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Environmental Assessment Report Derecktor Shipyard-Building 42 Area

U.S. Department of Navy
Naval Education and Training Center
Newport, Rhode Island

TRC
TRC Environmental Corporation

ENVIRONMENTAL ASSESSMENT REPORT DERECKTOR SHIPYARD-BUILDING 42 AREA

U.S. DEPARTMENT OF NAVY NAVAL EDUCATION AND TRAINING CENTER NEWPORT, RHODE ISLAND

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Prepared for:
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1.0 INTRODUCTION

This report presents the findings of the soil and ground water environmental investigation program conducted to assess the presence and nature of subsurface soil and ground water contamination around Building 42 located on the former Derecktor Shipyard. The shipyard is located on the Naval Education and Training Center (NETC) in Middletown, Rhode Island. The location of the shipyard is shown on Figure 1-1. Building 42 is located in the west central portion of the shipyard. A map of the site area is provided as Figure 1-2. TRC Environmental Corporation (TRC) was contracted by the U.S. Department of the Navy to perform the subsurface investigation described in this report. The scope of the planned investigation was presented in the field sampling plan titled "Ground Water Investigation Protocol" (October 1994) prepared by TRC for the Navy.

Section 2.0 provides a brief summary of available background information on the shipyard and Building 42 area. A majority of the information in Section 2.0 was obtained from the "Preliminary Site Assessment Report" prepared for the shipyard by the Halliburton NUS (HNUS) Corporation in May 1993. Section 3.0 summarizes the field investigation program and observations made during the field investigation activities. Section 4.0 provides an assessment of the nature and extent of soil and ground water contamination based on the findings of this investigation. Section 5.0 presents a summary of the investigation findings along with conclusions regarding this assessment.

2.0 BACKGROUND INFORMATION

2.1 SHIPYARD HISTORICAL INFORMATION

The Derecktor Shipyard which was previously operated by Robert E. Derecktor (Derecktor) is located in the central portion of the Newport Naval Base (see Figure 1-1). The shipyard is approximately 41 acres in size and situated at the southern end of the Defense Highway just west of Gate 11 on the NETC along Coddington Cove of Narragansett Bay. Access to the shipyard is off of Defense Highway or Simon Pietri Drive on the NETC.

The shipyard was used for the repair, maintenance, and construction of private and military ships from January 1979 through January 1992. Shipyard operations included steel cutting and welding, sand blasting, priming and painting, and assembly of ships. Ship repair and maintenance operations were concentrated around Pier No. 1 which extends out into Coddington Cove at the northern end of the shipyard. Hazardous materials reportedly used during the shipyard operations included various oils, solvents, compressed gases, and paints. Because of the type of chemicals used and wastes generated in the shipyard operations, the shipyard was classified as a hazardous waste generator.

This shipyard is currently abandoned. The Navy is conducting an environmental assessment of the shipyard to determine the presence and nature of any contamination on the site. The Navy has recently conducted several removals of containerized hazardous chemicals from the facility and an extensive housekeeping clean-up (i.e., trash, debris, and scrap metal removal) of the area.

2.2 BUILDING 42 BACKGROUND INFORMATION

Building 42 is located in the west central portion of the shipyard approximately 50 feet from the Coddington Cove waterfront. The following presents a summary of available background information on Building 42. The information is presented separately for the interior and exterior portions of the building.

Building 42 Interior:

Building 42 is a one-story brick and masonry block building which was reportedly constructed in 1942 for use as a cold storage warehouse. Various refrigeration storage areas occupy much of the building interior. Building 42 is reportedly not connected to the area municipal sanitary sewer system.

At one time a fish processing business run by the Newport Seafood Group operated in the building. Following the use of Building 42 by the fish processing business, it was utilized by Derecktor in the shipyard operations. During these operations, three cold storage rooms in the southern portion of the building were reportedly used by Derecktor for hazardous waste storage, paint mixing and dispensing, and solvent recovery from painting operations. The northern portion of Building 42 was also used for the storage of electrical wire and cable. The large central area of the building was used for the pre-fabrication of duct work for ships and for the storage of shipboard insulation. At the very southern end of the building are three rooms, a locker room, a boiler room, and a refrigeration plant room. Materials reportedly removed from the building during a recent hazardous waste removal action included adhesives, anti-freeze, paint strippers, oils, paints, sand blast grit (black beauty), and acids. Paint and oil floor staining were observed in many portions of the building during the HNUS preliminary site inspection.

The Navy recently completed a removal of additional containerized hazardous chemicals and wastes from the building interior for proper off-site disposal. In addition, amounts of trash and debris were also removed from the building for off-site disposal. As a result of these clean-up activities, the building interior appears to be clear of all waste and debris.

Building 42 Exterior:

The exterior dimensions of the building are approximately 170 feet by 315 feet. A drum staging and scrap storage area were previously located along the eastern exterior side of Building 42. South of the building was recently used for the storage of scrap metal and metal racks. Along the western side of the building is an unpaved open area which appeared to be generally clean at the time of the preliminary site inspection by HNUS. This area is approximately 50 feet wide and separates Building 42 from the Bay. The area north of the building was being used for the storage of scrap metal.

Facility records indicate that used sand blast grit (black beauty) was placed by Derecktor as fill material along the eastern and northern exterior sides of Building 42. This material is visually evident at the surface as a black grit material in these areas. The amount of sand blast grit in these areas has been estimated at 4,000 to 6,000 cubic yards.

The exterior brick wall on the south side of Building 42 was previously observed to have staining. The stains were especially prevalent along the foundation of the building. An unknown 6-inch plastic pipe not connected to any drain line exits this wall. A storm water catch basin is also located approximately 30 feet from this wall. The discharge point of the catch basin is not known.

Based on an inspection report of the shipyard completed by the Rhode Island Department of Environmental Management (RIDEM) in 1983, "two large pits filled with liquid were found at the northeast corner of Building 42". The liquid reportedly consisted of "rust flakes, a tar-like preservative and water." This area reportedly was used for the disposal of liquids (including oily water and sludge) from dry dock tanks.

Containerized waste and assorted trash and debris around the exterior of the building was recently cleaned up by the Navy. Thus, the exterior surface area immediately surrounding the building is essentially clear of any containerized waste and debris.

2.3 PREVIOUS ENVIRONMENTAL INVESTIGATIONS

As presented in the introduction to this report, much of the background information presented on the shipyard was obtained from a Preliminary Site Assessment Report completed by HNUS Corporation for the Navy in May 1993. The findings of that assessment indicated assorted chemicals were used and hazardous wastes were generated during the operation of the shipyard. Potential adverse environmental impacts related to Building 42 that were noted in the HNUS assessment include the sand blast grit deposited around the building exterior, the oil pits previously reported at the northeast exterior corner of the building, poor housekeeping of chemicals resulting in the staining of interior building surfaces, large quantities of refuse and debris in the building, the presence of asbestos containing material and lead painted surfaces in the building.

The sand blast grit had previously been shown to contain several metals, including arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. Based on the results of hazardous waste characterization testing (EP Toxicity testing), the sand blast grit material was characterized as a non-hazardous waste. A copy of the laboratory results of this testing are provided in Appendix A.

In December 1993, a geophysical investigation was conducted around Building 42 by the University of Rhode Island (URI) Department of Civil and Environmental Engineering for the U.S. Navy. The survey included both geoelectric and seismic methods to aid in characterizing the subsurface conditions near the building. A primary objective of the project was to locate any ground water contaminant plumes to aid in the future placement of ground water monitoring wells. The findings of the surveys provided information on the depths to the ground water table and bedrock in the area. Cross sections developed by URI from the seismic data are provided in Appendix A. Recommendations made as a result of this investigation included the installation of ground water monitoring wells around Building 42 to further aid in characterizing the area hydrogeology and ground water quality.

In April 1994, the Navy collected several samples of the "black beauty" sand blast grit surface fill material for total metals analysis. These sample analysis results indicate that the material contains amounts of antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, tin, and zinc. Elevated concentrations of chromium, copper, lead, nickel, and zinc were detected in the samples. The results of these analysis are provided in Appendix A.

3.0 SITE INVESTIGATION

3.1 INTRODUCTION

The investigation program described in this section was developed to assess the subsurface soil and ground water quality around Building 42 on the shipyard. The field sampling methodology for the individual investigation activities (e.g., soil boring sampling, ground water sampling) is described in detail in this section of the report. This discussion also includes a summary of the quality assurance/quality control (QA/QC) procedures for the field sampling activities.

3.2 SOIL BORING SAMPLING

Soil samples were collected from each of the well borings completed under this ground water investigation. Soil borings were completed at four separate locations for the installation of ground water monitoring wells. The number of wells at each location included the following: three at two locations (MW-2 and MW-3), two at one location (MW-1), and one at another location (MW-4). Consistent with the sampling plan completed by TRC for this assessment, all of the wells were screened within the unconsolidated overburden materials. The original plan also included the installation of three wells at three locations; however, given the presence of a shallow bedrock surface at one of the locations (MW-1), only two overburden wells could be installed at that location. As a result of this circumstance (i.e., an extra well), one additional shallow ground water table well (MW-4S) was installed on the site. The locations of the wells are shown on Figure 3-1.

The locations of the three original well nests specified in the field sampling plan, MW-1, MW-2, and MW-3, were selected by the URI and Navy based on the findings of geophysical surveys previously conducted by URI adjacent to Building 42. The wells were planned at these locations to characterize the ground water quality around Building 42 and to aid in characterizing the geology and hydrogeology around the building and near the bulkhead sheet pile. The information from these borings and wells can also be correlated to the subsurface information obtained from the URI geoelectric and seismic surveys to aid in assessing the subsurface

conditions in the area. The fourth well location, MW-4, was selected in the field by Navy personnel to aid in characterizing ground water conditions at the site.

The boreholes for overburden wells were advanced using 4¼-inch inside diameter (I.D.) hollow-stem augers. Split spoon samples were collected continuously at 2.0-foot intervals from the deepest well boring at each location to the depth of ground water or fill, whichever was greatest. Beyond which split-spoon soil samples were collected at 5-foot intervals or an identifiable change in strata. The split-spoons were advanced according to the standard penetration test method [ASTM 1586-84 (1984)]. The standard penetration test defines split-spoon refusal as less than six inches of penetration for 100 blows with a 140-pound hammer falling 30 inches in conformance with ASTM 1586-84. The physical characteristics of each soil sample was visually characterized and geologically described in a field notebook. Split-spoon soil samples were monitored for the presence of total VOC vapors and gases with organic vapor analyzers (OVA and HNu) immediately upon opening. Field observations were recorded in a field notebook and are presented on the boring logs in Appendix B.

After logging and screening the soil samples, the soil samples submitted for laboratory analyses were transferred to the appropriate sample containers with a dedicated decontaminated stainless-steel spoon. Soil samples for all analyses except VOCs were collected after mixing the entire split-spoon soil sample in a dedicated decontaminated stainless steel bowl. In order to reduce the potential for the loss of VOCs during the soil sample collection, the sample aliquot for VOC analysis was collected directly from the split spoon. A maximum of two soil samples were collected from each of the soil borings for chemical analysis. The two soil samples which were submitted for laboratory analysis include a sample of the surface fill materials and the last sample interval believed to be above the depth of the ground water table. If signs of potential contamination (e.g., OVA/HNu readings) are observed elsewhere in the boring, the second sample was instead collected from that interval.

The final depths of the monitoring well borings were determined by TRC field personnel. Variables considered in establishing the final well boring depth included geologic conditions, depth to the water table, and site sampling objectives. Geologic descriptions and other sample characteristics (e.g., stains, odors) and observations (e.g., OVA/HNu readings, depth to water) were also recorded in a field notebook and are presented on the boring logs in Appendix B.

The soil samples were laboratory analyzed for volatile organic compounds (VOCs by EPA Method 8240), semivolatile organic compounds (SVOCs by EPA Method 8270), priority pollutant metals (assorted EPA methods), and total petroleum hydrocarbons (TPH by EPA Method 418.1). A list of the compounds and analytes included under the VOC, SVOC, and priority pollutant metals list is provided in Table 3-1. In addition to the soil samples collected for the above-listed chemical analyses, a soil sample was also collected from the saturated zone (within the screened interval) of each shallow well location and one of the deep well locations for total organic carbon (EPA Method 9060) and grain size (ASTM D422) determination.

All soil sampling equipment was decontaminated prior to use. The stainless steel spoons and bowls were laboratory decontaminated according to the "eight-step" procedure specified in the field sampling plan. The "eight step" decontamination procedure included the following: a non-phosphate soap wash, a tap water rinse, a dilute nitric acid (10%) rinse, a tap water rinse, a methanol rinse, a hexane rinse, air dry, and distilled water rinse. The steel split-spoon sampling devices were decontaminated in the field prior to each use with the eight-step decontamination procedure. The drilling equipment (e.g., augers, rods, plugs) were steam clean prior to each use.

Field quality control samples were also collected and maintained during the soil sampling activities. The soil QC samples included a field rinsate blank sample ("FBS" notation) collected from a decontaminated stainless steel spoon, bowl, and steel split spoon prior to sampling. A trip blank ("TB" notation) prepared by the laboratory, accompanied the sample containers from the laboratory, the samples in the field, and the samples back to the laboratory. A duplicate soil sample was also collected in the field by mixing the soil (except for VOCs) from a sample interval in a stainless steel bowl and alternately filling two sets of identical containers. In order to reduce the potential for the loss of VOCs during the duplicate sample collection, the duplicate sample aliquot for VOC analysis was collected directly from the split spoon by alternately filling two sets of VOC analysis containers. The duplicate sample was labelled and submitted to the laboratory with a different identification number than that of the actual sample location (i.e., as a "blind" sample).

3.2.1 Site Geology

Information reported in geotechnical boring logs obtained from NETC Public Works files and the findings of the recent URI geophysical investigation previously provided geological information for the Building 42 area. A copy of the historical geotechnical boring logs are provided in Appendix A of this report. The findings of the URI study are presented in a paper titled "Geophysical and Hydrogeological Investigation of a Contaminated Aquifer, Derecktor Naval Shipyard Project". In addition, the results of this environmental assessment have provided information on the site geology and hydrogeology. The boring logs completed for the wells boring completed under this assessment are provided in Appendix B.

In summary, the above information including the findings of this assessment indicates that the approximate depth to the ground water table ranges from approximately 10 feet to 13 feet below grade around the building. In general, the historical boring logs prepared for the construction of Building 42 and the findings of this environmental assessment indicate that the subsurface materials consist of the following layers from top to bottom: a fill layer ranging in thickness from 6 to 10 feet, a sand and silt layer ranging in thickness from approximately 10 to 20 feet, an underlying till layer consisting of a more firm or dense sand, gravel and clay ranging in thickness from approximately 3 to 31 feet, and bedrock at depths ranging from 21 to 53 feet below grade. This depth to bedrock range is based on the actual observed findings of this assessment because the historical geotechnical logs only indicate depth to "refusal" and do not explicitly define this as being bedrock. Two geologic cross sections depicting the findings of this assessment were developed based on the boring logs. A geologic cross section line location map is provided as Figure 3-2 and the two geologic cross sections are shown on Figures 3-3 and 3-6.

As shown by the geologic cross sections, the thickness of the till layer underlying the site increases significantly from east to west across the site. At well MW-1, the till layer was observed to be 5 feet thick, whereas at well MW-3 along the western shoreline the till is 29 feet thick. The thickness of the till increases with the increasing depth to bedrock. The depth to bedrock changes significantly from 21 feet below grade at well MW-1 to 53 feet below grade at well MW-3.

The findings of the URI geophysical investigation provided additional information on the estimated thickness of the unconsolidated material and depth to bedrock in the area of Building 42. Three seismic profiles were completed in the area of Building 42. The information from these profiles indicates the following: depths to ground water ranging from 8 to 22 feet below grade, thicknesses of unconsolidated materials ranging from 13 to 47 feet, and depths to bedrock ranging from 33 to 55 feet below grade. The seismic profile also suggests that the bedrock topography is lower to the southeast of Building 42. Cross sections developed by URI which compare the results of the geophysical surveys and historical borings logs are provided in Appendix A.

A comparison of the findings of the URI geophysical survey and the historical geotechnical boring logs by URI indicates differences in the depth to ground water and bedrock. The differences in the estimated depth to ground water are believed by URI to be related to seasonal differences; the borings were completed in May which is normally a wet period and the seismic surveys were completed in December which is typically a period of lower ground water table elevations. The differences in the depth to bedrock are believed to be based on the incorrect interpretation of the boring log term "refusal" as referring to bedrock on the historical boring logs. The findings of this assessment are similar to those presented by the historical geotechnical boring logs.

Grain size analysis results of soil samples from the screened intervals of several of the wells are provided in Appendix C. These sample included four soil samples from the following locations and depths: sample B1-3 from well boring for MW-1 at 10 to 12 feet below grade, sample B1-4 from well boring for MW-1 at 15 to 17 feet below grade, sample B2-3 from well boring for MW-2 at 14 to 16 feet below grade, and sample B3-3 from well boring for MW-3 at 14 to 16 feet below grade. The results of these grain size analysis confirm that the shallow overburden material is a "silty sand with some gravel". The amount of "fines" which is defined as percent finer than #200 sieve and includes clays and silts ranged from 32 to 40 % of the soil matrix.

Total organic carbon (TOC) data for the selected soil samples is provided in Table 4-3. TOC is a measurement of the amount of carbon present in the soil attributed to organic substances. The four soil samples for TOC analysis were collected from the same four sample

intervals as those collected for the grain size analysis. The reported TOC concentrations for these soil samples ranged from 2,990 mg/kg to 12,700 mg/kg (or ppm). The two soil samples having the highest TOC levels were B1-3 (12,700 ppm) and B2-3 (9,780 ppm). Both of these soil samples were also found to have elevated OVA FID levels and nondetectable HNu PID levels which is indicative of the natural decomposition of organic matter (generates methane). None of these samples were observed to have any signs of potential contamination (e.g., odors, stains). These high TOC levels also indicate a greater likelihood of the retardation of any ground water contaminants.

3.3 GROUND WATER SAMPLING

A total of nine (9) ground water monitoring wells were installed at four locations (MW-1, MW-2, MW-3, and MW-4) around and near Building 42 to assess the ground water quality and flow characteristics in this area. As discussed in Section 3.2, although three overburden wells were originally planned at each location, a shallow bedrock surface at one of the locations (MW-1) only allowed for the installation of two wells at that location. Therefore, an additional shallow well was installed at another nearby location as a replacement for this well.

Nested wells were installed at three of the locations to provide information on the hydrogeology (i.e., vertical gradients) and ground water/surface water relationship in this area. Well nest were installed at three locations which included wells screened over shallow (3 locations), intermediate (2 locations), and deep (3 locations) intervals. The shallow wells ("S" notation) were installed to intercept the ground water table which is approximately 10 feet below grade. The deep wells ("D" notation) are screened in the unconsolidated materials at the top of the bedrock which ranged from 21 to 53 feet below grade. The intermediate wells ("I" notation) are screened in the zone between the bottom of the shallow well and the top of the deep well screen, provided there was sufficient spacing between the shallow and deep wells for an intermediate well (not at well MW-1). A well nest diagram for each location is shown on the well construction logs provided in Appendix B.

The well constructions details included the following: 2-inch PVC screen and riser with threaded O-ring joints, 10-slot screen, a 1-foot sediment sump, No. 0 clean silica quartz sand pack, a 1- to 2-foot bentonite seal, a cement/bentonite grout, a cement surface seal, and a flush-

mounted protective steel casing. The construction details for each wells are provided on the well construction logs in Appendix B. A summary of the well construction details is provided in Table 3-2.

After the installation of the wells, all nine of the monitoring wells were developed after installation. Wells were developed by the surge block and pump technique. Fine-grained materials around the well screen were drawn into the well and removed by agitating the well water with a surge block assembly and simultaneously pumping water from the well at a low discharge rate. A submersible and peristaltic pumps outfitted with new dedicated tubing was used for removing the water from the well. To prevent cross-contamination between the wells, the surge block and submersible pump was decontaminated between each well. The tubing was also replaced with new tubing between each well. Water produced during well development was drummed for future characterization and proper disposal by the Navy.

The volume of ground water extracted from each monitoring well during development was in part determined by continuous monitoring of the following parameters; pH, temperature, specific conductance, and turbidity. The goal was for the well development to continue until pH, temperature, and specific conductance all stabilized and turbidity was $\leq$ 10 NTU's. However, at all but one of the wells (MW-4S), the 10 NTU criteria was not achievable. Therefore, in general the wells were developed until the water appeared to get as clear as possible over a minimum time period of approximately one hour. However, in several instances were well recovery was very slow (e.g., MW-2I, MW-2D), well development time varied. Although the turbidity values typically did not stabilize during the development, the pH, temperature, and conductivity values generally stabilized for most of the wells. A summary of the well development observations and recordings is provided in Table 3-3.

The ground water sampling was conducted two weeks after the development of the last well. Prior to the initiation of sampling activities and immediately upon opening each well, a headspace reading was measured from the inner well casing with two organic vapor analyzers, an OVA equipped with a flame ionization detector (FID) and a HNu equipped with a photoionization detector (PID). The results of these headspace readings are provided in Table 3-4. Based on the fact that the OVA FID detects methane and the HNu PID does not, it appears that the OVA readings are due to the methane. It is likely that methane is being generated in

the area as a result of the natural decomposition of subsurface organics in the shoreline environment of the site. Although two small HNu readings (0.8 ppm) were detected in the headspace of wells MW-2I and MW-2D.

The water level of each monitoring well was then measured to the nearest 0.01 ft with an electronic water sensing device and recorded in a field notebook. Ground water depths were measured in the wells on several occasions following their installation. All of the ground water elevation data is presented in Table 3-5. The water level indicator was decontaminated with a nonphosphate soap water and deionized water rinse prior to each use. Additionally, the presence and thickness of non-aqueous phase liquid (NAPLs) was assessed with an oil/water interface probe throughout the entire water column of each well prior to purging. The interface probe was decontaminated with non-phosphate detergent and tap water and then deionized water after each use. No NAPLs or any other signs of potential contamination were observed with the water level indicator or oil/water interface probe.

Next, downhole measurements of temperature, dissolved oxygen, and oxidation/reduction potential (Eh or redox) levels were obtained for the ground water in all of the monitoring wells. These measurements were obtained in-situ by lowering the measurement probes to a depth just below the ground water level in the well. In addition, for comparison purposes, the levels of these same parameters were obtained from the surface water in the adjacent Coddington Cove. The surface water measurements were also obtained approximately 1 foot below the surface of the water. A summary of the recorded temperature, dissolved oxygen, and Eh ground water and surface water values is provided in Table 3-6.

As shown in Table 3-6, the highest dissolved oxygen values were obtained in the shoreline wells (MW-4S and MW-3 wells) and surface water. This indicates a greater amount oxygenation in the shoreline ground water which is likely related to mixing caused by seawater intrusion. The redox values were all positive with the highest redox potential (Eh) values obtained in the two ground water table shoreline wells (MW-3S and MW-4S). The lowest Eh value was measured in the deep shoreline well (MW-3D). Ground water geochemistry is strongly influenced by the redox potential. The dissolved oxygen (DO) content of water is also related to redox. A low DO indicates that the redox potential will also be low; however, the actual potential is also a function of the oxidation state of any dissolved chemical species.

Furthermore, contaminants that induce an oxygen demand in water will reduce the DO. Thus, a lower than ambient DO may indicate a zone of potential contamination.

In accordance with the sampling plan, ground water samples were collected for laboratory chemical analysis from three shallow wells. Prior to ground water sampling, a minimum of three well volumes was purged from each well using either a hand-operated bailer or peristaltic pump. The ground water extracted during purging was continually monitored for pH, temperature, and specific conductance. Ground water was purged until the pH, temperature, and specific conductance had all stabilized to $\pm$ 10% on successive well volumes. Salinity values of the purge water were also recorded for informational purposes. A summary of the well purge parameters is provided as Table 3-7. Purging rates were kept below three gallons/minute to avoid over-pumping or pumping the well to dryness. In addition, the well was purged from the top of the water column down to allow the purging of the entire water column. The wells were sampled within two hours of purging.

Ground water samples were collected with dedicated, decontaminated Teflon bailers. A Teflon leader-line approximately 3-feet in length was attached to the end of the bailer. A polyethylene coated nylon rope was attached to the Teflon line and used to lower and raise the bailer in the monitoring well. The ground water sample was collected by slowly lowering the bailer into the well until the bailer was filled with water. Once filled, the bailer was raised to the surface where the ground water was transferred to the appropriate sample containers. Although the plan was to use a low flow sampling technique (peristaltic pump) to sample for metals to aid in reducing the potential for the collection of a highly turbid sample, this method was not feasible due to the low sample volume in the wells (i.e., would quickly pump wells dry).

Ground water samples from the three shallow monitoring wells MW-1S, MW-2S, and MW-3S were collected in separate pre-preserved containers (as appropriate) for the following laboratory analysis: VOCs (EPA Method 8240), SVOCs (EPA Method 8270), priority pollutant metals (EPA Method 200.7), TPH (EPA Method 418.1), total dissolved solids (TDS by EPA Method 160.1), and total chloride (EPA Method 9252). The order in which the ground water sample containers were filled was VOCs, SVOCs, TPH, chloride, metals, and TDS. The scope of this ground water investigation included the sampling of only the three originally planned

shallow wells (MW-1S, MW-2S, and MW-3S) for laboratory chemical analysis. However, as a preliminary cost-effective measure, a sample was also collected from well MW-4S for TPH analysis. The shallow well ground water sample from one of the wells (MW-3S) was also field filtered for dissolved metals analysis. This ground water sample was a split duplicate of the sample being submitted for total metals analysis and was field filtered through a 0.45 micron filter immediately following collection.

The temperature, pH, conductivity, redox potential, dissolved oxygen, and salinity of the ground water in each of the nine wells was also measured in the field. A summary of these ground water sample field parameters is provided in Table 3-8.

All ground water sampling equipment was decontaminated prior to use. The Teflon bailers were laboratory decontaminated according to the eight-step procedure specified in the sampling plan. The "eight-step" decontamination procedure included the following: a non-phosphate soap wash, a tap water rinse, a dilute nitric acid (10%) rinse, a tap water rinse, a methanol rinse, a hexane rinse, air dry, and distilled water rinse.

Field quality control (QC) samples were also collected and maintained during the ground water sampling activities. The ground water QC samples included a field rinsate blank sample ("FBW" notation) collected from a decontaminated Teflon bailer prior to sampling. A trip blank ("TB" notation) prepared by the laboratory, accompanied the sample containers from the laboratory, the samples in the field, and the samples back to the laboratory. A duplicate soil sample was also collected in the field by alternately filling identical sample containers with ground water from a bailer. The duplicate ground water sample was labelled and submitted to the laboratory with a different identification number than that of the actual sample location (i.e., as a "blind" sample).

3.3.1 Site Hydrogeology

The ground water monitoring network consists of the nine wells installed at four locations at the site. The locations of the wells are shown on Figure 3-1. As presented previously, three wells were installed at two locations (MW-2 and MW-3), two wells were installed at one location (MW-1), and one well was installed at another location (MW-4). The wells were installed such that they are screened across one of the following intervals: the ground water

Method 160.1), and total chloride (EPA Method 9252). The order in which the ground water sample containers were filled was VOCs, SVOCs, TPH, chloride, metals, and TDS. The scope of this ground water investigation included the sampling of the three originally planned shallow wells (MW-1S, MW-2S, and MW-3S) for laboratory chemical analysis. However, as a preliminary cost-effective measure, a sample was also collected from well MW-4S for TPH analysis. The shallow well ground water sample from one of the wells (MW-3S) was also field filtered for dissolved metals analysis. This ground water sample was a split duplicate of the sample being submitted for total metals analysis and was field filtered through a 0.45 micron filter immediately following collection and prior to preservation.

The temperature, pH, conductivity, redox potential, dissolved oxygen, and salinity of the ground water in each of the nine wells was also measured in the field. A summary of these ground water sample field parameters is provided in Table 3-8.

All ground water sampling equipment was decontaminated prior to use. The Teflon bailers were laboratory decontaminated according to the eight-step procedure specified in the sampling plan. The "eight-step" decontamination procedure included the following: a non-phosphate soap wash, a tap water rinse, a dilute nitric acid (10%) rinse, a tap water rinse, a methanol rinse, a hexane rinse, air dry, and distilled water rinse.

Field quality control (QC) samples were also collected and maintained during the ground water sampling activities. The ground water QC samples included a field rinsate blank sample ("FBW" notation) collected from a decontaminated Teflon bailer prior to sampling. A trip blank ("TB" notation) prepared by the laboratory, accompanied the sample containers from the laboratory, the samples in the field, and the samples back to the laboratory. A duplicate soil sample was also collected in the field by alternately filling identical sample containers with ground water from a bailer. The duplicate ground water sample was labelled and submitted to the laboratory with a different identification number than that of the actual sample location (i.e., as a "blind" sample).

Cove and Narragansett Bay. This primary flow direction is the most evident by the deeper ground water contour maps (Figures 3-6, 3-8, 3-10, 3-13 and 3-15) and several of the low tide ground water table contour maps (Figures 3-5 and 3-9). During periods of high tide (see Figures 3-11 and 3-14), site shallow ground water around well MW-4 near the shoreline flows in a reversed southeasterly direction. At two other measurement events, during a slack tide (Figure 3-7) and a low tide (Figure 3-12), shallow ground water flow direction was towards the northeast. These slight inconsistencies are likely the result of varying seasonal (precipitation and evapotranspiration) and tidal effects on the site ground water.

As is evident by comparing the ground water contour maps to one another, the shallow ground water flow along the western edge of the site and around well MW-3S appears be effected by the presence of the sheetpile bulkhead which runs along that edge of the site and Coddington Cove. Although the depth of the sheetpile is unknown, it appears that it extends deep enough to cause the shallow ground water in that area to flow to the north around the end of the sheetpile just south of well MW-4S. Further evidence of this occurence was obtained by the URI from reduced salinity measurements in the Cove surface water at the northern end of the sheetpile, indicating a likely fresh water ground water input. The sheetpile also appears to be effecting the tidal responses of the ground water elevations in this shoreline area as evidenced by the inconsistent ground water elevation values measured at well MW-3S. As indicated by the ground water elevation data and as expected, the greatest tidal effects were observed in the shoreline wells MW-4S, MW-3S, and MW-3D; however, as presented above the tidal effects at well MW-3S were not always consistent. Without additional or continuous ground water elevation measurements from the wells and the Cove, it is difficult to further explain or predict the effects of the bulkhead on the ground water flow conditions in that area of the site.

The depth to ground water in the area of the wells ranges from 8 feet (MW-4) to 13 feet (MW-1) below grade. The topography at the site slopes downward from east to west towards the Cove with a decrease in ground elevation of approximately 5 feet from well MW-1 to MW-4. Given that the bedrock topography also slopes downward from east to west, the depth to bedrock is much shallower at the eastern edge of the site than along the western shoreline edge.

However, in the area of this assessment, the ground water table was always found to be within the unconsolidated overburden materials.

Vertical hydraulic gradients were determined at the three sets of nested monitoring wells based on the ground water elevation measurements. The vertical gradient between two depths in an aquifer is equal to the difference in water elevations (i.e., hydraulic heads) divided by the vertical distance between the two points which the elevations represent. In the case where a vertical gradient is determined between a shallow or ground water table well and a well screened below the water table (e.g., an intermediate or deep well), the distance used to estimate the vertical gradient is that between the ground water table and middle of the screened interval of the deeper well. In calculating the head difference, the more shallow well ground water elevation is subtracted from the deeper well piezometric elevation such that a resulting negative value indicates a downward gradient. A summary of the vertical gradient factors and values calculated under this assessment is provided in Table 3-9.

Both positive (upward) and negative (downward) vertical gradients were observed in the ground water at the wells nests. Consistently positive or upward gradients were observed at the most inland well location MW-1 between the shallow and deep well at that location. The greatest upward vertical gradient (0.17 ft./ft.) was observed at well MW-1 on the December 12, 1994 measurement date. A consistently negative gradient was only observed at one location, at well nest MW-3 between the shallow (S) and deep well (D). The greatest negative gradient (-0.14 ft./ft.) was observed between the shallow and intermediate well at MW-3. Negative gradients were typically observed between all of the wells at well nest MW-3. However, positive and negative gradients were observed during both low and high tides at this location. This is likely a result of a combination of different tidal effects, seasonal variations, and influences from the adjacent sheetpile bulkhead. Although slight positive gradients were common at well nest MW-2, slight negative vertical gradients were also observed on several occasions at well nest MW-2

Horizontal hydraulic gradients were also determined from the ground water level measurements at the site. Horizontal gradients are used along with estimated aquifer hydraulic conductivity and effective porosity values to estimate horizontal ground water flow velocities, and thus the rate at which an aquifer may transport soluble contaminants. The horizontal

gradient represents the change in hydraulic head, measured in feet, per horizontal foot of travel through the flow medium. Horizontal gradients were calculated for both the shallow and deep ground water flow across the area of the site using the ground water contour maps generated for the site. The ground water contour maps (Figures 3-5 through 3-15) show the locations for which horizontal gradients were calculated (depicted by arrows on figures). Table 3-10 provides a summary of the calculated horizontal hydraulic gradients for the assessment area.

Average horizontal gradients were very low (less than 2%) across the investigation area, as would be expected over a relatively flat area. In the shallow ground water area between MW-1 and MW-4, the horizontal gradients generally varied slightly from 0.005 ft./ft. to 0.007 ft./ft. with ground water flow in a northwest direction. However, in the shallow ground water area near the shoreline and MW-3, partial ground water flow direction reversals were observed during two measurement events with flow in a northeast direction and slightly greater gradients ranging from 0.013 ft./ft. (12/12/94 low tide) to 0.017 ft./ft. (11/10/94 slack tide). In the intermediate ground water, horizontal gradient varied slightly from 0.005 ft./ft. to 0.013 ft./ft. with ground water flow in a northwest or west direction.

The highest intermediate ground water horizontal gradients (0.012 ft./ft. and 0.013 ft./ft.) were observed during the December 1994 measurement events when the ground water elevation in the most inland well MW-1D increased by approximately 1.4 feet more than the levels did in the other wells completed at this depth, MW-2I and MW-3I. This is likely due to greater seasonal recharge effects on the ground water level at well MW-1D than at the other two wells because of the thin overburden and shallow bedrock at well MW-1, thereby resulting in a decreased ability of the aquifer to absorb the increased seasonal recharge.

The calculated horizontal hydraulic gradients, along with estimated hydraulic conductivity and effective porosity values were used to calculate average linear velocity values for the site ground water. Table 3-10 provides a summary of the calculated average linear velocities for the site. Based on the geologic materials encountered at the site, the following hydraulic conductivity (K) and effective porosity (n) values have been estimated: the shallow silty sand layer having a K = 10 ft/day and n = 25% (0.25), and the deeper till layer having a K = 0.01 ft./day and n = 40% (0.40). These values are within published typical ranges for the silty sand and till encountered at the site.

As shown in Table 3-10, estimated average linear ground water velocities range from 0.0001 ft./day to 0.52 ft./day for the site ground water. Much greater linear velocities are estimated for the ground water in the shallow overburden silty sand than in the underlying dense till. Very small linear velocities ranging from 0.0001 ft./day to 0.0003 ft./day are estimated for the ground water in the till. The greatest linear velocities of 0.52 ft./day and 0.68 ft./day are estimated for the two periods when a ground water flow reversal towards the northeast was observed from well MW-3 to well MW-2.

4.0 NATURE AND EXTENT OF CONTAMINATION

This section of the report presents the sample results for the soil and ground water sampling activities described in Section 2.0. This discussion of the nature and extent of contamination is presented in separate sections for the soil and ground water. Each section provides a summary of each investigation activity followed by a separate discussion for each of the following chemical compound classes: volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), semivolatile organic compounds (SVOCs), and inorganics. Under this assessment, soil samples were collected from well borings and ground water samples were collected from monitoring wells installed in the well borings. The locations of the monitoring wells are shown on Figure 3-1.

The chemical class discussions contain summaries of analytical results along with comparisons of detected contaminant levels to action levels, guidelines and/or standards. Ground water contaminant levels were compared to federal maximum contaminant levels (MCLs) established under the Safe Drinking Water Act and to state ground water quality standards established under the Rhode Island DEM Rules and Regulations for Ground Water Quality (July 1993). The site ground water is classified as GB which means that the ground water may not be suitable for drinking water without treatment due to known or presumed degradation.

Soil and ground water samples were analyzed for VOCs (EPA Method 8240), SVOCs (EPA Method 8270), priority pollutant metals (assorted EPA methods), and TPH (EPA Method 418.1). Ground water samples were also analyzed for total chloride and TDS. A summary of the samples collected and analyses conducted under this assessment is provided in Table 4-1. Copies of the laboratory data reports are provided in Appendix C of this report.

4.1 SOIL ASSESSMENT

Soil samples were collected during the monitoring well drilling activities. A total of six soil samples (plus one duplicate sample) were collected during the site investigation. A summary of the soil sample results is provided as detection summary or "hits" tables in Table 4-2. The depths from which the samples were collected are also noted on this table.

Presented in this section of the report is a discussion on the nature and extent of the soil contamination at the locations investigated around Building 42 of the former Derecktor Shipyard site. The discussion for the soils is presented in the order of the following chemical classes: VOCs, TPH, SVOCs, and metals. The contaminant discussion for each section presents general observations regarding soil contamination along with comparisons to applicable soil guidance or action levels. Soil action levels established by the RIDEM for lead was also evaluated in this comparison.

4.1.1 Volatile Organic Compounds (VOCs)

During the site investigation, seven soil samples were collected from the site and analyzed for VOCs. The soil sample VOC results indicate the presence of low parts per billion (ppb) levels (6-30 ppb) of methylene chloride, considered to be a "common laboratory solvent". As indicated on Table 4-2, this compound was also found in the laboratory, field, and trip blanks associated with the samples. Based upon these findings, methylene chloride will not be discussed further in this assessment.

The only other VOC detected in the soil samples was acetone. A low concentration of acetone (180 ppb) was detected in soil sample B1-2 collected from 10-12 feet below grade. This sample was collected from the boring completed for well MW-2 at a depth just above the ground water table. Although acetone is also considered to be a "common laboratory solvent" and is used in sampling equipment decontamination, it was not detected in any of the laboratory, field, or trip blanks associated with the soil samples. There were no signs (i.e., stains, odors) of potential VOC contamination in this sample and no VOCs were detected off of this sample in the field with the HNu.

In general, the soil VOC data indicates there is little or no VOC contamination at the sample locations. Although, acetone was detected in one soil sample at a level greater than that typically attributed to laboratory contamination and it was not detected in any of the associated quality control blanks, its presence in the sample is considered suspect. This is due to the fact that there were no other signs of potential contamination in the sample, no other organic compounds were detected in the sample, acetone is not documented to be a potential site contaminant of concern, and acetone is a common laboratory contaminant.

Also note that although volatile gases were measured off of several of the soil samples in the field (see boring logs) with an organic vapor analyzer (OVA) which is equipped with a flame ionization detector (FID), no gases or vapors were measured off of these same samples with an HNu photoionization detector (PID). This indicates that the gases or vapors detected with the OVA FID were likely attributed to methane which the OVA FID detects and the HNu PID does not.

4.1.2 Total Petroleum Hydrocarbon (TPH)

Seven soil samples (plus one duplicate sample) were collected during the site investigation for TPH analysis (Method 418.1). TPH levels above the analytical detection limits were reported in all but one of the soil samples. The detected TPH levels ranged from 84 ppm to 1,100 ppm. The highest TPH levels were detected in the two soil samples B3-1 and B3-2 collected from the boring completed for well MW-3. Sample B3-2 which had a TPH concentration of 1,100 ppm was collected from fill material 8 to 10 feet below grade just above the depth of the ground water table. Whereas, sample B3-1 which had a TPH concentration of 590 ppm was collected from fill material 2 to 4 feet below grade. Neither of these samples had any signs of potential contamination (e.g., stains, odors).

Lower TPH levels were detected in the soil at the other two well locations. At well location MW-1, TPH was not detected in sample B1-1 from 4 to 6 feet below grade and a TPH level of 84 ppm was detected in sample B1-2 from 10 to 12 feet below grade just above the depth of the ground water table. At well location MW-2, TPH levels of 460 ppm and 140 ppm were detected in samples B2-1 (0 to 2 feet) and B2-2 (6 to 8 feet), respectively. Sample B2-1 contained fill material including black sand blast grit.

4.1.3 Semivolatile Organic Compounds (SVOCs)

Seven soil samples were collected during the site investigation for SVOC analysis. Five of the seven soil samples collected contained detectable concentrations of SVOCs. Detected total SVOC concentrations ranged from 420 ppb to 9,820 ppb. The SVOCs detected in the site soils consisted primarily of PAHs. Individual PAH concentrations detected in the soil samples ranged from 420 ppb to 2,700 ppb. Total detected PAH concentrations of the soil samples ranged from

420 ppb (B3-2) to 7,700 ppb (B2-1). The SVOC, bis(2-ethylhexyl)phthalate, was also detected in one of the soil samples (B2-1) at a concentration of 1,200 ppb.

Sample B2-1 collected at the surface (0 to 2 feet) which was found to have the highest SVOC and PAH levels was observed to contain fill material which included black sand blast grit. Sand blast grit material is visible across the surface of the area where well MW-2 is location. Prior reports have shown the sand blast grit material to contain elevated metals as a result the paint contained in the used grit. Based on the soil data, it appears that PAHs and phthalate are also associated with the black sand blast grit.

In general, little or no SVOC contamination was found in the soils, with the exception of sample B2-1. It appears that the higher SVOC levels detected in sample B2-1 are associated with the sand blast grit or "black beauty" material in this sample.

4.1.4 Metals

During the site investigation seven soil samples (plus one duplicate) were collected and analyzed for the thirteen priority pollutant metals. Several metals were detected in the soil samples. The metals detected in all of the soil samples include arsenic, chromium, copper, nickel, and zinc. Other metals detected in all but a few of the soil samples include beryllium (3 of 7 samples) and lead (6 of 7 samples). Metals which were infrequently detected in the soil samples include cadmium (1 sample) and mercury (1 sample). The metals antimony, selenium, silver, and thallium were not detected in any of the soil samples. A summary of the concentration ranges for the metals detected in the soil samples is provided in Table 4-3.

