EXHIBIT 3

Licensed Site Professional Evaluation Opinion Supported by Phase I Initial Site Investigation Report and Tier Classification

DEP Release Tracking Number: 3-0001684

Corporate Environmental Engineering, Inc.

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LICENSED SITE PROFESSIONAL EVALUATION OPINION

SUPPORTED BY
PHASE I SITE INVESTIGATION
AND
TIER CLASSIFICATION
RTN 3-0001684

MAY 1997

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1.0 INTRODUCTION

The subject site, RTN 3-0001684, was listed on the LTBI list on January 15, 1990 as a result of a release of approximately 2,000 gallons of No. 6 fuel oil from a 30,000 gallon underground storage tank (UST). In 1990 The Department of Mental Health (DMH) retained services to remove the leaking tank, as well as two others, and 3,669 tons of oil-contaminated soil. The DMH retained Corporate Environmental Engineering Inc (CEE) to conduct investigations and prepare an LSP Evaluation Opinion. The appropriate transmittal forms are located in Appendix A.

Corporate Environmental Engineering Inc has prepared a Licensed Site Professional (LSP) Evaluation Opinion which is supported by the Phase I Initial Site Investigation Report. This report was produced in accordance with the requirements of the Massachusetts Contingency Plan 310 CMR 40.0480. CEE's scope of work consisted of a review of federal, state and local files and correspondence, site inspection, historical review, interviews with on-site and government personnel, soil borings, monitoring well installation, and collection of soil and groundwater samples for laboratory analysis. This report documents the results of an initial site assessment and subsurface investigation of soil and groundwater conducted at the Power Plant located on the Medfield State Hospital (MSH) property, 45 Hospital Road, Medfield, Massachusetts (the site). See Appendix B, Figure 1.0, Site Location Map. Please note that all figures and site photographs are in Appendix B.

Additionally, CEE determined the approximate extent of impact by former releases of No. 6 heating oil and the likelihood of the oil migrating off site and into the adjacent wetlands. The oil releases have originated from the underground storage tanks (USTs) located adjacent to the MSH Power Plant.

1.1 SITE INSPECTION AND DESCRIPTION

The Commonwealth of Massachusetts is the current owner of the MSH site. The Department of Mental Health operates the hospital for psychiatric care. The MSH facilities occupy approximately 400 acres and is located approximately 2 miles north of the center of Medfield near the Sherborn town line. The site is on the north side of Hospital Road and is accessed from Route 27. The MSH property contains approximately 75 acres of developed land occupied by 42 brick buildings and associated roadways, paved parking, and landscaped areas. Most of these buildings are unoccupied. The remaining area consists of undeveloped land including forested areas, wetlands, grass meadow areas, and abandoned agricultural land.

On March 10, 1997 Mr. Kerry Tull and Mr. Edward Giordano of CEE conducted an inspection of the Power Plant, the underground storage tank access ways, the existing monitoring wells, and the fill and vent access ways for the tank system. The UST system consists of three 30,000-gallon, double-wall steel tanks which were installed in 1990. The new USTs replaced single-wall steel tanks that had been installed in 1957 - 1961. Please refer to Figure 2.0 for UST location within the MSH facility.

When the new tanks were installed, eight monitoring wells were placed in the excavation and backfilled with sand adjacent to the USTs. All of these wells extend down to a depth of approximately 10 feet below grade. At the time of CEE's inspection there was no groundwater in the wells. During CEE's subsequent test drilling program groundwater was encountered at an approximate depth of 14 feet.

The Power Plant is a two-story brick building which houses four oil-fired boilers that produce 24,000 pounds of steam pressure. This steam is used to heat the buildings, laundry, and kitchens on the MSH facility. This building has a variety of other ancillary equipment including, but not limited to, electric switch gears, drums of chemicals for the boiler lines, machine shop equipment, and recording and monitoring equipment. The drums of chemicals consist of anti-scaling agents used to keep the boiler lines clear. There have been no reports of releases of hazardous materials from the Power Plant building.

The site is located on the northwest portion of the MSH facility grounds at the topographical lowest elevation of the facility. The topography of the site slopes downward from the south to the north and west toward the Charles River which is approximately 200 feet to the north of the Power Plant. The property between the site and the Charles River is covered by low brush, vegetation, and trees. Although a wetlands delineation has not been performed for this site. wetlands may be located within 100 feet of the site.

1.2 PREVIOUS INVESTIGATIONS

Previous investigations for this site have been limited to observations made during the UST replacement and soil removal project conducted in 1990. No subsurface or post-excavation sampling and analysis programs have been conducted. Previous analyses were for disposal and reuse of the excavated soil. There was no groundwater data generated during these previous projects.

According to correspondence from the Commonwealth of Massachusetts Water Resources Commission (MWRC) dated August 14, 1978, there was an oil spill on March 27, 1978 involving a leak from one of the UST piping lines. Please refer to correspondence in Appendix

C. This spill clean up included soil removal which was overseen by the MWRC. The clean up involved removing surface oil and impacted soil, and rerouting a drainage swale to prevent further oil laden run-off from entering the Charles River. Piping repairs were performed to prevent further releases. According to the aforementioned letter, oil-contaminated soil and debris were buried on a remote location on the MSH facility grounds in one of two clay-lined excavations created for this purpose. According to MSH Director of Engineering, Mr. Joseph Minukas, the burial pits were approved by the EPA. These burial pits are located approximately 300 feet south, and topographically upgradient of the Power Plant.

According to a letter dated April 20, 1989 from the Massachusetts Department of Environmental Quality Engineering (DEQE), there was a report of an investigation concerning the release of approximately 2,000 gallons of No. 6 fuel oil from one of the three USTs. See Appendix C. The USTs were approximately 30 years old and tank 3 was leaking.

In 1990 all three 30,000 gallon USTs were excavated, removed, and replaced by Clean Harbors, Inc. These tanks were replaced with three new, 30,000-gallon, double-wall, *Stip3* steel USTs. These USTs are equipped with cathodic protection, high volume alarms, spill prevention devices, and interstitial leak monitors.

The 1990 UST removal and replacement project included the excavation and on-site reuse of approximately 3,669 tons of soil contaminated with No. 6 oil. These materials was reused on site as asphalt paving. See Appendix D for copies of UST removal/installation documents submitted by Clean Harbors and approved by the DEP.

1.3 HISTORICAL RESEARCH

The Medfield State Hospital was originally the Medfield Insane Asylum. This facility was developed in 1896. According to historical research the property, which includes the MSH facility and outlying lands, was previously undeveloped and privately owned farmland referred to as Castle Hill.

The MSH first served as a psychiatric treatment center in May of 1896 prior to completion of all the buildings. By design in this rural area, the MSH facility was self sufficient through on-site farming, a dairy, a machine shop, a carpentry shop, a laundry, and potable water wells coupled to a water tower. The agricultural buildings and farmlands were abandoned in the 1960s. Currently the majority of the buildings at this facility are unoccupied and not in use. These structures were used for patient care, nursing quarters, administration offices, and mechanical support.

Originally all of the approximately 30 original three-story brick buildings were heated by individual fire places until 1905 when the original Power Plant was centrally located among the other facility structures. The new Power Plant was built in 1930 and located away from the main facility grounds. Both the original and the new Power Plant burned coal. The new plant had coal brought in on a railroad spur and an elevated wooden trestle. The coal was deposited into a concrete retaining area and the coal ash was taken out by train. The new Power Plant switched from coal to No. 6 fuel oil in 1957 when one of the three original 30,000 USTs was installed. The other two USTs were installed on or about 1961.

CEE personnel have reviewed the site history and inspected the physical features of this area. See Appendix A for site photographs. During the 30 years preceding the change over to oil, the area downgradient of the plant received coal and ash debris, and has been built up and reconfigured incrementally over time. The result is an area which is made up of primarily fill materials to a depth of 10 to 15 feet.

1.4 FEDERAL, STATE AND MUNICIPAL FILE REVIEW

The sources of information and records reviewed by CEE included:

- The U.S. Environmental Protection Agency (EPA) National Priorities List (NPL);
- The EPA Comprehensive Environmental Response, Compensation and Liability System (CERCLIS) List;
- Massachusetts Department of Environmental Protection (DEP) List of Confirmed Disposal Sites and Locations To Be Investigated (LTBI), dated August 1993;
- Massachusetts Department of Public Safety, Underground Storage Tank Records;
- The DEP Incident Response Records including Leaking Underground Storage Tanks;
- The Town of Medfield Engineering & Water Departments;
- The Town of Medfield Health Department and Conservation Commission.

The reports on file with the Northeastern Regional Office of the DEP in Woburn indicate that there have been at least two reported releases of No. 6 fuel oil. According to limited information from copies of correspondence on file, there were two oil spills in the late 1970s. These releases were cleaned up and the oil-impacted debris placed in clay lined burial pits. According to Mr. Minukas, Director of Engineering at MSH., these burial pits were closed by plastic covering and additional clay lining over the plastic.

The most recent oil releases involved the discovery of product loss from one of the USTs in 1988. This discovery lead to the removal and replacement of all three of the tanks. The DMH

received a Notice of Responsibility (NOR) letter from the DEP dated April 20, 1989. This NOR letter addressed contamination attributed to the former USTs. The next DEP action involved placing the site on the Location to be Investigated (LTBI) List in January 15, 1990. In 1997 the site was placed on the LTBI Default List and Classified as Tier IB.

Conversations with personnel within the Town of Medfield included Mr. Michael Fitzgerald of the Conservation Department and Mr. Kenneth Feeney, Senior Engineer for the Town's water supply. Both of these representatives stated that the Town has had some concern with the potential impact of contaminants from the MSH facility migrating to the new municipal drinking water well which was under construction at the time of this report.

1.5 REGULATORY COMPLIANCE

Currently the site is classified as a Tier IB Disposal Facility. This classification was imposed on the site by the DEP after deadlines for submission of a Tier Classification or Response Action Outcome (RAO) passed in August 2, 1996.

This Licensed Site Professional (LSP) Evaluation Opinion and Phase I Report is submitted on behalf of the Massachusetts Department of Mental Health (DMH) to comply with the requirements of 310 CMR 40.0600.

2.0 SUBSURFACE INVESTIGATIONS

2.1 INTRODUCTION

This section describes the subsurface investigation conducted by CEE of the site on March 17 and 18, 1997. This investigation was designed to determine the presence of contaminants beyond the immediate area around the underground storage tanks (USTs). The subsurface investigation included advancement of soil borings and monitoring well installation, soil and groundwater sampling and analysis, and a limited topographic and hydrogeologic survey.

2.2 SOIL BORING AND MONITORING WELL INSTALLATION

On March 17 and 18, 1997 CEE retained TDS Drilling Services of Leominster, Massachusetts to conduct test drilling. TDS advanced a total of nine soil borings (B1 - B9) in downgradient locations around the UST area. Locations were chosen based on proximity to the USTs, photographs of UST replacement activities, and historical records of impact by previous releases. The borings were advanced using truck mounted drilling equipment equipped with an hollow stem auger. This work was supervised by a CEE Professional Geologist.

The borings ranged in depth from 12 to 22 feet below the ground surface. Borings were located throughout the area suspected to have been impacted by releases of oil and topographically downgradient of the Power Plant UST area. The soil borings were located in order to intercept oil contamination which may be advancing through the subsurface soils or groundwater. These borings have been used to evaluate the presence of oil contamination at the site. Soil boring logs and monitoring well schematics are included in Appendix E.

Soil samples were collected at 5-ft depth intervals during the drilling using a split-spoon sampler in accordance with ASTM Method 1586-84. Selected soil samples were collected by CEE and submitted to Toxikon Laboratories in Bedford, Massachusetts, a state certified laboratory, for analysis. Nine samples were selected based upon vertical sample location in relation to the groundwater table, discoloration, photoionization instrument screening, and/or field observations.

Monitoring wells were installed in four of the nine borings. Two wells were constructed of 4-in. diameter PVC materials and two were constructed of 2-in. diameter PVC. All monitoring wells included 0.020-in. machine-slotted PVC well screen placed in the lower 10 feet spanning the water table. The annuli around the well screens were packed with pre-washed sand to a depth of approximately 1 foot above the screened interval. A 1-ft thick natural clay bentonite seal was placed above the sand pack in each of the borings.

The remaining annular spaces in the borings were filled with drill cuttings. Solid well casings were extended to the ground surface and finished with protective steel casings. Wells placed in the roadway or parking areas were installed flush to the pavement so as not to interfere with snow plowing. Upon completion, the monitoring wells were developed by removing three to five well volumes of groundwater. The wells were then allowed to recharge completely with fresh groundwater prior to sampling. Soil borings and monitoring well locations are shown in Figure 3.0.

Fill materials consisting of coal ash and broken brick intermixed with gravely sands were encountered in each of these borings from grade surface to approximately 15 feet below grade. Natural soils encountered below the waste materials in the borings consisted of a silts with trace amounts of clay to a depth of at least 18 feet. Underlying the fine sand and silt in most of the borings was a layer of cobbles to a depth of approximately 22 feet.

Monitoring wells were installed in the following borings: MW-1 in B-2, MW-2 in B-3, MW-3 in B-5, and MW-4 was installed in borings B-7. Monitoring wells were installed topographically

downgradient of the UST area for groundwater monitoring purposes. Groundwater was encountered in the borings at a depth ranging from 7 to 15 feet below the ground surface.

On April 29, 1997 CEE again retained TDS to advance two (2) additional borings to the northeast of the tank pad. The location of these borings was based upon the estimated groundwater flow from monitoring wells MW-1 to MW-4. The borings were advanced to a maximum depth of 24 feet below the ground surface. Boring 10 and 11met refusal at 21-ft and 24-ft below grade, respectively. The same criteria for soil collection, sampling, screening, and selection for laboratory analysis described above was followed during this additional drilling process.

Boring B-10 was completed as MW-5 with the well constructed of 4-in. diameter PVC well material and 0.020-in. machine-slotted PVC well screen. Boring B-11 was completed MW-6 with the well constructed of 2-in. diameter PVC well material and 0.010-in. machine-slotted PVC well screen. Well construction followed the same format previously discussed.

2.3 PHOTOIONIZATION SCREENING OF SOIL SAMPLES

Soils were screened continuously during the test pit excavations for the presence of petroleum-related volatiles. PID readings did not indicate an elevated level of petroleum related contamination. These results are included in a column identified as "Field Screening Results." Table 1.

2.4 UNDERGROUND STORAGE TANK TESTING

As part of the field activities conducted by CEE a tank test was performed on tank 2. The test was conducted because testing performed in April 1996 indicated tank 2 failed. The testing conducted by CEE was intended to determine if a new release (in addition to the 1988 release) had occurred. On April 3, 1997, CEE contracted with P.M. Environmental, Inc. (PM) to conduct tightness testing on tank 2. This test employed helium gas and helium detectors placed in areas adjacent to tank seals which may leak. The test involved the use of two helium tanks with a total of 5,000 pounds of helium.

All access ports, the vent lines, and the underground pipe chases were monitored. None of these areas displayed leakage of helium. A concrete expansion joint located on the southeast side of tank 2 revealed a helium leak. CEE has reviewed photographs taken during the UST installation project and has matched the probable source of the leak to an elbow/flange in the vent line above the top of the tank. The results indicate there has not been a new release. Test results are located in Appendix F.

3.0 SOIL SAMPLING AND ANALYSIS

Soil samples collected from the borings were submitted for laboratory analysis. The purpose of the soil sampling was to investigate the impact of a previous oil release from leaks in tank 2. Soil samples were analyzed for total petroleum hydrocarbons (TPH) by EPA Method 8100M and Polynuclear Aromatic Hydrocarbons (PAHs) by EPA Method 8100. All samples were temperature preserved and delivered by courier under chain of custody to Toxikon Laboratories.

The sample identifications, the depths at which the samples were collected, and the results of the analysis are shown on Table 1 and are summarized below. Soil laboratory reports are included in Appendix G.

3.1 TOTAL PETROLEUM HYDROCARBONS (TPH)

The TPH analysis by EPA Method 8100M was performed on the eleven selected soil samples collected from the borings. TPH was reported in two out of nine samples at a concentration of 334 and 1,730 parts per million (ppm). These samples were obtained from Borings B2 and B3 respectively. Boring B3 is located closest to the USTs. However, neither of these concentrations exceeds the Method 1 Standards applicable to the site soils. The soil samples which revealed detectable concentrations of TPH were collected from a depth of 10 to 12 feet in B2 and 19 to 21 feet in boring B3. TPH was not reported in any of the other soil samples selected for laboratory analyses. These other samples were from depths of 10 to 17 feet below the ground surface.

3.2 POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)

Due to the composition of No. 6 fuel oil, the laboratory analysis for concentrations of PAHs were limited to Naphthalene, 2-Methylnaphthalene, and Phenanthrene. These analyses were performed on the samples collected from the borings. Concentrations of PAHs did not exceed the applicable DEP Method 1 Soil Concentrations. Applicable MCP Method 1 Standards are in the bottom row. In accordance with 310 CMR 40.0975(6), CEE has used the MCP Method 1 Soil Category S-3/GW-2 and 3.

TABLE 1
SUMMARY OF SOIL SAMPLE FIELD SCREENING AND LABORATORY ANALYTICAL DATA
MEDFIELD STATE HOSPITAL POWER PLANT SITE
MARCH 17 & 18, APRIL 29, 1997
(All results in parts per million, ppm)

SAMPLE ID and (depth in feet)	Field Screening Results	TPH	Naphthalene	2-Methylnaphthalene	Phenanthrene
B1-S3 (15-17)	2.1	ND	ND	ND	ND
B2-S2 (10-12)	4.6	334	ND	D	0.462
B3-S4 (19-21)	14.7	1730	2.64	6.05	7.85
B4-S3 (15-17)	1.6	ND	ND	ND	ND
B5-S2 (10-12)	13.1	ND	ND	ND	ND
B6-S3 (15-17)	1.9	ND	ND	ND	ND
B7-S3 (15-17)	3.8	ND	ND	ND	ND
B8-S3 (14-16)	1.4	ND	ND	ND	ND
B9-S2 (10-12)	ND	ND	ND	ND	ND
B10-S3 (15-17)	2.4	ND	ND	ND	ND
B11-S3 (15-17)	1.5	ND	ND	ND	ND
Method 1 S-3/GW-2	NA	5,000	1,000	20	2,500
Method 1 S-3/GW-3	NA	5,000	1,000	7	100

Notes: ND = No Detection; NA = Not Applicable

4.0 GROUNDWATER SAMPLING AND ANALYSIS

On March 24, 1997 groundwater samples were collected from the four new monitoring wells. No samples could be obtained from the eight existing monitoring wells installed in the UST concrete pad since these wells did not extend to groundwater. The groundwater samples were placed in pre-cleaned laboratory prepared containers. The type of container, quantity of sample, and preservative required were predetermined by Toxikon in accordance with the applicable EPA analytical method. After the sampling event the samples were temperature preserved and delivered by courier under chain of custody to Toxikon for analysis for TPH by EPA Method 8100M and PAH by EPA Method 8100. Chain of custody documents are included with the laboratory results in Appendix H. The results of the groundwater sampling are summarized in Section 4.1 and in Table 2. Please note that on March 24, 1997 MW-1 yielded only enough water to take a sample for TPH.

On April 30, 1997 groundwater samples were collected from monitoring well MW-6. These samples were collected as described above and submitted for the same analytical tests. Monitoring well MW-5 was dry and collection of a sample could not be completed.

4.1 GROUNDWATER ANALYTICAL RESULTS

The results of the groundwater analyses of samples collected on March 24 and April 30, 1997 indicated that TPH was not detected in any of the four monitoring wells at or above the laboratory method detection limits (MDLs). Groundwater analytical results for PAHs revealed that only MW-2 displayed concentrations above MDLs. However, none of the concentrations were above GW2 standards. The applicable Method 1 Groundwater Standards are presented in a separate row on Table 2. Copies of the analytical reports are included in Appendix C. In accordance with 310 CMR 40.0974(2), CEE has used the MCP Method 1 Groundwater Category GW-2.

TABLE 2
SUMMARY OF GROUNDWATER LABORATORY ANALYTICAL DATA
MEDFIELD STATE HOSPITAL POWER PLANT SITE
MARCH 24 AND MAY 1, 1997
(All results in parts per billion, ppb)

SAMPLE	TPH	Naphthalene	2-Methylnaphthalene	Phenanthrene
MW-1	ND	NA	NA	NA
MW-2	ND	18.3	23.0	47.9
MW-3	ND	ND	ND	ND
MW-4	ND	ND	ND	ND
MW-6	ND	ND	ND	ND
Method 1 GW-2	NA	6,000	10,000	NA
Method 1 GW-3	50,000	6,000	3,000	50

Notes: ND = No Detection ; NA = Not Applicable

5.0 GEOLOGY AND HYDROGEOLOGY

5.1 SURFICIAL GEOLOGY

The overlying fill materials that comprise the immediate subsurface soils on this site consist of layers of fill disposed over the years. Coarse sands and gravel intermixed with coal, coal ash, and pieces of broken brick were observed in all the borings from surface level to approximately 13 feet below grade.

The natural surficial geology for this site is typical New England post-glacial outwash deposition. These materials were then overlain by river deposits. The New England topography is almost entirely a product of the last glacial ice sheet which retreated approximately 20,000 years ago. Surficial deposits observed in the drill tailings and the samples generally consists of glacial melt-water outwash deposits and intermixed fine sands, silt, and clay.

5.2 BEDROCK GEOLOGY

According to the Bedrock Geologic Map of Massachusetts (Zen, 1983), the site is located in an area identified as the Dedham Granite in the Milford-Dedham Zone. Bedrock outcrops were not observed on site and bedrock was not sampled in any of the borings advanced on site for this investigation.

5.3 SURFACE WATER DRAINAGE

The MSH property is located within the Charles River Basin. The MSH facility occupies a relatively flat plateau adjacent to the Charles River. The river course flows around the MSH property on the northwest and northern sides. Stormwater discharge from the site area is direct runoff from paved and developed areas. Stormwater surface runoff flows directly into the adjacent Charles River wetlands. The Power Plant site is located on the topographically downgradient side of the facility.

5.4 SITE SURVEY AND WATER TABLE TOPOGRAPHY

On March 24, 1997, CEE conducted a limited topographic and hydrogeologic survey of the newly installed monitoring wells. As there are no readily available survey control points in this area of the MSH facility, CEE assigned an elevation of 100.00 feet to a permanent fixture. This bench mark, shown on Figure 3.0, was used to determine the locations of test borings and elevation of the monitoring wells installed during this investigation. A second limited survey was conducted on April 29, 1997, to include MW-5 and MW-6. The previously assigned bench mark was utilized as a control point. Groundwater contours and water table elevations were calculated for the study area. Monitoring well MW-5 was not utilized in determining groundwater flow. Groundwater elevations, contours, and flow directions for this site are shown on Figure 3.0.

Monitoring well gauging was performed on April 30, 1997. CEE used an oil/water interface probe capable of measuring the depth to water and detecting free-phase oil. Free-phase oil is commonly referred to as a non-aqueous phase liquid (NAPL). The presence of NAPL was not detected in any of the wells gauged.

Based on the well gauging data the inferred shallow groundwater flow direction in the vicinity of the MSH Power Plant is to the northeast.

6.0 MIGRATION PATHWAYS AND EXPOSURE POTENTIALS

6.1 SITE GROUNDWATER CATEGORIES

In accordance with 310 CMR 40.0932 groundwater at all disposal sites shall be classified, at a minimum, as Category GW-3. Also, the site does not meet any of the GW-1 criteria listed in 40.0932(4).

According to 310 CMR 40.0932(6) the groundwater is category GW-2 if it is located within 30 feet of an existing occupied building and the average annual depth to groundwater is 15 feet or less.

The groundwater is classified as GW-2 and GW-3.

6.2 SITE SOIL CATEGORIES

The MCP categorizes soil according to the frequency and intensity of use as well as if adults or children are present.

At this site the frequency of use, for children, is considered low. The low frequency of use for children is based on 40.0933(4)(a) items 3 and 4:

> Children's frequency for use is classified as low when they are present at a site on an infrequent basis. The regulations state that it must be presumed that children may be present at the site or in the surrounding environment unless demonstrated that access by children 15 years and younger is restricted or that such children are highly unlikely to be present.
>
> The next lower frequency of use category for children is Not Present. The selection of the low frequency of use for children was considered to be a more conservative approach. Nevertheless, the final classification of the soil category as defined by Table 40.933(9), for children, was not altered by using the more conservative measure.

The frequency of use for adults may also considered low if they are not on the site for a full day or for shifts of 8 hours or more on a continuous basis. Since MSH personnel are on site for 8-hour shifts the frequency of use is considered high.

6.2.1 **Intensity of Use.** The intensity of use by both children and adults is characterized as low. As this site is a patrolled security area the potential for individuals to disturb the soil, which would result in direct contact with the soil or inhalation of soil derived dust. is unlikely.

6.2.2 **Accessibility.** The soil is considered potentially accessible. This is based on 310 CMR 40.0933(4)(c)1, which states that if impacted soil is located at a depth of 3 to 15 feet below the surface, it is considered potentially accessible.

6.2.3 **Selection of Soil Category.** The soil category selection is based on Table 40.933(9). For children, soil contact is considered to be a low frequency of use, low intensity, and potentially accessible. Therefore, for children the soil category is S-3. For adults, the frequency of use is also low, the intensity of use is low, and it (i.e., the soil) is potentially accessible. Based on this information, the soil category for adults is S-3. Overall, the soil category is S-3.

6.3 IDENTIFICATION OF EXPOSURE POINTS.

CEE selected the locations for the new monitoring wells based on historical evidence that this area has been impacted by historical releases of fuel oil. The analytical results of those groundwater samples were reported as below the Method 1 Risk Characterization for GW-2 groundwater. To date there have been no reports of surface water contamination of the Charles River attributed to the site.

A total of 28 soil samples were collected during the boring program for the nine borings. Nine of the twenty-eight samples were selected from each boring to be forwarded to a laboratory. The analytical results for the nine soil samples selected by CEE indicate a residual level of petroleum contaminants. (See Table 1) These soil results are representative of the subsurface conditions immediately downgradient of the UST area.

As a result of the information obtained during this investigation, the primary exposure point would be the subsurface soils and groundwater. Other potential exposure points include the Charles River.

6.4 POTENTIAL MIGRATION PATHWAYS

Potential exposure to contaminants in the soil and groundwater at the site could occur during subsurface utility repairs and/or installations (see Algonquin Gas Line on Figure 3.0), and during excavations in the vicinity of the USTs.

According to a telephone conversation with personnel at the Medfield Water District on March 28, 1997, the new public supply well is not currently used. Medfield plans to bring this well on line in the coming months. The site is not located in the Interim Wellhead Protection Area.

6.5 POTENTIAL ENVIRONMENTAL RECEPTORS

The site is located in a Protected Open Space known as an Area of Critical Environmental Concern (ACEC). Potential environmental receptors are the flora and fauna which would be expected on site. Although the groundwater is not directly accessible for these receptors, contaminants which leach into the Charles River would expose wildlife and domestic animals drinking from, bathing in, or swimming in these waters. The wetlands which border this site to the north and northwest could potentially be environmental receptors.

6.6 EVALUATION OF IRA REQUIREMENT

There are no conditions which meet 2-hour or 72-hour reporting conditions. Therefore, there is no requirement for an Immediate Response Action (IRA).

7.0 FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

This report has been produced to support a Licensed Site Professional Evaluation Opinion. CEE has reviewed all the files currently at the office of the DEP in Woburn as well as the information provided by the Town of Medfield, and the Department of Mental Health (DMH). This investigation has revealed that the site has been impacted by releases of fuel oil. However, the concentrations of contaminants detected on site are below the applicable Method 1 Standards.

CEE conducted a historical, regulatory and subsurface investigation of the Medfield State Hospital (MSH) Power Plant site identified by the DEP as RTN #3-0001684. Interviews with MSH personnel and reviews of previous reports and correspondence indicated there have been at least two significant fuel oil releases (1978 and 1988) that are known to have impacted the study area. CEE advanced soil borings and installed monitoring wells, and collected soil and groundwater samples for laboratory analysis which has confirmed the presence of the impact by oil.

A total of eleven soil borings including six monitoring wells were installed in this area in order to evaluate the possible extent of contamination. Soil and groundwater samples were collected from the monitoring wells and were submitted for laboratory analysis for TPH and selected PAHs.

A release of oil subject to the notification requirements of 310 CMR 40.0300 has occurred at the location but response actions completed prior to the date of the LSP Evaluation Opinion meet the requirements of a Class A Response Action Outcome pursuant to 310 CMR 40.1000.

CEE recommends that the concrete pad above the vent line for tank 2 be exposed. The suspected vent line elbow/flange can be inspected and repaired if necessary. A confirmatory tightness test on that portion of the tank system can be used to confirm the repair.

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC-110

LICENSED SITE PROFESSIONAL (LSP) EVALUATION OPINION TRANSMITTAL FORM

Pursuant to 310 CMR 40.0600 (Subpart F)

Release Tracking Number: 3 - 0001684

A. SITE OR LOCATION TO BE INVESTIGATED (LTBI) INFORMATION:

Provide the following information as it appears on the Transition List of Confirmed Disposal Sites and Locations To Be Investigated.

Site or LTBI Name: Medfield State Hospital

Street: 45 Hospital Road Location Aid: Power Plant

City/Town: Medfield ZIP Code: 02052

Site Status: (check one) [X] Location To Be Investigated [ ] Unclassified Disposal Site [ ] Non-Priority Disposal Site without a Waiver

Date First Listed in Above Category: January 15, 1990

Related Release Tracking Numbers that this LSP Evaluation Opinion Addresses:

B. LSP EVALUATION OF SITE OR LOCATION TO BE INVESTIGATED: (check one of the following)

[ ] Check here if this location is **NOT** a Site where a Release of Oil(s) or Hazardous Material(s) occurred that is subject to the notification requirements of 310 CMR 40.0300, and no further response actions are required.

[X] Check here if a Release of Oil(s) and Hazardous Material(s) subject to the notification requirements of 310 CMR 40.0300 occurred or may have occurred at this location, but Response Actions completed prior to the date of this LSP Evaluation Opinion meet the requirements of a Class A or Class B Response Action Outcome.

If this LSP Evaluation Opinion is checked, you must meet all appropriate Response Action Outcome requirements described at 310 CMR 40.1000. You must include with this submittal documentation equivalent to a Response Action Outcome, including all supporting materials.

Indicate the class of the equivalent Response Action Outcome:

( ) Class A-1 (X) Class A-2 ( ) Class A-3 ( ) Class B-1 ( ) Class B-2

You may choose to submit a completed Response Action Outcome Statement (BWSC-104) and supporting documentation in lieu of an LSP Evaluation Opinion, provided that you make the submittal prior to the LSP Evaluation Opinion deadline.

[ ] Check here if a Release subject to the notification requirements of 310 CMR 40.0300 occurred or may have occurred at this location, and further Response Actions are necessary, pursuant to 310 CMR 40.0000.

If this option is checked you must make one of the following submittals by the applicable LSP Evaluation Opinion deadline: (i) provide a Tier Classification Submittal Transmittal Form (BWSC-107) and, if necessary, a Tier I Permit Application; (ii) provide a Response Action Outcome Statement (BWSC-104); (iii) or provide a Downgradient Property Status Submittal (BWSC-104).

[ ] Check here if this location is a Site that is Adequately Regulated, pursuant to 310 CMR 40.0110. Specify which other regulatory authority applies:

( ) Response Actions at this Site, which are being conducted as a HSWA Corrective Action, are Adequately Regulated, pursuant to 310 CMR 40.0112.

( ) Response Actions at this Site, which is a 21C facility under the RCRA Authorized State Hazardous Waste Program, are Adequately Regulated under M.G.L. c. 21C and 310 CMR 30.000, pursuant to 310 CMR 40.0113.

( ) Response Actions at this Site, which is a Solid Waste Management facility, are Adequately Regulated under M.G.L. c. 21H, M.G.L. c. 111, § 150A and/or 310 CMR 19.000, pursuant to 310 CMR 40.0114.

You must attach all supporting documentation for the LSP Evaluation Opinion indicated, including copies of any Legal Notices and Notices to Public Officials required by 310 CMR 40.1400.

D. LSP OPINION:

I attest under the pains and penalties of perjury that I have personally examined and am familiar with this transmittal form, including any and all documents accompanying this submittal. In my professional opinion and judgment based upon application of (i) the standard of care in 309 CMR 4.02(1), (ii) the applicable provisions of 309 CMR 4.02(2) and (3), and (iii) the provisions of 309 CMR 4.03(5), to the best of my knowledge, information and belief, this LSP Evaluation Opinion was developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and the response action(s) upon which this opinion is based, if any, were reasonable and appropriate to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000.

I am aware that significant penalties may result, including, but not limited to, possible fines and imprisonment, if I submit information which I know to be false, inaccurate or materially incomplete.

SECTION D IS CONTINUED ON THE NEXT PAGE.

Massachusetts Department of Environmental Protection — BWSC-110
Bureau of Waste Site Cleanup

LICENSED SITE PROFESSIONAL (LSP) EVALUATION OPINION TRANSMITTAL FORM

Pursuant to 310 CMR 40.0600 (Subpart F)

Release Tracking Number: 3 - 0001684

D. LSP OPINION: (continued)

☐ Check here if the Response Action(s) on which this opinion is based, if any, is (are) subject to any order(s), permit(s) and/or approval(s) issued by DEP or EPA. If this box is checked, you MUST attach a statement identifying the applicable provisions thereof.

LSP Name: Kenneth J. Snow LSP #: 3266 Stamp:

Telephone: 508-791-8700 Ext.:

FAX: (optional) 508-791-1973

Signature: [signature]

Date: 5/12/97

COMMONWEALTH OF MASSACHUSETTS — KENNETH J. SNOW No. 3266 REGISTERED LICENSED SITE PROFESSIONAL

E. PERSON SUBMITTING LSP EVALUATION OPINION:

Name of Organization: Massachusetts Department of Mental Health

Name of Contact: William M. Corliss Title: Director

Street: 25 Staniford Street

City/Town: Boston State: MA ZIP Code: 02114

Telephone: 617-727-5500 Ext.: FAX: (optional)

F. RELATIONSHIP TO SITE OR LOCATION TO BE INVESTIGATED OF PERSON SUBMITTING LSP EVALUATION OPINION: (check one)

☒ RP or PRP Specify: ○ Owner ⊗ Operator ○ Generator ○ Transporter Other RP or PRP:

☐ Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G.L. c. 21E, s. 2)

☐ Agency or Public Utility on a Right of Way (as defined by M.G.L. c. 21E, s. 5(j))

☐ Any Other Person Submitting LSP Evaluation Opinion Specify Relationship:

G. CERTIFICATION OF PERSON SUBMITTING LSP EVALUATION OPINION:

I, William M. Corliss, attest under the pains and penalties of perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

By: [signature] Title: Director
(signature)

For: Massachusetts Department of Mental Health Date: 5/14/97
(print name of person or entity recorded in Section E)

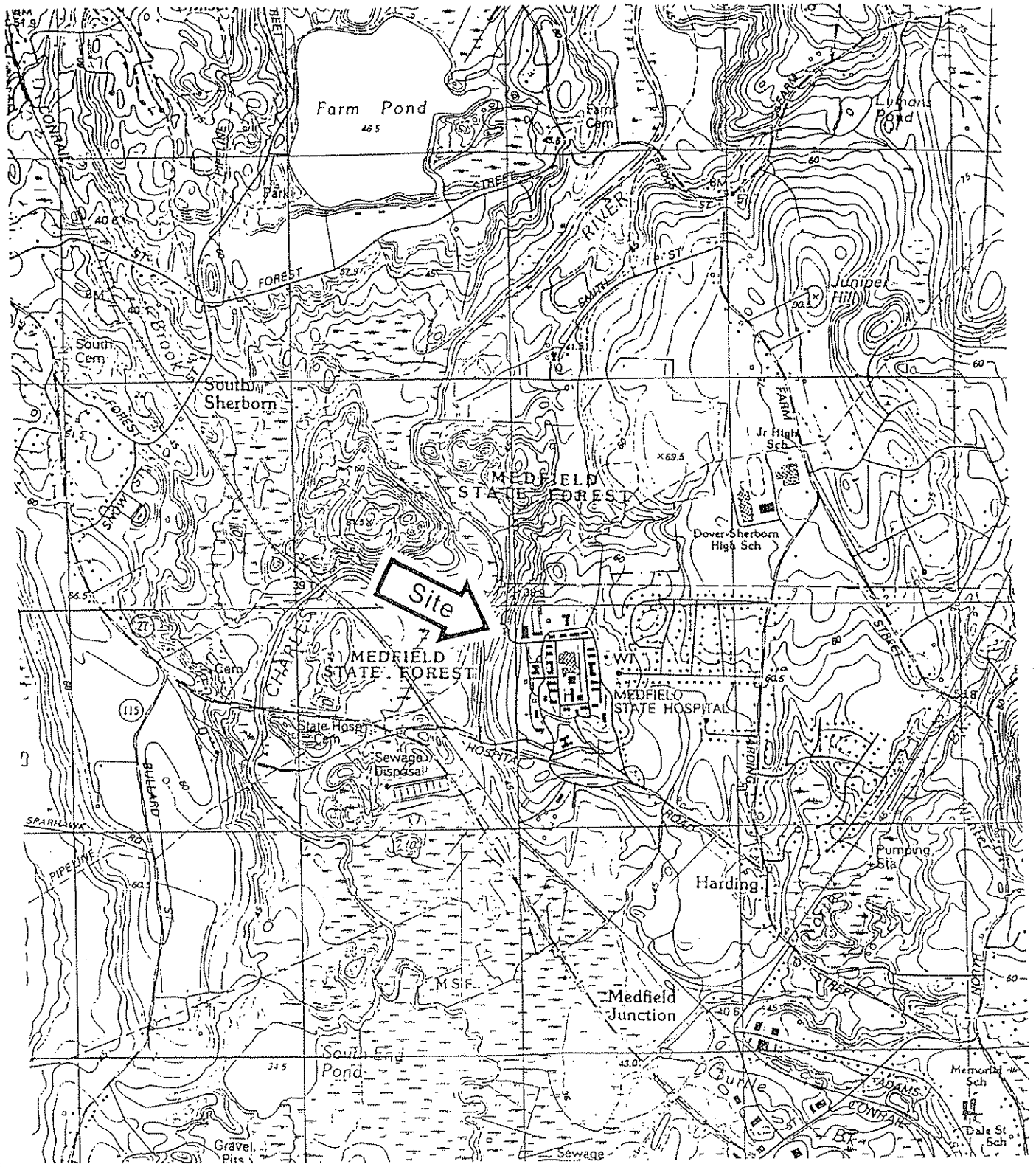
Enter address of the person providing certification, if different from address recorded in Section E:

Street:

City/Town: State: ZIP Code:

Telephone: Ext.: FAX: (optional)

YOU MUST COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE, AND YOU MAY INCUR ADDITONAL COMPLIANCE FEES.



