well as the departure of Mr. Brook. However, it is imperative that you comply with the requirements set forth by this office. Per Article 11, Division 3, Chapter 16, Title 23 of the California Code of Regulations, **you are required to conduct a Preliminary Site Assessment (PSA) to determine the lateral and vertical extent and severity of soil and groundwater contamination, which has resulted from the release at the site.** The information gathered by the PSA will be used to determine an appropriate course of action to remediate the site, if deemed necessary. **The major elements of such an investigation, include, but are not limited to, the following:**

- At least one groundwater monitoring well must be installed within 10 feet of the observed soil contamination, oriented in the confirmed downgradient direction relative to groundwater flow. In the absence of data identifying the local confirmed downgradient direction, a minimum of three wells will be required to verify gradient direction. During the installation of these wells, soil samples are to be collected at five-foot-depth intervals and any significant changes in lithology.

- Subsequent to the installation of the monitoring wells, these wells must be surveyed to an established benchmark (mean sea level, MSL), with an accuracy of 0.01 foot. Groundwater samples are to be collected and analyzed quarterly.

This Department will oversee the assessment and remediation of your site. Our oversight will include the review of and comment on work proposals and technical guidance on appropriate investigative approaches and monitoring schedules. All reports and proposals must be submitted under a seal of a California –Registered Geologist, -Certified Engineering Geologist, or – Registered Civil Engineer.

The PSA proposal is due within 60 days of date of this letter by July 7, 2001. Once the proposal is approved, fieldwork should commence within 60 days. A report must be submitted within 45 days after the completion of this phase of work at the site. Subsequent reports are to be submitted quarterly until this office approves a change in sampling frequency or the site qualifies for closure. Such quarterly reports are due the first day of the second month of each subsequent quarter.

The referenced initial and quarterly reports must describe the status of the investigation and must include, among others, the following elements:

- Details and results of all work performed during the designated period of time: records of field observations and data, boring and well construction logs, water level data, chain-of-custody forms, laboratory results for all samples collected and analyzed, tabulations of free product thicknesses and dissolved fractions, etc.
- Status of groundwater contamination characterization
- Interpretations of results: water level contour maps showing gradients, free and dissolved product, plume definition maps for each target component, geologic cross sections, etc.
- Recommendations or plans for additional investigative work or remediation

Additionally, Per my discussion with Ms. Cynthia Dittmar of Bonskowski & Associates previously, you are required to include a well survey and address the known domestic well(s).

The City of Hayward will oversee any work relating to the 1998 UST upgrade requirements. However, this office will oversee any contaminated soil or groundwater that is generated from this work.

The State Water Resources Control Board manages an Underground Storage Tank Cleanup Fund (Fund) to help eligible Responsible Parties to obtain reimbursement for costs of investigating and remediating releases from petroleum underground storage tanks. You are encouraged to apply. To obtain an Application Package, contact the Fund at the following:

State Water Resources Control Board
Division of Clean Water Programs
UST Cleanup Fund
P.O. Box 944212
Sacramento, CA 944212
Telephone: (916)227-4307

You are also advised to contact Cheryl Gordon at (916)-227-4539 with any questions regarding State Trust fund.

Please be advised that this is a formal request for a work plan pursuant to Section 2722(c)(d) of Title 23 California Code of Regulations. Any extensions of the stated deadlines, or modifications of the required tasks, must be confirmed in writing by either this agency or RWQCB.

Please respond to above by May 21, 2001, otherwise a Notice of Violation.

If you have any questions or comments, please contact me at (510) 567-6876.

Sincerely,

Amir K. Gholami, REHS
Hazardous Materials Specialist

CC: Ms. Cynthia Dittmar, Bonskowski & Associates Inc., 6400 Hollis Street, Suite 4, Emeryville, CA 94608
Files