An evaluation of the soil data indicates that elevated levels of metals were detected in several of the soil samples. As shown in Table 4-3, the soil sample having the highest levels of several of the metals was sample B2-1 collected from the surface at well location MW-2. This sample contained the sand blast fill material referred to as "black beauty" which has previously been reported to have elevated metals concentrations (see Appendix A data). This was the only soil sample collected at the surface (i.e., 0- to 2-foot depth) under this investigation.

Detected lead concentrations in the soil samples were also compared to the RIDEM soil lead guidance level of 300 ppm. This lead soil guidance level was exceeded in one of the soil

samples, sample B2-1 which had a lead concentration of 380 ppm. As previously indicated, this sample was collected from the surface fill material found at the boring location and contained the metal-laden used sand blast grit. However, note that previous EP toxicity testing of this material indicated that the leaching potential of the metals was low and did not result in the material as being characterized as hazardous waste.

4.2 GROUND WATER ASSESSMENT

Ground water samples were collected from four shallow monitoring wells screened at the ground water table within the overburden material. Several other intermediate and deep wells were also installed at the shallow wells locations; however, these wells were not sampled for chemical analysis under this assessment. Figure 3-1 provides the locations of the monitoring wells. Ground water samples collected from three of the shallow wells (MW-1, MW-2, and MW-3) were analyzed for VOCs (EPA Method 8240), SVOCs (EPA Method 8270), priority pollutant metals (assorted EPA methods), total dissolved solids (EPA Method 160.1), and total chloride (EPA Method 9252). The ground water sample collected from the remaining well (MW-4) was only analyzed for TPH. Although the sampling of this well for chemical analysis was not included under the original scope of this assessment, it was sampled for TPH analysis as a preliminary cost effective assessment of petroleum-related ground water contamination at this location. Detection summary or "hits" tables for the ground water samples are presented as Table 4-4.

The following sections discuss the presence and nature of ground water contamination detected in the site ground water samples. The ground water assessment discussion is presented in the order of the following chemical compound classes: VOCs, TPH, SVOCs, and inorganic analytes. Ground water contaminant levels were compared to federal maximum contaminant levels (MCLs) and secondary maximum contaminant levels (SMCLs) established under the Safe Drinking Water Act, and to the Rhode Island DEM Rules and Regulations for Ground Water Quality (July 1993). Contaminant-specific comparisons of detected levels to federal and RIDEM ground water standards for the ground water samples are presented in Table 4-5. Figure 3-16 presents the compounds and analytes which were detected in the site monitoring well ground water samples above federal MCLs and State of Rhode Island Ground Water Quality Standards.

Although MCLs and state ground water quality standards are being used for the purpose of this assessment, these regulations may not be directly applicable to the site ground water based on its state classification as GB, the fact that it is not a current source of drinking water, and the proximity of Coddington Cove and the associated effects of salt water intrusion. In addition, information obtained under this assessment (e.g., high chloride, high TDS) indicates that the shallow ground water is not of potable quality. Instead, site-specific human health and environmental considerations (i.e., effects on ecological receptors) which take into account current and planned future uses of the property may be considered to determine more appropriate ground water action levels for this site. In addition, background or upgradient ground water data (especially metals data) should also be obtained in order to perform a more complete assessment of the site ground water data. However, in the absence of conducting risk assessments or having any background ground water data, the site ground water concentrations will be compared to established drinking water standards in this evaluation.

4.2.1 Volatile Organic Compounds (VOCs)

During the site investigation, ground water samples were collected from three shallow monitoring wells (MW-1, MW-2, and MW-3) and analyzed for VOCs . The ground water sample results indicate that no VOCs were detected in the shallow ground water at these wells. In addition, during the drilling, installation, development, and purging of these wells, no significant signs of potential volatile organic contamination (other than methane) were observed. Furthermore, prior to sampling all of the wells, the headspace of each well casing was checked with an OVA and HNu to aid in assessing the presence of any volatile organic vapors or gases in the ground water. As shown in Table 3-4, although detectable OVA readings were obtained in the headspace of most of the wells, very low HNu readings were only detected in two of the wells at one of the locations. As with the soil OVA/HNu readings, this indicates that the OVA readings are likely related to naturally-occurring levels of methane in the subsurface.

To further investigate the presence of VOCs in the site ground water, all nine wells installed at the site were probed from top to bottom with an oil/water interface probe to assess the presence of any non-aqueous phase liquids (NAPLs) in the ground water at each well. No NAPLs were detected in any of the wells with the oil/water interface probe. In addition, no

NAPLs were observed in any of the ground water during the well purging, developing, or sampling.

4.2.2 Total Petroleum Hydrocarbon (TPH)

During the site investigation, ground water samples were collected from all four shallow monitoring wells (MW-1, MW-2, MW-3, and MW-4) and analyzed for TPH. The ground water sample results indicate that TPH levels were not detected in any of the three samples. The TPH practical quantitation limit for the ground water samples was 0.30 ppm.

4.2.3 Semivolatile Organic Compounds (SVOCs)

The ground water samples collected from three of the shallow wells (MW-1, MW-2, and MW-3) were analyzed for SVOCs. Results of the sample analysis indicate that there were no detectable concentrations of SVOCs present in the shallow ground water samples from these wells. The individual SVOC practical quantitation limits for the ground water samples ranged from 10 to 50 ppb.

4.2.4 Inorganic Compounds

During the site investigation, ground water samples were collected from three of the shallow monitoring wells (MW-1, MW-2, and MW-3) and analyzed for total priority pollutant metals (i.e., unfiltered) and total chloride. An aliquot of the ground water sample from monitoring well MW-3S was also analyzed for dissolved metals (i.e., field filtered). Metals detected in the ground water samples include arsenic, chromium, copper, lead, nickel, zinc. In addition, levels of total chloride were detected in each of the ground water samples.

As shown in Table 4-5, the metals which were detected above federal MCLs and/or state ground water quality standards include arsenic, chromium, lead, and nickel. Samples from two of the monitoring wells, MW-2S and MW-3S, contained several metals that exceeded the federal MCLs and/or state ground water quality standards. Chloride was also detected above federal SMCLs in the ground water samples from all three wells. The highest concentrations of most of the metals were detected in the ground water sample collected from well MW-3S.

Dissolved metals analysis was also conducted on one filtered ground water sample (labelled MW-6S) collected from well MW-3S. Although the EPA requires total metals analysis (i.e., unfiltered) as a conservative worst-case approach in determining the presence and levels of metals in the ground water, a filtered sample was also collected for comparison and to aid in evaluating the metals levels detected in the ground water samples. According to EPA risk assessment guidance, total metals ground water data is also required for risk assessment purposes. However, in some instances (e.g., very turbid water of non-potable quality), filtered ground water sample data may sometimes be considered more appropriate.

As shown in Table 4-4, a comparison of the well MW-3S filtered and non-filtered ground water sample results indicate that the inorganic concentrations in the filtered samples are far below the concentrations of the non-filtered samples. As indicated by ground water turbidity and dissolved solids data and field observations, many of the ground water sample were turbid and visibly contained solids. In fact, the ground water from well MW-3S, which was analyzed for both total and dissolved metals, was also found to have the greatest turbidity and solids contents. Thus, it appears that the high concentrations of inorganic contamination detected in the site ground water are likely related to the fine soil particles in the ground water. In addition, the high TDS values for the shoreline ground water (wells MW-3S and MW-4S) indicates that this water is not potable in that the suggested aesthetic TDS limit is 500 mg/l.

Each of the ground water samples was also analyzed for total chloride and salinity to assess the presence of any seawater intrusion from the adjacent Coddington Cover into the site ground water. The total chloride results are presented with the ground water "hits tables" in Table 4-4. Salinity values for the ground water sample are presented in Table 3-8. Results of these analyses indicate that chloride was detected in each of the ground water samples at concentrations ranging from 24 ppm to 372 ppm. The highest concentrations of total chloride were detected in monitoring wells MW-2S (372 ppm) and MW-3S (324 ppm). Levels of salinity (ranging from 0.75 parts per thousand (ppt) to 1.0 ppt) and conductivity (0.17 mmhos/cm to 1.85 mmhos/cm) were also detected in these two ground water samples.

Salinity values were also measured in each of the other site wells at concentrations ranging from 0 ppt to 3 ppt. Although no levels of salinity (i.e., 0 ppt) were measured in wells MW-1S and MW-1D located the furthest inland from the Cove, a total chloride concentration

of 24.9 ppm was detected in well MW-1S. The highest ground water salinity values were measured in wells MW-3I (3 ppt) and MW-3D (1.4 ppt) located directly adjacent to Coddington Cove. Salinity and conductivity values of the water of Coddington Cove adjacent to the site were also measured for comparison to site ground water values. The salinity and conductivity values measured in the adjacent surface water were 29 ppt and 35,000 umhos/cm, respectively. Based on the ground water sample salinity and chloride data, there is evidence of salt water intrusion in the site ground water.

5.0 SUMMARY AND CONCLUSIONS

5.1 SUMMARY

The findings of this assessment indicate the presence of generally low levels of contaminants in the site soils and ground water. Select soil samples were found to contain levels of organic and inorganic contaminants. Total petroleum hydrocarbon (TPH) levels were also detected in many of the soil samples. However, nondetectable to low levels of volatile organic compounds were detected in the soil samples. In addition, none of the soil samples were found to have any signs of potential petroleum-related contamination (e.g., stains, odors). The soils found to have the greatest signs of contamination were the surface fill material at well MW-2 and the shoreline fill materials at well MW-3. The most overall elevated heavy metals levels were detected in the black sand blast surface fill material at well MW-2. In addition, this used sand blast material was found to contain detectable levels of polynuclear aromatic hydrocarbons (PAHs). Previous studies also showed this discarded sand blast grit ("black beauty") to contain elevated levels of heavy metals.

The site ground water is classified as GB by the RIDEM which means that the ground water may not be suitable for drinking water without treatment due to known or presumed degradation. The ground water at the site was found to contain no detectable levels of organics or total petroleum hydrocarbon. In addition, no NAPLs were observed during any of the well installation or sampling activities. However, several metals including arsenic, chromium, lead, and nickel were detected at levels above drinking water standards in two of the ground water samples (MW-2S and MW-3S). Both of these samples were silty and found to contain very high levels of dissolved solids. A dissolved metals (i.e., filtered) duplicate sample analysis of one of these samples (MW-3S), showed significantly reduced levels of metals similar to those detected in the other ground water sample and below all drinking water standards. Chloride was also detected above secondary drinking water standards in all of the ground water samples. Many of the site ground water samples were found to be very silty and had very high total dissolved solids levels above aesthetic potable limits. In addition, salinity measurements obtained during ground

water sampling, indicating the occurrence of sea water intrusion from the adjacent bay into the site ground water.

5.2 CONCLUSIONS

The findings of this assessment indicate that some of the site soils and surface fill material contain elevated levels of metals. The elevated metals soil levels appear to be related to the used black sand blast fill material present on the surface in several areas of the site. Although elevated metals levels were also detected in several of the ground water samples, duplicate dissolved (filtered) analysis indicates that this is a result of the high fines (silts and clays) content in the ground water samples. This is consistent with the soil grain size analysis results which indicate that the aquifer formation materials contain a high percentage (approximately 40%) of fines. Furthermore, the demonstrated occurrence of salt water intrusion into the site ground water has likely adversely affected the site ground water quality. In addition, the high chloride and total dissolved solids levels of the site ground water indicate that it is of non-potable quality.

Therefore, although metals were detected above drinking water standards in site ground water samples, their detection is not necessarily considered to be an indication of a site-related ground water contamination problem. Although the site ground water is not of potable quality, it is consistent with the RIDEM GB classification for this area. The site data indicates that the elevated metals levels detected in the ground water are primarily related to fines present in the aquifer formation soils.

Based on the findings of this assessment, the most significant area of concern is the spent sand blast material ("black beauty") which is deposited on the surface in several areas of the site. This material was found to have elevated levels of several metals including chromium, copper, lead, nickel, and zinc. These findings are consistent with previous investigation sand blast analysis results. Although previous analysis indicates that the leaching potential of this material is low, the elevated metal levels in the material may present an elevated human health exposure risk to site visitors or future site workers. In addition, the discarded sand blast material may also pose an ecological risk to terrestrial organisms or nearby marine organisms in the adjacent Cove.

The scope of this assessment did not include a human health or ecological risk assessment to quantify these risks.

Given the above concerns, any future commercial or industrial development of the site area should include provisions for containment or capping (e.g., pavement) of the site to reduce or eliminate any potential exposure risks or off-site migration of the fill material or discarded sand blast grit. However, regrading and preparation of the surface fill materials and site area would be necessary as part of any such activity. Under any future site development activities which involve the disturbance of the discarded sand blast grit, it is recommended that a site mitigation plan be prepared which addresses the potential fill material hazards and related personnel protection requirements. In addition, should future development of the site involve any removal of the fill materials or sand blast grit from the site, the material should be properly characterized for off-site disposal.

TABLES

TABLE 3-1
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD - BUILDING 42
LIST OF LABORATORY ANALYSIS COMPOUNDS/ANALYTES

Volatile Organic Compounds (Method 8240)	Semivolatile Organic Compounds (Method 8270)		Priority Pollutant Metals
Benzene	Acenaphthene	Dimethyl phthalate	Antimony
Bromodichloromethane	Acenaphthylene	2-Methyl-4,6-dinitrophenol	Arsenic
Bromoform	Aniline	2,4-Dinitrophenol	Beryllium
Bromomethane	Anthracene	2,4-Dinitrotoluene	Cadmuim
Carbon tetrachloride	Benzoic acid	2,6-Dinitrotoluene	Chromium
Chlorobenzene	Benzo(a)anthracene	Di-n-octylphthalate	Copper
Chloroethane	Benzo(b)fluoranthene	Fluoranthene	Lead
2-Chloroethylvinyl ether	Benzo(k)fluoranthene	Fluorene	Mercury
Chloroform	Benzo(g,h,i)perylene	Hexachlorobenzene	Nickel
Chloromethane	Benzo(a)pyrene	Hexachlorobutadiene	Selenium
Dibromochloromethane	Benzyl alcohol	Hexachlorocyclopentadiene	Silver
1,2-Dichlorobenzene	bis(2-Chloroethoxy)methane	Hexachloroethane	Thalluim
1,3-Dichlorobenzene	bis(2-Chloroethyl)ether	Indeno(1,2,3-cd)pyrene	Zinc
1,4-Dichlorobenzene	bis(2-Chloroisopropyl)ether	Isophorone	
1,1-Dichlorethane	bis(2-Ethylhexyl)phthalate	2-Methylnaphthalene	
1,2-Dichloroethane	4-Bromophenyl phenyl ether	2-Methylphenol (o-cresol)	
1,1-Dichloroethene	Benzyl butyl phthalate	4-Methylphenol (p-cresol)	
1,2-Dichloroethene (Total)	4-Chloroaniline	Naphthalene	
1,2-Dichloropropane	2-Chloronaphthalene	2-Nitoraniline	
cis-1,3-Dichloropropene	4-Chloro-3-methylphenol	3-Nitroaniline	
trans-1,3-Dichloropropene	2-Chlorophenol	4-Nitroaniline	
Ethylbenzene	4-Chlorophenyl phenyl ether	Nitrobenzene	
Methylene chloride	Chrysene	2-Nitrophenol	
1,1,2,2-Tetrachloroethane	Dibenzo(a,h)anthracene	4-Nitrophenol	
Tetrachloroethene	Dibenzofuran	N-Nitroso-di-n-propylamine	
Toluene	Di-n-butyl phthalate	N-Nitrosodiphenylamine	
1,1,1-Trichloroethane	1,3-Dichlorobenzene	Pentachlorophenol	
1,1,2-Trichloroethane	1,4-Dichlorobenzene	Phenathrene	
Trichloroethene	1,2-Dichlorobenzene	Phenol	
Trichlorofluoromethane	1,2-Diphenylhydrazine	Pyrene	
Vinyl chloride	3,3'-Dichlorobenzidine	1,2,4-Trichlorobenzene	
Acetone	2,4-Dichlorophenol	2,4,5-Trichlorophenol	
2-Butanone	Diethyl phthalate	2,4,6-Trichlorophenol	
Carbon disulfide	2,4-Dimethylphenol		
1,2-Dibromoethane			
2-Hexanone			
Methyl-t-butylether			
4-Methyl-2-pentanone			
Styrene			
Vinyl Acetate			
Xylenes (Total)			

TABLE 3-2
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD - BUILDING 42
TOTAL ORGANIC CARBON SOIL DATA

Sample Location:	D42-B1-3	D42-B1-4	D42-B2-3	D42-B3-3
Sample Collection Date:	17 OCT 94	17 OCT 94	19 OCT 94	21 OCT 94
Sample Depth:	10-12'	15-17'	14-16'	14-16'
Total Organic Carbon (TOC) (ppm)	12,700	6,400	9,780	2,990

TABLE 3-3
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD - BUILDING 42
MONITORING WELL CONSTRUCTION ELEVATION SUMMARY

Well Number	Date Installed	Ground Elev. (msl)	Inner Casing Elev. (msl)	Screen Depth (from ground surface) Top	Screen Depth (from ground surface) Bottom	Screen Elevation (msl) Top	Screen Elevation (msl) Bottom
MW-1S	10/17/94	13.87	13.39	5.00	15.00	8.87	-1.13
MW-1D	10/19/94	13.88	13.52	16.00	21.00	-2.12	-7.12
MW-2S	10/20/94	12.22	11.80	8.00	18.00	4.22	-5.78
MW-2I	10/21/94	11.95	11.74	27.00	32.00	-15.05	-20.05
MW-2D	10/20/94	11.95	11.72	41.00	46.00	-29.05	-34.05
MW-3S	10/21/94	10.73	10.44	8.00	18.00	2.73	-7.27
MW-3I	10/25/94	10.97	10.59	30.00	35.00	-19.03	-24.03
MW-3D	10/25/94	10.96	10.32	47.50	52.50	-36.54	-41.54
MW-4S	10/26/94	9.19	8.70	7.00	17.00	2.19	-7.81

TABLE 3-4
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD - BUILDING 42
MONITORING WELL DEVELOPMENT PARAMETERS

Well Number	Date	Pump Type/ Total Gal. Pumped	Time	pH	Temperature (o C)	Conductivity (mmhos/cm)	Turbidity (NTU)	Observations
MW-01S	10/27/94	Submersible	13:30	NR	NR	NR	NR	
		4.5 gallons	13:45	7.8	16	200	215	Brown/gray silty.
			14:00	7.5	16	200	220	Brown/gray silty.
			14:20	7.9	16	240	37	Brown/gray silty.
			14:40	8.5	16	220	146	Brown/gray silty.
			15:00	8.6	16	235	NR	Brown/gray silty.
			15:20	8.6	15	230	NR	
MW-01D	10/26/94	Submersible	16:20	7.8	15	270	>1,000	Water very silty.
		15 gallons	16:25	8.1	15	205	>1,000	
			16:30	8.0	14	195	>1,000	
			16:35	8.6	14	265	639	
			16:40	8.6	14	215	716	Well pumped dry.
			16:45	NR	NR	NR	NR	Surged well.
			17:00	8.3	14	205	>1,000	
			17:05	8.3	14	240	503	
			17:25	8.5	14	210	>1,000	Well pumped dry.
MW-02S	10/27/94	Peristaltic	11:20	7.0	16	1,950	>1,000	Dark gray silty.
		35 gallons	11:28	6.8	15	1,390	488	
			11:51	6.8	16	2,020	101	
			12:02	7.5	15	1,200	NR	
			12:23	6.8	15	1,900	87	
			12:31	6.7	15	1,850	290	
			13:00	NR	15	1,800	136	Very light gray silty.

TABLE 3-4
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD - BUILDING 42
MONITORING WELL DEVELOPMENT PARAMETERS

Well Number	Date	Pump Type/ Total Gal. Pumped	Time	pH	Temperature (o C)	Conductivity (mmhos/cm)	Turbidity (NTU)	Observations
MW-02I	10/27/94	Submersible	9:35	12.3	14	2,200	193	Dark gray silty. Very slow
		7 gallons	12:17	12.2	16	2,100	290	recovery.
			12:52	12.1	18	2,400	286	Light gray silt
MW-02D	10/27/94	Submersible	7:38	12.8	11	1,500	328	Gray silty. Very slow
		10 gallons	8:35	12.4	12	1,500	>1,000	recovery. Dark gray silty.
			9:13	12.2	14	1,500	>1,000	
			10:43	12.0	14	870	NR	
			10:45	12.0	14	820	>1,000	
			10:54	11.6	16	780	NR	
			12:44	10.3	16	350	372	Gray silty.
MW-03S	10/26/94	Submersible	14:30	7.1	17	1,200	>1,000	Very silty.
		7 gallons	14:35	7.2	16	1,300	>1,000	Slow recharge.
			15:20	6.8	15	700	>1,000	
			15:30	6.7	15	750	>1,000	
	10/27/94	Submersible	15:50	7.3	15	1,250	>1,000	Brown silty.
		15 gallons	16:15	8.0	15	1,200	>1,000	
			16:30	8.0	14	1,350	520	Brown cloudy.

TABLE 3-4
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD - BUILDING 42
MONITORING WELL DEVELOPMENT PARAMETERS

Well Number	Date	Pump Type/ Total Gal. Pumped	Time	pH	Temperature (o C)	Conductivity (mmhos/cm)	Turbidity (NTU)	Observations
MW-03I	10/26/94	Submersible 3 gallons	13:40	12.5	14	2,350	209	Very silty
	10/27/94	Submersible	16:00	12.4	14	3,100	328	Cloudy brown/gray.
		10 gallons	16:20	12.5	13	4,100	360	Cloudy brown.
			16:40	12.2	12	3,800	146	Clear.
MW-03D	10/26/94	Submersible	11:05	12.1	16	3,950	98	Gray silty.
		55 gallons	11:10	12.3	13	2,450	392	
			11:15	10.8	12	1,500	479	
			11:20	10.0	12	1,900	122	
			11:25	9.7	12	1,950	49	Clear.
			11:30	11.4	12	1,950	50	Surged again.
			11:45	11.2	12	1,750	354	Gray silty.
			11:50	11.0	12	1,950	340	
			11:55	10.2	12	1,950	397	
			12:00	9.7	12	2,000	98	Cloudy.
			12:05	9.1	12	2,000	28	Clear.
			12:10	9.1	12	1,950	23	
			12:15	9.0	12	2,000	20	Clear.
MW-04S	10/27/94	Peristaltic	13:40	8.1	18	600	3	Gray silty, possible oil
		35 gallons	14:00	8.1	16	445	5	sheen, no odor.
			14:30	8.5	16	750	177	
			14:45	8.6	16	1,000	135	Cloudy
			15:00	8.3	15	1,450	6	Clear

TABLE 3-5
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD - BUILDING 42
MONITORING WELL HEADSPACE VALUES

Well Number	HNu (ppm)	OVA (ppm)
MW-1S	ND	1.5
MW-1D	ND	900
MW-2S	ND	700
MW-2I	0.8	>1,000
MW-2D	0.8	100
MW-3S	ND	37.5
MW-3I	ND	1.5
MW-3D	ND	0.5
MW-4S	ND	0.5

TABLE 3-6
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD - BUILDING 42
GROUND WATER LEVEL ELEVATION VALUES

Well Number	Measurement Date/Water Elevation (ft. msl)						Maximum Variation
	10/27/94 Low Tide	11/10/94 Slack Tide	11/11/94 Low Tide	11/11/94 High Tide	12/12/94 Low Tide	12/12/94 High Tide	
MW-1S	1.12	0.71	0.79	0.73	1.74	1.72	1.03
MW-1D	1.17	0.94	1.00	NR	2.76	2.77	1.83
MW-2S	-0.34	-0.73	-0.74	-0.89	-0.26	-0.33	0.63
MW-2I	-0.02	-0.81	-0.80	NR	-0.17	-0.21	0.79
MW-2D	0.00	-0.27	-0.48	NR	-0.29	-0.06	0.48
MW-3S	0.05	2.82	-0.70	-0.64	2.66	0.42	3.52
MW-3I	-0.26	-0.52	-0.64	NR	-0.19	-0.11	0.53
MW-3D	-0.80	0.05	-1.29	NR	-1.08	0.15	1.44
MW-4S	-1.42	-0.27	-1.61	0.12	0.74	1.10	2.71

Notes: NR = Denotes not recorded, water levels not recovered after recent sampling.

TABLE 3-7
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD - BUILDING 42
GROUND WATER DOWNHOLE PARAMETERS

Well Number	Date Sampled	Temperature (o C)	Dissolved Oxygen (mg/l)	Eh (mV)
MW-1S	11/10/94	15	2.5	355
MW-1D	11/10/94	14	2.2	338
MW-2S	11/10/94	14	3.6	250
MW-2I	11/10/94	14	3.6	329
MW-2D	11/10/94	14	3.1	247
MW-3S	11/10/94	14	6.0	446
MW-3I	11/10/94	13	7.7	228
MW-3D	11/10/94	14	8.8	66
MW-4S	11/10/94	13	11.0	485
Surface Water	11/10/94	13	12.0	204

TABLE 3-8
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD - BUILDING 42
MONITORING WELL PURGE PARAMETERS

Well Number	Date	Pump Type/ Total Gal. Pumped	Volume	pH	Temperature (o C)	Conductivity (umhos/cm)	Salinity (ppt)	Observations
MW-01S	11/11/94	Peristaltic Pump	0.5 gallons	6.5	13	225	0	Slightly cloudy
		1.7 gallons	0.5 gallons	6.4	13	180	0	
			0.7 gallons	6.4	13	170	0	Clear
MW-02S	11/10/94	Peristaltic Pump	1.5 gallons	6.8	13	1,050	0	Brown cloudy
		3 gallons	1.0 gallon	6.8	13	1,150	0.75	
			0.5 gallons	6.7	13	1,850	1	Slightly cloudy brown
MW-03S	11/10/94	Peristaltic Pump	1 gallon	6.2	14	850	0.3	Brown cloudy
		6 gallons	2 gallons	6.2	15	1,050	0.5	
			2 gallons	6.3	15	1,150	0.5	
			1 gallon	6.4	14	1,200	0.75	Brown cloudy
MW-04S	11/11/94	Bailer	1 gallon	7.6	14	1,050	0.5	Clear
		5 gallons	1 gallon	7.7	14	800	0.2	Clear
			1.5 gallons	7.7	14	900	0.3	Clear
			1.5 gallons	7.7	14	900	0.3	Clear

TABLE 3-9
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD
GROUND WATER SAMPLE FIELD PARAMETERS

Well Number	Date Sampled	Temperature (o C)	pH	Conductivity (umhos/cm)	Salinity (ppt)
MW-1S	11/11/94	13	6.4	170	0
MW-1D	11/11/94	14	6.7	270	0
MW-2S	11/10/94	13	6.7	1,850	1.0
MW-2I	11/11/94	14	6.5	1,400	0.75
MW-2D	11/11/94	12	10.8	280	0
MW-3S	11/10/94	14	6.4	1,200	0.75
MW-3I	11/11/94	12	11.2	4,000	3.0
MW-3D	11/10/94	11	12.0	2,025	1.4
MW-4S	11/11/94	14	7.7	900	0.3
Bay Water	11/11/94	11	7.9	35,000	29

TABLE 3-10
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD - BUILDING 42
GROUND WATER VERTICAL HYDRAULIC GRADIENTS

Well Cluster I.D.	Vertical Distance (feet)(1)					Head Difference (feet)(2)					Gradient (foot/foot)				
	10/27/94	11/10/94	11/11/94	12/12/94	12/12/94	10/27/94 Low Tide	11/10/94 Slack Tide	11/11/94 Low Tide	12/12/94 Low Tide	12/12/94 High Tide	10/27/94 Low Tide	11/10/94 Slack Tide	11/11/94 Low Tide	12/12/94 Low Tide	12/12/94 High Tide
MW-1(S-D)	5.74	5.33	5.41	6.36	6.34	0.05	0.23	0.21	1.02	1.05	0.0087	0.0432	0.0388	0.1604	0.1656
MW-2(S-I)	17.21	16.82	16.81	17.29	17.22	0.32	-0.08	-0.06	0.09	0.12	0.0186	-0.0048	-0.0036	0.0052	0.0070
MW-2(S-D)	31.21	30.82	30.81	31.29	31.22	0.34	0.46	0.26	-0.03	0.27	0.0109	0.0149	0.0084	-0.0010	0.0086
MW-2(I-D)	14.00	14.00	14.00	14.00	14.00	0.02	0.54	0.32	-0.12	0.15	0.0014	0.0386	0.0229	-0.0086	0.0107
MW-3 (S-I)	21.58	24.35	20.83	24.19	21.95	-0.31	-3.34	0.06	-2.85	-0.53	-0.0144	-0.1372	0.0029	-0.1178	-0.0241
MW-3 (S-D)	39.09	41.86	38.34	41.70	39.46	-0.85	-2.77	-0.59	-3.74	-0.27	-0.0217	-0.0662	-0.0154	-0.0897	-0.0068
MW-3 (I-D)	17.51	17.51	17.51	17.51	17.51	-0.54	0.57	-0.65	-0.89	0.26	-0.0308	0.0326	-0.0371	-0.0508	0.0148

Notes:

(1) The vertical distance is the difference in elevation between the water table in the shallow well (S) or the middle of intermediate (I) screen and the middle of the screened interval in the deeper well.

(2) The head difference is the elevation of the deeper well piezometric level minus the shallower well water table elevation. Thus, a negative sign on the value represents a downward gradient.

TABLE 3-11
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD - BUILDING 42
GROUND WATER HORIZONTAL HYDRAULIC GRADIENTS AND LINEAR VELOCITIES

Site Location	Average Horizontal Gradients (ft/ft)					Estimated Average Linear Velocity (ft/day)				
	10/27/94 Low Tide	11/10/94 Slack Tide	11/11/94 Low Tide	12/12/94 Low Tide	12/12/94 High Tide	10/27/94 Low Tide	11/10/94 Slack Tide	11/11/94 Low Tide	12/12/94 Low Tide	12/12/94 High Tide
Shallow Ground Water										
Near MW-1 and northwest to near MW-2	0.005	N/A	0.006	N/A	0.007	0.20	N/A	0.24	N/A	0.28
Near MW-2 and northwest to near MW-4	0.007	N/A	0.006	N/A	0.012	0.28	N/A	0.24	N/A	0.48
Near MW-3 and northeast to near MW-2	N/A	0.017	N/A	0.013	N/A	N/A	0.68	N/A	0.52	N/A
Intermediate Ground Water										
Near MW-1 and northwest	N/A	0.005	0.005	0.013	0.012	N/A	0.0001	0.0001	0.0003	0.0003
Near MW-1 and west	0.006	N/A	N/A	N/A	N/A	0.0002	N/A	N/A	N/A	N/A

Notes:

* The shallow and deep hydraulic conductivities for the site (10 ft/day and 0.01 ft/day, respectively) are estimated based on the materials encountered over the screened intervals of the well borings.
* Based on the geologic materials, effective porosities of 0.25 and 0.40 were assumed for the shallow and deeper ground water, respectively.

N/A Denotes Not Applicable.

TABLE 4-1
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD - BUILDING 42
ENVIRONMENTAL ASSESSMENT SAMPLE SUMMARY

Sample Matrix	Number and Type of Sample				Laboratory Analysis(2)
	Environmental	Duplicate	Field Blank	Trip Blank(1)	
Soils	6	1	1	-	A,B,C,D
	4	-	-	-	E,F
	-	-	-	1	A
Ground Water	3	1	2	-	A,B,C,D,G,H
	1	-	-	-	C
	1	-	-	-	D
	-	-	-	1	A

NOTES:

1. Trip blanks only analyzed for volatile organic compounds.
2. Analysis performed as follows:
   A). Volatile Organic Compounds (Method 8240)
   B). Semivolatile Organic Compounds (Method 8270)
   C). Priority Pollutant Metals (assorted EPA methods)
   D). Total Petroleum Hydrocarbons (Method 418.1)
   E). Total Organic Carbon
   F). Grain Size
   G). Total Dissolved Solids
   H). Total Chloride

TABLE 4-2
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD - BUILDING 42
SOIL SAMPLE LABORATORY DATA SUMMARY

Sample Location:	D42-B1-1	D42-B1-2	D42-B2-1	D42-B2-2	D42-B3-1
Sample Collection Date:	17 OCT 94	17 OCT 94	17 OCT 94	17 OCT 94	19 OCT 94
Sample Depth:	4-6'	10-12'	0-2'	6-8'	2-4'
Volatile Organic Compounds (ppb)					
Benzene	-	-	-	-	-
Bromodichloromethane	-	-	-	-	-
Bromoform	-	-	-	-	-
Bromomethane	-	-	-	-	-
Carbon tetrachloride	-	-	-	-	-
Chlorobenzene	-	-	-	-	-
Chloroethane	-	-	-	-	-
2-Chloroethylvinyl ether	-	-	-	-	-
Chloroform	-	-	-	-	-
Chloromethane	-	-	-	-	-
Dibromochloromethane	-	-	-	-	-
1,2-Dichlorobenzene	-	-	-	-	-
1,3-Dichlorobenzene	-	-	-	-	-
1,4-Dichlorobenzene	-	-	-	-	-
1,1-Dichlorethane	-	-	-	-	-
1,2-Dichloroethane	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-
1,2-Dichloroethene (Total)	-	-	-	-	-
1,2-Dichloropropane	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	-	-	-
trans-1,3-Dichloropropene	-	-	-	-	-
Ethylbenzene	-	-	-	-	-
Methylene chloride	22B	30B	9B	16B	9B
1,1,2,2-Tetrachloroethane	-	-	-	-	-
Tetrachloroethene	-	-	-	-	-
Toluene	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-
1,1,2-Trichloroethane	-	-	-	-	-
Trichloroethene	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-
Vinyl chloride	-	-	-	-	-
Acetone	-	180	-	-	-
2-Butanone	-	-	-	-	-
Carbon disulfide	-	-	-	-	-
1,2-Dibromoethane	-	-	-	-	-
2-Hexanone	-	-	-	-	-
Methyl-t-butylether	-	-	-	-	-
4-Methyl-2-pentanone	-	-	-	-	-
Styrene	-	-	-	-	-
Vinyl Acetate	-	-	-	-	-
Xylenes (Total)	-	-	-	-	-

TABLE 4-2
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD - BUILDING 42
SOIL SAMPLE LABORATORY DATA SUMMARY

Sample Location:	D42-B3-4	D42-B3-2	D42-TB1	D42-TB2	D42-FBS
Sample Collection Date:	21 OCT 94	21 OCT 94	17 OCT 94	19 OCT 94	19 OCT 94
Sample Depth:	2-4'(duplicate)	8-10'	Trip Blank	Trip Blank	Field Blank
Volatile Organic Compounds (ppb)					
Benzene	-	-	-	-	-
Bromodichloromethane	-	-	-	-	-
Bromoform	-	-	-	-	-
Bromomethane	-	-	-	-	-
Carbon tetrachloride	-	-	-	-	-
Chlorobenzene	-	-	-	-	-
Chloroethane	-	-	-	-	-
2-Chloroethylvinyl ether	-	-	-	-	-
Chloroform	-	-	-	-	-
Chloromethane	-	-	-	-	-
Dibromochloromethane	-	-	-	-	-
1,2-Dichlorobenzene	-	-	-	-	-
1,3-Dichlorobenzene	-	-	-	-	-
1,4-Dichlorobenzene	-	-	-	-	-
1,1-Dichlorethane	-	-	-	-	-
1,2-Dichloroethane	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-
1,2-Dichloroethene (Total)	-	-	-	-	-
1,2-Dichloropropane	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	-	-	-
trans-1,3-Dichloropropene	-	-	-	-	-
Ethylbenzene	-	-	-	-	-
Methylene chloride	6B	8B	-	9B	8B
1,1,2,2-Tetrachloroethane	-	-	-	-	-
Tetrachloroethene	-	-	-	-	-
Toluene	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-
1,1,2-Trichloroethane	-	-	-	-	-
Trichloroethene	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-
Vinyl chloride	-	-	-	-	-
Acetone	-	-	-	-	-
2-Butanone	-	-	-	-	-
Carbon disulfide	-	-	-	-	-
1,2-Dibromoethane	-	-	-	-	-
2-Hexanone	-	-	-	-	-
Methyl-t-butylether	-	-	-	-	-
4-Methyl-2-pentanone	-	-	-	-	-
Styrene	-	-	-	-	-
Vinyl Acetate	-	-	-	-	-
Xylenes (Total)	-	-	-	-	-

TABLE 4-2
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD - BUILDING 42
SOIL SAMPLE LABORATORY DATA SUMMARY

Sample Location:	D42-B1-1	D42-B1-2	D42-B2-1	D42-B2-2	D42-B3-1	D42-B3-2	D42-B3-4	D42-FBS
Sample Collection Date:	17 OCT 94	17 OCT 94	17 OCT 94	17 OCT 94	19 OCT 94	21 OCT 94	21 OCT 94	19 OCT 94
Sample Depth:	4-6'	10-12'	0-2'	6-8'	2-4'	8-10'	2-4'	Field Blank
Semivolatile Organic Compounds (ppb)								
Acenapthene*	-	-	-	-	-	-	-	-
Acenapthylene*	-	-	-	-	-	-	-	-
Aniline	-	-	-	-	-	-	-	-
Anthracene*	-	-	-	-	-	-	-	-
Benzoic acid	-	-	-	-	-	-	-	-
Benzo(a)anthracene*	-	-	630	-	-	-	-	-
Benzo(b)fluoranthene**	-	-	1,000	-	-	-	-	-
Benzo(k)flouranthene**	-	-	650	-	-	-	-	-
Benzo (g,h,i) perylene	-	-	-	-	-	-	-	-
Benzo(a)pyrene*	-	-	920	-	-	-	-	-
Benzyl alcohol	-	-	-	-	-	-	-	-
bis(2-Chloroethoxy) methane	-	-	-	-	-	-	-	-
bis(2-Chloroethyl) ether	-	-	-	-	-	-	-	-
bis (2-Chloroisopropyl) ether	-	-	-	-	-	-	-	-
bis(2-Ethylhexyl) phthalate	-	-	1,200	-	-	-	-	-
4-Bromophenyl phenyl ether	-	-	-	-	-	-	-	-
Benzyl butly phthalate	-	-	-	-	-	-	-	-
4-Chloroaniline	-	-	-	-	-	-	-	-
2-Chloronaphthalene	-	-	-	-	-	-	-	-
4-Chloro-3-methylphenol	-	-	-	-	-	-	-	-
2-Chlorophenol	-	-	-	-	-	-	-	-
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	-	-
Chrysene**	-	-	850	-	-	-	-	-
Dibenzo (a,h) anthracene**	-	-	-	-	-	-	-	-
Dibenzofuran	-	-	-	-	-	-	-	-
Di-n-butyl phthalate	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	-	-	-	-	-	-	-	-
1,2-Diphenylhydrazine	-	-	-	-	-	-	-	-
3,3'-Diphenylbenzidine	-	-	-	-	-	-	-	-
2,4-Dichlorophenol	-	-	-	-	-	-	-	-
Diethyl phthalate	-	-	-	-	-	-	-	-
2,4-Dimethylphenol	-	-	-	-	-	-	-	-
Dimethyl phthalate	-	-	-	-	-	-	-	-
2-Methyl-4,6-dinitrophenol	-	-	-	-	-	-	-	-
2,4-Dinitrophenol	-	-	-	-	-	-	-	-
2,4-Dinitrotoluene	-	-	-	-	-	-	-	-
2,6-Dinitrotoluene	-	-	-	-	-	-	-	-
Di-n-octylphthalate	-	-	-	-	-	-	-	-
Fluoranthene*	-	-	1,100	-	460	-	-	-
Fluorene*	-	-	-	-	-	-	-	-
Hexachlorobenzene	-	-	-	-	-	-	-	-
Hexachlorobutadiene	-	-	-	-	-	-	-	-
Hexachlorocyclopentadiene	-	-	-	-	-	-	-	-
Hexachloroethane	-	-	-	-	-	-	-	-
Ideno (1,2,3-cd) pyrene**	-	-	-	-	-	-	-	-
Isophorone	-	-	-	-	-	-	-	-
2-Methylnaphthalene	-	-	-	-	-	-	-	-
2-Methylphenol (o-cresol)	-	-	-	-	-	-	-	-
4-Methylphenol (p-cresol)	-	-	-	-	-	-	-	-
Naphthalene*	-	-	-	-	-	-	-	-
2-Nitoraniline	-	-	-	-	-	-	-	-
3-Nitroaniline	-	-	-	-	-	-	-	-
4-Nitoraniline	-	-	-	-	-	-	-	-
Nitrobenzene	-	-	-	-	-	-	-	-
2-Nitorphenol	-	-	-	-	-	-	-	-
4-Nitrophenol	-	-	-	-	-	-	-	-
N-Nitroso-di-n-propylamine	-	-	-	-	-	-	-	-
N-Nitrosodiphenylamine	-	-	-	-	-	-	-	-
Pentachlorophenol	-	-	-	-	-	-	-	-
Phenanthrene*	-	-	770	-	-	-	490	-
Phenol*	-	-	-	-	-	-	-	-
Pyrene*	-	-	2,700	690	900	420	1,000	-
1,2,4-Trichlorobenzene	-	-	-	-	-	-	-	-
2,4,5-Trichlorophenol	-	-	-	-	-	-	-	-
2,4,6-Trichlorophenol	-	-	-	-	-	-	-	-
TOTALS Carcinogenic PAHs**	-	-	2,500	0	0	0	0	-
PAHs*	-	-	8,620	690	1,360	420	1,490	-
SVOCs	-	-	9,820	690	1,360	420	1,490	-

TABLE 4-2
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD - BUILDING 42
SOIL SAMPLE LABORATORY DATA SUMMARY

Sample Location:	D42-B1-1	D42-B1-2	D42-B2-1	D42-B2-2	D42-B3-1	D42-B3-4	D42-B3-2	D42-FBS
Sample Collection Date:	17 OCT 94	17 OCT 94	19 OCT 94	19 OCT 94	21 OCT 94	21 OCT 94	21 OCT 94	19 OCT 94
Sample Depth:	4-6'	10-12'	0-2'	6-8'	2-4'	2-4'(duplicate)	8-10'	Field Blank
Inorganics (ppm)								
Antimony	-	-	-	-	-	-	-	-
Arsenic	5.8	11.5	9.48	22.5	15.4	19.8	15.8	-
Beryllium	-	-	3.4	-	0.54	1.1	-	-
Cadmuim	-	-	0.56	-	-	-	-	-
Chromium	12	7.9	31	8.4	14	22	7.6	-
Copper	260	16	550	26	50	74	10	-
Lead	39	28	380	227	50	67	-	-
Mercury	-	-	0.14	-	-	-	-	-
Nickel	10	12	68	13	22	33	13	-
Selenium	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Thalluim	-	-	-	-	-	-	-	-
Zinc	71	35	1,200	51	180	280	30	-

TABLE 4-3
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD - BUILDING 42
TOTAL PETROLEUM HYDROCARBON SOIL DATA

Sample Location:	D42-B1-1	D42-B1-2	D42-B2-1	D42-B2-2	D42-B3-1	D42-B3-4	D42-B3-2
Sample Collection Date:	17 OCT 94	17 OCT 94	19 OCT 94	19 OCT 94	21 OCT 94	21 OCT 94	21 OCT 94
Sample Depth:	10-12'	15-17'	0-2'	14-16'	2-4'	2-4' (DUP. B3-1)	8-10'
Total Petroleum Hydrocarbon (TPH) (ppm)	-	84	460	140	590	450	1,100

TABLE 4-4
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD - BUILDING 42
SOIL SAMPLE METALS DATA SUMMARY

Analyte	Sample Number and Depth/Concentration (mg/kg or ppm)							Range
	B1-1 4-6'	B1-2 10-12'	B2-1 0-2'	B2-2 6-8'	B3-1 2-4'	B3-4 2-4' (DUP. B3-1)	B3-2 8-10'	
Antimony	-	-	-	-	-	-	-	ND
Arsenic	5.8	11.5	9.48	22.5	15.4	19.8	15.8	5.8-22.5
Beryllium	-	-	3.4	-	0.54	1.1	-	ND - 3.4
Cadmuim	-	-	0.56	-	-	-	-	ND - 0.56
Chromium	12	7.9	31	8.4	14	22	7.6	7.6 - 31
Copper	260	16	550	26	50	74	10	10 - 550
Lead	39	28	380	227	50	67	-	ND - 380
Mercury	-	-	0.14	-	-	-	-	ND - 0.14
Nickel	10	12	68	13	22	33	13	10 - 68
Selenium	-	-	-	-	-	-	-	ND
Silver	-	-	-	-	-	-	-	ND
Thalluim	-	-	-	-	-	-	-	ND
Zinc	71	35	1,200	51	180	280	30	30 - 1,200

= Denotes maximum analyte concentration of the samples.