QUADRANGLE MAP (TOPOGRAPHIC) MEDFIELD

SCALE: 1" APPROX. = 2,000'

DATE: APRIL 1997

DRAWN BY: EFG

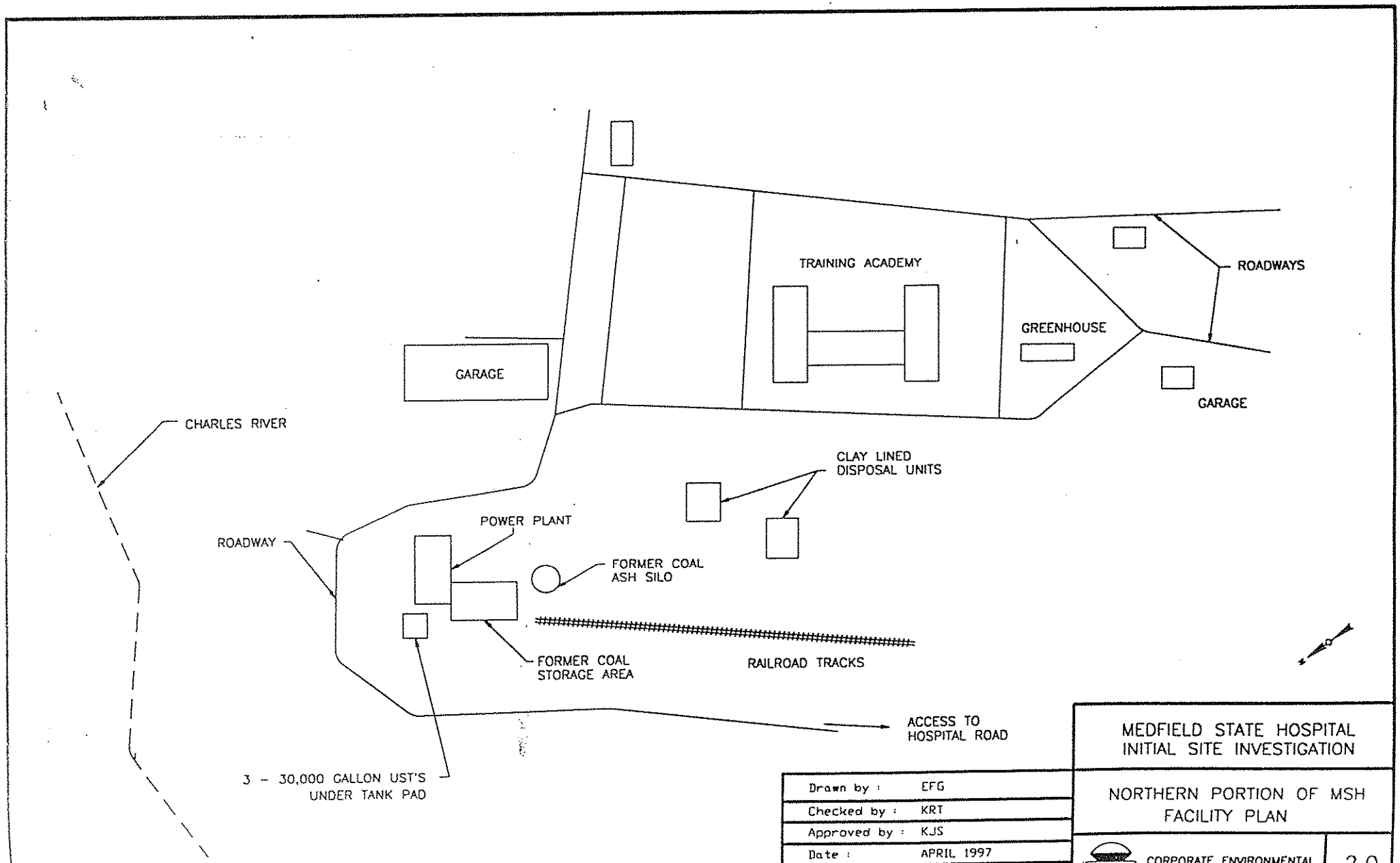
APPROVED BY: KRT

FIGURE No. 1.0

N

MEDFIELD STATE HOSPITAL
MEDFIELD, MA

CORPORATE ENVIRONMENTAL ENGINEERING INC
CEE
255 PARK AVENUE
WORCESTER, MA 01609



MEDFIELD STATE HOSPITAL
INITIAL SITE INVESTIGATION

NORTHERN PORTION OF MSH
FACILITY PLAN

Drawn by :	EFG
Checked by :	KRT
Approved by :	KJS
Date :	APRIL 1997
Scale :	NOT TO SCALE

CEE CORPORATE ENVIRONMENTAL ENGINEERING INC.

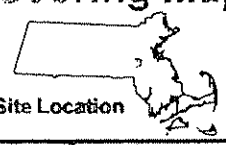
2.0

MA DEP - Bureau of Waste Site Cleanup

Site Scoring Map: 500 feet & 0.5 Mile Radii

SITE NAME:
Medfield State Hospital
Medfield, MA
4675650n 307250ew
4675875N 306900E MJ

Site Location



The information shown on this map is the best available at the date of printing. Please refer to the date source description document.

MASS GIS — Massachusetts Geographic Information System — Massachusetts Executive Office of Environmental Affairs - 1997

DEP — Department of Environmental Protection

Roads: Interstate,US,State,Street,Trail — EPA Designated Sole Source Aquifer

Boundaries: Municipal,County,DEP Region — Public Water Supplies: Ground,Surface,Non Community

Train; Powerline; Pipeline — Approved Zone2; IWPA;

Drainage Basins: Major,Sub — Hydrography: Water Features,Public Surface Water Supply

Streams: Perennial,Intermittent,Aqueduct — Wetlands: Fresh,Salt,NHESP Wetlands Habitat

Potentially Productive Aquifers: Medium Yield,High Yield — Protected Open Space; ACEC

Non-Potential Drinking Water Source Area: Medium,High Yield — DEP Permitted Solid Waste Facilities; Certified Vernal Pools

N W E S

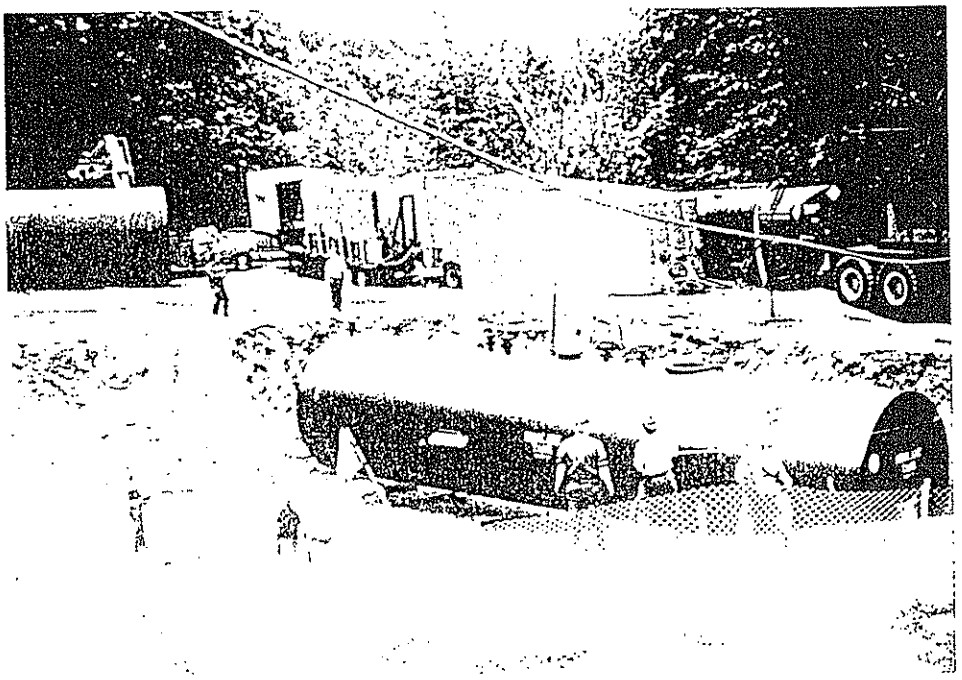
SCALE 1:15000

0 1/2 0 1/2 Miles

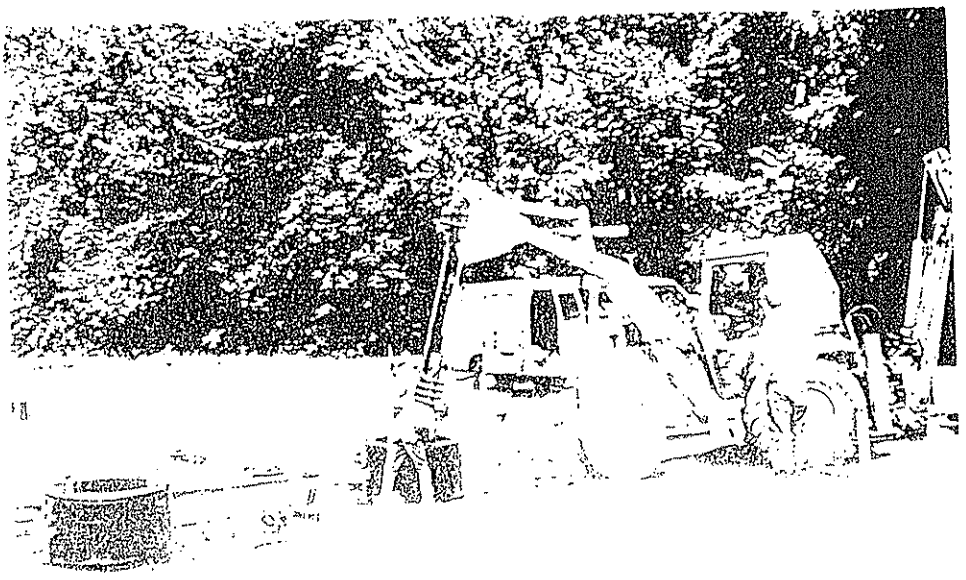
KILOMETERS

March 13, 1997

PHOTOGRAPHIC DOCUMENTATION



PLACEMENT OF TANK #3 (1990)



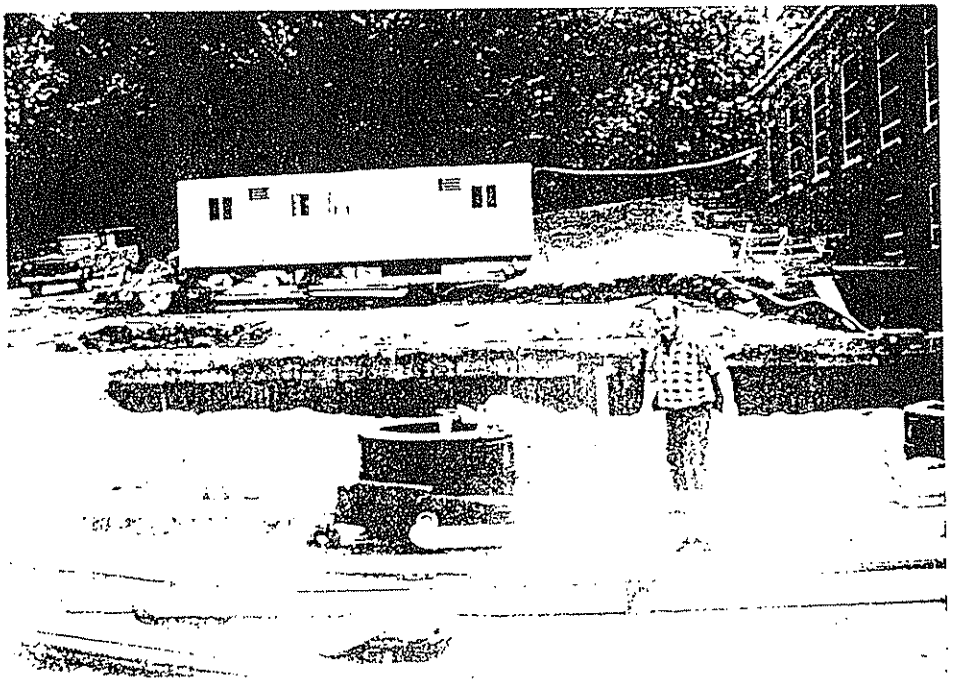
INSTALLATION OF HEATING COIL (1990)

MEDFIELD STATE HOSPITAL
MEDFIELD, MASSACHUSETTS

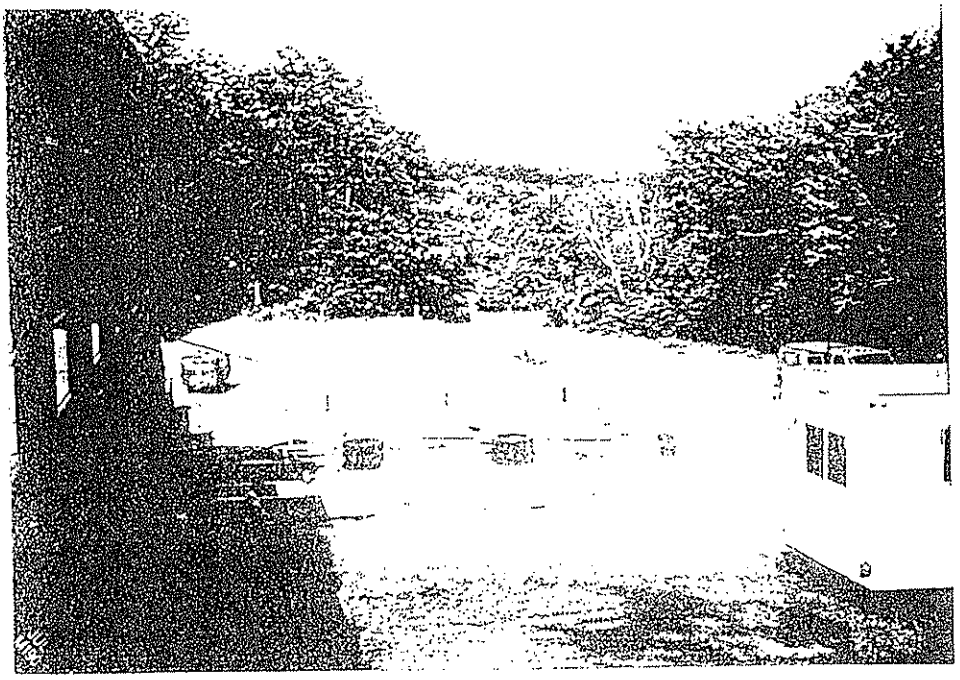
CEE

CORPORATE ENVIRONMENT
ENGINEERING INC
255 PARK AVENUE
WORCESTER, MA 01609

PHOTOGRAPHIC DOCUMENTATION



INSTALLATION OF TANK VENT LINES (1990)



OVERVIEW OF TANK INSTALLATION PRIOR TO POURING TANK PAD, NOTE TEST MONITORING WELLS. (1990)

MEDFIELD STATE HOSPITAL
MEDFIELD, MASSACHUSETTS

CEE
CORPORATE ENVIRONMENTAL ENGINEERING INC
255 PARK AVENUE
WORCESTER, MA 01609

PHOTOGRAPHIC DOCUMENTATION

NORTHWEST SIDE OF POWER PLANT, TANK PAD IN FOREGROUND (1997)

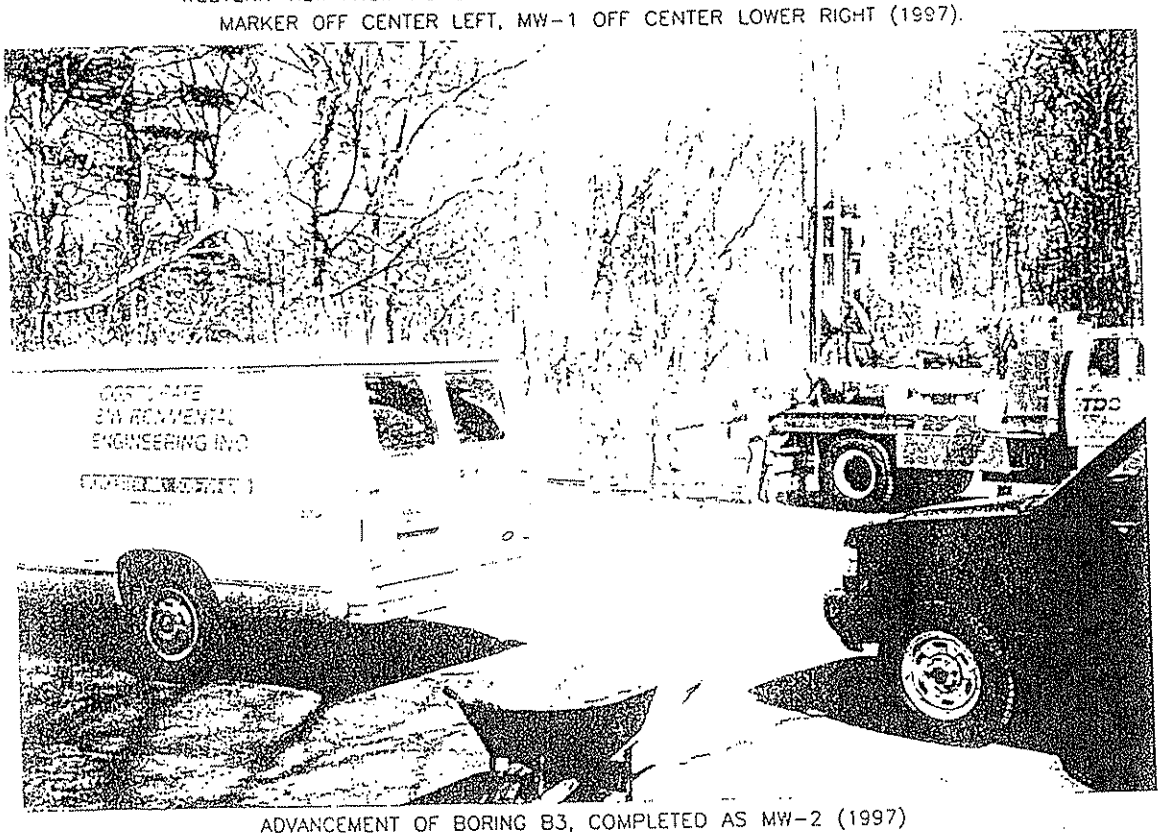
NORTHERN VIEW OF FORMER RAILROAD TRESSEL AND ASH SILO (1997)

MEDFIELD STATE HOSPITAL
MEDFIELD, MASSACHUSETTS

CEE
CORPORATE ENVIRONMENTA
ENGINEERING INC
255 PARK AVENUE
WORCESTER, MA 01609

PHOTOGRAPHIC DOCUMENTATION

WESTERN VIEW FROM POWER PLANT PARKING LOT. ALGONQUIN PIPE LINE MARKER OFF CENTER LEFT, MW-1 OFF CENTER LOWER RIGHT (1997).

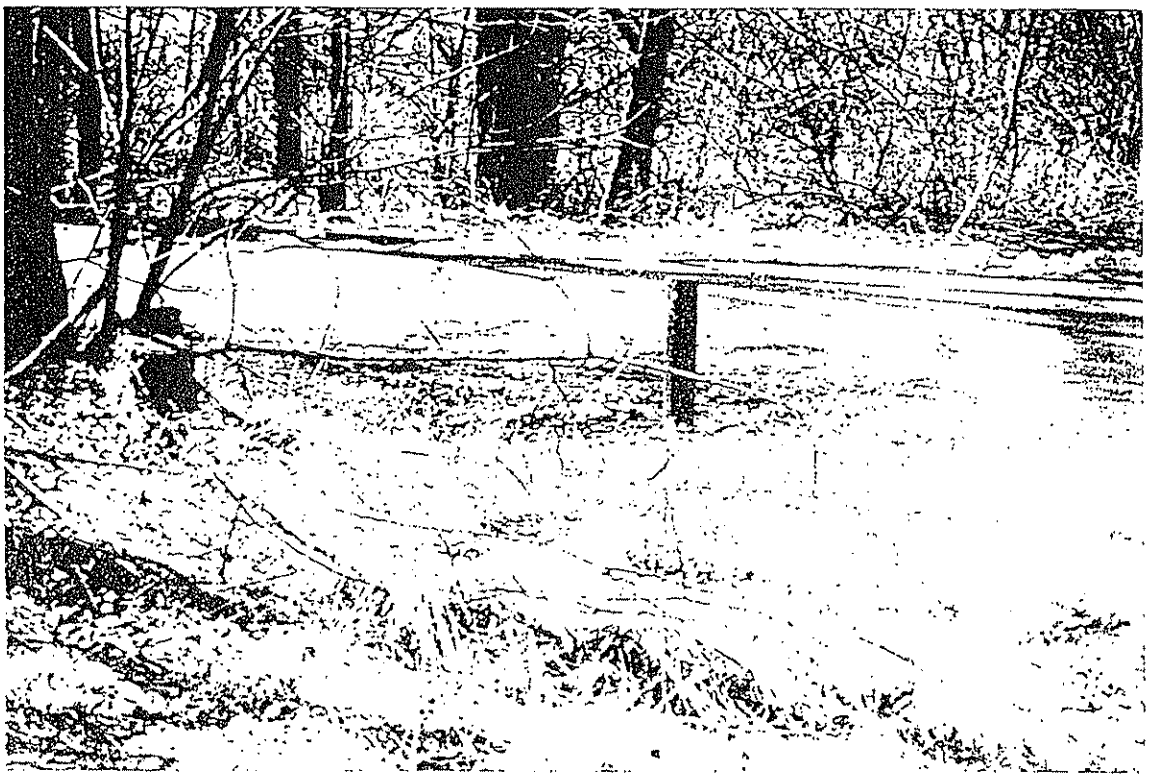


ADVANCEMENT OF BORING B3, COMPLETED AS MW-2 (1997)

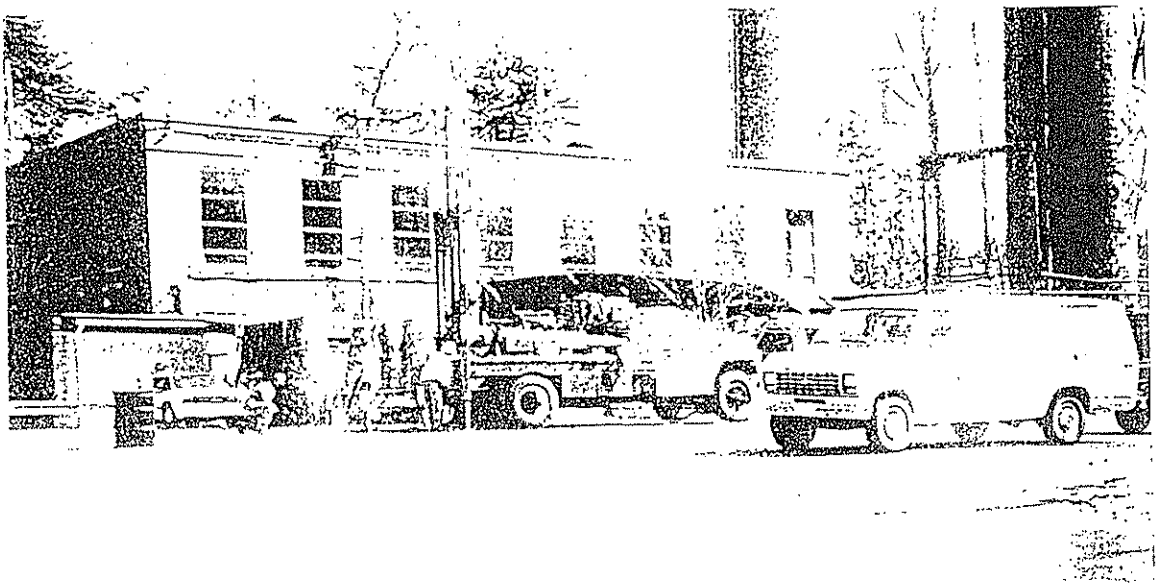
MEDFIELD STATE HOSPITAL
MEDFIELD, MASSACHUSETTS

CEE
CORPORATE ENVIRONMENTAL ENGINEERING INC
255 PARK AVENUE
WORCESTER, MA 01609

PHOTOGRAPHIC DOCUMENTATION



VIEW OF MW-3 STANDPIPE (1997)



ADVANCEMENT OF BORING B7, FIVE FEET FROM EDGE OF TANK PAD (1997)

MEDFIELD STATE HOSPITAL
MEDFIELD, MASSACHUSETTS

CEE

CORPORATE ENVIRONMENTAL
ENGINEERING INC
255 PARK AVENUE
WORCESTER, MA 01609

15M-3-73-074886

THE COMMONWEALTH OF MASSACHUSETTS

WATER RESOURCES COMMISSION

LEVERETT SALTONSTALL BUILDING, GOVERNMENT CENTER

100 CAMBRIDGE STREET, BOSTON 02202

OFFICE OF THE DIRECTOR
DIVISION OF WATER POLLUTION CONTROL

utheast Regional Office
O. Box 539
. Pembroke, Ma. 02359

August 14, 1978

Re: Medfield (CHL)
Charles River
Oil Spill

Paul Lavote, Ph.D.
Superintendent
Medfield State Hospital
Hospital Road
P.O. Box 275
Medfield, Massachusetts 02052

Dear Mr. Lavote:

A recent inspection of cleanup activity associated with your facility's oil spill reported March 27, 1978, has been conducted with the following observations:

1. In-house boiler room piping has been changed with the provision for visual monitoring of discharge from the oil preheaters to eliminate a reoccurrence of such a spill.

2. All spilled oil from the drain outlet source to the edge of uncontaminated lowland vegetation bordering the former landfill site had been removed to the satisfaction of this Division.

3. The large clay-lined excavation used for onsite disposal was nearly filled to capacity with oil contaminated soil and debris, and a second excavation was available for clay-lining to accommodate the remaining oil contaminated soil and debris stockpiled at the spill site.

4. The drainage swail had been rerouted to the Charles River away from the spill area and was to be maintained with absorbant to remove the slight oil residue associated with the cleanup activity.

This Division is satisfied that proper action has been taken by the Department of Mental Health in this matter and requires the following to be completed prior to final approval:

1. Prior to August 31, 1978 - place remaining oil contaminated material within excavation after clay-lining, and grade and reslope former landfill to original topography with respect to the lowland.

2. Prior to September 15, 1978 - compact and cover both disposal areas with polyethylene and notify this office for inspection. Polyethylene cover must extend a minimum of ten (10) feet beyond the edge of filled material. Immediately following inspection, cover the disposal areas with stockpiled fill material and top soil to return area to grade.

3. Have available for view during the inspection in Item 2, a revised plot plan of the hospital property, which is part of the Department's permanent file, indicating, with appropriate detail, the location of the onsite disposal area.

Your continued cooperation in this matter is appreciated.

Very truly yours,

Jeffrey E. Gould
Acting Southeast Regional Engineer

JEG:jd

cc: Arthur Hammer, Department of Mental Health, Engineering Section, 190 Portland St., Boston, MA 02114
John Marcell, Steward, Medfield State Hospital, Hospital Rd., P.O. Box 276, Medfield, MA 02052
John Dolan, Chief Engineer, Medfield State Hospital, Hospital Rd., P.O. Box 276, Medfield, MA 02052
Steven Novik, U.S. Environmental Protection Agency, Oil and Hazardous Materials Section, 60 Westview St., Lexington, MA 02173

DANIEL S. GREENBAUM
Commissioner
935-2160

The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Metropolitan Boston - Northeast Region
5A Commonwealth Avenue
Woburn, Massachusetts 01801

April 20, 1989

RE:MEDFIELD - ERB-N88-839

Medfield State Hospital
45 Hospital Road
Medfield, MA 02052

NOTICE OF RESPONSIBILITY/REQUEST
FOR TECHNICAL INFORMATION PURSUANT
TO M.G.L. CHAPTER 21E and
310 CMR 40.000

Attention: Judith Joseph, Director

Dear Madam:

On June 9, 1988, Department personnel investigated reports concerning the release of approximately 2,000 gallons of #6 fuel oil from a 30,000 gallon underground storage tank located at 45 Hospital Road in Medfield, MA. The release was discovered during routine stick readings taken at the power plant.

As a result of the inventory loss, an inspection of the site was conducted. A small amount of oil had discharged from a culvert pipe into a nearby wetland area. The tank in question has been pumped and taken out of service. An oil/water mixture continues to recharge into the tank indicating significant soil and groundwater contamination is present in the area.

Such incident is governed by The Massachusetts Contingency Plan (MCP), 310 CMR 40.000 and Chapter 21E of the General Laws of Massachusetts (hereinafter "M.G.L. Chapter 21E"), the Massachusetts Oil and Hazardous Material Release Prevention and Response Act, which was enacted on March 24, 1983.

Chapter 21E and the MCP identify as responsible parties the current owner or operator of a site at which there has been a release or threat of release of oil or a hazardous material; the past owner or operator of a site where a release of hazardous material has occurred; any person who directly or indirectly arranged for the transport, disposal, storage or treatment of hazardous materials to or at such a site; and any person who caused or is legally responsible for a release or a threat of release of oil or a hazardous material at such a site. Such parties are liable without regard to fault; the nature of this liability is joint and several. (M.G.L. Chapter 21E, Section 5a).

This letter is to inform you in writing that:

(1) The Department has determined that a release of #6 fuel oil has occurred at the subject site.

(2) Information available to the Department indicates that you as operator/owner of the subject site, are a liable and "responsible" party pursuant to Section 5(a) of Chapter 21E.

(3) Additional information is needed to better evaluate the need for further emergency response action at this site. Please, refer to page 3 for the requested information.

(4) Should you fail to implement those actions deemed necessary by this Office, the Department may, pursuant to M.G.L. Chapter 21E, take or arrange for any and all necessary actions at the site. If public funds are expended under such conditions, Chapter 21E, Section 11 stipulates that the Attorney General of the Commonwealth of Massachusetts may initiate legal action against the responsible party(s) to recover all costs incurred by the Department in the assessment, containment, and removal of any release or threat of release of oil or hazardous materials.

(5) The liability of responsible parties in (4) above includes:

a. Administrative costs incurred by the Department in handling this matter.

b. Interest charges on the total liability at the statutory rate of 12% compounded annually;

c. Treble costing (i.e., three (3) times the total amount of response costs the Department incurs); and

d. All damages for the injury, destruction or loss of natural resources due to the release.

This liability constitutes a debt to the Commonwealth. The debt, together with interest, creates a lien on all your property in the Commonwealth. Lien placement will increase your administrative cost liability. This liability will further increase if the Department is required to go to court to recover its costs. Administrative and legal costs for simple spill cases which reach this stage total at least $3,300.00. In addition to the foreclosure remedy provided by the lien, the Attorney General of the Commonwealth may recover that debt or any part of it in an action against you. You may also be liable under M.G.L. C.21E Section 11 for up to $100,000 in fines or penalties for each violation of C.21E as well as for additional penalties or damages pursuant to other statutes or common law.

On June 9, 1988, Department personnel verbally notified Joe Minukas pursuant to Section 40.160 of the MCP of your responsibility for such releaseand gave you one copy of a document prepared by the Department and entitled "Brief Synopsis of M.G.L. Chapter 21E, the Massachusetts Oil and Hazardous Material Release Prevention and Response Act".

Your acceptance of responsibility for such release means that: (1) You will enter into a contract with a cleanup contractor, approved by the Department, to (a) perform the spill cleanup as deemed necessary by the Department; (b) perform necessary analyses of the waste material and make arrangements for its appropriate treatment/disposal; (c) perform analysis of the soil/water/groundwater impacted by the release to determine contaminant conditions at the site after the initial response to the incident; and (d) submit a report of their findings for review by the Department. And (2) you will pay for all response costs incurred by the Department due to such release.

Pursuant to the Department's authority to perform information-gathering activities and its authority to investigate, sample and inspect records, conditions, equipment, practices or property under M.G.L. C.21E Sections 2, 4 and 8, you are directed to provide to the Department, within seven (7) days of the date of this letter, an incident report to include the following information:

(1) a brief account of why, how and where such release occurred; and

(2) a brief description of all emergency remedial actions that have been and/or will be taken relative to such release; please include field screening data and/or analytical data (soil/groundwater) describing contaminant conditions at the site; and

(3) an estimate, to the best of your knowledge, of the quantity of oil/hazardous material released; and

(4) photocopies of all waste manifests for the oil/hazardous material released; and

(5) laboratory results of soil/water samples taken from the "cleaned up" environmental media impacted by the release; and

(6) a detailed description and a timetable of measures you plan to implement to prevent future recurrence of such incidents.

You are hereby notified that failure to respond to this letter in a timely manner, is a violation of 310 CMR 40.008 and the submission of false and inaccurate information is a violation of 310 CMR 40.009 and 40.011. Any such violations may subject you to legal action including criminal prosecution, court-imposed civil penalties, administrative orders and/or civil administrative penalties assessed by the Department pursuant to M.G.L, Chapter 21A.

It is to your advantage to respond to this request for information in an adequate and timely manner, demonstrating that you have acted appropriately in taking necessary response actions relative to this release/threat of release of oil and/or hazardous materials.

Depending on the information generated by the above work, the Department may require additional investigations, studies and response actions in conformance with 310 CMR 40.000. If you fail to take these actions or if you fail to perform these tasks in accordance with the standards of the Department, the Department may perform response actions in your stead and recover its costs from you in accordance with the provisions described above.

Your cooperation in this matter in promptly accepting responsibility and initiating emergency remedial measures relative to this release is appreciated.

Your response to the requested information and any further questions regarding this matter should be directed to Rosemarie Bradley at the letterhead address or 935-2160 and refer to case number ERB-N88-839.

Very truly yours,

Rosemarie Bradley

Rosemarie Bradley
Environmental Analyst

Richard J. Chalpin

Richard J. Chalpin
Deputy Regional
Environmental Engineer

RJC/RB/ram

cc: Frank Sciannameo, DEQE, OIR, One Winter St., Boston, MA 02108
Medfield BOH, Town Hall, Medfield, MA 02052
Medfield Fire Dept., 114 North St., Medfield, MA 02108

Enclosures:
(1) Brief Synopsis of M.G.L. Chapter 21E
(2) OIR Policy #1 - Minimal Standards for the Submission of Analytical Data
(3) List of DEQE-Licensed Spill Cleanup Contractors

MEDFIELD STATE HOSPITAL
HOSPITAL ROAD
MEDFIELD, MASSACHUSETTS

March 20, 1991

Medfield State Hospital
Hospital Road
Medfield, Massachusetts

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- APPENDIX B - INSTALLATION PERMITS, REMOVAL PERMITS, & TEMPORARY STORAGE PERMITS
- APPENDIX C - MANIFESTING, TANK DISPOSAL RECEIPTS & BILLS OF LADING
- APPENDIX D - MONITORING MANUALS & CUT SHEETS
- APPENDIX E - TANK TESTING RESULTS
- APPENDIX F - AS BUILT DRAWING

ENVIRONMENTAL ENGINEERING CORPORATION
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-1200

February 27,1991

Mr. David Gerrity
Commonwealth of Massachusetts
D.C.P.O- Facilities Planning
1 Ashburton Place
Boston, Ma 02108

RE: Completion of Medfield State Hospital

Dear Mr. Gerrity,

I would like to inform you that Clean Harbors of Kingston has completed the removal and installation of three underground storage tanks at Medfield State Hospital. This work included the removal of three ~~40,000~~ 30,000 gallon tanks and installation of three 30,000 gallon D/W steel tanks. CHI used Preferred Utilities monitoring equipment to monitor the interstitual space, piping chase, high level alarm and oil level probe. CHI design and built a concrete pipe chase to conform to all local and state codes.

CHI cleaned the 3) ~~40,000~~ 30,000 gallon tanks to a gas free state. The tanks were then excavated, removed and shipped to a State certified scrap yard. When excavating the tank CHI encountered groundwater at 15 feet. The groundwater was sampled and found to exhibit higher levels of contaminates than EPA discharge standards. CHI set up temporary storage for this water until federal approval to treat and discharge into an existing storm drain was received. The dewatering process started on 6/25/90 and continued to 7/20/90. CHI processed a estimated 98,000 gallons of groundwater during the tank removal and installation. CHI excavated a estimated 3669 tons of virgin #6 oil contaminated soil. The soil was sampled and approved by the DEP to be pugmilled and spread on site. United Retek Corporation was hired to process the contaminated soil.

After excavating down to the hold down pad, CHI found the pad to be in excellent condition. DCPO then decided to re-use the hold down pad. At this point in time CHI began the installation of three 30,000 gallon double wall steel tanks. The tanks were manufactured by Mohawk Tank Inc. The tanks were air tested at five psi for one hour and approved by the Medfield Fire Chief. The tanks were then set with a crane on 12 inches of 3/8 pea stone. CHI used 3/8 pea stone to backfill the tanks up to grade.

A concrete pipe chase was proposed to the DCPO to replace Ric well piping systems. With approval by the State, CHI designed and build a reinforced concrete pipe chase for the Medfield State installation. The concrete pipe chase was approved by the state building inspector. CHI installed three inch suction lines, two inch return lines, 1 1/2 steam and condensate lines. All lines were insulated with one inch fiberglass insulation. Explosion proof lighting was installed in the pipe chase to insure safe operation of the piping systems.

The tanks were tested with number four oil using the Petro-tite method. The Petro-Tite method is a state approved tank testing method. The product lines were air tested at 50 psi for one hour. The tank testing results are enclosed in the report. After all the testing was completed, CHI put the facility on line using the new tanks and product lines. If you have any questions or require additional information concerning this report please feel free to contact me at 585-5112.

