# DELPHI

# FACILITY INVESTIGATIVE REPORT

# APPENDIX A
# SECTION 2

SITE CHARACTERIZATION AND REMEDIAL ACTION PLAN
DELCO-REMY
ANAHEIM, CALIFORNIA

DAMES & MOORE
SANTA BARBARA, CALIFORNIA
JOB NO. 14197-002-042
NOVEMBER 4, 1986

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Dames & Moore

33.1G/6-COV

Dames & Moore
820 5th Avenue
San Diego, CA 92101
(619) 234-8363

November 5, 1986

Delco-Remy
1201 N. Magnolia
Anaheim, California

**DRAFT**

Attention: Mr. Dave Hornyak

Re: Site Characterization and Remedial Action Plan

Dear Mr. Hornyak:

Please find attached our draft Site Characterization and Remedial Action Plan for Delco-Remy's facility. This document summarizes the work conducted at the site to date, discusses the extent of contamination, and presents a remedial action plan. After your review, this document can be submitted to the Orange County Health Care Agency personnel listed below. Work can be scheduled and implemented after the counties review and concurrence of the proposal plan.

After you have reviewed the document please contact the undersigned if you have comments or questions.

Very truly yours

DAMES & MOORE

Anthony S. Nelson
Project Manager
Registered Geologist 4175

TAV:ASN:ses
33.1G/31-ltr1
cc: Ms. Debby Grecco, Orange County Health Care Agency

# SITE CHARACTERIZATION AND REMEDIAL ACTION PLAN FOR DELCO-REMY FACILITY ANAHEIM, CALIFORNIA

## 1.0 INTRODUCTION

### 1.1 PURPOSE

The purpose of the following report is to: (1) present the results of our Site Characterization Plan; and (2) propose remedial actions to address the contamination.

### 1.2 BACKGROUND

At the request of Delco-Remy, Dames & Moore is providing consulting services related to the removal of six underground storage tanks at 1201 North Magnolia Blvd., Anaheim, California (Figure 1).

In January 1985 representatives of Dames & Moore and Delco-Remy agreed on a preliminary scope of services to include: (1) soil sampling under each tank; (2) analysis of samples; (3) interaction with regulatory agencies; (4) assistance in preparing permits; and, (5) assistance in developing a site characterization plan if needed. In July 1986 these services were expanded to include drilling and sampling of soils to characterize soil contamination observed during the tank removal program. Dames & Moore arranged for drilling to be conducted by Datum Exploration Company from Long Beach and for chemical testing services to be provided by Chemical Research Laboratories in Stanton, California. Delco-Remy arranged for the tank excavations to be conducted by Frize Corporation from Industry, California; for handling of the waste materials by Waste Disposal Services of Upland California; and for removal of residual fuel by Petro-Trading of Long Beach, California.

### 1.3 FACILITIES

The Delco-Remy facility consists of a main manufacturing building and numerous smaller buildings and related support operations. The principal activity at the Delco-Remy facility is the assembly and distribution of lead/acid batteries.

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Six underground storage tanks were located at the facility in two separate areas (Figure 2). Tank Area 1 contained four 19,000 gallon tanks. The tanks were originally used for the storage of fuel oil (diesel #2), but were taken out of service in the early 1980's. The tanks remained in the ground with residual fuel until the time they were removed by the Frize Corporation. Tank Area 2 contained two 12,000-gallon tanks. These tanks originally stored sodium hydroxide but were converted to waste oil storage in 1979.

Both sets of tanks rested upon thick concrete support slabs poured in the bottom of the excavations pits during tank installation. The concrete support slab under Tank Area 1 is flat. The concrete support pad under Tank Area 2 is up to two feet thick and included a large concrete slurry crib structure poured around the lower third of the tanks. Apparently the underlying concrete support pad was poured and allowed to harden. The tanks were then placed into the excavation on top of the concrete slab. After being secured with metal straps, a concrete slurry was poured around the tanks to form a crib-like structure.

The six underground storage tanks were excavated and removed by Frize Corporation under separate contract to Delco-Remy in July 1986. Dames & Moore was onsite during the excavation program to observe tank removal and to collect soil samples required by Orange County Health Care Agency (OCHCA). During the removal of the tanks in Tank Area 2 a waste oil leak was observed from the most westerly tank. The lower half of the tank was ruptured and some residual contents were released onto the concrete support pad. The tanks in Tank Area 1 did not appear to have leaked.

Subsequent to the discovery of the waste oil leak in Tank Area 2, Dames & Moore prepared a Site Characterization Plan to assess the extent of contamination. The plan was submitted to OCHCA on July 23, 1986. The plan focused on Tank Area 2 and proposed four vertical borings surrounding the concrete support pad and two vertical borings in the center of the concrete support pad. However, development of a ramp to allow drilling equipment into the pit was not possible due to the discovery of large buried footings in the proposed ramp area. Dames & Moore and OCHCA agreed that three borings placed out-

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side the excavation pit and angle-drilled under the pad and one vertical exploratory boring drilled through the concrete pad would be used to collect soil samples. Additionally, one ground water monitoring well would be installed just southwest of Tank Area 2.

Three sets of samples were collected during the coarse of the investigation. The first set of soil samples were collected during tank removal (G1 and G9). The second set soil of samples were collected in Tank Area 2 from borings in and around the excavation pit (B1 to B4, MW1 to MW4 and HB1 samples). After chemical testing, a third set of soil samples (HB2 and HB3) were collected to further assess soil contamination. Sampling methods, locations and results are discussed below.

## 2.0 GEOLOGIC AND HYDROLOGIC SETTING

Regional geologic structures in the area include the Whittier-Elsinore fault system on the northeast side of the Orange County and the Newport-Inglewood fault zone along the coastline. These faults are associated primarily with right lateral horizontal displacement. Topographic relief commonly characterizes their traces. The Orange County Plain overlies a large northwest-southeast trending synclinal trough that extends from the San Joaquin hills near Newport Beach to the Santa Monica mountains northwest of Los Angeles. Subsidence in this structural basin was initiated in Middle Miocene time and received up to 28,000 feet of sediment along the western edge of the county.

The study area is located in the northern part of the Orange County Coastal Plain and is locally underlain by a thick sequence of poorly consolidated to unconsolidated sand, gravel and fine-grained sediments of continental origin. The sediments were deposited by rivers draining highland areas to the north and transporting sediment west and southwestward across the Orange County Plain. Rivers nearby include the Santa Ana River, 6½ miles to the west, Carbon Creek 1½ miles to the south, and Coyote Creek 5.2 miles to the east. Alluvial deposits are generally described as widely variable mixtures of gravels, sands

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and silts. Poorly consolidated sediments encountered during exploratory drillings onsite consisted of medium to fine grained sands with layers of sandy silt and silty sands.

The site is situated in the lower Santa Ana River Ground Water Basin. The basin is actually part of a larger ground water basin that underlies both the Los Angeles and Orange County Coastal Plains. Well records indicate that the regional ground water table, used for domestic water supply, occurs approximately 100 feet below ground surface in the site area. Orange County Water District report from 1984-85 indicates a southwesterly flow direction for this water table. Shallow, perched water, is reported to occur approximately 30 to 40 feet below ground surface (bgs) in the Anaheim area. Shallow ground water was encountered under Tank Area 2 at 31 feet bgs during this investigation.

Ground water quality in the perched water is generally considered very poor. Recent publications by Robbins (1986) reports concentrations of total dissolved solids in excess of several thousand milligrams per liter. Water wells in the area do not utilize the shallow perched water. Ground water quality in the deeper producing zone in the Anaheim area generally exhibits good to excellent quality. However, values up to 600 milligrams per liter for total dissolved solids and up to 325 milligrams per liter for hardness have been reported in Anaheim.

## 3.0 METHODS

### 3.1 TANK EXCAVATION AND SOIL SAMPLING

Prior to the excavation of any tank, the tank contents were evacuated and tanks were rinsed in place by Petro-Trading and Disposal Control Services under the direction of Delco-Remy. The rinsate was removed and dry ce was inserted into the tanks at a ratio of ten pounds to every thousand gallons. The tanks were then excavated and removed from the ground during a two-day period by Frize Corporation. Tank removal was witnessed by Miss Debby Greco of OCHCA and Inspector Ray Martin of the Anaheim Fire Department. Subsequent to excavation the tanks were removed to a surface staging area. The tanks were inspected by representative of the Anaheim Fire Department. The most westerly tank in Tank


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Area 2 was observed to be ruptured. All other tanks from both tank areas appeared to be structurally intact.