= Denotes minimum analyte concentration of the samples.

TABLE 4-5
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD - BUILDING 42
GROUND WATER SAMPLE LABORATORY DATA SUMMARY

Sample Location: Sample Collection Date:	D42-MW1S 11 NOV 94	D42-MW5S 11 NOV 94 Dup of MW1S	D42-MW2S 10 NOV 94	D42-MW3S 10 NOV 94	D42-MW6S 10 NOV 94 MW-3S Dissolved	D42-MW4S 11 NOV 94	D42-TB NOV 94 Trip Blank	D42-FBW 11 NOV 94 Field Blank
Volatile Organic Compounds (ppb)	-	-	-	-	N/A	N/A	-	-
Semivolatile Organic Compounds (ppb)	-	-	-	-	N/A	N/A	N/A	-
Total Petroleum Hydrocarbons (ppm)	-	-	-	-	N/A	-	N/A	-
Inorganics (ppb)								
Arsenic	-	18.4	86	238	18.1	N/A	N/A	-
Chromium	-	-	202	433	-	N/A	N/A	-
Copper	21	20	611	442	-	N/A	N/A	-
Lead	5.8	-	455	318	-	N/A	N/A	-
Nickel	-	-	400	540	-	N/A	N/A	-
Zinc	30	40	804	1192	34	N/A	N/A	-
Chloride	24900	23800	372000	324000	N/A	N/A	N/A	1000
Total Dissolved Solids	101000	86000	631000	752000	N/A	N/A	N/A	-

TABLE 4-6
U.S. NAVY, NETC - NEWPORT, RI
DERECKTOR SHIPYARD - BUILDING 42
COMPARISON OF GROUND WATER DATA TO DRINKING WATER STANDARDS

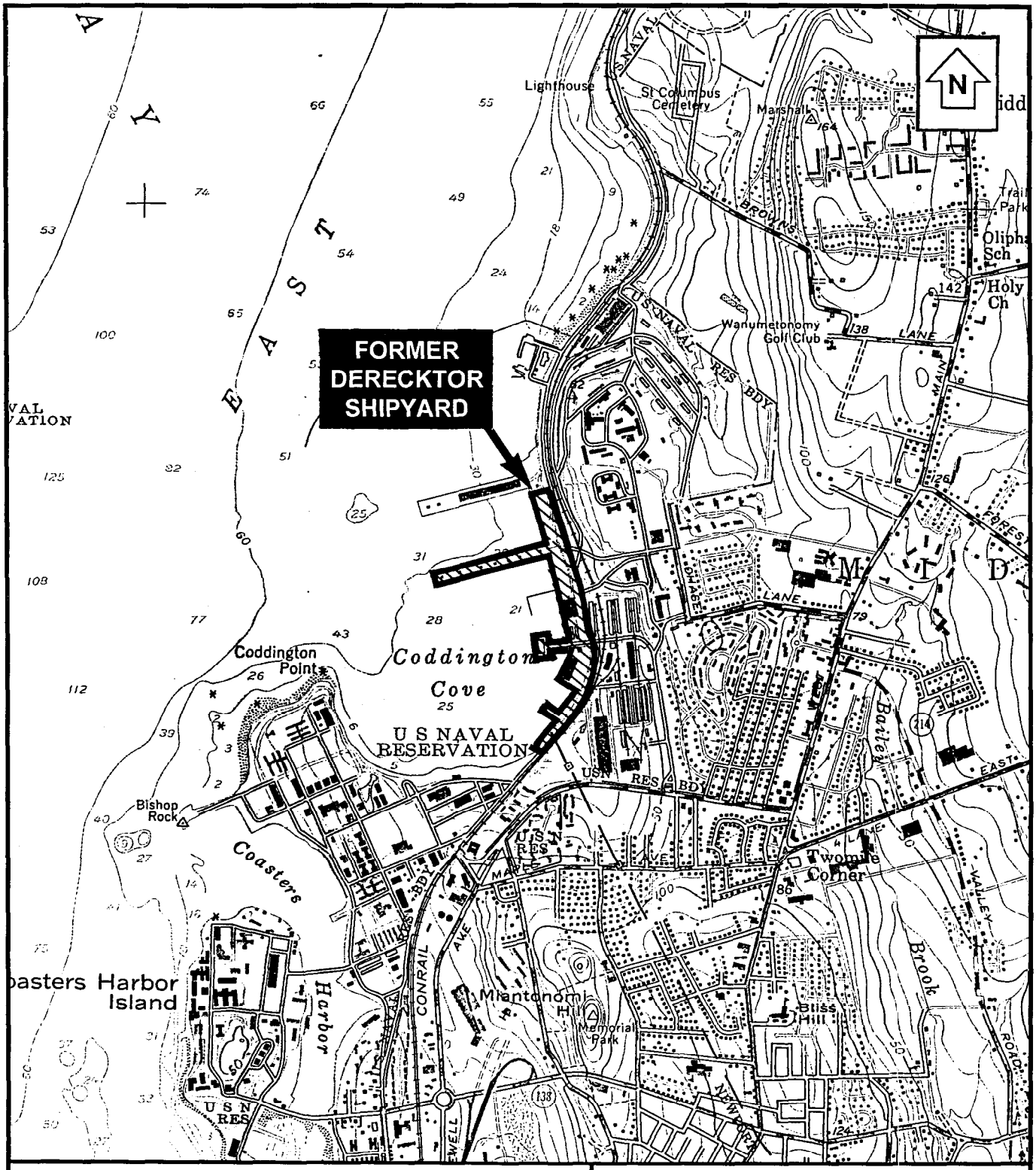
Sample Location:	D42-MW1S	D42-MW5S	D42-MW2S	D42-MW3S	D42-MW6S	FEDERAL ARARs/TBCs			RHODE ISLAND ARARs/TBCs
Sample Collection Date:	11 NOV 94	11 NOV 94 Dup of MW1S	10 NOV 94	10 NOV 94	10 NOV 94 Dissolved	MCL[1] (ppb)	MCLG[2] (ppb)	SMCLs[3] (ppb)	Ground Water[4] Quality Standards (ppb)
Volatile Organic Compounds (ppb)									
Semivolatile Organic Compounds (ppb)									
Total Petroleum Hydrocarbon (ppm)									
Inorganics (ppb)									
Arsenic	-	18.4	86	238	18.1	50			
Chromium	-	-	202	433	-	100	100		100
Copper	21	20	611	442	-	1,300	1,300	1,000	
Lead	5.8	-	455	318	-	15*	0*		15
Nickel	-	-	400	540	-	100	100		
Zinc	30	40	804	1,192	34			5,000	
Chloride	24,900	23,800	372,000	324,000	N/A			250	
Total Dissolved Solids	101,000	86,000	631,000	752,000	N/A				

Notes:

1. MCL - Maximum Contaminant Level. National Primary Drinking Water Regulations.
2. MCLG - Maximum Contaminant Level Goal, based on health considerations only.
3. SMCL - Secondary Maximum Contaminant Level, National Secondary Drinking Water Regulations.
4. Water Quality Standards, Class GAA and Class GA ground waters, Rhode Island Regulations, July 1993.

= Denotes exceeded standard.
- = Non-Detect.
* = Denotes Concentration at the Tap.

FIGURES



Map Source: USGS Quadrangle Map - Prudence RI, 1955
Photorevised 1970 and 1975

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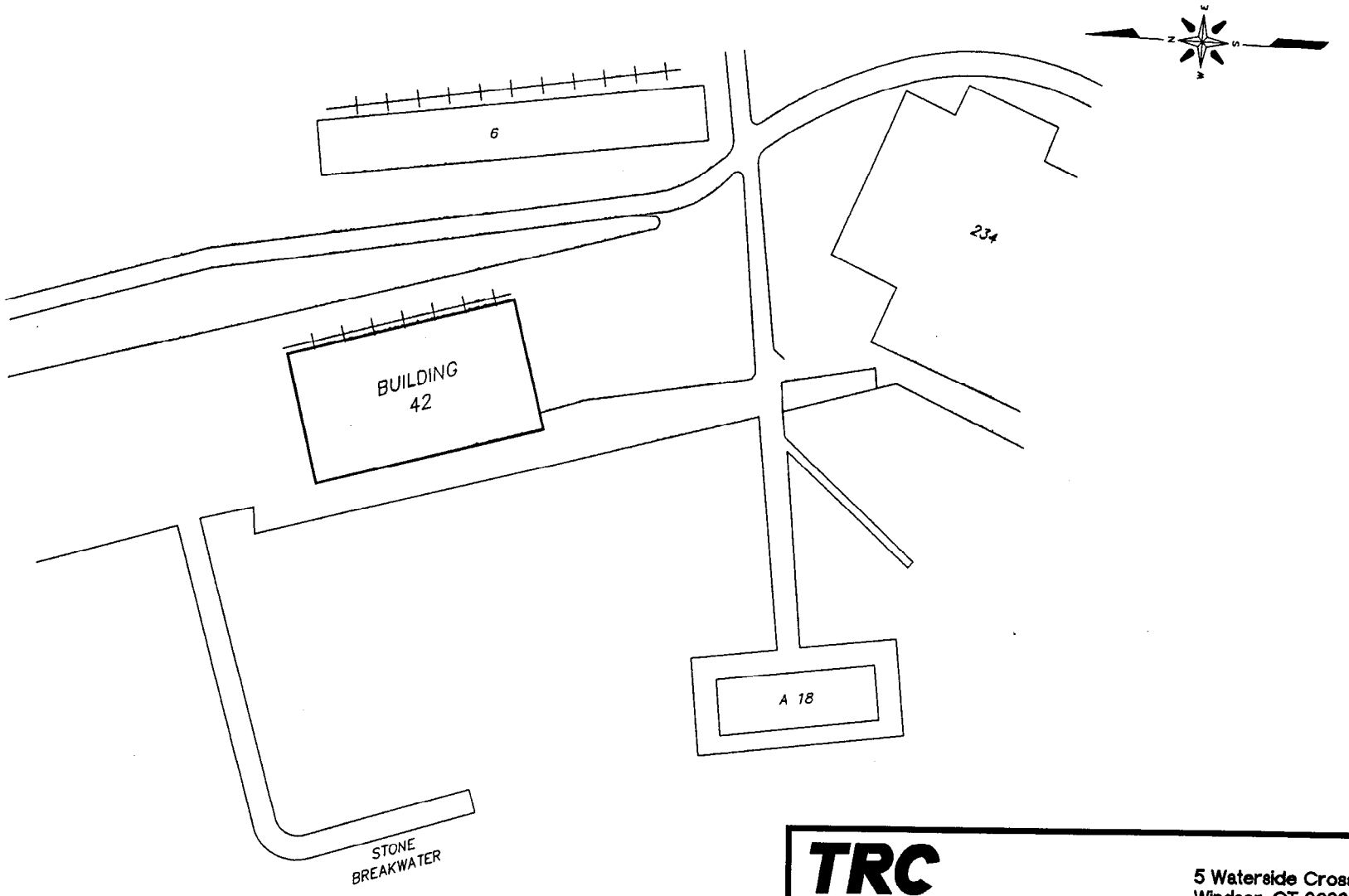
FIGURE 1-1.
SITE LOCATION MAP

Date: 12/94 | Project No. 01981-0020-00000



GRAPHIC SCALE

200 0 100 200 400

(IN FEET)
1 inch = 200 ft.

C:\19810010\FIG1-2D

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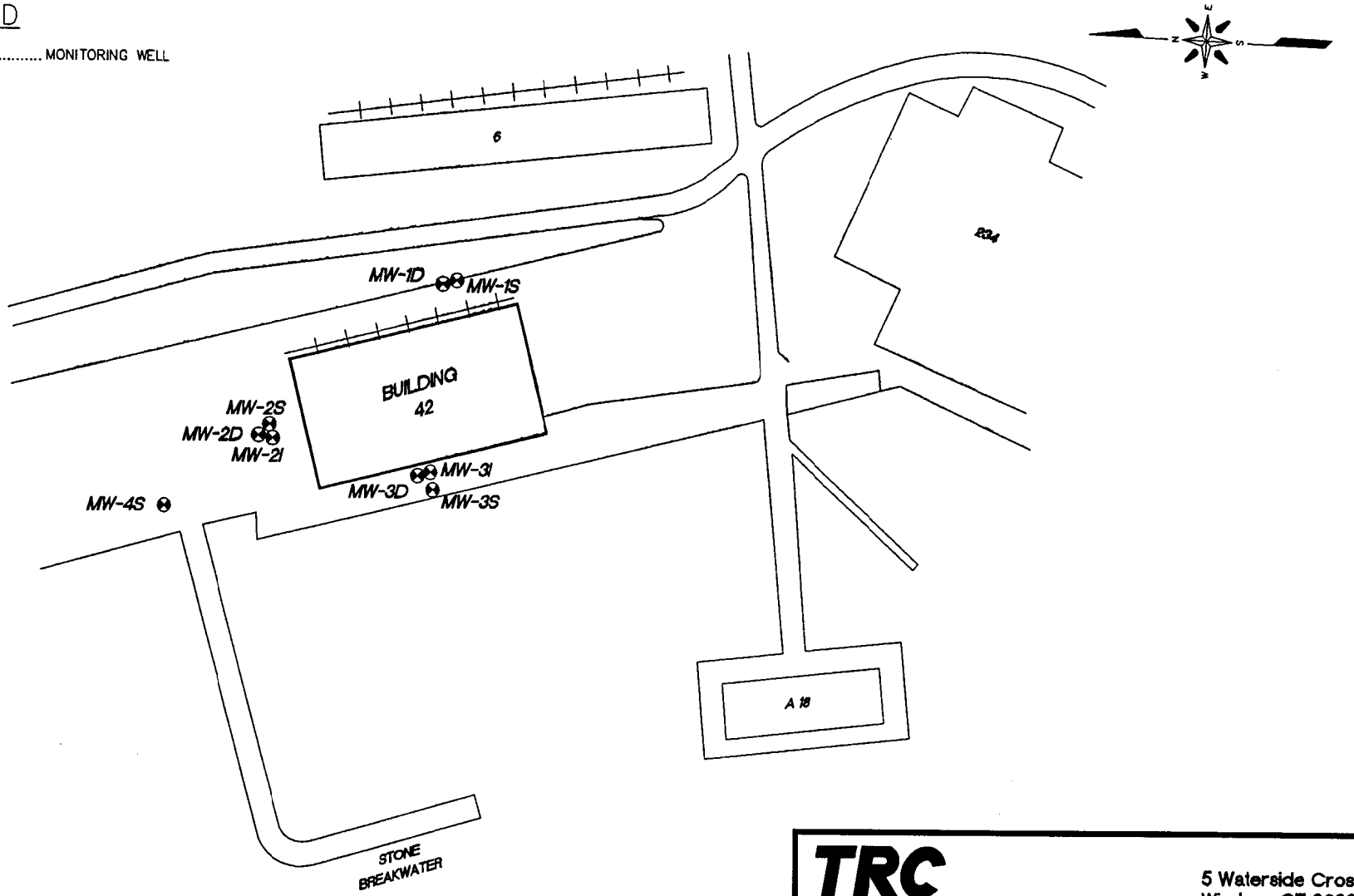
FIGURE 1-2
SITE MAP

Date: 11/94

Project No. 01981-0020-00000

LEGEND

MW-1D..... MONITORING WELL



GRAPHIC SCALE

200 0 100 200 400

(IN FEET)

1 inch = 200 ft.

C:\19810010\FIG3-1D

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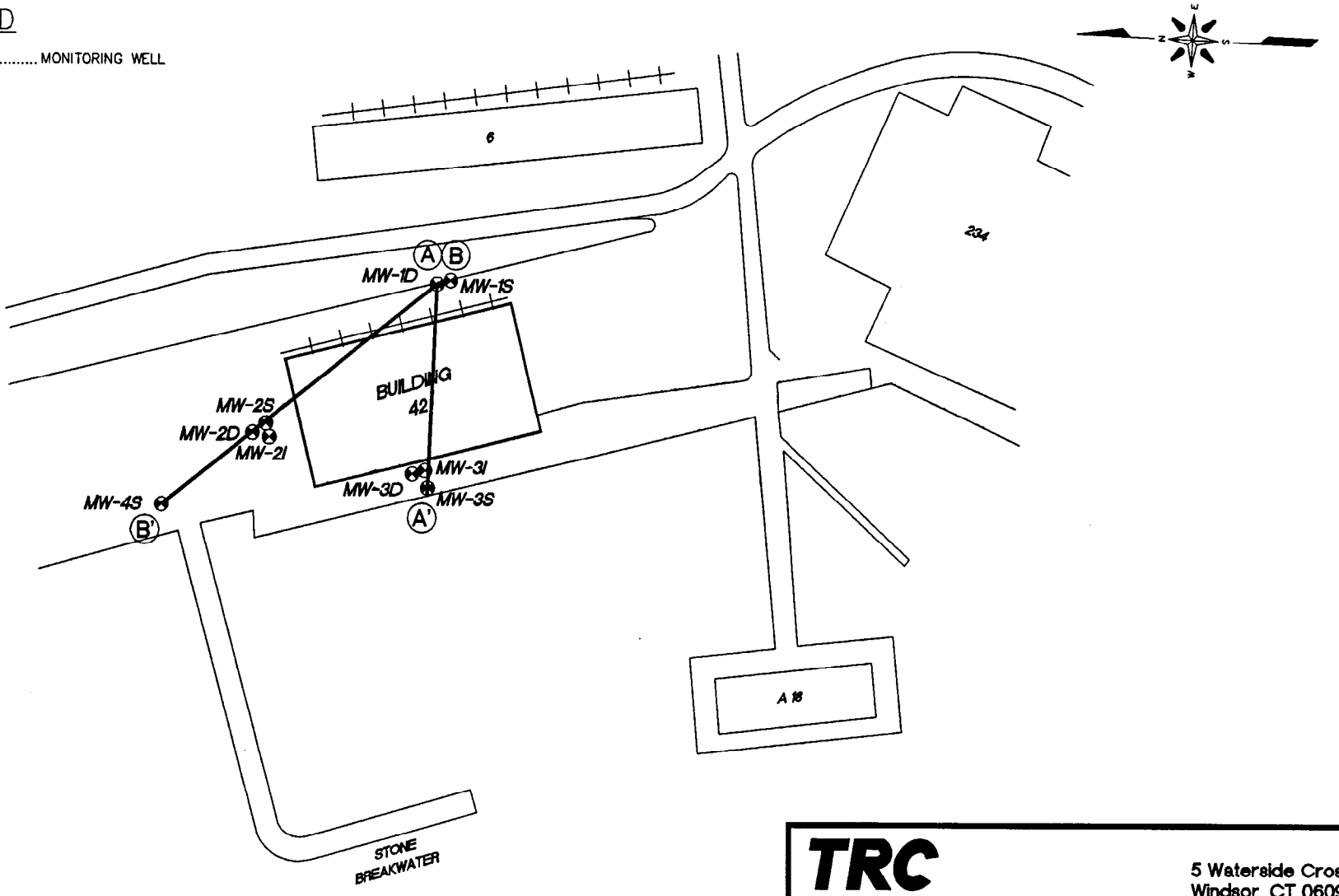
FIGURE 3-1
MONITORING WELL LOCATION MAP

Date: 11/94 | Project No. 01981-0020-00000

LEGEND

⊗ MW-ID..... MONITORING WELL



GRAPHIC SCALE

200 0 100 200 400

(IN FEET)

1 inch = 200 ft.

C:\19810010\FIG3-2D

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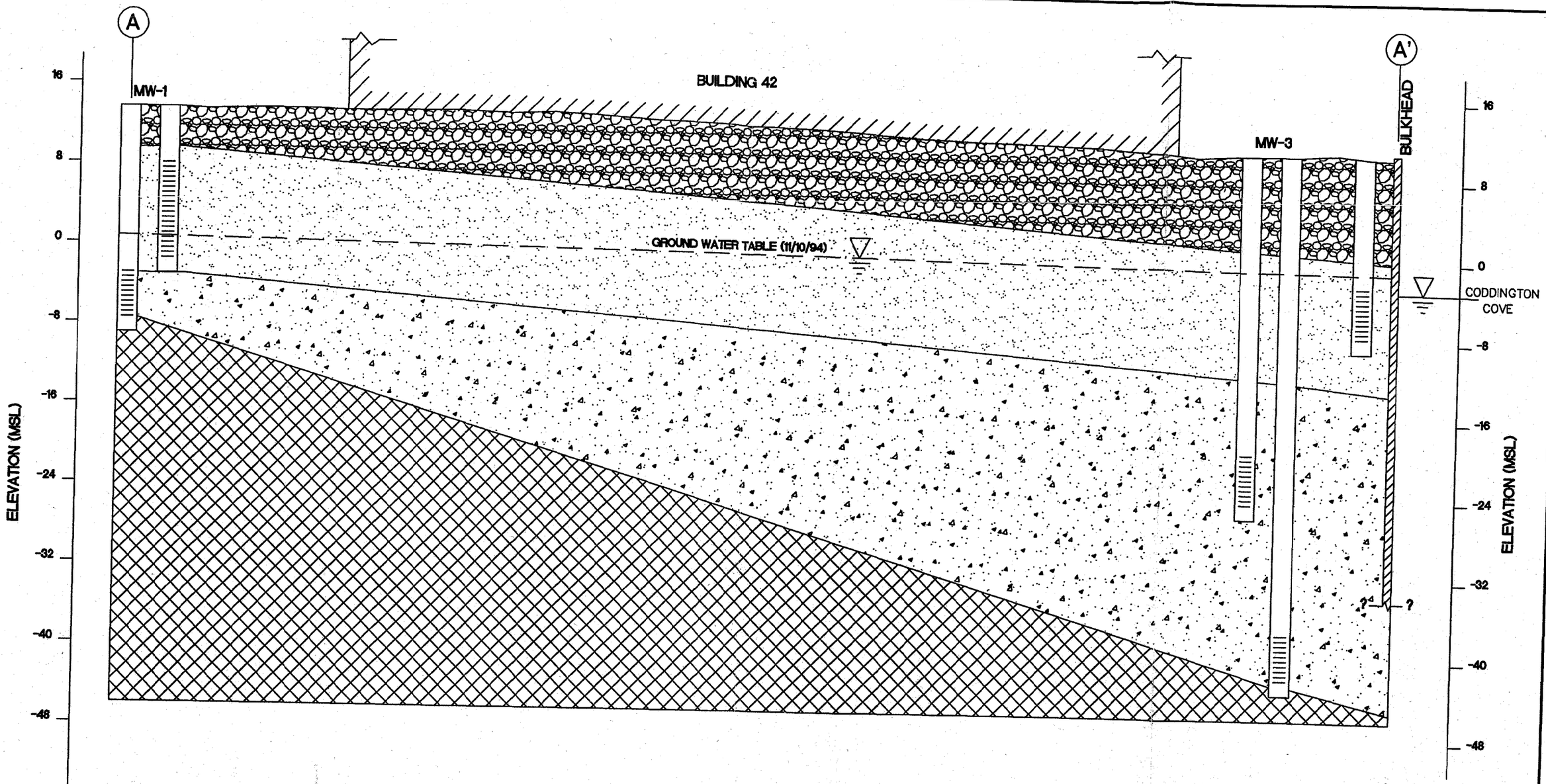
FIGURE 3-2
GEOLOGIC CROSS SECTION LINE LOCATION MAP

Date: 11/94

Project No. 01981-0020-00000



LEGEND

- FILL
- SAND
- TILL
- BEDROCK

GRAPHIC SCALE

10 0 10 20

1 inch = 10 ft. Vert.

20 0 20 40

1 inch = 20 ft. Horiz.

C:\19810010\FIG3-3D

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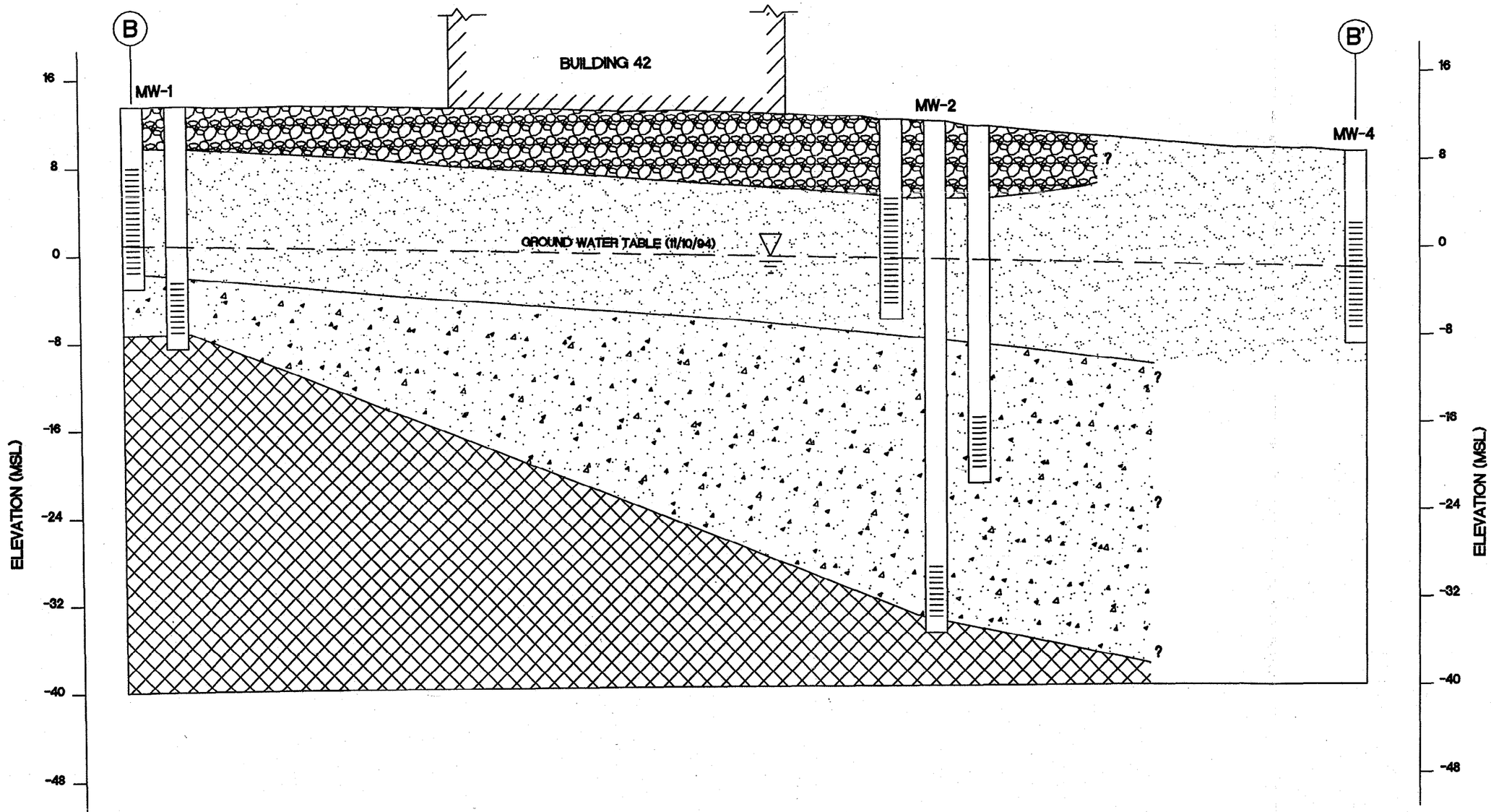
FIGURE 3-3
GEOLOGIC CROSS SECTION A-A'

Date: 12/94

Project No. 01981-0020-00000



LEGEND

- FILL
- SAND
- TILL
- BEDROCK

GRAPHIC SCALE

10 0 10 20

1 inch = 10 ft. Vert.

40 0 40 80

1 inch = 40 ft. Horiz.

C:\19810010\FIG3-4D

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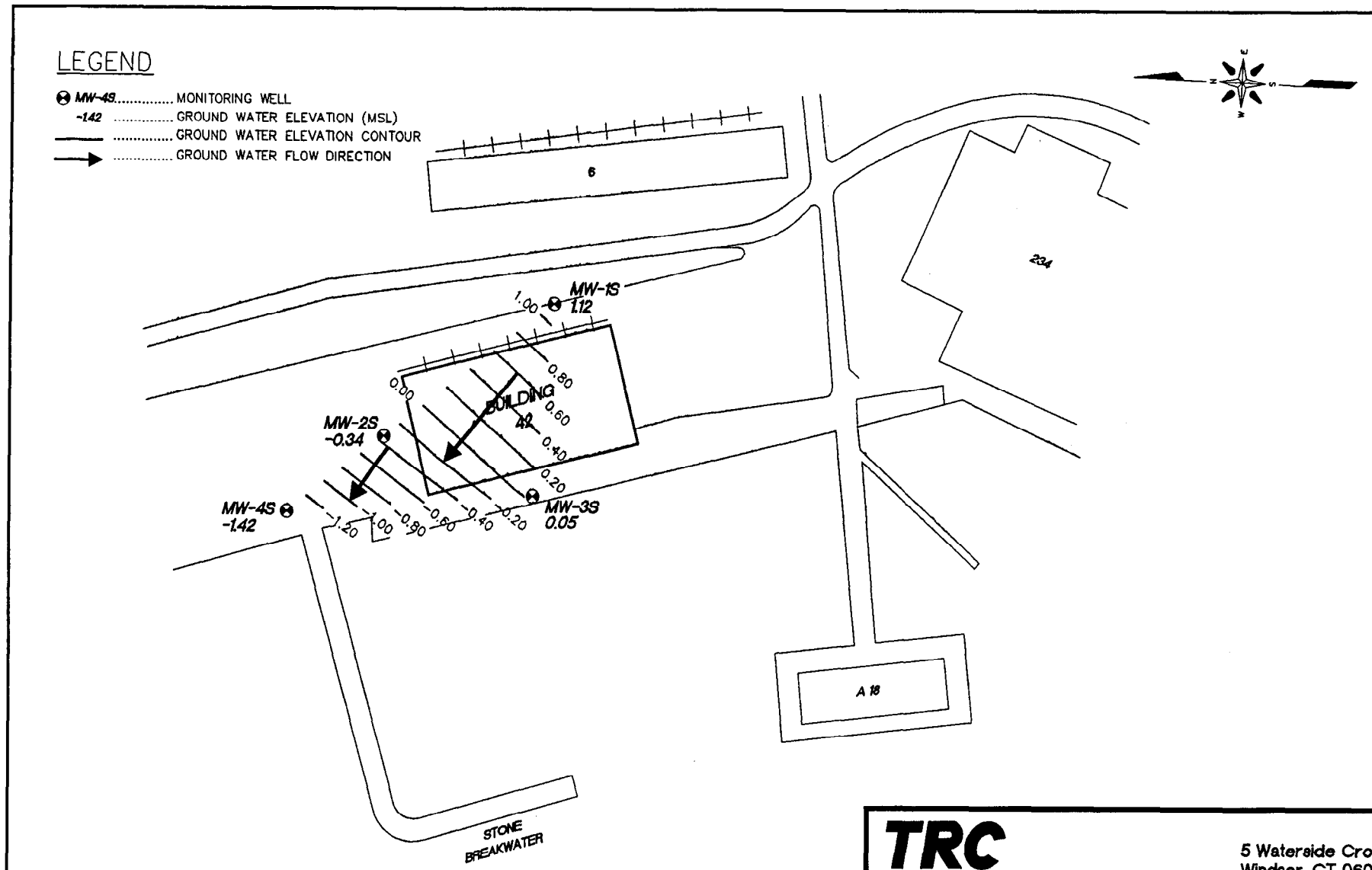
FIGURE 3-4
GEOLOGIC CROSS SECTION B-B'

Date: 12/94 | Project No. 01981-0020-00000



GRAPHIC SCALE

200 0 100 200 400

(IN FEET)

1 inch = 200 ft.

C:\19810010\FIG3-5D

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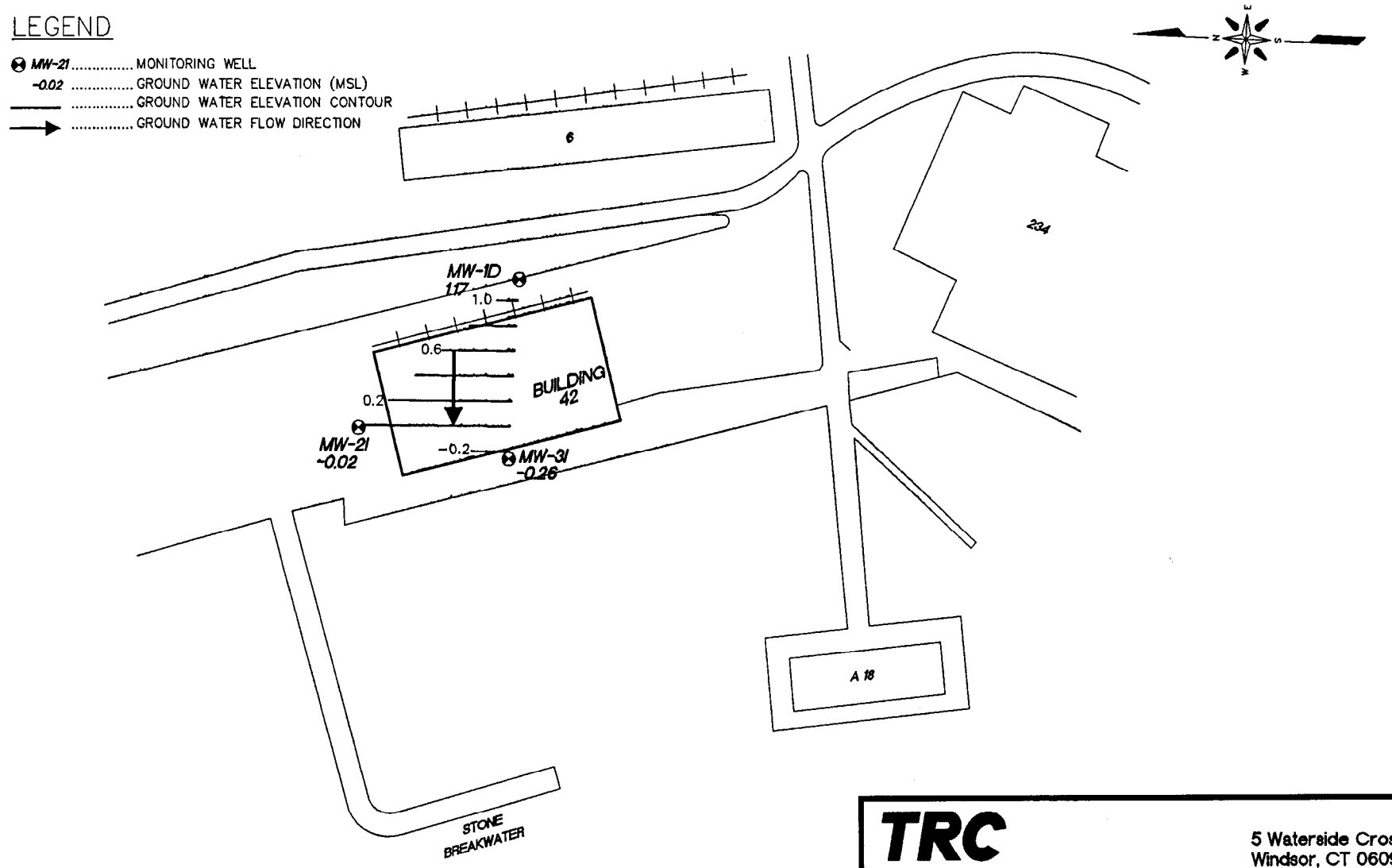
FIGURE 3-5
GROUND WATER TABLE CONTOUR MAP (10/27/94)-LOW TIDE

Date: 11/94 | Project No. 01981-0020-00000



GRAPHIC SCALE

200 0 100 200 400

(IN FEET)

1 inch = 200 ft.

C:\19810010\FIG3-6D

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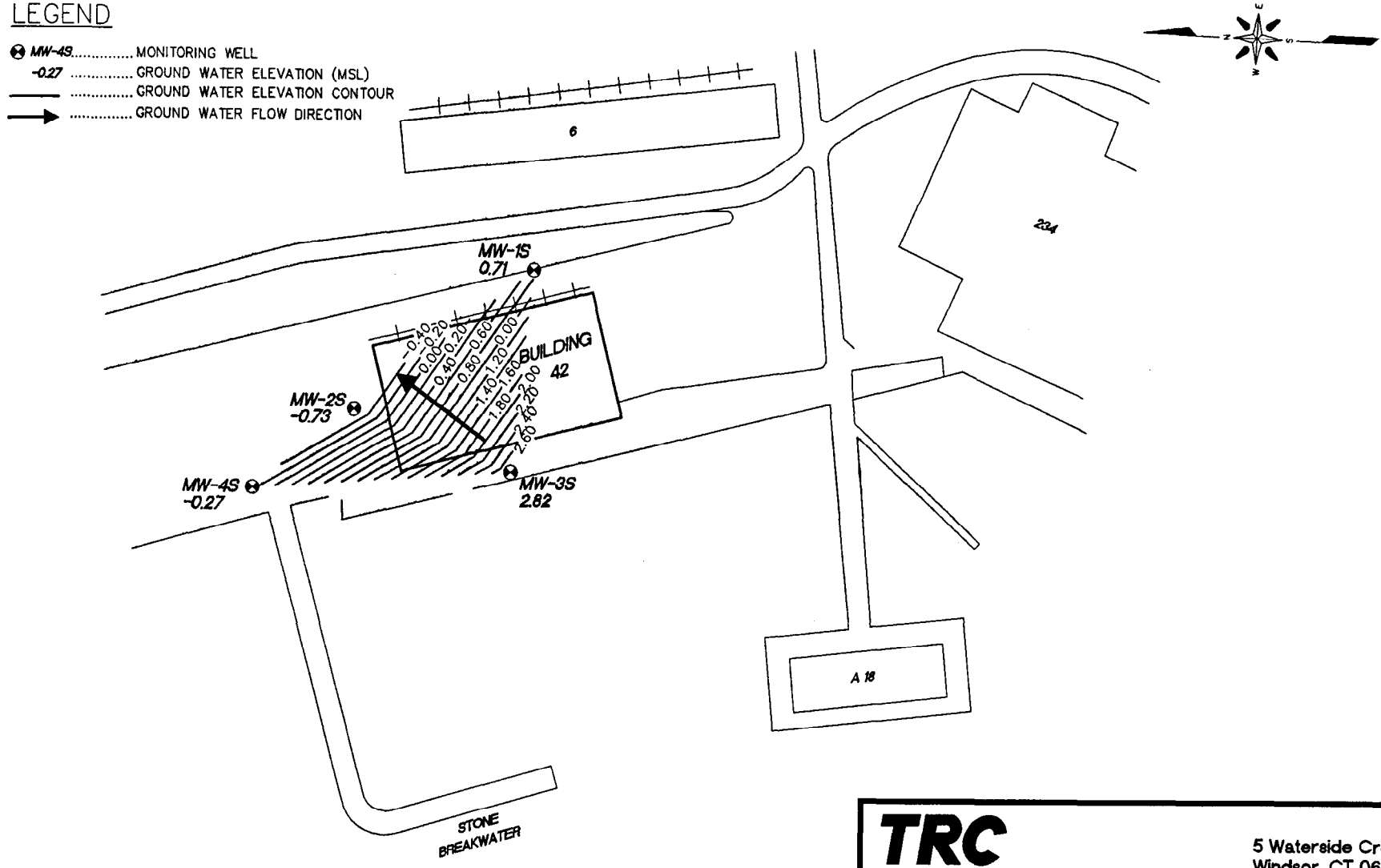
FIGURE 3-6
PIEZOMETRIC GROUND WATER ELEVATION (10/27/94)-SLACK TIDE

Date: 12/94 | Project No. 01981-0020-00000



GRAPHIC SCALE

200 0 100 200 400

(IN FEET)

1 inch = 200 ft.