Sincerely,

Timothy Riordan
Installation Supervisor

Medfield State Hospital Soil Remediation Summary

Clean Harbors of Kingston, Inc. submitted a request to the Massachusetts Department of Environmental Protection (DEP) for approval to utilize the RETEK Process at the Medfield State Hospital on July 2, 1990. Approximately 1,500 cubic yards of virgin number 6 oil contaminated soil were excavated from the underground storage tank area and stockpiled on site. Clean Harbors sampled the soil for various analyses according to the DEP requirements for on site soil treatment. A representative sample was taken on June 8, 1990 and based on those results more samples were taken on June 22, 1990. This analysis included 12 Total Petroleum Hydrocarbons, 4 Total Metals, 3 PCB's, 6 Volatile Organics, and 3 Sieve analysis. Approval was received verbally from the DEP and later followed up in writing on a letter dated August 9, 1990. Attached is a copy of this approval letter.

United Retek Corporation, a Clean Harbors subcontractor, processed all of the contaminated soil stockpiled on site into an unregulated asphalt product, specifically a base course. This process involved crushing and screening the soil to a 4 inch minus then processing into base material with the Mobile Treatment Unit (pugmill). The Mobile Treatment Unit's hopper is fed with a front end loader with the soil which rides up a conveyer belt into the actual pugmill where two helical gears mix the soil with a site specific asphalt emulsion. The product is then allowed to "cure" which is actually the water evaporating from the emulsion. The end product was stockpiled on site and later used on site as base material around the new tank installation and driveway area. The material, as required was later topped with a hot mix asphalt.

This process generated approximately 100 tons of debris i.e. soil, concrete, pipe, wood, etc. which could not be processed through the pugmill. This debris is stockpiled on site and has been approved by the DEP to be disposed of at the GCR landfill in Peabody, MA.

If you should have any questions, please feel free to contact me at (617) 849-1800 extension 1158.

Sincerely,

Craig J. Malloy
Soils Manager

Clean Harbors
ENVIRONMENTAL SERVICES COMPANIES
100 JOSEPH STREET
KINGSTON, MA 02364
(617) 585-5112

May 1, 1991

Mr. David Gerrity
Commonwealth of Massachusetts
D.C.P.O.-Facilities Planning
1 Ashburton Place
Boston, MA 02108

RE: Medfield State Hospital
Underground Storage Tanks
Warranty Information

Dear Mr. Gerrity,

Clean Harbors of Kingston, Inc. would like to inform the Department of Capital Planning that the Medfield State Hospital underground storage tank project is complete. Clean Harbors guarantees all workmanship and materials used on site with a 1 Year Warranty. The warranty for the Mohawk tanks is as stated on the enclosed sti-P3 Limited Warranty.

Clean Harbors of Kingston would like to thank you for the opportunity to work with you on this project.

Sincerely,

Benjamin J. Santacroce
Vice President

BS:eam

Enclosure

sti-P_3® Limited Warranty

The STEEL TANK INSURANCE COMPANY ("STICO") warrants the sti-P_3® tank for 30 years following delivery of the tank, against tank failure caused by: (i) cracking, breakup or collapse; and (ii) corrosion caused by reaction of the tank with its soil environment; and (iii) internal corrosion for those tanks equipped with wear plates and used to store heating or motor fuels, including alcohols, and other compatible chemicals. In addition, the sti-P_3® Licensee, warrants the tank against failure due to defective materials and workmanship for 1 year following the delivery of the tank.

Each such limited warranty is subject to the following conditions:

1. The sti-P_3® tank must be: (i) the original underground installation within the Continental United States of America, Alaska, Hawaii, and the Commonwealth of Puerto Rico; (ii) fabricated by an sti-P_3® Licensee ("Licensee") in accordance with the applicable sti-P_3® specifications; and (iii) installed and maintained in accordance with applicable sti-P_3® installation instructions, which are printed in full on the reverse side, and applicable codes and regulations.

2. This limited warranty is not valid unless and until the warranty validation card is fully completed by the ultimate purchaser and returned to Steel Tank Institute ("STI") within 30 days after the date of installation or 90 days after the licensee's shipment, as reflected on the warranty validation card, whichever comes first.

3. To permit Warrantors to fulfill the terms of this limited warranty, the purchaser represents and agrees that, upon discovery of a suspected tank failure or leak covered by the warranty, the purchaser shall give STI and the Licensee written notice thereof sufficient to permit them to inspect the tank site prior to and during excavation and the tank itself thereafter. Such notice to STI and the licensee shall be deemed notice to STICO.

4. Warrantors obligations under this warranty shall be limited to, at their option: (i) repair of the original tank; (ii) delivery of a replacement tank of approximately the same size, design, quality of material and workmanship as the original tank; or (iii) refund of the original purchase price. Warrantors shall not be liable for: (i) failure of the piping system connected with the steel tank; (ii) labor or other installation costs of any replacement tank; nor (iii) any indirect or consequential damages to person or property resulting from failure of the tank.

5. The exclusion of indirect or consequential damages, as set forth in Paragraph 4, and the limitation of implied warrantics, as set forth in the following paragraph, may not be applicable to purchasers who are deemed "consumers" and who reside in states that do not allow the limitation of implied warranties or the exclusion of indirect or consequential damages otherwise applicable to consumers. Moreover, if you are deemed a "consumer," you may have specific legal rights in addition to those set forth in this warranty, which rights vary from state to state.

6. THE FOREGOING LIMITED WARRANTY IS THE ONLY WARRANTY MADE. NO OTHER WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, AND ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEED THE AFORESAID OBLIGATIONS ARE HEREBY DISCLAIMED BY THE WARRANTORS AND EXCLUDED FROM THIS AGREEMENT OF LIMITED WARRANTY.

Steel Tank Institute, 570 Oakwood Road, Lake Zurich, IL 60047, 708/438-TANK
Effective with installations on or after August 1, 1988

20-11 8/1/88

The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC SAFETY—DIVISION OF FIRE PREVENTION

PERMIT

06/05/90 _____ 19

FOR REMOVAL AND TRANSPORTATION TO APPROVED TANK YARD

C.82 S.40 M.G.L.
DIG SAFE NUMBER
90223488
Start Date 06/05/90

In accordance with the provisions of Chapter 148, G.L. as provided in Section 38A this permit is granted to 265 Wood Road

Name: Clean Harbors of Kingston, Inc. Braintree, Mass.
Full name of person, firm or Corporation

To transport underground steel storage tank(s)
3- 30,000 gallon tanks to Approved tank yard# 03501

State clearly type of inert gas used in steel storage tank: steel tank: Dry Ice
method

FDID# 21175

Fee paid $30.00

Name and address of contractor disposing tank Clean Harbors of Kingston, Inc. 265 Wood Road Braintree, Mass.

Location to which tank will be transported

03501
Approved tank yard#

This permit will expire 07/06/90 19

William A. Kyle, Fire Chief
Signature of official granting permit (TITLE)
(Head of Fire Dept.)

The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC SAFETY—DIVISION OF FIRE PREVENTION

C.82 S.40 M.G.L. 1010 COMMONWEALTH AVENUE, BOSTON

DIG SAFE NUMBER
90223488
Start Date 06/05/90

Medfield June 6, 1990
(City or Town) (Date)

PERMIT

In accordance with the provisions of Chapter 148, G. L. as provided in 10 A

this permit is granted to

Name Medfield State Hospital 45 Hospital Road Medfield, Mass.
(Full name of person, firm or corporation granted permit)

State clearly purpose for which permit is granted

to Maintain a temporary oil storage tank to provide #6 oil to the Power House. by means of a 9,000 gallon oil tank trailer.

Restrictions: Tank is to be diked and properly stabilized. Filling of tank is to take place during normal working hours (8-4) and properly supervised to prevent any spillage. Evening or night deliveries will not be allowed.

at Medfield State Hospital 45 Hospital Road Medfield, Mass.
(Give location by street and No., or otherwise in such manner as to be readily ascertained)

Fee Paid $ 10.00

William A. Kyle
(Signature of officer granting permit)

Fire Chief
(Title)

This permit will expire _____ 19

The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC SAFETY—DIVISION OF FIRE PREVENTION

C.82 S.40 M.G.L. 1010 COMMONWEALTH AVENUE, BOSTON

DIG SAFE NUMBER
90223488
Start Date 06/05/90

Medfield June 7, 19 90
(City or Town) (Date)

PERMIT

In accordance with the provisions of Chapter 148, G. L. as provided in 10 A

this permit is granted to

Name Clean Harbors of Kingston, Inc. 265 Wood Road Braintree, Mass.
(Full name of person, firm or corporation granted permit)

State clearly purpose for which permit is granted

to Install 3 - 30,000 gallon oil tanks at the Power House for the purpose of updating facility. Restrictions: Installation will be done in accordance with Mass. 527 CMR 9.00 & 4.00 and per manufacturers specifications. Chief to witness testing of tanks and lines.

Restrictions:

at 45 Hospital Road Medfield State Hospital Medfield, Mass.
(Give location by street and no., or describe in such manner as to provide adequate identification of location)

Fee Paid $ 80.00

This permit will expire 19

William C. Ryder
(Signature of official granting permit)

Fire Chief
(Title)

☞ (THIS PERMIT MUST BE CONSPICUOUSLY POSTED UPON THE PREMISES.) ☜

FIRE ALARM PERMIT NO. (If applicable)

RECEIPT OF DISPOSAL OF UNDERGROUND STEEL STORAGE TANK Medfield State Hospital

NAME AND ADDRESS OF APPROVED TANK YARD: JAMES G. GRANT CO., INC. / R. 28 WOLCOTT ST. / READVILLE, MA 02137

Medfield MASS 1 x 30,000 I 2485

APPROVED TANK YARD NO. 03501

Tank Yard Ledger 502 CMR 3.03(4) Number: 9004131

I certify under penalty of law I have personally examined the underground steel storage tank delivered to this "approved tank yard" by firm, corporation or partnership Town Hauling and accepted same in conformance with Massachusetts Fire Prevention Regulation 502 CMR 3.00 Provisions for Approving Underground Steel Storage Tank dismantling yards. A valid permit was issued by LOCAL Head of Fire Department FDID# 21175 to transport this tank to this yard.

Name and official title of approved tank yard owner or owners authorized representative:

David Grant President 6-12-90

SIGNATURE TITLE DATE SIGNED

This signed receipt of disposal must be returned to the local head of the fire department FDID# 21175 pursuant to 502 CMR 3:00. (EACH TANK MUST HAVE A RECEIPT OF DISPOSAL)

FORM F.P. 291 (rev. 9/88) (OVER) MASSACHUSETTS STATE FIRE MARSHAL'S

RECEIPT OF DISPOSAL OF UNDERGROUND STEEL STORAGE TANK Medfield State Hospital

NAME AND ADDRESS OF APPROVED TANK YARD: JAMES G. GRANT CO., INC. / R. 28 WOLCOTT ST. / READVILLE, MA 02137

Medfield MASS 1 x 30,000 I 2485

APPROVED TANK YARD NO. 03501

Tank Yard Ledger 502 CMR 3.03(4) Number: 9004132

I certify under penalty of law I have personally examined the underground steel storage tank delivered to this "approved tank yard" by firm, corporation or partnership Town Hauling and accepted same in conformance with Massachusetts Fire Prevention Regulation 502 CMR 3.00 Provisions for Approving Underground Steel Storage Tank dismantling yards. A valid permit was issued by LOCAL Head of Fire Department FDID# 21175 to transport this tank to this yard.

Name and official title of approved tank yard owner or owners authorized representative:

David Grant President 6-12-90

SIGNATURE TITLE DATE SIGNED

This signed receipt of disposal must be returned to the local head of the fire department FDID# 21175 pursuant to 502 CMR 3:00. (EACH TANK MUST HAVE A RECEIPT OF DISPOSAL)

FORM F.P. 291 (rev. 9/88) (OVER) MASSACHUSETTS STATE FIRE MARSHAL'S

RECEIPT OF DISPOSAL OF UNDERGROUND STEEL STORAGE TANK Medfield State Hospital

NAME AND ADDRESS OF APPROVED TANK YARD: JAMES G. GRANT CO., INC. / R. 28 WOLCOTT ST. / READVILLE, MA 02137

Medfield, Mass 1 x 30,000 I 2485

APPROVED TANK YARD NO. 03501

Tank Yard Ledger 502 CMR 3.03(4) Number: 9004133

I certify under penalty of law I have personally examined the underground steel storage tank delivered to this "approved tank yard" by firm, corporation or partnership Town Hauling and accepted same in conformance with Massachusetts Fire Prevention Regulation 502 CMR 3.00 Provisions for Approving Underground Steel Storage Tank dismantling yards. A valid permit was issued by LOCAL Head of Fire Department FDID# 21175 to transport this tank to this yard.

Name and official title of approved tank yard owner or owners authorized representative:

David Grant President 6-12-90

SIGNATURE TITLE DATE SIGNED

This signed receipt of disposal must be returned to the local head of the fire department FDID# 21175 pursuant to 502 CMR 3:00. (EACH TANK MUST HAVE A RECEIPT OF DISPOSAL)

FORM F.P. 291 (rev. 9/88) (OVER) MASSACHUSETTS STATE FIRE MARSHAL'S

This Shipping Order must be legibly filled in in ink, in indelible Pencil, or in Carbon, and retained by the Agent

Shipper No. _____

Carrier No. _____

Date 6/7/90

J.P. NOONAN
(Name of Carrier)

TO:
Consignee ATLANTIC FUELS
Street
Destination CHELSEA MASS Zip Code

FROM:
Shipper CLEAN HARBORS
Street 45 HOSPITAL ST
Origin MEDFIELD MASS

Vehicle Number

Route

No. Shipping Units	HM*	Kind of Packaging, Description of Articles, Special Marks and Exceptions	Weight (subject to correction)	Rate	CHARGES
6000	X	#6 FUEL OIL			
		COMBUSTIBLE LIQUID			
		UN 1993			

REMIT C.O.D. TO:
ADDRESS

COD Amt. $

COD FEE:
PREPAID ☐ $
COLLECT ☐ $
TOTAL CHARGES $

FREIGHT CHARGES
FREIGHT PREPAID except when box at right is checked ☐
Check box if charges are to be collect ☐

NOTE — Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.
The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding
$ _____ per _____

This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.
Signature _____

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the Consignor shall sign the following statement.
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.
(Signature of Consignor)

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.
Shipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns

SHIPPER CLEAN HARBORS INC
PER _____

CARRIER NOONAN TKB 12
PER _____
DATE 6/7/90

2

Agent must detach and retain this Shipping Order and must sign the Original Bill of Lading.

30/Cal.

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING
DIVISION OF HAZARDOUS WASTE
One Winter Street
Boston, Massachusetts 02108

153/302

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator US EPA ID No. MAP0100041749 — Manifest Document No. 21515
2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: MEDFIELD STATE HOSP, TAI
45 HOSPITAL ST
MEDFIELD MASS
4. Generator's Phone (508) 359-7312

A. State Manifest Document Number: MA 6883108
B. State Gen. ID: SAME
C. State Trans. ID: MA 157
D. Transporter's Phone: 617 585-5110
E. State Trans. ID:
F. Transporter's Phone:
G. State Facility's ID: Not Required
H. Facility's Phone: 617 935-5068

5. Transporter 1 Company Name: CLEAN HARBORS OF KINGSTON — 6. US EPA ID Number: MAD039132126
7. Transporter 2 Company Name — 8. US EPA ID Number
9. Designated Facility Name and Site Address: MURPHY'S WASTE OIL SERVICE INC
25 ER SALEM ST
WOBURN MA 01801 — 10. US EPA ID Number: MAD066195305

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	Waste No.
a. WASTE OIL NOS COMBUSTIBLE LIQUID, NA1993, III	03	TV	17	G	MA01
b.					
c.					
d.					

GENERATOR

J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.)
a. 2 OIL WATER
b.
c.
d.

K. Handling Codes for Wastes Listed Above
a. T01
b.

15. Special Handling Instructions and Additional Information
EMERGENCY # 1-800-OIL-TANK

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: PETE HAMBLETT — Signature: [signature] — Date: Month 10 Day 12 Year 10

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: GEORGE J. JOHNSON — Signature: [signature] — Date: Month 10 Day 12 Year 10
18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: — Signature: — Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: CHRIS MORAN — Signature: [signature] — Date: Month 10 Day 12 Year 10

Form Approved OMB No. 2050-0039, Expires 9-30-91
EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

COPY>5: TRANSPORTER 1 RETAINS

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING
DIVISION OF HAZARDOUS WASTE
One Winter Street
Boston, Massachusetts 02108

KJ0541
155/385

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator US EPA ID No.: MAP000049499 — Manifest Document No.: 1483 — 2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: MEDFIELD STATE HOSPITAL, 45 HOSPITAL ST, MEDFIELD MA

4. Generator's Phone: (617) 508 1 7312

A. State Manifest Document Number: MA [illegible] 683107

B. State Gen. ID: SAME

5. Transporter 1 Company Name: CLEAN HARBORS OF KINGSTON — 6. US EPA ID Number: MAD039322250

C. State Trans. ID: MA [illegible]

D. Transporter's Phone: 617 585 5111

7. Transporter 2 Company Name: — 8. US EPA ID Number:

E. State Trans. ID

F. Transporter's Phone

9. Designated Facility Name and Site Address: CLEAN HARBORS OF KINGSTON, 100 JOSEPH ST, KINGSTON MASS — 10. US EPA ID Number: MAD039322250

G. State Facility's ID: Not Required

H. Facility's Phone: 617 585 5111

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. WASTE OIL N.O.S. COMBUSTIBLE LIQUID ON 1270	01	TT	85297	G	MA97
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.)
a. 20% & H2O
b.
c.
d.

K. Handling Codes for Wastes Listed Above
a. S01
b.
c.
d.

15. Special Handling Instructions and Additional Information

EMERGENCY # 1500 OIL TANK

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: [illegible] — Signature: [illegible] — Date: Month Day Year: 02 09 9[illegible]

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: GEORGE J JOHNSON — Signature: [illegible] — Date: Month Day Year: 02 09 9[illegible]

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: — Signature: — Date: Month Day Year:

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: [illegible] — Signature: [illegible] — Date: Month Day Year: [illegible]

In case of emergency or spill, immediately call the National Response Center (800) 424-8802.

Form Approved OMB No. 2050-0039. Expires 9-30-91
EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

COPY 5: TRANSPORTER 1 RETAINS

Preferred Instruments

Installer: MacAuthur Electric Company
98 Baxter Avenue
Quincy, Massachusetts 02169
Contact: Dave MacAuthur
(617) 472-5058

Clean Harbors contact:
John Irwin
100 Joseph Street
Kingston,Massachusetts 02364
(617) 585-5112

Manufacturer Representative:
Preferred Instrument
300 Ballardvale Street
Andover Massachusetts 01810
Howard OBrien
(508) 474-8858

PREFERRED—RIMCOR
INSTRUMENTS
P. O. BOX 1280, DANBURY, CONN. 06810
203-743-6741

TANK GAUGE, OVERFILL ALARM,
and LEAK MONITOR
TG-EL-D3-STF
TG-EL-D3-SRF
TG-EL-D3-SCF
for use with: HD-S, TG-EL-LF & TG-EL-VF Sensors

INSTALLATION and OPERATING INSTRUCTIONS

GENERAL

The TG-EL-D3-S Tank Gauging, Overfill Alarm and Leak Monitoring system is intended for use on double wall storage tanks with an annular space sump that is accessible from grade. A complete system consists of: the TG-EL-D3-S remote mounted indicator/alarm, the TG-EL-LF (formerly 107270) or TG-EL-VF tank level sensors and the HD-S leak sensor.

The TG-EL-D3-S indicator is microprocessor based and provides a continuous indication of the gallons of fluid in the tank. On demand the fluid depth in inches is displayed. The TG-EL-D3-S indicator also provides alarm contacts and visual indication for: "tank empty" (low fluid level) and "tank over-fill" (high fluid level), and double wall hole.

The TG-EL-LF level sensor is lever-float actuated, and senses the depth of the fluid in the tank. It is connected to the TG-EL-D3-S indicator via a three wire shielded cable. The fluid depth is translated into a gallons display in the TG-EL-D3-S indicator. A chain permanently connected to the float arm is provided for calibration and periodic testing of the level sensor and overfill alarm function. TG-EL-LF is suitable for use in all oils from gasoline thru #6 oil.

The TG-EL-VF level sensor is a magnetically coupled vertical lift float actuated level sensor. It's stainless steel and teflon construction makes it suitable for gasoline thru #2 oil, waste oils, waste water and many chemicals.

The TG-EL-D3-S indicator can be used with either the TG-EL-LF or TG-EL-VF. The LF and VF sensors are not field interchangeable.

The HD-S leak sensor is installed in a sump connected to the annular space in a double-wall fuel storage tank. Should the inner tank wall leak, the level of the product in the sump will rise, actuating the float switch. Should the outer tank wall leak, ground water will leak into the sump, also activating the switch.

The HD-S may also be used to monitor leaks from double-wall piping systems into a piping sump or manway.

Provisions are made to test the HD-S sensor and associated circuitry by mechanically simulating a high sump level. This test feature may be operated from grade level provided that access to the sensor head is maintained.

The TG-EL-D3-S system is designed for use on underground steel double wall tanks, vaulted single wall tanks, day tanks with spill basins, and similar applications. See the TG-EL-D3-A literature for double-wall fiberglass tank applications.

FEATURES

*FM Approved intrinsically safe sensor wiring allows sensors to be safely located in Class I, Div. 1, Group C & D hazardous locations.
*Single sensor for: gallons display, low level (time to refill) overfill (high level), liquid depth.
*Leak Sensor can be tested from grade.
*Integral door mounted alarm horn and alarm silence pushbutton.
*Self-silencing relay contact output for outdoor tank overfill warning bell.
*Dedicated low level alarm relay contact for connection to remote alarms or building automation systems.
*Double wall hole alarm relay contact for connection to remote alarms or building automation systems.
*English language alarm messages on indicator door for fast diagnostics.
*4-20mA output proportional to gallons for remote indicators, recorders or building automation systems.
*Gallons recall pushbutton allows you to compare tank gallons before and after Hole alarm (to determine leak rate).
*Options: Idle Tank Theft/Loss alarm, Remote overfill alarm silence, Common alarm silence.

SPECIFICATIONS

TG-EL-D3-S Indicator

Power: 120VAC(+15, -20%)/30VA
Non-Volatile Calibration
Microprocessor based
Ambient Temperature:
Operating:+32^{O} to 125^{O}F (0^{O}C to +55^{O}C)
System Accuracy:
+/-0.4% (field calibrated)
Digital Display: 0.8" characters
Readout: To 100,000 gallons

4-20mA Output:
Max. load 550 ohm. "I"-terminal tied to building ground (non-isolated).
Intrinsically Safe Sensor Circuits: Class I, Div. 1
Group C & D locations when installed in accordance with instructions. cable lenght - 800 ft. max. -each
Instrument Housing:
Die cast aluminum for flush and surface mounting
Relay Contacts: SPDT, 120 VAC max. 5A Resistive

TG-EL-LF Level Sensor

Tank Depth: 12 feet max.
Tank Pressure: 15 psi max.
Fluid Temperature: 180^{O}F max.
Assembly head Ambient Temp: -20^{O} to +120^{O}F max
Tank Contents: gasoline through #6 fuel oil
Wetted Parts: Aluminum, bronze, buna N, stainless steel
Mounting: 2" tank opening minimum

TG-EL-VF Level Sensor

Tank Depth: 12 feet max.
Tank Pressure: 150 psi max.
Fluid Temperature: 180^{O}F max.
Tank Contents: Light oils, gasoline
Wetted Parts: Stainless steel, teflon
Mounting: 4" tank opening required

HD-S Hole and Piping Sump Detector

Ambient Temp: -20^{O} to 120^{O} F
Wetted Parts: Stainless steel, PVC
Detector: Watertight construction
Mounting: 2" Tank opening minimum

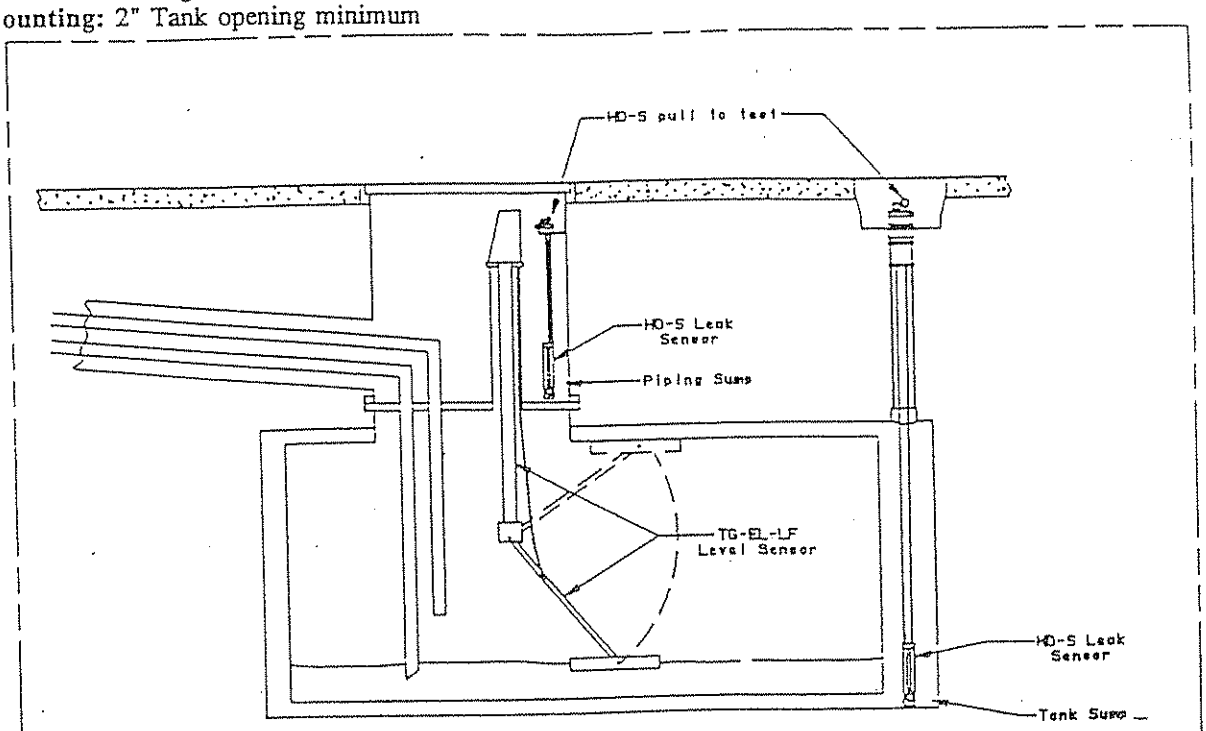


Fig. 1 Typical Installation

OPERATION

Normal

Display on door indicates current gallons in tank. Pressing "Liquid Depth" pushbutton will cause display to indicate liquid depth in inches and tenths of inches.

4-20mA output constantly transmits a signal proportional to tank gallons.

Low Tank Contents

Door horn sounds, common alarm contacts close (B-BO), low level contacts close (L-LO) and display alternates between "LO" and current gallons.

Press alarm silence pushbutton on indicator door to silence horn (B-BO) contacts will also open).

Display will continue to indicate "LO" and low level contacts (L-LO) remain closed until tank is filled above low level setpoint.

Tank Over-Fill

When tank gallons exceeds the 'H' (high) setpoint: door horn sounds, common alarm contacts close (B-BO), Over-Fill contacts close (F-FO), and display alternates between "HI" and current gallons.

Press alarm silence pushbutton on indicator door to silence door horn (B-BO contacts also open).

Display will continue to indicate "HI" until tank is emptied below Over-Fill Alarm setpoint.

Over-Fill contacts (F-FO) remain closed for approximately 1 minute after initial over-fill and then automatically open. These contacts are typically used to sound an audible alarm located near the tank fill pipe. The alarm notifies the truck driver that filling should stop immediately. This alarm silences automatically to prevent annoying neighbors and to make it unnecessary for the driver to silence the alarm.

Leak (Hole)

When an HD-S Hole Detector trips; the horn sounds, common alarm contacts close (B-B0), hole contacts close (H-HO) and the display alternates between "HOLE" and the current gallons. When the hole is initially detected, the TG-EL-D3-S saves the current gallons in its memory.

Press the alarm silence pushbutton to silence the horn (and open B-BO contacts).

The display will continue to indicate 'HOLE' and contacts H-HO will remain closed until the sump is drained.

Pressing "Hole Alarm Recall" will cause the display to show the gallons in the tank at the start of the leak. Comparison with the current gallons and usage will show how many gallons leaked.

When multiple HD-S sensors are installed, a leak at any of the locations will cause 'HOLE' alarm. Generally the sensors are located in the double wall piping sump(s) and in the tank double wall sump. Visually inspect the piping sump(s) to determine whether the piping or the tank is leaking.

OPTIONS

Only one of the following options can be chosen:

Idle Tank Theft/Loss Alarm (TG-EL-D3-STF)

Idle Tank Theft/Loss Monitor: When a tank is idle, an external contact closure inserts the existing liquid level as a setpoint. A withdrawal of approximately 0.3% of tank height closes an alarm relay and flashes "LOSS" on the display. Requires remote on/off switch.

Pressing the "Hole Alarm Recall" pushbutton will cause the display to show the gallons in the tank before the loss. Comparison with the current gallons will show gallons lost.

The Loss monitor mode activate switch contact is wired across terminals C & LA (closed=Monitor On).

Remote Over-Fill Alarm Silence (TG-EL-D3-SRF)

The Over-Fill alarm relay contacts (F-FO) open automatically approximately 1 minute after the initial alarm. These contacts generally sound an alarm near the fillpipe.

This option allows an external Over-Fill alarm silence pushbutton to be wired across terminals C & LA. This allows the driver to silence the alarm before the 1 minute period expires. Press and hold for 2 seconds minimum.

Common Alarm Silence (TG-EL-D3-SCF)

This option allows an external alarm silence pushbutton to be wired across terminals C & LA. Momentarily closing the pushbutton will silence the horn on the indicator door. This feature is useful when multiple indicators are mounted in one location. Press and hold for 2 seconds minimum.

INSTALLATION

ATTENTION

Each TG-EL-D3-S System (indicator and level sensor) is fabricated based on the dimensions of a specific tank. Before proceeding, verify that the tank depth and capacity (engraved on the TG-EL-D3-S door) match the tank dimensions. Do not attempt to install this unit if there is a discrepancy. Each TG-EL-D3-S indicator and level sensor are factory calibrated as a matched set. Verify that the S/N of both pieces are the same.

Read all of the Installation instructions before proceeding.

The phase "Intrinsically Safe" is used throughout this manual. What does it mean?

"Intrinsically Safe" means that the combination of the design of the TG-EL-D3-S system and proper field installation allows the TG-EL-LF (or TG-EL-VF) Level sensor and HD-S Leak sensor(s) to be safely located in Class I, Division 1, Group C & D Hazardous Locations.

If the TG-EL-D3-S system is properly installed, the sensor wiring circuits will be incapable of releasing sufficient energy to cause ignition of the Group C & D Hazardous atmosphere.

WARNING

Failure to follow all procedures in this manual and on drawing TG-D3-1-FM voids the intrinsically safe design and may create a hazardous condition.

Consult with the National Electric Code (NEC) and local authorities (building inspectors, fire marshall etc...) to determine what locations (if any) are Hazardous at your site.

Installation Overview

Mount TG-EL-D3-S Indicator
Mount Level Sensor (TG-EL-LF or TG-EL-VF)
Mount HD-S Leak Sensor(s)
Mount Accessories
Route Wiring (Do Not connect)
Test Sensor Wiring
Connect Wiring
Calibrate Level Sensor
Test Leak Sensor(s)
Encapsulate wiring splices
Set Over-Fill Alarm Setpoint
Test Over-Fill Alarm
Set Low Level Alarm Setpoint

Mount TG-EL-D3-S Indicator

*The indicator must be mounted in a location where it is protected from temperature extremes (32° - 125° F), vibration and moisture.
*The indicator must be mounted in a non-hazardous area. Conduits must be sealed to prevent hazardous gases from entering the non-hazardous area.
*The wiring distance between the Indicator and each Sensor should not exceed 800 feet.

Mount the Level Sensor

*The TG-EL-D3-S indicator can be used with either the TG-EL-LF or TG-EL-VF level sensors. The -LF and -VF sensors are not field interchangeable.

*When the tank is underground, manholes large enough to permit removal and servicing of the sensors MUST be provided. DO NOT BURY the level sensor. Many local codes require easy access for monthly testing of sensors.

*Vertical clearance above the tank must permit installation of the level sensors. Allow approximately one half of the tank diameter plus 1-1/2 feet.

*Although the sensors and wiring are watertight (when properly installed), adequate drainage should be provided. The units should not be submerged under normal operating conditions. Water damage to sensors caused by improper installation will not be covered by the warranty.

TG-EL-LF Lever Float Level Sensor

*The float must have an unobstructed swing in a vertical arc so it reaches the top and bottom of the tank. Avoid locations where the float will be affected by manual sticking, tank filling and return flows. Make sure that the float will not hit the end of the tank or rub against pipes, ladders or other obstructions (Fig. 1).

*Remove the 2" NPT flange adapter (and gasket) by removing the 4 hex head bolts (see Fig. 2).

*Remove the "WARNING" tag from the level sensor and note the "critical dimension".

*Measure the tank INSIDE diameter. Compare it to the I.D. shown on the tag. If the dimensions are not the same; consult the factory, DO NOT PROCEED ANY FURTHER.

*Measure the height from the tank fitting to the tank bottom (Fig. 3). Cut and thread a 2" NPT nipple such that the top of the flange will be at the "Critical Dimension" (+/- 1/8"). The intent is to place the pivot point of the lever arm exactly in the middle of the tank. If it is not, readings will be inaccurate.

*Tighten the flange and nipple (using pipe dope). Make sure that the face of the flange is parallel to the top of the tank. Two of the bolt holes must be in line with the long axis of the tank (See Fig. 4).

*Temporarily set the float aside. Make sure the calibration disk is attached to the lever arm. Attach the float arm to the pivot lever. Connect the chain from the lever arm to the chain on the head, make sure the chain is not wrapped around anything. (See Fig. 5).

*Place the flange gasket on the nipple/flange. Insert the Tank Assembly with the calibration chain hole facing the direction of the float arm swing (See Fig. 6A). When the gear bracket is inside the Tank, use the chain to pull up the float arm to prevent from jamming on the Tank bottom. (See Fig. 6B).

*Hand tighten the 4 flange bolts. (See Fig. 6C).

Using the chain, slowly raise and lower the float arm from tank bottom to top. It should move freely. Do not force the arm past any obstructions.