The four diesel fuel tanks were taken offsite to Transcape at 17710 South Broadway, Los Angeles, California by Frize Corporation. The two waste oil tanks were manifested as hazardous waste and take to Kettleman Hills California (Appendix A) by Disposal Control Services. The diesel fuel evacuated from tanks in Tank Area 1 was recycled. The waste oil evacuated from tanks in Tank Area 2 was transported to Kettleman Hills by United Pumping Company. The rinsate water evacuated after the wash-down was transported to the DeMennoKerdoon Corporation in Compton, California by Disposal Control Services.

Tanks in Tank Area 1 were positioned under two large bag-house filtering units. These units are constructed of large steel I beams which supported the bag house. Each bag house measures approximately 50 feet long by 30 feet wide by 25 feet high and weighs up to 50,000 pounds a piece. One of the units had to be moved to allow for tank excavation. During excavation it was found that the tanks extended further under the remaining bag house unit than showed on plant diagrams. Supporting soils under the bag house caved way during excavation exposing an 8-inch sewer line and threatening the stability of the bag house. Engineers from both Delco-Remy and Frize Corporation reviewed the site conditions and both OCHCA and the Anaheim Fire Department were informed about the bag house situation. Delco-Remy and Frize Corporation decided that a speedy backfill of the excavation was necessary to stop caving of the pit sidewall, reduced likelihood of sewer line failure and protect the bag house structure.

Tanks in Tank Area 2 rested on a concrete slurry crib housed on top of the concrete support pad. During tank removal residual rinsate, sludge and waste oil was observed to spill out of the ruptured tank onto the crib structure. At that time, a berm was built in the pit bottom to confine the spilled fluids to the concrete pad. Disposal Control Services was called and the spilled fluids were pumped out of the excavation. Based on the chemical test results of soil samples collected in Tank Area 2 (see Section 4 for discussion) it appears that


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rinsate water and waste oil escaped to the edge of the concrete pad and penetrated the shallow soils to an approximate depth of two feet immediately surrounding the pad area on the north.

After removal of the tanks, grab samples were collected from soils below each tank. Since all tanks rested directly on concrete, samples could not be obtained directly under the tank inverts. Specific soils sample locations were discussed with Miss Debbie Greco of OCHCA. The samples were collected from soils between the tanks or from soils immediately at the edge of the concrete pads.

Soil samples G-2, G-3 and G-4 in Tank Area 2 were collected approximately two feet below the edge of the concrete support slab using a backhoe. Samples G-5 and G-9 in Tank Area 2 and samples G-6, G-7 and G-8 in Tank Area 1 were collected by using a spade to expose fresh soils in the pit bottom and quickly placing the sample into a wide mouth jar. Sample G-1 was collected from soil piles excavated from Tank Area 2 and stored above ground.

All soil grab samples were placed in wide mouth jars. The soil was tapped firmly into the jar to reduce head space. The jars were sealed, labeled, placed in a cooler with dry ice and delivered to the chemical testing laboratory on the day of collection. Grab sample locations are shown in Figures 2 and 3, the results of the analysis are presented in Appendix C and discussed in Sections 4.0 and 5.0.

### 3.2 DRILLING AND SOIL SAMPLING

All drilling was conducted under the technical supervision of a Dames & Moore geologist. The exploratory angle borings were drilled with an 3-inch hollow stem auger drilling equipment. The monitoring well boring was drilled with a 10-inch hollow stem augering equipment, and the hand augered holes were drilled with either a portable motor-driven 3-inch auger equipment, or were completed manually. Soil samples were collected at 5-foot intervals, commencing at 15 feet below ground surface (bgs), in the angle borings and at 1- foot bgs in the monitoring well borings. Samples were retrieved through the hollow

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stem of the auger using a modified Dames & Moore U-type sampler (Appendix B). The sampler was driven 12 inches or to refusal with a standard 140 pound hammer. Samples were retrieved from the hand augered boring by manually driving the Dames & Moore sampler to 12 inches. The samplers were fitted with 2.5-inch diameter, 3-inch long stainless steel sleeves. Soil samples were screened for organic vapors using a TLV or Hnu vapor monitor. The lower-most sample sleeves were retained for chemical testing. Exposed soil at the end of each sample sleeve was covered with teflon sheeting, fitted with plastic end caps, and sealed with tape. Labels were fixed to the end cap of each sample and contained: boring number; sample number; depth; date; collector's name; owner; and, location. Samples were placed in coolers with dry ice and were delivered, with chain of custody forms (Appendix C) to the laboratory on the day of collection. A log of the material encountered in the boring was recorded and is presented in Appendix B. Boring locations are shown in Figure 3 and 4.

All downhole drilling equipment was steam cleaned prior to use at each boring location. Prior to the collection of each sample, soil sample equipment and stainless steel sample sleeves were washed in dilute trisodium phosphate solution, rinsed in fresh water, and final rinsed in distilled water. Drilling cuttings were placed with above ground contaminated soil onsite. An admixture of bentonite (Volclay or Holeplug) and sand was used to backfill the borings.

### 3.3 INSTALLATION OF GROUND MONITORING WELL AND GROUNDWATER SAMPLING

One ground water monitoring well was installed southwest of Tank Area 2 to assess the depth to perched ground water and to collect ground water samples for chemical testing (Figure 4).

The well was drilled with a ten-inch, hollow-stem auger equipment to a depth of 38 feet. A ten foot length of 4-inch, schedule 40, slotted, capped PVC casing was installed in the bottom of the boring. [redacted] Blank casing was installed to the ground surface. Clean, washed, Number three Monterey sand was placed in the annular space to 1 foot above the slots. A two

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foot thick clay pellet plug was then installed above the sand. The remaining annular space was filled with a concrete/bentonite grout to the ground surface. The well was completed with a PVC locking hasp cover installed in a standard concrete christy box with locking tab and steel plate. The christy box was installed at grade.

After installation the well was allowed to equilibrate for a period of one week. The well was then manually purged of three well volumes using a teflon bailer. The purged water was placed in a 55-gallon drum on site pending analyses of the samples. Ground water samples were then collected with a teflon bailer and were placed in VOC bottles. The samples were properly labeled, placed in a cooler onsite, and delivered to the laboratory on the day of collection. A second set of ground water samples were collected October 15, 1986 using the same method.

3.4 CHEMICAL TESTING

Chemical testing was performed by Chemical Research Laboratories of Stanton, California. Chemical test method 418.1 was proposed for all soil samples in our Site Characterization Plan. Subsequent to discussions between Dames & Moore and OCHCA the plan was modified to include ground water analysis using EPA Method 601 and soil analysis using EPA Method 8015, 8240 and 8270 on selected soil samples as discussed below. Figure 3, 4 and 5 show the sample locations.

Soil grab samples collected from both Tank Areas 1 and 2, and undisturbed soil samples collected from exploratory borings, in Tank Area 2 were analyzed for total petroleum hydrocarbon (TPH) using Method 418.1. [redacted]

[redacted]

Subsequent to chemical testing by Method 418.1 two additional soil samples were collected and analyzed to further assess the contamination. Sample HB-2-1a, collected by hand augering in Tank Area 1, was analyzed for volatile organic compounds using EPA Method 8015 (modified). [redacted]


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Groundwater samples collected August 25, 1986, from the monitoring well installed southwest of tank area 2 were analyzed for purgeable halocarbons using EPA Method 601. The groundwater samples collected October 16th, 1986, were analyzed for extractable organic compounds using EPA Method 625.

## 4.0 ANALYTICAL RESULTS

Grab sample collected in Tank Area 1 showed total hydrocarbon concentrations of 700 ppm in sample G-6. A confirmation sample collected by hand augering in the same area and analyzed by EPA Method 8015 (modified) did not show any petroleum hydrocarbon. Wood Chips in Sample

Soil grab samples collected from the sidewall and beside the concrete support pad in Tank Area 2 contained detectable concentrations of hydrocarbon ranging from 29,000 parts per million (ppm) in sample G-9 to 16.2 ppm in G-5. Sample G-5 did not contain sodium hydroxide but did have a measured pH of 10.5. Soil grab samples collected 2 feet below the edge of the concrete support pad showed THC concentrations up to 21,000 ppm. Undisturbed soil samples B-1, B-2 and B-3 collected from the exploratory borings drilled under the pad in Tank Area 2, and soil samples from the monitoring well boring MW-1, showed concentrations lower than 21 ppm.