C:\19810010\FIG3-7

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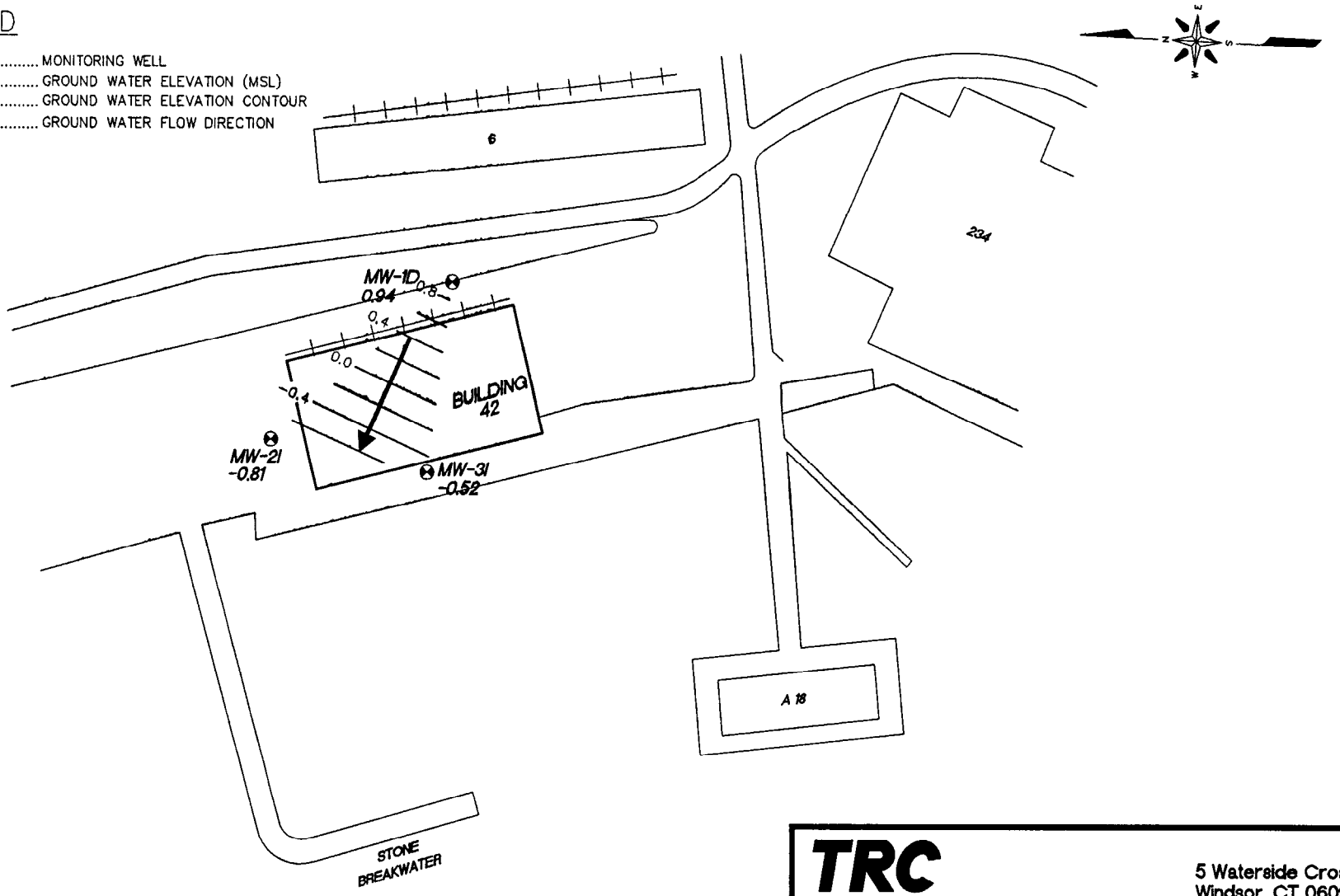
FIGURE 3-7
GROUND WATER TABLE CONTOUR MAP (11/10/94)-SLACK TIDE

Date: 11/94

Project No. 01981-0020-00000

LEGEND

- MW-21 ..... MONITORING WELL
- -0.81 ..... GROUND WATER ELEVATION (MSL)
- ——— ..... GROUND WATER ELEVATION CONTOUR
- ⟶ ..... GROUND WATER FLOW DIRECTION



GRAPHIC SCALE

200 0 100 200 400

(IN FEET)

1 inch = 200 ft.

C:\19810010\FIG3-8D

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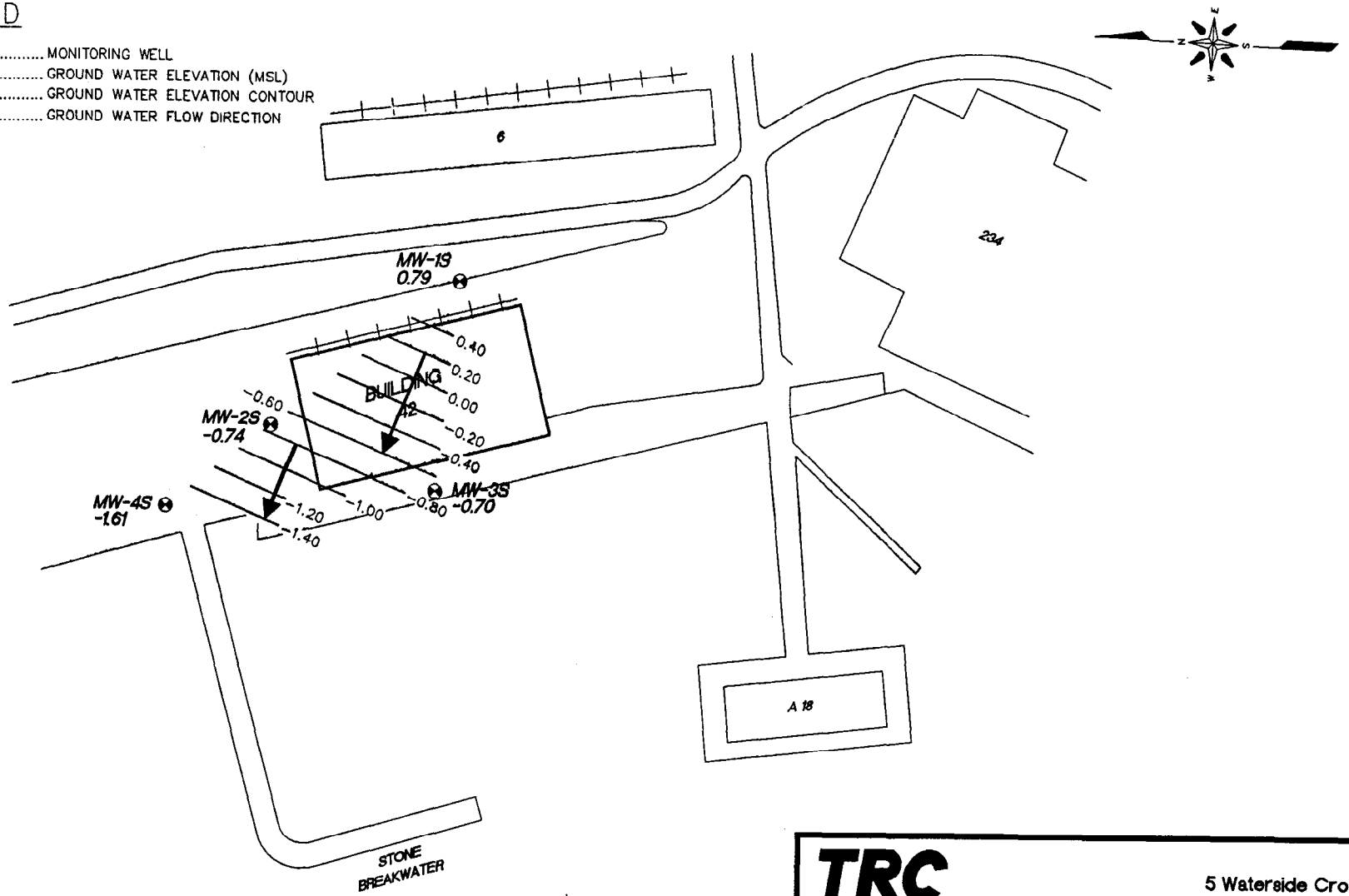
FIGURE 3-8
PIEZOMETRIC GROUND WATER ELEVATION (11/10/94)-SLACK TIDE

Date: 12/94 | **Project No.** 01981-0020-00000

LEGEND

- MW-4S ..... MONITORING WELL
- -1.61 ..... GROUND WATER ELEVATION (MSL)
- ——— ..... GROUND WATER ELEVATION CONTOUR
- ——→ ..... GROUND WATER FLOW DIRECTION



GRAPHIC SCALE

200 0 100 200 400

(IN FEET)

1 inch = 200 ft.

C:\19810010\FIG3-9D

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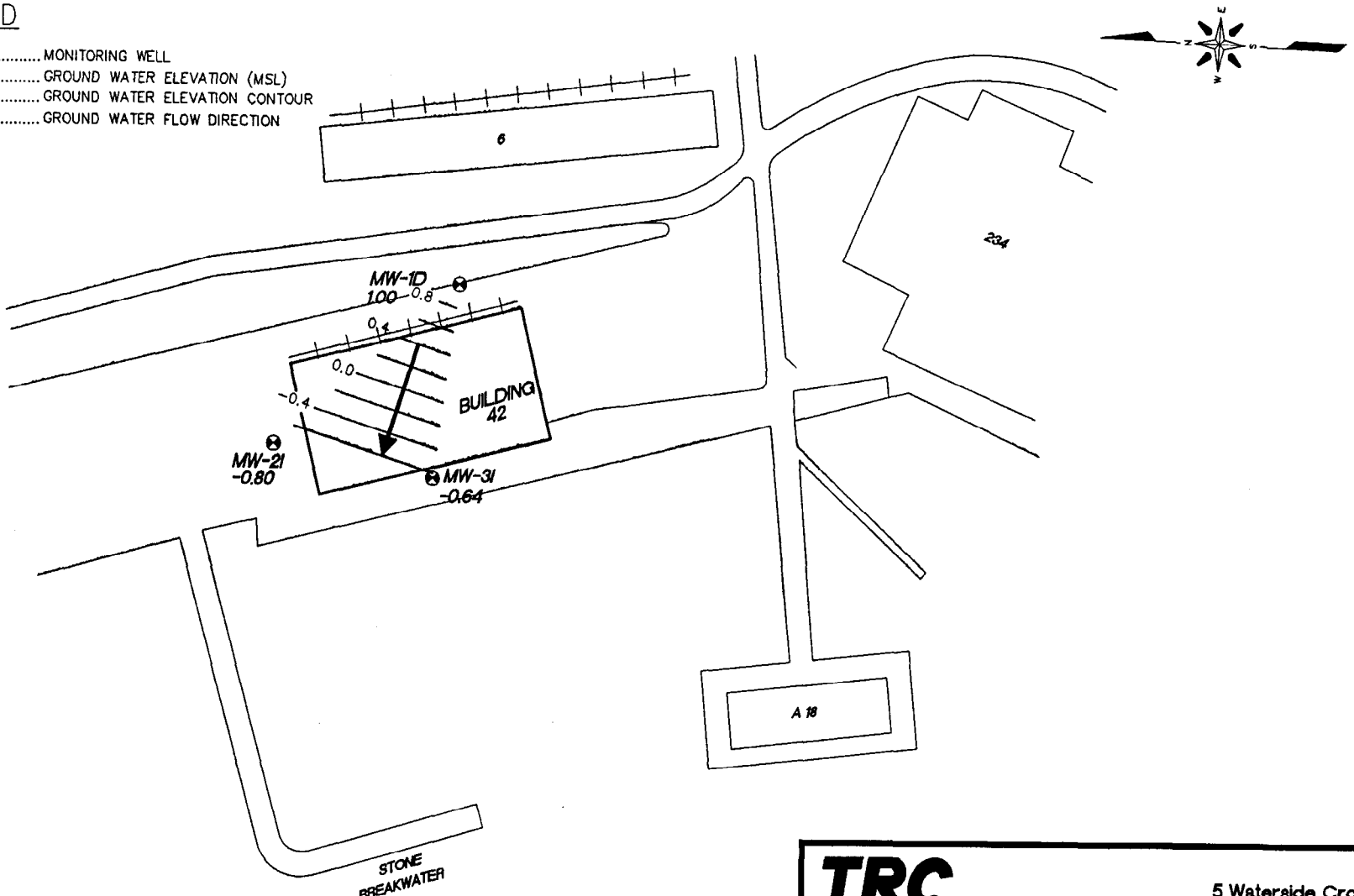
FIGURE 3-9
GROUND WATER TABLE CONTOUR MAP (11/11/94)-LOW TIDE

Date: 11/94 | Project No. 01981-0020-00000

LEGEND

MW-21 ..... MONITORING WELL
-0.80 ..... GROUND WATER ELEVATION (MSL)
——— ..... GROUND WATER ELEVATION CONTOUR
→ ..... GROUND WATER FLOW DIRECTION



GRAPHIC SCALE

200 0 100 200 400

(IN FEET)
1 inch = 200 ft.

C:\19810010\FIG3-10D

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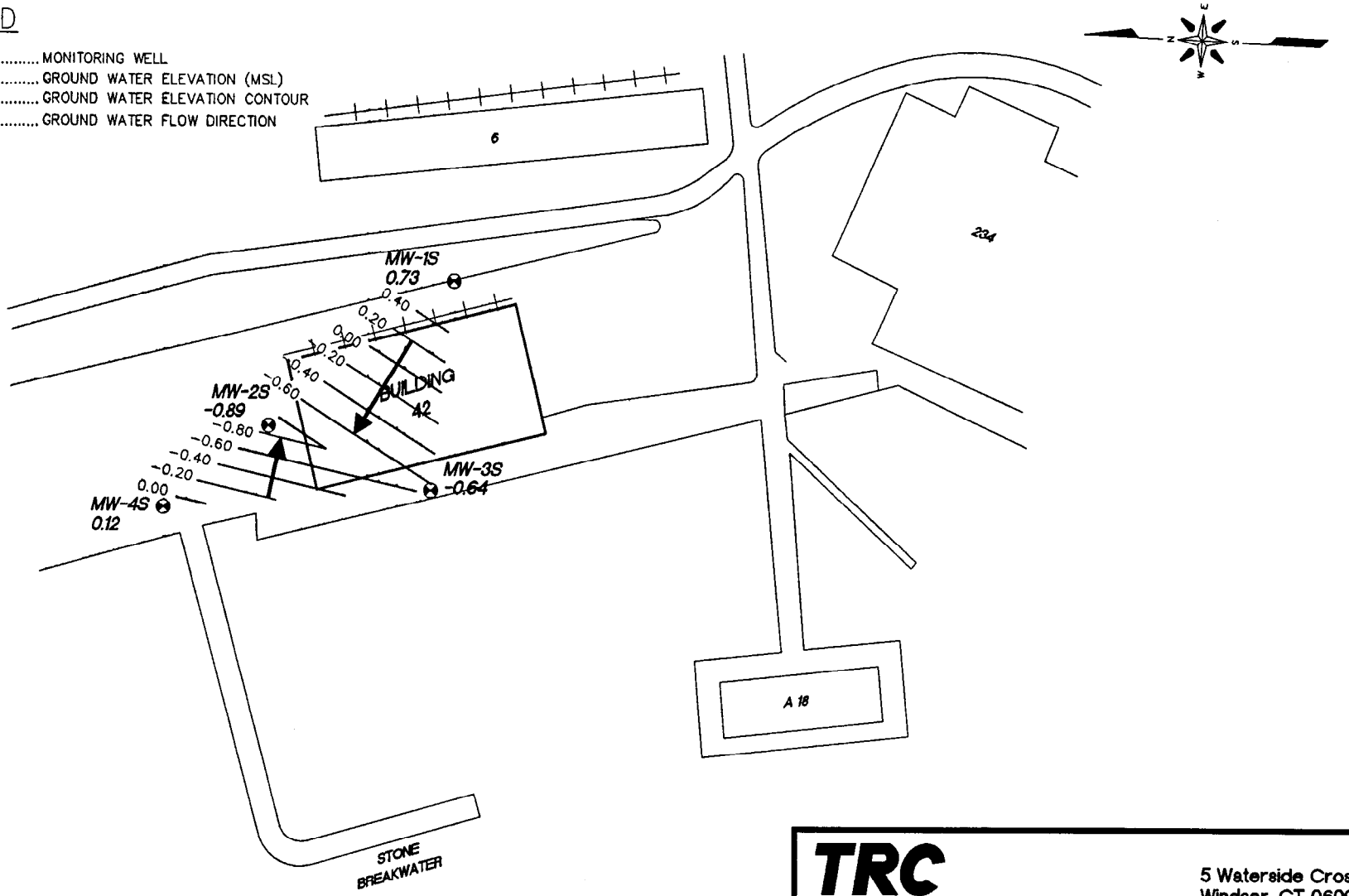
FIGURE 3-10
PIEZOMETRIC GROUND WATER ELEVATION (11/11/94)-LOW TIDE

Date: 12/94 | Project No. 01981-0020-00000

LEGEND

- MW-2S ..... MONITORING WELL
- -0.89 ..... GROUND WATER ELEVATION (MSL)
- ——— ..... GROUND WATER ELEVATION CONTOUR
- ⟶ ..... GROUND WATER FLOW DIRECTION



GRAPHIC SCALE

200 0 100 200 400

(IN FEET)

1 inch = 200 ft.

C:\19810010\FIG3-11D

TRC

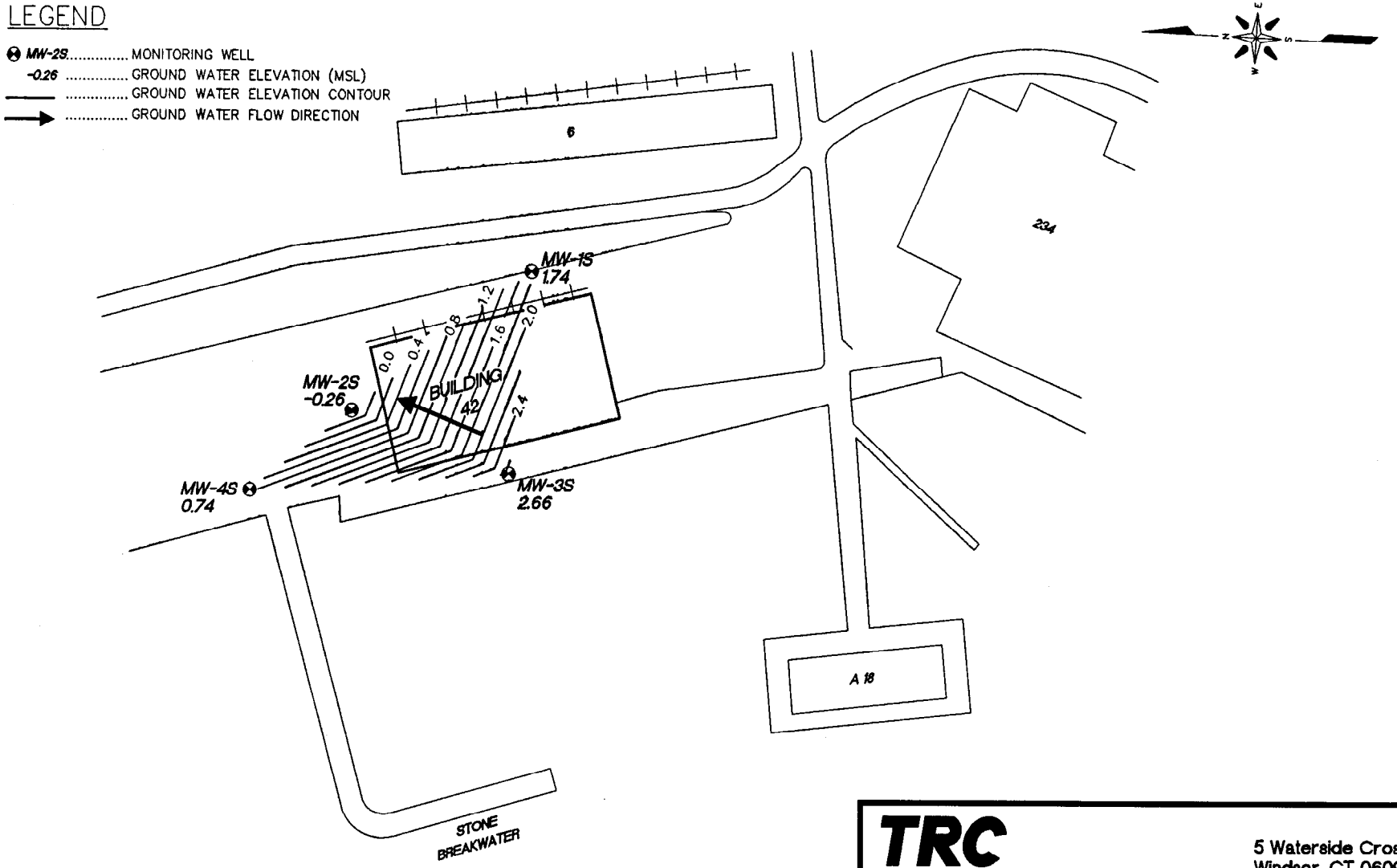
TRC Environmental Corporation

5 Waterside Crossing
Windsor, CT 06095
(203) 289-8631

DERECKTOR SHIPYARD
NAVAL EDUCATION AND TRAINING CENTER
NEWPORT, RHODE ISLAND

FIGURE 3-11
GROUND WATER TABLE CONTOUR MAP (11/11/94)-HIGH TIDE

Date: 11/94 | Project No. 01981-0020-00000



GRAPHIC SCALE

200 0 100 200 400

(IN FEET)

1 inch = 200 ft.

C:\19810010\FIG3-12D

TRC

TRC Environmental Corporation

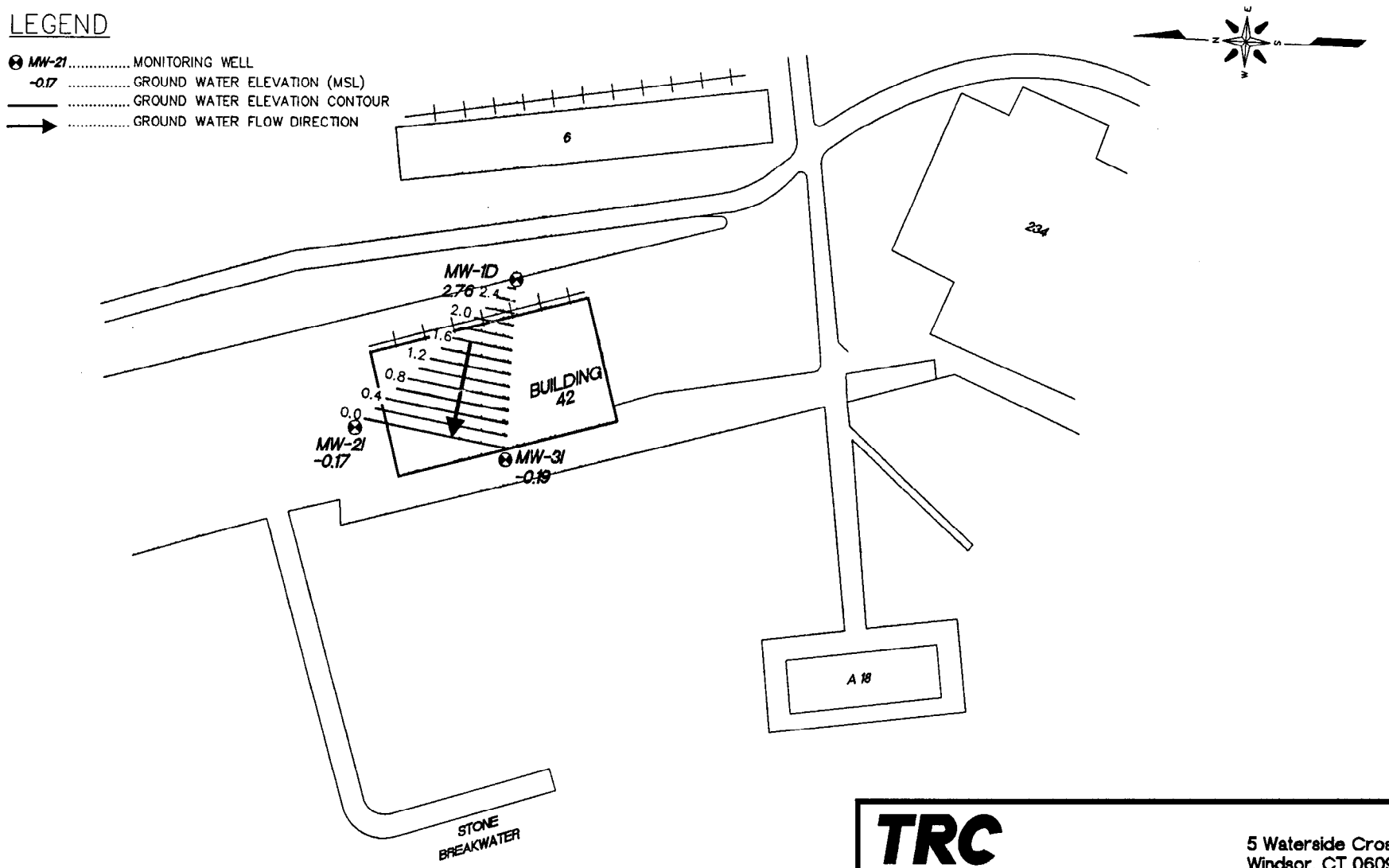
5 Waterside Crossing
Windsor, CT 06095
(203) 289-8631

DERECKTOR SHIPYARD
NAVAL EDUCATION AND TRAINING CENTER
NEWPORT, RHODE ISLAND

FIGURE 3-12
GROUND WATER TABLE CONTOUR MAP (12/12/94)-LOW TIDE

Date: 12/94

Project No. 01981-0020-00000



GRAPHIC SCALE

200 0 100 200 400

(IN FEET)

1 inch = 200 ft.

C:\19810010\FIG3-13D

TRC

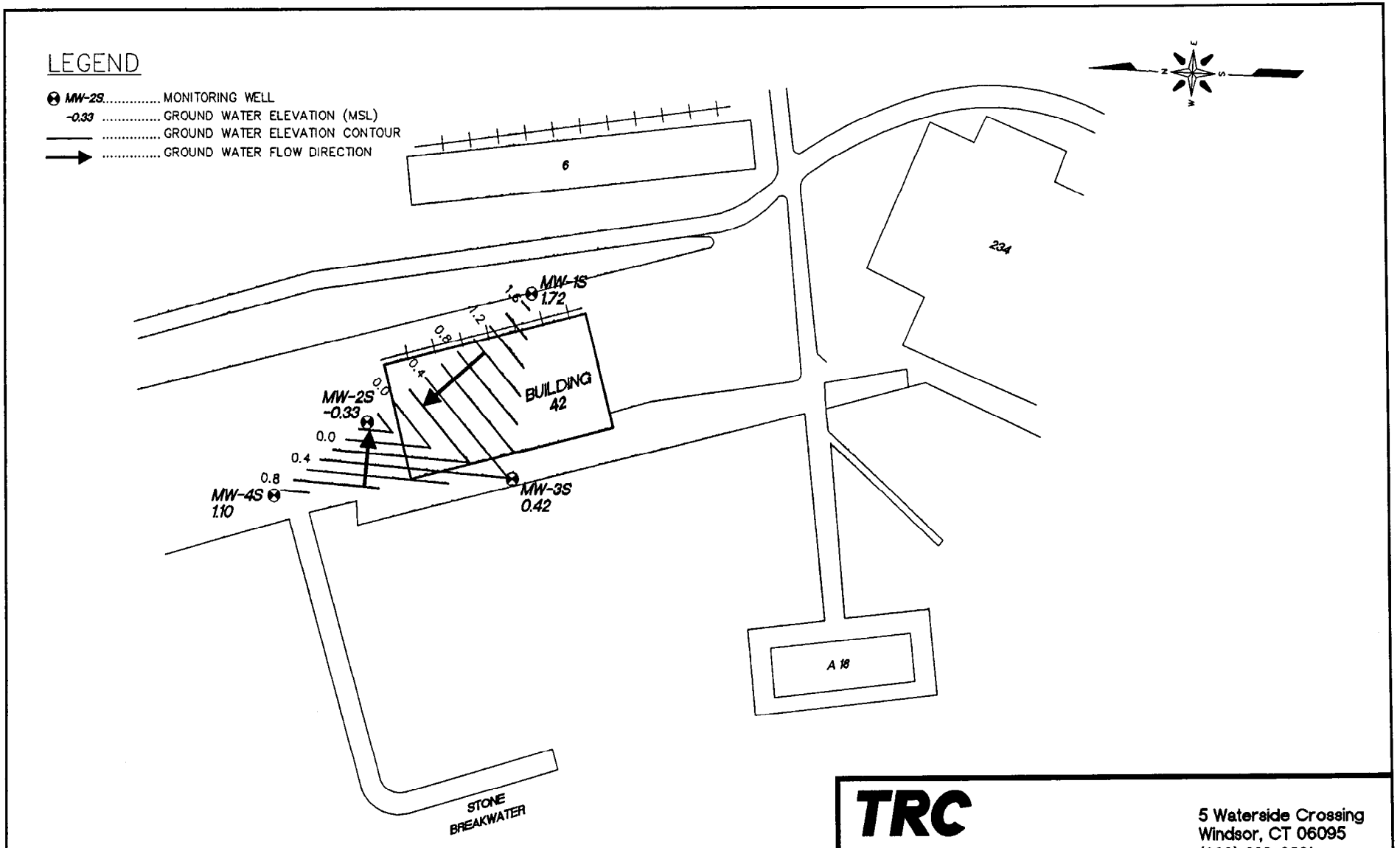
TRC Environmental Corporation

5 Waterside Crossing
Windsor, CT 06095
(203) 289-8631

DERECKTOR SHIPYARD
NAVAL EDUCATION AND TRAINING CENTER
NEWPORT, RHODE ISLAND

FIGURE 3-13
PIEZOMETRIC GROUND WATER ELEVATION (12/12/94)-LOW TIDE

Date: 12/94 | **Project No.** 01981-0020-00000



C:\19810010\FIG3-14D

TRC

TRC Environmental Corporation

5 Waterside Crossing
Windsor, CT 06095
(203) 289-8631

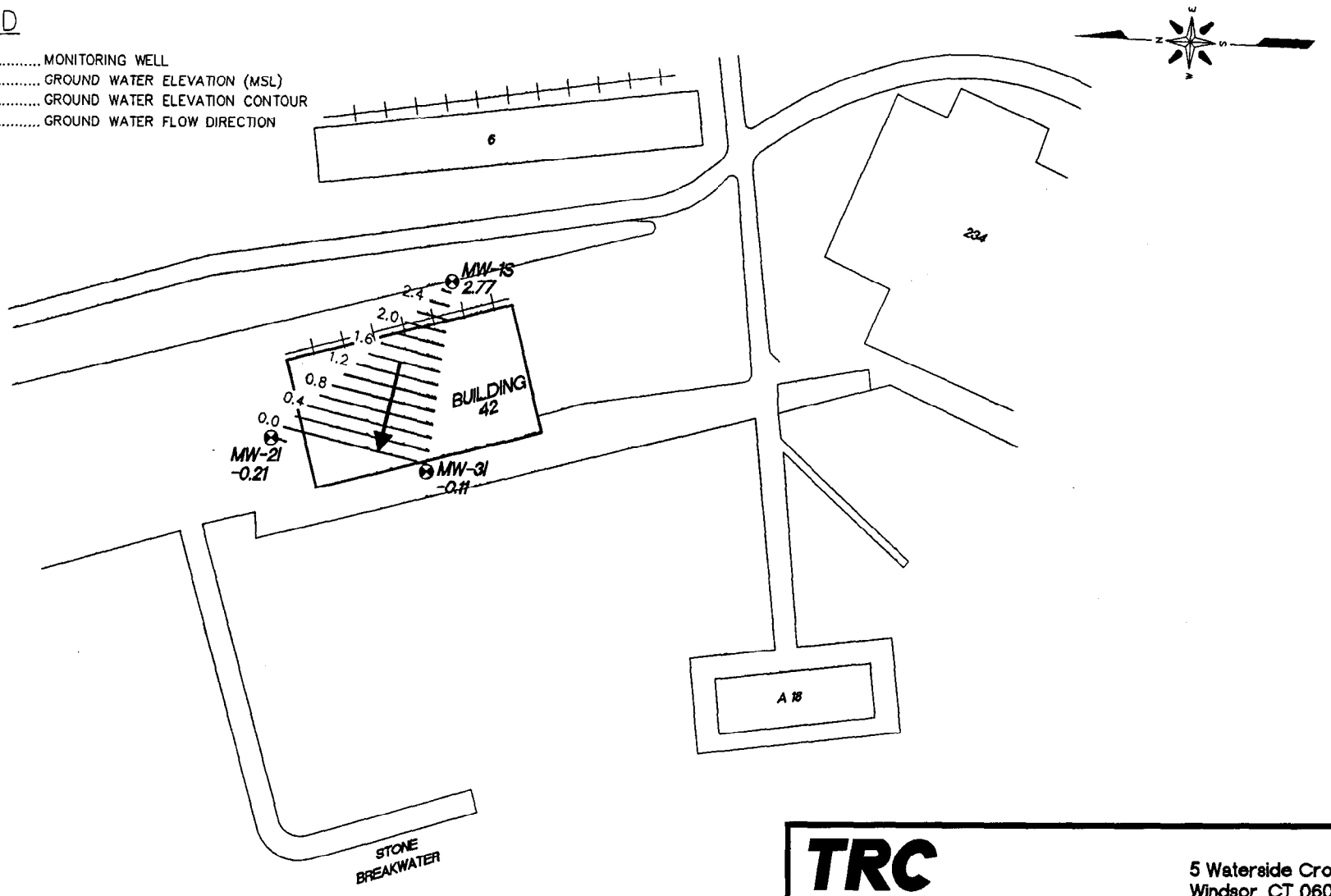
DERECKTOR SHIPYARD
NAVAL EDUCATION AND TRAINING CENTER
NEWPORT, RHODE ISLAND

FIGURE 3-14
GROUND WATER TABLE CONTOUR MAP (12/12/94)-HIGH TIDE

Date: 12/94 | **Project No.** 01981-0020-00000

LEGEND

MW-21 ..... MONITORING WELL
-0.21 ..... GROUND WATER ELEVATION (MSL)
..... GROUND WATER ELEVATION CONTOUR
..... GROUND WATER FLOW DIRECTION



GRAPHIC SCALE

200 0 100 200 400

(IN FEET)
1 inch = 200 ft.

C:\19810010\FIG3-15D

TRC

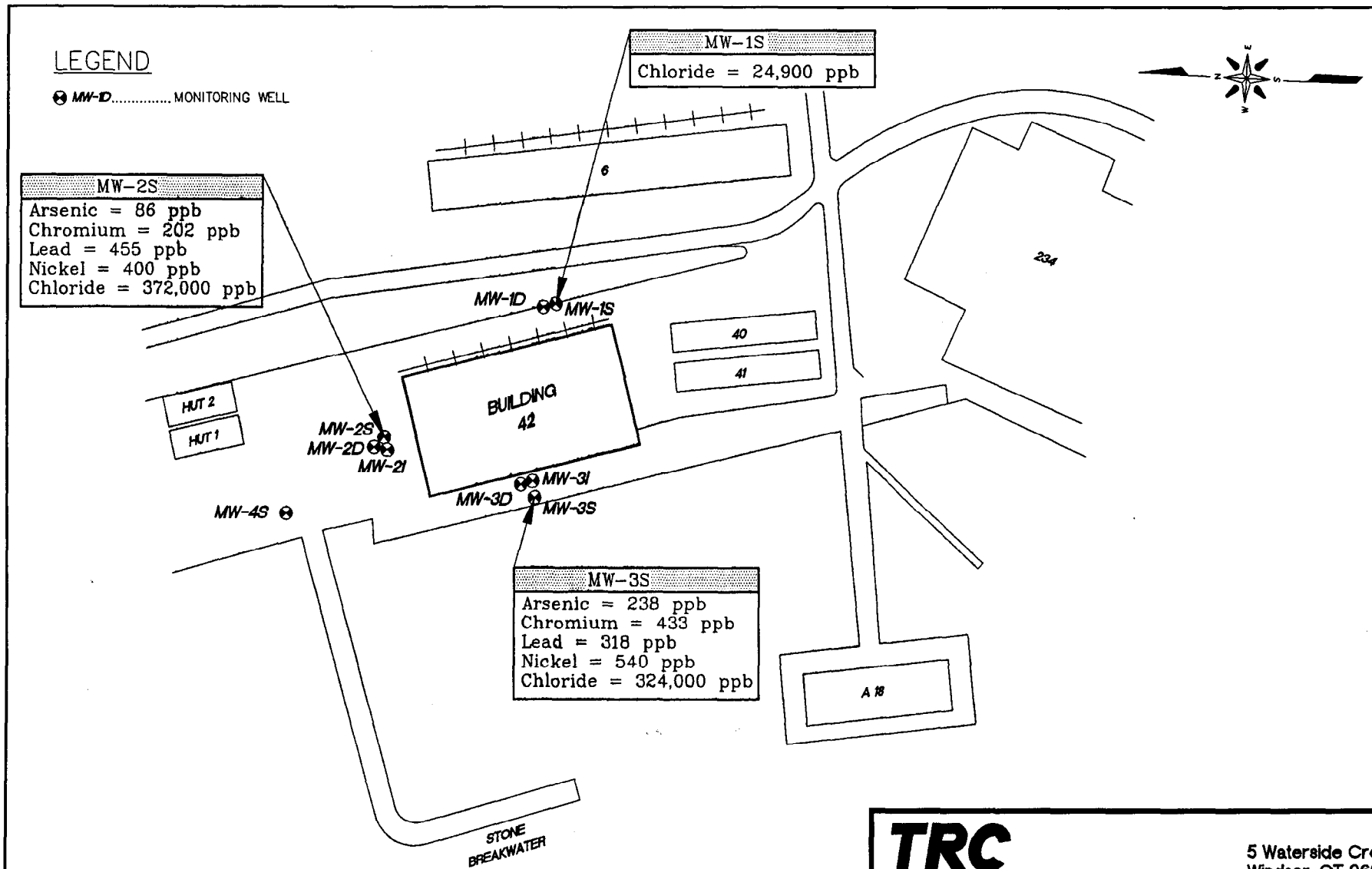
TRC Environmental Corporation

5 Waterside Crossing
Windsor, CT 06095
(203) 289-8631

DERECKTOR SHIPYARD
NAVAL EDUCATION AND TRAINING CENTER
NEWPORT, RHODE ISLAND

FIGURE 3-15
PIEZOMETRIC GROUND WATER ELEVATION (12/12/94)-HIGH TIDE

Date: 12/94 | **Project No.** 01981-0020-00000



GRAPHIC SCALE

200 0 100 200 400

(IN FEET)

1 inch = 200 ft.