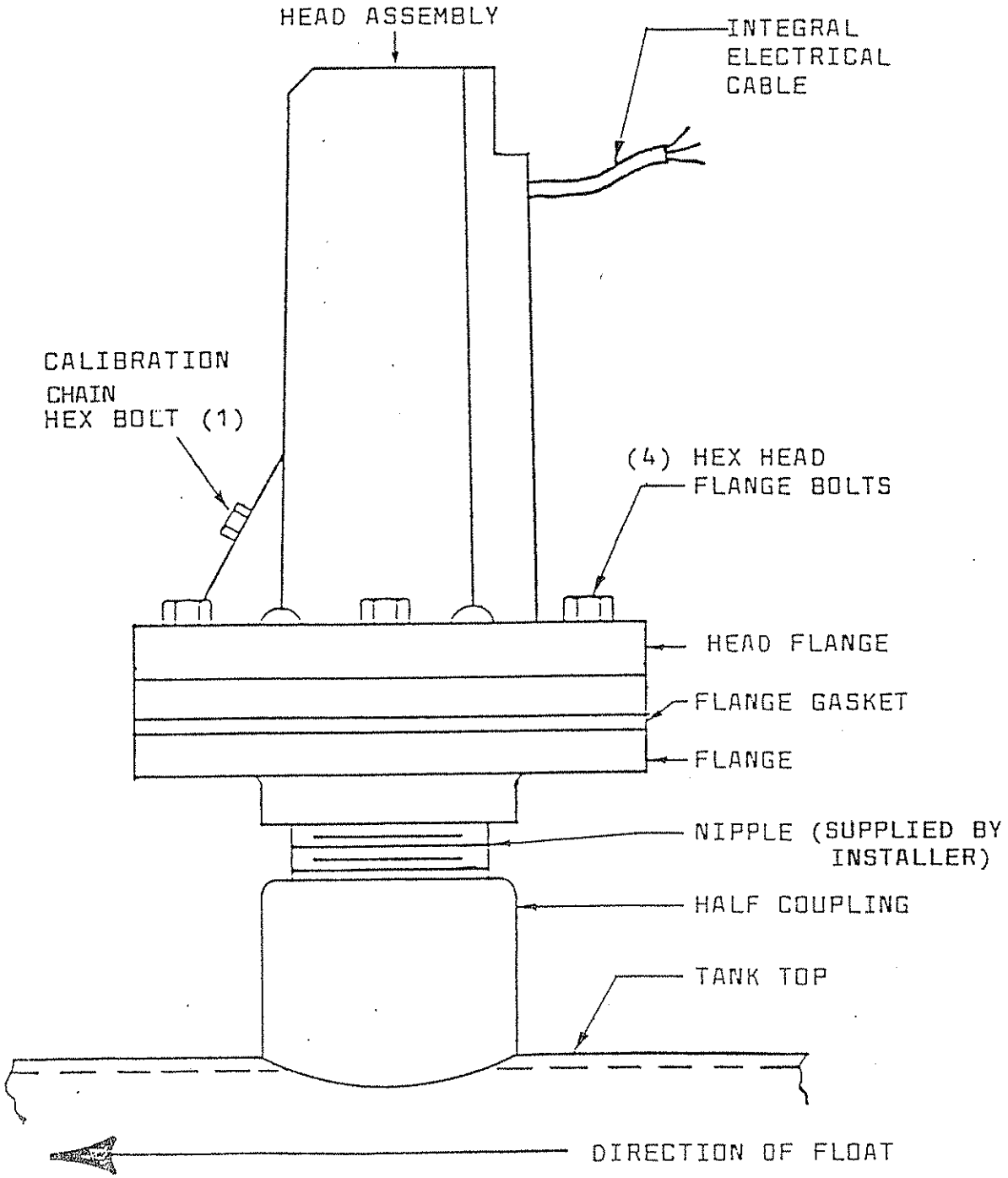


FIG. 2

TG-EL-LF LEVEL SENSOR HEAD

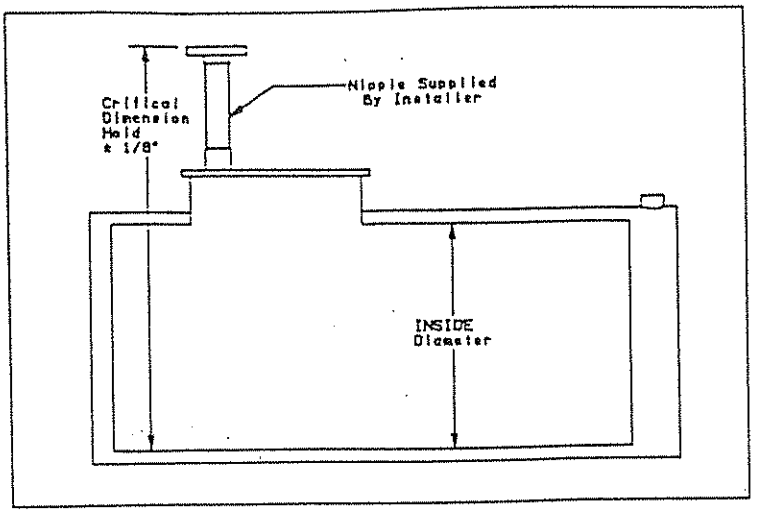


FIG. 3

TG-EL-LF

MOUNTING FLANGE CRITICAL DIMENSION

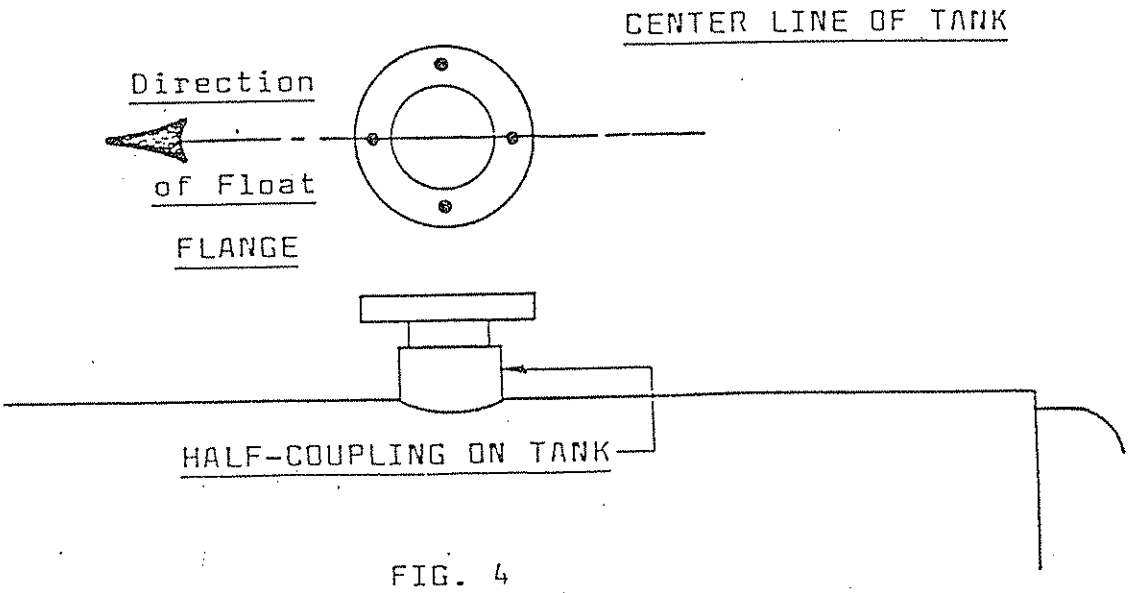


FIG. 4

TG-EL-LF FLANGE ORIENTATION

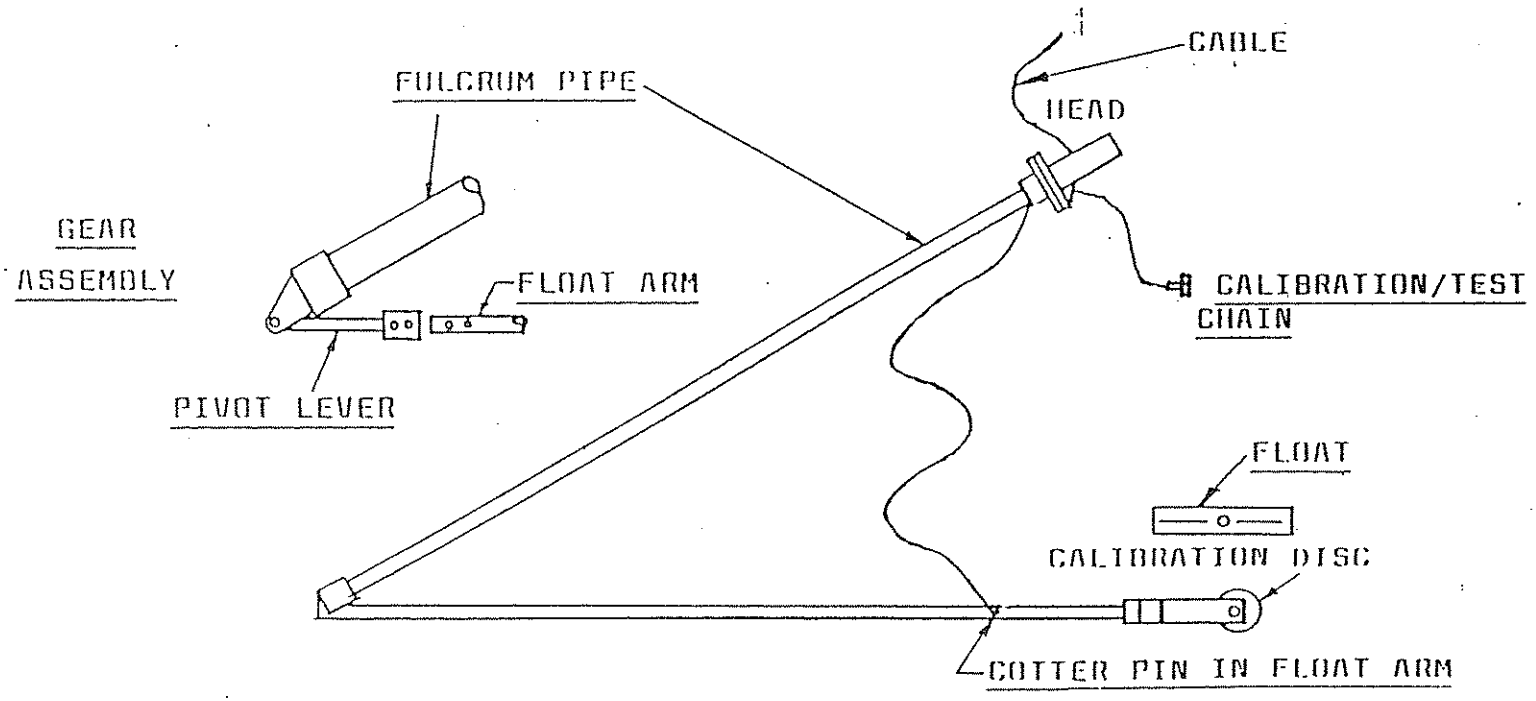


FIG. 5

TG-EL-LF ASSEMBLY

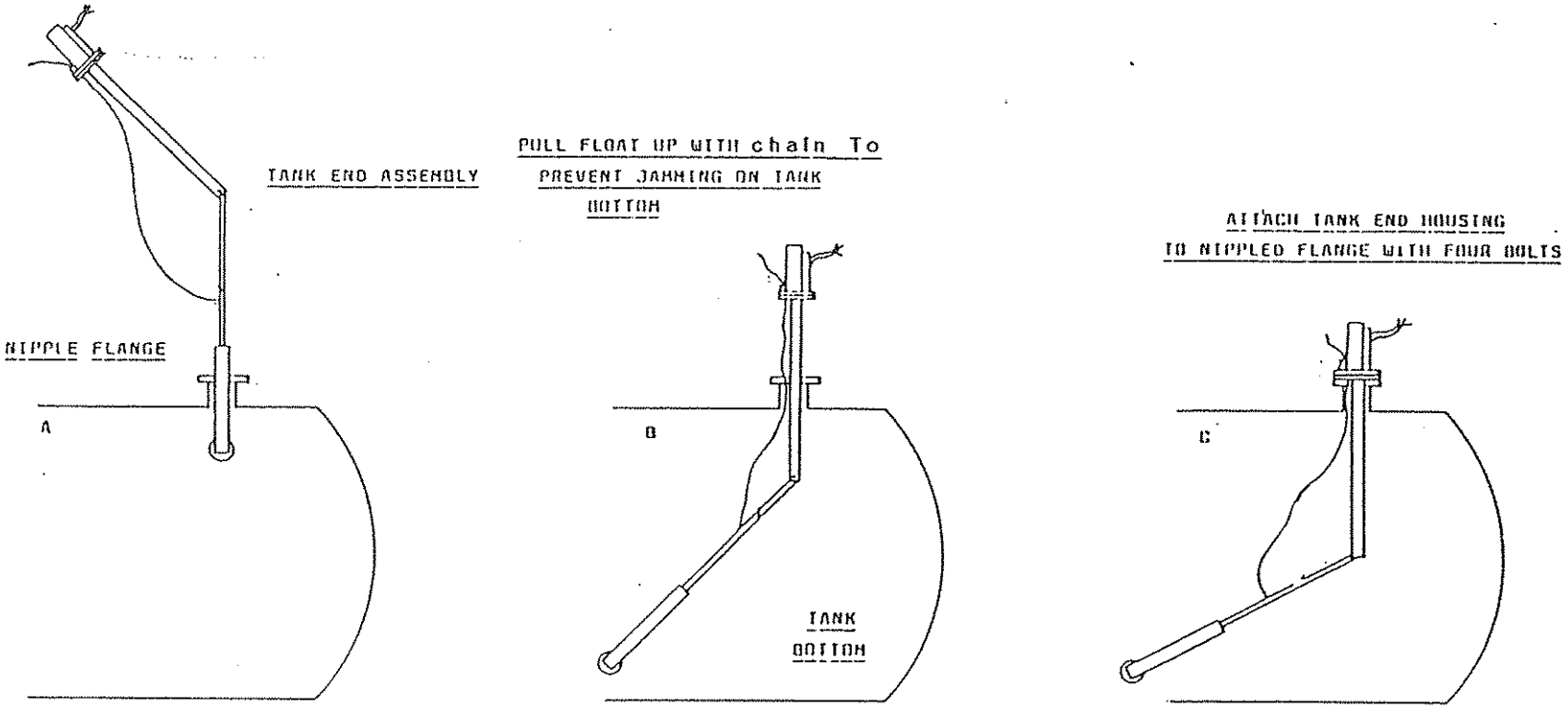


FIG. 6

TG-EL-LF TANK INSERTION

TG-EL-VF Vertical Lift Level Sensor

*Check the sensor for damage which may have occured during shipment. The float should move freely from top to bottom. If the float can be rotated on the rod, it is damaged.

*The transmitter float assembly should be installed through a 4" NPT half coupling in the top of the tank as shown in Fig. 7. It is recommended that a strike plate be situated directly below the coupling.

*Remove the "WARNING" tag from the sensor and note the "mounting height."

*Measure the tank INSIDE diameter and compare it to the I.D. shown on the tag. If the dimensions are not the same; consult the factory. DO NOT PROCEED ANY FURTHER.

*Screw the mounting bushing 1-1/16" into the proper opening in the top of the tank (see Fig. 7). There should be a clearance of at least 2.0" between the bottom of the probe and the bottom of the tank (see Fig. 9).

*When using a standpipe, screw the mounting bushing1-1/16" into the 4" NPT coupling on top of the standpipe (see Fig. 8). There should be a clearance of at least 2,0" between the bottom of the probe and the bottom of the tank (see Fig. 9).

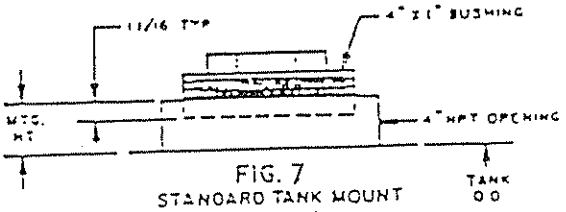


FIG. 7
STANDARD TANK MOUNT
(BUSHING)

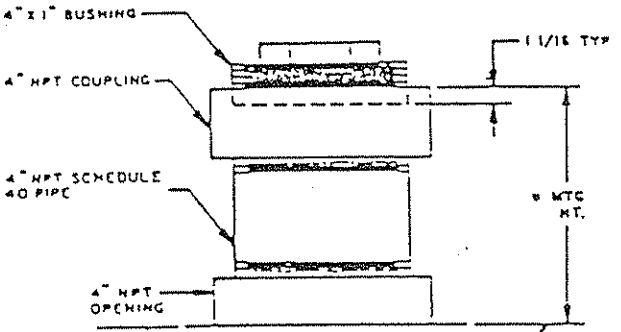
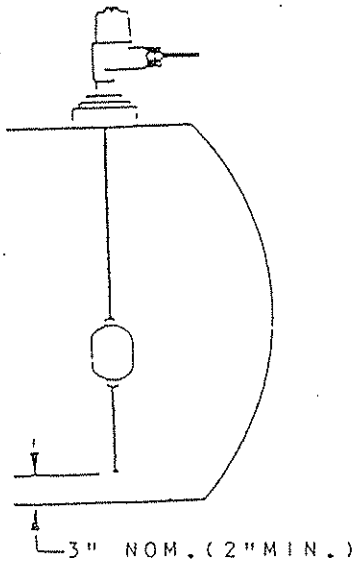


FIG. 8
STANDPIPE MOUNT
(BUSHING)

FIG. 9



Mount the HD-S Leak Sensors

One HD-S sensor must be mounted in the annular space sump of the tank. Additional HD-S sensors may be mounted in double wall piping sumps or manways to detect piping leaks.

*DO NOT BURY the HD-S sensor. Provide access for periodic testing via an easily removable street box or manhole assembly. (Fig. 13).

*The HD-S head assembly and sensor must be mounted vertically for proper operation (Fig. 10 & 11).

*Loosen the clamp on the Sensor Head Adaptor (B) and remove the insert (A) from the Adaptor (B) (Fig. 12).

*Remove the feed-through fitting cap nut.

*Slide the yellow feed-through rubber bushing away from the head to allow the float sensor to rest on bottom of the sump.

*For tank double wall sump applications; provide a 2" Sch 40 stand pipe to bring the sensor head up close to grade. This provides easy access to the Lift-to-Test Ring.

*Screw the 2" NPT Sensor Head Adaptor (B) into the tank opening or riser using a suitable thread compound. Take care not to let dirt, water or other foreign objects fall down the tank opening into the annular space.

*For piping sump applications, fabricate a bracket to hold the HD-S Sensor Head Adaptor near the top of the sump or manhole. The Lift-to-Test ring should be readily accessible.

*Insert the HD-S Float Sensor Guard (C) into the Head Adaptor (B) and slowly lower the sensor to the bottom of the sump. Care should be taken to straighten the cable as the sensor is being lowered so that the sensor and cable hang properly.

*Press the Sensor Head Insert (A) into the Sensor Head Adapter (B).

*When the Sensor Guard just touches the bottom of the sump, slide the yellow rubber plug along the cable until it seats in the bore of the feed through fitting. Then, making certain that the Sensor Guard is still just touching the bottom of the sump, install and tighten the cap on the feed through fitting. The adjustment of the length of the cable below the feed through is critical as will be seen in the next step.

*After the cable has been adjusted and locked into position, carefully withdraw the entire assembly from the tank and lay it out on a clean surface. After stretching the cable taut, fasten one end of the beaded test chain to the chain fitting on the bottom of the Sensor head Insert. Then stretch the chain alongside the cable and, leaving about 1/4 inch slack, cut the chain and snap it into the fitting on the top of the Sensor Guard Assembly. This will allow the float to be lifted for testing from outside the tank by pulling the Lift-to-Test Ring on the Sensor head.

*Now put the assembly back into the tank, sliding the Sensor head Insert as far down into the Adaptor as it will go. Tighten the hose clamp to retain the Insert.

*Using an ohmmeter, check the circuit at the end of the cable, between the black and white conductors. The circuit should be closed. Now, lift up on the pull ring while checking the circuit. It should open. If the circuit is always closed, the chain is too long. If it is always open, the chain is too short. Adjust the length of the chain as required, using the splice line furnished with the equipment.

*Leave enough slack wire so that the entire sensor may be withdrawn from the tank and stretched out at the grade level for adjustment or trouble shooting. Cut the excess cable from the sensor assembly.

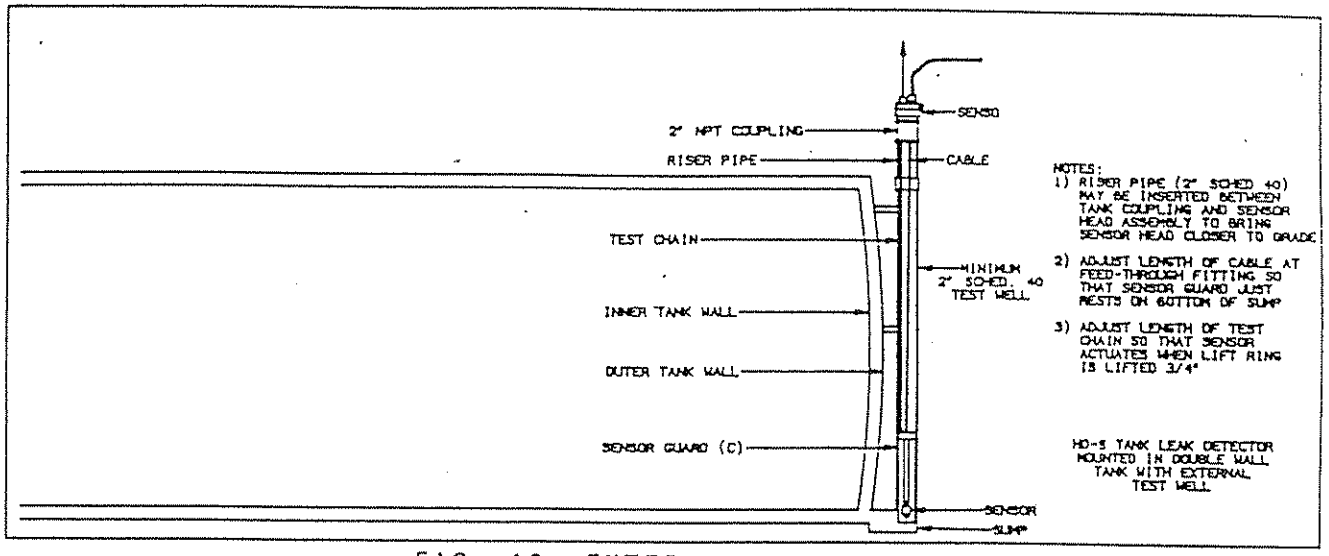


FIG. 10 EXTERNAL SUMP

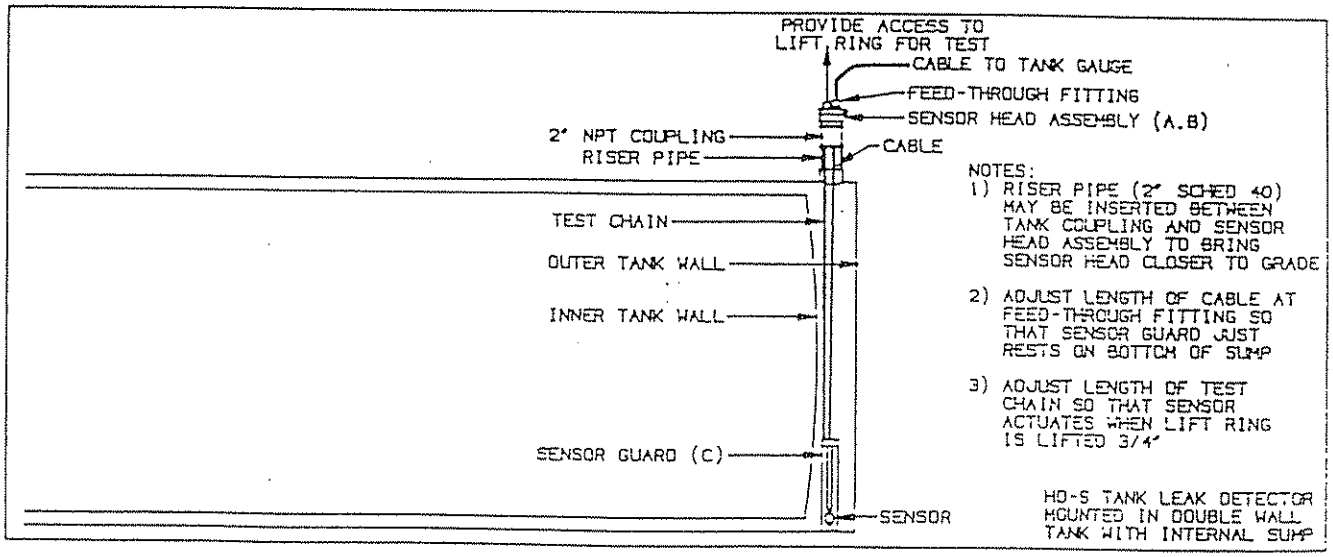


FIG. 11 INTERNAL SUMP

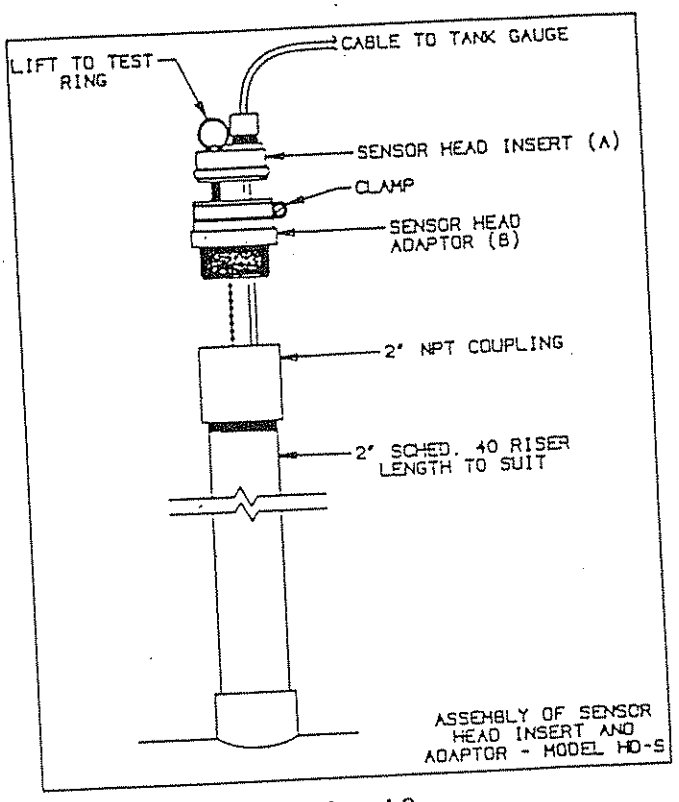

CABLE TO TANK GAUGE
LIFT TO TEST RING
SENSOR HEAD INSERT (A)
CLAMP
SENSOR HEAD ADAPTOR (B)
2" NPT COUPLING
2" SCHED. 40 RISER LENGTH TO SUIT
ASSEMBLY OF SENSOR HEAD INSERT AND ADAPTOR - MODEL HD-S

FIG. 12

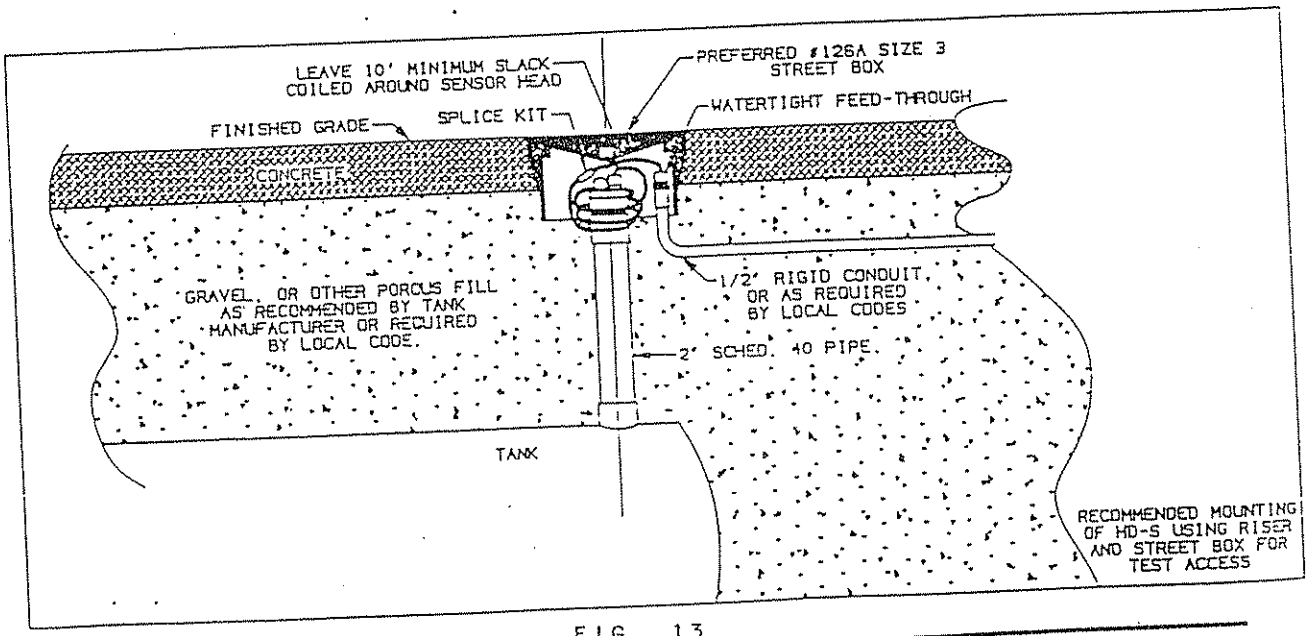

LEAVE 10' MINIMUM SLACK COILED AROUND SENSOR HEAD
PREFERRED #126A SIZE 3 STREET BOX
WATERTIGHT FEED-THROUGH
FINISHED GRADE
SPLICE KIT
CONCRETE
GRAVEL, OR OTHER POROUS FILL AS RECOMMENDED BY TANK MANUFACTURER OR REQUIRED BY LOCAL CODE.
1/2" RIGID CONDUIT, OR AS REQUIRED BY LOCAL CODES
2" SCHED. 40 PIPE.
TANK
RECOMMENDED MOUNTING OF HD-S USING RISER AND STREET BOX FOR TEST ACCESS

FIG. 13

Mount Accessories (optional)

The FA-S Overfill warning sign, overfill alarm bell and/or warning light and optional overfill alarm silence pushbutton should all be mounted near the tank fill pipe. The tank truck driver must be able to hear (or see) the overfill alarm from the fill pipe location.

However, since the wiring to these devices is not Intrinsically Safe; DO NOT MOUNT ANY OF THE OVERFILL ALARM ACCESSORIES IN A CLASS I HAZARDOUS LOCATION!

Route Wiring

After reading all of the notes below, route conduits and pull wiring.

Pull sensor cabling carefully to prevent nicks or cuts in the cable outer insulation. Use Preferred P/N 21655 cable (or equal).

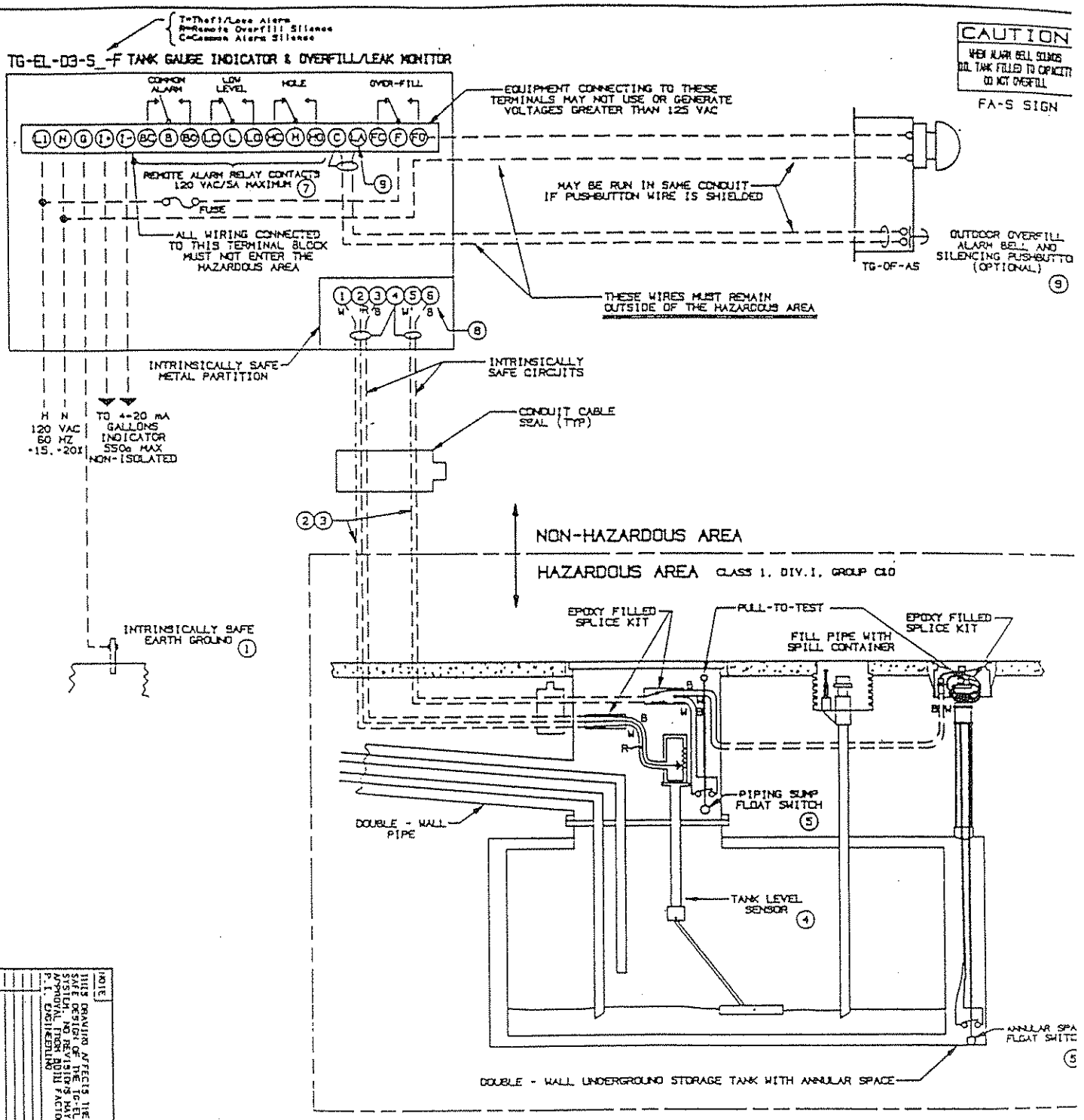
Water or moisture contacting any of the sensor wiring will cause incorrect readings.

Preform wiring shorts and leakage test in the next step BEFORE MAKING ANY LEVEL OR LEAK SENSOR WIRING CONNECTIONS.

WARNING

Failure to follow all procedures in this manual and on drawing TG-D3-1-FM voids the Intrinsically Safe design, and may create a Hazardous condition.

*The combination of the design of the TG-EL-D3-S indicator and proper field installation allows the TG-EL-LF (or TG-EL-VF) level sensor and HD-S Leak sensor to be safely used in Class I, Division 1, Group C & D Hazardous Locations.
*All wiring must comply with local codes. Use copper wire.
*Use only the conduit entries provided on the TG-EL-D3-S Indicator case. Do not make any new openings in the case.
*The Intrinsically Safe wiring must remain physically seperated from Non-Intrinsically Safe wiring by means of conduit, raceways, partitions or tie-downs (if a 2" minimum seperation is maintained).
*The Non-Intrinsically safe wiring (alarm bells, overfill alarm, remote displays, etc...) MUST NOT PASS THRU THE CLASS I HAZARDOUS AREA.
*Equipment connected to the TG-EL-D3 indicator must not use or generate voltages greater than 125 VAC.
*Conduits that enter the Hazardous Area must have a conduit seal to prevent the passage of fumes.
*The Integrity of the Intrinsically Safe design of the TG-EL-D3-S depends on effective shunting of electrical current to ground. DO NOT connect the "G" terminal to local power system ground ("green wire"). Run a seperate dedicated conductor to a grounding electrode. 1 ohm maximum from indicator to ground. 12 Ga. minimum. Protect the ground wire from damage. Mark the wire with "INTRINSICALLY SAFE" labels.
*Multiple TG-EL-D3-S indicators may be wired to the same ground, provided that failure of one ground wire will not affect the grounds to the other indicators.
*Intrinsically Safe sensor wiring from multiple TG-EL-D3-S indicators may be run in the same conduit provided that all indicators share the same ground.
*See ANSI/ISA RP-12.6 for further installation guidelines.
*Do not apply power to the TG-EL-D3-S indicator unless the metal safety partition is covering the sensor terminal strip. Do not remove the partition unless all sources of power are removed first.
*Identify the Intrinsically Safe sensor wiring with light blue (if no other wires are blue) or "INTRINSICALLY SAFE" tags.



CAUTION

WHEN ALARM BELL SOUNDS OIL TANK FILLED TO CAPACITY DO NOT OVERFILL

FA-S SIGN

NOTES:

- — — — = FACTORY WIRING
- ═══ = SHIELDED CABLE, 20 GAUGE MIN. TAPE EXPOSED SHIELDS, CONNECT SHIELDS ONLY WHERE SHOWN

(1) A SEPARATE DEDICATED CONDUCTOR CONNECTED TO A GROUNDING ELECTRODE, 1Ω MAX. FROM INDICATOR TO GROUNDING ELECTRODE. DO NOT CONNECT TO POWER SYSTEM GROUND. THE INTEGRITY OF THE INTRINSIC SAFETY BARRIER DEPENDS ON EFFECTIVE SHUNTING OF ELECTRICAL CURRENT TO GROUND. MULTIPLE TG-EL-03 INDICATORS MAY BE WIRED TO THE SAME GROUND, PROVIDED THAT FAILURE OF ONE GROUND WIRE WILL NOT AFFECT THE GROUNDS TO THE OTHER INDICATORS.

(2) THE INTRINSICALLY SAFE WIRING MUST REMAIN PHYSICALLY SEPARATED FROM NON-INTRINSICALLY SAFE WIRING BY MEANS OF CONDUIT, RACEWAYS, PARTITIONS, OR TIE DOWNS, WITHIN ENCLOSURES 2" MIN. SEPARATION

(3) EACH CABLE MUST HAVE LESS THAN 0.15μf CAPACITANCE AND 100 μh INDUCTANCE, IF PREFERRED CABLE (P/N 21655) IS USED MAXIMUM LENGTH IS 800'.

(4) ANY LEVEL SENSOR BASED SOLELY ON A POTENTIOMETER IS ACCEPTABLE AND NEED NOT BE AN APPROVED DEVICE, PREFERRED MODEL 107270 (TG-EL-LF) & TG-EL-VF ARE ACCEPTABLE. (CONSULT FACTORY)

(5) ANY LEAK DETECTOR BASED SOLELY ON A FLOAT ACTIVATED MECHANICAL SWITCH IS ACCEPTABLE AND NEED NOT BE AN APPROVED DEVICE. PREFERRED MODEL HO-S IS ACCEPTABLE. (CONSULT FACTORY).

(6) SEE ANSI/ISA RP-12.6 FOR FURTHER INSTALLATION GUIDELINES.

(7) ALARM RELAYS SHOWN WITH POWER ON AND NO ALARMS.

(8) IF HOLE ALARM FEATURE IS NOT USED, JUMPER (5) & (6)

(9) FUNCTION DEPENDS ON OPTION SELECTED (T/R/C). 'C' SHOWN. SEE 'OPTIONS' IN INSTRUCTION MANUAL.

FILE # TANKGAUGE

NO.	REVISIONS	DATE OF CHANGE

NOTE: THIS DRAWING AFFECTS THE INTRINSICALLY SAFE DESIGN OF THE TG-EL-03 TANK GAUGING SYSTEM. NO REVISIONS MAY BE MADE WITHOUT APPROVAL FROM ROBERTSHAW FACTORY MUTUAL AND P.E. ENGINEERING

PREFERRED - RINCOR INSTRUMENTS

11 SOUTH STREET — DANBURY, CONNECTICUT

A Division of National Utility Instruments Corp.

INTRINSICALLY SAFE SYSTEM WIRING DIAGRAM FOR TG-EL-03-S

ATTY: P.L. 4/5/90	MODEL:
DRAWN: B. MOLA 1/17/90	SUPERSEDES:
	MATERIAL:
	SCALE: NONE
	SIZE:
	ASS'Y NO.:
	TYPE:

TG-D3-1-FM

*Use minimum 20 gauge shielded cable for sensor wiring. Tape all exposed shields. Connect shields only where shown. If other than Preferred P/N 21655 cable is used: cable run must have less than .15 uf total capacitance and less than 100 mh total inductance; and insulation must be greater than .01 inches in thickness.

Test Sensor Wiring

*After routing the shielded cable to the sensors, but before making any connections; check resistance from each conductor (including shield) to ground. All conductors must measure greater than 2 Meg ohms to ground. This checks for damaged insulation and water infiltration. Do not hold the ohm meter probe tips or bare wires with your fingers, this will give false readings.
*Replace any questionable cable.

Connect the Wiring

WARNING

DO NOT APPLY POWER to the TG-EL-D3-S indicator or to any of the auxiliary circuits (alarm relay contacts, etc.) UNTIL AFTER the sensor wiring (terminals 1-6) have been connected AND the metal safety partition is in place in the indicator.

Do not remove the metal safety partition unless all sources of power have been removed (this may involve multiple disconnects).

See drawing TG-D3-1-FM for all field wiring connections. Note that all terminals are shown figuratively, the physical terminal layout is labeled in the TG-EL-D3-S indicator and shown below: (Fig. 14).