Undisturbed soil samples collected by hand augering beneath the concrete support slab in Tank Area 2 contained 8,000 ppm for sample HB-1-2a. Sample HB3-1a collected a week later from the same area, at the same depth, did not yield any detectable concentrations when analyzed by EPA Method 8240. EPA Method 8270 showed 1.4 ppm Di -n-Butylphthalata in sample HB3-1a. or 2a

The ground water sample collected [illegible] method 601 and did not contain any detectable compounds. [illegible] sample collected October 16 was analyzed by [illegible] any detectable compounds. The ground water [illegible]

One surface grab sample, collected from soils excavated from Tank Area 2 had concentrations of 336 ppm THC. Sample locations are shown on Figures 3, 4,

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and 5. Laboratory results summary in Table 1 and Table 2. Appendix C contains laboratory reports and chain of custody forms.

## 5.0 SUMMARY AND DISCUSSIONS

### 5.1 TANK AREA 1

The safety considerations present at Tank Area 1 required that that excavation be backfilled and secured shortly after the removal of the tanks. Upon return of the chemical test results Sample G-6, collected under the bag house in Tank Area 1, showed 700 ppm total hydrocarbon using Method 418.1. Samples G7 and G8 did not show any hydrocarbon. Consequently, a hand augered boring was drilled the same location as sample G-6 in order to obtain another sample at the same location. During hand augering, refusal occurred at approximately 11½ to 12 feet. A sample was collected at that depth and was analyzed according to EPA Method 8015 (modified). The reason for using this analytical methods was to eliminate the influence of burnt wood fragments observed in the first sample. Since Method 418.1 detects natural organic compounds as well as petroleum hydrocarbon compounds it was felt that the readings may have been affected by the presence of burnt wood. No compounds were detected in the second sample collected under the bag house using EPA method 8015.

### 5.2 TANK AREA 2

Chemical test results and observations made during tank excavations indicate that hydrocarbon is present to a depth of 2 feet in soils immediately adjacent the concrete support pad. [redacted] Stained soils and liquid waste oil are currently present on the concrete support pad in the pit bottom. However, chemical test results from soil samples collected in the angle borings drilled under the concrete pad show total hydrocarbon concentrations less than 21 ppm.

During removal of the tank, rinse water and waste oil spilled onto the concrete pad that previously confined material in the ruptured tank. This newly

no. added to Cont. - as evidence by Cloudy $H_2O$ + HCl ppt.

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released rinse water and waste oil migrated to the edge of the pad area and contaminated the soils immediately adjoining the pad. Since this was a new condition, the waste oil did not have an time to migrate to any depth off the pad perimeter. Consequently soil samples collected at depths of 5 to 15 feet below the pad did not encounter as high a level of contamination as encountered immediately beside the pad perimeter.

Analytical results and visual observations indicate that contamination of may be present at a depth of 3 to 5 feet directly below the center of the concrete support pad. The material in question was visually observed to undergo rapid hardening when exposed to air in the chemical test laboratory. The contamination was initally identified in an undisturbed soil sample analyzed by Method 418.1. The first sample was collected with hand auger equipment and sampled with a split-spoon sampler. Additional sampling and analysis using Method 8240 and 8270 did not identify any compounds in soils sampled in the same location at approximately the same depth. Angle borings drilled under the concrete support pad did not encounter samples of similar appearance or behavior. Furthermore, chemical test methods 418.1 did not detect any hydrocarbon in samples taken. The contamination therefore appears to be confined to a thin 3 foot thick layer positioned directly under the pad. This layer appears to be a white to light tan sandy material with a slig / sweet odor. Plant records do not contain reference to torage of any materials other than sodium hydroxide and waste oil in the waste oil tank.

## 5.3 GROUND WATER

[redacted] the two ground water samples from MW-1 did not detect any compounds using EPA Method 601 (Volatile Halocarbons), Method 625 (Base/neutral extractable) or Method 418.1 (Total petroleum Hydrocarbons). The water samples had a pH of 9.0 to 9.6 and were a cloudy brown color. One sample was allowed to sit for 48 hours. Some fine sediment settled to the bottom of the sample jar. However, the water sample remained a dark brown clear fluid. The sample did not emit any odor and did not have a sheen. During preparation of the sample for chemical testing [redacted] The remaining water was clear and odor free. Nonetheless, the ground water samples have a pH that is inconsistent with the pH of natural water and the chemical composition of the water appears to have been modified.


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## 5.4 EXCAVATED SOILS

Soils excavated from Tank Area 2 were segregated based on visual observation. The soils that were clearly contaminated by visual observation were isolated and placed in a bermed area pending disposal at an appropriate landfill. The soils that were not clearly contaminated were isolated and a grab sample was taken to assess if any contamination was present. Soil sample G-1 collected from soils excavated from Tank Area 2 was analyzed by EPA Method 418.1 and contained 336 THC. OCHCA has indicated that these soils may potentially be used to backfill the excavation at Tank Area 2. Analyze for lead.

# 6.0 RECOMMENDATIONS

## 6.1 TANK AREA 1

If chemical test results of the confirmation samples are characteristic of soils in this area, then remedial action does not appear warranted at this time. — OK

## 6.2 TANK AREA 2

Possible contamination may be present under the concrete support pad as indicated by sample HB1-2a (test Method 418.1). However the specific compound was not identified by either EPA Method 8240 or 8270. Further characterization options would include drilling more borings through the concrete pad to collected samples for additional chemical testing. There are three conditions that have influenced the remedial actions proposed below. First, adjacent plant operations are currently out of service due to the excavation pit. It is important for Delco-Remy to restore the excavation area to its original condition and put these operations back in full service. Second, the current excavation may be jeopardizing the foundations of nearby structures. Third, it is important to remove the potential for induced downward migration of contaminants that could result if significant rain occurs before backfilling is complete. It therefore appears most prudent to pursue [redacted] address the contamination at Tank Area 2. If the materials under the pad are shown to be non-hazardous prior to implementation of this program, we would suggest applying alternate remedial action to include partial excavation and then backfilling. Doesn't later Chapter



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The program recommended to address the contamination in Tank Area 2 will be phased as follows:

- The inside of the excavation pit will be cleared of visually contaminated materials. These materials will be removed with a backhoe or crane. The material will be chemically tested as appropriate and will be stockpiled above-ground with earlier excavated material for transport offsite to an appropriate disposal site.

- After removal of visually contaminated soils, the concrete pad will be saw cut into large blocks and removed from the excavation pit. The removed concrete will be cleaned, visually inspected and chemically tested. The concrete will be disposed of at an appropriate site, recycled for use in the production of concrete or used as backfill material if it is suitable based on its chemical and physical conditions.

- The soils underneath the concrete pad will then be excavated with a crane to a maximum depth of 25 feet bgs until such time as visual evidence for contamination is not present in the excavation pit.

Excavation activities will be witnessed by representatives from Dames & Moore, Delco-Remy, and Orange County Health Care Agency. Confirmation sampling will only be conducted if visual verification of contamination is not possible. Upon removal of contaminated soils from the excavation pit, the pit will be backfilled with clean fill material and recompacted to optimum density of 90%. Since ground water is present 30 feet bgs in the pit area, excavation activities will not exceed 25 bgs.

If excavation activities successfully remove all evidences of contaminated soil in the excavation pit the project will be considered completed and over. If evidence of visual soil contamination is present at the maximum depth of excavation then two additional groundwater monitoring wells will be installed onsite to assess and monitor the condition of local ground water.



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## 6.3 GROUND WATER

The goal at this phase of work is to successfully remove soil contamination such that the excavation can be backfilled and compacted prior to the arrival of inclement weather. Evidence of soil contamination will be further assessed during soil excavation. We recommend installing two addition ground water monitoring wells near Tank Area 2. One well will be installed approximately 20 feet south of the excavation pit and one well will be installed 20 feet north of the excavation. The wells will be installed in the fashion described in section 3.3 of the report. The purpose of the wells will be to further assess potential ground water contamination and define the ground water gradient in the perched water. Specific remedial action plans to address the ground water will depend upon the conditions encountered in the excavation program and in addition ground water data obtained from the monitoring wells discussed above.