C:\19810010\FIG3-16D

TRC

TRC Environmental Corporation

5 Waterside Crossing
Windsor, CT 06095
(203) 289-8631

DERECKTOR SHIPYARD
NAVAL EDUCATION AND TRAINING CENTER
NEWPORT, RHODE ISLAND

FIGURE 3-16
GROUND WATER CONTAMINANT LOCATIONS EXCEEDING STANDARDS

Date: 11/94 | Project No. 01981-0020-00000

APPENDIX A

BACKGROUND INFORMATION

Appendix A-1

NETC Sand Blast Grit Data

DERECKTOR ALLL

CEIMIC
CORPORATION

"Analytical Chemistry for Environmental Management"

QUALITY CONTROL

METHOD BLANK

RC 46096

Client: NETC

Client Sample ID: Method Blank

Project No.: 940307 Laboratory ID: 0418PBS

Date Analysis Completed: 4/20/94 Concentration in: mg/kg (ppm)

Target Analyte	Sample Concentration	Method Reporting Limit
Total Metals		
Antimony	ND	40
Arsenic	ND	2
Beryllium	ND	2
Cadmium	ND	2
Chromium	ND	4
Copper	ND	4
Lead	ND	1
Mercury	ND	0.2
Nickel	ND	8
Selenium	ND	1
Silver	ND	2
Thallium	ND	2
Tin	ND	20
Zinc	ND	4

ND = Not detected

Reported by: Approved by:

RECEIVED
NOV 2 1994

10 Dean Knauss Drive, Narragansett, R.I. 02882 • (401) 782-8900 • FAX (401) 782-8905

CEIMIC
CORPORATION
"Analytical Chemistry for Environmental Management"

QUALITY CONTROL

LABORATORY CONTROL SAMPLE

Client: NETC

Client Sample ID: Laboratory Control Sample

Project No.: 940307 Laboratory ID: 0418LCSS

Date Analysis Completed: 4/20/94 Matrix: Soil

Target Analyte	% Recovery	Control Limits
Total Metals		
Antimony	106	44-140%
Arsenic	101	50-150
Beryllium	98	60-151
Cadmium	103	51-159
Chromium	100	45-140
Copper	99	49-149
Lead	97	45-145
Mercury	88	54-154
Nickel	92	50-165
Selenium	90	50-161
Silver	92	50-140
Thallium	100	51-150
Zinc	97	55-150

Reported by: _____ Approved by: _____

10 Dean Knauss Drive, Narragansett, R.I. 02882 • (401) 782-8900 • FAX (401) 782-8905

CEIMIC
CORPORATION
"Analytical Chemistry for Environmental Management"

TOTAL METALS

Client: NETC

Client Sample ID: 01

Date Sample Received: 4/15/94 Laboratory ID: 940307-01

Date Analysis Completed: 4/20/94 Concentration in: mg/kg (ppm)+

Target Analyte	Sample Concentration	Method Reporting Limit
Antimony	43	40
Arsenic	4	2
Beryllium	4	2
Cadmium	6	2
Chromium	140	4
Copper	685	4
Lead	723	1
Mercury	ND	0.2
Nickel	59	8
Selenium	ND	1
Silver	ND	2
Thallium	ND	2
Tin	27	20
Zinc	1,330	4

ND = Not detected

+ Reported on a dry weight basis, % solid = 93

Reported by: Approved by:

10 Dean Knauss Drive, Narragansett, R.I. 02882 • (401) 782-8900 • FAX (401) 782-8905

CEIMIC
CORPORATION
"Analytical Chemistry for Environmental Management"

TOTAL METALS

Client: NETC

Client Sample ID: 02

Date Sample Received: 4/15/94 Laboratory ID: 940307-02

Date Analysis Completed: 4/20/94 Concentration in: mg/kg (ppm)+

Target Analyte	Sample Concentration	Method Reporting Limit
Antimony	ND	40
Arsenic	8	2
Beryllium	6	2
Cadmium	8	2
Chromium	136	4
Copper	1,380	4
Lead	110	1
Mercury	ND	0.2
Nickel	106	8
Selenium	ND	1
Silver	ND	2
Thallium	ND	2
Tin	42	20
Zinc	1,240	4

ND = Not detected

+ Reported on a dry weight basis, % solid = 96

Reported by: _____ Approved by: _____

10 Dean Knauss Drive, Narragansett, R.I. 02882 • (401) 782-8900 • FAX (401) 782-8905

CEIMIC
CORPORATION
"Analytical Chemistry for Environmental Management"

TOTAL METALS

Client: NETC

Client Sample ID: 03

Date Sample Received: 4/15/94 Laboratory ID: 940307-03

Date Analysis Completed: 4/20/94 Concentration in: mg/kg (ppm)+

Target Analyte	Sample Concentration	Method Reporting Limit
Antimony	ND	40
Arsenic	10	2
Beryllium	5	2
Cadmium	6	2
Chromium	108	4
Copper	998	4
Lead	259	1
Mercury	ND	0.2
Nickel	269	8
Selenium	1	1
Silver	ND	2
Thallium	ND	2
Tin	82	20
Zinc	1,950	4

ND = Not detected

+ Reported on a dry weight basis, % solid = 96

Reported by: Approved by:

10 Dean Knauss Drive, Narragansett, R.I. 02882 • (401) 782-8900 • FAX (401) 782-8905

CEIMIC
CORPORATION
"Analytical Chemistry for Environmental Management"

TOTAL METALS

Client: NETC

Client Sample ID: 04

Date Sample Received: 4/15/94 Laboratory ID: 940307-04

Date Analysis Completed: 4/20/94 Concentration in: mg/kg (ppm)+

Target Analyte	Sample Concentration	Method Reporting Limit
Antimony	ND	40
Arsenic	16	2
Beryllium	15	2
Cadmium	11	2
Chromium	225	4
Copper	2,360	4
Lead	1,320	1
Mercury	ND	0.2
Nickel	885	8
Selenium	6	1
Silver	5	2
Thallium	ND	2
Tin	372	20
Zinc	6,570	4

ND = Not detected

+ Reported on a dry weight basis, % solid = 92

Reported by: _____ Approved by: _____

10 Dean Knauss Drive, Narragansett, R.I. 02882 • (401) 782-8900 • FAX (401) 782-8905

CEIMIC
CORPORATION
"Analytical Chemistry for Environmental Management"

TOTAL METALS

Client: NETC

Client Sample ID: 05

Date Sample Received: 4/15/94 Laboratory ID: 940307-05

Date Analysis Completed: 4/20/94 Concentration in: mg/kg (ppm)+

Target Analyte	Sample Concentration	Method Reporting Limit
Antimony	ND	40
Arsenic	21	2
Beryllium	ND	2
Cadmium	3	2
Chromium	28	4
Copper	156	4
Lead	79	1
Mercury	ND	0.2
Nickel	48	8
Selenium	ND	1
Silver	ND	2
Thallium	ND	2
Tin	26	20
Zinc	392	4

ND = Not detected

+ Reported on a dry weight basis, % solid = 90

Reported by: _____ Approved by: _____

10 Dean Knauss Drive, Narragansett, R.I. 02882 • (401) 782-8900 • FAX (401) 782-8905

Appendix A-2
URI Geophysical Cross Sections

OBTAINED FROM:

CVE 591
SPECIAL PROBLEM
CIVIL/ENVIRONMENTAL ENGINEERING DEPARTMENT
UNIVERSITY OF RHODE ISLAND

DERECKTOR SHIPYARD - BUILDING 42 AREA WATER QUALITY AND GROUNDWATER FLOW ANALYSIS

Prepared By:
THOMAS D. GAMBLE

Project Advisors:
PROFESSOR LEON T. THIEM Ph.D
PROFESSOR DANIEL W. URISH Ph.D

Derecktor Shipyard Cross-Sectional Profile

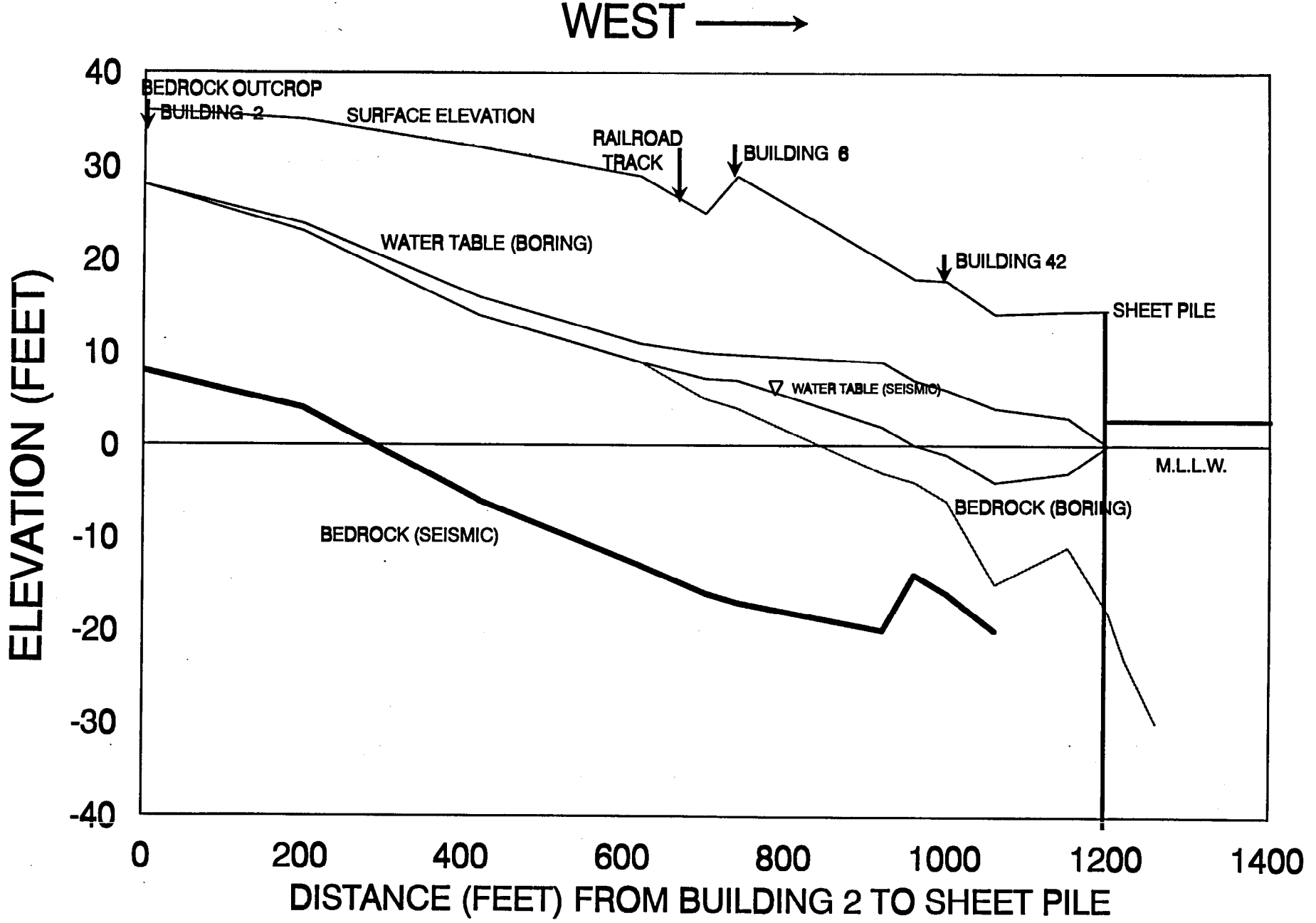


FIGURE 4a

Derecktor Shipyard Cross-Sectional Profile

Boring / Surveying / Seismic Data Comparison

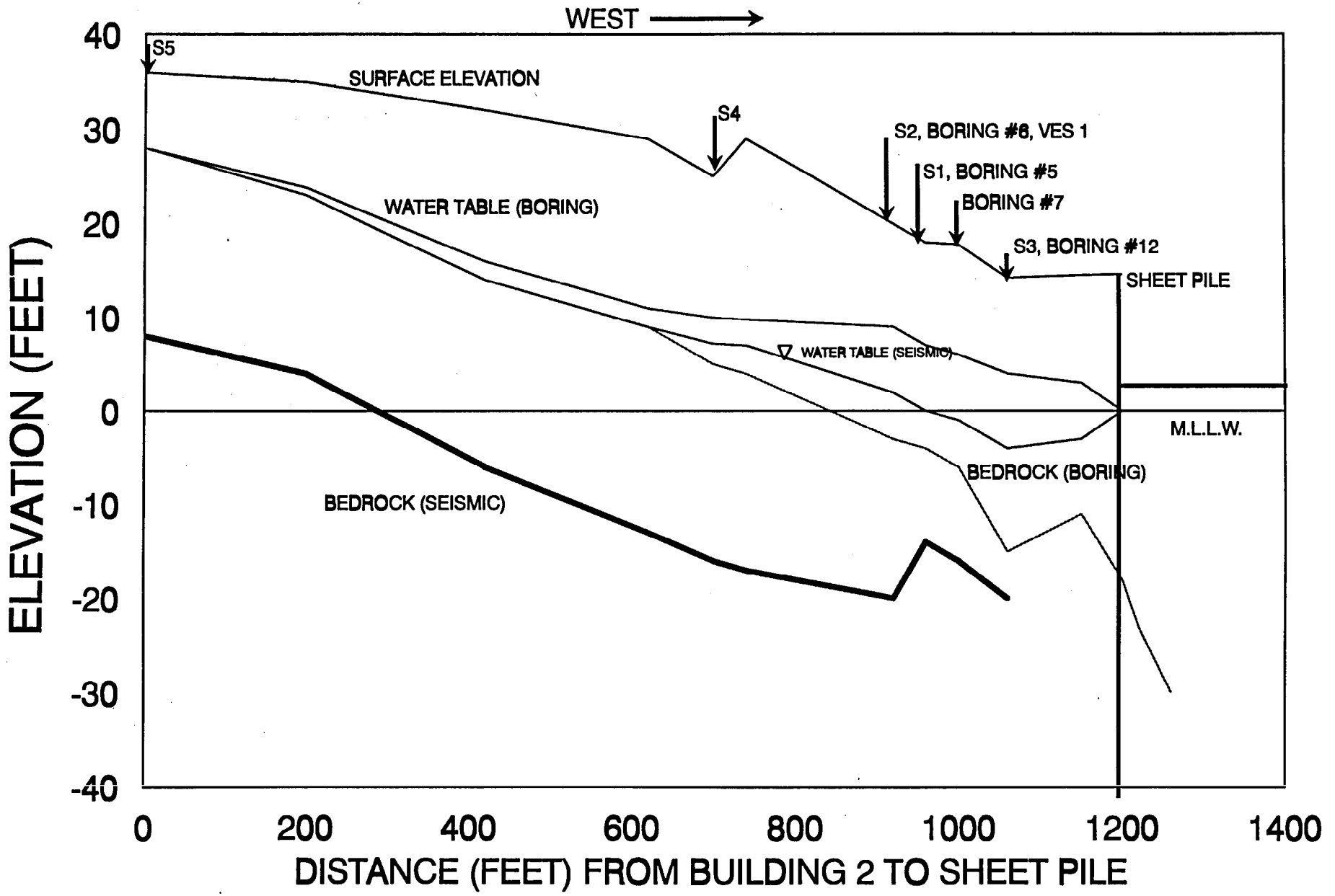
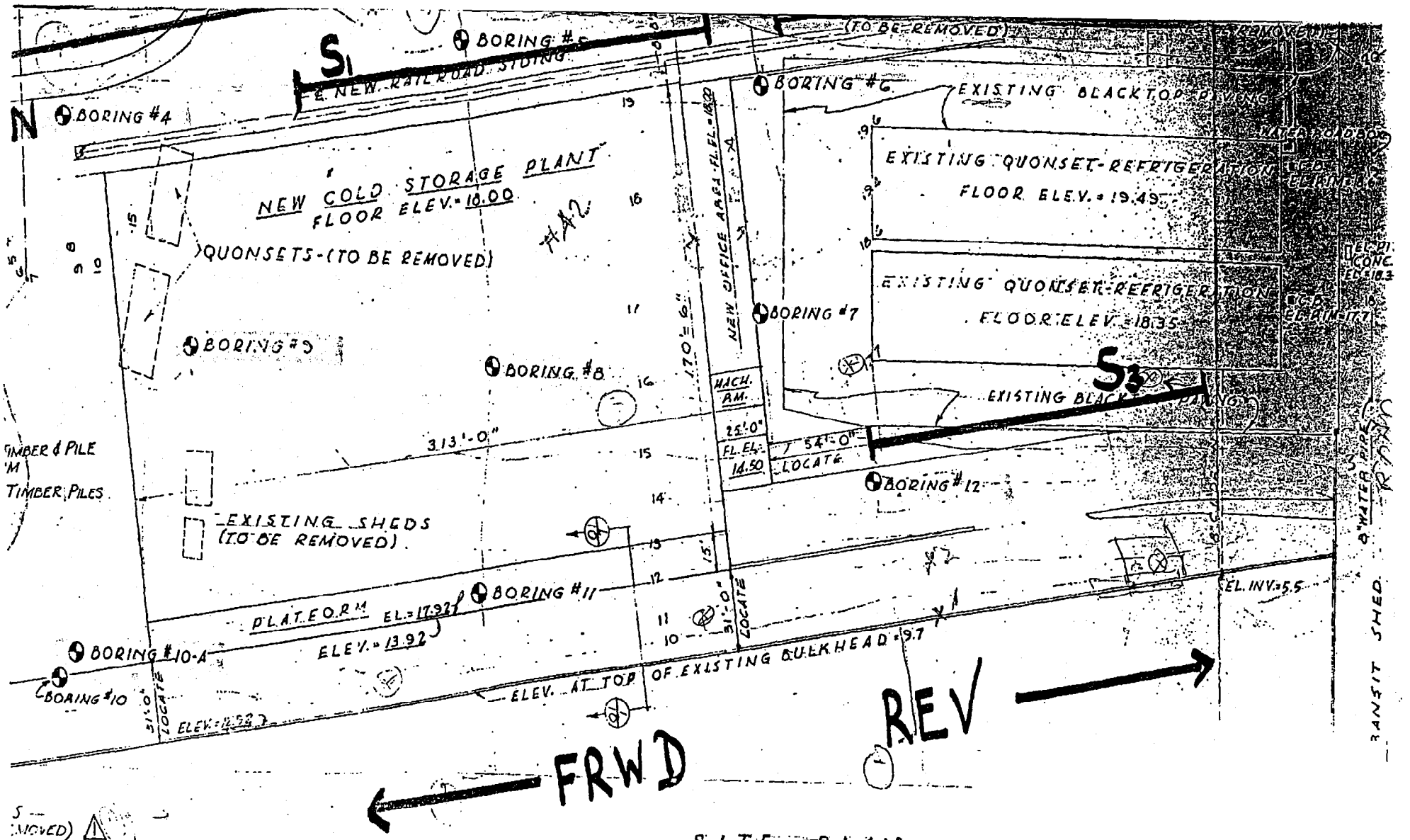


FIGURE 4b

Appendix A-3

Historical Building 42 Geotechnical Boring Logs



NO. 529897.
JTEAUME & McMULLEN

PLANE OF MEAN LOW WATER (EL.=0.0) ✓
THIS PLAN ARE EXIST...

0.8

SYMBOL	DESCRIPTION	DATE	APPROVAL
	REVISIONS		

ENGINEERS JOB NO. 2302

ENGINEERS DWG. NO. 3

DEPARTMENT OF THE NAVY
DISTRICT PUBLIC WORKS OFFICE
BUREAU OF YARDS & DOCKS
1 ST ND BOSTON, MASS.

GANTEAUME & McMULLEN — ENGR. & ARCH.
BOSTON 11, MASS.

DRAWN BY GRAFFAM
TRACED BY
CHECKED BY KING

DPWO DWG. No. NBN-2 C-2

U.S. NAVAL SUPPLY DEPOT
NEWPORT, R.I.

COLD STORAGE PLANT

BORING DATA AND MISCELLANEOUS SITE DETAILS

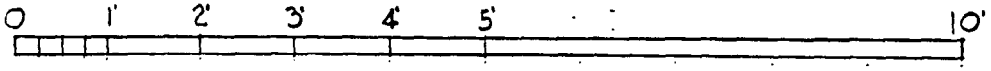
PROJ. ENGR. T.A.Q.
DIRECTOR Seddon
APPROVED H. J. Kellyfatrick DATE 8 May 1952

APPROVED FOR BUREAU OF YARDS & DOCKS
H. J. Kellyfatrick
DPWO FOR CHIEF OF BUREAU
DATE 8 May 1952

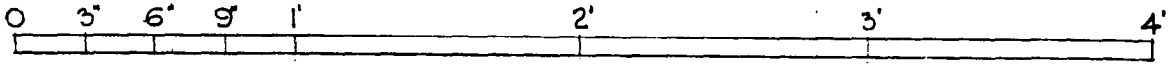
SCALE: GRAPHIC SPEC. 31223
SHEET 3 OF 51 NO. 29553
Y & D DRAWING NO. 529897

GRAPHIC SCALE

SCALE: 1/2" = 1'-0"



SCALE: 1 1/2" = 1'-0"



SATISFACTORY TO

DATE 7 May 1952

NO. 1 qp

ELEV. -14.0 f

	FIRM COARSE GRAY SAND	8
-30.0	HARD SAND, GRAVEL, CLAY	20
-34.0		

NO. 2 qp

ELEV. -12.8 f

	FIRM COARSE GRAY SAND	8
-26.1	HARD SAND, GRAVEL, CLAY	20
-32.6		

NO. 3 qp

-2.3

ELEV. -7.8 f

	FIRM COARSE GRAY SAND	8
-17.3	HARD SAND, GRAVEL, CLAY	30
-20.8	REFUSAL	

3-#3 BARS

#4-6" O.C.

8-#3 HORIZ - EVENLY SPACED

6" VARIES 2" MIN.

02
3

BITUMINOUS PAVING

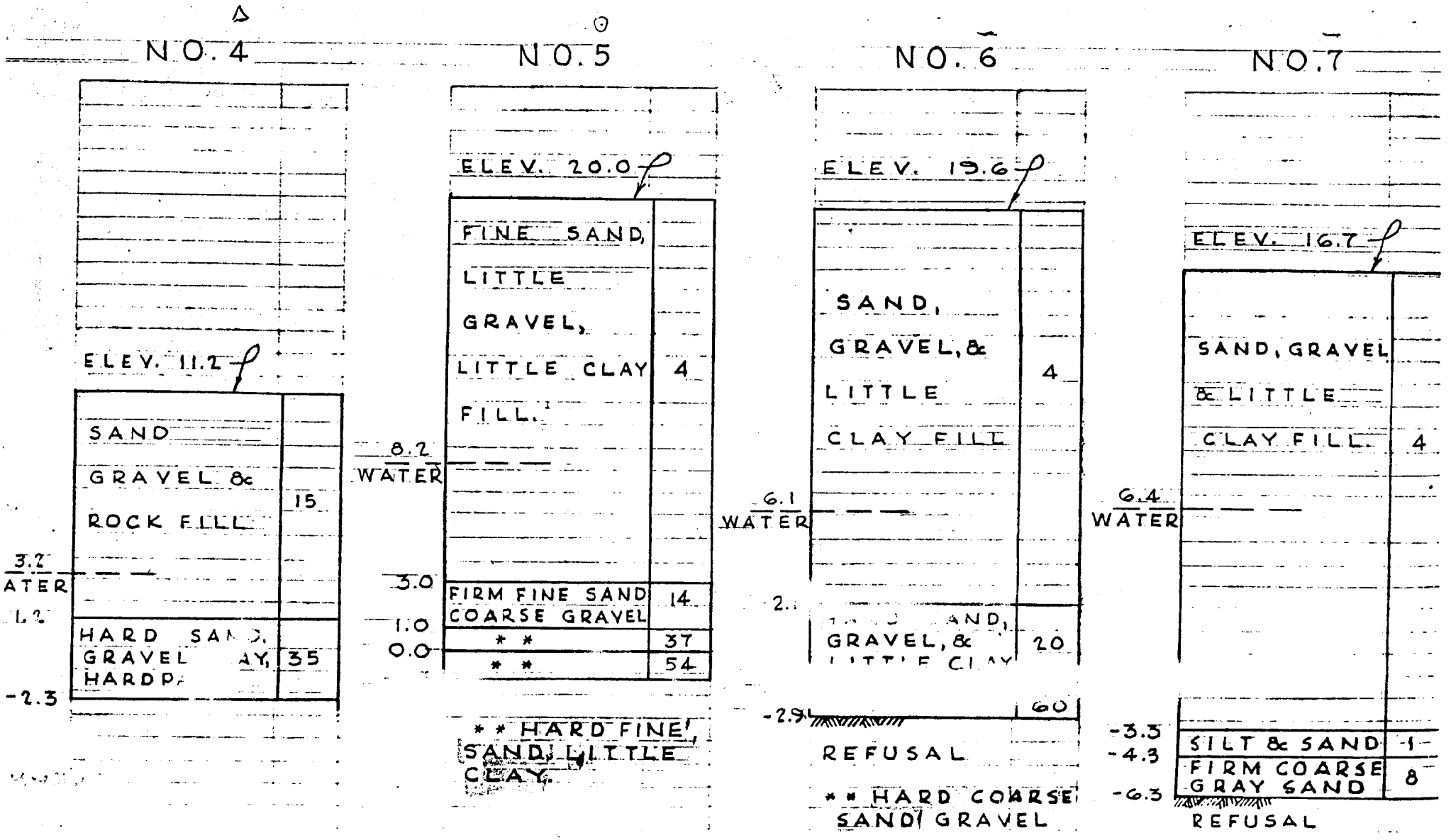
5 3/16

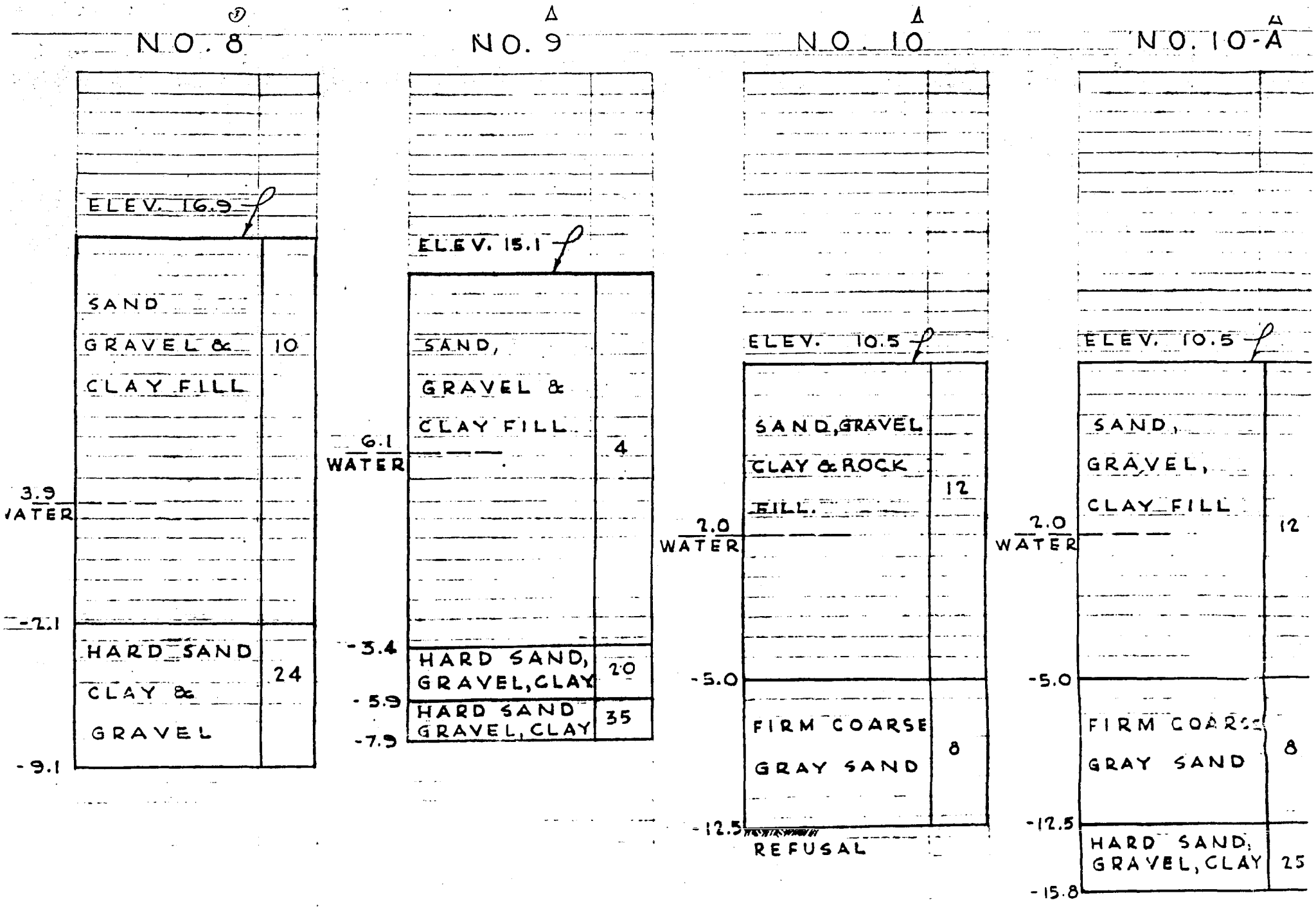
85# RAIL 0.00% GRADE

#4

#3

VARIES


NO. 4
ELEV. 11.2
SAND
GRAVEL &
ROCK FILL
15
3.2
ATER
L 2
HARD SAN
GRAVEL AY,
HARDP
35
-2.3
NO. 5
ELEV. 20.0
FINE SAND,
LITTLE
GRAVEL,
LITTLE CLAY
FILL.
4
8.2
WATER
3.0
FIRM FINE SAND
COARSE GRAVEL
14
1.0
* *
37
0.0
* *
54
* * HARD FINE
SAND, LITTLE
CLAY.
NO. 6
ELEV. 19.6
SAND,
GRAVEL, &
LITTLE
CLAY FILL
4
6.1
WATER
2.
AND,
GRAVEL, &
20
60
-2.9
REFUSAL
* * HARD COARSE
SAND GRAVEL
NO. 7
ELEV. 16.7
SAND, GRAVEL
& LITTLE
CLAY FILL.
4
6.4
WATER
-3.3
SILT & SAND
1
-4.3
FIRM COARSE
GRAY SAND
8
-6.3
REFUSAL


NO. 8
ELEV. 16.9
SAND
GRAVEL &
CLAY FILL
10
3.9
WATER
-7.1
HARD SAND
CLAY &
GRAVEL
24
-9.1
NO. 9
ELEV. 15.1
SAND,
GRAVEL &
CLAY FILL
4
6.1
WATER
-3.4
HARD SAND,
GRAVEL, CLAY
20
-5.9
HARD SAND
GRAVEL, CLAY
35
-7.9
NO. 10
ELEV. 10.5
SAND, GRAVEL
CLAY & ROCK
FILL.
12
2.0
WATER
-5.0
FIRM COARSE
GRAY SAND
8
-12.5
REFUSAL
NO. 10-A
ELEV. 10.5
SAND,
GRAVEL,
CLAY FILL
12
2.0
WATER
-5.0
FIRM COARSE
GRAY SAND
8
-12.5
HARD SAND,
GRAVEL, CLAY
25
-15.8

NO. 11

ELEV. 12.4

	SAND, GRAVEL & CLAY FILL	6
4.1 WATER		
-5.6	*	7
-5.1	HARD COARSE SAND, GRAVEL	25
-8.1	HARD FINE SAND & CLAY	15
-10.6	HARD SAND, GRAVEL & CLAY.	20
-20.1		

NO. 12

ELEV. 13.9

	SAND, GRAVEL, & CLAY FILL	5
3.1 WATER		
-5.1	FIRM COARSE GRAY SAND	8
-11.6	HARD COARSE SAND GRAVEL	15
-15.1	*	80
-16.1	REFUSAL	

*HARD SAND & CLAY

APPENDIX B

BORING AND WELL CONSTRUCTION LOGS

MONITORING WELL NEST MW-1 CONSTRUCTION DIAGRAM AND BORING LOG

Monitoring Well Nest: MW-1
Derecktor Shipyard - Building 42
NETC - Newport, RI

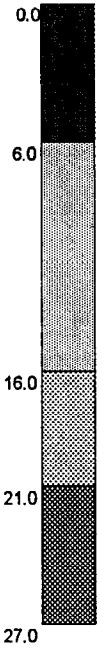
Drilling Company: A&W Environmental Drilling, Ltd.
Drillers: P. Thornsbury & D. Silvia
TRC Inspector: J. Peronto

Elevations:	MW-1S	MW-1D
Ground:	13.87 mlw	13.88 mlw
Top of PVC:	13.39 mlw	13.52 mlw

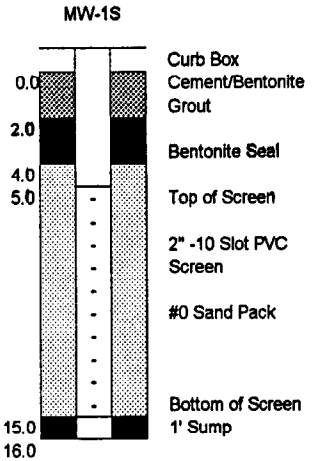
Date Started: October 17, 1994
Date Completed: October 19, 1994
Depth to Water: MW-1S = 12.77 Feet (10/27/94)
MW-1D = 12.35 Feet (10/27/94

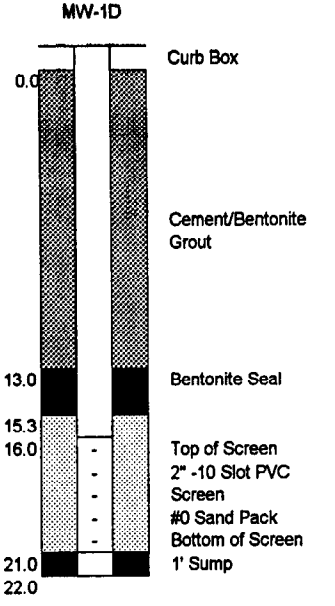
Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	HNu (ppm)	Soil Description
0-2	12	14	77	ND	FILL, black sand grit, dry.
	21	14			Recovery = 12".
2-4	15	14	2.4	ND	FILL, black sand grit, dry.
	10	14			Recovery = 16".
4-6	40	94	4.2	ND	0-2" Brown/grey F SAND and SILT.
	45	13			2-18" FILL, black grit sand blast.
6-8	13	10	13	ND	0-2" Stone piece.
	8	9			2-10" F SAND and SILT, some rocks, dry.
8-10	6	5	27	ND	Dark brown F SAND and SILT, dry. Recovery = 12".
	7	8			
10-12	3	4	41	ND	Grey M SAND, trace silt, dry. Recovery = 16".
	4	6			
12-14	3	3	5	ND	0-17" Grey M SAND, trace silt and rocks, moist.
	9	9			17-19" Brown M-C SAND, wet.
14-16	22	40	3	ND	0-6" Brown M-C SAND, some rock, dry. 6-18" dense.
	54	64			16-18" Brown SHALE, dry.
16-18	80	97	9	ND	Grey TILL, F-C sand, trace silt, some rock, dense.
	130	120			Recovery = 20".
20-22	81	50	5	ND	0-11" Grey TILL, M-C sand, trace silt, shale fragments.
	130/6"				11-20" Grey SHALE, weathered.
25-27	73	120	NR	NR	Grey SHALE, weathered. Recovery = 12".

Lithology



Monitoring Well Nest Construction





Geologic Symbols:
- Fill
- Sand and Silt
- Till
- Bedrock

Well Details:
- Screen section
- Bentonite seal
- #0 Sand pack
- Concrete/bentonite grout

Notes: Sample B1-1 collected from 4-6'.
Sample B1-2 collected from 10-12'.
Sample B1-3 collected from 10-12' (for TOC & Grain Size).
Sample B1-4 collected from 15-17' (for TOC & Grain Size).

ND = Not Detected.
NR = No Reading.

MONITORING WELL NEST MW-2 CONSTRUCTION DIAGRAM AND BORING LOG

Monitoring Well Nest: MW-2
Derecktor Shipyard - Building 42
NETC - Newport, RI

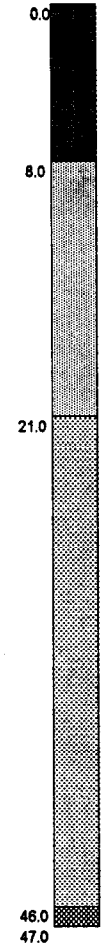
Drilling Company: A&W Environmental Drilling Ltd.
Drillers: P. Thornsbury & D. Silvia
TRC Inspector: T. McMorrow

Elevations:	MW-2S	MW-2I	MW-2D
Ground:	12.22 mlw	11.95 mlw	11.95
Top of PVC:	11.80 mlw	11.74 mlw	11.72

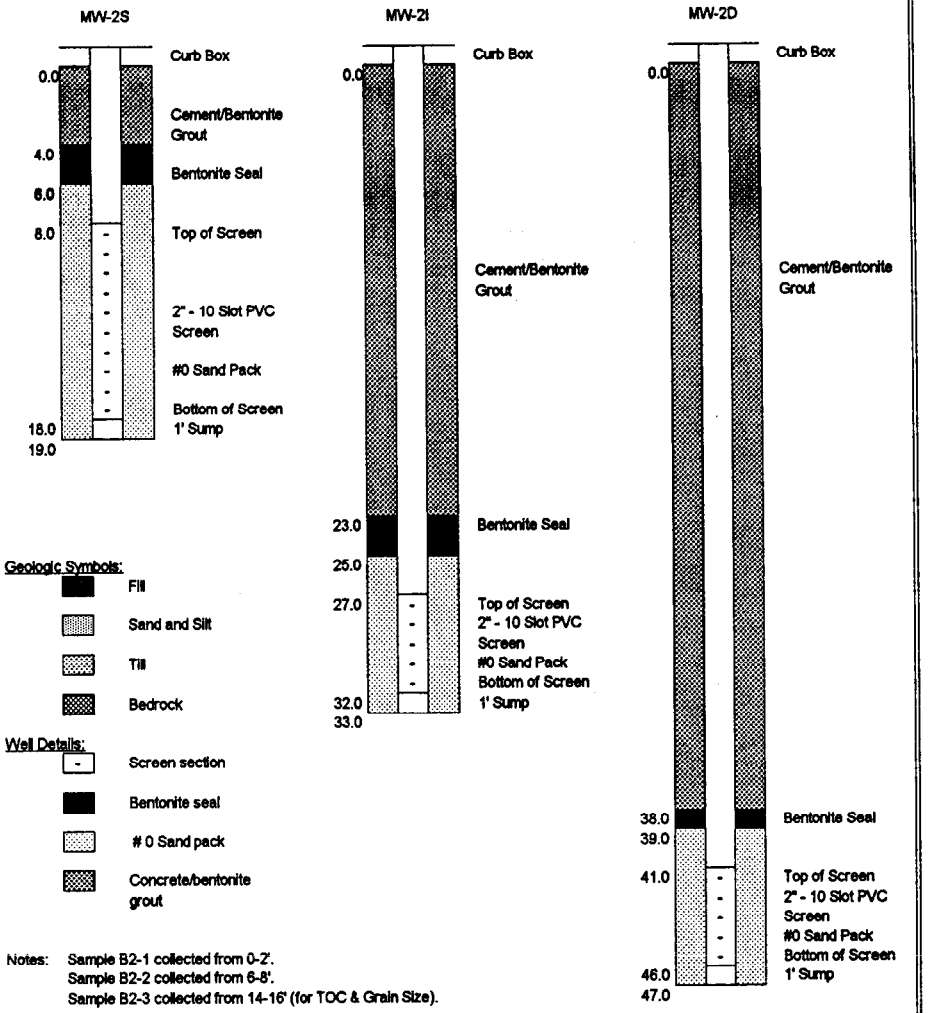
Date Started: October 19, 1994
Date Completed: October 21, 1994
Depth to Water: MW-2S = 12.14 Feet (10/27/94)
MW-2I = 11.76 Feet (10/27/94)
MW-2D = 11.72 Feet (10/27/94)

Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	HNu (ppm)	Soil Description
0-2	9	21	1.5	ND	FILL, 0-2" Black sand grit. 2-18" Dark brown
	28	31			M-C sand, little gravel, brick fragments, dry.
2-4	50	71	7	NR	FILL, 0-6" Dark brown M-C sand, little gravel, brick frags.
	58	77			FILL, 6-9" Asphalt. 9-18" Grey/brown TILL, tight F sand & silt, tr gravel.
4-6	16	22	7	NR	FILL, 0-14" Brown F-M SAND, little gravel, shale fragments.
	23	34			14-18" Black Asphalt.
6-8	29	21	47	ND	FILL, brown F sand, trace gravel, brick fragments.
	15	15			Recovery = 16".
8-10	10	7	37	ND	Grey fine SAND and SILT, trace gravel damp.
	7	6			Recovery = 18".
10-12	6	4	82	ND	Dark brown F SAND and SILT, trace gravel.
	10	6			Shale fragments. Recovery = 12".
12-14	5	8	ND	ND	Dark brown F SAND and SILT, trace gravel.
	7	11			6-9" Grey shale layer. Recovery = 12".
14-16	4	5	47	ND	Dark brown F SAND and SILT, trace clay, trace gravel, wet.
	4	5			Recovery = 12".
20-22	4	3	1	ND	0-10" Dark grey M-F SAND, trace silt.
	7	21			TILL, 10-14" F-C gravel, trace F sand. Wet.
25-27	23	51	ND	ND	TILL, Dark grey silt and F sand, trace clay, trace gravel
	52	54			Very tight, wet. Recovery = 20".
30-32	20	26	ND	ND	TILL, Dark grey silt and F sand, trace clay, trace gravel
	44	54			Very tight, wet. Recovery = 16".
35-37	20	32	ND	ND	TILL, Dark grey silt and F sand, trace clay, trace gravel
	28	48			Very tight, moist. Recovery = 14".
40-42	82	140	NR	NR	0-10" TILL, dark grey silt and F sand, trace clay, trace gravel
					10-12" Grey weathered SHALE, moist.
42-44	84	140	NR	NR	TILL, Dark grey silt, little F sand, trace clay, trace gravel,
					very tight. Recovery = 12".
45-47	45	84	NR	NR	TILL, 0-6" Dark grey silt, little F sand, trace clay, trace gravel,
	100	100/3"			very tight. BEDROCK, 6-18" Grey weathered SHALE, dry.

Lithology



Monitoring Well Nest Construction



Notes: Sample B2-1 collected from 0-2'.
Sample B2-2 collected from 6-8'.
Sample B2-3 collected from 14-16' (for TOC & Grain Size).

ND = Not Detected.
NR = No Reading.