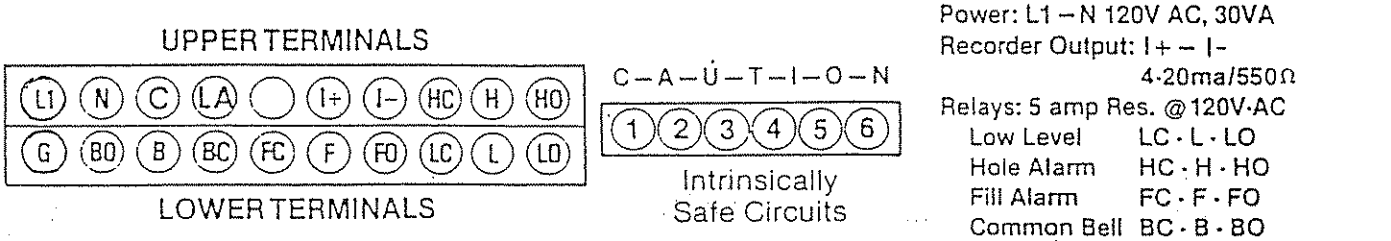


FIG. 14
TG-EL-D3 Terminal Block Layout

*The TG-EL-LF and HD-S sensors have a color coded cable. Follow color code on drawing TG-D3-1-FM.
*The TG-EL-VF sensor has a numbered terminal strip: 1,2,3. Wire 1-1, 2-2, 3-3, shield -4.
*AFTER the system has been fully tested and calibrated, field splices will be encapsulated in an epoxy resin to seal against moisture. DO NOT ENCAPSULATE SPLICES until after testing.
*To permit easy withdrawal of the sensors from the tank for future service and testing, leave sufficient cable coiled around the sensor head (approx. 10-15 ft.).
*The function of the external switch or pushbutton wired across terminals C & LA depends on the indicator model. See the OPTIONS section.

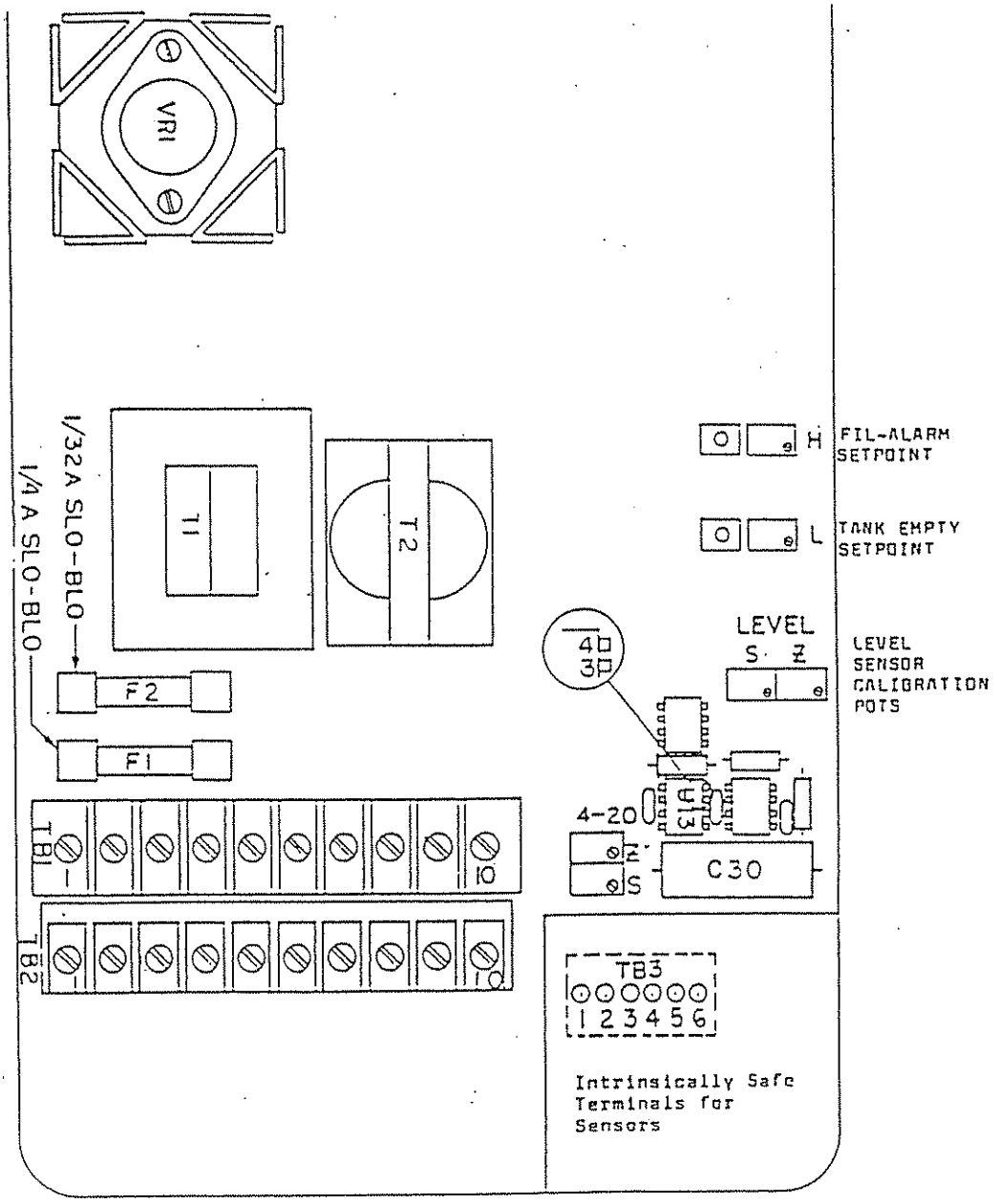


FIG. 15
TG-EL-D3 MAIN PC BOARD

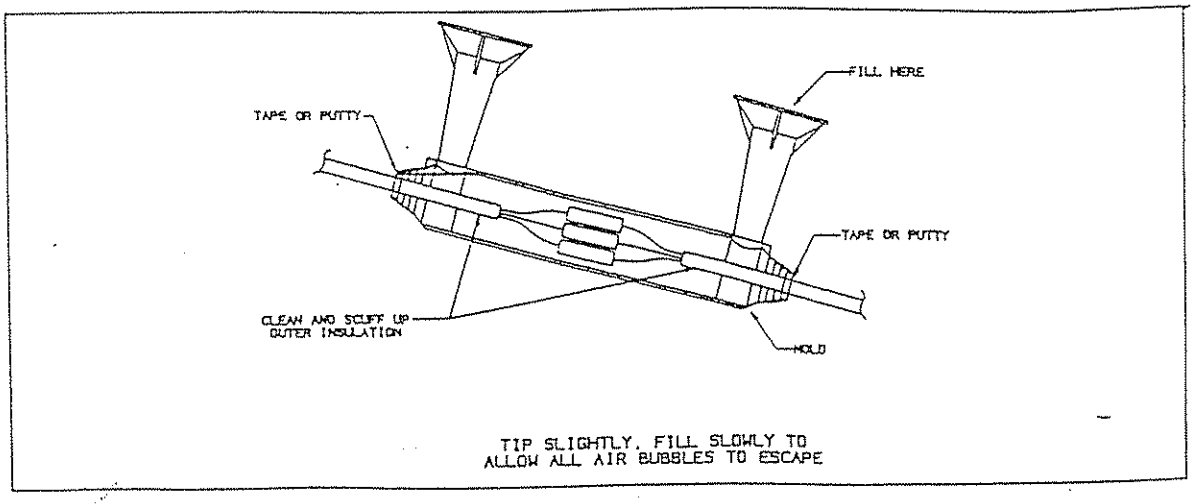


FIG. 16
Sensor Splice Kit Mold

Calibrate the Level Sensor

The TG-EL-D3 may be ordered with either the TG-EL-LF Lever Float level sensor or the TG-EL-VF Vertical Lift Float level sensor. Follow the appropriate procedure.

TG-EL-LF Calibration

Power the instrument. The display should light up. Permit a two minute warm up time.

Station one person at the Indicator to observe the readings and perform any necessary calibration adjustments. A second person at the Tank will stroke the Tank Assembly. The two should be able to communicate.

With the float arm resting on the bottom of the Tank (chain completely slack) depress and hold-in the "Liquid Depth" pushbutton on the Indicator door. The display should read 0.9. If the reading is LLLL or less than 0.8, slowly rotate clockwise the LEVEL "Z" adjustment screw (See Fig. 15) until the reading is 0.9. If the reading is above 0.9, slowly rotate the Z adjustment screw counter-clockwise until the reading is 0.9.

Using the test chain, slowly raise the float arm and hold gently against the top of the Tank. When depressing and holding the "Liquid Depth" pushbutton, the gauge should indicate: (Tank depth -.9"). The tank depth for which the gauge was built is engraved on the instrument door.

For example: for tank depth of 120", the reading should be 119.1; for a 72" Tank, 71.1.

If the reading is HHHH or too high, slowly rotate the LEVEL "S" adjustment screw counter-clockwise; if too low, rotate clockwise, until the reading is correct.

Adjustment of the Span (S) screw will affect the Zero (Z) reading. Repeat Zero and Span steps several times until both readings are correct.

After calibration, to prevent unauthorized adjustments, the adjusting screws may be sealed with inspection lacquer.

Withdraw the Tank Assembly from the Tank by removing the four flange bolts.

Remove the calibration disc and screw from the end of the float arm (Fig. 5). These are only used during calibration and not required for normal gauging system operation.

Install the float on the float arm as per instructions attached to the float.

Re-install the Level Sensor.

ATTENTION

To install the Assembly with the float attached, the Tank must be less than half full of liquid. Otherwise, as the float is forced into the liquid the float arm could be bent and damaged. Reduce liauid level if required.

Replace the four flange bolts and tighten evenly to assure a watertight seal.

Replace the Hex Plug (with O ring) in the calibration chain hole so that water cannot enter the Tank (Fig. 2).

TG-EL-VF Calibration

The LEVEL S adjustment is preset at the factory to match the Tank Depth (I.D.) on the sensor WARNING tag and engaved on the indicator door. It should not be adjusted in the field.

Stick the tank. Note the liquid depth. The level must be greater than 12" and less than 'FULL' minus 12" for proper calibration.

If the tank is empty, lay the sensor on the ground and position the float at approximately half stroke. Measuring from the mid-point of the float, determine the liquid depth that this position simulates.

Press the 'Liquid Depth' pushbutton on the indicator door. Adjust the LEVEL 'Z' trimpot (Fig. 15) on the main PC board until the display reads the same depth as the stick reading. (a correction of 2-3" from the factory setting is not uncommon).

Test Leak Sensor(s)

*Pull up the Lift Ring on the tank sump HD-S sensor for 5 seconds. The indicator display should flash HOLE and the indicator alarm horn will sound.
*Press the Alarm Silence pushbutton.
*Pull up the Lift Ring on the piping sump HD-S for 5 seconds (if installed). The indicator display should flash HOLE and sound the horn again.
*Press the Alarm Silence pushbutton.

Encapsulate the Sensor Wiring Splices

*Read all steps before starting.
*Additional splice encapsulation kits can be ordered by Preferred P/N 190271 or can be obtained from electrical supply distributors as: 3M "Scotchcast 82-A1" Power Cable splice kit.
*Clean and scuff the cable outer insulation that will be inside the splice. This insures good resin adhesion.
*Snap the two halves of the plastic splice mold over the completed connection. If necessary enlarge the opening at the end of the mold (Fig. 16).
*Do not wrap the wires and butt connectors in electrical tape. This will prevent the resin from sealing the connections.
*Wrap the ends of the mold with the tape provided (or putty) to prevent the resin from leaking out. Insert the two funnels into the mold.
*Prop up the mold at a slight angle. Hold it with a clamp so that both hands will be free to work with the resin pouch.
*Mix the epoxy resin according to the instructions on the resin pouch. Note the caution about cold weather.
*Fill the mold (from the low end) very slowly to prevent air bubbles from forming.
*Allow the splice to harden and cool.
*Coil the cable and splice in the sensor head access chamber.

Set the Overfill Alarm Setpoint

*Determine the gallons that should trip the Over-Fill Warning Alarm. The Over-Fill setpoint should comply with all codes (Federal EPA, local EPA, fire codes, etc.) and must be sufficiently below tank full capacity to give the tank truck operator enough time to prevent an over-fill spill.
*For regulated tanks that rely on the Over-fill alarm as the only means of overfill prevention, the Federal EPA requires that the alarm trips before the tank is 90% full.
*If time-to-overfill is the main criteria, the tank fill rate must be known. Some sample fill rates for light oils with gravity fill are:

4" fill tube	450 gal/min.
3" " "	350 " "
2" " "	250 " "

These are approximate figures and must be verified for the actual fluid and piping arrangement.
-determine desired time before over-fill (in seconds).
-calculate:
(full tank gallons - ((gpm fill rate x seconds)/60))
-example: 19,890 full capacity, 450 gpm fill rate, 3 minute warning
(19890 - ((450 x 180)/60)) = 18540
NOTE: 18540 is greater than 90% full (17901)
*Open indicator door. Press H pushbutton (Fig. 15), view current trip point (in gallons) on door. Change setpoint by adjusting screw next to H pushbutton.

Test Over-Fill Alarm

TG-EL-LF

*Station one person at the indicator and a second person at the tank. The two should be able to communicate.
*Unscrew the calibration/test chain Hex head screw. Slowly pull the chain up. When the gallons displayed exceeds the over-fill setpoint, the horn on the indicator door will sound and the display will Flash 'HI'.
*If an outdoor alarm is installed it will activate.
*Replace the chain Hex Plug (with O ring) in the calibration chainhole so that water cannot enter the tank.

TG-EL-VF

*Note the current gallons displayed on the indicator.
*Open the indicator door, press the H pushbutton (Fig. 15) and note the over-fill arlarm setpoint. While holding the H pushbutton rotate the adjacent trimpot counter-clockwise until the setpoint is less than the current gallons.
*The Over-fill alarm will activate as described above.
*Set the Over-Fill alarm setpoint back to the original value.

Adjust the Low Level Setpoint

Open the Indicator door. Press L pushbutton (Fig. 15). View the current trip point on the door (in gallons). Change setpoint by adjusting screw adjacent to L pushbutton.

TROUBLE SHOOTING

Display Indicates "LLLL" or "HHHH"

This means that the level sensor is indicating a level Below O" (LLLL) or Above max. tank height (HHHH). Possible causes are: blown fuse F2, incorrect calibration, field wiring error, bad field wiring, water or moisture contacting wiring, bad level sensor. NOTE: the TG-EL-LF level transmitting element is a 20K ohm pot, TG-EL-VF uses a 2K pot.

1) Check fuse F2 (120 VAC, 1/32 A, slo-blo, 1/4 x 1 1/4). Both fuses are located just above the terminal strip. F1 is closer to the terminals, F2 is above F1. CAUTION 120 VAC! (Fig. 15)

2) Press H pushbutton and adjust high alarm setpoint slightly. If this is possible, indicator is probably functioning properly.

3) Remove all sources of power from the indicator. Independent sources may power alarm contacts.

WARNING

If power is present, accidental shorts to the sensor wiring may cause an explosion in the hazardous area.

4) Remove intrinsic safety metal cover from terminals 1-6.

5) Remove wires in terminals 1,2,3,4. Measure from sensor wire 1 (wht) to 3 (blk); correct reading is 20K ohms for TG-EL-LF, 2K for TG-EL-VF. Measure from 1 (wht) to 2 (red) and then from 2 (red) to 3 (blk), add these two measurements together. The sum should be the same as the 1 to 3 reading. The ohm meter must be an Intrinsically Safe meter if the sensors are in a Hazardous location.

If any reading is bad, disconnect wiring at sensor splice and repeat the measurements to determine if the sensor is bad or if the field wiring has a short/open.

6) Measure resistance from each field wire to earth ground (G terminal). Each must measure greater than 2 meg ohms. Do not hold the ohmmeter probe tips or the bare wires with your fingers, this will give false readings.

If any wire shows a partial short to ground; disconnect wiring at level sensor. Measure sensor and field wiring independently to determine which is causing the short. Shorts less than 1K ohms are typically damaged insulation. High resistance readings are typically caused by water infiltrating the cable, cable splices, or the level sensor head.

7) Level Sensor and Field Wiring OK: Either the indicator is improperly calibrated, the indicator is malfunctioning, or the lever arm/float is physically damaged (bent, fell off, etc.)

Follow level sensor calibration procedure above. The tank must be less than half full to extract the TG-EL-LF for calibration purposes.

WARNING

Install Intrinsic Safety metal partition over terminals 1-6 BEFORE re-applying any power to the indicator.

8) If tests 5 & 6 show no problem, and the unit will not calibrate correctly; check indicator S/N and Level Sensor S/N. S/N's should be identical, check capacity and depth engraved on door against actual tank data.

If all S/N's and dimensions are correct indicator may be programmed incorrectly, or defective.

Poor Accuracy

If indicator can be calibrated correctly at empty and full but readings at other points appear to be inaccurate (greater than 1% of capacity deviation), several factors could apply:

1) **Tank not level.** Depth measurements at the stick hole and level sensor location will not agree.

2) **Worn dip stick.** After years of droppin a stick into a tank, the wear can alter the true lenght of the stick.

3) **Incorrect fabrication data.** Capacity and depth engraved on door (and in the program) MUST match actual tank data.

4) **Pivot Point Not Centered.** (TG-EL-LF only). Lever pivot point MUST be at the vertical and horizontal center of the tank. Incorrect I.D., stand pipe, manhole, or height data could cause the level sensor to be fabricated incorrectly. Make sure sensor S/N and indicator S/N match.

4-20mA Output not Calibrated

1) See Fig. 6 for component layout.
2) Intrinsically Safe metal barrier MUST be in place.
3) Remove wire on Terminal I+. Connect ma meter across terminals I+, I-.
4) Short across capacitor C30. Adjust 4-20 "Z" trimpot until output = 4.00mA. Remove C30 short.
5) Short across U13 pins 3 & 4. Shorting pins other than 3 & 4 could cause permanent damage. Adjust 4-20 "S" trimpot until output = 12.00mA.
6) Repeat steps 4 & 5 until both readings do not require adjustment.
7) Note that terminal "I-" is connected to terminal G. If ground loops occur, an external isolator may be required.

False HOLE Alarm

Possible causes: water accumulating in the sump, field wiring.

Water: The HD-S sensor is a float switch. It will trip whenever enough fluid accumulates to lift the Float (approx. 1").

Check all manhole covers and street boxes to make sure that surface water is not running into the sumps. If necessary seal the covers or regrade the surface so that water runs away from manholes.

Make sure all piping and sensor connections are tight.

Water that enters the sump through the outer wall of a double wall tank or double wall piping IS NOT a false alarm. If water can enter through the secondary "containment" wall; then, if a leak should occur, the tank contents will travel out through the outer wall.

If persistant water accumulations occur, consult with the tank manufacturer to determine how to test the outer wall for leaks.

Defective wiring: The HD-S float switch contact is closed when dry (float down) and the switch is open when wet (float up). If two or more sensors are installed; they are wired in series and all switches must be closed to complete the circuit.

1) Remove all sources of power from the indicator. Independent sources may power alarm contacts.

WARNING

If power is present, accidental shorts to the sensor wiring may cause an explosion in the hazardous area.

2) Remove intrinsic safety metal cover from terminals 1-6.

3) Remove wires on terminals 5 & 6. Measure ohms from wire to wire. Approximately zero ohms indicates HD-S switches are closed and wiring is intact. Any other reading indicates at least one HD-S switch is open or that the wiring is broken (an open circuit).

Use an Intrinsically Safe Ohmmeter.

If an open circuit is indicated; activate the Pull to Test Ring on each HD-S sensor and inspect each sensor before replacing any of the wiring.

4) If the wires indicate a closed circuit (approx. zero ohms), measure resistance from each wire to G terminal (wires should be disconnected from terminals 5 & 6). Each must measure greater than 2 Meg ohms.

If any wire shows a partial short; disconnect wiring at the sensor. Measure sensor and field wiring independently to determine which is causing the short. Shorts less than 1K ohms are typically damaged insulation. High resistance readings are typically caused by water infiltrating the cable, cable splices, or the sensor head.

Do not hold the ohm meter probe tips or the bare wires with your fingers, this will give false readings.

WARNING

Install Intrinsic Safety metal partition over terminals 1-6 BEFORE re-applying any power to the indicator.

Indicator

1) Check both fuses (just above terminal strip). CAUTION 120 VAC!

2) Check door cable. Re-seat plug in socket J3 (top-middle of PC board). White dot should be toward top. If cable is multicolored, brown should be on top. If grey cable, red stripe should be on top.

3) Check U1 for proper seating. Notch in I.C. should be toward top. DO NOT UNPLUG with power on. Use anti-static discharge procedures to avoid damaging chip. Chip should be marked with the same S/N as the Indicator door.

4) Press H pushbutton and adjust Over-fill alarm setpoint slightly.

If the setpoint can be adjusted the indicator is probably functioning correctly.

If the indicator is not functioning properly, it must be returned to the factory for repair. Any attempt to repair the TG-EL-D3-S Indicator in the field will void the Intrinsic Safety design and the warranty.

Form 77-1(
(J 21103-3(

Data Chart for Tank System Tightness Tester

USING KENT-MOORE CORPORATION TANK TIGHTNESS TESTER MODEL 1000

PLEASE PRINT

1. OWNER Property ☒ Tank(s) ☒

Name	Address	Representative	Telephone
MEDFIELD STATE HOSPITAL - GENERATING STATION	HOSPITAL RD. MEDFIELD MA.		
Name	Address	Representative	Telephone

2. OPERATOR

Name	Address	Telephone

3. REASON FOR TEST (Explain Fully)

NEW TANKS & LINES INSTALLED

4. WHO REQUESTED TEST AND WHEN

Name	Title	Company or Affiliation	Date
G & W, I.	JOHN IRWIN		
Address			Telephone

5. WHO IS PAYING FOR THIS TEST?

Company, Agency or Individual	Person Authorizing	Title	Telephone
C.H.F.	JOHN IRWIN		617-848-2752
Billing Address	City	State	Zip
61338			
Attention of:	Order No.	Other Instructions	

6. TANK(S) INVOLVED (3) From Buccaneer

Identify by Direction	Capacity	Brand/Supplier	Grade	Approx. Age	Steel/Fiberglass
		WOOLMAN			D/W
CLOSEST	30,444	"	#4 DIC	NEW 9/90	STEEL
2ND OUT				NEW 9/90	STEEL
3RD OUT				NOW 9/90	STEEL

7. INSTALLATION DATA

Location	Cover	Fills	Vents	Siphones	Pumps
REAR RT. OF PLANT.	CONCRETE MAT	6" - 9" & 2" -	3"	NO	SUCTION - FOR BOILERS.
North inside driveway, Rear of station, etc.	Concrete, Black Top, Earth, etc.	Size, Fillfill make, Drop tubes, Remote Fills	Size, Manifolded	Which tanks?	Suction, Remote, Make it known

8. UNDERGROUND WATER

Depth to the Water table — DOUBLE WALL TANKS

Is the water over the tank? ☐ Yes ☒ No

9. FILL-UP ARRANGEMENTS

Tanks to be filled _____ hr. _____ Date Arranged by _____ Name _____ Telephone

Extra product to "top off" and run TSTT. How and who to provide? Consider NO Lead.

— PREVIOUSLY FILLED —

Terminal or other contact for notice or inquiry _____ Company _____ Name _____ Telephone

10. CONTRACTOR, MECHANICS, any other contractor involved

10-1-90 NOT ENOUGH PRODUCT TO FILL TANK —
10-2-90 MAN HOLE COVER 3/8" FITTING HAS WELDING HOLE/NEED WELDED

11. OTHER INFORMATION OR REMARKS

WILL NEED PRODUCT PUMPED OVER FROM TANK TO TANK WILL BE WHEN EACH IS READY FOR TESTING.

Additional information on any items above. Officials or others to be advised when testing is in progress or completed. Visitors or observers present during test etc.

12. TEST RESULTS

Tests were made on the above tank systems in accordance with test procedures prescribed for Kent-Moore Tank Systems Tightness Tester Model 1000 as detailed on attached test charts with results as follows:

Tank Identification	Tight	Leakage Indicated	Date Tested
CLOSEST TO PLANT	YES	—	10-3-90
MIDDLE	YES	—	10-5-90
FURTHEST FROM	YES	—	10-10-90

(3) ALL 30,000 CAPACITY

13. CERTIFICATION

This is to certify that these tank systems were tested on the date(s) shown. Those indicated as "Tight" meet the criteria established by the National Fire Protection Association Pamphlet 29.

10-10-90
Date

E.W. ELRICK
E. ELRICK
Technicians

ELRICK ELECTRIC INC. E.W. Elrick
Testing Contractor or Company By: Signature

464
Serial No. of Tester

H4 MEETING HOUSE LN. MARSHFIELD MA.
Address

14. MEDFIELD STATE HOSPITAL (GENERATING PLANT) MEDFIELD MA. 10-10-90
Name of Supplier, Owner or Dealer | Address No. and Street(s) | City | State | Date of Test

15. TANK TO TEST
FURTHEST FROM BLDG.
Identify by position
#4 FUEL OIL
Brand and Grade

16. CAPACITY
Nominal Capacity 30,000 Gallons
By most accurate capacity chart available 30444 Gallons
Is there doubt as to True Capacity? ☐
See Section "DETERMINING TANK CAPACITY"
From
☐ Station Chart
☐ Tank Manufacturer's Chart
☐ Company Engineering Data
☐ Charts supplied with TSTT
☐ Other

17. FILL-UP FOR TEST
SENSOR 70.2
SAMPLE 74.0
DIFF. +4
API GR. 13.8
Stick Water Bottom before Fill-up 0 to X in. 0 Gallons
Fill up. STICK BEFORE AND AFTER EACH COMPARTMENT DROP OR EACH METERED DELIVERY QUANTITY
Product in full tank (up to fill pipe) 12587

	Stick readings to X in.	Gallons	Total in Tank
Inventory			30444
	Top off	+50	30494
	H2O	0	
Tank Diameter	126"		30494

18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK
See manual sections applicable. Check below and record procedure in log (28).
☐ NO Water in tank ☐ NO High water table in tank excavation ☐ DONE Line(s) being tested ☐ NOT APP. Vapor recovery systems ☐ Stage I ☐ Stage II

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY
Bottom of tank to Grade*..... 176"
Assemble tubing + 30" for 4" L.....
+ 24" for 3" L.....
Total tubing to assemble (Approximate).....

20.
Tank top to grade*..... 50"
Extend hose on Test Elbow 6" or more below tank top.....
*If Fill pipe extends above grade, use top of fill.

21. TEMPERATURE/VOLUME FACTOR (a) TO TEST THIS TANK
Inventory Top ____ °F Center ____ °F Bottom ____ °F On Truck ____ °F Expected Change ±
22. Thermal-Sensor reading after circulation 15725 digits 70/71 Nearest °F
23. Digits per °F in range of expected change 325 digits
24. 30494 total quantity full tank (17) ÷ 2587 coefficient of expansion for involved product = 11.787398 53 volume change in this tank per °F gallons
25. 11.787398 53 volume change per °F (24) + 325 Digits per °F in test Range (26) = .0362689 Volume change per digit. Compute to 3 decimal places. This is test factor (a)

a = .036

Erick Electric Inc.
114 MEETINGHOUSE LANE
MARSHFIELD, MASS. 02050
617-834-8433

Furthest from BOF. (Supplemental)

28. DATE / TIME (24 hr.)	Record details of setting up and running test (Use full length of line if needed)	29. Reading No	CONTROL: Standpipe Level in Inches — Beginning of Reading	CONTROL: Standpipe Level in Inches — Level to which Restored	RECORD TO .001 GAL: 32. Product in Graduate — Before Reading	RECORD TO .001 GAL: 32. Product in Graduate — After Reading	33. Product Replaced (-) — Product Recovered (+)	USE FACTOR (a) .036: 35. Thermal Sensor Reading	36. Change Higher + Lower - (c)	37. Computation (c) × (a) = Expansion + Contraction -	CHANGING EACH READING: Temperature Adjustment — Volume Minus Expansion (+) or Contraction (-) #33(V) — #37(T)	ACCUMULATED CHANGE: At Low Level compute Change per Hour (NFPA criteria)
1140	NO CHANGE	11	12.0	12	.365	.365	.000	732	+1	.036	-.036	-.001
1145	NO CHANGE	12	12.0	12	.365	.365	.000	732	0	.00	.00	-.001
1150	NO CHANGE	13	12.0	12	.365	.365	.000	732	0	.00	.00	-.001
1155	DRAIN TO 12"	14	12.1	12	.365	.375	+.010	733	+1	.036	-.026	-.027
1200	NO CHANGE	15	12.0	12	.375	.375	.000	733	0	.00	.00	-.027
1205	NO CHANGE	16	12.0	12	.375	.375	.00	732	-1	.036	+.036	+.009
1210	DRAIN TO 12"	17	12.1	12	.375	.380	+.005	733	+1	.036	-.031	-.022
1215	NO CHANGE	18	12.0	12	.380	.380	.000	733	0	.000	.000	.022
1220	NO CHANGE	19	12.0	12	.380	.380	.000	734	+1	.036	-.036	-.058
1225	NO CHANGE	20	12.0	12	.380	.380	.000	734	0	.000	.000	-.058
1230	DRAIN TO 12"	21	12.1	12	.380	.390	+.010	733	-1	.036	+.046	-.012
1235	NO CHANGE	22	12.0	12	.390	.390	.000	733	0	.000	.000	-.012
1240	NO CHANGE	23	12.0	12	.390	.390	.000	733	0	.000	.000	-.012
1245	NO CHANGE	24	12.0	12	.390	.390	.000	734	+1	.036	-.036	-.048
				T	ANK	TES	TS	TIGHT.				
	.048 ÷ 2HRS											
	.024GPH.											

P-T Tank Test Data Chart Additional Info

1. Net Volume Change at Conclusion of Precision Test: .024 gph

Signature of Tester: E.W. Elrich

Date: Oct. 10, 1990

PN5829

2. Statement:

☒ Tank and product handling system has been tested tight according to the Precision Test Criteria as established by N.F.P.A. publication 329. This is not intended to indicate permission of a leak.

OR

☐ Tank and product handling system has failed the tank tightness test according to the Precision Test Criteria as established by N.F.P.A. publication 329.

It is the responsibility of the owner and/or operator of this system to immediately advise state and local authorities of any implied hazard and the possibility of any reportable pollution to the environment as a result of the indicated failure of this system. Heath Consultants Incorporated does not assume any responsibility or liability for any loss of product to the environment.

Tank Owner/Operator GENERATING plant

Date 10-10-90

MEDFIELD STATE HOSP. MEDFIELD MA.

14. Medfield State Hospital — Name of Supplier, Owner or Dealer
Address No. and Street(s): Medfield — City: Ma. — State: 10-3-90 — Date of Test

15. TANK TO TEST

Close to building — Identify by position
#4 fuel oil — Brand and Grade

16. CAPACITY

Nominal Capacity: 30,000 Gallons
By most accurate capacity chart available: 30,444 Gallons
Is there doubt as to True Capacity? ☐
See Section "DETERMINING TANK CAPACITY"

From
- ☐ Station Chart
- ☐ Tank Manufacturer's Chart
- ☐ Company Engineering Data
- ☐ Charts supplied with TSTT
- ☐ Other

17. FILL-UP FOR TEST

Stick Water Bottom before Fill-up: 0 to X in. - 0 Gallons

Sensor 92.0
Sample 93.0
Diff +1

Db. API Gravity 13.8

FILL up. STICK BEFORE AND AFTER EACH COMPARTMENT DROP OR EACH METERED DELIVERY QUANTITY

Product in full tank (up to fill pipe): 2583 Pg. 17

Tank Diameter: 126

	Stick readings to X in.	Gallons	Total in Tank
Inventory			30444
Topoff		40	30484
H2O		0	30484
			30484

18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK

See manual sections applicable. Check below and record procedure in log (26).

- ☐ NO Water in tank
- ☐ NO High water table in tank excavation
- ☐ Done Line(s) being tested
- ☐ NA Vapor recovery systems
- ☐ Stage I
- ☐ Stage II

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY

Bottom of tank to Grade*	176 "
Assemble tubing + 30" for 4" L	"
+ 24" for 3" L	"
Total tubing to assemble (Approximate)	"

20.

Tank top to grade*	50 "
Extend hose on Test Elbow 8" or more above tank top	"

*If Fill pipe extends above grade, use top of fill.

21. TEMPERATURE/VOLUME FACTOR (a) TO TEST THIS TANK

Inventory Top ____ °F Center ____ °F Bottom ____ °F On Truck ____ °F Expected Change ____

22. Thermal-Sensor reading after circulation: 22615 digits — 92/93 Nearest °F

23. Digits per °F in range of expected change: 312 digits

24. 30484 total quantity full tank (17) × .2583 coefficient of expansion for for involved product = 11.80178087 gallons volume change in this tank per °F

25. 11.80178087 volume change per °F (24) ÷ 312 Digits per °F in test Range (26) = .0378205622 Volume change per digit. Compute to 3 decimal places. This is test factor (a)

a = .038

MEDFIELD STATE HOSPITAL — MEDFIELD MA.

27. Date Time (24 hr.)	28. Record details of setting up and running test. (Use full length of line if needed.)	29. Reading No.	30. Hydrostatic Pressure Control: Standpipe Level in Inches — Beginning of Reading	Level to which Restored	31. Volume Measurements (V) Record to .001 Gal. — 32. Product in Graduate: Before Reading	After Reading	33. Product Replaced (−) / Product Recovered (+)	34. Temperature Compensation, Use Factor (v) .038 — 35. Thermal Sensor Reading	36. Change Higher + Lower − (c)	37. Computation (c) × (v) = Expansion + Contraction −	38. Net Volume Changes Each Reading: Temperature Adjustment Volume Minus Expansion (+) or Contraction (−) (r) − (t)	39. Accumulated Change: At High Level record total and deflection. At low level compute change per hour (NFPA criteria)
	26. Log of Test Procedures: Closest to BLDG. #4 o/c											
1140	No Change	10	12.0	12	.63	.63	.000	22623	0	.000	.000	-.016
1145	Drain to 12"	11	12.1	12	.63	.645	+.015	22623	0	.000	+.015	-.001
1150	Drain to 12"	12	12.1	12	.645	.66	+.015	22625	+2	.076	-.061	-.062
1155	No Change	13	12.0	12	.66	.66	.000	22675	0	.000	.000	-.062
1200	Drain to 12"	14	12.1	12	.66	.675	+.015	22675	+0	.000	+.015	-.047
1205	" " "	15	12.1	12	.675	.69	+.015	22676	+1	.038	-.023	-.070
1210	" " "	16	12.1	12	.69	.705	+.015	22676	0	.000	+.015	-.055
1215	No Change	17	12.0	12	.705	.705	.000	22677	+1	.038	-.038	-.093
1220	" "	18	12.0	12	.705	.705	.000	22677	+0	.000	.000	-.093
1225	Drain to 12"	19	12.1	12	.705	.72	+.015	22677	+0	.000	+.015	-.078
1230	" " "	20	12.1	12	.72	.735	+.015	22676	-1	-.038	+.053	-.025
1235	No Change	21	12.0	12	.735	.735	.000	22676	0	.000	.000	-.025
1240	" "	22	12.0	12	.73	.73	.000	22677	+1	.038	-.038	-.063
1245	Drain to 12"	23	12.1	12	.73	.745	+.015	22677	0	+.000	+.015	-.048
1250	" " "	24	12.1	12	.745	.76	+.015	22678	+1	.038	-.023	-.071

-.071 ÷ 2 = -.0355 gph meets NFPA Criteria of ±.05 gph.

Tank Test Tight

14. MEDFIELD STATE HOSPITAL (GENERATING PLANT) MEDFIELD MA. 10-5-90

Name of Supplier, Owner or Dealer | Address No. and Street(s) | City | State | Date of Test

15. TANK TO TEST

middle of 3 TANKS
Identity by position

#4 FUEL OIL
Brand and Grade

16. CAPACITY

Nominal Capacity 30,000 Gallons

By most accurate capacity chart available 30444 Gallons

Is there doubt as to True Capacity? ☐

See Section "DETERMINING TANK CAPACITY"

From
- ☐ Station Chart
- ☐ Tank Manufacturer's Chart
- ☐ Company Engineering Data
- ☐ Charts supplied with TSTT
- ☐ Other

17. FILL-UP FOR TEST

SENSOR - 70.6°
Sample - 73.0
Diff - +2
API GR. 13.8

Stick Water Bottom before Fill-up 0 to ¼ in. - 0 Gallons

Fill up. STICK BEFORE AND AFTER EACH COMPARTMENT DROP OR EACH METERED DELIVERY QUANTITY

Product in full tank (up to fill pipe) 2584

	Stick readings to ¼ in.	Gallons	Total in Tank
Inventory			30444
	Top off	50	30494
	H2O	0	
Tank Diameter	126"		30494

18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK

See manual sections applicable. Check below and record procedure in log (26).

- ☐ NO Water in tank
- ☐ NO High water table in tank excavation
- ☐ DONE Line(s) being tested
- ☐ Not Applicable Vapor recovery systems
- ☐ Stage I
- ☐ Stage II

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY

Bottom of tank to Grade*	176
Assemble tubing + 30" for 4" L	
+ 24" for 3" L	
Total tubing to assemble (Approximate)	

20.

Tank top to grade*	50
Extend hose on Test Elbow 6" or more above tank top	

*If FIll pipe extends above grade, use top of fill.