## 6.4 EXCAVATED SOILS

If all contaminated soils are successfully excavated from Tank Area 2 then we suggest disposing of all soils and backfilling the excavation with clean backfill material. If low levels of contaminated are left in the excavation then we suggest using the soil shown to contain 330 ppm total hydrocarbon as backfill.

100ppm or <
+ lead.


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TABLE 1

ANALYTICAL RESULTS OF SOIL GRAB SAMPLE
COLLECTED DURING TANK EXCAVATION

| Sample No. | Method 418-1 (ppm) | Comment |
|---|---|---|
| G-1** | 336 | Soil piled above ground |
| G-2** | 21,000 | 2 feet below north side of concrete support pad A |
| G-3** | 3,500 | 2 feet below north side of concrete support pad B |
| G-4** | 3,100 | 2 feet below west side of concrete support pad |
| G-5** | 16.2 | Unusual light color sandy material, side wall |
| G-6* | 700 | Possible contamination from burnt wood |
| G-7* | 56 | |
| G-8* | 27.4 | |
| G-9** | 29,000 | Side wall sample in contact with tank |

* Tank Area 1
** Tank Area 2



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TABLE 2

ANALYTICAL RESULTS OF UNDISTURBED SOIL SAMPLES
COLLECTED IN ANGLE, HAND AUGER AND MONITORING WELL BORINGS

| Sample No. | Adjusted Depth Below Ground Surface | Adjusted Depth Below Concrete Slab | Method 418 (ppm) |
|---|---|---|---|
| B1-1A | 16 | 4 (at edge of slab) | 21 |
| B1-2A | 20 | 8 | NA |
| B1-3A | 24 | 12 | 7 |
| B2-1A | 17.5 | 2.5 (at edge of excavation) | 10 |
| B2-2A | 22 | 7 | NA |
| B2-3A | 25 | 10 | NA |
| B2-4A | 29 | 13 | 12 |
| B3-1A | 18 | 3 | ND |
| B3-2A | 22 | 7 | NA |
| B3-3A | 28 | 13 | ND |
| HB1-2A | | 5 | 8400 |
| HB2-1A* | | 12 | ND (Method 8015 |
| HB3-1A | | 6 | ND (Method 8040 and 8070) |
| MW1-2A | 16 | | ND |
| MW1-3A | 21 | | ND |
| MW1-4A | 26 | | 3 |
| MW1-5A | 31 | | ND |

ND = Not detected
NA = Not analyzed
* = Tank Area 1, all others from Tank Area 2

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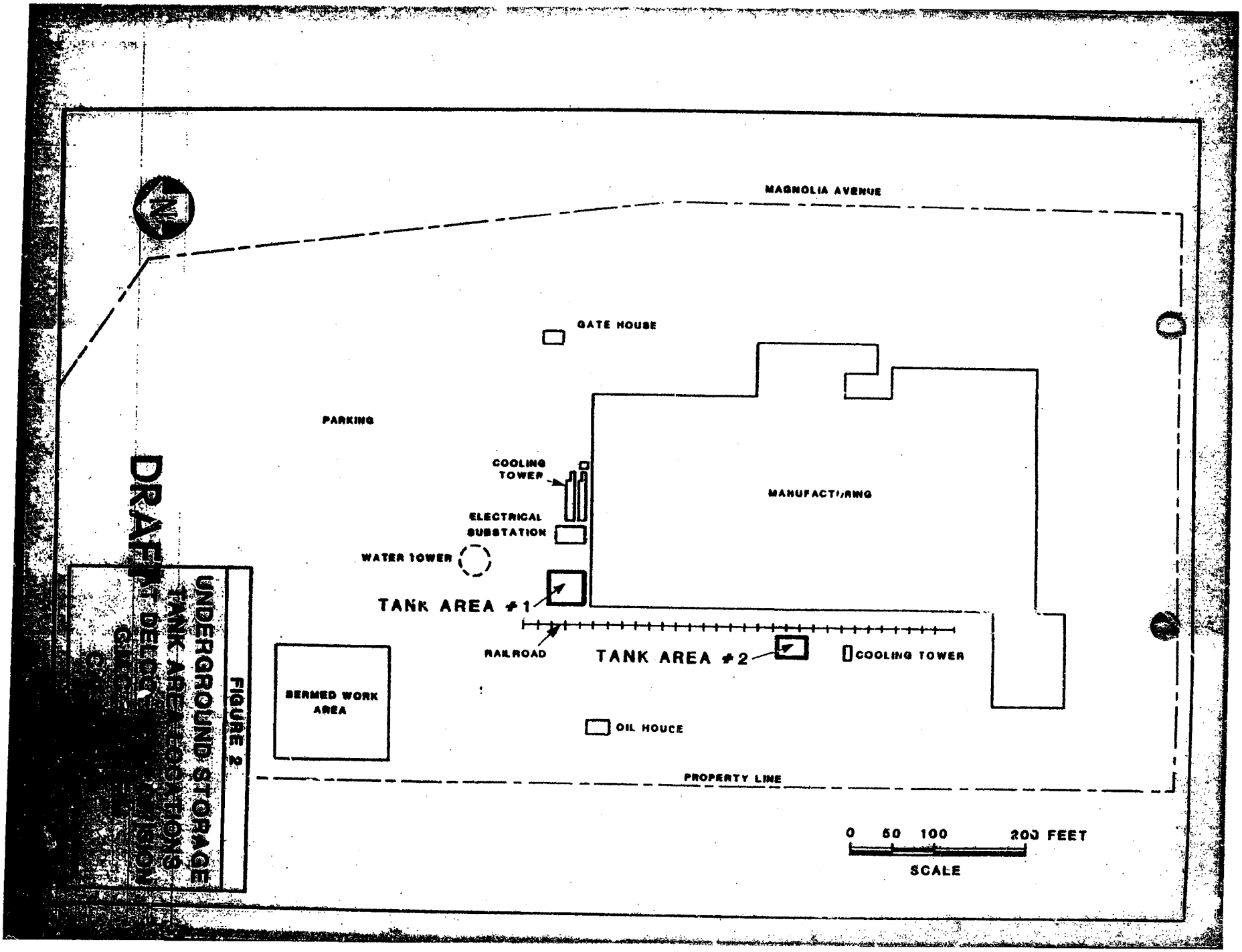
33.1G/6-T2