MONITORING WELL NEST MW-3 CONSTRUCTION DIAGRAM AND BORING LOG

Monitoring Well Nest: MW-3
Derecktor Shipyard - Building 42
NETC - Newport, RI

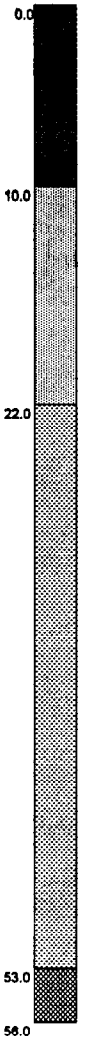
Drilling Company: A&W Environmental Drilling Ltd.
Drillers: P. Thornsbury & D. Silvia
TRC Inspector: T. McMorrow

Elevations:	MW-3S	MW-3I	MW-3D
Ground:	10.73 mlw	10.97 mlw	10.96 mlw
Top of PVC:	10.44 mlw	10.59 mlw	10.32 mlw

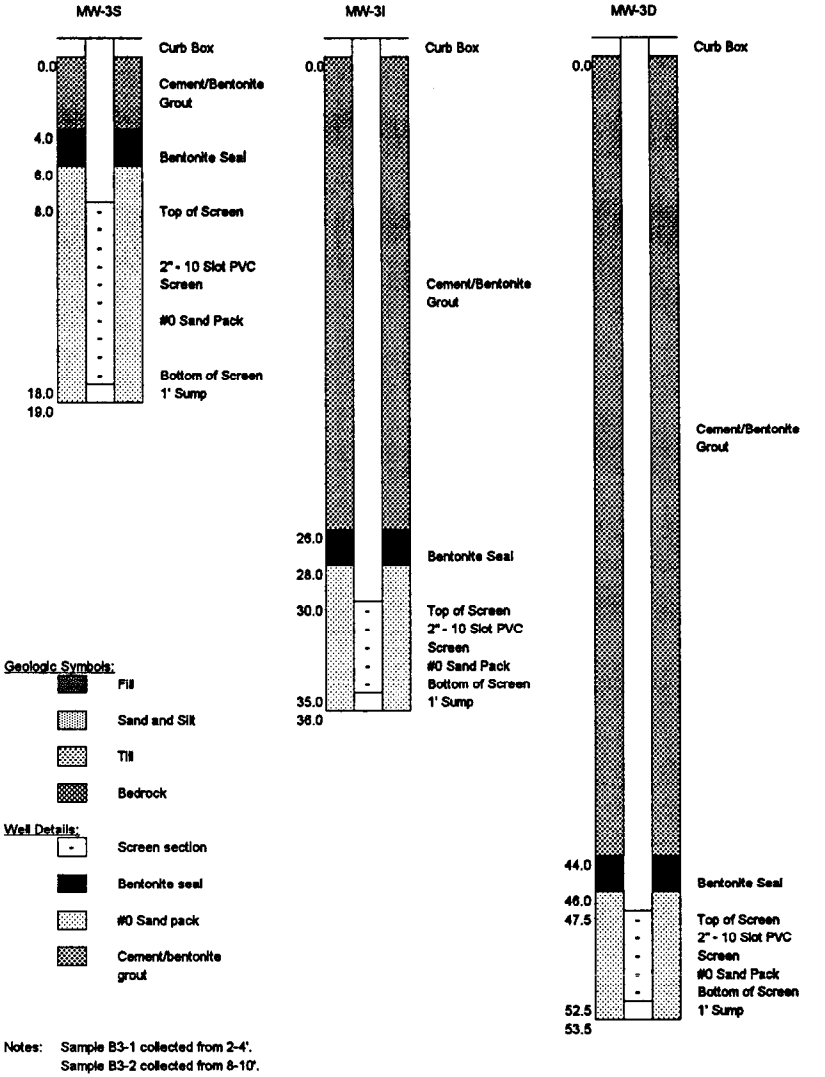
Date Started: October 21, 1994
Date Completed: October 25, 1994
Depth to Water: MW-3S = 10.39 Feet (10/27/94)
MW-3I = 10.85 Feet (10/27/94)
MW-3D = 11.12 Feet (10/27/94)

Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	HNu (ppm)	Soil Description
0-2	17	22	ND	ND	FILL, Light brown F-M SAND, little gravel, dry.
	51	54			Recovery = 2".
2-4	24	33	ND	ND	FILL, Dark brown SILT and F SAND, little gravel, trace clay,
	23	21			dry, very tight. Recovery = 12".
4-6	8	10	ND	ND	FILL, Dark brown SILT and F SAND, little gravel, trace clay,
	8	7			dry. Recovery = 12".
6-8	6	5	ND	ND	FILL, 0-10" Dark brown SILT and F SAND, little gravel, trace clay,
	4	6			dry. 10-12" Red Brick.
8-10	5	4	7	ND	FILL, Brown SILT and F SAND, trace gravel and clay, moist.
	4	4			0-2" red brick frags. 6-8" shale frags. Recovery = 12".
10-12	1	3	ND	ND	Brown F SAND and SILT, trace gravel, moist.
	2	4			Recovery = 6".
12-14	4	4	ND	ND	Brown F SAND and SILT, trace gravel, shale fragments, wet.
	4	4			Recovery = 12".
14-16			ND	ND	Brown/grey F SAND and SILT, trace gravel, shale fragments, wet.
19-21	NR		48	NR	0-6" Gray SILT, little clay, cohesive, wet.
					6-12" Dark gray M-F SAND, trace coarse sand, wet.
24-26	24	36	ND	NR	Dark brown/gray TILL, M-F sand, little gravel, trace
	14	17			silt, wet. Recovery = 16".
29-31	16	31	NR	NR	No recovery.
	28	18			
34-36	18	23	ND	NR	Dark gray TILL, silt and F sand, little gravel, trace
	24	23			clay, very tight. Recovery = 12".
39-41	24	42	ND	NR	Dark gray TILL, silt and F sand, little gravel, trace
	46	46			clay, very tight. Recovery = 12".
44-46	25	40	ND	NR	Dark gray TILL, silt and F sand, little gravel, trace
	48	55			clay, very tight. Recovery = 10".
49-51	72	40	ND	NR	Dark gray TILL, silt and F sand, little gravel, trace
	43	49			clay, very tight. Recovery = 8".
54-56	46	100/4"	ND	NR	BEDROCK, Gray highly weathered SHALE. Recovery = 8".

Lithology



Monitoring Well Nest Construction



Geologic Symbols:
- Fill
- Sand and Silt
- Till
- Bedrock

Well Details:
- Screen section
- Bentonite seal
- #0 Sand pack
- Cement/bentonite grout

Notes: Sample B3-1 collected from 2-4'.
Sample B3-2 collected from 8-10'.
Sample B3-4 collected from 2-4' (for TOC and grain size)

ND = Not Detected.
NR = No Reading.

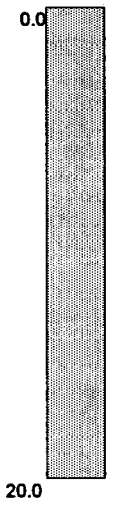
MONITORING WELL MW-4S CONSTRUCTION DIAGRAM AND BORING LOG

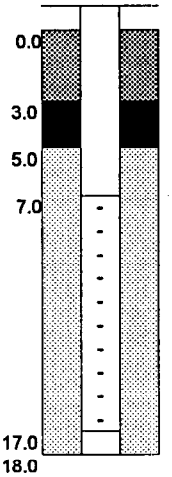
Monitoring Well: MW-4S
Derecktor Shipyard - Building 42
NETC - Newport

Drilling Company: A&W Environmental Drilling, Ltd.
Drillers: P. Thornsbury & D. Silvia
TRC Inspector: T. McMorrow

Date Started: October 26, 1994
Date Completed: October 26, 1994
Depth to Water: 10.12 Feet (10/27/94)
Monitoring Well Elevations:
Top of PVC = 8.70
Ground Elevation = 9.19

Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	Field Measurements HNu (ppm)	Soil Description
0.5-2.5	8	18	ND	NR	Brown F-M SAND, little gravel, dry.
	17	19			Recovery = 18".
5-7	9	8	ND	NR	Black F-M SAND, little gravel, trace silt, dry.
	6	6			Recovery = 14".
10-12	6	8	ND	NR	Black F-M SAND, little gravel, trace silt, wet.
	6	10			Recovery = 4".
15-17	5	4	ND	NR	Black F-M SAND, shale fragments throughout, wet.
	2	8			
18-20	6	7	ND	NR	Dark gray F-M SAND, some shale fragments, wet.
	9	7			Recovery = 8".





Geologic Symbols:
Sand

Notes: ND = Not Detected
Depth to Water Measured From Top of PVC.

APPENDIX C

LABORATORY DATA REPORTS

Appendix C-1

Grain Size Data Reports

GeoTesting Express

Rapid Testing of Soils
for Geotechnical and
Physical Properties

10 Craig Road
Acton, Massachusetts 01720
508-635-0424
FAX 508-635-0266

GeoTesting Express

10 CRAIG ROAD
ACTON, MA 01720
508•635•0424 FAX 508•635•0266

October 27, 1994

Mr. Jim Peronto
TRC Environmental Corp.
5 Waterside Crossing
Windsor, CT 06095

Dear Mr. Peronto;

Enclosed are the test results you requested on October 21, 1994. We received four bag samples from you on October 24 and performed four grain size analyses (ASTM D422). Please note that one sample's ID differed from jar to chain of custody. The jar sample read "D42-B33-1021" while the chain of custody read "D42-B33-1019". We reported the result for that sample as it appears on the jar, not the chain of custody. These samples will be retained for a period of sixty days and will then be discarded unless otherwise notified by you.

Please call me directly if you have any questions or if you require any additional information. Thank you for using ***GeoTesting Express*** and we look forward to working with you on future projects.

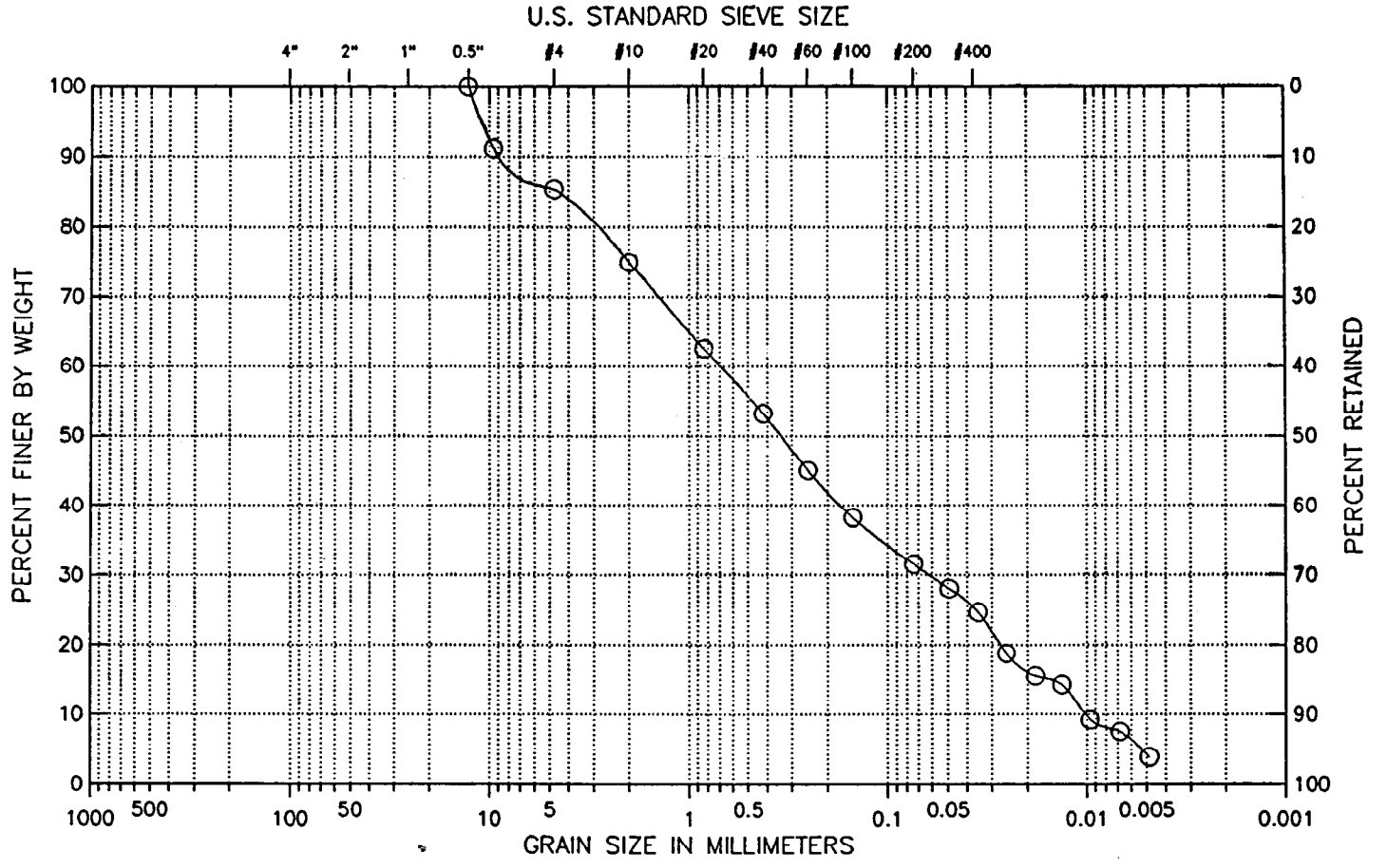
Respectfully yours;

Gary T. Torosian

Gary T. Torosian
Laboratory Manager

GeoTesting Express

	Boring No. : --- Sample No.: D42-B13-1017 Test Method ASTM D422 Filename : B131017	Project : 01981-0010 Project No.: GTX-651 Location: --- Date : Thu Oct 27 1994



Classification :

Visual Description :
Dark brown silty sand with some gravel

Remarks :
Hydrometer required; fines > 10%

Figure 1

GEOTECHNICAL LABORATORY TEST DATA

Project : 01981-0010
Project No. : GTX-651
Boring No. : ---
Sample No. : D42-B13-1017
Location : ---
Depth : ---
Test Date : 10/26/94
Test Method : ASTM D422
Filename : B131017
Elevation : ---
Tested by : cnr
Checked by : gtt
Soil Description : Dark brown silty sand with some gravel
Remarks : Hydrometer required; fines > 10%

HYDROMETER

Hydrometer ID : hy1
Weight of air-dried soil = 43.75 gm
Specific Gravity = 2.65

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
1.00	22.50	18.70	16.37	0.049	28	0.049
2.00	20.50	18.70	14.37	0.035	25	0.035
4.00	17.10	18.70	10.97	0.025	19	0.025
8.00	15.20	18.70	9.07	0.018	16	0.018
15.00	14.50	18.60	8.34	0.013	14	0.013
30.00	11.40	19.00	5.38	0.010	9	0.010
60.00	10.40	19.10	4.41	0.007	8	0.007
120.00	8.20	19.30	2.28	0.005	4	0.005

FINE SIEVE SET

Sieve Mesh	Sieve Openings Inches	Millimeters	Weight Retained (gm)	Cumulative Weight Retained (gm)	Percent Finer (%)
0.5"	0.500	12.70	0.00	0.00	100
0.375"	0.374	9.51	10.93	10.93	91
#4	0.187	4.75	7.20	18.13	85
#10	0.079	2.00	12.93	31.06	75
#20	0.033	0.84	15.37	46.43	63
#40	0.017	0.42	11.51	57.94	53
#60	0.010	0.25	10.17	68.11	45
#100	0.006	0.15	8.32	76.43	38
#200	0.003	0.07	8.24	84.67	32
Pan			39.21	123.88	0

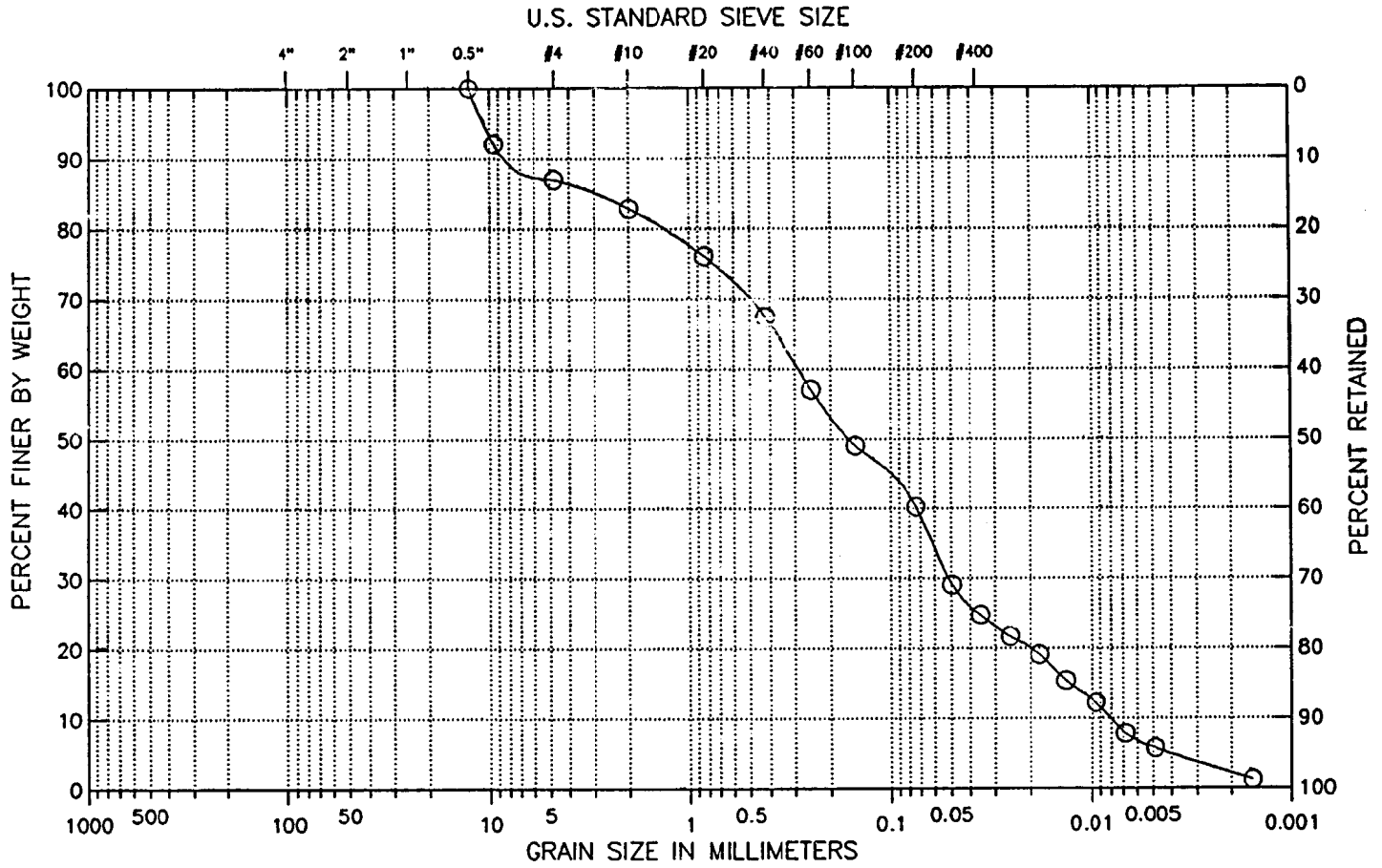
Total Dry Weight of Sample = 131.93

D85 : 4.6085 mm
D60 : 0.6966 mm
D50 : 0.3425 mm
D30 : 0.0613 mm
D15 : 0.0159 mm
D10 : 0.0101 mm

Soil Classification
ASTM Group Symbol : N/A
ASTM Group Name : N/A
AASHTO Group Symbol : A-2-4(0)
AASHTO Group Name : Silty Gravel and Sand

GeoTesting Express

	Boring No. : --- Sample No.: D42-B14-1017 Test Method ASTM D422 Filename : B141017	Project : 01981-0010 Project No.: GTX-651 Location: --- Date : Thu Oct 27 1994



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Visual Description :
Dark brown silty sand with some gravel

Remarks :
Hydrometer required; fines > 10%

Figure 2

GEOTECHNICAL LABORATORY TEST DATA

Project : 01981-0010
Project No. : GTX-651
Boring No. : ---
Sample No. : D42-B14-1017
Location : ---
Depth : ---
Test Date : 10/26/94
Test Method : ASTM D422
Filename : B141017
Elevation : ---
Tested by : cnr
Checked by : gtt
Soil Description : Dark brown silty sand with some gravel
Remarks : Hydrometer required; fines > 10%

HYDROMETER

Hydrometer ID : hy1
Weight of air-dried soil = 47.71 gm
Specific Gravity = 2.65

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
1.00	23.00	18.30	16.73	0.049	29	0.049
2.00	20.50	18.30	14.23	0.035	25	0.035
4.00	18.70	18.50	12.50	0.025	22	0.025
8.00	17.20	18.50	11.00	0.018	19	0.018
15.00	15.00	18.60	8.84	0.013	15	0.013
30.00	13.20	18.60	7.04	0.010	12	0.010
60.00	10.60	18.80	4.51	0.007	8	0.007
120.00	9.30	19.10	3.31	0.005	6	0.005
1230.00	7.50	16.80	0.72	0.002	1	0.002

FINE SIEVE SET

Sieve Mesh	Sieve Openings Inches	Sieve Openings Millimeters	Weight Retained (gm)	Cumulative Weight Retained (gm)	Percent Finer (%)
0.5"	0.500	12.70	0.00	0.00	100
0.375"	0.374	9.51	6.26	6.26	92
#4	0.187	4.75	4.00	10.26	87
#10	0.079	2.00	3.29	13.55	83
#20	0.033	0.84	5.37	18.92	76
#40	0.017	0.42	6.83	25.75	67
#60	0.010	0.25	8.21	33.96	57
#100	0.006	0.15	6.32	40.28	49
#200	0.003	0.07	6.93	47.21	40
Pan			31.83	79.04	0

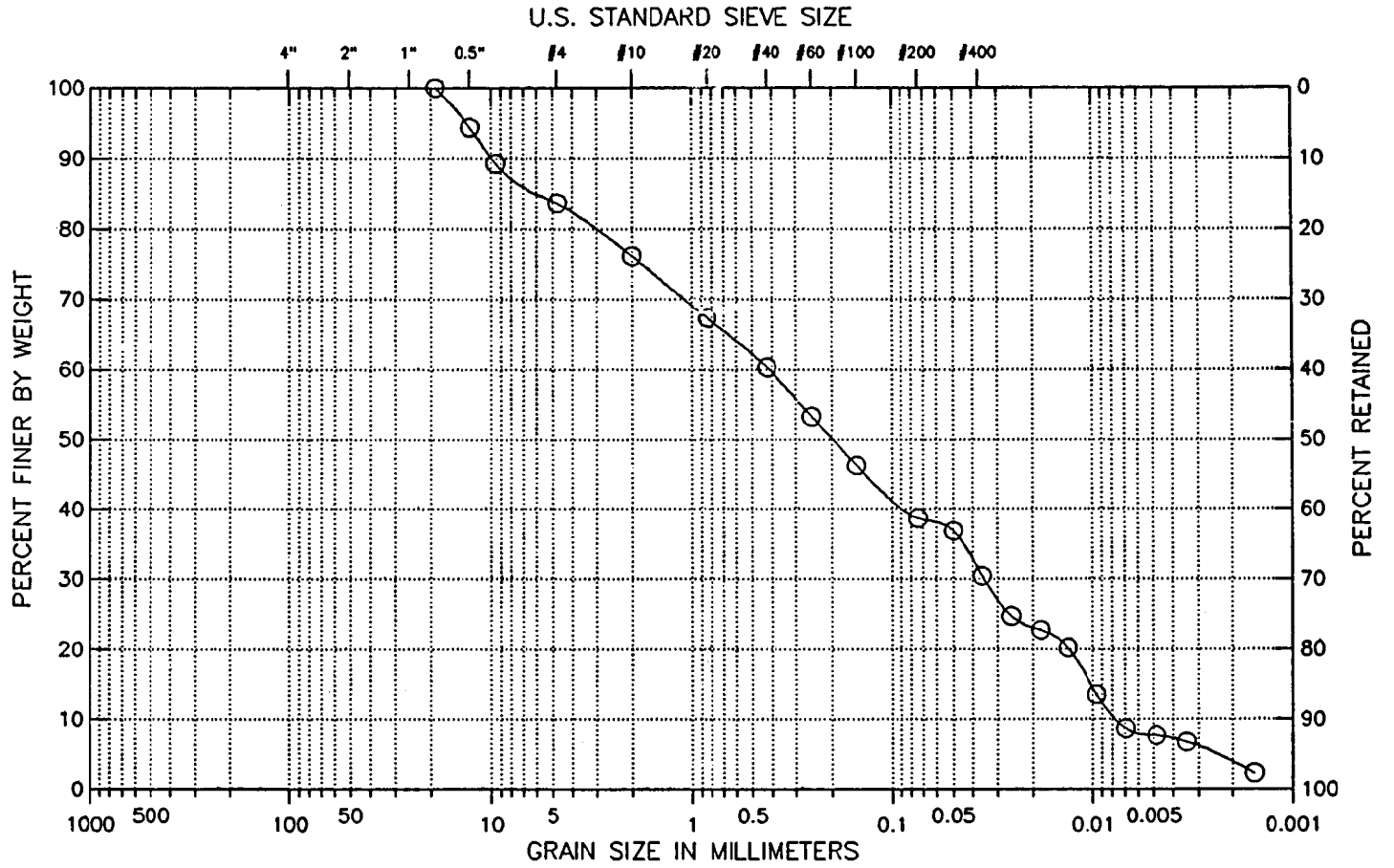
Total Dry Weight of Sample = 87.2

D85 : 3.1222 mm
D60 : 0.2899 mm
D50 : 0.1586 mm
D30 : 0.0510 mm
D15 : 0.0128 mm
D10 : 0.0080 mm

Soil Classification
ASTM Group Symbol : N/A
ASTM Group Name : N/A
AASHTO Group Symbol : A-4(0)
AASHTO Group Name : Silty Soils

GeoTesting Express

	Boring No. : --- Sample No: D42-B23-1019 Test Method ASTM D422 Filename : B231019	Project : 01981-0010 Project No.: GTX-651 Location: --- Date : Thu Oct 27 1994



Classification :

Visual Description :
Dark brown silty sand with some gravel

Remarks :
Hydrometer required; fines > 10%

Figure 3

GEOTECHNICAL LABORATORY TEST DATA

Project : 01981-0010
Project No. : GTX-651
Boring No. : ---
Sample No. : D42-B23-1019
Location : ---
Depth : ---
Test Date : 10/26/94
Test Method : ASTM D422
Filename : B231019
Elevation : ---
Tested by : cnr
Checked by : gtt
Soil Description : Dark brown silty sand with some gravel
Remarks : Hydrometer required; fines > 10%

HYDROMETER

Hydrometer ID : hyl
Weight of air-dried soil = 36.37 gm
Specific Gravity = 2.65

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
1.00	22.40	18.00	16.03	0.050	37	0.050
2.00	19.60	18.00	13.23	0.036	30	0.036
4.00	17.10	18.00	10.73	0.026	25	0.026
8.00	16.20	18.10	9.86	0.018	23	0.018
15.00	15.00	18.40	8.77	0.013	20	0.013
30.00	12.00	18.70	5.87	0.010	14	0.010
60.00	10.00	18.40	3.77	0.007	9	0.007
120.00	9.30	19.20	3.35	0.005	8	0.005
240.00	8.90	19.20	2.95	0.003	7	0.003
1237.00	7.80	16.80	1.02	0.002	2	0.002

FINE SIEVE SET

Sieve Mesh	Sieve Openings Inches	Millimeters	Weight Retained (gm)	Cumulative Weight Retained (gm)	Percent Finer (%)
0.75"	0.748	19.00	0.00	0.00	100
0.5"	0.500	12.70	7.44	7.44	94
0.375"	0.374	9.51	6.77	14.21	89
#4	0.187	4.75	7.44	21.65	84
#10	0.079	2.00	9.99	31.64	76
#20	0.033	0.84	11.69	43.33	67
#40	0.017	0.42	9.33	52.66	60
#60	0.010	0.25	9.35	62.01	53
#100	0.006	0.15	9.25	71.26	46
#200	0.003	0.07	10.00	81.26	39
Pan			51.35	132.61	0

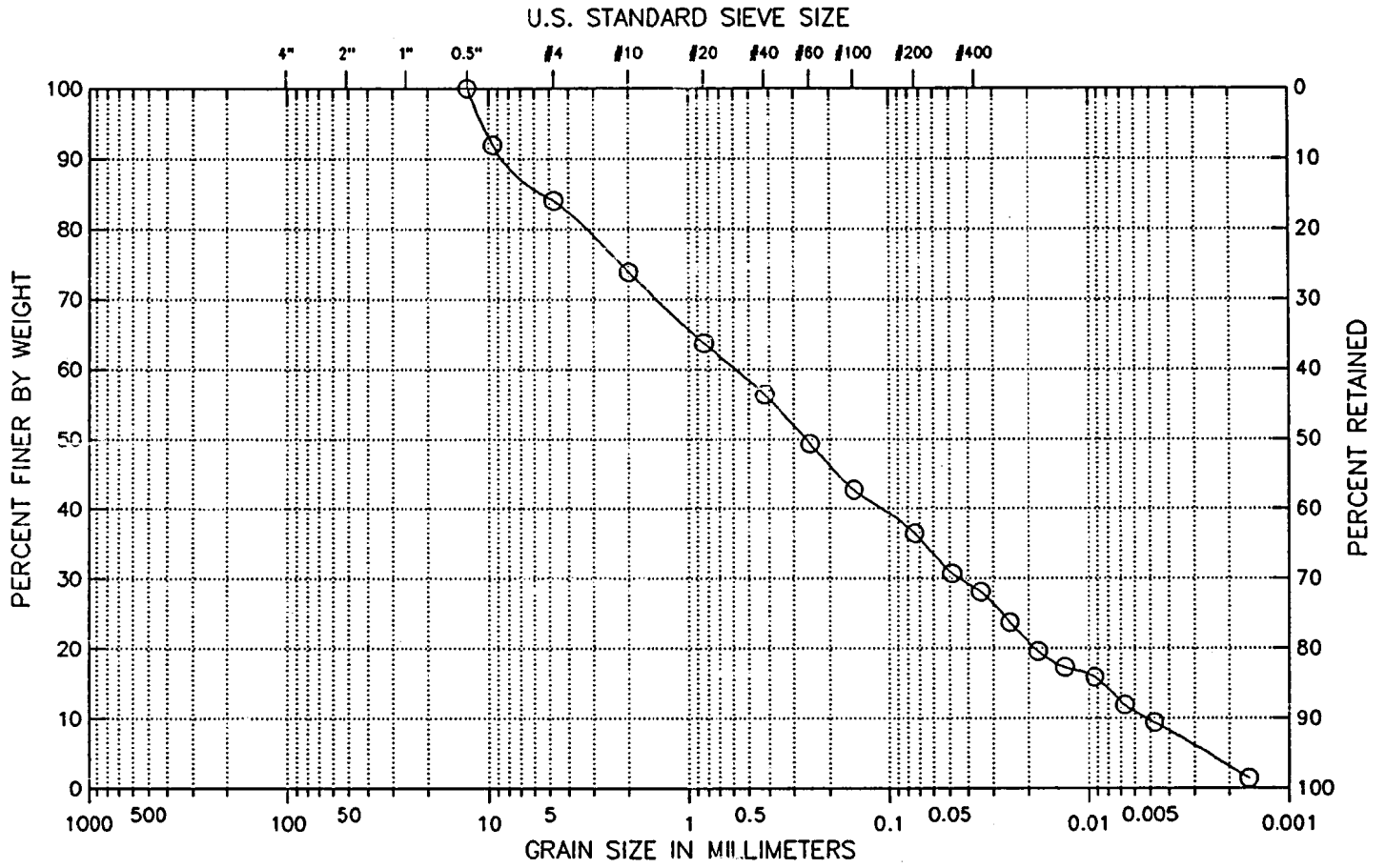
Total Dry Weight of Sample = 140.63

D85 : 5.5970 mm
D60 : 0.4111 mm
D50 : 0.1966 mm
D30 : 0.0348 mm
D15 : 0.0103 mm
D10 : 0.0075 mm

Soil Classification
ASTM Group Symbol : N/A
ASTM Group Name : N/A
AASHTO Group Symbol : A-4(0)
AASHTO Group Name : Silty Soils

GeoTesting Express

	Boring No. : --- Sample No.: D42-B33-1021 Test Method ASTM D422 Filename : B331021	Project : 01981-0010 Project No.: GTX-651 Location: --- Date : Thu Oct 27 1994



Classification :

Visual Description :
Dark gray silty sand with some gravel

Remarks :
Hydrometer required; fines > 10%

Figure 4

GEOTECHNICAL LABORATORY TEST DATA

Project : 01981-0010
Project No. : GTX-651
Boring No. : ---
Sample No. : D42-B33-1021
Location : ---
Depth : ---
Test Date : 10/26/94
Test Method : ASTM D422
Filename : B331021
Elevation : ---
Tested by : cnr
Checked by : gtt
Soil Description : Dark gray silty sand with some gravel
Remarks : Hydrometer required: fines > 10%

HYDROMETER

Hydrometer ID : hy1
Weight of air-dried soil = 42.22 gm
Specific Gravity = 2.65

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
1.00	23.50	19.20	17.55	0.049	31	0.049
2.00	22.00	19.20	16.05	0.035	28	0.035
4.00	19.50	19.20	13.55	0.025	24	0.025
8.00	17.10	19.30	11.18	0.018	20	0.018
15.00	15.80	19.30	9.88	0.013	17	0.013
30.00	15.00	19.30	9.08	0.009	16	0.009
60.00	12.70	19.40	6.82	0.007	12	0.007
120.00	11.20	19.60	5.39	0.005	9	0.005
1185.00	7.50	17.10	0.82	0.002	1	0.002

FINE SIEVE SET

Sieve Mesh	Sieve Openings Inches	Millimeters	Weight Retained (gm)	Cumulative Weight Retained (gm)	Percent Finer (%)
0.5"	0.500	12.70	0.00	0.00	100
0.375"	0.374	9.51	9.08	9.08	92
#4	0.187	4.75	8.90	17.98	84
#10	0.079	2.00	11.48	29.46	74
#20	0.033	0.84	11.44	40.90	64
#40	0.017	0.42	8.32	49.22	56
#60	0.010	0.25	7.91	57.13	49
#100	0.006	0.15	7.45	64.58	43
#200	0.003	0.07	7.03	71.61	36
Pan			41.14	112.75	0

Total Dry Weight of Sample = 120.83

D85 : 5.1624 mm
D60 : 0.5923 mm
D50 : 0.2627 mm
D30 : 0.0442 mm
D15 : 0.0087 mm
D10 : 0.0051 mm

Soil Classification
ASTM Group Symbol : N/A
ASTM Group Name : N/A
AASHTO Group Symbol : A-4(0)
AASHTO Group Name : Silty Soils

Appendix C-2
Chemical Data Reports

IEA
An Aquarion Company

149 Rangeway Road
North Billerica, MA 01862

Phone 617·272·5212
Fax 508·667·7871

Mr. James Peronto
TRC Environmental
5 Waterside Crossing
Windsor, CT 06095

November 4, 1994

Dear Mr. Peronto:

Please find enclosed the analytical results of the sample(s) received at our laboratory on October 19, 1994. This report contains sections addressing the following information at a minimum:

- sample ID correspondence table
- analytical methodology
- analytical results
- chain-of-custody (if applicable)
- definitions of data qualifiers and terminology
- state certifications

Client Project #	01981-0010	**Client Project Name**	N/A
IEA Report #	T118-001	**Purchase Order #**	N/A

Copies of this analytical report and supporting data are maintained in our files for a minimum of 3 years unless special arrangements are made. Unless specifically indicated, all analytical testing was performed at the IEA-Massachusetts laboratory.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact your customer service representative at (617) 272-5212 for any additional information. Thank you for utilizing our services and we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.

Sincerely,

Michael F. Wheeler, Ph.D.
Laboratory Director
IEA-Massachusetts

MW/slh

Doc# RPF00100.MA

IEA
An Aquarion Company

QA/QC NOTICE

Report Date:	11/04/94	Received Date:	10/19/94
Client:	TRC Environmental	IEA Job Number:	T118-001
Project:	01981-0010		

This project was analyzed using EPA Region I holding times. All methods were performed in accordance with these holdings times.

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SUBCONTRACT/INTERLABORATORY NOTIFICATION

Report Date:	11/03/94	Received Date:	10/19/94
Client:	TRC Environmental	IEA Job Number:	T118-001
Project:	01981-0010		

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A portion of the analytical work for this project was performed at another laboratory. Analytical methods conducted within the IEA Network are subject to uniform corporate quality control procedures. Non-network laboratories are selected on the basis of appropriate certification. The following parameters were analyzed at the indicated labs.

Subcontract Laboratory	Parameter
IEA-North Carolina	Antimony
IEA-North Carolina	Beryllium
IEA-North Carolina	Cadmium
IEA-North Carolina	Chromium
IEA-North Carolina	Copper
IEA-North Carolina	Nickel
IEA-North Carolina	Silver
IEA-North Carolina	Zinc
IEA-Connecticut	Total Organic Carbon

IEA
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Sample ID Correspondence Table

Client Sample ID	IEA Sample ID
D42-B11-1017	T118-001-01
D42-B12-1017	T118-001-02
D42-B13-1017	T118-001-03
D42-B14-1017	T118-001-04
TRIP BLANK	T118-001-05

Doc# RPF00100.MA

IEA
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Analytical Methodology

IEA utilizes approved environmental methodologies whenever possible and appropriate. Due to the varying nature of sample matrices submitted to our laboratories we utilize a wide variety of analytical methodologies and quality assurance protocols. Analytical results and Quality Assurance protocols employed by our network laboratories are based on guidelines specified in the following documents:

- "Methods of Organic Chemical Analysis of Municipal and Industrial Wastewater", Federal Register Vol. 49, No. 209, October 26, 1984;
- "Test Methods for Evaluating Solid Waste", SW-846 Third Edition, September 1986, USEPA;
- "Standard Methods for the Examination of Water and Wastewater" 1985, 14th, 15th and 16th Edition;
- "Methods for Chemical Analysis of Water and Wastes" March 1983, EMSL, EPA;
- "Manual of Analytical Methods for the Analysis of Pesticides in Humans and Environmental Samples", EPA 600/8-80-038, June 1980;
- Organic Analysis: Multi-media, Multi-Concentration-IFB-CLP, January 1991, Document Number OLM01.2 (plus revisions);
- Inorganic Analysis: Multi-media, Multi-Concentration-IFB-CLP, Document Number ILM01.0;
- "Handbook for Analytical Quality Control in Water and Wastewater Laboratories", EPA-600/4-79-019, March 1979;
- National Enforcement Investigation Center Policies and Procedures Manual, EPA-330/9/78/001-R, Revised May 1986
- "Manual for the Certification of Laboratories Analyzing Drinking Water", April 1990, EPA/570/9-90/008.
- "NIOSH Manual of Analytical Methods", February 1984, 3rd Edition.

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IEA LABORATORY RESULTS

Report Date: 11/03/94
Client: TRC Environmental
Project: 01981-0010

Received Date: 10/19/94
IEA Job Number: T118-001

IEA Sample #	Client ID	Parameter	Results	Units	PQL	Date Analyzed
		TOTAL METALS				
1	D42-B11-1017	Antimony	BQL	mg/kg(dry)	6.6	10/30/94
1	D42-B11-1017	Arsenic	5.80	mg/kg(dry)	0.50	11/01/94
1	D42-B11-1017	Beryllium	BQL	mg/kg(dry)	0.55	10/30/94
1	D42-B11-1017	Cadmium	BQL	mg/kg(dry)	0.55	10/30/94
1	D42-B11-1017	Chromium	12	mg/kg(dry)	1.1	10/30/94
1	D42-B11-1017	Copper	260	mg/kg(dry)	2.8	10/30/94
1	D42-B11-1017	Lead	39	mg/kg(dry)	10	10/27/94
1	D42-B11-1017	Mercury	BQL	mg/kg(dry)	0.10	10/25/94
1	D42-B11-1017	Nickel	10	mg/kg(dry)	4.4	10/30/94
1	D42-B11-1017	Selenium	BQL	mg/kg(dry)	0.50	11/01/94
1	D42-B11-1017	Silver	BQL	mg/kg(dry)	1.1	10/30/94
1	D42-B11-1017	Thallium	BQL	mg/kg(dry)	0.50	11/01/94
1	D42-B11-1017	Zinc	71	mg/kg(dry)	2.2	10/30/94
		TOTAL METALS				
2	D42-B12-1017	Antimony	BQL	mg/kg(dry)	6.6	10/30/94
2	D42-B12-1017	Arsenic	11.5	mg/kg(dry)	0.50	11/01/94
2	D42-B12-1017	Beryllium	BQL	mg/kg(dry)	0.55	10/30/94
2	D42-B12-1017	Cadmium	BQL	mg/kg(dry)	0.55	10/30/94
2	D42-B12-1017	Chromium	7.9	mg/kg(dry)	1.1	10/30/94
2	D42-B12-1017	Copper	16	mg/kg(dry)	2.8	10/30/94
2	D42-B12-1017	Lead	28	mg/kg(dry)	10	10/27/94
2	D42-B12-1017	Mercury	BQL	mg/kg(dry)	0.10	10/25/94
2	D42-B12-1017	Nickel	12	mg/kg(dry)	4.4	10/30/94
2	D42-B12-1017	Selenium	BQL	mg/kg(dry)	0.50	11/01/94
2	D42-B12-1017	Silver	BQL	mg/kg(dry)	1.1	10/30/94
2	D42-B12-1017	Thallium	BQL	mg/kg(dry)	0.50	11/01/94
2	D42-B12-1017	Zinc	35	mg/kg(dry)	2.2	10/30/94
3	D42-B13-1017	Total Organic Carbon	12,700	mg/kg(dry)	100	11/01/94
4	D42-B14-1017	Total Organic Carbon	6,400	mg/kg(dry)	100	11/01/94

COMMENTS:
PQL = Practical Quantitation Limit
BQL = Below Quantitation Limit

Result3.wk1 Rev. 041393

IEA
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IEA LABORATORY RESULTS

Report Date: 12/06/94
Client: TRC Environmental
Project: 01981-0010

Received Date: 10/19/94
IEA Job Number: T118-001

IEA Sample #	Client ID	Parameter	Results	Units	PQL	Date Analyzed
1	D4Z-B11-1017	TPH-IR	BQL	mg/kg(dry)	32	10/28/94
2	D4Z-B12-1017	TPH-IR	84	mg/kg(dry)	37	10/28/94

COMMENTS:
PQL = Practical Quantitation Limit
BQL = Below Quantitation Limit

Result3.wk1 Rev. 041393

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-001-01
Project:	01981-0010	Sample:	D42-B11-1017
Report Date:	11/02/94	Type:	Soil
Collected:	10/17/94	Container:	VOA
Received:	10/19/94		
Analyzed:	10/27/94		
By:	GMT	Dilution Factor:	1.1

Priority Pollutant Compounds

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
1	Benzene	6	BQL
2	Bromodichloromethane	6	BQL
3	Bromoform	6	BQL
4	Bromomethane	11	BQL
5	Carbon tetrachloride	6	BQL
6	Chlorobenzene	6	BQL
7	Chloroethane	11	BQL
8	2-Chloroethylvinyl ether	6	BQL
9	Chloroform	6	BQL
10	Chloromethane	11	BQL
11	Dibromochloromethane	6	BQL
12	1,2-Dichlorobenzene	6	BQL
13	1,3-Dichlorobenzene	6	BQL
14	1,4-Dichlorobenzene	6	BQL
15	1,1-Dichloroethane	6	BQL
16	1,2-Dichloroethane	6	BQL
17	1,1-Dichloroethene	6	BQL
18	1,2-Dichloroethene (Total)	6	BQL
19	1,2-Dichloropropane	6	BQL
20	cis-1,3-Dichloropropene	6	BQL
21	trans-1,3-Dichloropropene	6	BQL
22	Ethylbenzene	6	BQL
23	Methylene chloride	6	22B
24	1,1,2,2-Tetrachloroethane	6	BQL
25	Tetrachloroethene	6	BQL
26	Toluene	6	BQL
27	1,1,1-Trichloroethane	6	BQL
28	1,1,2-Trichloroethane	6	BQL
29	Trichloroethene	6	BQL
30	Trichlorofluoromethane	6	BQL
31	Vinyl chloride	11	BQL

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010

IEA ID: T118-001-01
Sample: D42-B11-1017

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
Other TCL Compounds:			
32	Acetone	110	BQL
33	2-Butanone	110	BQL
34	Carbon disulfide	6	BQL
35	1,2-Dibromoethane	6	BQL
36	2-Hexanone	55	BQL
37	Methyl-t-butylether	6	BQL
38	4-Methyl-2-pentanone	55	BQL
39	Styrene	6	BQL
40	Vinyl Acetate	55	BQL
41	Xylenes (Total)	6	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	92 %
Toluene-d8	96 %
Bromofluorobenzene	85 %

Comments:

BQL = Below Quantitation Limit.
PQL = Practical Quantitation Limit.
Dilution factor adjusted for % moisture.
B = Compound in blank

Doc# MSF10900.MA

IEA
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Analysis Report: EPA Method 8240A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-001-02
Project:	01981-0010	Sample:	D42-B12-1017
Report Date:	11/02/94	Type:	Soil
Collected:	10/17/94	Container:	VOA
Received:	10/19/94		
Analyzed:	10/27/94		
By:	GMT	Dilution Factor:	1.2

Priority Pollutant Compounds

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
1	Benzene	6	BQL
2	Bromodichloromethane	6	BQL
3	Bromoform	6	BQL
4	Bromomethane	12	BQL
5	Carbon tetrachloride	6	BQL
6	Chlorobenzene	6	BQL
7	Chloroethane	12	BQL
8	2-Chloroethylvinyl ether	6	BQL
9	Chloroform	6	BQL
10	Chloromethane	12	BQL
11	Dibromochloromethane	6	BQL
12	1,2-Dichlorobenzene	6	BQL
13	1,3-Dichlorobenzene	6	BQL
14	1,4-Dichlorobenzene	6	BQL
15	1,1-Dichloroethane	6	BQL
16	1,2-Dichloroethane	6	BQL
17	1,1-Dichloroethene	6	BQL
18	1,2-Dichloroethene (Total)	6	BQL
19	1,2-Dichloropropane	6	BQL
20	cis-1,3-Dichloropropene	6	BQL
21	trans-1,3-Dichloropropene	6	BQL
22	Ethylbenzene	6	BQL
23	Methylene chloride	6	30B
24	1,1,2,2-Tetrachloroethane	6	BQL
25	Tetrachloroethene	6	BQL
26	Toluene	6	BQL
27	1,1,1-Trichloroethane	6	BQL
28	1,1,2-Trichloroethane	6	BQL
29	Trichloroethene	6	BQL
30	Trichlorofluoromethane	6	BQL
31	Vinyl chloride	12	BQL

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Definitions of Data Qualifiers and Terminology

A number of data qualifiers are widely used within the environmental testing industry and may be utilized in our data reports. The following definitions of these qualifiers are included as a service to our clientele. The majority of the qualifiers have evolved from the EPA contract laboratory program (CLP).