21. TEMPERATURE/VOLUME FACTOR (a) TO TEST THIS TANK

Inventory Top ____ °F Center ____ °F Bottom ____ °F On Truck ____ °F Expected Change ±

22. Thermal-Sensor reading after circulation 15902 digits — 70/71 Nearest °F

23. Digits per °F in range of expected change 325 digits

24. 30494 total quantity full tank (17) ÷ .00258 coefficient of expansion for involved product = 11.80108 volume change in this tank per °F — gallons

25. 11.8011 volume change per °F (24) + 325 Digits per °F in test Range (26) = .0363 Volume change per digit. Compute to 3 decimal places. — This is test factor (a)

a = .036

Elrick Electric Inc.
114 MEETINGHOUSE LANE
MARSHFIELD, MASS. 02050
617-834-9433

MEDFIELD STATE HOSPITAL GENERATING PLANT

26. Log of test procedures: Middle Tank 30,000

27. Date Time (24 hr.)	28. Record details of setting up and running test. (Use full length of line if needed.)	29. Reading No.	30. Hydrostatic Pressure Control: Standpipe Level in Inches — Beginning of Reading	Level to which Restored	31. Volume Measurements (V) Record to .001 Gal.: Product in Gradate — Before Reading	After Reading	33. Product Replaced (−) / Product Recovered (+)	34. Temperature Compensation, Use Factor (a) .036: 35. Thermal Sensor Reading	36. Change Higher + Lower − (c)	37. Computation (c) × (a) = Expansion + Contraction −	38. Net Volume Changes Each Reading: Temperature Adjustment Volume Minus Expansion (+) or Contraction (−) (v) − (i)	39. Accumulated Change: At High Level record total and deflection / At low level compute change per hour (NFPA criteria)
10-5-90												
1120	DRAIN TO 12'	10	12.4	12	.795	.835	T .040	15915	+1	.036	T .004	+ .031
1125	DRAIN TO 12"	11	12.4	12	.835	.875	+ .040	15917	+2	.072	− .032	− .001
1130	DRAIN TO 12"	12	12.4	12	.875	.915	T .040	15917	0	.000	+ .040	+ .039
1135	" " "	13	12.4	12	.000	.035	+ .035	15918	+1	.036	− .001	+ .038
1140	" " "	14	12.4	12	.035	.075	T .040	15919	+1	.036	+ .004	+ .042
1145	" " "	15	12.4	12	.075	.110	+ .035	15920	+1	.036	− .001	+ .041
1150	DRAIN TO 12"	16	12.4	12	.110	.150	+ .040	15920	0	.000	+ .040	T .081
1155	" " "	17	12.4	12	.150	.190	+ .040	15921	+1	.036	+ .004	+ .085
1200	" " "	18	12.4	12	.190	.225	T .035	15922	+1	.036	− .001	+ .084
1205	" " "	19	12.4	12	.225	.260	T .035	15923	+1	.036	− .001	+ .083
1210	DRAIN TO 12"	20	12.4	12	.260	.300	T .040	15925	+2	.072	− .032	+ .051
1215	" " "	21	12.4	12	.300	.335	T .035	15926	+1	.036	− .031	+ .050
1220	" " "	22	12.4	12	.335	.375	T .040	15927	+1	.036	+ .004	+ .054
1225	" " "	23	12.4	12	.375	.415	+ .040	15928	+1	.036	+ .004	+ .058
1230	DRAIN TO 12"	24	12.4	12	.415	.450	+ .035	15929	+1	.036	− .001	+ .057
							TANK TESTS TIGHT					
	.057 ÷ 2Hrs .029 G.P.H. Meets CRITERIA ESTABLISHED BY THE N.F.P.A.											

CleanHarbors

ENVIRONMENTAL SERVICES COMPANIES
325 WOOD ROAD
BRAINTREE, MA 02184
(617) 849-1800

3-1684

January 16, 1991

Department of Environmental Protection
Northeast Region
5 Commonwealth Ave.
Woburn, MA 01801

Attn: Mr. John Buckley

RE: Soil Disposal, Medfield State Hospital, 45 Hospital Road, Medfield, MA

Dear Mr. Buckley,

In accordance with the State's Soil Management Policy on Contaminated Soil, Clean Harbors of Kingston, Inc. wishes to submit a formal request in regards to the Medfield State Hospital, Medfield, Massachusetts site.

Our intention is to seek approval from the D.E.P. to transport approximately 60 yards of contaminated soil that meets State-approved levels of contamination under the State Soil Management Policy to The GCR Landfill in Peabody, MA for use as cover material.

Clean Harbors removed and installed the underground storage tanks for the boiler plant at Medfield State Hospital in the summer of 1990. Approximately 2,500 tons of number 6 oil contaminated soil were generated and processed by United Retek Corporation into an asphalt base material used on site for the new parking area. This remaining 60 yards of material is what was screened by the on site recycling process and could not be pugmilled because of the debris it contained. The DEP Case # is ~~3-1486~~. 3-1684

Under the State Soil Management Policy, fuel oil contaminated material less than 3,000 PPM can be handled as non-hazardous material and disposed of in three ways: 1. Brought to an asphalt batching plant and used as base; 2. Treated on-site; or 3. Brought to a local landfill. This soil contains some minor construction debris such as wood, pipe and other miscellaneous debris, therefore the soil would not be suitable for recycling.

Samples were taken to the Clean Harbors Laboratory in Braintree, MA. The average of the three TPH results is 283 ppm. The VOA and PCB's were both non detectable. The results of these analyses are included in this report for your review.

Clean Harbors of Kingston, Inc. has, in the past, and will continue to in the future, coordinate it's objectives to the State's requirements wherever possible.

If you need any further assistance, please feel free to contact the undersigned at (617) 849-1200.

Sincerely,

Craig J. Malloy
Soils Manager

ANALYTICAL SERVICES
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-6070

REPORT OF ANALYSIS

Clean Harbors, Tank Division
265 Wood Road
Braintree, MA 02184

Project: MEDFIELD STATE HOSPITAL
P.O. #: I-2485

Date Received: 06/22/90
CHAS Lab #: 9006192

Attn: Mr. Chris McIntyre

Enclosed are the results for the sample(s) delivered to our laboratory on the date indicated above.

The methods listed represent those methodologies which were used to develop the best analytical techniques. Analytical results and quality assurance protocols are based on these guidelines. These meet the requirements for the reporting of results under the RCRA, NPDES and Safe Drinking Water Act regulations.

Clean Harbors Analytical Services has an active program of quality assurance and quality control. The program closely follows the guidance provided in the EPA Contract Laboratory Program Statement of Work (organic - 7/87 and inorganic - 7/85), the guidance provided in SW-846, and many other pertinent documents.

Should you have any questions concerning this work, please do not hesitate to contact me.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: [signature] 9 Jul

Robert E. Bentley
Laboratory Manager

Client: Clean Harbors, Tank Division
Sample I.D.: 1
Sample Type: Soil

CHAS Lab #: 9006192-01M
Date Received: 06/22/90

Polychlorinated Biphenyls (PCB's)
by EPA Method 3540/8080

Extraction Date: 06/25/90
Analysis Date: 06/28/90

Parameter	MDL	Concentration	Units
PCB - Aroclor 1016	1.0	ND	mg/kg
PCB - Aroclor 1221	1.0	ND	mg/kg
PCB - Aroclor 1232	1.0	ND	mg/kg
PCB - Aroclor 1242	1.0	ND	mg/kg
PCB - Aroclor 1248	1.0	ND	mg/kg
PCB - Aroclor 1254	1.0	ND	mg/kg
PCB - Aroclor 1260	1.0	ND	mg/kg

Notes: ND = Below minimum detectable level (MDL)
Soil/solid sample results based on sample dry weight

QA/QC Surrogate Recovery:	Acceptance Criteria:	Soil (EPA 3540)
Hexabromobenzene: Diluted out.		78-148%

Client: Clean Harbors, Tank Division
Sample I.D.: 3
Sample Type: Soil

CHAS Lab #: 9006192-03
Date Received: 06/22/9

Volatile Organic Analysis - System: #2
by EPA Method 8240(ref. c)

Analysis Date: 06/25/90

Parameter	MDL*	Conc.*
Priority Pollutant Compounds:		
Chloromethane	21	ND
Bromomethane	21	ND
Vinyl Chloride	21	ND
Chloroethane	21	ND
Methylene Chloride	10	ND
Trichlorofluoromethane	10	ND
1,1-Dichloroethene	10	ND
1,1-Dichloroethane	10	ND
trans-1,2-Dichloroethene	10	ND
Chloroform	10	ND
1,2-Dichloroethane	10	ND
1,1,1-Trichloroethane	10	ND
Carbon Tetrachloride	10	ND
Bromodichloromethane	10	ND
1,2-Dichloropropane	10	ND
cis-1,3-Dichloropropene	10	ND
Trichloroethene	10	ND
Benzene	10	ND
Dibromochloromethane	10	ND
1,1,2-Trichloroethane	10	ND
trans-1,3-Dichloropropene	10	ND
2-Chloroethylvinyl Ether	21	ND
Bromoform	10	ND
1,1,2,2-Tetrachloroethane	10	ND
Tetrachloroethene	10	ND
Toluene	10	ND
Chlorobenzene	10	ND
Ethylbenzene	10	ND
Hazardous Substance List Compounds:		
Acetone	41	ND
Carbon Disulfide	21	ND
2-Butanone	41	ND
Vinyl Acetate	21	ND
4-Methyl-2-Pentanone	10	ND
2-Hexanone	10	ND
Styrene	10	ND
Total Xylenes	10	ND
Additional Compounds:		
Dibromoethane(EDB)	10	ND
Methyl-t-Butylether(MTBE)	21	ND

Notes ND = Below minimum detectable level (MDL)
TR = Trace amount present but below MDL
* = ug/kg

No additional peaks observed in sample

QA/QC	Surrogate Recoveries:	Acceptance Criteria:	Water	Soil
	d4-1,2-Dichloroethane: 102 %		76-114	70-121
	d8-Toluene: 95 %		88-110	84-138
	p-Bromofluorobenzene: 93 %		86-115	59-113

Clean Harbors

Client: Clean Harbors, Tank Division
Sample I.D.: 4
Sample Type: Soil

CHAS Lab #: 9006192-04A
Date Received: 06/22/9

Volatile Organic Analysis - System: #2
by EPA Method 8240(ref. c)

Analysis Date: 06/25/90

Parameter	MDL*	Conc.*	Parameter	MDL*	Conc.*
Priority Pollutant Compounds:			1,1,2-Trichloroethane	10	ND
Chloromethane	19	ND	trans-1,3-Dichloropropene	10	ND
Bromomethane	19	ND	2-Chloroethylvinyl Ether	19	ND
Vinyl Chloride	19	ND	Bromoform	10	ND
Chloroethane	19	ND	1,1,2,2-Tetrachloroethane	10	ND
Methylene Chloride	10	ND	Tetrachloroethene	10	ND
Trichlorofluoromethane	10	ND	Toluene	10	ND
1,1-Dichloroethene	10	ND	Chlorobenzene	10	ND
1,1-Dichloroethane	10	ND	Ethylbenzene	10	ND
trans-1,2-Dichloroethene	10	ND			
Chloroform	10	ND	**Hazardous Substance List Compounds:**		
1,2-Dichloroethane	10	ND	Acetone	39	ND
1,1,1-Trichloroethane	10	ND	Carbon Disulfide	19	ND
Carbon Tetrachloride	10	ND	2-Butanone	39	ND
Bromodichloromethane	10	ND	Vinyl Acetate	19	ND
1,2-Dichloropropane	10	ND	4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	10	ND	2-Hexanone	10	ND
Trichloroethene	10	ND	Styrene	10	ND
Benzene	10	ND	Total Xylenes	10	ND
Dibromochloromethane	10	ND			
			Additional Compounds:		
			Dibromoethane(EDB)	10	ND
			Methyl-t-Butylether(MTBE)	19	ND

Notes ND = Below minimum detectable level (MDL)
TR = Trace amount present but below MDL
* = ug/kg

Additional compounds observed in sample

QA/QC	Surrogate Recoveries:	Acceptance Criteria:	Water	Soil
	d4-1,2-Dichloroethane: 98 %		76-114	70-121
	d8-Toluene: 104 %		88-110	84-138
	p-Bromofluorobenzene: 114 %		86-115	59-113

Client: Clean Harbors, Tank Division
Sample I.D.: 8
Sample Type: Soil

CHAS Lab #: 9006192-08C
Date Received: 06/22/90

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Petroleum Hydrocarbon Oil & Grease by IR	10	150	mg/kg	06/25/90	503D/503E-B(b)
Total Solids	--	81.7	%	06/25/90	209F(b)

Notes: ND - Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.
Extraction Date: 06/22/90

Client: Clean Harbors, Tank Division
Sample I.D.: 9
Sample Type: Soil

CHAS Lab #: 9006192-09
Date Received: 06/22/90

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Petroleum Hydrocarbon Oil & Grease by IR	10	30	mg/kg	06/26/90	503D/503E-B(b)
Total Solids	--	93.7	%	06/25/90	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.
O&G Extraction Date: 06/25/90

Client: Clean Harbors, Tank Division
Sample I.D.: 11
Sample Type: Soil

CHAS Lab #: 9006192-11C
Date Received: 06/22/90

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Petroleum Hydrocarbon Oil & Grease by IR	10	670	mg/kg	06/29/90	503D/503E-B(b
Total Solids	--	84.0	%	06/25/90	209F(b

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.
Extraction Date: 06/26/90

ANALYTICAL SERVICES
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-6070

REPORT OF ANALYSIS
ADDITIONAL

Clean Harbors, Tank Division
325 Wood Road
Braintree, MA 02184

Project: MEDFIELD STATE HOSPITAL
P.O. #: I2485B

Date Received: 10/12/90
CHAS Lab #: 9010122

Attn: Mr. Chris McIntyre

Enclosed are the results for the sample(s) delivered to our laboratory on the date indicated above.

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Should you have any questions concerning this work, please do not hesitate to contact me.

The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: _____

Robert E. Bentley
Laboratory Manager

CleanHarbors

Client: Clean Harbors, Tank Division
Sample I.D.: 1
Sample Type: Soil

CHAS Lab #: 9010122-01[illegible]
Date Received: 10/12/90

Parameter	MDL*	Result*	Digestion Date	Analysis Date	Method Number and Reference
Arsenic - Total	0.423	6.05	11/11/90	11/14/90	3050/7060(c)
Barium - Total	2.3	250	11/11/90	11/12/90	3050/6010(c)
Cadmium - Total	0.232	ND	11/11/90	11/18/90	3050/6010(c)
Chromium - Total	0.46	9.2	11/11/90	11/18/90	3050/6010(c)
Lead - Total	5	20	11/11/90	11/18/90	3050/6010(c)
Mercury - Total	0.0598	0.1969	11/14/90	11/15/90	7471(c)
Selenium - Total	0.127	ND	11/11/90	11/15/90	3050/7740(c)
Silver - Total	0.85	ND	11/11/90	11/12/90	3005/6010(c)

Notes: ND = Below minimum detectable level (MDL)
* = mg/kg
Soil/solid samples based on sample dry weight.

ANALYTICAL SERVICES
325 WOOD ROAD, BRAINTREE, MA 02184
(617) 849-6070

REPORT OF ANALYSIS

Clean Harbors, Tank Division
325 Wood Road
Braintree, MA 02184

Project: MEDFIELD STATE HOSPITAL
P.O. #: I2485B

Date Received: 10/12/90
CHAS Lab #: 9010122

Attn: Mr. Chris McIntyre

Enclosed are the results for the sample(s) delivered to our laboratory on the date indicated above.

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The information contained in this report is, to the best of my knowledge, accurate and complete.

Per/Date: _____

Robert E. Bentley
Laboratory Manager

Client: Clean Harbors, Tank Division
Sample I.D.: 1
Sample Type: Soil

CHAS Lab #: 9010122-[illegible]
Date Received: 10/12/90

Parameter	MDL	Result	Units	Analysis Date	Method Number and Reference
Cyanide, Total	0.52	ND	mg/kg	10/22/90	9010(c)
Flashpoint	--	>200	deg F	10/24/90	D1310-84(u)
pH	--	6.2	--	10/12/90	Mod.150.1(a)
Sulfide, Total	2.1	ND	mg/kg	10/17/90	9030(c)
Total Solids	--	93.0	%	10/12/90	209F(b)

Notes: ND = Below minimum detectable level (MDL)
Soil/solid samples based on sample dry weight.

CleanHarbors

Method References

(a "Methods for Chemical Analysis of Water and Wastes." Publication EPA-600/4-79-020 U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, 1979, revised March 1983.

(b "Standard Methods for the Examination of Water and Wastewater," 16th ed., American public health Association, American Water Works Association, Water Pollution Control Federation, Washington, D.C., 1985.

(c "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods," 2nd ed. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response Washington, D.C., July 1982.

(d, "The Determination of Polychlorinated Biphenyls in Transformer Fluid and Waste Oils, Publication EPA-600/4-81-045, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, 1981.

(e, "EPA-CLP Organic Analyses of Low and Medium Hazardous Waste Sample (Water and Soil Procedures Revision," U.S. Environmental Protection Agency, July 1985.

(f "Test Procedures for Analyses of Organic Pollutants," Code of Federal Regulations Appendix A, Part 136, July 1, 1985.

(g "Measurement of Purgeable Organic Compounds in Drinking Water by Gas Chromatography/Mass Spectrometry," Method 524, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati.

(h "Prescribed Procedures for Measurement of Radioactivity in Drinking Water," Publication EPA-600/4-80-032, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, August 1980.

(i) "Clean Harbors Radiological Environmental Analytical Procedures," Clean Harbors Analytical Services, Braintree, MA, October 1985.

(j) "Methods for Chlorinated Phenoxy Acid Herbicides in Industrial Effluents," MDQARL, Cincinnati, November 23, 1973.

(k) "Annual Book of Standards," Section 11: Water and Environmental Technology, Vols. 11.01-11.04, American Society for Testing Materials, Philadelphia, 1983, 1984 & 1985.

(l "Methods for Benzidine, Chlorinated Organic Compounds, Pentachlorophenol and Pesticides in Water and Wastewater," U.S. Environmental Protection Agency, September 1978.

.n "Methods for Organochlorine Pesticides in Industrial Effluents," MDQARL Environmental Protection Agency, Cincinnati, November 28, 1973.

.o "Methods for Determination of Inorganic Substances in Water and Fluvial Sediments, Techniques of Water-Resources Investigation of the U.S. Geological Survey, Book 5 Chapter A-1, U.S. Department of the Interior, 1979.

(o "Measurement of Trihalomethanes in Drinking Water by Gas Chromatography/Mass Spectrometry and Selected Ion Monitoring," Method 501.3, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati.

(p "The Analysis of Trihalomethanes in Finished Waters by the Purge and Trap Method," U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati.

(q "The Analysis of Trihalomethanes in Drinking Water by Liquid/Liquid Extraction," U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati.

r "Official Methods of Analysis," Association of Official Analytical Chemists, 14th ed., 1984.

s "Hach Handbook of Water Analysis," Hach Chemical Company, Loveland, CO, 1979

t "H.M. Prichard and T.F. Gesell "Rapid Measurement of Rn-222 Concentrations in Water with a Commercial Liquid Scintillation Counter," Health Physics, Vol. 33, 1977, pp 577-581

u "Petroleum Products and Lubricants (I): D56-D1660," Annual Book of ASTM Standards Volume 5.01, American Society for Testing and Materials, Philadelphia 1985

v "Petroleum Products and Lubricants (III): D2981-Latest: Catalysts," Annual Book of ASTM Standards, Volume 5.03, American Society for Testing and Materials Philadelphia, 1985

CORPORATE ENVIRONMENTAL ENGINEERING INC

Soil Boring Log

CLIENT: **Medfield State Hospital**		DRILLING CONTRACTOR: **Technical Drilling Services**	
SITE: **Power Plant**			
BORING: **B1**	START DATE: **3/17/97**		END DATE: **3/18/97**
FOREMAN: **Martin MacNamara**	GEOLOGIST: **Edward Giordano**		PROJECT: **W091-004-GS**
BORING TYPE: **HSA**	CASING SIZE: **NA**	AUGER SIZ **6.5"**	INSTRUMENT: **OVM**

DEPTH	SAMPLE NO.	DEPTH (FEET)	BLOW COUNT PER 6 INCHES	RECOVERY (INCHES)	SAMPLE DESCRIPTION	TOV's (ppm)
5			Flight	NA	Black crs SAND and Cobble	
10	S-1	5 - 7	6 - 4 - 8 - 10	3	Black crs SAND and Cobble with yellow brick	2.8
15	S-2	10-12	4 - 2 - 3 - 3 Flight	3 NA	Black crs SAND and Cobble Pieces of pliable metal	2.2
20	S-3	15-17	22 - 30 - 32 - 55	15	3" Black crs SAND and Cobble 12" Tan crs - med SAND and Cobble, wet	2.1
25						
30					Boring refusal at 18 feet below grade	
35						
40						

Percent Proportion	Blow Counts	Grain Size Description	
Trace = 1 - 10%	Very Loose = 0 - 4	vf = very fine	peb = pebbly
Little = 10 - 20%	Loose = 5 - 10	f = fine	cob = cobbly
Some = 20 - 35%	Med. Dense = 11 - 30	med = medium	org = organic
And = 35 - 50%	Dense 31 - 50	crs = coarse	
	Very Dense = 50+	vcrs = very coarse	

CORPORATE ENVIRONMENTAL ENGINEERING INC

Soil Boring Log

CLIENT: **Medfield State Hospital**		DRILLING CONTRACTOR: **Technical Drilling Services**	
SITE: **Power Plant**			
BORING: **B2-MW1**	START DATE: **3/17/97**		END DATE: **3/18/97**
FOREMAN: **Martin MacNamara**	GEOLOGIST: **Edward Giordano**		PROJECT: **W091-004-GS**
BORING TYPE: **HSA**	CASING SIZE: NA	AUGER SIZ **4.25" & 6.5"**	INSTRUMENT: **OVM**

DEPTH	SAMPLE NO.	DEPTH (FEET)	BLOW COUNT PER 6 INCHES	RECOVERY (INCHES)	SAMPLE DESCRIPTION	TOV's (ppm)
5		0 - 3	Flight	NA	Bituminous asphalt COBBLE and lt brown crs - med Sand	
10	S-1	5 - 7	65 - 96 - 30 - 49	18	1" COBBLE and black crs Sand 2" crushed stone 15" COBBLE and lt brown crs to med Sand	4.9
15	S-2	10 - 12	5 - 2 - 4 - 3	6	3" Tan crs - med SAND and Cobble 3" Black crs - med SAND and Cobble	4.6
20	S-3	14 - 16	2 - 3 - 14 - 15	4	2" stone 2" Tan med SAND and Silt	1.9
25	S-4	20 - 22	7 - 9 - 52 - 36	15	Tan f SAND and Silt some Clay, wet	1.8
30					Completed as monitoring well **MW-1** Set well at 16' below grade	
35					utilized: 10', 0.020" slotted 4" PVC screen 6' solid 4" PVC riser well point with well cap Bolt down road box	
40					Initial depth to water 10'	

Percent Proportion	Blow Counts	Grain Size Description	
Trace = 1 - 10%	Very Loose = 0 - 4	vf = very fine	peb = pebbly
Little = 10 - 20%	Loose = 5 - 10	f = fine	cob = cobbly
Some = 20 - 35%	Med. Dense = 11 - 30	med = medium	org = organic
And = 35 - 50%	Dense 31 - 50	crs = coarse	
	Very Dense = 50+	vcrs = very coarse	

CORPORATE ENVIRONMENTAL ENGINEERING INC

Soil Boring Log

CLIENT: **Medfield State Hospital**		DRILLING CONTRACTOR: **Technical Drilling Services**	
SITE: **Power Plant**			
BORING: **B3-MW2**	START DATE: **3/17/97**		END DATE: **3/18/97**
FOREMAN: **Martin MacNamara**	GEOLOGIST: **Edward Giordano**		PROJECT: **W091-004-GS**
BORING TYPE: **HSA**	CASING SIZE: **NA**	AUGER SIZ **4.25" & 6.5"**	INSTRUMENT: **OVM**

DEPTH	SAMPLE NO.	DEPTH (FEET)	BLOW COUNT PER 6 INCHES	RECOVERY (INCHES)	SAMPLE DESCRIPTION	TOV's (ppm)
5		0 - 3	Flight	NA	Bituminous asphalt Lt brown crs - med SAND and Cobble	
10	S-1	5 - 7	9 - 7 - 7 - 8	18	6" Black crs - med SAND and Cobble 12" Tan med - f SAND	1.9
15	S-2	10 - 12 13	26 - 23 - 22 - 22 NA	18 NA	Tan crs SAND and Cobble ? drilling through glacial till	1.8
20	S-3	14 - 16 17 - 18	27 - 40 - 29 - 19 NA	9 NA	3" Lt tan crs SAND and Cobble 6" Tan med - f SAND ? drilling through glacial till	2.6
25	S-4	19 - 21	18 - 20 - 25 - 41	12	COBBLE and grey crs Sand, wet product visible on spoon and sample	14.7
30					Completed as monitoring well **MW-2** Set well at 19.6' below grade	
35					utilized: 10', 0.020" slotted 2" PVC screen 9.5' solid 2" PVC riser well point+G14 with well cap Bolt down road box	
40					Initial depth to water 16'	

Percent Proportion	Blow Counts	Grain Size Description	
Trace = 1 - 10%	Very Loose = 0 - 4	vf = very fine	peb = pebbly
Little = 10 - 20%	Loose = 5 - 10	f = fine	cob = cobbly
Some = 20 - 35%	Med. Dense = 11 - 30	med = medium	org = organic
And = 35 - 50%	Dense 31 - 50	crs = coarse	
	Very Dense = 50+	vcrs = very coarse	

CORPORATE ENVIRONMENTAL ENGINEERING INC

Soil Boring Log

CLIENT: **Medfield State Hospital**		DRILLING CONTRACTOR: **Technical Drilling Services**	
SITE: **Power Plant**			
BORING: **B4**	START DATE: **3/17/97**		END DATE: **3/18/97**
FOREMAN: **Martin MacNamara**	GEOLOGIST: **Edward Giordano**		PROJECT: **W091-004-GS**
BORING TYPE: **HSA**	CASING SIZE: **NA**	AUGER SIZ **4.25"**	INSTRUMENT: **OVM**

DEPTH	SAMPLE NO.	DEPTH (FEET)	BLOW COUNT PER 6 INCHES	RECOVERY (INCHES)	SAMPLE DESCRIPTION	TOV's (ppm)
					Black organic topsoil	
5						
	S-1	5 - 7	4 - 4 - 5 - 3	NA	Stone in spoon, no sample recovered	
			Flight	NA	Black COBBLE and crs Sand	8.2
10						
	S-2	10 - 12	7 - 8 - 24 - 12	18	Red-brown crs - med SAND and Cobble	1.7
15						
	S-3	15 - 17	7 - 5 - 6 - 7	18	Grey med - f SAND and Silt some Cobble, wet	1.6
20						
25						
					Boring terminated at 17 feet below grade	
30						
35						
40						

Percent Proportion	Blow Counts	Grain Size Description	
Trace = 1 - 10%	Very Loose = 0 - 4	vf = very fine	peb = pebbly
Little = 10 - 20%	Loose = 5 - 10	f = fine	cob = cobbly
Some = 20 - 35%	Med. Dense = 11 - 30	med = medium	org = organic
And = 35 - 50%	Dense 31 - 50	crs = coarse	
	Very Dense = 50+	vcrs = very coarse	

CORPORATE ENVIRONMENTAL ENGINEERING INC

Soil Boring Log

CLIENT: **Medfield State Hospital**		DRILLING CONTRACTOR: **Technical Drilling Services**	
SITE: **Power Plant**			
BORING: **B5-MW3**	START DATE: **3/17/97**		END DATE: **3/18/97**
FOREMAN: **Martin MacNamara**	GEOLOGIST: **Edward Giordano**		PROJECT: **W091-004-GS**
BORING TYPE: **HSA**	CASING SIZE: **NA**	AUGER SIZ **4.25" & 6.5"**	INSTRUMENT: **OVM**

DEPTH	SAMPLE NO.	DEPTH (FEET)	BLOW COUNT PER 6 INCHES	RECOVERY (INCHES)	SAMPLE DESCRIPTION	TOV's (ppm)
					Black organic topsoil	
5						
	S-1	5 - 7	4 - 5 - 3 - 4	6	Grey med - f SAND and Silt	4.9
10						
	S-2	10 - 12	10 - 35 - 41 - 26	20	8" Red-brown med - f SAND and Silt 12" Grey med - f SAND and Silt, wet	13.1
15						
20						
25						
30					Completed as monitoring well **MW-3** Set well at 13' below grade	
35					utilized: 10', 0.020" slotted 4" PVC screen 6' solid 4" PVC riser well point with well cap Stand pipe	
40					Initial depth to water 8'	

Percent Proportion	Blow Counts	Grain Size Description	
Trace = 1 - 10%	Very Loose = 0 - 4	vf = very fine	peb = pebbly
Little = 10 - 20%	Loose = 5 - 10	f = fine	cob = cobbly
Some = 20 - 35%	Med. Dense = 11 - 30	med = medium	org = organic
And = 35 - 50%	Dense 31 - 50	crs = coarse	
	Very Dense = 50+	vcrs = very coarse	

CORPORATE ENVIRONMENTAL ENGINEERING INC

Soil Boring Log

CLIENT:	**Medfield State Hospital**	DRILLING CONTRACTOR:	**Technical Drilling Services**
SITE:	**Power Plant**		
BORING:	**B6**	START DATE: **3/17/97**	END DATE: **3/18/97**
FOREMAN:	**Martin MacNamara**	GEOLOGIST: **Edward Giordano**	PROJECT: **W091-004-GS**
BORING TYPE:	**HSA**	CASING SIZE: **NA** AUGER SIZ **4.25"**	INSTRUMENT: **OVM**

DEPTH	SAMPLE NO.	DEPTH (FEET)	BLOW COUNT PER 6 INCHES	RECOVERY (INCHES)	SAMPLE DESCRIPTION	TOV's (ppm)
					Black organic topsoil	
5						
	S-1	5 - 7	22 - 11 - 7 - 6	6	Black crs SAND and Cobble	1.9
10						
	S-2	10 - 12	2 - 7 - 7 - 4	8	2" Black crs SAND and Cobble	
					6" Tan crs - med SAND and Cobble	1.9
		13 - 14	NA	NA	? drilling through glacial till	
15						
	S-3	15 - 17	22 - 31 - 37 - 55	12	6" Lt tan crs SAND and Cobble	
		18	NA	NA	6" Tan crs - med SAND	1.9
					? drilling through glacial till	
20						
	S-4	19	100 (0")	NA	Refusal, no sample recovered	NA
25						
					Boring refusal at 19 feet below grade	
30						
35						
40						

Percent Proportion	Blow Counts	Grain Size Description	
Trace = 1 - 10%	Very Loose = 0 - 4	vf = very fine	peb = pebbly
Little = 10 - 20%	Loose = 5 - 10	f = fine	cob = cobbly
Some = 20 - 35%	Med. Dense = 11 - 30	med = medium	org = organic
And = 35 - 50%	Dense 31 - 50	crs = coarse	
	Very Dense = 50+	vcrs = very coarse	

CORPORATE ENVIRONMENTAL ENGINEERING INC

Soil Boring Log

CLIENT: **Medfield State Hospital**		DRILLING CONTRACTOR: **Technical Drilling Services**	
SITE: **Power Plant**			
BORING: **B7**	START DATE: **3/17/97**		END DATE: **3/18/97**
FOREMAN: **Martin MacNamara**	GEOLOGIST: **Edward Giordano**		PROJECT: **W091-004-GS**
BORING TYPE: **HSA**	CASING SIZE: **NA**	AUGER SIZ **4.25"**	INSTRUMENT: **OVM**

DEPTH	SAMPLE NO.	DEPTH (FEET)	BLOW COUNT PER 6 INCHES	RECOVERY (INCHES)	SAMPLE DESCRIPTION	TOV's (ppm)
5		0 - 3	Flight	NA	Bituminous asphalt Black crs SAND and Cobble Lt brown crs SAND and Cobble	
10	S-1	5 - 7	10 - 9 - 5 - 7	8	Lt brown crs SAND and Cobble	2.1
15	S-2	10 - 12	4 - 5 - 4 - 3	8	Lt brown crs SAND and Cobble	3.5
20	S-3	15 - 17	3 - 7 - 27 - 30	15	9" Brown crs SAND and Cobble 6" Grey med - f SAND and Silt some Cobble	3.8
25	S-4	20 - 22	15 - 16 - 36 - 64	24	12" Brown crs SAND and Silt 12" Grey-brown med - f SAND and Silt	5.2
30					Boring terminated at 22 feet below grade	
35						
40						

Percent Proportion

Trace = 1 - 10%
Little = 10 - 20%
Some = 20 - 35%
And = 35 - 50%

Blow Counts

Very Loose = 0 - 4
Loose = 5 - 10
Med. Dense = 11 - 30
Dense 31 - 50
Very Dense = 50+

Grain Size Description

vf = very fine
f = fine
med = medium
crs = coarse
vcrs = very coarse
peb = pebbly
cob = cobbly
org = organic

CORPORATE ENVIRONMENTAL ENGINEERING INC

Soil Boring Log

CLIENT:	**Medfield State Hospital**	DRILLING CONTRACTOR:	**Technical Drilling Services**
SITE:	**Power Plant**		
BORING:	**B8-MW4**	START DATE: **3/17/97**	END DATE: **3/18/97**
FOREMAN:	**Martin MacNamara**	GEOLOGIST: **Edward Giordano**	PROJECT: **W091-004-GS**
BORING TYPE:	**HSA**	CASING SIZE: **NA**	AUGER SIZ **4.25"** INSTRUMENT: **OVM**

DEPTH	SAMPLE NO.	DEPTH (FEET)	BLOW COUNT PER 6 INCHES	RECOVERY (INCHES)	SAMPLE DESCRIPTION	TOV's (ppm)
		0 - 3	Flight	NA	Bituminous asphalt Lt brown crs SAND and Cobble	
5						
	S-1	5 - 7	10 - 14 - 25- 23	10	4" Black crs SAND and Cobble 6" Black crs SAND	1.4
10						
	S-2	9 - 11	10 - 13 - 11 - 6	13	8" Black crs SAND and Cobble, clinkers 2" Lt brown crs SAND and Cobble 3" Black crs SAND and Cobble	1.5
15						
	S-3	14 - 16	2 - 2 - 6 - 21	12	Tan med - f SAND and Silt	1.4
20						
	S-4	19 - 21	41 - 45 - 25 - 21	12	Lt tan crs - med SAND and Cobble some Silt	2.8
25						
30					Completed as monitoring well **MW-4** Set well at 20' below grade	
35					utilized: 10', 0.020" slotted 2" PVC screen 10' solid 2" PVC riser well point with well cap Bolt down road box	
40					Initial depth to water 15'	

Percent Proportion	Blow Counts	Grain Size Description	
Trace = 1 - 10%	Very Loose = 0 - 4	vf = very fine	peb = pebbly
Little = 10 - 20%	Loose = 5 - 10	f = fine	cob = cobbly
Some = 20 - 35%	Med. Dense = 11 - 30	med = medium	org = organic
And = 35 - 50%	Dense 31 - 50	crs = coarse	
	Very Dense = 50+	vcrs = very coarse	

CORPORATE ENVIRONMENTAL ENGINEERING INC

Soil Boring Log

CLIENT:	**Medfield State Hospital**	DRILLING CONTRACTOR:	**Technical Drilling Services**
SITE:	**Power Plant**		
BORING:	**B9**	START DATE: **3/17/97**	END DATE: **3/18/97**
FOREMAN:	**Martin MacNamara**	GEOLOGIST: **Edward Giordano**	PROJECT: **W091-004-GS**
BORING TYPE:	**HSA**	CASING SIZE: **NA**	AUGER SIZ **4.25"** INSTRUMENT: **OVM**

	DEPTH	SAMPLE NO.	DEPTH (FEET)	BLOW COUNT PER 6 INCHES	RECOVERY (INCHES)	SAMPLE DESCRIPTION	TOV's (ppm)
	5					Black organic topsoil	
	10	S-1	5 - 7	3 - 5 - 7 - 10	4	Black crs SAND and Cobble	1.2
	15	S-2	10 - 12	2 - 2 - 2 - 6	18	Red-brown crs - med SAND and Cobble some Silt, wet	1.1
	20						
	25						
	30					Boring terminated at 12 feet below grade	
	35						
	40						

Percent Proportion	Blow Counts	Grain Size Description	
Trace = 1 - 10%	Very Loose = 0 - 4	vf = very fine	peb = pebbly
Little = 10 - 20%	Loose = 5 - 10	f = fine	cob = cobbly
Some = 20 - 35%	Med. Dense = 11 - 30	med = medium	org = organic
And = 35 - 50%	Dense 31 - 50	crs = coarse	
	Very Dense = 50+	vcrs = very coarse	

CORPORATE ENVIRONMENTAL ENGINEERING INC

Soil Boring Log

CLIENT: **Medfield State Hospital**		DRILLING CONTRACTOR: **Technical Drilling Services**	
SITE: **Power Plant**			
BORING: **B10**	START DATE: **4/29/97**		END DATE: **4/29/97**
FOREMAN: **Toby Gray**	GEOLOGIST: **Edward Giordano**		PROJECT: **W091-004-GS**
BORING TYPE: **HSA**	CASING SIZE: **NA**	AUGER SIZ **6.25"**	INSTRUMENT: **OVM**

DEPTH	SAMPLE NO.	DEPTH (FEET)	BLOW COUNT PER 6 INCHES	RECOVERY (INCHES)	SAMPLE DESCRIPTION	TOV's (ppm)
5		0 - 2	NA	Flight	Black organic topsoil 6" black med - f SAND, and Silt, some Cobble	
10	S-1	5 - 7	2 -4 - 6 - 3	9	3" Tan med - f SAND, and Silt, some Cobble	2.2
15	S-2	10 - 12 13	4 - 17 - 33 - 75 NA	18 NA	Tan med - f SAND, and Silt, some Cobble ? drilling through glacial till	2.4
20	S-3	15 - 17 18	6 - 8 - 20 - 35 NA	12 NA	Tan med - f SAND, and Silt, some Cobble, ? drilling through glacial till	1.5
25	S-4	20 - 21	12 - 14 - 14 - 50	9	Tan med - f SAND, and Silt, some Cobble, wet Refusal 21.5'	2.5
30					Completed as monitoring well **MW-5** Set well at 21' below grade	
35					utilized: 10', 0.020" slotted 4" PVC screen 11' solid 4" PVC riser well point with well cap Bolt down road box	
40						

Percent Proportion	Blow Counts	Grain Size Description	
Trace = 1 - 10%	Very Loose = 0 - 4	vf = very fine	peb = pebbly
Little = 10 - 20%	Loose = 5 - 10	f = fine	cob = cobbly
Some = 20 - 35%	Med. Dense = 11 - 30	med = medium	org = organic
And = 35 - 50%	Dense 31 - 50	crs = coarse	
	Very Dense = 50+	vcrs = very coarse	

CORPORATE ENVIRONMENTAL ENGINEERING INC

Soil Boring Log

CLIENT: **Medfield State Hospital**		DRILLING CONTRACTOR: **Technical Drilling Services**	
SITE: **Power Plant**			
BORING: **B9**	START DATE: **4/29/97**		END DATE: **4/29/97**
FOREMAN: **Toby Gray**	GEOLOGIST: **Edward Giordano**		PROJECT: **W091-004-GS**
BORING TYPE: **HSA**	CASING SIZE: **NA**	AUGER SIZ **4.25"**	INSTRUMENT: **OVM**

DEPTH	SAMPLE NO.	DEPTH (FEET)	BLOW COUNT PER 6 INCHES	RECOVERY (INCHES)	SAMPLE DESCRIPTION	TOV's (ppm)
		0 - 2	NA	Flight	Black organic topsoil	
5					4" black med - f SAND, and Silt, some Cobble	
	S-1	5 - 7	2 - 3 - 2 - 2	12	8" Tan med - f SAND, and Silt, some Cobble	1.6
10						
	S-2	10 - 12	2 - 25 - 25 - 27	18	Tan med - f SAND, some Silt, some Cobble	2.1
15		14	NA	NA	? drilling through glacial till	
	S-3	15 - 17	17 - 13 - 30 - 33	12	Tan med - f SAND, some Silt, some Cobble	2.4
20		17- 18	NA	NA	? drilling through glacial till	
	S-4	20 - 21	18 - 48 - 32 - 65	20	Tan med - f SAND, and Silt, some Cobble, wet Refusal 24'	2.1
25						
30					Completed as monitoring well **MW-6** Set well at 24' below grade	
35					utilized: 10', 0.010" slotted 2" PVC screen 14' solid 2" PVC riser well point with well cap Bolt down road box	
40						

Percent Proportion	Blow Counts	Grain Size Description	
Trace = 1 - 10%	Very Loose = 0 - 4	vf = very fine	peb = pebbly
Little = 10 - 20%	Loose = 5 - 10	f = fine	cob = cobbly
Some = 20 - 35%	Med. Dense = 11 - 30	med = medium	org = organic
And = 35 - 50%	Dense 31 - 50	crs = coarse	
	Very Dense = 50+	vcrs = very coarse	

P.M. ENVIRONMENTAL INC. MANCHESTER, MASS.