MAGNOLIA AVENUE
GATE HOUSE
PARKING
COOLING TOWER
MANUFACTURING
ELECTRICAL SUBSTATION
WATER TOWER
TANK AREA #1
RAILROAD
TANK AREA #2
COOLING TOWER
BERMED WORK AREA
OIL HOUCE
PROPERTY LINE
0 50 100 200 FEET
SCALE
N
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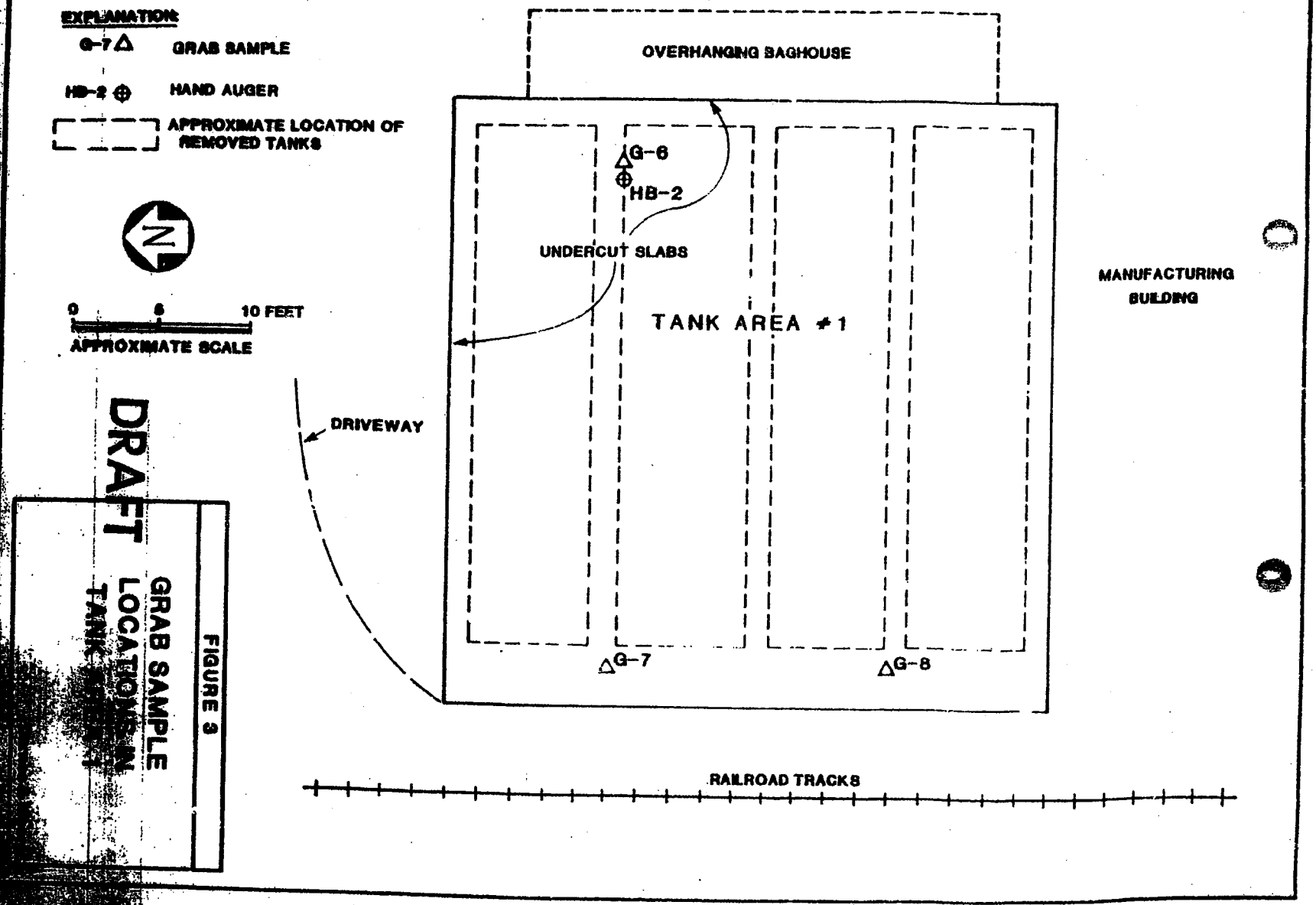
UNDERGROUND STORAGE
FIGURE 2

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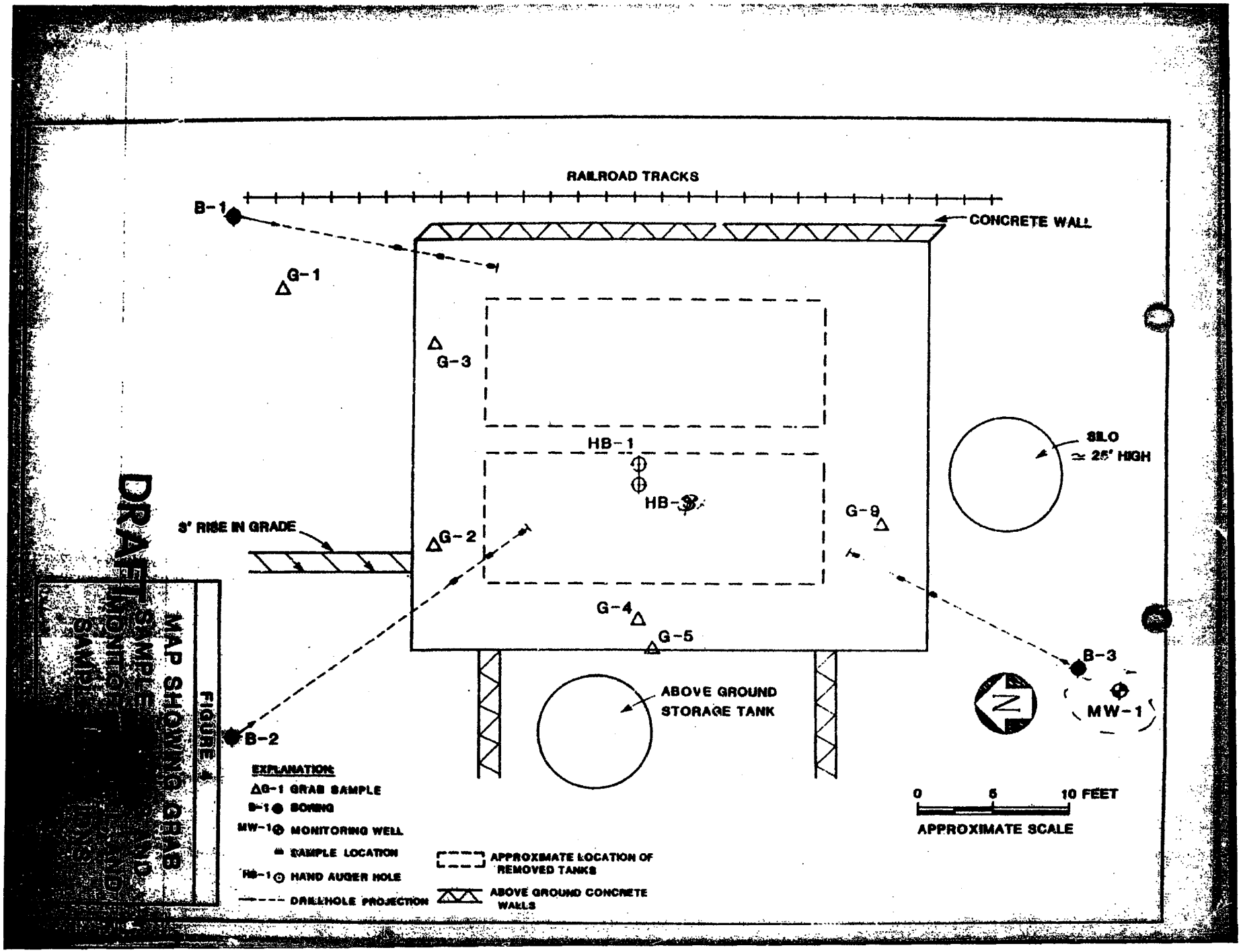
GRAB SAMPLE LOCATIONS IN TANK [illegible]

FIGURE 3


RAILROAD TRACKS
B-1
CONCRETE WALL
G-1
G-3
HB-1
HB-2
SILO
≃ 25' HIGH
3' RISE IN GRADE
G-2
G-9
G-4
G-5
B-3
MW-1
ABOVE GROUND
STORAGE TANK
B-2
EXPLANATION:
G-1 GRAB SAMPLE
B-1 BORING
MW-1 MONITORING WELL
SAMPLE LOCATION
HB-1 HAND AUGER HOLE
DRILLHOLE PROJECTION
APPROXIMATE LOCATION OF REMOVED TANKS
ABOVE GROUND CONCRETE WALLS
0 5 10 FEET
APPROXIMATE SCALE
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MAP SHOWING GRAB SAMPLE AND MONITOR WELL SAMPLE
FIGURE 4