B - This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to use caution when applying the results of this analyte.

BQL - Below Quantitation Limit indicates the compound was not detected in the sample above the practical quantitation limit.

D - Indicates the compound was diluted below the calibration range.

E - Indicates that the concentration of the specific compound exceeded the calibration range of the instrument for that particular analysis.

J - Indicates an estimated value. The compound is determined to be present in the sample based on GC/MS criteria, but the amount is less than the sample quantitation limit. IEA - MA GC/MS reports do not typically report J - marked results. If requested, J - marked results are provided and the report flagged to verify that the data was appropriately reviewed.

MDL - The method detection limit is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero.

NA - Not applicable or not available.

ND - Indicates the compound or analyte was not detected in the sample above the method detection limit or the practical quantitation limit for the particular analysis.

PQL - The practical quantitation limit is the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine operating conditions.

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State Certifications

In some instances it may be necessary for environmental data to be reported to a regulatory authority with reference to a certified laboratory. For your convenience, the laboratory identification numbers for the IEA-Massachusetts laboratory are provided in the following table. Many states certify laboratories for specific parameters or tests within a category (e.g. EPA method 624 for wastewater). The information in the following table indicates the lab is certified in a general category of testing such as drinking water or wastewater analysis. The laboratory should be contacted directly if parameter specific certification information is required.

IEA-Massachusetts
Certification Summary, as of November 1993

State	Responsible Agency	Area of Certification	Lab Number
Connecticut	Department of Health Services	General Environmental	0646
Maine	Department of Human Services	Drinking Water	Provisional
Massachusetts	Department of Environmental Protection	Drinking Water Wastewater	MA038
New Hampshire	Department of Environmental Services	Drinking Water Wastewater	C300
New York	Department of Public Health	Wastewater	10838
North Carolina	Department of Natural Resources	Wastewater	333
Rhode Island	Department of Health	Chemistry	A58
Virginia	Department of General Services	Drinking Water	00157

IEA
An Aquarion Company

IEA LABORATORY RESULTS

Report Date: 11/04/94
Client: TRC Environmental
Project: 01981-0010

Received Date: 10/21/94
IEA Job Number: T118-002

IEA Sample #	Client ID	Parameter	Results	Units	PQL	Date Analyzed
		TOTAL METALS				
1	D42-B21-1019	Antimony	BQL	mg/kg(dry)	6.4	10/30/94
1	D42-B21-1019	Arsenic	9.48	mg/kg(dry)	0.50	11/01/94
1	D42-B21-1019	Beryllium	3.4	mg/kg(dry)	0.55	10/30/94
1	D42-B21-1019	Cadmium	0.56	mg/kg(dry)	0.55	10/30/94
1	D42-B21-1019	Chromium	31	mg/kg(dry)	1.1	10/30/94
1	D42-B21-1019	Copper	550	mg/kg(dry)	2.7	10/30/94
1	D42-B21-1019	Lead	380	mg/kg(dry)	10	10/27/97
1	D42-B21-1019	Mercury	0.14	mg/kg(dry)	0.10	11/01/94
1	D42-B21-1019	Nickel	68	mg/kg(dry)	4.3	10/30/94
1	D42-B21-1019	Selenium	BQL	mg/kg(dry)	0.50	11/01/94
1	D42-B21-1019	Silver	BQL	mg/kg(dry)	1.1	10/30/94
1	D42-B21-1019	Thallium	BQL	mg/kg(dry)	0.50	11/01/94
1	D42-B21-1019	Zinc	1200	mg/kg(dry)	2.1	10/30/94
		TOTAL METALS				
2	D42-B22-1019	Antimony	BQL	mg/kg(dry)	6.4	10/30/94
2	D42-B22-1019	Arsenic	22.5	mg/kg(dry)	0.50	11/01/94
2	D42-B22-1019	Beryllium	BQL	mg/kg(dry)	0.55	10/30/94
2	D42-B22-1019	Cadmium	BQL	mg/kg(dry)	0.55	10/30/94
2	D42-B22-1019	Chromium	8.4	mg/kg(dry)	1.1	10/30/94
2	D42-B22-1019	Copper	26	mg/kg(dry)	2.7	10/30/94
2	D42-B22-1019	Lead	227	mg/kg(dry)	10	10/27/97
2	D42-B22-1019	Mercury	BQL	mg/kg(dry)	0.10	11/01/94
2	D42-B22-1019	Nickel	13	mg/kg(dry)	4.3	10/30/94
2	D42-B22-1019	Selenium	BQL	mg/kg(dry)	0.50	11/01/94
2	D42-B22-1019	Silver	BQL	mg/kg(dry)	1.1	10/30/94
2	D42-B22-1019	Thallium	BQL	mg/kg(dry)	0.50	11/01/94
2	D42-B22-1019	Zinc	51	mg/kg(dry)	2.1	10/30/94
3	D42-B23-1019	Total Organic Carbon	9780	mg/kg(dry)	100	11/01/94

IEA
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IEA LABORATORY RESULTS

Report Date: 11/04/94
Client: TRC Environmental
Project: 01981-0010

Received Date: 10/21/94
IEA Job Number: T118-002

IEA Sample #	Client ID	Parameter	Results	Units	PQL	Date Analyzed
		TOTAL METALS				
4	D42-FBS-1019	Antimony	BQL	mg/L	0.06	10/31/94
4	D42-FBS-1019	Arsenic	BQL	mg/L	0.0050	11/01/94
4	D42-FBS-1019	Beryllium	BQL	mg/L	0.005	10/31/94
4	D42-FBS-1019	Cadmium	BQL	mg/L	0.005	10/31/94
4	D42-FBS-1019	Chromium	BQL	mg/L	0.01	10/31/94
4	D42-FBS-1019	Copper	BQL	mg/L	0.025	10/31/94
4	D42-FBS-1019	Lead	BQL	mg/L	0.0050	11/01/94
4	D42-FBS-1019	Mercury	BQL	mg/L	0.00050	10/28/94
4	D42-FBS-1019	Nickel	BQL	mg/L	0.04	10/31/94
4	D42-FBS-1019	Selenium	BQL	mg/L	0.0050	11/01/94
4	D42-FBS-1019	Silver	BQL	mg/L	0.01	10/31/94
4	D42-FBS-1019	Thallium	BQL	mg/L	0.0050	11/01/94
4	D42-FBS-1019	Zinc	BQL	mg/L	0.02	10/31/94

COMMENTS:
PQL = Practical Quantitation Limit
BQL = Below Quantitation Limit

Result3.wk1 Rev. 041393

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IEA LABORATORY RESULTS

Report Date: 11/04/94
Client: TRC Environmental
Project: 01981-0010

Received Date: 10/21/94
IEA Job Number: T118-002

IEA Sample #	Client ID	Parameter	Results	Units	PQL	Date Analyzed
1	D42-B21-1019	TPH-IR	460	mg/kg(dry)	31	10/28/94
2	D42-B22-1019	TPH-IR	140	mg/kg(dry)	32	10/28/94
4	D42-FBS-1019	TPH-IR	BQL	mg/L	0.30	11/02/94

COMMENTS:
PQL = Practical Quantitation Limit
BQL = Below Quantitation Limit

Result3.wk1 Rev. 041393

IEA
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Analysis Report: EPA Method 8240A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-002-01
Project:	01981-0010	Sample:	D42-B21-1019
Report Date:	11/01/94	Type:	Soil
Collected:	10/19/94	Container:	Glass
Received:	10/21/94		
Analyzed:	10/26/94		
By:	GMT	Dilution Factor:	1

Priority Pollutant Compounds

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	BQL
13	1,3-Dichlorobenzene	5	BQL
14	1,4-Dichlorobenzene	5	BQL
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	1,2-Dichloroethene (Total)	5	BQL
19	1,2-Dichloropropane	5	BQL
20	cis-1,3-Dichloropropene	5	BQL
21	trans-1,3-Dichloropropene	5	BQL
22	Ethylbenzene	5	BQL
23	Methylene chloride	5	9B
24	1,1,2,2-Tetrachloroethane	5	BQL
25	Tetrachloroethene	5	BQL
26	Toluene	5	BQL
27	1,1,1-Trichloroethane	5	BQL
28	1,1,2-Trichloroethane	5	BQL
29	Trichloroethene	5	BQL
30	Trichlorofluoromethane	5	BQL
31	Vinyl chloride	10	BQL

Doc# MSF10900.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 2 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-002-01
Project:	01981-0010	Sample:	D42-B21-1019

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
Other TCL Compounds:			
32	Acetone	100	BQL
33	2-Butanone	100	BQL
34	Carbon disulfide	5	BQL
35	1,2-Dibromoethane	5	BQL
36	2-Hexanone	50	BQL
37	Methyl-t-butylether	5	BQL
38	4-Methyl-2-pentanone	50	BQL
39	Styrene	5	BQL
40	Vinyl Acetate	50	BQL
41	Xylenes (Total)	5	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	103 %
Toluene-d8	95 %
Bromofluorobenzene	85 %

Comments:

BQL = Below Quantitation Limit.
PQL = Practical Quantitation Limit.
Dilution factor adjusted for % moisture.
B = Compound in blank

Doc# MSF10900.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-002-02
Project:	01981-0010	Sample:	D42-B22-1019
Report Date:	11/01/94	Type:	Soil
Collected:	10/19/94	Container:	Glass
Received:	10/21/94		
Analyzed:	10/26/94		
By:	GMT	Dilution Factor:	1

Priority Pollutant Compounds

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	BQL
13	1,3-Dichlorobenzene	5	BQL
14	1,4-Dichlorobenzene	5	BQL
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	1,2-Dichloroethene (Total)	5	BQL
19	1,2-Dichloropropane	5	BQL
20	cis-1,3-Dichloropropene	5	BQL
21	trans-1,3-Dichloropropene	5	BQL
22	Ethylbenzene	5	BQL
23	Methylene chloride	5	16B
24	1,1,2,2-Tetrachloroethane	5	BQL
25	Tetrachloroethene	5	BQL
26	Toluene	5	BQL
27	1,1,1-Trichloroethane	5	BQL
28	1,1,2-Trichloroethane	5	BQL
29	Trichloroethene	5	BQL
30	Trichlorofluoromethane	5	BQL
31	Vinyl chloride	10	BQL

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IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 2 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-002-02
Project:	01981-0010	Sample:	D42-B22-1019

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
Other TCL Compounds:			
32	Acetone	100	BQL
33	2-Butanone	100	BQL
34	Carbon disulfide	5	BQL
35	1,2-Dibromoethane	5	BQL
36	2-Hexanone	50	BQL
37	Methyl-t-butylether	5	BQL
38	4-Methyl-2-pentanone	50	BQL
39	Styrene	5	BQL
40	Vinyl Acetate	50	BQL
41	Xylenes (Total)	5	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	90 %
Toluene-d8	85 %
Bromofluorobenzene	78 %

Comments:

BQL = Below Quantitation Limit.
PQL = Practical Quantitation Limit.
Dilution factor adjusted for % moisture.
B = Compound in blank

Doc# MSF10900.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-002-04
Project:	01981-0010	Sample:	D42-FBS-1019
Report Date:	11/01/94	Type:	Water
Collected:	10/19/94	Container:	VOA
Received:	10/21/94		
Analyzed:	10/26/94		
By:	GMT	Dilution Factor:	1

Priority Pollutant Compounds

Number	Compound	PQL (ug/L)	Result (ug/L)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	BQL
13	1,3-Dichlorobenzene	5	BQL
14	1,4-Dichlorobenzene	5	BQL
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	1,2-Dichloroethene (Total)	5	BQL
19	1,2-Dichloropropane	5	BQL
20	cis-1,3-Dichloropropene	5	BQL
21	trans-1,3-Dichloropropene	5	BQL
22	Ethylbenzene	5	BQL
23	Methylene chloride	5	8B
24	1,1,2,2-Tetrachloroethane	5	BQL
25	Tetrachloroethene	5	BQL
26	Toluene	5	BQL
27	1,1,1-Trichloroethane	5	BQL
28	1,1,2-Trichloroethane	5	BQL
29	Trichloroethene	5	BQL
30	Trichlorofluoromethane	5	BQL
31	Vinyl chloride	10	BQL

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 2 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-002-04
Project:	01981-0010	Sample:	D42-FBS-1019

Number	Compound	PQL (ug/L)	Result (ug/L)
Other TCL Compounds:			
32	Acetone	100	BQL
33	2-Butanone	100	BQL
34	Carbon disulfide	5	BQL
35	1,2-Dibromoethane	5	BQL
36	2-Hexanone	50	BQL
37	Methyl-t-butylether	5	BQL
38	4-Methyl-2-pentanone	50	BQL
39	Styrene	5	BQL
40	Vinyl Acetate	50	BQL
41	Xylenes (Total)	5	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	91 %
Toluene-d8	103 %
Bromofluorobenzene	97 %

Comments:

BQL = Below Quantitation Limit.
PQL = Practical Quantitation Limit.
B = Compound in blank

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IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-002-05
Project:	01981-0010	Sample:	D42-TB2-1019
Report Date:	11/01/94	Type:	Water
Collected:	10/19/94	Container:	VOA
Received:	10/21/94		
Analyzed:	10/26/94		
By:	GMT	Dilution Factor:	1

Priority Pollutant Compounds

Number	Compound	PQL (ug/L)	Result (ug/L)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	BQL
13	1,3-Dichlorobenzene	5	BQL
14	1,4-Dichlorobenzene	5	BQL
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	1,2-Dichloroethene (Total)	5	BQL
19	1,2-Dichloropropane	5	BQL
20	cis-1,3-Dichloropropene	5	BQL
21	trans-1,3-Dichloropropene	5	BQL
22	Ethylbenzene	5	BQL
23	Methylene chloride	5	9B
24	1,1,2,2-Tetrachloroethane	5	BQL
25	Tetrachloroethene	5	BQL
26	Toluene	5	BQL
27	1,1,1-Trichloroethane	5	BQL
28	1,1,2-Trichloroethane	5	BQL
29	Trichloroethene	5	BQL
30	Trichlorofluoromethane	5	BQL
31	Vinyl chloride	10	BQL

Doc#MSF10800.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010

IEA ID: T118-001-02
Sample: D42-B12-1017

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
Other TCL Compounds:			
32	Acetone	120	180
33	2-Butanone	120	BQL
34	Carbon disulfide	6	BQL
35	1,2-Dibromoethane	6	BQL
36	2-Hexanone	60	BQL
37	Methyl-t-butylether	6	BQL
38	4-Methyl-2-pentanone	60	BQL
39	Styrene	6	BQL
40	Vinyl Acetate	60	BQL
41	Xylenes (Total)	6	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	98 %
Toluene-d8	101 %
Bromofluorobenzene	91 %

Comments:

BQL = Below Quantitation Limit.
PQL = Practical Quantitation Limit.
Dilution factor adjusted for % moisture.
B = Compound in blank

Doc# MSF10900.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-001-05
Project:	01981-0010	Sample:	TRIP BLANK
Report Date:	11/01/94	Type:	Water
Collected:	10/17/94	Container:	VOA
Received:	10/19/94		
Analyzed:	10/28/94		
By:	LJT	Dilution Factor:	1

Priority Pollutant Compounds

Number	Compound	PQL (ug/L)	Result (ug/L)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	BQL
13	1,3-Dichlorobenzene	5	BQL
14	1,4-Dichlorobenzene	5	BQL
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	1,2-Dichloroethene (Total)	5	BQL
19	1,2-Dichloropropane	5	BQL
20	cis-1,3-Dichloropropene	5	BQL
21	trans-1,3-Dichloropropene	5	BQL
22	Ethylbenzene	5	BQL
23	Methylene chloride	5	BQL
24	1,1,2,2-Tetrachloroethane	5	BQL
25	Tetrachloroethene	5	BQL
26	Toluene	5	BQL
27	1,1,1-Trichloroethane	5	BQL
28	1,1,2-Trichloroethane	5	BQL
29	Trichloroethene	5	BQL
30	Trichlorofluoromethane	5	BQL
31	Vinyl chloride	10	BQL

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010

IEA ID: T118-001-05
Sample: TRIP BLANK

Number	Compound	PQL (ug/L)	Result (ug/L)
Other TCL Compounds:			
32	Acetone	100	BQL
33	2-Butanone	100	BQL
34	Carbon disulfide	5	BQL
35	1,2-Dibromoethane	5	BQL
36	2-Hexanone	50	BQL
37	Methyl-t-butylether	5	BQL
38	4-Methyl-2-pentanone	50	BQL
39	Styrene	5	BQL
40	Vinyl Acetate	50	BQL
41	Xylenes (Total)	5	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	108 %
Toluene-d8	106 %
Bromofluorobenzene	101 %

Comments:

BQL = Below Quantitation Limit.
PQL = Practical Quantitation Limit.

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IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 1 OF 2 PAGES)

Client:		IEA ID:	Method Blank (10/27)
Project:		Sample:	
Report Date:	11/02/94	Type:	Soil
Collected:		Container:	
Received:			
Analyzed:	10/27/94		
By:	GMT	Dilution Factor:	1

Priority Pollutant Compounds

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	BQL
13	1,3-Dichlorobenzene	5	BQL
14	1,4-Dichlorobenzene	5	BQL
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	1,2-Dichloroethene (Total)	5	BQL
19	1,2-Dichloropropane	5	BQL
20	cis-1,3-Dichloropropene	5	BQL
21	trans-1,3-Dichloropropene	5	BQL
22	Ethylbenzene	5	BQL
23	Methylene chloride	5	10
24	1,1,2,2-Tetrachloroethane	5	BQL
25	Tetrachloroethene	5	BQL
26	Toluene	5	BQL
27	1,1,1-Trichloroethane	5	BQL
28	1,1,2-Trichloroethane	5	BQL
29	Trichloroethene	5	BQL
30	Trichlorofluoromethane	5	BQL
31	Vinyl chloride	10	BQL

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IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 2 OF 2 PAGES)

Client:
Project:

IEA ID: Method Blank (10/27)
Sample:

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
Other TCL Compounds:			
32	Acetone	100	BQL
33	2-Butanone	100	BQL
34	Carbon disulfide	5	BQL
35	1,2-Dibromoethane	5	BQL
36	2-Hexanone	50	BQL
37	Methyl-t-butylether	5	BQL
38	4-Methyl-2-pentanone	50	BQL
39	Styrene	5	BQL
40	Vinyl Acetate	50	BQL
41	Xylenes (Total)	5	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	101 %
Toluene-d8	106 %
Bromofluorobenzene	101 %

Comments:

BQL = Below Quantitation Limit.
PQL = Practical Quantitation Limit.
Dilution factor adjusted for % moisture.
Corresponding Samples: T118-001-01, T118-001-02

Doc# MSF10900.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-001-01
Project:	01981-0010	Sample:	D42-B11-1017
Report Date:	11/01/94	Type:	Soil
Collected:	10/17/94	Container:	Glass
Received:	10/19/94		
Extracted:	10/25/94		
Analyzed:	10/26/94		
By:	LJT	Dilution Factor:	1.1

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
1	Acenaphthene	363	BQL
2	Acenaphthylene	363	BQL
3	Aniline	1815	BQL
4	Anthracene	363	BQL
5	Benzoic acid	1815	BQL
6	Benzo(a)anthracene	363	BQL
7	Benzo(b)fluoranthene	363	BQL
8	Benzo(k)fluoranthene	363	BQL
9	Benzo(g,h,i)perylene	363	BQL
10	Benzo(a)pyrene	363	BQL
11	Benzyl alcohol	726	BQL
12	bis(2-Chloroethoxy)methane	363	BQL
13	bis(2-Chloroethyl)ether	363	BQL
14	bis(2-Chloroisopropyl)ether	363	BQL
15	bis(2-Ethylhexyl)phthalate	363	BQL
16	4-Bromophenyl phenyl ether	363	BQL
17	Benzyl butyl phthalate	363	BQL
18	4-Chloroaniline	726	BQL
19	2-Chloronaphthalene	363	BQL
20	4-Chloro-3-methylphenol	726	BQL
21	2-Chlorophenol	363	BQL
22	4-Chlorophenyl phenyl ether	363	BQL
23	Chrysene	363	BQL
24	Dibenzo(a,h)anthracene	363	BQL
25	Dibenzofuran	363	BQL
26	Di-n-butyl phthalate	363	BQL
27	1,3-Dichlorobenzene	363	BQL
28	1,4-Dichlorobenzene	363	BQL
29	1,2-Dichlorobenzene	363	BQL
30	1,2-Diphenylhydrazine	363	BQL
31	3,3'-Dichlorobenzidine	726	BQL
32	2,4-Dichlorophenol	363	BQL
33	Diethyl phthalate	363	BQL
34	2,4-Dimethylphenol	363	BQL
35	Dimethyl phthalate	363	BQL
36	2-Methyl-4,6-dinitrophenol	1815	BQL
37	2,4-Dinitrophenol	1815	BQL
38	2,4-Dinitrotoluene	363	BQL

Doc# MSF00200.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010

IEA ID: T118-001-01
Sample: D42-B11-1017

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
39	2,6-Dinitrotoluene	363	BQL
40	Di-n-octylphthalate	363	BQL
41	Fluoranthene	363	BQL
42	Fluorene	363	BQL
43	Hexachlorobenzene	363	BQL
44	Hexachlorobutadiene	363	BQL
45	Hexachlorocyclopentadiene	363	BQL
46	Hexachloroethane	363	BQL
47	Indeno(1,2,3-cd)pyrene	363	BQL
48	Isophorone	363	BQL
49	2-Methylnaphthalene	363	BQL
50	2-Methylphenol (o-cresol)	363	BQL
51	4-Methylphenol (p-cresol)	363	BQL
52	Naphthalene	363	BQL
53	2-Nitroaniline	1815	BQL
54	3-Nitroaniline	1815	BQL
55	4-Nitroaniline	1815	BQL
56	Nitrobenzene	363	BQL
57	2-Nitrophenol	363	BQL
58	4-Nitrophenol	1815	BQL
59	N-Nitroso-di-n-propylamine	363	BQL
60	N-Nitrosodiphenylamine	363	BQL
61	Pentachlorophenol	1815	BQL
62	Phenanthrene	363	BQL
63	Phenol	363	BQL
64	Pyrene	363	BQL
65	1,2,4-Trichlorobenzene	363	BQL
66	2,4,5-Trichlorophenol	363	BQL
67	2,4,6-Trichlorophenol	363	BQL

Surrogate Standard Recovery:

2-Fluorophenol	62 %
Phenol-d6	59 %
Nitrobenzene-d5	53 %
2-Fluorobiphenyl	69 %
2,4,6-Tribromophenol	34 %
Terphenyl-d14	58 %

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.

Doc# MSF00200.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-001-02
Project:	01981-0010	Sample:	D42-B12-1017
Report Date:	11/01/94	Type:	Soil
Collected:	10/17/94	Container:	Glass
Received:	10/19/94		
Extracted:	10/25/94		
Analyzed:	10/26/94		
By:	LJT	Dilution Factor:	1.2

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
1	Acenaphthene	396	BQL
2	Acenaphthylene	396	BQL
3	Aniline	1980	BQL
4	Anthracene	396	BQL
5	Benzoic acid	1980	BQL
6	Benzo(a)anthracene	396	BQL
7	Benzo(b)fluoranthene	396	BQL
8	Benzo(k)fluoranthene	396	BQL
9	Benzo(g,h,i)perylene	396	BQL
10	Benzo(a)pyrene	396	BQL
11	Benzyl alcohol	792	BQL
12	bis(2-Chloroethoxy)methane	396	BQL
13	bis(2-Chloroethyl)ether	396	BQL
14	bis(2-Chloroisopropyl)ether	396	BQL
15	bis(2-Ethylhexyl)phthalate	396	BQL
16	4-Bromophenyl phenyl ether	396	BQL
17	Benzyl butyl phthalate	396	BQL
18	4-Chloroaniline	792	BQL
19	2-Chloronaphthalene	396	BQL
20	4-Chloro-3-methylphenol	792	BQL
21	2-Chlorophenol	396	BQL
22	4-Chlorophenyl phenyl ether	396	BQL
23	Chrysene	396	BQL
24	Dibenzo(a,h)anthracene	396	BQL
25	Dibenzofuran	396	BQL
26	Di-n-butyl phthalate	396	BQL
27	1,3-Dichlorobenzene	396	BQL
28	1,4-Dichlorobenzene	396	BQL
29	1,2-Dichlorobenzene	396	BQL
30	1,2-Diphenylhydrazine	396	BQL
31	3,3'-Dichlorobenzidine	792	BQL
32	2,4-Dichlorophenol	396	BQL
33	Diethyl phthalate	396	BQL
34	2,4-Dimethylphenol	396	BQL
35	Dimethyl phthalate	396	BQL
36	2-Methyl-4,6-dinitrophenol	1980	BQL
37	2,4-Dinitrophenol	1980	BQL
38	2,4-Dinitrotoluene	396	BQL

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IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010

IEA ID: T118-001-02
Sample: D42-B12-1017

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
39	2,6-Dinitrotoluene	396	BQL
40	Di-n-octylphthalate	396	BQL
41	Fluoranthene	396	BQL
42	Fluorene	396	BQL
43	Hexachlorobenzene	396	BQL
44	Hexachlorobutadiene	396	BQL
45	Hexachlorocyclopentadiene	396	BQL
46	Hexachloroethane	396	BQL
47	Indeno(1,2,3-cd)pyrene	396	BQL
48	Isophorone	396	BQL
49	2-Methylnaphthalene	396	BQL
50	2-Methylphenol (o-cresol)	396	BQL
51	4-Methylphenol (p-cresol)	396	BQL
52	Naphthalene	396	BQL
53	2-Nitroaniline	1980	BQL
54	3-Nitroaniline	1980	BQL
55	4-Nitroaniline	1980	BQL
56	Nitrobenzene	396	BQL
57	2-Nitrophenol	396	BQL
58	4-Nitrophenol	1980	BQL
59	N-Nitroso-di-n-propylamine	396	BQL
60	N-Nitrosodiphenylamine	396	BQL
61	Pentachlorophenol	1980	BQL
62	Phenanthrene	396	BQL
63	Phenol	396	BQL
64	Pyrene	396	BQL
65	1,2,4-Trichlorobenzene	396	BQL
66	2,4,5-Trichlorophenol	396	BQL
67	2,4,6-Trichlorophenol	396	BQL

Surrogate Standard Recovery:

2-Fluorophenol	51 %
Phenol-d6	52 %
Nitrobenzene-d5	37 %
2-Fluorobiphenyl	49 %
2,4,6-Tribromophenol	37 %
Terphenyl-d14	53 %

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.

Doc# MSF00200.MA

IEA
An Aquarion Company

149 Rangeway Road
North Billerica, MA 01862

Phone 617·272·5212
Fax 508·667·7871

Mr. James Peronto
TRC Environmental
5 Waterside Crossing
Windsor, CT 06095

November 4, 1994

Dear Mr. Peronto:

Please find enclosed the analytical results of the sample(s) received at our laboratory on October 21, 1994. This report contains sections addressing the following information at a minimum:

- sample ID correspondence table
- analytical methodology
- analytical results
- chain-of-custody (if applicable)
- definitions of data qualifiers and terminology
- state certifications

Client Project #	01981-0010	**Client Project Name**	N/A
IEA Report #	T118-002	**Purchase Order #**	N/A

Copies of this analytical report and supporting data are maintained in our files for a minimum of 3 years unless special arrangements are made. Unless specifically indicated, all analytical testing was performed at the IEA-Massachusetts laboratory.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact your customer service representative at (617) 272-5212 for any additional information. Thank you for utilizing our services and we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.

Sincerely,

Michael F. Wheeler, Ph.D.
Laboratory Director
IEA-Massachusetts

MW/slh

Doc# RPF00100.MA

IEA
An Aquarion Company

QA/QC NOTICE

Report Date:	11/07/94	Received Date:	10/21/94
Client:	TRC Environmental	IEA Job Number:	T118-002
Project:	01981-0010		

This project was analyzed using EPA Region I holding times. All methods were performed in accordance with these holdings times.

IEA
An Aquarion Company

Sample ID Correspondence Table

Client Sample ID	IEA Sample ID
D42-B21-1019	T118-002-01
D42-B22-1019	T118-002-02
D42-B23-1019	T118-002-03
D42-FBS-1019	T118-002-04
D42-TB2-1019	T118-002-05

IEA
An Aquarion Company

SUBCONTRACT/INTERLABORATORY NOTIFICATION

Report Date: 11/04/94
Client: TRC Environmental
Project: 01981-0010

Received Date: 10/21/94
IEA Job Number: T118-002

A portion of the analytical work for this project was performed at another laboratory. Analytical methods conducted within the IEA Network are subject to uniform corporate quality control procedures. Non-network laboratories are selected on the basis of appropriate certification. The following parameters were analyzed at the indicated labs.

Subcontract Laboratory	Parameter
IEA-North Carolina	Antimony
IEA-North Carolina	Beryllium
IEA-North Carolina	Cadmium
IEA-North Carolina	Chromium
IEA-North Carolina	Copper
IEA-North Carolina	Nickel
IEA-North Carolina	Silver
IEA-North Carolina	Zinc
IEA-Connecticut	Total Organic Carbon

If you have any questions please call our client service representative.

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Definitions of Data Qualifiers and Terminology

A number of data qualifiers are widely used within the environmental testing industry and may be utilized in our data reports. The following definitions of these qualifiers are included as a service to our clientele. The majority of the qualifiers have evolved from the EPA contract laboratory program (CLP).

B - This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to use caution when applying the results of this analyte.

BQL - Below Quantitation Limit indicates the compound was not detected in the sample above the practical quantitation limit.

D - Indicates the compound was diluted below the calibration range.

E - Indicates that the concentration of the specific compound exceeded the calibration range of the instrument for that particular analysis.

J - Indicates an estimated value. The compound is determined to be present in the sample based on GC/MS criteria, but the amount is less than the sample quantitation limit. IEA - MA GC/MS reports do not typically report J - marked results. If requested, J - marked results are provided and the report flagged to verify that the data was appropriately reviewed.

MDL - The method detection limit is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero.

NA - Not applicable or not available.

ND - Indicates the compound or analyte was not detected in the sample above the method detection limit or the practical quantitation limit for the particular analysis.

PQL - The practical quantitation limit is the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine operating conditions.

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Analytical Methodology

IEA utilizes approved environmental methodologies whenever possible and appropriate. Due to the varying nature of sample matrices submitted to our laboratories we utilize a wide variety of analytical methodologies and quality assurance protocols. Analytical results and Quality Assurance protocols employed by our network laboratories are based on guidelines specified in the following documents:

- "Methods of Organic Chemical Analysis of Municipal and Industrial Wastewater", Federal Register Vol. 49, No. 209, October 26, 1984;
- "Test Methods for Evaluating Solid Waste", SW-846 Third Edition, September 1986, USEPA;
- "Standard Methods for the Examination of Water and Wastewater" 1985, 14th, 15th and 16th Edition;
- "Methods for Chemical Analysis of Water and Wastes" March 1983, EMSL, EPA;
- "Manual of Analytical Methods for the Analysis of Pesticides in Humans and Environmental Samples", EPA 600/8-80-038, June 1980;
- Organic Analysis: Multi-media, Multi-Concentration-IFB-CLP, January 1991, Document Number OLM01.2 (plus revisions);
- Inorganic Analysis: Multi-media, Multi-Concentration-IFB-CLP, Document Number ILM01.0;
- "Handbook for Analytical Quality Control in Water and Wastewater Laboratories", EPA-600/4-79-019, March 1979;
- National Enforcement Investigation Center Policies and Procedures Manual, EPA-330/9/78/001-R, Revised May 1986
- "Manual for the Certification of Laboratories Analyzing Drinking Water", April 1990, EPA/570/9-90/008.
- "NIOSH Manual of Analytical Methods", February 1984, 3rd Edition.

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State Certifications

In some instances it may be necessary for environmental data to be reported to a regulatory authority with reference to a certified laboratory. For your convenience, the laboratory identification numbers for the IEA-Massachusetts laboratory are provided in the following table. Many states certify laboratories for specific parameters or tests within a category (e.g. EPA method 624 for wastewater). The information in the following table indicates the lab is certified in a general category of testing such as drinking water or wastewater analysis. The laboratory should be contacted directly if parameter specific certification information is required.

IEA-Massachusetts
Certification Summary, as of November 1993

State	Responsible Agency	Area of Certification	Lab Number
Connecticut	Department of Health Services	General Environmental	0646
Maine	Department of Human Services	Drinking Water	Provisional
Massachusetts	Department of Environmental Protection	Drinking Water Wastewater	MA038
New Hampshire	Department of Environmental Services	Drinking Water Wastewater	C300
New York	Department of Public Health	Wastewater	10838
North Carolina	Department of Natural Resources	Wastewater	333
Rhode Island	Department of Health	Chemistry	A58
Virginia	Department of General Services	Drinking Water	00157

IEA
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Analysis Report: EPA Method 8240A
(PAGE 2 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-002-05
Project:	01981-0010	Sample:	D42-TB2-1019

Number	Compound	PQL (ug/L)	Result (ug/L)
Other TCL Compounds:			
32	Acetone	100	BQL
33	2-Butanone	100	BQL
34	Carbon disulfide	5	BQL
35	1,2-Dibromoethane	5	BQL
36	2-Hexanone	50	BQL
37	Methyl-t-butylether	5	BQL
38	4-Methyl-2-pentanone	50	BQL
39	Styrene	5	BQL
40	Vinyl Acetate	50	BQL
41	Xylenes (Total)	5	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	94 %
Toluene-d8	100 %
Bromofluorobenzene	94 %

Comments:

BQL = Below Quantitation Limit.
PQL = Practical Quantitation Limit.
B = Compound in blank

Doc# MSF10800.MA

IEA
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Analysis Report: EPA Method 8270A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-002-01
Project:	01981-0010	Sample:	D42-B21-1019
Report Date:	11/04/94	Type:	Soil
Collected:	10/19/94	Container:	Glass
Received:	10/21/94		
Extracted:	10/25/94		
Analyzed:	10/26/94		
By:	LJT	Dilution Factor:	1.6

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
1	Acenaphthene	528	BQL
2	Acenaphthylene	528	BQL
3	Aniline	2640	BQL
4	Anthracene	528	BQL
5	Benzoic acid	2640	BQL
6	Benzo(a)anthracene	528	630
7	Benzo(b)fluoranthene	528	1,000
8	Benzo(k)fluoranthene	528	650
9	Benzo(g,h,i)perylene	528	BQL
10	Benzo(a)pyrene	528	920
11	Benzyl alcohol	1056	BQL
12	bis(2-Chloroethoxy)methane	528	BQL
13	bis(2-Chloroethyl)ether	528	BQL
14	bis(2-Chloroisopropyl)ether	528	BQL
15	bis(2-Ethylhexyl)phthalate	528	1,200
16	4-Bromophenyl phenyl ether	528	BQL
17	Benzyl butyl phthalate	528	BQL
18	4-Chloroaniline	1056	BQL
19	2-Chloronaphthalene	528	BQL
20	4-Chloro-3-methylphenol	1056	BQL
21	2-Chlorophenol	528	BQL
22	4-Chlorophenyl phenyl ether	528	BQL
23	Chrysene	528	850
24	Dibenzo(a,h)anthracene	528	BQL
25	Dibenzofuran	528	BQL
26	Di-n-butyl phthalate	528	BQL
27	1,3-Dichlorobenzene	528	BQL
28	1,4-Dichlorobenzene	528	BQL
29	1,2-Dichlorobenzene	528	BQL
30	1,2-Diphenylhydrazine	528	BQL
31	3,3'-Dichlorobenzidine	1056	BQL
32	2,4-Dichlorophenol	528	BQL
33	Diethyl phthalate	528	BQL
34	2,4-Dimethylphenol	528	BQL
35	Dimethyl phthalate	528	BQL
36	2-Methyl-4,6-dinitrophenol	2640	BQL
37	2,4-Dinitrophenol	2640	BQL
38	2,4-Dinitrotoluene	528	BQL

Doc# MSF00200.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010

IEA ID: T118-002-01
Sample: D42-B21-1019

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
39	2,6-Dinitrotoluene	528	BQL
40	Di-n-octylphthalate	528	BQL
41	Fluoranthene	528	1,100
42	Fluorene	528	BQL
43	Hexachlorobenzene	528	BQL
44	Hexachlorobutadiene	528	BQL
45	Hexachlorocyclopentadiene	528	BQL
46	Hexachloroethane	528	BQL
47	Indeno(1,2,3-cd)pyrene	528	BQL
48	Isophorone	528	BQL
49	2-Methylnaphthalene	528	BQL
50	2-Methylphenol (o-cresol)	528	BQL
51	4-Methylphenol (p-cresol)	528	BQL
52	Naphthalene	528	BQL
53	2-Nitroaniline	2640	BQL
54	3-Nitroaniline	2640	BQL
55	4-Nitroaniline	2640	BQL
56	Nitrobenzene	528	BQL
57	2-Nitrophenol	528	BQL
58	4-Nitrophenol	2640	BQL
59	N-Nitroso-di-n-propylamine	528	BQL
60	N-Nitrosodiphenylamine	528	BQL
61	Pentachlorophenol	2640	BQL
62	Phenanthrene	528	770
63	Phenol	528	BQL
64	Pyrene	528	2,700
65	1,2,4-Trichlorobenzene	528	BQL
66	2,4,5-Trichlorophenol	528	BQL
67	2,4,6-Trichlorophenol	528	BQL

Surrogate Standard Recovery:

2-Fluorophenol	76 %
Phenol-d6	57 %
Nitrobenzene-d5	46 %
2-Fluorobiphenyl	81 %
2,4,6-Tribromophenol	110 %
Terphenyl-d14	134 %

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.