P.O. Box 392, Manchester, MA 01944

(508) 526-8255
1 800-628-2799

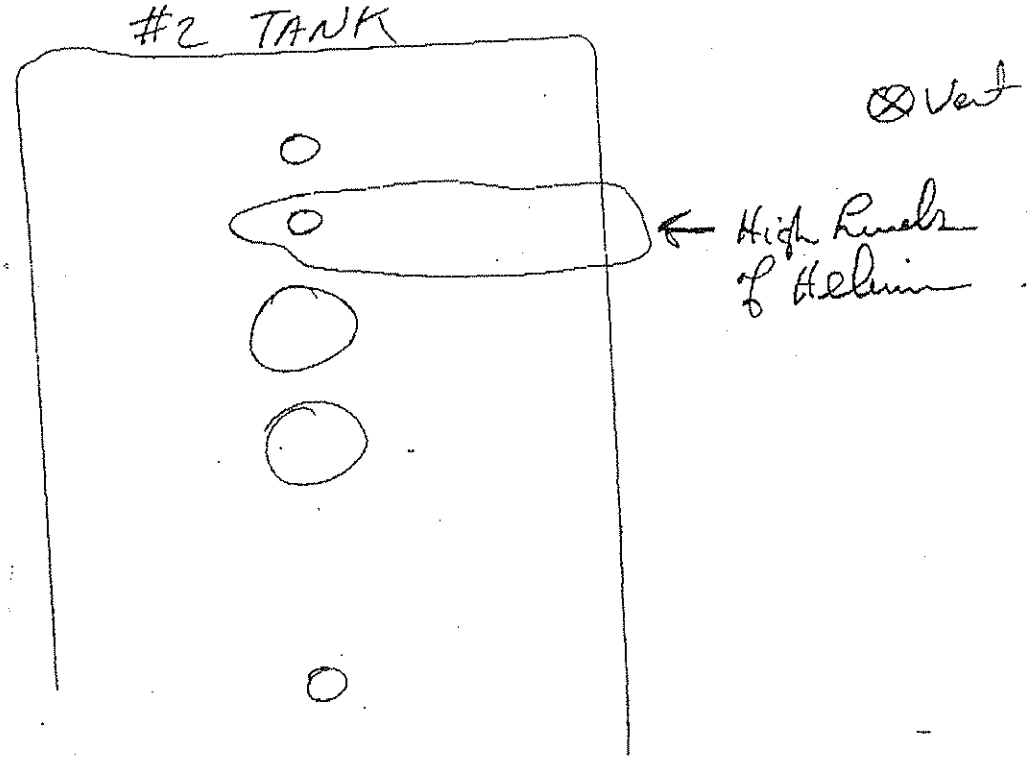
April 18,1997

CORPORATE ENVIRONMENTAL ENGINEERING,INC.
ATTN:MR.KEN SNOW
255 PARK AVENUE
WORCESTER,MA.01609

RE: MEDFIELD STATE HOSPITAL
Test Date 3/26/97
TANK 2 # 6 OIL

Dear Sir:

The helium leak detector was used on the tank and piping system.Steam plant personnel assisted in the location of vent line connection point to the tank.This area showed high readings of helium,near the stick port and surruounding area.Readings were taken over the entire tank and piping runs with no other level recorded.



April 3, 1997

Medfield State Hospital
W091-004-GS

RE: Field Activities on 4/3/97

Purpose:
Conduct helium leak test on #2 UST in an attempt to determine location of leak.

Field Activities:
Mr. Peter O'Beirne of P.M. Environmental, Inc. conducted the test. Tank #2 had approximately 96.5 inches of #6 fuel oil in the tank. First tank of helium entered the tank and associated piping under 50 psi. All access ports to the tank and the pipe chase were screened with a helium detector. All 2,500 psi of helium was spent within ½ hour. No discernible leak was detected.

A second 2,500 psi helium tank was setup with a flow rate of 9 psi. All access ports were screened. Additionally, the pipe chase was screened from the underground walkway access area. The pipe chase was screened under positive and negative pressure. The vent line was screened at the exit and along the concrete to the tank.

The concrete expansion joint along the southeast side of the tank and to the west of the pipe chase access port showed elevated, up to 0.12 ppm, readings No other area showed elevated readings. Based upon photographs taken during tank installation activities the area of elevated screening is in the area of the tank vent line and elbow/flange.

Recommendations:
Utilizing a concrete saw remove the portion of concrete above the tank vent line and elbow, isolate the tank at the elbow/flange, conduct a tank tightness test on both the vent line and the tank. If both pass separately replace the elbow/flange. Repeat tightness test.

Additional Comments:
Mr. Howard Wilkinson would like all the tanks cleaned at the same time that tank #2 is pumped out and cleaned. He would also like move forward with the repair of tank #2. This should be followed up in writing for his signature and approval.

Edward Giordano

From field notes page 14 and 15 in the Medfield field notebook

Personal Lines Insurance
Brokerage, Inc.

One Construction Plaza
Boston, Massachusetts 02129-2025

Telephone 617.241.9800
Facsimile 617.241.2892

March 28, 1997

Corporate Environmental Engineering, Inc.
255 Park Ave., Suite 904
Worcester, MA 01609
Attn: Kerry Tull

Re: P M Environmental, Inc.

Dear Ms. Tull:

Enclosed please find a Certificate of Insurance evidencing coverage for captioned Insured.

I trust you will find same to be in order. However, should you have any questions, please do not hestitate to call.

Sincerely,

Anna M. Burchfield
Senior Account Manager
Direct Tel. #617-241-2109

cc: Peter O'Beirne
P M Environmental, Inc.

ACORD. CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YY) 03/28/97

PRODUCER
Personal Lines Insurance Brokerage, Inc.
One Constitution Plaza
Boston MA 02129-2025
2076001

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED
P M Environmental, Inc.
P.O. Box 392
Manchester, MA 01944

COMPANIES AFFORDING COVERAGE

COMPANY A Commercial Union Ins. Co.

COMPANY B Insurnce Co. of No. America

COMPANY C

COMPANY D

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
A	GENERAL LIABILITY [X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS MADE [X] OCCUR [ ] OWNER'S & CONTRACTOR'S PROT	CBR116061	06/01/96	06/01/97	GENERAL AGGREGATE	$ 1,000,000.
					PRODUCTS-COMP/OP AGG.	$
					PERSONAL & ADV. INJURY	$ 1,000,000.
					EACH OCCURRENCE	$ 1,000,000.
					FIRE DAMAGE (Any one fire)	$
					MED. EXPENSE (Any one person)	$
A	AUTOMOBILE LIABILITY [ ] ANY AUTO [ ] ALL OWNED AUTOS [ ] SCHEDULED AUTOS [ ] HIRED AUTOS [ ] NON-OWNED AUTOS	CBXB17317	04/06/96	04/06/97	COMBINED SINGLE LIMIT	$ 1,000,000.
					BODILY INJURY (Per person)	$
					BODILY INJURY (Per accident)	$
					PROPERTY DAMAGE	$
	GARAGE LIABILITY [ ] ANY AUTO				AUTO ONLY - EA ACCIDENT	
					OTHER THAN AUTO ONLY:	
					EACH ACCIDENT	
					AGGREGATE	
	EXCESS LIABILITY [ ] UMBRELLA FORM [ ] OTHER THAN UMBRELLA FORM				EACH OCCURRENCE	$
					AGGREGATE	$
B	WORKER'S COMPENSATION AND EMPLOYERS' LIABILITY THE PROPRIETOR/ PARTNERS/EXECUTIVE OFFICERS ARE: [X] INCL [ ] EXCL	WOCC42167277*	07/25/96	07/25/97	[X] WC STATU-TORY LIMITS [ ] OTH-ER	
					EL EACH ACCIDENT	$ 100,000.
					EL DISEASE-POLICY LIMIT	$ 500,000
					EL DISEASE-EA EMPLOYEE	$ 100,000.
	OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS
*MA Employees Only

CERTIFICATE HOLDER

Corporate Environmental Engineering Inc.
255 Park Ave., Suite 904
Worcester, MA 01609

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 10 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE Laura M Burchfield

ACORD 25-S (1/95)

** TOTAL PAGE.02 **

TO: JOE MINUKAS
DATE: 05/15/96
TIME: 12:01 P.M.

NOTICE WAS GIVEN TO PLANT PERSONEL THAT TANK #2 (heavy oil) WAS TO BE ISOLATED FROM THE SYSTEM.

ALL VALVES TO AND FROM THE TANK IS SHUT OFF AND TAGGED.

A NOTICE WAS PUT ON THE BOARD ALSO

Howard Wilkins

CHIEF ENGINEER P.P.

ALERT

Technologies

#6 Oil

Certification Report

P.O. Box 392, Manchester, MA 01944

(508) 526-8255
1 800-628-2799

May 8,1996

MEDFIELD STATE HOSPITAL
ATTN:HOWARD WILKINS
25 HOSPITAL ROAD
MEDFIELD, MA.02052

RE: JOB # 96042301
Test Date 4/23/96
Medfield State Hospital
Medfield,MA.02052

Dear Sir:

A percision test was performed on tanks at the above location using the Alert 1000 underfill system and the Alert 1050 ullage system. I have reviewed the data produced in conjunction with this for purposes of verifying the results and certifying the tanks systems. Certifying is at the time of testing,and no implied warranty of tank or piping system.The testing was performed in accordance with the Alert protocol,and therfore satisfies all requirements for such testing as set forth by NFPA-329092 and USEPA 40 CFR part 280.

The results of testing are shown on the following page,and indicate whether the wetted and non-wetted portion passed or failed. Included with the report are repoductions of data compiled during the test which formed the basis for these conclusions. This information is stored in a file for future verification of the test results is needed.

A copy of the test results will be sent to the Medfield Fire Department Office of Fire Prevention,Medfield,MA. 02052.

Tested Certified by:

Peter O'Beirne
AL/NC 011

P.O. Box 392, Manchester, MA 01944

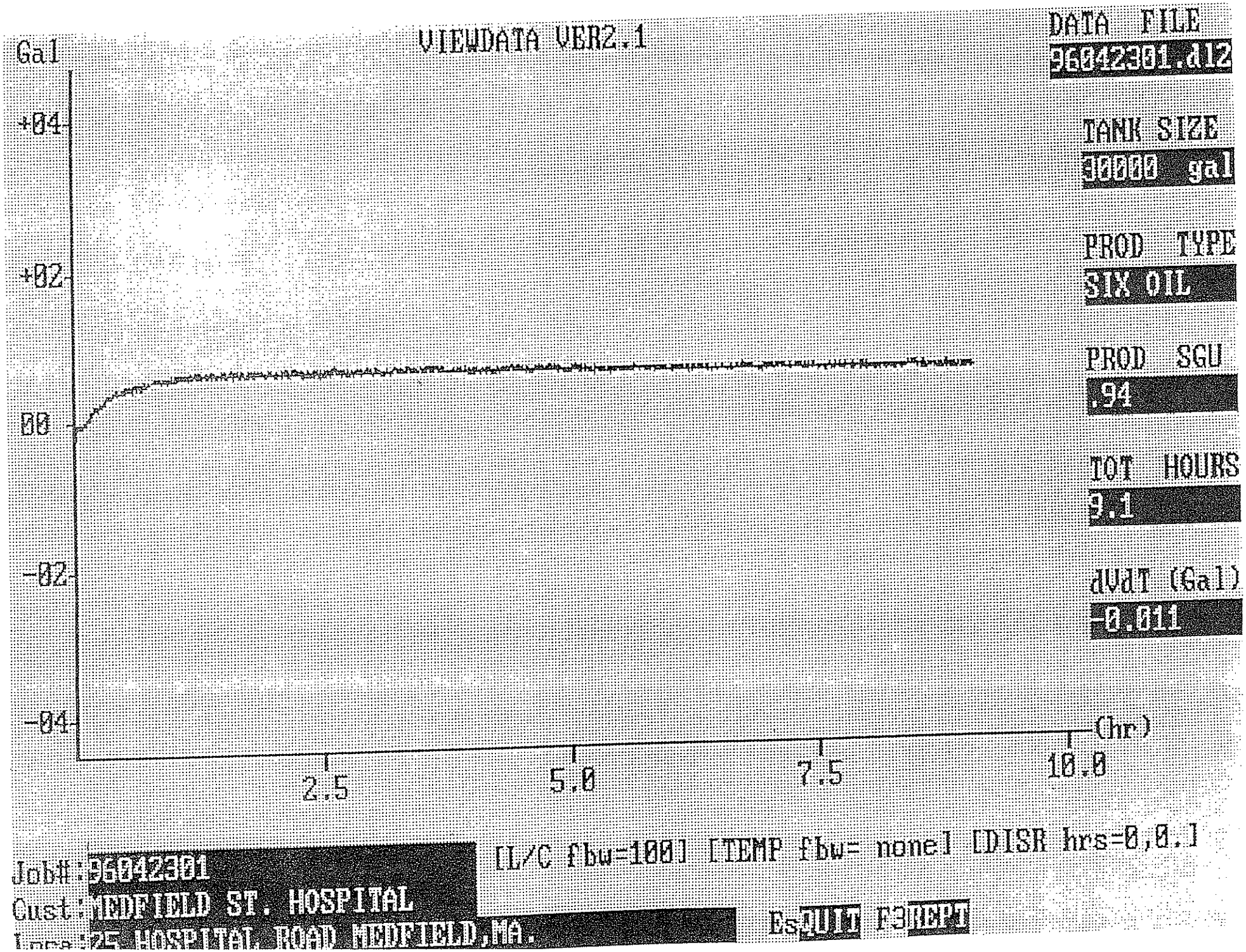
(508) 526-8255
1 800-628-2799

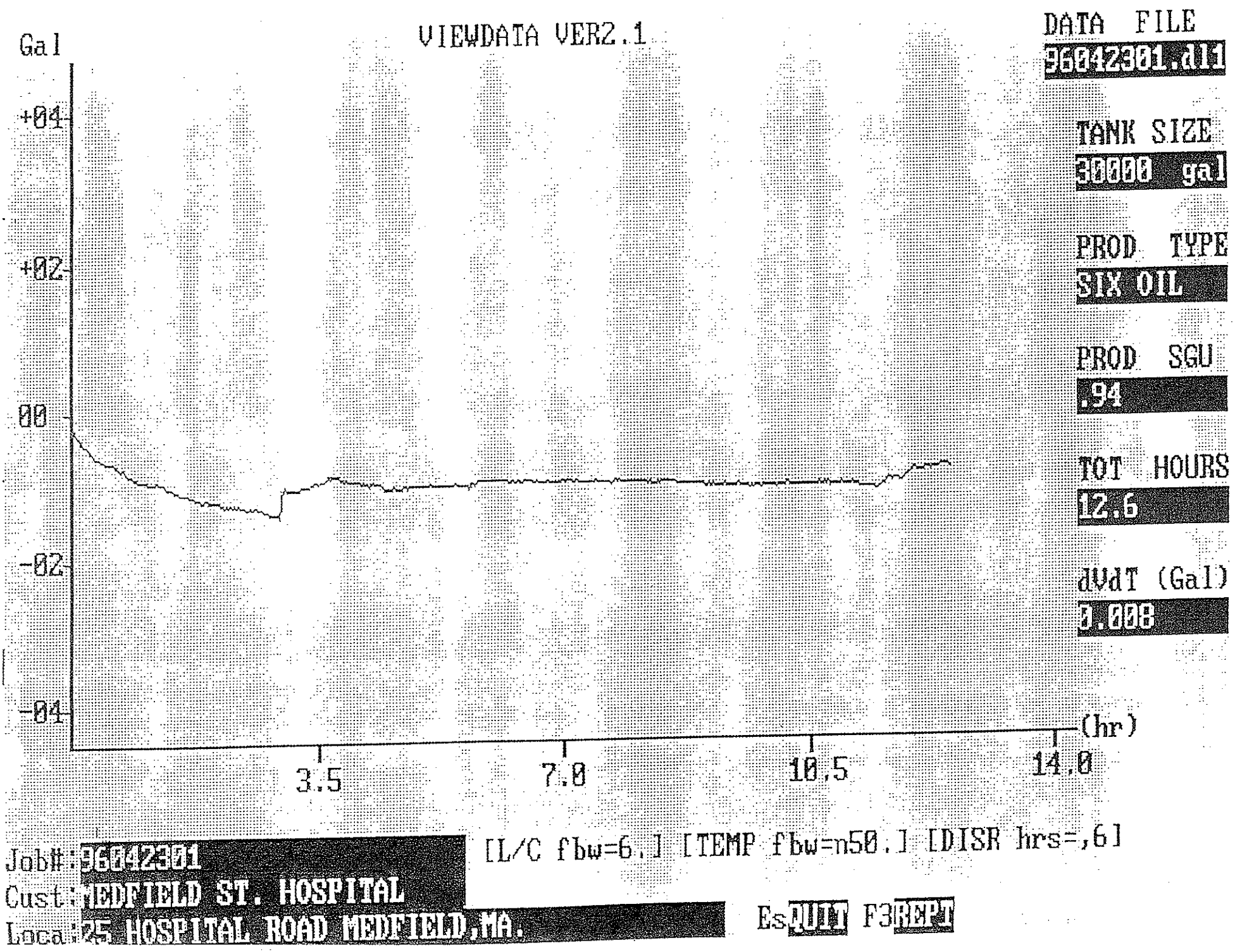
JOB # 96042301
TEST DATE: 4/23/96

MEDFIELD STATE HOSPITAL
25 HOSPITAL ROAD
MEDFIELD,MA.02052

TEST RESULTS

Product	Volume (Gal)	% Full	Wetted Portion	Non-Wetted Portion	Water in Tank
SIX OIL	30,000	82	PASS	PASS	0.0"
SIX OIL	30,000	80	PASS	FAIL	0.0"
SIX OIL	30,000	78	PASS	PASS	0.0"


VIEWDATA VER2.1
DATA FILE
96042301.d12
Gal
+04
+02
00
-02
-04
TANK SIZE
30000 gal
PROD TYPE
SIX OIL
PROD SGU
.94
TOT HOURS
9.1
dVdT (Gal)
-0.011
2.5
5.0
7.5
10.0
(Hr)
[L/C fbw=100] [TEMP fbw= none] [DISR hrs=0,0.]
Job#:96042301
Cust:MEDFIELD ST. HOSPITAL
Loca:E HOSPITAL ROAD MEDFIELD,MA.
Es QUIT F3 REPT


VIEWDATA VER2.1
Gal
+04
+02
00
-02
-04
3.5
7.0
10.5
14.0
(hr)
DATA FILE
96042301.d11
TANK SIZE
30000 gal
PROD TYPE
SIX OIL
PROD SGU
.94
TOT HOURS
12.6
dVdT (Gal)
3.008
[L/C fbw=6.] [TEMP fbw=n50.] [DISR hrs=,6]
Job#:96042301
Cust:MEDFIELD ST. HOSPITAL
Loca:25 HOSPITAL ROAD MEDFIELD,MA.
EsQUIT F3REPT

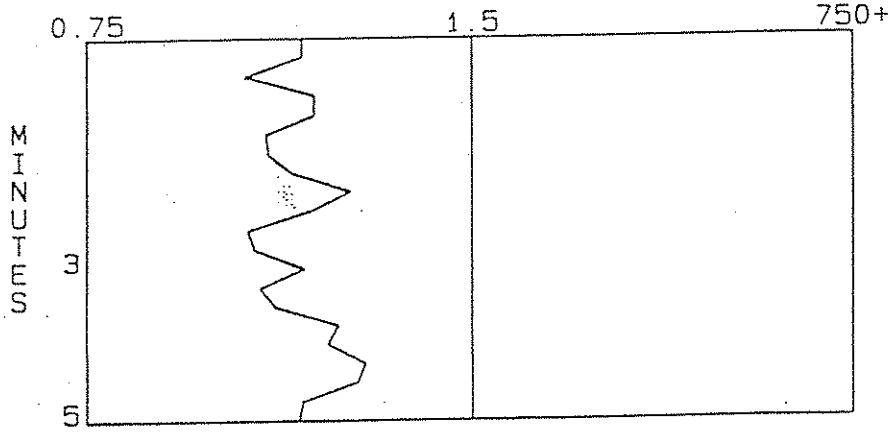
ALERT TECHNOLOGIES

PLOT OF ULLAGE TEST DATA

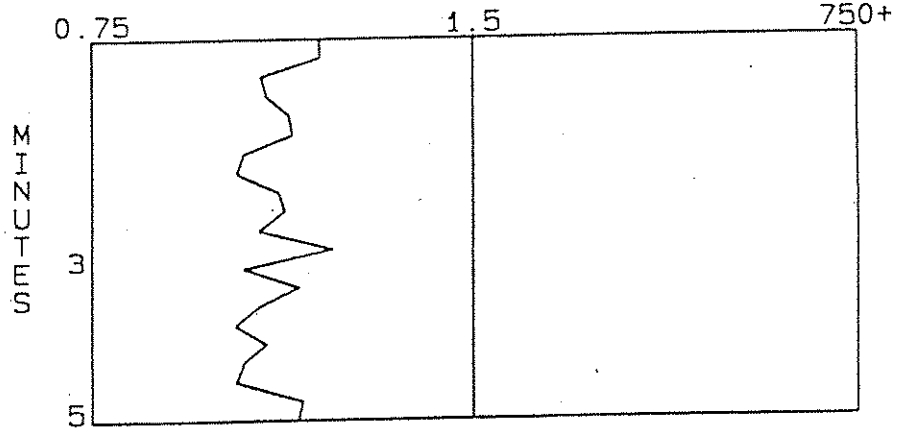
MEDFIELD ST. HOSPITAL
25 HOSPITAL ROAD
MEDFIELD, MA.

30000 GALLON SIX OIL TANK

12KHz AMPLITUDE RATIO



25KHz AMPLITUDE RATIO



12KHz DETECTION RATIO = 1.03

25KHz DETECTION RATIO = .972

TEST RESULT = PASS

DATE AND TIME OF TEST: 4/23/96 10: 28AM

BEGINNING BOTTLE PRESSURE = 2300

BEGINNING TANK PRESSURE = 1.5 PSIG

ENDING BOTTLE PRESSURE = 200

ENDING TANK PRESSURE = 1.4 PSIG

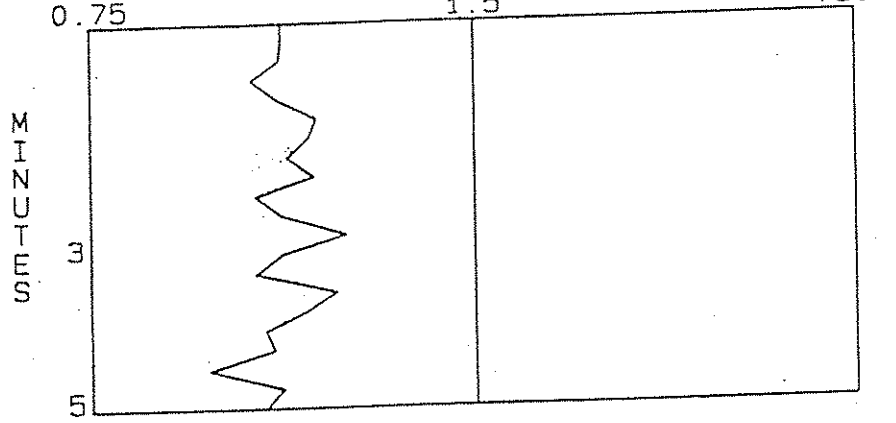
ALERT TECHNOLOGIES

PLOT OF ULLAGE TEST DATA

MEDFIELD ST. HOSPITAL
25 HOSPITAL ROAD
MEDFIELD, MA.

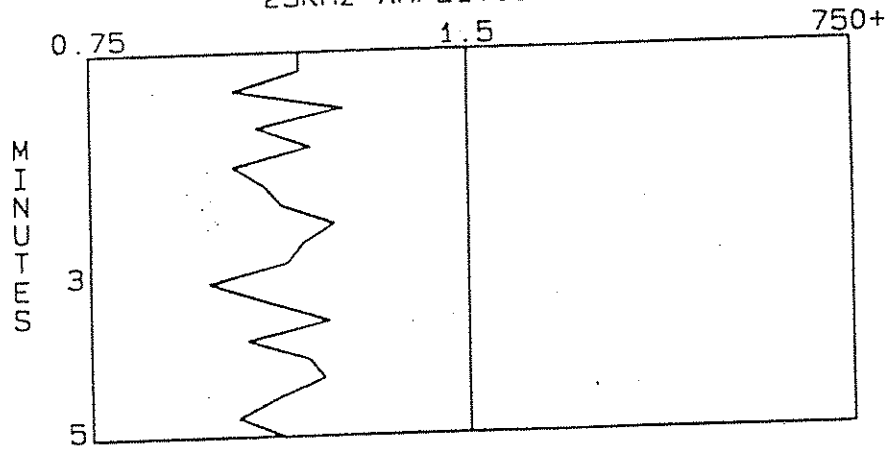
30000 GALLON SIX OIL TANK

12KHz AMPLITUDE RATIO



12KHz DETECTION RATIO = .997

25KHz AMPLITUDE RATIO



25KHz DETECTION RATIO = 1.00

TEST RESULT = PASS

DATE AND TIME OF TEST: 4/29/96 10:56AM

BEGINNING BOTTLE PRESSURE = 1000

BEGINNING TANK PRESSURE = 1.5 PSIG

ENDING BOTTLE PRESSURE = 200

ENDING TANK PRESSURE = 1.4 PSIG

P.M. ENVIRONMENTAL INC. MANCHESTER, MASS.

P.O. Box 392, Manchester, MA 01944

(508) 526-825
1 800-628-279

INVOICE

MAY 8,1996

MEDFIELD STATE HOSPTIAL
25 HOSPITAL ROAD
MEDFIELD,MA. 02052

SERVICE CONTRACT SCDMH4704ENVIRON

FOR TANK TESTING THREE 30,000 GAL # 6 OIL TANKS	$ 1,800.00
FOR TANK TESTING FOUR # 2 OIL TANKS	$ 1,600.00

TOTAL $ 3,400.00

Received: 04/30/97 05/06/97 11:24:28

REPORT TO: CORPORATE ENVIRONMENTAL ENG.
255 PARK AVENUE, SUITE 904
WORCESTER, MA 01609
508-791-3700 FAX: 1973
ATTEN ED GIORDANO

PREPARED BY: TOXIKON CORPORATION
15 WIGGINS AVE
BEDFORD, MA 01730
ATTEN PAUL LEZBERG
PHONE (617)275-3330

CERTIFIED BY:

CONTACT CHUCKC

CLIENT CEE SAMPLES 2
COMPANY CORPORATE ENVIRONMENTAL ENG.
FACILITY 255 PARK AVENUE, SUITE 904
WORCESTER, MA 01609

MA CERT # M-MA064: TRACE METALS, SULFATE,CYANIDE,RES. FREE CHLORINE, Ca, TOTAL ALK., TDS, pH, THMs, VOC, PEST.,NUTRIENTS, DEMAND, O&G, PHENOLICS, PCBs . CT DHS #PH-0563, NY #10778 FL HRS E87143, NJ DEP 59538, NC DNR286, SC 88002, NH 204091-C.

WORK ID W091-004-GS
TAKEN 4/29/97
TRANS
TYPE SOIL
P.O. #
INVOICE under separate cover

VERIFIED BY:

SAMPLE IDENTIFICATION

01 B10-S3 15-17'
02 B11-S3 15-17'

TEST CODES and NAMES used on this workorder

EPETS	EXTRACTION GC PET SOIL
GC PET	PETROLEUM SCAN BY GC
GENERC	GENERIC TEST METHOD

Received: 04/30/97

TOXIKON CORP. REPORT

Work Order # 97-04-552

Results by Sample

SAMPLE ID B10-S3 15-17' FRACTION 01A TEST CODE GC PET NAME PETROLEUM SCAN BY GC

Date & Time Collected 04/29/97 Category SOIL

TPH by Modified EPA Method 8100

PARAMETER	RESULT
JP-4	ND
Gasoline	ND
Kerosene	ND
Diesel	ND
No. 2 Fuel Oil	ND
No. 4 Fuel Oil	ND
No. 6 Fuel Oil	ND
Waste Oil	ND
Petroleum Constituent	ND
Total Petro. Hydrocarbons	ND

DETECTION LIMIT

Water Matrix	*
Solid Matrix	10.0 mg/Kg

Notes and Definitions for this Report:

EXTRACTED 05/02/97
DATE RUN 05/05/97
ANALYST ST
INSTRUMENT HP 7

N.O.S. = Not Otherwise Specified
ND = Compound(s) not detected above detection limit

Comments

SAMPLE ID 810-S3 15-17' FRACTION 01A TEST CODE GENERC NAME GENERIC TEST METHOD
Date & Time Collected 04/29/97 Category SOIL

SPECIAL TEST REPORT

ANALYTE	RESULT	REPORTING LIMIT
NAPHTHALENE	ND	330
2-METHYLNAPHTHALENE	ND	330
PHENANTHRENE	ND	330

Notes and definitions for this report:

EXTRACTED... 05/02/97
DATE RUN.... 05/05/97
ANALYST..... ST
EPA METHOD.. 8100
UNITS..... ug/Kg

ND = not detected at detection limits

Date extracted included when applicable.

Received: 04/30/97 Results by Sample

SAMPLE ID B11-S3 15-17' FRACTION 02A TEST CODE GC PET NAME PETROLEUM SCAN BY GC
Date & Time Collected 04/29/97 Category SOIL

TPH by Modified EPA Method 8100

PARAMETER	RESULT
JP-4	ND
Gasoline	ND
Kerosene	ND
Diesel	ND
No. 2 Fuel Oil	ND
No. 4 Fuel Oil	ND
No. 6 Fuel Oil	ND
Waste Oil	ND
Petroleum Constituent	ND
Total Petro. Hydrocarbons	ND

DETECTION LIMIT

Water Matrix	*
Solid Matrix	10.0 mg/Kg

Notes and Definitions for this Report:

EXTRACTED 05/02/97
DATE RUN 05/05/97
ANALYST ST
INSTRUMENT HP 7

N.O.S. = Not Otherwise Specified
ND = Compound(s) not detected above detection limit

Comments

SAMPLE ID B11-S3 15-17' FRACTION 02A TEST CODE GENERC NAME GENERIC TEST METHOD
Date & Time Collected 04/29/97 Category SOIL

SPECIAL TEST REPORT

ANALYTE	RESULT	REPORTING LIMIT
NAPHTHALENE	ND	330
2-METHYLNAPHTHALENE	ND	330
PHENANTHRENE	ND	330

Notes and definitions for this report:

EXTRACTED... 05/02/97
DATE RUN.... 05/05/97
ANALYST..... ST
EPA METHOD.. 3100
UNITS..... ug/Kg

ND = not detected at detection limits

Date extracted included when applicable.

TEST CODE EPETS NAME EXTRACTION GC PET SOIL

EPA METHOD: 3540: Soxhlet Extraction.

Reference: Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods.
EPA SW-846 (Third Edition) 1986. Office of Solid Waste, USEPA.

TEST CODE GC PET NAME PETROLEUM SCAN BY GC

EPA Method: 8100 Modified

Reference: Test Methods for Evaluating Solid Waste: Physical/Chemical
Methods. EPA SW-846 (Third Edition) 1986.
Office of Solid Waste, USEPA.

This method utilizes analytical procedures consistent with EPA Method 8100. The identity of petroleum contaminants is subject to comparison with commercially supplied standards.

Alternate Method:ASTM Method D 3328

Test Methodology

TEST CODE GENERC NAME GENERIC TEST METHOD

METHOD INDICATED IN REPORT

15 Wiggins Ave., Bedford, MA 01730
Telephone: (617) 275-3330
Fax: (617) 275-7478

CHAIN OF CUSTODY RECORD

DUE DATE : 5 - 13 - 97

COMPANY: Corporate Environmental Engineering
ADDRESS: 255 Park Ave Suite 904
Worcester MA
PHONE #: (508) 791-8700 FAX #: (508) 791-1973
P.O. #:
PROJECT MANAGER: E. Giordano
PROJECT ID/LOCATION: 4091-004-GS

SAMPLE TYPE: 1. WASTEWATER 2. SOIL 3. SLUDGE 4. OIL 5. DRINKING WATER 6. WATER (GW/MW/SW) 7. OTHER (SPECIFY

CONTAINER TYPE: P - PLASTIC G - GLASS V - VOA

ANALYSES: TPH (8100); Unified PAH's: less 3-methylcholanthrene

TOXIKON #	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER SIZE	CONTAINER TYPE	CONTAINER #	SAMPLING DATE	SAMPLING TIME	PRESERVATIVE	TPH (8100)	Unified PAH's	SPECIAL INSTRUCTIONS/ COMMENTS
1	B10-S3 15-17'	2	4 oz	G	1	4/29/97	Am	<4°C	X	X	
2	B11-S3 15-17'	2	4 oz	G	1		Am	<4°C	X	X	

SAMPLED BY: Edward Giordano — DATE: 4-29-97 TIME: Am

RELINQUISHED BY: Edward Giordano — DATE: 4-30-97 TIME: 12-15

RECEIVED BY: [signature] — DATE: 04-30-97 TIME: 1215

RELINQUISHED BY: [signature] — DATE: 04-30-97 TIME: 1605

RECEIVED FOR LAB BY: [signature] — DATE: TIME:

METHOD OF SHIPMENT

QUOTATION #:

COOLER TEMPERATURE

☐ RUSH ..... BUSINESS DAY TURN AROUND
☒ ROUTINE

Sample disposal information

Are there any other known or suspected contaminants in these samples other than those listed above?
Yes ____ No X If Yes, 1st Known ____

TOXIKON CORP. REPORT

Work Order # 97-03-324

Received: 03/19/97

03/26/97 13:27:58

REPORT CORPORATE ENVIRONMENTAL ENG.
TO 255 PARK AVENUE, SUITE 904
WORCESTER, MA 01609
508-791-8700 FAX: 1973
ATTEN ED GIORDANO

PREPARED TOXIKON CORPORATION
BY 15 WIGGINS AVE
BEDFORD, MA 01730
ATTEN PAUL LEZBERG
PHONE (617)275-3330

CERTIFIED BY

CONTACT CHUCKC

CLIENT CEE SAMPLES 9
COMPANY CORPORATE ENVIRONMENTAL ENG.
FACILITY 255 PARK AVENUE, SUITE 904
WORCESTER, MA 01609

MA CERT # M-MA064: TRACE METALS, SULFATE,CYANIDE,RES. FREE CHLORINE, Ca, TOTAL ALK., TDS, pH, THMs, VOC, PEST.,NUTRIENTS. DEMAND, O&G, PHENOLICS, PCBs . CT DHS #PH-0563, NY #10778 FL HRS E87143, NJ DEP 59538, NC DNR286, SC 88002, NH 204091-C.

WORK ID W091-004-GS
TAKEN 3/17-18/97
TRANS
TYPE SOIL
P.O. #
INVOICE under separate cover

VERIFIED BY:

SAMPLE IDENTIFICATION

01 B1-S3 15'-17'
02 B2-S2 15'-17'
03 B3-S4 19'-21'
04 B4-S3 15'-17'
05 B5-S2 15'-17'
06 B6-S3 15'-17'
07 B7-S3 15'-17'
08 B8-S3 14'-16'
09 B9-S2 15'-17'

TEST CODES and NAMES used on this workorder

8100	POLYNUC AROMATIC HYDROCARB
EPETS	EXTRACTION GC PET SOIL
GC PET	PETROLEUM SCAN BY GC

SAMPLE ID B1-S3 FRACTION 01A TEST CODE GC_PET NAME PETROLEUM SCAN BY GC
Date & Time Collected 03/17/97 09:30:00 Category SOIL

TPH by Modified EPA Method 8100

PARAMETER	RESULT
JP-4	ND
Gasoline	ND
Kerosene	ND
Diesel	ND
No. 2 Fuel Oil	ND
No. 4 Fuel Oil	ND
No. 6 Fuel Oil	ND
Waste Oil	ND
Petroleum Constituent	ND
Total Petro. Hydrocarbons	ND

DETECTION LIMIT

Water Matrix	*
Solid Matrix	10.0 mg/Kg

Notes and Definitions for this Report:

EXTRACTED 03/20/97
DATE RUN 03/21/97
ANALYST ST
INSTRUMENT HP 5

N.O.S. = Not Otherwise Specified
ND = Compound(s) not detected above detection limit

Comments

SAMPLE ID B1-S3 FRACTION 01A TEST CODE GENERC NAME GENERIC TEST METHOD
Date & Time Collected 03/17/97 09:30:00 Category SOIL

SPECIAL TEST REPORT

ANALYTE	RESULT	REPORTING LIMIT
NAPHTHALENE	ND	330
2-METHYLNAPHTHALENE	ND	330
PHENANTHRENE	ND	330

Notes and definitions for this report:

EXTRACTED... 03/21/97
DATE RUN.... 03/24/97
ANALYST..... ST
EPA METHOD.. 8100
UNITS..... ug/Kg

ND = not detected at detection limits

Date extracted included when applicable.