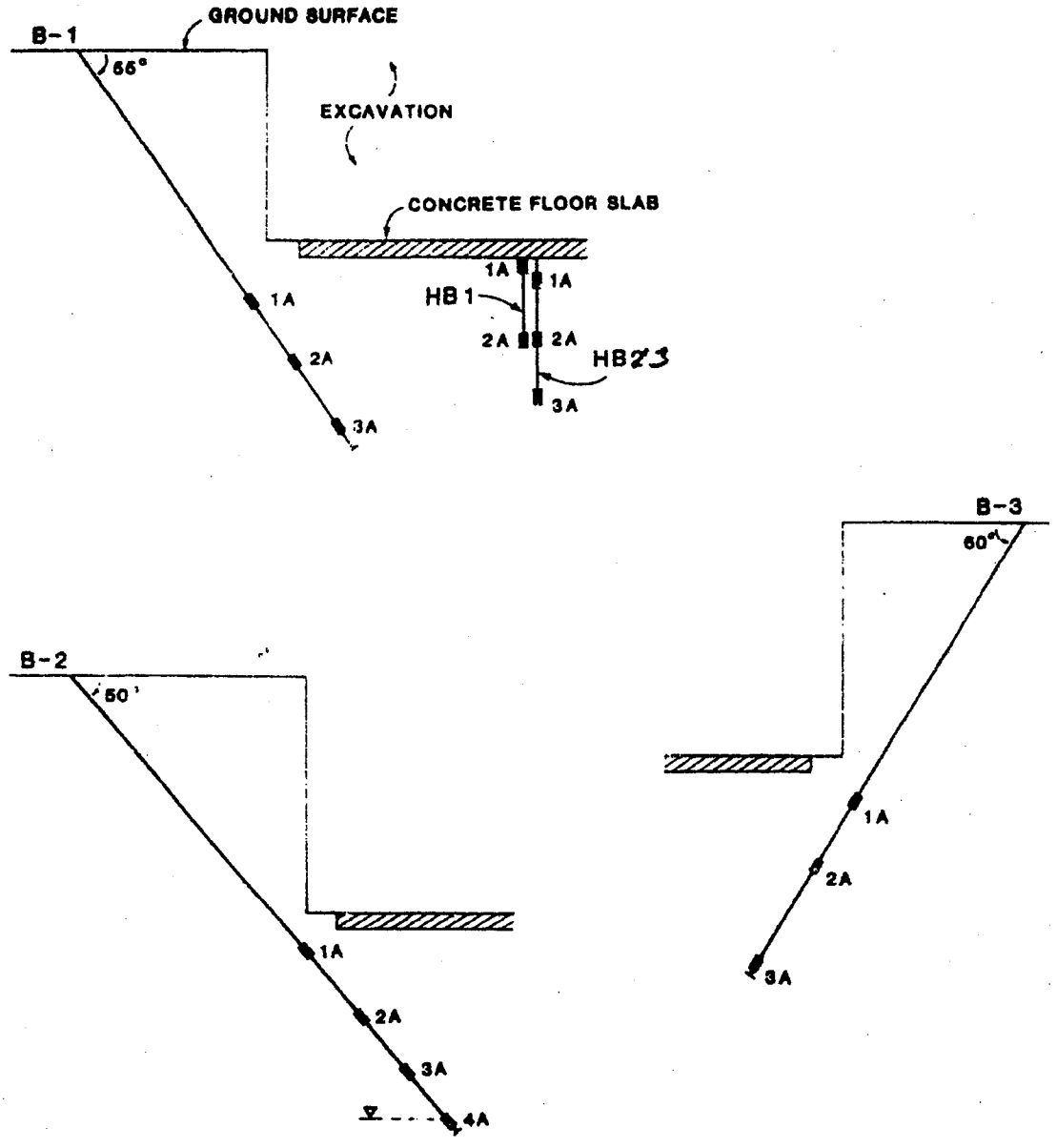


FIGURE 5

BORING CROSS SECTIONS SHOWING SOIL SAMPLE LOCATIONS

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DISPOSAL CONTROL SERVICE, INC.
1369 W. 9th STREET, UPLAND, CALIFORNIA 91786
(800) 824-3345 (714) 983-0342

October 9, 1986

Mr. Dave Horniak
Delco Remy
1201 N. Magnolia
Anaheim, CA 92801

Dear Mr. Horniak:

Enclosed, please find copies of manifests for hazardous wastes removed from the Delco Remy facility in July, 1986. This material was generated during an underground tank removal project. Following is a brief description of these wastes and their disposal sites:

| Manifest # | Waste | Disposal Site |
|---|---|---|
| 84677274 | Oil/Water Rinseate From Tank Cleaning | DeMenno Kerdoon Compton, CA |
| 84677276 | 12,000 Gallon Waste Oil Tank That Was Crushed On-Site | CWMI Kettleman Hills, CA |
| 84674840 | 12,000 Gallon Waste Oil Tank That was Shipped Intact | CWMI Kettleman Hills, CA |

If you have additional questions, please feel free to contact me at (714) 983-0342.

Sincerely,

Rick Lambert
Project Manager

RL/tm

Enclosures

FINAL REPORT
SOILS INVESTIGATION
FOR DELCO-REMY
1201 N. MAGNOLIA
ANAHEIM, CALIFORNIA

JOB NO. 14397-002-042
July 20, 1987

Dames & Moore

TUSTIN, CALIFORNIA

DAMES & MOORE A PROFESSIONAL LIMITED PARTNERSHIP
KOLL BUSINESS CTR., 1541 PARKWAY LOOP, STE. B, TUSTIN, CALIF. 92680 (714) 259-9101

July 20, 1987

Delco-Remy
1201 N. Magnolia Ave.
Anaheim, CA 92803

Attention: Mr. David Hornyak

Gentlemen:

Presented herein are the results of our soil sampling program conducted following tank removal at 1201 N. Magnolia, Anaheim, California.

It has been a pleasure working with Delco-Remy on this project. We look forward to being of continued service to you.

Very truly yours,

DAMES & MOORE
A PROFESSIONAL LTD. PARTNERSHIP

Anthony S. Nelson
Project Manager

William E. Halbert
Geologist

ASN:WEH:mdm

DAMES & MOORE A PROFESSIONAL LIMITED PARTNERSHIP
KOLL BUSINESS CTR., 1541 PARKWAY LOOP, STE. B, TUSTIN, CALIF. 92680 (714) 259-9101

July 20, 1987

Delco-Remy
1201 N. Magnolia
Anaheim, CA 92803

Attention: Mr. Dave Hornyak

Gentlemen:

Final Report
Soil Sampling - Tank Area 2
1201 N. Magnolia
Anaheim, California

## INTRODUCTION

In this letter report we present the results and methods of a remediation program conducted at the Delco-Remy Battery Plant, located in Anaheim, California. (Figure 1). The program was undertaken following the discovery of soil contamination during the removal of two underground storage tanks which contained waste oil.

Borings were drilled prior to the remediation program and are outlined in the Site Characterization and Remedial Action Plan submitted by Dames & Moore November 4, 1986. In short, 5 borings were drilled and soil samples taken to assess the extent of contamination. One boring (MW-1) was developed as a ground water monitoring well (Figure 3). Analyses run on selected soil samples indicated hydrocarbon contamination was present to a depth two feet below the tanks' supporting, concrete slab. The borings did not reveal, however, extensive lateral contamination.

Frize Corporation of Industry, California conducted the excavation under contract with Delco-Remy. Dames & Moore provided construction monitoring services for Delco-Remy during the course of excavation.

## METHOD OF SAMPLING

Grab samples of soil were taken from the bucket of backhoe for submittal to Chemical Research Laboratory (CRL) located in Stanton, Ca.

Following removal of sloughed debris from the floor of the excavation, a bucket full of soil was taken from the appropriate depth using a track mounted backhoe. Once the soil was brought to the surface, hydrocarbon vapor readings were taken using a portable TLV sniffer. Prior to sampling, the upper six inches of soil was scraped away from the bucket. The sample was then taken from the underlying soil using a clean, stainless steel scoop. The soil was placed in a clean, wide-mouth, glass jar, and packed firmly to reduce headspace. A Teflon sheet was then placed over the mouth of the jar and the lid screwed on tightly. The lid was then sealed using vinyl tape. Labels were affixed to the lid of each sample and contained the following information: 1) sample number; 2) date; 3) depth; 4) collectors initials; 5) owner; 6) location; and 7) time. Appropriately sealed and labeled samples were stored in coolers with ice. The samples were then transferred under chain of custody to CRL in Stanton. Copies of the chain of custody forms are included in Appendix B.

CHRONOLOGICAL SUMMARY

Following tank removal and initial soil sampling, a site characterization plan was prepared and submitted to Orange County for review and concurrence. Subsequently the characterization study was conducted to assess the extent of contamination. Prior to excavation, cleanup levels were set at 100 ppm TPHC by Ms. Debbie Greco of Orange County Health Care Agency (OCHCA). Thereafter, a program was begun by Delco-Remy to excavate contaminated soils in the vicinity of Tank Area 2. Frize Corporation was retained by Delco-Remy to conduct the shoring and excavation. Soils removed during the program were stockpiled onsite for subsequent treatment and/or disposal. Dames & Moore periodically collected soil samples from the pit sidewalls and pit bottom (Figure 2).

The south and west walls of the pit were shored to prevent caving and to assist in supporting soils beneath two silos immediately to the south of the excavation area. A retaining wall (already existing) provided support for soils to the east of the excavation. It was decided jointly by Delco, Frize and Dames & Moore that removal of the contaminated soils would best be achieved by dividing the excavation into three sections, each section running east-west, and removing the contaminated soil from each section individually. Contaminated soils were stockpiled in a bermed area onsite prior to disposal at an I.T. Corporation facility in Imperial County, California.

The removal of contaminated soils was begun 12-15-86 with the excavation of the northern third. A ramp was cut into the north sidewall to facilitate access for the track-mounted backhoe. The concrete slab that supported the tanks was saw

cut from east to west and the concrete removed over the area to be excavated. The soil was removed to a depth of 21 feet below ground surface (bgs) and 6 samples were taken to assess the levels of contamination present (samples SP1-6). A further sample was taken at 23 feet (SP7) to assess if further excavation was necessary. The following day (12-16-86) the verbal results of analyses were reported to Ms. Debby Greco of Orange County Health Care Agency (OCHCA). At that time she gave her verbal consent for backfilling and compaction of the northern third, pending written results of the analyses from CRL.

On 12-17-86 the northern third of the excavation was backfilled to a depth of 24 feet bgs and compacted to at least 90% bulk dry density. The northern area was then further ramped to gain access to the southern portion of the excavation.

On 12-21-86 the northern silo immediately south of the excavation was moved to the west of the southern silo. This move was necessary to prevent structural failure should sloughing of the southern wall occur during continued soil removal (Figure 2).

On Friday, 12-26-86, shoring was removed from the south and west walls of the excavation and the remaining portion of the concrete was broken using a hydraulic breaker on the end of the loader arm. The concrete and re-bar was then loaded into an end dump truck and transported to the stockpile area onsite.

Excavation of the southern wall was hindered by the presence of a buried 10' fire protection supply line which ran across the southern portion of the excavation. As Frize Corporation uncovered the line, it was supported with chains suspended from a 24 inch high I-beam running from the retaining wall on the east to undisturbed soils on the west. Care was taken not to hit the line with the backhoe bucket. There was also concern for soil stability beneath the southern silo with continued excavation to the south. It was decided by Delco-Remy that excavation would stop 3' (one bucket width) south of the fire line whereupon side wall samples would be taken to assess remaining contamination levels. Visual evidence of contamination was limited to two or three lenticular areas at or near the elevation of the former concrete slab. These areas were exposed following the removal of the shoring. These soils were excavated and not evident at a point 3' south of the fire protection line. Samples were collected at two locations shown in Figure 2. Mr. David Gifford, Sanitarian, of Orange County Health Care Agency (OCHCA) was present during collection of these samples and directed the confirmation sample locations.

Free oil was noticed on the footing of the retaining wall bordering the eastern side of the excavation. The oil was very thick, almost tar-like, and the lateral extent seemed to end 6 to 8 feet south of the fire protection line. This oil was removed from the footing prior to backfilling of the excavation.

Removal of soils from beneath the concrete slab in the remaining two sections of the excavation floor proceeded

without incident. Confirmation samples were taken from the floor and sidewalls under the supervision of Mr. Gifford of OCHCA (Figure 2).

Following the excavation and sampling program, the hole was backfilled with clean, decomposed granite. Backfilling was conducted using 6-10" lifts of material and compacting with a hydraulic attachment to the arm of the track-mounted backhoe. The lifts were compacted to a minimum of 90% dry bulk density and tested using a Troxler Nutron density gauge. The engineering report will follow under separate cover.

ANALYTICAL RESULTS

Analyses were run for total petroleum hydrocarbons (TPHC) and total lead by CRL using EPA Methods 418.1 and 7421, respectively. These results are presented in Appendix A. The analyses showed TPHC levels in the confirmation samples to be below 50 ppm with only one sample (SP 6) above 100 ppm. Lead levels in the confirmation samples were generally below 8 ppm with a single sample exceeding 10 ppm (SP 23, 11 ppm).

At the suggestion of Mr. Gifford, of OCHCA, EPA Method 8240 was run on one sample considered to be moderately contaminated -- 6,100 ppm TPHC, 3.3 ppm total lead. The purpose of this analysis was to assess the levels of chlorinated compounds and benzenes, toluene or xylenes in contaminated soil. Mr. Gifford indicated that if the results did not reveal significant levels of these compounds, acceptable TPHC levels in remaining soils could be raised to 1,000 ppm. Laboratory results did not indicate the presence of

chlorinated compounds nor benzenes or xylenes. Toluene was detected, however,. at 0.08 ppm slightly above its detection limit.

In general, soil contamination with petroleum hydrocarbons and lead was removed in Tank Area 2. Levels of TPHC and total lead in the remaining soils appear to be below OCHCA recommended action levels. For soils that may have TPHC contamination above 100 ppm, additional testing showed no chlorinated compounds nor the presence of benzenes or xylenes.

MONITORING WELLS

Following the installation and development of monitoring well MW-1 near the southwest corner of the excavation, water samples were collected and analyzed. The water collected was a cloudy brown color and had a pH of 9.0 to 9.6. Test results from EPA Methods 601 (Volatile Hydrocarbons), 625 (Base/Neutral Extractable) and 418.1 (TPHC) did not detect any contamination.

Nonetheless, the ground water appears to exhibit a pH that is inconsistent with that of natural water and appears to have been modified.

As stated in Site Characterization and Remedial Action Plan, two additional ground-water monitoring wells are proposed to be installed adjacent to Tank Area 2 (Figure 3). The purpose of these wells will be to further assess groundwater contamination and define the gradient of the [redacted]. Specific remedial action plans to address the ground water will depend upon the ground water data obtained from the afore mentioned wells.

-oOo-

Thank you for the opportunity to perform this soil sampling program for Delco-Remy. We look forward to being of continued service to you.