SAMPLE ID B2-S2 FRACTION 02A TEST CODE GC PET NAME PETROLEUM SCAN BY GC
Date & Time Collected 03/17/97 10:30:00 Category SOIL

TPH by Modified EPA Method 8100

PARAMETER	RESULT
JP-4	ND
Gasoline	ND
Kerosene	ND
Diesel	ND
No. 2 Fuel Oil	ND
No. 4 Fuel Oil	ND
No. 6 Fuel Oil	ND
Waste Oil	ND
Petroleum Constituent	334 mg/Kg
Total Petro. Hydrocarbons	334 mg/Kg

DETECTION LIMIT

Water Matrix	*
Solid Matrix	10.0 mg/Kg

Notes and Definitions for this Report:

EXTRACTED 03/20/97
DATE RUN 03/21/97
ANALYST ST
INSTRUMENT HP 5

N.O.S. = Not Otherwise Specified
ND = Compound(s) not detected above detection limit

Comments C20-C36

SAMPLE ID B2-S2 FRACTION 02A TEST CODE GENERC NAME GENERIC TEST METHOD
Date & Time Collected 03/17/97 10:30:00 Category SOIL

SPECIAL TEST REPORT

ANALYTE	RESULT	REPORTING LIMIT
NAPHTHALENE	ND	330
2-METHYLNAPHTHALENE	ND	330
PHENANTHRENE	462	330

Notes and definitions for this report:

EXTRACTED... 03/21/97
DATE RUN.... 03/24/97
ANALYST..... ST
EPA METHOD.. 8100
UNITS..... ug/Kg

ND = not detected at detection limits

Date extracted included when applicable.

SAMPLE ID B3-S4 FRACTION 03A TEST CODE GC_PET NAME PETROLEUM SCAN BY GC
Date & Time Collected 03/17/97 14:00:00 Category SOIL

TPH by Modified EPA Method 8100

PARAMETER	RESULT
JP-4	ND
Gasoline	ND
Kerosene	ND
Diesel	ND
No. 2 Fuel Oil	ND
No. 4 Fuel Oil	ND
No. 6 Fuel Oil	ND
Waste Oil	ND
Petroleum Constituent	1730 mg/Kg
Total Petro. Hydrocarbons	1730 mg/Kg

DETECTION LIMIT

Water Matrix	*
Solid Matrix	10.0 mg/Kg

Notes and Definitions for this Report:

EXTRACTED 03/20/97
DATE RUN 03/21/97
ANALYST ST
INSTRUMENT HP 5

N.O.S. = Not Otherwise Specified
ND = Compound(s) not detected above detection limit

Comments C9-C36

SAMPLE ID B3-S4 FRACTION 03A TEST CODE GENERC NAME GENERIC TEST METHOD
Date & Time Collected 03/17/97 14:00:00 Category SOIL

SPECIAL TEST REPORT

ANALYTE	RESULT	REPORTING LIMIT
NAPHTHALENE	2640	330
2-METHYLNAPHTHALENE	6050	330
PHENANTHRENE	7850	330

Notes and definitions for this report:

EXTRACTED... 03/21/97
DATE RUN.... 03/24/97
ANALYST..... ST
EPA METHOD.. 8100
UNITS..... ug/Kg

ND = not detected at detection limits

Date extracted included when applicable.

SAMPLE ID B4-S3 FRACTION 04A TEST CODE GC PET NAME PETROLEUM SCAN BY GC
Date & Time Collected 03/17/97 15:30:00 Category SOIL

TPH by Modified EPA Method 8100

PARAMETER	RESULT
JP-4	ND
Gasoline	ND
Kerosene	ND
Diesel	ND
No. 2 Fuel Oil	ND
No. 4 Fuel Oil	ND
No. 6 Fuel Oil	ND
Waste Oil	ND
Petroleum Constituent	ND
Total Petro. Hydrocarbons	ND

DETECTION LIMIT

Water Matrix	*
Solid Matrix	10.0 mg/Kg

Notes and Definitions for this Report:

EXTRACTED 03/20/97
DATE RUN 03/21/97
ANALYST ST
INSTRUMENT HP 5

N.O.S. = Not Otherwise Specified
ND = Compound(s) not detected above detection limit

Comments

SAMPLE ID B4-S3 FRACTION 04A TEST CODE GENERC NAME GENERIC TEST METHOD
Date & Time Collected 03/17/97 15:30:00 Category SOIL

SPECIAL TEST REPORT

ANALYTE	RESULT	REPORTING LIMIT
NAPHTHALENE	ND	330
2-METHYLNAPHTHALENE	ND	330
PHENANTHRENE	ND	330

Notes and definitions for this report:

EXTRACTED... 03/21/97
DATE RUN.... 03/24/97
ANALYST..... ST
EPA METHOD.. 8100
UNITS..... ug/Kg

ND = not detected at detection limits

Date extracted included when applicable.

SAMPLE ID B5-S2 FRACTION 05A TEST CODE GC_PET NAME PETROLEUM SCAN BY GC
Date & Time Collected 03/18/97 09:00:00 Category SOIL

TPH by Modified EPA Method 8100

PARAMETER	RESULT
JP-4	ND
Gasoline	ND
Kerosene	ND
Diesel	ND
No. 2 Fuel Oil	ND
No. 4 Fuel Oil	ND
No. 6 Fuel Oil	ND
Waste Oil	ND
Petroleum Constituent	ND
Total Petro. Hydrocarbons	ND

DETECTION LIMIT

Water Matrix	*
Solid Matrix	10.0 mg/Kg

Notes and Definitions for this Report:

EXTRACTED 03/20/97
DATE RUN 03/21/97
ANALYST ST
INSTRUMENT HP 5

N.O.S. = Not Otherwise Specified
ND = Compound(s) not detected above detection limit

Comments

SAMPLE ID B5-S2 FRACTION 05A TEST CODE GENERC NAME GENERIC TEST METHOD
Date & Time Collected 03/18/97 09:00:00 Category SOIL

SPECIAL TEST REPORT

ANALYTE	RESULT	REPORTING LIMIT
NAPHTHALENE	ND	330
2-METHYLNAPHTHALENE	ND	330
PHENANTHRENE	ND	330

Notes and definitions for this report:

EXTRACTED... 03/21/97
DATE RUN.... 03/24/97
ANALYST..... ST
EPA METHOD.. 8100
UNITS..... ug/Kg

ND = not detected at detection limits

Date extracted included when applicable.

SAMPLE ID B6-S3 FRACTION 06A TEST CODE GC PET NAME PETROLEUM SCAN BY GC
Date & Time Collected 03/18/97 10:30:00 Category SOIL

TPH by Modified EPA Method 8100

PARAMETER	RESULT
JP-4	ND
Gasoline	ND
Kerosene	ND
Diesel	ND
No. 2 Fuel Oil	ND
No. 4 Fuel Oil	ND
No. 6 Fuel Oil	ND
Waste Oil	ND
Petroleum Constituent	ND
Total Petro. Hydrocarbons	ND

DETECTION LIMIT

Water Matrix	*
Solid Matrix	10.0 mg/Kg

Notes and Definitions for this Report:

EXTRACTED 03/20/97
DATE RUN 03/21/97
ANALYST ST
INSTRUMENT HP 5

N.O.S. = Not Otherwise Specified
ND = Compound(s) not detected above detection limit

Comments

SAMPLE ID B6-S3 FRACTION 06A TEST CODE GENERC NAME GENERIC TEST METHOD
Date & Time Collected 03/18/97 10:30:00 Category SOIL

SPECIAL TEST REPORT

ANALYTE	RESULT	REPORTING LIMIT
NAPHTHALENE	ND	330
2-METHYLNAPHTHALENE	ND	330
PHENANTHRENE	ND	330

Notes and definitions for this report:

EXTRACTED... 03/21/97
DATE RUN.... 03/24/97
ANALYST..... ST
EPA METHOD.. 8100
UNITS..... ug/Kg

ND = not detected at detection limits

Date extracted included when applicable.

SAMPLE ID B7-S3 FRACTION 07A TEST CODE GC PET NAME PETROLEUM SCAN BY GC
Date & Time Collected 03/18/97 12:30:00 Category SOIL

TPH by Modified EPA Method 8100

PARAMETER	RESULT
JP-4	ND
Gasoline	ND
Kerosene	ND
Diesel	ND
No. 2 Fuel Oil	ND
No. 4 Fuel Oil	ND
No. 6 Fuel Oil	ND
Waste Oil	ND
Petroleum Constituent	ND
Total Petro. Hydrocarbons	ND

DETECTION LIMIT

Water Matrix	*
Solid Matrix	10.0 mg/Kg

Notes and Definitions for this Report:

EXTRACTED 03/20/97
DATE RUN 03/21/97
ANALYST ST
INSTRUMENT HP 5

N.O.S. = Not Otherwise Specified
ND = Compound(s) not detected above detection limit

Comments

SAMPLE ID B7-S3 FRACTION 07A TEST CODE GENERC NAME GENERIC TEST METHOD
Date & Time Collected 03/18/97 12:30:00 Category SOIL

SPECIAL TEST REPORT

ANALYTE	RESULT	REPORTING LIMIT
NAPHTHALENE	ND	330
2-METHYLNAPHTHALENE	ND	330
PHENANTHRENE	ND	330

Notes and definitions for this report:

EXTRACTED... 03/21/97
DATE RUN.... 03/24/97
ANALYST..... ST
EPA METHOD.. 8100
UNITS..... ug/Kg

ND = not detected at detection limits

Date extracted included when applicable.

TOXIKON CORP. REPORT
Results by Sample

Work Order # 97-03-324

SAMPLE ID B8-S3 FRACTION 08A TEST CODE GC PET NAME PETROLEUM SCAN BY GC
Date & Time Collected 03/18/97 14:00:00 Category SOIL

TPH by Modified EPA Method 8100

PARAMETER	RESULT
JP-4	ND
Gasoline	ND
Kerosene	ND
Diesel	ND
No. 2 Fuel Oil	ND
No. 4 Fuel Oil	ND
No. 6 Fuel Oil	ND
Waste Oil	ND
Petroleum Constituent	ND
Total Petro. Hydrocarbons	ND

DETECTION LIMIT

Water Matrix	*
Solid Matrix	10.0 mg/Kg

Notes and Definitions for this Report:

EXTRACTED 03/20/97
DATE RUN 03/21/97
ANALYST ST
INSTRUMENT HP 5

N.O.S. = Not Otherwise Specified
ND = Compound(s) not detected above detection limit

Comments

SAMPLE ID B8-S3 FRACTION 08A TEST CODE GENERC NAME GENERIC TEST METHOD
Date & Time Collected 03/18/97 14:00:00 Category SOIL

SPECIAL TEST REPORT

ANALYTE	RESULT	REPORTING LIMIT
NAPHTHALENE	ND	330
2-METHYLNAPHTHALENE	ND	330
PHENANTHRENE	ND	330

Notes and definitions for this report:

EXTRACTED... 03/21/97
DATE RUN.... 03/24/97
ANALYST..... ST
EPA METHOD.. 8100
UNITS..... ug/Kg

ND = not detected at detection limits

Date extracted included when applicable.

TOXIKON CORP. REPORT
Results by Sample

Work Order # 97-03-324

SAMPLE ID B9-S2 FRACTION 09A TEST CODE GC PET NAME PETROLEUM SCAN BY GC
Date & Time Collected 03/18/97 14:30:00 Category SOIL

TPH by Modified EPA Method 8100

PARAMETER	RESULT
JP-4	ND
Gasoline	ND
Kerosene	ND
Diesel	ND
No. 2 Fuel Oil	ND
No. 4 Fuel Oil	ND
No. 6 Fuel Oil	ND
Waste Oil	ND
Petroleum Constituent	ND
Total Petro. Hydrocarbons	ND

DETECTION LIMIT

Water Matrix	*
Solid Matrix	10.0 mg/Kg

Notes and Definitions for this Report:

EXTRACTED 03/20/97
DATE RUN 03/21/97
ANALYST ST
INSTRUMENT HP 5

N.O.S. = Not Otherwise Specified
ND = Compound(s) not detected above detection limit

Comments

SAMPLE ID B9-S2 FRACTION 09A TEST CODE GENERC NAME GENERIC TEST METHOD
Date & Time Collected 03/18/97 14:30:00 Category SOIL

SPECIAL TEST REPORT

ANALYTE	RESULT	REPORTING LIMIT
NAPHTHALENE	ND	330
2-METHYLNAPHTHALENE	ND	330
PHENANTHRENE	ND	330

Notes and definitions for this report:

EXTRACTED... 03/21/97
DATE RUN.... 03/24/97
ANALYST..... ST
EPA METHOD.. 8100
UNITS..... ug/Kg

ND = not detected at detection limits

Date extracted included when applicable.

TEST CODE 8100 NAME POLYNUC AROMATIC HYDROCARB

EPA Method : 8100: Polynuclear Aromatic Hydrocarbons.

Reference: Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846 (Third Edition) 1986. Office of Solid Waste, USEPA.

TEST CODE EPETS NAME EXTRACTION GC PET SOIL

EPA METHOD: 3540: Soxhlet Extraction.

Reference: Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods. EPA SW-846 (Third Edition) 1986. Office of Solid Waste, USEPA.

TEST CODE GC PET NAME PETROLEUM SCAN BY GC

EPA Method: 8100 Modified

Reference: Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846 (Third Edition) 1986. Office of Solid Waste, USEPA.

This method utilizes analytical procedures consistent with EPA Method 8100. The identity of petroleum contaminants is subject to comparison with commercially supplied standards.

Alternate Method:ASTM Method D 3328

TOXIKON
15 Wiggins Ave., Bedford, MA 01730
Telephone: (617) 275-3330
Fax: (617) 275-7478

CHAIN OF CUSTODY RECORD

WORK ORDER #: 97-03-321

DUE DATE : 3-31-97

COMPANY: Corporate Environmental Engineering, Inc
ADDRESS: 255 Park Ave Suite 904
Worcester MA 01609
PHONE #: (508) 791-8700 FAX #: (508) 791-1973
P.O. #:
PROJECT MANAGER: E. Giordano
PROJECT ID/LOCATION: W091-004-GS

SAMPLE TYPE
1. WASTEWATER
2. SOIL
3. SLUDGE
4. OIL
5. DRINKING WATER
6. WATER (GW/MW/SW)
7. OTHER (SPECIFY)

CONTAINER TYPE
P - PLASTIC
G - GLASS
V - VOA

TOXIKON #	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER SIZE	CONTAINER TYPE	CONTAINER #	SAMPLING DATE	SAMPLING TIME	PRESERVATIVE	ANALYSES: TPH (8100)	ANALYSES: Limited PAH: naphthalene, 2-methylnaphthalene, phenanthrene	SPEC INSTRUCTIO COMME
1	B1-S3	2	4 oz	G	1	3/17/97	0930	<4°C	X	X	
2	B2-S2	"	"	"	"	"	1030	"	X	X	
3	B3-S4	"	"	"	"	"	1400	"	X	X	
4	B4-S3	"	"	"	"	3/17/97	1530	"	X	X	
5	B5-S2	"	"	"	"	3/18/97	0900	"	X	X	
6	B6-S3	"	"	"	"	"	1030	"	X	X	
7	B7-S3	"	"	"	"	"	1230	"	X	X	
8	B8-S3	"	"	"	"	"	1400	"	X	X	
9	B9-S2	2	4 oz	G	1	3/18/97	1430	<4°C	X	X	

SAMPLED BY: E. Giordano
DATE: As noted
TIME: - -

QUOTATION #:

RELINQUISHED BY:
DATE: 3-19-97
TIME: 2-20-PM

RECEIVED BY:
DATE: 03 19-97
TIME: 1420

RELINQUISHED BY:
DATE: 03 19 97
TIME: 1620

RECEIVED FOR LAB BY:
DATE: 3-19-97
TIME: 16-00-00

☐ RUSH ..... BUSINESS DAY TURN AROUND
☒ ROUTINE

Sample disposal information
Are there any other known or suspected contaminants in these samples other than

Page 1 TOXIKON CORP. REPORT Work Order # 97-05-038
Received: 05/02/97 05/08/97 11:20:39

REPORT TO: CORPORATE ENVIRONMENTAL ENG.
255 PARK AVENUE, SUITE 904
WORCESTER, MA 01609
508-791-8700 FAX: 1973
ATTEN ED GIORDANO

PREPARED BY: TOXIKON CORPORATION
15 WIGGINS AVE
BEDFORD, MA 01730
ATTEN PAUL LEZBERG
PHONE (617)275-3330

CERTIFIED BY
CONTACT CHUCKC

CLIENT CEE SAMPLES 1
COMPANY CORPORATE ENVIRONMENTAL ENG.
FACILITY 255 PARK AVENUE, SUITE 904
WORCESTER, MA 01609

MA CERT # M-MA064: TRACE METALS, SULFATE, CYANIDE, RES. FREE CHLORINE, Ca, TOTAL ALK., TDS, pH, THMs, VOC, PEST., NUTRIENTS, DEMAND, O&G, PHENOLICS, PCBs . CT DHS #PH-0563, NY #10778 FL HRS E87143, NJ DEP 59538, NC DNR286, SC 88002, NH 204091-C.

WORK ID W091-004-GS
TAKEN 4/30/97 15:00
TRANS
TYPE WATER
P.O. #
INVOICE under separate cover

VERIFIED BY:

SAMPLE IDENTIFICATION

01 MW-6

TEST CODES and NAMES used on this workorder

EPETW	EXTRACTION GC PET WATER
GC PET	PETROLEUM SCAN BY GC
GENERC	GENERIC TEST METHOD

Page 2 TOXIKON CORP. REPORT Work Order # 97-05-038
Received: 05/02/97 Results by Sample

SAMPLE ID MW-6 FRACTION 01A TEST CODE GC_PET NAME PETROLEUM SCAN BY GC
Date & Time Collected 04/30/97 15:00:00 Category WATER

TPH by Modified EPA Method 8100

PARAMETER	RESULT
JP-4	ND
Gasoline	ND
Kerosene	ND
Diesel	ND
No. 2 Fuel Oil	ND
No. 4 Fuel Oil	ND
No. 6 Fuel Oil	ND
Waste Oil	ND
Petroleum Constituent	ND
Total Petro. Hydrocarbons	ND

DETECTION LIMIT

Water Matrix	1.0 mg/L
Solid Matrix	*

Notes and Definitions for this Report:

EXTRACTED 05/06/97
DATE RUN 05/07/97
ANALYST ST
INSTRUMENT HP 7

N.O.S. = Not Otherwise Specified
ND = Compound(s) not detected above detection limit

Comments

Page 3 TOXIKON CORP. REPORT Work Order # 97-05-038
Received: 05/02/97 Results by Sample

SAMPLE ID RW-6 FRACTION 01A TEST CODE GENERC NAME GENERIC TEST METHOD
Date & Time Collected 04/30/97 15:00:00 Category WATER

SPECIAL TEST REPORT

ANALYTE	RESULT	REPORTING LIMIT
NAPHTHALENE	ND	10
2-METHYLNAPHTHALENE	ND	10
PHENANTHRENE	ND	10

Notes and definitions for this report:

EXTRACTED..: 05/06/97
DATE RUN.... 05/07/97
ANALYST..... ST
EPA METHOD.. 8100
UNITS..... ug/L

ND = not detected at detection limits

Date extracted included when applicable.

TEST CODE EPETW NAME EXTRACTION GC PET WATER

Method not available.

TEST CODE GC PET NAME PETROLEUM SCAN BY GC

EPA Method: 8100 Modified

Reference: Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846 (Third Edition) 1986. Office of Solid Waste, USEPA.

This method utilizes analytical procedures consistent with EPA Method 8100. The identity of petroleum contaminants is subject to comparison with commercially supplied standards.

Alternate Method:ASTM Method D 3328

TOXIKON
15 Wiggins Ave., Bedford, MA 01730
Telephone: (617) 275-3330
Fax: (617) 275-7478

CHAIN OF CUSTODY RECORD

WORK ORDER #: 97-05-[illegible]
DUE DATE: 5-12-97

COMPANY: Corporate Environmental Engineering
ADDRESS: 855 Park Ave Suite 304
Worcester MA
PHONE #: (508) 791-8700 FAX #: (508) 791-1973
P.O. #:
PROJECT MANAGER: E. Gordan
PROJECT ID/LOCATION: W091-004-GS

SAMPLE TYPE: 1. WASTEWATER 2. SOIL 3. SLUDGE 4. OIL 5. DRINKING WATER 6. WATER (GW/RAW/SW) 7. OTHER (SPECIFY)

CONTAINER TYPE: P - PLASTIC G - GLASS V - VOA

ANALYSES: TPH (8100); Limited PAH: Naphthalene, 2-Methylnaphthalene, Phenanthrene

TOXIKON #	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER SIZE	CONTAINER TYPE	CONTAINER #	SAMPLING DATE	SAMPLING TIME	PRESERVATIVE	TPH (8100)	Limited PAH											SPECIAL INSTRUCTIONS/ COMMENTS
	mw-6	6	1L	G	2	4/30/97	3:00 pm	≤4°C	X	X											

SAMPLED BY: Edward Gordan DATE: 4-30-97 TIME: 4:00 PM
QUOTATION #:
RELINQUISHED BY: [signature] DATE: 5-2-97 TIME: 10:50 AM
RECEIVED BY: [signature] DATE: 05-02-97 TIME: 10:50
RELINQUISHED BY: [signature] DATE: 05-02-97 TIME: 1625
RECEIVED FOR LAB BY: [signature] DATE: 5-2-97 TIME: 5:00 PM

☐ RUSH ..... BUSINESS DAY TURN AROUND
☒ ROUTINE

Sample disposal information
Are there any other known or suspected contaminants in these samples other than

Received: 03/25/97

TOXIKON CORP. REPORT
03/28/97 15:01:21

Work Order # 97-03-444

REPORT TO
CORPORATE ENVIRONMENTAL ENG.
255 PARK AVENUE, SUITE 904
WORCESTER, MA 01609
508-791-8700 FAX: 1973
ATTEN K.TULL

PREPARED BY
TOXIKON CORPORATION
15 WIGGINS AVE
BEDFORD, MA 01730
ATTEN PAUL LEZBERG
PHONE (617)275-3330

CERTIFIED BY

CONTACT CHUCKC

CLIENT CEE SAMPLES 4
COMPANY CORPORATE ENVIRONMENTAL ENG.
FACILITY 255 PARK AVENUE, SUITE 904
WORCESTER, MA 01609

WORK ID W091-004-GS
TAKEN 3/24/97
TRANS
TYPE WATER
P.O. #
INVOICE under separate cover

MA CERT # M-MA064: TRACE METALS, SULFATE, CYANIDE, RES. FREE CHLORINE, Ca, TOTAL ALK., TDS, pH, THMs, VOC, PEST., NUTRIENTS, DEMAND, O&G, PHENOLICS, PCBs . CT DHS #PH-0563, NY #10778 FL HRS E87143, NJ DEP 59538, NC DNR286, SC 88002, NH 204091-C.

VERIFIED BY:

SAMPLE IDENTIFICATION

01 MW 1
02 MW 2
03 MW 3
04 MW 4

TEST CODES and NAMES used on this workorder

8100	POLYNUC AROMATIC HYDROCARB
EPETW	EXTRACTION GC PET WATER
GC PET	PETROLEUM SCAN BY GC

Received: 03/25/97

TOXIKON CORP. REPORT
Results by Sample

Work Order # 97-03-444

SAMPLE ID MW 1 FRACTION 01A TEST CODE GC PET NAME PETROLEUM SCAN BY GC
Date & Time Collected 03/24/97 Category WATER

TPH by Modified EPA Method 8100

PARAMETER	RESULT
JP-4	ND
Gasoline	ND
Kerosene	ND
Diesel	ND
No. 2 Fuel Oil	ND
No. 4 Fuel Oil	ND
No. 6 Fuel Oil	ND
Waste Oil	ND
Petroleum Constituent	ND
Total Petro. Hydrocarbons	ND

DETECTION LIMIT

Water Matrix	4.0 mg/L
Solid Matrix	*

Notes and Definitions for this Report:

EXTRACTED 03/26/97
DATE RUN 03/27/97
ANALYST ST
INSTRUMENT HP 5

N.O.S. = Not Otherwise Specified
ND = Compound(s) not detected above detection limit

Comments

TOXIKON CORP. REPORT
Results by Sample

Work Order # 97-03-444

SAMPLE ID MW 2 FRACTION 02A TEST CODE 8100 NAME POLYNUC AROMATIC HYDROCARB
Date & Time Collected 03/24/97 Category WATER

POLYNUCLEAR AROMATIC HYDROCARBONS

	RESULT	LIMIT
Naphthalene	18.3	10
2-Methylnaphthalene	23.0	10
1-Methylnaphthalene	NA	10
Acenaphthylene	NA	10
Acenaphthene	NA	10
Fluorene	NA	10
Phenanthrene	47.9	10
Anthracene	NA	10
Fluoranthene	NA	10
Pyrene	NA	10
Benzo(a)anthracene	NA	10
Chrysene	NA	10
Benzo(b)fluoranthene	ND	10
Benzo(k)fluoranthene	NA	10
Benzo(a)pyrene	NA	10
Indeno(1,2,3-cd)pyrene	ND	10
Dibenz(a,h)anthracene	ND	10
Benzo(g,h,i)perylene	ND	10

Notes and Definitions for this Report:

UNITS:	ug/L
EXTRACTED:	03/26/97
DATE RUN:	03/27/97
ANALYST:	ST
INSTRUMENT:	HP 7
CONC FACTOR:	1

ND = not detected at detection limit

TOXIKON CORP. REPORT
Results by Sample

Work Order # 97-03-444

SAMPLE ID MW 2 FRACTION 02A TEST CODE GC PET NAME PETROLEUM SCAN BY GC
Date & Time Collected 03/24/97 Category WATER

TPH by Modified EPA Method 8100

PARAMETER	RESULT
JP-4	ND
Gasoline	ND
Kerosene	ND
Diesel	ND
No. 2 Fuel Oil	ND
No. 4 Fuel Oil	ND
No. 6 Fuel Oil	ND
Waste Oil	ND
Petroleum Constituent	ND
Total Petro. Hydrocarbons	ND

DETECTION LIMIT

Water Matrix	1.0 mg/L
Solid Matrix	*

Notes and Definitions for this Report:

EXTRACTED 03/26/97
DATE RUN 03/27/97
ANALYST ST
INSTRUMENT HP 5

N.O.S. = Not Otherwise Specified
ND = Compound(s) not detected above detection limit

Comments

TOXIKON CORP. REPORT
Results by Sample

Work Order # 97-03-444

SAMPLE ID MW 3 FRACTION 03A TEST CODE 8100 NAME POLYNUC AROMATIC HYDROCARB
Date & Time Collected 03/24/97 Category WATER

POLYNUCLEAR AROMATIC HYDROCARBONS

	RESULT	LIMIT
Naphthalene	ND	10
2-Methylnaphthalene	ND	10
1-Methylnaphthalene	NA	10
Acenaphthylene	NA	10
Acenaphthene	NA	10
Fluorene	NA	10
Phenanthrene	ND	10
Anthracene	NA	10
Fluoranthene	NA	10
Pyrene	NA	10
Benzo(a)anthracene	NA	10
Chrysene	NA	10
Benzo(b)fluoranthene	NA	10
Benzo(k)fluoranthene	NA	10
Benzo(a)pyrene	NA	10
Indeno(1,2,3-cd)pyrene	NA	10
Dibenz(a,h)anthracene	NA	10
Benzo(g,h,i)perylene	NA	10

Notes and Definitions for this Report:

UNITS: ug/L
EXTRACTED: 03/26/97
DATE RUN: 03/27/97
ANALYST: ST
INSTRUMENT: HP 7
CONC FACTOR: 1

ND = not detected at detection limit

TOXIKON CORP. REPORT
Results by Sample

Work Order # 97-03-444

SAMPLE ID MW 3 FRACTION 03A TEST CODE GC PET NAME PETROLEUM SCAN BY GC
Date & Time Collected 03/24/97 Category WATER

TPH by Modified EPA Method 8100

PARAMETER	RESULT
JP-4	ND
Gasoline	ND
Kerosene	ND
Diesel	ND
No. 2 Fuel Oil	ND
No. 4 Fuel Oil	ND
No. 6 Fuel Oil	ND
Waste Oil	ND
Petroleum Constituent	ND
Total Petro. Hydrocarbons	ND

DETECTION LIMIT

Water Matrix	1.0 mg/L
Solid Matrix	*

Notes and Definitions for this Report:

EXTRACTED 03/26/97
DATE RUN 03/27/97
ANALYST ST
INSTRUMENT HP 5

N.O.S. = Not Otherwise Specified
ND = Compound(s) not detected above detection limit

Comments

TOXIKON CORP. REPORT
Results by Sample

Work Order # 97-03-444

SAMPLE ID MW 4 FRACTION 04A TEST CODE 8100 NAME POLYNUC AROMATIC HYDROCARB
Date & Time Collected 03/24/97 Category WATER

POLYNUCLEAR AROMATIC HYDROCARBONS

	RESULT	LIMIT
Naphthalene	ND	10
2-Methylnaphthalene	ND	10
1-Methylnaphthalene	NA	10
Acenaphthylene	NA	10
Acenaphthene	NA	10
Fluorene	NA	10
Phenanthrene	ND	10
Anthracene	NA	10
Fluoranthene	NA	10
Pyrene	NA	10
Benzo(a)anthracene	NA	10
Chrysene	NA	10
Benzo(b)fluoranthene	NA	10
Benzo(k)fluoranthene	NA	10
Benzo(a)pyrene	NA	10
Indeno(1,2,3-cd)pyrene	NA	10
Dibenz(a,h)anthracene	NA	10
Benzo(g,h,i)perylene	NA	10

Notes and Definitions for this Report:

UNITS:	ug/L
EXTRACTED:	03/26/97
DATE RUN:	03/27/97
ANALYST:	ST
INSTRUMENT:	HP 7
CONC FACTOR:	1

ND = not detected at detection limit

TOXIKON CORP. REPORT
Results by Sample

Work Order # 97-03-444

SAMPLE ID MW 4 FRACTION 04A TEST CODE GC PET NAME PETROLEUM SCAN BY GC
Date & Time Collected 03/24/97 Category WATER

TPH by Modified EPA Method 8100

PARAMETER	RESULT
JP-4	ND
Gasoline	ND
Kerosene	ND
Diesel	ND
No. 2 Fuel Oil	ND
No. 4 Fuel Oil	ND
No. 6 Fuel Oil	ND
Waste Oil	ND
Petroleum Constituent	ND
Total Petro. Hydrocarbons	ND

DETECTION LIMIT

Water Matrix	1.0 mg/L
Solid Matrix	*

Notes and Definitions for this Report:

EXTRACTED 03/26/97
DATE RUN 03/27/97
ANALYST ST
INSTRUMENT HP 5

N.O.S. = Not Otherwise Specified
ND = Compound(s) not detected above detection limit

Comments

TEST CODE 8100 NAME POLYNUC AROMATIC HYDROCARB

EPA Method : 8100: Polynuclear Aromatic Hydrocarbons.

Reference: Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846 (Third Edition) 1986. Office of Solid Waste, USEPA.

TEST CODE EPETW NAME EXTRACTION GC PET WATER

Method not available.

TEST CODE GC PET NAME PETROLEUM SCAN BY GC

EPA Method: 8100 Modified

Reference: Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846 (Third Edition) 1986. Office of Solid Waste, USEPA.

This method utilizes analytical procedures consistent with EPA Method 8100. The identity of petroleum contaminants is subject to comparison with commercially supplied standards.

Alternate Method:ASTM Method D 3328

TOXIKON
15 Wiggins Ave., Bedford, MA 01730
Telephone: (617) 275-3330
Fax: (617) 271-1136

CHAIN OF CUSTODY RECORD

WORK ORDER #: 97-03-444
DUE DATE: 4-2-97

COMPANY: Corporate Environmental Engineering
ADDRESS: 255 Park Ave Suite 904
Worcester MA
PHONE #: (508) 791-8700 FAX #: (508) 791-1573
P.O. #:
PROJECT MANAGER: K. Tull
PROJECT ID/LOCATION: W091-004-GS

SAMPLE TYPE: 1. WASTEWATER 2. SOIL 3. SLUDGE 4. OIL 5. DRINKING WATER 6. WATER (GW/MW/SW) 7. OTHER (SPECIFY

CONTAINER TYPE: P - PLASTIC G - GLASS V - VOA

ANALYSES

TOXIKON #	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER SIZE	CONTAINER TYPE	CONTAINER #	SAMPLING DATE	SAMPLING TIME	PRESERVATIVE <4C	TPH (8100)	PAH (limited to: 2-methyl naphthalene, naphthalene, phenanthrene)	SPECIAL INSTRUCTIONS/ COMMENTS
1	mw-1	GW	L	G	1	3/24/97		<4C	X		1 sample heavy silt
2	mw-2	GW	L	G	2	3/24/97		<4C	X	X	
3	mw-3	GW	L	G	2	3/24/97		<4C	X	X	
4	mw-4	GW	L	G	2	3/24/97		<4C	X	X	

SAMPLED BY: E. Giordano, K. Tull — DATE: 3-24-97 TIME: as indicated

QUOTATION #:

RELINQUISHED BY: [signature] — DATE: 3-25-97 TIME: 12:00
RECEIVED BY: [signature] — DATE: 03-25-97 TIME: 12:00

RELINQUISHED BY: [signature] — DATE: 03 25 97 TIME: 16:25
RECEIVED FOR LAB BY: [signature] — DATE: 3-25-97 TIME: 19:25

METHOD OF SHIPMENT
COOLER TEMPERATURE
PRESERVATION VERIFIED

☐ RUSH ..... BUSINESS DAY TURN AROUND
☒ ROUTINE

Sample disposal information
Are there any other known or suspected contaminants in these samples other than those listed above?

STATEMENT OF LIMITATIONS AND CONDITIONS

ATTACHMENT TO
OPINION OF MASSACHUSETTS LICENSED SITE PROFESSIONAL

CORPORATE ENVIRONMENTAL ENGINEERING INC

Name of Licensed Site Professional Kenneth J. Snow

LSP Registration Number 3266

Date of Opinion May 1, 1997

Client to Whom Opinion was Rendered Massachusetts Dept. of Mental Health

Date of Agreement between Corporate Environmental Engineering Inc (CEE) and Client to which Opinion was Rendered: March 6, 1997

Response Tracking No./Site No. 3-0001684

This Statement of Limitations and Conditions is an integral part of, and is incorporated by reference into, the Opinion of the Massachusetts Licensed Site Professional (LSP) referenced above.

LIMITATIONS

1. Purpose of Opinion

   A. This Opinion is being provided in compliance with the requirements set forth in the Massachusetts Contingency Plan ("MCP"), 310 CMR 40.0000 et seq. Specifically, the LSP has prepared this Opinion at the request of the Client identified above as part of a LSP Evaluation Opinion (Insert Appropriate Form - e.g. Release Notification Form, Status Opinion, Completion Statement, Response Action Outcome Statement, Tier Classification Submittal, etc.). This stated purpose has been a significant factor in determining the scope and level of services required to render this Opinion.

   B. Should the purpose for which this Opinion is to be used change, this Opinion shall no longer be valid.

2. General

   A. This Opinion was prepared for the sole and exclusive use of the Client, subject to the provisions of the MCP. No other party is entitled to rely in any way on the conclusions, observations, specifications, or data contained herein without the express written consent of CEE who rendered this opinion. Any use of this Opinion by anyone other than Client, or any use of this Opinion by Client or others for any purpose other than the stated purpose set forth above, without the written authorization of CEE, shall be at the user's sole risk, and neither CEE nor the LSP shall have any liability or responsibility therefor.

   B. This Opinion was prepared pursuant to an Agreement between CEE and the Client referenced above which defines the scope of work and sets out agreements regarding waivers of consequential damages, limitations on liability, and other important conditions and restrictions pursuant to which the Opinion is rendered. All uses of the Opinion are subject to and deemed acceptance of the conditions and restrictions contained in such Agreement. A copy of the Agreement or relevant excerpts from the Agreement will be made available upon request to any authorized person seeking to use the Opinion.

3. Scope of Service

The observations and conclusions described in this Opinion are based solely on the Services provided pursuant to the Agreement with the Client and any approved additional services authorized by Client. Without limitation of any other applicable limitations or conditions, neither CEE nor the LSP shall be liable for the existence of any condition, the discovery of which would have required the performance of services not authorized under the Agreement.

4. Changed Circumstances

The passage of time may result in changes in technology, economic conditions or regulatory standards, manifestations of latent conditions, or the occurrence of future events which would render this Opinion inaccurate or otherwise inapplicable. Neither CEE nor the LSP shall be liable or responsible for the consequences of any such changed circumstances or conditions on the accuracy of this Opinion. In addition, under no circumstances shall the Client nor any other person or entity rely on the information or conclusions contained in this Opinion after 12 months from its date of submission without the express written consent of CEE. Reliance on the Opinion after such period of time shall be at the user's sole risk.

5. Should CEE or the LSP be required or requested to review or authorize others to use this Opinion after its date of submission, CEE shall be entitled to additional compensation at then existing rates or such other terms as may be agreed upon between CEE and the Client. Nothing herein contained shall be deemed to require CEE or the LSP to undertake any such review or authorize others to use this Opinion.

6. The conclusion stated in this Opinion are based upon [check and initial appropriate boxes]:

- [x] KJ — Visual inspection of existing physical conditions;
- [x] KS — Review and interpretation of site history and site usage information which was made available or obtained within the scope of work authorized by the Client;
- [x] KJ — Information provided by the Client;
- [x] KS — Information and/or analyses for designated substances or parameters provided by an independent testing service or laboratory on a limited number of samples;
- [x] KS — A limited number of subsurface explorations made on dates indicated in documentation supporting this Opinion;
- [ ] _____ — Other _____

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