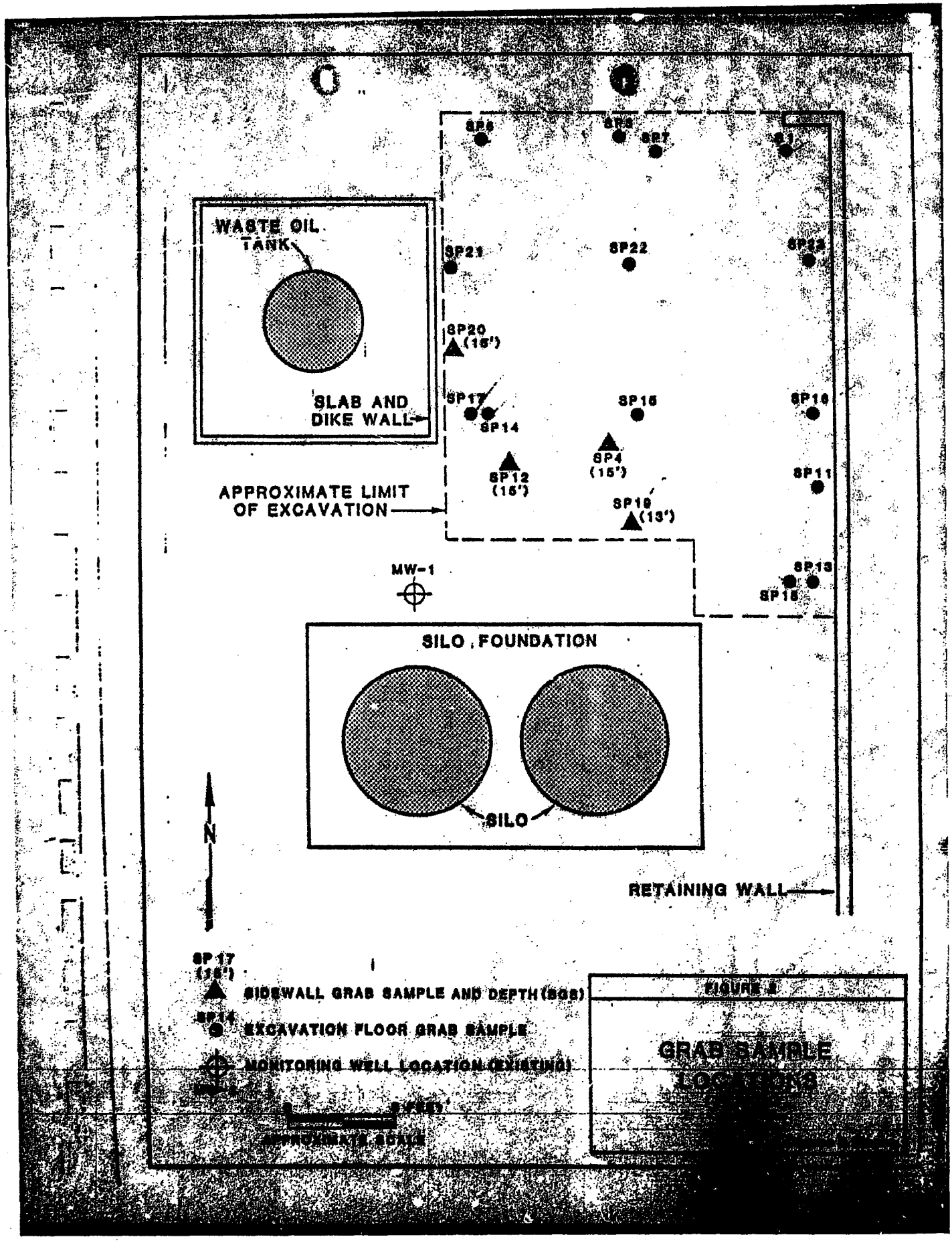
Very truly yours,

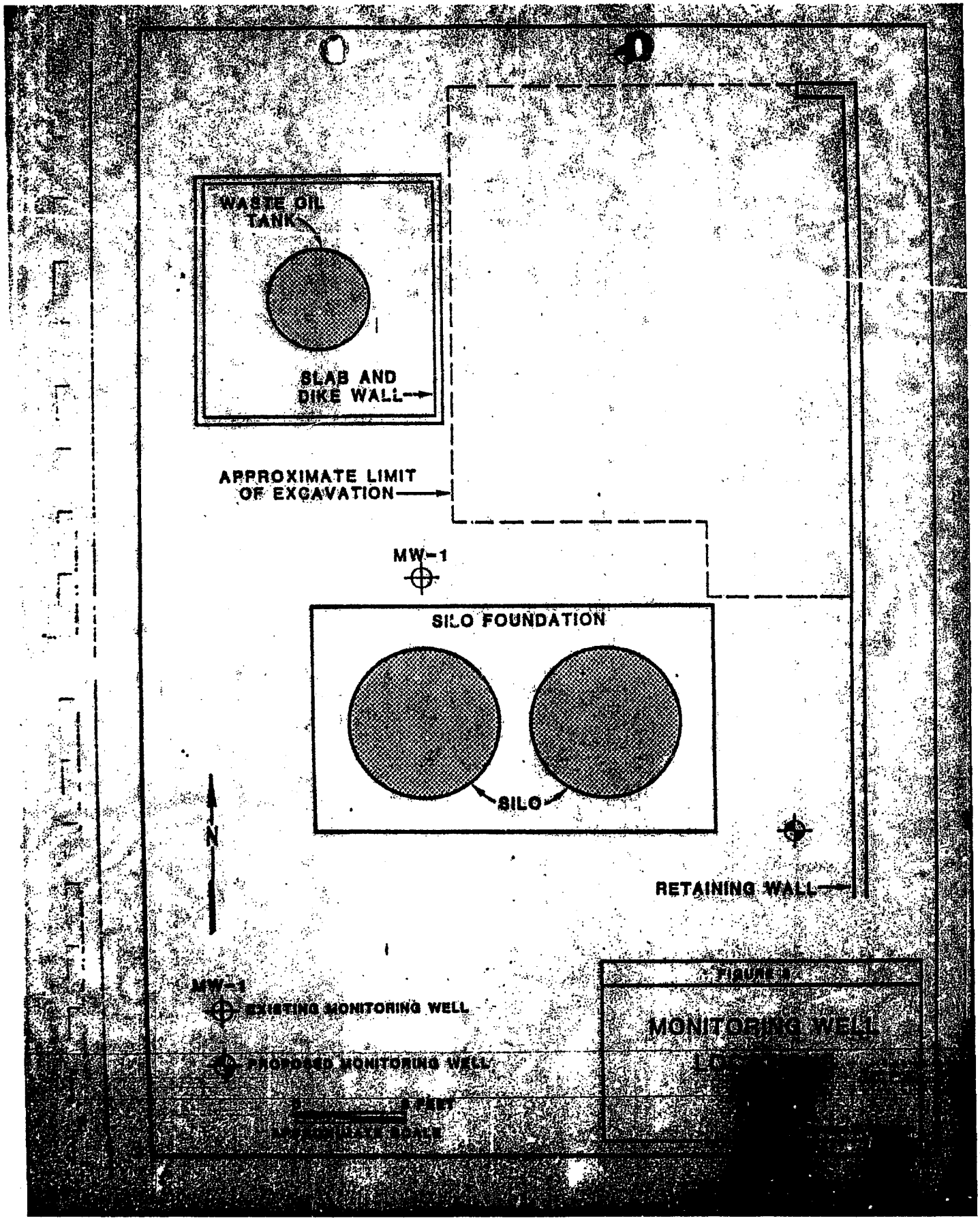
DAMES & MOORE
A PROFESSIONAL LTD. PARTNERSHIP

Anthony S. Nelson
Project Manager
Registered Geologist #4175

William E. Halbert
Geologist

ASN:WEH:mdm


WASTE OIL TANK
SLAB AND DIKE WALL
SP21
SP22
SP23
SP20 (15')
SP17
SP14
SP16
SP18
SP4 (15')
SP12 (15')
SP11
SP19 (13')
APPROXIMATE LIMIT OF EXCAVATION
MW-1
SP13
SP15
SILO FOUNDATION
SILO
N
RETAINING WALL
SP17 (15')
SIDEWALL GRAB SAMPLE AND DEPTH (BGS)
SP14
EXCAVATION FLOOR GRAB SAMPLE
MONITORING WELL LOCATION (EXISTING)
FIGURE 4
GRAB SAMPLE


WASTE OIL TANK
SLAB AND DIKE WALL
APPROXIMATE LIMIT OF EXCAVATION
MW-1
SILO FOUNDATION
SILO
N
RETAINING WALL
MW-1
EXISTING MONITORING WELL
PROPOSED MONITORING WELL
FEET
APPROXIMATE SCALE
FIGURE 3
MONITORING WELL

CHEMICAL RESEARCH LABORATORIES

11631 SEABOARD CIRCLE (213) 598-0458
STANTON, CA 90680 (714) 898-6370

# LABORATORY REPORT

FROM: Dames & Moore
816 Anacapa Street
Santa Barbara, CA 93101
ATTN: Mr. Tony Nelson

ANALYSIS NO.: 861215-15/18,20,21
SAMPLING DATE: 12/15/86
DATE SAMPLE REC'D: 12/15/86
INVOICE NO.: 18536

NATURE OF SAMPLE:

Delco Remy - 1201 N. Magnolia, Anaheim, CA Job #14897 (soil)

RESULTS, in mg/kg

| SAMPLE IDENTIFICATION | TOTAL LEAD | TOTAL PETROLEUM HYDROCARBONS (EPA 418.1) |
|---|---|---|
| SP 1 | 5.0 | 42. |
| SP 2 | 75. | 340. |
| SP 3 | 11. | 26,100. |
| SP 4 | 7.3 | 9. |
| SP 6 | 3.0 | 120. |
| SP 7 | 3.0 | 2. |

NOTE: Samples were received in a chilled state, intact and with chain of custody record attached.

CHEMICAL RESEARCH LABORATORIES
11831 SEABOARD CIRCLE (213) 598-0458
STANTON, CA 90680 (714) 898-6370

# LABORATORY REPORT

FROM: Dames & Moore
912 Anacapa Street
Santa Barbara, CA 93101
ATTN: Mr. Tony Nelson

ANALYSIS NO.: 861215-15/18,20,21
SAMPLING DATE: 12/15/86
DATE SAMPLE REC'D: 12/15/86
INVOICE NO.: 18536

NATURE OF SAMPLE:
Delco Remy - 1201 N. Magnolia, Anaheim, CA Job # 14897 (soil)

| PARAMETERS | pH, in units |
|---|---|
| SP 1 | 11.32 |
| SP 2 | 9.51 |
| SP 3 | 11.48 |
| SP 4 | 10.06 |
| SP 6 | 11.39 |
| SP 7 | 11.04 |

NOTE: Samples were received in a chilled state, intact and with chain of custody record attached.