Doc# MSF00200.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-002-02
Project:	01981-0010	Sample:	D42-B22-1019
Report Date:	11/04/94	Type:	Soil
Collected:	10/19/94	Container:	Glass
Received:	10/21/94		
Extracted:	10/25/94		
Analyzed:	10/26/94		
By:	LJT	Dilution Factor:	1.1

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
1	Acenaphthene	363	BQL
2	Acenaphthylene	363	BQL
3	Aniline	1815	BQL
4	Anthracene	363	BQL
5	Benzoic acid	1815	BQL
6	Benzo(a)anthracene	363	BQL
7	Benzo(b)fluoranthene	363	BQL
8	Benzo(k)fluoranthene	363	BQL
9	Benzo(g,h,i)perylene	363	BQL
10	Benzo(a)pyrene	363	BQL
11	Benzyl alcohol	726	BQL
12	bis(2-Chloroethoxy)methane	363	BQL
13	bis(2-Chloroethyl)ether	363	BQL
14	bis(2-Chloroisopropyl)ether	363	BQL
15	bis(2-Ethylhexyl)phthalate	363	BQL
16	4-Bromophenyl phenyl ether	363	BQL
17	Benzyl butyl phthalate	363	BQL
18	4-Chloroaniline	726	BQL
19	2-Chloronaphthalene	363	BQL
20	4-Chloro-3-methylphenol	726	BQL
21	2-Chlorophenol	363	BQL
22	4-Chlorophenyl phenyl ether	363	BQL
23	Chrysene	363	BQL
24	Dibenzo(a,h)anthracene	363	BQL
25	Dibenzofuran	363	BQL
26	Di-n-butyl phthalate	363	BQL
27	1,3-Dichlorobenzene	363	BQL
28	1,4-Dichlorobenzene	363	BQL
29	1,2-Dichlorobenzene	363	BQL
30	1,2-Diphenylhydrazine	363	BQL
31	3,3'-Dichlorobenzidine	726	BQL
32	2,4-Dichlorophenol	363	BQL
33	Diethyl phthalate	363	BQL
34	2,4-Dimethylphenol	363	BQL
35	Dimethyl phthalate	363	BQL
36	2-Methyl-4,6-dinitrophenol	1815	BQL
37	2,4-Dinitrophenol	1815	BQL
38	2,4-Dinitrotoluene	363	BQL

Doc# MSF00200.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010

IEA ID: T118-002-02
Sample: D42-B22-1019

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
39	2,6-Dinitrotoluene	363	BQL
40	Di-n-octylphthalate	363	BQL
41	Fluoranthene	363	BQL
42	Fluorene	363	BQL
43	Hexachlorobenzene	363	BQL
44	Hexachlorobutadiene	363	BQL
45	Hexachlorocyclopentadiene	363	BQL
46	Hexachloroethane	363	BQL
47	Indeno(1,2,3-cd)pyrene	363	BQL
48	Isophorone	363	BQL
49	2-Methylnaphthalene	363	BQL
50	2-Methylphenol (o-cresol)	363	BQL
51	4-Methylphenol (p-cresol)	363	BQL
52	Naphthalene	363	BQL
53	2-Nitroaniline	1815	BQL
54	3-Nitroaniline	1815	BQL
55	4-Nitroaniline	1815	BQL
56	Nitrobenzene	363	BQL
57	2-Nitrophenol	363	BQL
58	4-Nitrophenol	1815	BQL
59	N-Nitroso-di-n-propylamine	363	BQL
60	N-Nitrosodiphenylamine	363	BQL
61	Pentachlorophenol	1815	BQL
62	Phenanthrene	363	BQL
63	Phenol	363	BQL
64	Pyrene	363	690
65	1,2,4-Trichlorobenzene	363	BQL
66	2,4,5-Trichlorophenol	363	BQL
67	2,4,6-Trichlorophenol	363	BQL

Surrogate Standard Recovery:

2-Fluorophenol	66 %
Phenol-d6	59 %
Nitrobenzene-d5	47 %
2-Fluorobiphenyl	83 %
2,4,6-Tribromophenol	69 %
Terphenyl-d14	115 %

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.

Doc# MSF00200.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-002-04
Project:	01981-0010	Sample:	D42-FBS-1019
Report Date:	11/04/94	Type:	Water
Collected:	10/19/94	Container:	Glass
Received:	10/21/94		
Extracted:	10/26/94		
Analyzed:	10/31/94		
By:	MEW	Dilution Factor:	1

Number	Compound	PQL (ug/L)	Result (ug/L)
1	Acenaphthene	10	BQL
2	Acenaphthylene	10	BQL
3	Aniline	50	BQL
4	Anthracene	10	BQL
5	Benzoic acid	50	BQL
6	Benzo(a)anthracene	10	BQL
7	Benzo(b)fluoranthene	10	BQL
8	Benzo(k)fluoranthene	10	BQL
9	Benzo(g,h,i)perylene	10	BQL
10	Benzo(a)pyrene	10	BQL
11	Benzyl alcohol	20	BQL
12	bis(2-Chloroethoxy)methane	10	BQL
13	bis(2-Chloroethyl)ether	10	BQL
14	bis(2-Chloroisopropyl)ether	10	BQL
15	bis(2-Ethylhexyl)phthalate	10	BQL
16	4-Bromophenyl phenyl ether	10	BQL
17	Benzyl butyl phthalate	10	BQL
18	4-Chloroaniline	20	BQL
19	2-Chloronaphthalene	10	BQL
20	4-Chloro-3-methylphenol	20	BQL
21	2-Chlorophenol	10	BQL
22	4-Chlorophenyl phenyl ether	10	BQL
23	Chrysene	10	BQL
24	Dibenzo(a,h)anthracene	10	BQL
25	Dibenzofuran	10	BQL
26	Di-n-butyl phthalate	10	BQL
27	1,3-Dichlorobenzene	10	BQL
28	1,4-Dichlorobenzene	10	BQL
29	1,2-Dichlorobenzene	10	BQL
30	1,2-Diphenylhydrazine	10	BQL
31	3,3'-Dichlorobenzidine	20	BQL
32	2,4-Dichlorophenol	10	BQL
33	Diethyl phthalate	10	BQL
34	2,4-Dimethylphenol	10	BQL
35	Dimethyl phthalate	10	BQL
36	2-Methyl-4,6-dinitrophenol	50	BQL
37	2,4-Dinitrophenol	50	BQL
38	2,4-Dinitrotoluene	10	BQL

Doc # MSF00100.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010

IEA ID: T118-002-04
Sample: D42-FBS-1019

Number	Compound	PQL (ug/L)	Result (ug/L)
39	2,6-Dinitrotoluene	10	BQL
40	Di-n-octylphthalate	10	BQL
41	Fluoranthene	10	BQL
42	Fluorene	10	BQL
43	Hexachlorobenzene	10	BQL
44	Hexachlorobutadiene	10	BQL
45	Hexachlorocyclopentadiene	10	BQL
46	Hexachloroethane	10	BQL
47	Indeno(1,2,3-cd)pyrene	10	BQL
48	Isophorone	10	BQL
49	2-Methylnaphthalene	10	BQL
50	2-Methylphenol (o-cresol)	10	BQL
51	4-Methylphenol (p-cresol)	10	BQL
52	Naphthalene	10	BQL
53	2-Nitroaniline	50	BQL
54	3-Nitroaniline	50	BQL
55	4-Nitroaniline	50	BQL
56	Nitrobenzene	10	BQL
57	2-Nitrophenol	10	BQL
58	4-Nitrophenol	50	BQL
59	N-Nitroso-di-n-propylamine	10	BQL
60	N-Nitrosodiphenylamine	10	BQL
61	Pentachlorophenol	50	BQL
62	Phenanthrene	10	BQL
63	Phenol	10	BQL
64	Pyrene	10	BQL
65	1,2,4-Trichlorobenzene	10	BQL
66	2,4,5-Trichlorophenol	10	BQL
67	2,4,6-Trichlorophenol	10	BQL

Surrogate Standard Recovery:

2-Fluorophenol	64 %
Phenol-d6	66 %
Nitrobenzene-d5	67 %
2-Fluorobiphenyl	53 %
2,4,6-Tribromophenol	62 %
Terphenyl-d14	62 %

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.

Doc # MSF00100.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 1 OF 2 PAGES)

Client:		IEA ID:	Method Blank (10/26)
Project:		Sample:	
Report Date:	11/01/94	Type:	Soil
Collected:		Container:	
Received:			
Analyzed:	10/26/94		
By:	GMT	Dilution Factor:	1

Priority Pollutant Compounds

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	BQL
13	1,3-Dichlorobenzene	5	BQL
14	1,4-Dichlorobenzene	5	BQL
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	1,2-Dichloroethene (Total)	5	BQL
19	1,2-Dichloropropane	5	BQL
20	cis-1,3-Dichloropropene	5	BQL
21	trans-1,3-Dichloropropene	5	BQL
22	Ethylbenzene	5	BQL
23	Methylene chloride	5	2J
24	1,1,2,2-Tetrachloroethane	5	BQL
25	Tetrachloroethene	5	BQL
26	Toluene	5	BQL
27	1,1,1-Trichloroethane	5	BQL
28	1,1,2-Trichloroethane	5	BQL
29	Trichloroethene	5	BQL
30	Trichlorofluoromethane	5	BQL
31	Vinyl chloride	10	BQL

Doc# MSF10900.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 2 OF 2 PAGES)

Client:
Project:

IEA ID: Method Blank (10/26)
Sample:

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
Other TCL Compounds:			
32	Acetone	100	BQL
33	2-Butanone	100	BQL
34	Carbon disulfide	5	BQL
35	1,2-Dibromoethane	5	BQL
36	2-Hexanone	50	BQL
37	Methyl-t-butylether	5	BQL
38	4-Methyl-2-pentanone	50	BQL
39	Styrene	5	BQL
40	Vinyl Acetate	50	BQL
41	Xylenes (Total)	5	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	104 %
Toluene-d8	99 %
Bromofluorobenzene	98 %

Comments:

BQL = Below Quantitation Limit.
PQL = Practical Quantitation Limit.
Dilution factor adjusted for % moisture.
J = Approximate result. Quantitation below calibration.
Corresponding Samples: T118-002-01, T118-002-02

Doc# MSF10900.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 1 OF 2 PAGES)

Client:		IEA ID:	Method Blank (10/26)
Project:		Sample:	
Report Date:	11/01/94	Type:	Water
Collected:		Container:	
Received:			
Analyzed:	10/26/94		
By:	GMT	Dilution Factor:	1

Priority Pollutant Compounds

Number	Compound	PQL (ug/L)	Result (ug/L)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	BQL
13	1,3-Dichlorobenzene	5	BQL
14	1,4-Dichlorobenzene	5	BQL
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	1,2-Dichloroethene (Total)	5	BQL
19	1,2-Dichloropropane	5	BQL
20	cis-1,3-Dichloropropene	5	BQL
21	trans-1,3-Dichloropropene	5	BQL
22	Ethylbenzene	5	BQL
23	Methylene chloride	5	8
24	1,1,2,2-Tetrachloroethane	5	BQL
25	Tetrachloroethene	5	BQL
26	Toluene	5	BQL
27	1,1,1-Trichloroethane	5	BQL
28	1,1,2-Trichloroethane	5	BQL
29	Trichloroethene	5	BQL
30	Trichlorofluoromethane	5	BQL
31	Vinyl chloride	10	BQL

Doc#MSF10800.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 2 OF 2 PAGES)

Client:
Project:

IEA ID: Method Blank (10/26)
Sample:

Number	Compound	PQL (ug/L)	Result (ug/L)
Other TCL Compounds:			
32	Acetone	100	BQL
33	2-Butanone	100	BQL
34	Carbon disulfide	5	BQL
35	1,2-Dibromoethane	5	BQL
36	2-Hexanone	50	BQL
37	Methyl-t-butylether	5	BQL
38	4-Methyl-2-pentanone	50	BQL
39	Styrene	5	BQL
40	Vinyl Acetate	50	BQL
41	Xylenes (Total)	5	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	97 %
Toluene-d8	98 %
Bromofluorobenzene	93 %

Comments:

BQL = Below Quantitation Limit.
PQL = Practical Quantitation Limit.
Corresponding Samples: T118-002-04, T118-002-05

Doc# MSF10800.MA

IEA
An Aquarion Company

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1-800-950-5212

CHAIN OF CUSTODY RECORD

REQUIRED

CUST. P.O. #

REGULATORY CLASSIFICATION - PLEASE SPECIFY

☐ NPDES ☐ DRINKING WATER ☐ RCRA ☒ OTHER EPA Region I

TURN AROUND
☐ 15 BUSINESS DAY
☒ 10 BUSINESS DAY
☐ RUSH
☐ OTHER

COMPANY	CONTACT PERSON	PROJECT I.D.	PHONE #	FAX #
TRC Environmental	J Peronto	01981-0010	203-298-6233	203-298-6399

ADDRESS: 5 Waterside Crossing

CITY: Windsor | STATE: CT | ZIP: 06095

DATE	TIME	SAMPLE I.D.	MATRIX	CONTAINER TYPE	# OF CONTAINERS	PRESERVATIVE	REQUESTED PARAMETERS: VOCs (8240)	SVOCs (8270)	TPH (418.1)	PP Metals	TDS	Total Cyanide			(COMMENTS)
11/10/94	17:30	D42-MW2-1110	W	G/P	8	(*)	2	1	1	1	2	1			* VOCs - HCl Metals - HNO_3 TPH - H_2SO_4
11/10/94	16:45	D42-MW3-1110	W	G/P	8	(*)	2	1	1	1	2	1			
11/10/94	16:45	D42-MW6-1110	W	P	1	(*)				1					
11/11/94	12:30	D42-MW4-1111	W	G	1	(*)			1						Note: EPA Region I Holding Times Apply! Megan Brown 2

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED BY	DATE / TIME
IEA LAB	11/09/94	Federal Express	11/09/94
Federal Express	11/10/94	TRC/Megan Brown	11/10/94
TRC/Megan Brown	11/11/94	Federal Express	11/11/94/1130

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED FOR LAB BY	DATE / TIME

IEA USE ONLY: 94-0927-04D

FIELD REMARKS

CHAIN OF CUSTODY RECORD

IEA
An Aquarion Company
149 Rangeway Road
N. Billerica, Massachusetts 01862
617 / 272-5212
Fax 508 / 667-7871
1-800-950-5212

REGULATORY CLASSIFICATION - PLEASE SPECIFY
☐ NPDES ☐ DRINKING WATER ☐ RCRA ☒ OTHER EPA REGION I

CUST. P.O. # REQUIRED

TURN AROUND
☐ 15 BUSINESS DAY
☒ 10 BUSINESS DAY
☐ RUSH
☐ OTHER

COMPANY	CONTACT PERSON	PROJECT I.D.	PHONE #	FAX #
TRC ENVIRONMENTAL	J. PERONTO	01981-001D	203 298 6233	203 298 6399

ADDRESS	CITY	STATE	ZIP
5 WATERSIDE CROSSING	WINDSOR	CT	06095

DATE	TIME	SAMPLE I.D.	MATRIX	CONTAINER TYPE	# OF CONTAINERS	PRESERVATIVE	REQUESTED PARAMETERS: VOCs (8290)	SVOCs (8270)	TPH (418.1)	PP METALS	TDS	TOTAL CHLORINE			(COMMENTS)
11/11/94	0830	01981-FBW-1111	W	G/P	8	(*)	2	1	1	1	2	1			(*) VOCs - HCl METALS - HNO_3
11/11/94	NA	D42-TB-1111 (TRIP BLANK)	W	G	1	HCl	1								TPH - H_2SO_4
		~~D42-MW6-1111~~ DP													
11/11/94	0910	D42-MW1-1111	W	G/P	8	(*)	2	1	1	1	2	1			
11/11/94	1400	D42-MW5-1111	W	G/P	8	(*)	2	1	1	1	2	1			NOTE
															EPA REGION I
															HOLDING TIMES
															APPLY !!

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED BY	DATE / TIME
IEA-EAB	11/09/94	FEDERAL EXPRESS	11/09/94
FED. EXPRESS	11/10/94	TRC/JIM PERONTO	11/10/94
TRC/JIM PERONTO	11/11/94	FEDERAL EXPRESS	11/11/94 1930
RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED FOR LAB BY	DATE / TIME
		M. A. Sullivan	11-14-94

IEA USE ONLY
94-0927-04D

FIELD REMARKS

IEA
An Aquarion Company

149 Rangeway Road
North Billerica, MA 01862

Phone 617·272·5212
Fax 508·667·7871

Mr. James Peronto
TRC Environmental
5 Waterside Crossing
Windsor, CT 06095

November 7, 1994

Dear Mr. Peronto:

Please find enclosed the analytical results of the sample(s) received at our laboratory on October 22, 1994. This report contains sections addressing the following information at a minimum:

- sample ID correspondence table
- analytical methodology
- analytical results
- chain-of-custody (if applicable)
- definitions of data qualifiers and terminology
- state certifications

Client Project #	01981-0010	**Client Project Name**	N/A
IEA Report #	T118-003	**Purchase Order #**	N/A

Copies of this analytical report and supporting data are maintained in our files for a minimum of 3 years unless special arrangements are made. Unless specifically indicated, all analytical testing was performed at the IEA-Massachusetts laboratory.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact your customer service representative at (617) 272-5212 for any additional information. Thank you for utilizing our services and we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.

Sincerely,

Michael F. Wheeler, Ph.D.
Laboratory Director
IEA-Massachusetts

MW/slh

Doc# RPF00100.MA

IEA
An Aquarion Company

QA/QC NOTICE

Report Date:	11/07/94	Received Date:	10/22/94
Client:	TRC Environmental	IEA Job Number:	T118-003
Project:	01981-0010		

This project was analyzed using EPA Region I holding times. All methods were performed in accordance with these holdings times.

IEA
An Aquarion Company

SUBCONTRACT/INTERLABORATORY NOTIFICATION

Report Date: 11/07/94
Client: TRC Environmental
Project:

Received Date: 10/22/94
IEA Job Number: T118-003

==========

A portion of the analytical work for this project was performed at another laboratory. Analytical methods conducted within the IEA Network are subject to uniform corporate quality control procedures. Non-network laboratories are selected on the basis of appropriate certification. The following parameters were analyzed at the indicated labs.

Subcontract Laboratory	Parameter
IEA-North Carolina	Antimony
IEA-North Carolina	Beryllium
IEA-North Carolina	Cadmium
IEA-North Carolina	Chromium
IEA-North Carolina	Copper
IEA-North Carolina	Nickel
IEA-North Carolina	Silver
IEA-North Carolina	Zinc
IEA-North Carolina	Total Organic Carbon

If you have any questions please call our client service representative.

IEA
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Sample ID Correspondence Table

Client Sample ID	IEA Sample ID
D42-B31-1021	T118-003-01
D42-B32-1021	T118-003-02
D42-B33-1021	T118-003-03
D42-B34-1021	T118-003-04

IEA
An Aquarion Company

Definitions of Data Qualifiers and Terminology

A number of data qualifiers are widely used within the environmental testing industry and may be utilized in our data reports. The following definitions of these qualifiers are included as a service to our clientele. The majority of the qualifiers have evolved from the EPA contract laboratory program (CLP).

B - This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to use caution when applying the results of this analyte.

BQL - Below Quantitation Limit indicates the compound was not detected in the sample above the practical quantitation limit.

D - Indicates the compound was diluted below the calibration range.

E - Indicates that the concentration of the specific compound exceeded the calibration range of the instrument for that particular analysis.

J - Indicates an estimated value. The compound is determined to be present in the sample based on GC/MS criteria, but the amount is less than the sample quantitation limit. IEA - MA GC/MS reports do not typically report J - marked results. If requested, J - marked results are provided and the report flagged to verify that the data was appropriately reviewed.

MDL - The method detection limit is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero.

NA - Not applicable or not available.

ND - Indicates the compound or analyte was not detected in the sample above the method detection limit or the practical quantitation limit for the particular analysis.

PQL - The practical quantitation limit is the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine operating conditions.

IEA
An Aquarion Company

Analytical Methodology

IEA utilizes approved environmental methodologies whenever possible and appropriate. Due to the varying nature of sample matrices submitted to our laboratories we utilize a wide variety of analytical methodologies and quality assurance protocols. Analytical results and Quality Assurance protocols employed by our network laboratories are based on guidelines specified in the following documents:

- "Methods of Organic Chemical Analysis of Municipal and Industrial Wastewater", Federal Register Vol. 49, No. 209, October 26, 1984;
- "Test Methods for Evaluating Solid Waste", SW-846 Third Edition, September 1986, USEPA;
- "Standard Methods for the Examination of Water and Wastewater" 1985, 14th, 15th and 16th Edition;
- "Methods for Chemical Analysis of Water and Wastes" March 1983, EMSL, EPA;
- "Manual of Analytical Methods for the Analysis of Pesticides in Humans and Environmental Samples", EPA 600/8-80-038, June 1980;
- Organic Analysis: Multi-media, Multi-Concentration-IFB-CLP, January 1991, Document Number OLM01.2 (plus revisions);
- Inorganic Analysis: Multi-media, Multi-Concentration-IFB-CLP, Document Number ILM01.0;
- "Handbook for Analytical Quality Control in Water and Wastewater Laboratories", EPA-600/4-79-019, March 1979;
- National Enforcement Investigation Center Policies and Procedures Manual, EPA-330/9/78/001-R, Revised May 1986
- "Manual for the Certification of Laboratories Analyzing Drinking Water", April 1990, EPA/570/9-90/008.
- "NIOSH Manual of Analytical Methods", February 1984, 3rd Edition.

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State Certifications

In some instances it may be necessary for environmental data to be reported to a regulatory authority with reference to a certified laboratory. For your convenience, the laboratory identification numbers for the IEA-Massachusetts laboratory are provided in the following table. Many states certify laboratories for specific parameters or tests within a category (e.g. EPA method 624 for wastewater). The information in the following table indicates the lab is certified in a general category of testing such as drinking water or wastewater analysis. The laboratory should be contacted directly if parameter specific certification information is required.

IEA-Massachusetts
Certification Summary, as of November 1993

State	Responsible Agency	Area of Certification	Lab Number
Connecticut	Department of Health Services	General Environmental	0646
Maine	Department of Human Services	Drinking Water	Provisional
Massachusetts	Department of Environmental Protection	Drinking Water Wastewater	MA038
New Hampshire	Department of Environmental Services	Drinking Water Wastewater	C300
New York	Department of Public Health	Wastewater	10838
North Carolina	Department of Natural Resources	Wastewater	333
Rhode Island	Department of Health	Chemistry	A58
Virginia	Department of General Services	Drinking Water	00157

IEA
An Aquarion Company

IEA LABORATORY RESULTS

Report Date: 11/07/94
Client: TRC Environmental
Project: 01981-0010

Received Date: 10/22/94
IEA Job Number: T118-003

IEA Sample #	Client ID	Parameter	Results	Units	PQL	Date Analyzed
		TOTAL METALS				
1	D42-B31-1021	Antimony	BQL	mg/kg(dry)	6.7	10/30/94
1	D42-B31-1021	Arsenic	15.4	mg/kg(dry)	0.50	11/01/94
1	D42-B31-1021	Beryllium	0.54	mg/kg(dry)	0.53	10/30/94
1	D42-B31-1021	Cadmium	BQL	mg/kg(dry)	0.56	10/30/94
1	D42-B31-1021	Chromium	14	mg/kg(dry)	1.1	10/30/94
1	D42-B31-1021	Copper	50	mg/kg(dry)	2.8	10/30/94
1	D42-B31-1021	Lead	50	mg/kg(dry)	10	10/27/94
1	D42-B31-1021	Mercury	BQL	mg/kg(dry)	0.10	11/01/94
1	D42-B31-1021	Nickel	22	mg/kg(dry)	4.4	10/30/94
1	D42-B31-1021	Selenium	BQL	mg/kg(dry)	0.50	11/01/94
1	D42-B31-1021	Silver	BQL	mg/kg(dry)	1.1	10/30/94
1	D42-B31-1021	Thallium	BQL	mg/kg(dry)	0.50	11/01/94
1	D42-B31-1021	Zinc	180	mg/kg(dry)	2.2	10/30/94
		TOTAL METALS				
2	D42-B32-1021	Antimony	BQL	mg/kg(dry)	6.7	10/30/94
2	D42-B32-1021	Arsenic	15.8	mg/kg(dry)	0.50	11/01/94
2	D42-B32-1021	Beryllium	BQL	mg/kg(dry)	0.53	10/30/94
2	D42-B32-1021	Cadmium	BQL	mg/kg(dry)	0.56	10/30/94
2	D42-B32-1021	Chromium	7.6	mg/kg(dry)	1.1	10/30/94
2	D42-B32-1021	Copper	10	mg/kg(dry)	2.8	10/30/94
2	D42-B32-1021	Lead	BQL	mg/kg(dry)	10	10/27/94
2	D42-B32-1021	Mercury	BQL	mg/kg(dry)	0.10	11/01/94
2	D42-B32-1021	Nickel	13	mg/kg(dry)	4.4	10/30/94
2	D42-B32-1021	Selenium	BQL	mg/kg(dry)	0.50	11/01/94
2	D42-B32-1021	Silver	BQL	mg/kg(dry)	1.1	10/30/94
2	D42-B32-1021	Thallium	BQL	mg/kg(dry)	0.50	11/01/94
2	D42-B32-1021	Zinc	30	mg/kg(dry)	2.2	10/30/94
3	D42-B33-1021	Total Organic Carbon	2990	mg/kg(dry)	100	11/02/94

IEA
An Aquarion Company

IEA LABORATORY RESULTS

Report Date: 11/07/94
Client: TRC Environmental
Project: 01981-0010

Received Date: 10/22/94
IEA Job Number: T118-003

IEA Sample #	Client ID	Parameter	Results	Units	PQL	Date Analyzed
		TOTAL METALS				
4	D42-B34-1021	Antimony	BQL	mg/kg(dry)	6.7	10/30/94
4	D42-B34-1021	Arsenic	19.8	mg/kg(dry)	0.50	11/01/94
4	D42-B34-1021	Beryllium	1.1	mg/kg(dry)	0.53	10/30/94
4	D42-B34-1021	Cadmium	BQL	mg/kg(dry)	0.56	10/30/94
4	D42-B34-1021	Chromium	22	mg/kg(dry)	1.1	10/30/94
4	D42-B34-1021	Copper	74	mg/kg(dry)	2.8	10/30/94
4	D42-B34-1021	Lead	67	mg/kg(dry)	10	10/27/94
4	D42-B34-1021	Mercury	BQL	mg/kg(dry)	0.10	11/01/94
4	D42-B34-1021	Nickel	33	mg/kg(dry)	4.4	10/30/94
4	D42-B34-1021	Selenium	BQL	mg/kg(dry)	0.50	11/01/94
4	D42-B34-1021	Silver	BQL	mg/kg(dry)	1.1	10/30/94
4	D42-B34-1021	Thallium	BQL	mg/kg(dry)	0.50	11/01/94
4	D42-B34-1021	Zinc	280	mg/kg(dry)	2.2	10/30/94

COMMENTS:
PQL = Practical Quantitation Limit
BQL = Below Quantitation Limit

Result3.wk1 Rev. 041393

IEA
An Aquarion Company

IEA LABORATORY RESULTS

Report Date: 11/07/94
Client: TRC Environmental
Project: 01981-0010

Received Date: 10/22/94
IEA Job Number: T118-003

IEA Sample #	Client ID	Parameter	Results	Units	PQL	Date Analyzed
1	D42-B31-1021	TPH-IR	590	mg/kg(dry)	32	10/28/94
2	D42-B32-1021	TPH-IR	1,100	mg/kg(dry)	170	10/28/94
3	D42-B33-1021	TPH-IR	450	mg/kg(dry)	33	10/28/94

COMMENTS:
PQL = Practical Quantitation Limit
BQL = Below Quantitation Limit

Result3.wk1 Rev. 041393

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-003-01
Project:	01981-0010	Sample:	D42-B31-1021
Report Date:	11/07/94	Type:	Soil
Collected:	10/21/94	Container:	Glass
Received:	10/22/94		
Analyzed:	11/01/94		
By:	GMT	Dilution Factor:	1.1

Priority Pollutant Compounds

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
1	Benzene	6	BQL
2	Bromodichloromethane	6	BQL
3	Bromoform	6	BQL
4	Bromomethane	11	BQL
5	Carbon tetrachloride	6	BQL
6	Chlorobenzene	6	BQL
7	Chloroethane	11	BQL
8	2-Chloroethylvinyl ether	6	BQL
9	Chloroform	6	BQL
10	Chloromethane	11	BQL
11	Dibromochloromethane	6	BQL
12	1,2-Dichlorobenzene	6	BQL
13	1,3-Dichlorobenzene	6	BQL
14	1,4-Dichlorobenzene	6	BQL
15	1,1-Dichloroethane	6	BQL
16	1,2-Dichloroethane	6	BQL
17	1,1-Dichloroethene	6	BQL
18	1,2-Dichloroethene (Total)	6	BQL
19	1,2-Dichloropropane	6	BQL
20	cis-1,3-Dichloropropene	6	BQL
21	trans-1,3-Dichloropropene	6	BQL
22	Ethylbenzene	6	BQL
23	Methylene chloride	6	9B
24	1,1,2,2-Tetrachloroethane	6	BQL
25	Tetrachloroethene	6	BQL
26	Toluene	6	BQL
27	1,1,1-Trichloroethane	6	BQL
28	1,1,2-Trichloroethane	6	BQL
29	Trichloroethene	6	BQL
30	Trichlorofluoromethane	6	BQL
31	Vinyl chloride	11	BQL

Doc# MSF10900.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 2 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-003-01
Project:	01981-0010	Sample:	D42-B31-1021

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
Other TCL Compounds:			
32	Acetone	110	BQL
33	2-Butanone	110	BQL
34	Carbon disulfide	6	BQL
35	1,2-Dibromoethane	6	BQL
36	2-Hexanone	55	BQL
37	Methyl-t-butylether	6	BQL
38	4-Methyl-2-pentanone	55	BQL
39	Styrene	6	BQL
40	Vinyl Acetate	55	BQL
41	Xylenes (Total)	6	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	99 %
Toluene-d8	92 %
Bromofluorobenzene	82 %

Comments:

BQL = Below Quantitation Limit.
PQL = Practical Quantitation Limit.
Dilution factor adjusted for % moisture.
B = Compound in blank

Doc# MSF10900.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-003-02
Project:	01981-0010	Sample:	D42-B32-1021
Report Date:	11/07/94	Type:	Soil
Collected:	10/21/94	Container:	Glass
Received:	10/22/94		
Analyzed:	11/01/94		
By:	GMT	Dilution Factor:	1

Priority Pollutant Compounds

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	BQL
13	1,3-Dichlorobenzene	5	BQL
14	1,4-Dichlorobenzene	5	BQL
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	1,2-Dichloroethene (Total)	5	BQL
19	1,2-Dichloropropane	5	BQL
20	cis-1,3-Dichloropropene	5	BQL
21	trans-1,3-Dichloropropene	5	BQL
22	Ethylbenzene	5	BQL
23	Methylene chloride	5	8B
24	1,1,2,2-Tetrachloroethane	5	BQL
25	Tetrachloroethene	5	BQL
26	Toluene	5	BQL
27	1,1,1-Trichloroethane	5	BQL
28	1,1,2-Trichloroethane	5	BQL
29	Trichloroethene	5	BQL
30	Trichlorofluoromethane	5	BQL
31	Vinyl chloride	10	BQL

Doc# MSF10900.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010

IEA ID: T118-003-02
Sample: D42-B32-1021

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
Other TCL Compounds:			
32	Acetone	100	BQL
33	2-Butanone	100	BQL
34	Carbon disulfide	5	BQL
35	1,2-Dibromoethane	5	BQL
36	2-Hexanone	50	BQL
37	Methyl-t-butylether	5	BQL
38	4-Methyl-2-pentanone	50	BQL
39	Styrene	5	BQL
40	Vinyl Acetate	50	BQL
41	Xylenes (Total)	5	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	99 %
Toluene-d8	95 %
Bromofluorobenzene	84 %

Comments:

BQL = Below Quantitation Limit.
PQL = Practical Quantitation Limit.
Dilution factor adjusted for % moisture.
B = Compound in blank

Doc# MSF10900.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-003-04
Project:	01981-0010	Sample:	D42-B34-1021
Report Date:	11/07/94	Type:	Soil
Collected:	10/21/94	Container:	Glass
Received:	10/22/94		
Analyzed:	11/01/94		
By:	GMT	Dilution Factor:	1

Priority Pollutant Compounds

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	BQL
13	1,3-Dichlorobenzene	5	BQL
14	1,4-Dichlorobenzene	5	BQL
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	1,2-Dichloroethene (Total)	5	BQL
19	1,2-Dichloropropane	5	BQL
20	cis-1,3-Dichloropropene	5	BQL
21	trans-1,3-Dichloropropene	5	BQL
22	Ethylbenzene	5	BQL
23	Methylene chloride	5	6B
24	1,1,2,2-Tetrachloroethane	5	BQL
25	Tetrachloroethene	5	BQL
26	Toluene	5	BQL
27	1,1,1-Trichloroethane	5	BQL
28	1,1,2-Trichloroethane	5	BQL
29	Trichloroethene	5	BQL
30	Trichlorofluoromethane	5	BQL
31	Vinyl chloride	10	BQL

Doc# MSF10900.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 2 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-003-04
Project:	01981-0010	Sample:	D42-B34-1021

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
Other TCL Compounds:			
32	Acetone	100	BQL
33	2-Butanone	100	BQL
34	Carbon disulfide	5	BQL
35	1,2-Dibromoethane	5	BQL
36	2-Hexanone	50	BQL
37	Methyl-t-butylether	5	BQL
38	4-Methyl-2-pentanone	50	BQL
39	Styrene	5	BQL
40	Vinyl Acetate	50	BQL
41	Xylenes (Total)	5	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	101 %
Toluene-d8	98 %
Bromofluorobenzene	84 %

Comments:

BQL = Below Quantitation Limit.
PQL = Practical Quantitation Limit.
Dilution factor adjusted for % moisture.
B = Compound in blank

Doc# MSF10900.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 1 OF 2 PAGES)

Client:		IEA ID:	Method Blank (11/01)
Project:		Sample:	
Report Date:	11/07/94	Type:	Soil
Collected:		Container:	
Received:			
Analyzed:	11/01/94		
By:	GMT	Dilution Factor:	1

Priority Pollutant Compounds

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	BQL
13	1,3-Dichlorobenzene	5	BQL
14	1,4-Dichlorobenzene	5	BQL
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	1,2-Dichloroethene (Total)	5	BQL
19	1,2-Dichloropropane	5	BQL
20	cis-1,3-Dichloropropene	5	BQL
21	trans-1,3-Dichloropropene	5	BQL
22	Ethylbenzene	5	BQL
23	Methylene chloride	5	3J
24	1,1,2,2-Tetrachloroethane	5	BQL
25	Tetrachloroethene	5	BQL
26	Toluene	5	BQL
27	1,1,1-Trichloroethane	5	BQL
28	1,1,2-Trichloroethane	5	BQL
29	Trichloroethene	5	BQL
30	Trichlorofluoromethane	5	BQL
31	Vinyl chloride	10	BQL

Doc# MSF10900.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 2 OF 2 PAGES)

Client:
Project:

IEA ID: Method Blank (11/01)
Sample:

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
Other TCL Compounds:			
32	Acetone	100	BQL
33	2-Butanone	100	BQL
34	Carbon disulfide	5	BQL
35	1,2-Dibromoethane	5	BQL
36	2-Hexanone	50	BQL
37	Methyl-t-butylether	5	BQL
38	4-Methyl-2-pentanone	50	BQL
39	Styrene	5	BQL
40	Vinyl Acetate	50	BQL
41	Xylenes (Total)	5	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	101 %
Toluene-d8	102 %
Bromofluorobenzene	94 %

Comments:

BQL = Below Quantitation Limit.
PQL = Practical Quantitation Limit.
Dilution factor adjusted for % moisture.
Corresponding Samples: T118-003-01, T110-003-02, T110-003-04
J = Approximate result. Quantitation below calibration.

Doc# MSF10900.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-003-01
Project:	01981-0010	Sample:	D42-B31-1021
Report Date:	11/07/94	Type:	Soil
Collected:	10/21/94	Container:	Glass
Received:	10/22/94		
Extracted:	10/25/94		
Analyzed:	10/26/94		
By:	LJT	Dilution Factor:	1.1

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
1	Acenaphthene	363	BQL
2	Acenaphthylene	363	BQL
3	Aniline	1815	BQL
4	Anthracene	363	BQL
5	Benzoic acid	1815	BQL
6	Benzo(a)anthracene	363	BQL
7	Benzo(b)fluoranthene	363	BQL
8	Benzo(k)fluoranthene	363	BQL
9	Benzo(g,h,i)perylene	363	BQL
10	Benzo(a)pyrene	363	BQL
11	Benzyl alcohol	726	BQL
12	bis(2-Chloroethoxy)methane	363	BQL
13	bis(2-Chloroethyl)ether	363	BQL
14	bis(2-Chloroisopropyl)ether	363	BQL
15	bis(2-Ethylhexyl)phthalate	363	BQL
16	4-Bromophenyl phenyl ether	363	BQL
17	Benzyl butyl phthalate	363	BQL
18	4-Chloroaniline	726	BQL
19	2-Chloronaphthalene	363	BQL
20	4-Chloro-3-methylphenol	726	BQL
21	2-Chlorophenol	363	BQL
22	4-Chlorophenyl phenyl ether	363	BQL
23	Chrysene	363	BQL
24	Dibenzo(a,h)anthracene	363	BQL
25	Dibenzofuran	363	BQL
26	Di-n-butyl phthalate	363	BQL
27	1,3-Dichlorobenzene	363	BQL
28	1,4-Dichlorobenzene	363	BQL
29	1,2-Dichlorobenzene	363	BQL
30	1,2-Diphenylhydrazine	363	BQL
31	3,3'-Dichlorobenzidine	726	BQL
32	2,4-Dichlorophenol	363	BQL
33	Diethyl phthalate	363	BQL
34	2,4-Dimethylphenol	363	BQL
35	Dimethyl phthalate	363	BQL
36	2-Methyl-4,6-dinitrophenol	1815	BQL
37	2,4-Dinitrophenol	1815	BQL
38	2,4-Dinitrotoluene	363	BQL

Doc# MSF00200.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010

IEA ID: T118-003-01
Sample: D42-B31-1021

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
39	2,6-Dinitrotoluene	363	BQL
40	Di-n-octylphthalate	363	BQL
41	Fluoranthene	363	460
42	Fluorene	363	BQL
43	Hexachlorobenzene	363	BQL
44	Hexachlorobutadiene	363	BQL
45	Hexachlorocyclopentadiene	363	BQL
46	Hexachloroethane	363	BQL
47	Indeno(1,2,3-cd)pyrene	363	BQL
48	Isophorone	363	BQL
49	2-Methylnaphthalene	363	BQL
50	2-Methylphenol (o-cresol)	363	BQL
51	4-Methylphenol (p-cresol)	363	BQL
52	Naphthalene	363	BQL
53	2-Nitroaniline	1815	BQL
54	3-Nitroaniline	1815	BQL
55	4-Nitroaniline	1815	BQL
56	Nitrobenzene	363	BQL
57	2-Nitrophenol	363	BQL
58	4-Nitrophenol	1815	BQL
59	N-Nitroso-di-n-propylamine	363	BQL
60	N-Nitrosodiphenylamine	363	BQL
61	Pentachlorophenol	1815	BQL
62	Phenanthrene	363	BQL
63	Phenol	363	BQL
64	Pyrene	363	900
65	1,2,4-Trichlorobenzene	363	BQL
66	2,4,5-Trichlorophenol	363	BQL
67	2,4,6-Trichlorophenol	363	BQL

Surrogate Standard Recovery:

2-Fluorophenol	78 %
Phenol-d6	60 %
Nitrobenzene-d5	49 %
2-Fluorobiphenyl	86 %
2,4,6-Tribromophenol	108 %
Terphenyl-d14	119 %

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.

Doc# MSF00200.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-003-02
Project:	01981-0010	Sample:	D42-B32-1021
Report Date:	11/07/94	Type:	Soil
Collected:	10/21/94	Container:	Glass
Received:	10/22/94		
Extracted:	10/25/94		
Analyzed:	10/26/94		
By:	LJT	Dilution Factor:	1.1

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
1	Acenaphthene	363	BQL
2	Acenaphthylene	363	BQL
3	Aniline	1815	BQL
4	Anthracene	363	BQL
5	Benzoic acid	1815	BQL
6	Benzo(a)anthracene	363	BQL
7	Benzo(b)fluoranthene	363	BQL
8	Benzo(k)fluoranthene	363	BQL
9	Benzo(g,h,i)perylene	363	BQL
10	Benzo(a)pyrene	363	BQL
11	Benzyl alcohol	726	BQL
12	bis(2-Chloroethoxy)methane	363	BQL
13	bis(2-Chloroethyl)ether	363	BQL
14	bis(2-Chloroisopropyl)ether	363	BQL
15	bis(2-Ethylhexyl)phthalate	363	BQL
16	4-Bromophenyl phenyl ether	363	BQL
17	Benzyl butyl phthalate	363	BQL
18	4-Chloroaniline	726	BQL
19	2-Chloronaphthalene	363	BQL
20	4-Chloro-3-methylphenol	726	BQL
21	2-Chlorophenol	363	BQL
22	4-Chlorophenyl phenyl ether	363	BQL
23	Chrysene	363	BQL
24	Dibenzo(a,h)anthracene	363	BQL
25	Dibenzofuran	363	BQL
26	Di-n-butyl phthalate	363	BQL
27	1,3-Dichlorobenzene	363	BQL
28	1,4-Dichlorobenzene	363	BQL
29	1,2-Dichlorobenzene	363	BQL
30	1,2-Diphenylhydrazine	363	BQL
31	3,3'-Dichlorobenzidine	726	BQL
32	2,4-Dichlorophenol	363	BQL
33	Diethyl phthalate	363	BQL
34	2,4-Dimethylphenol	363	BQL
35	Dimethyl phthalate	363	BQL
36	2-Methyl-4,6-dinitrophenol	1815	BQL
37	2,4-Dinitrophenol	1815	BQL
38	2,4-Dinitrotoluene	363	BQL

Doc# MSF00200.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010

IEA ID: T118-003-02
Sample: D42-B32-1021

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
39	2,6-Dinitrotoluene	363	BQL
40	Di-n-octylphthalate	363	BQL
41	Fluoranthene	363	BQL
42	Fluorene	363	BQL
43	Hexachlorobenzene	363	BQL
44	Hexachlorobutadiene	363	BQL
45	Hexachlorocyclopentadiene	363	BQL
46	Hexachloroethane	363	BQL
47	Indeno(1,2,3-cd)pyrene	363	BQL
48	Isophorone	363	BQL
49	2-Methylnaphthalene	363	BQL
50	2-Methylphenol (o-cresol)	363	BQL
51	4-Methylphenol (p-cresol)	363	BQL
52	Naphthalene	363	BQL
53	2-Nitroaniline	1815	BQL
54	3-Nitroaniline	1815	BQL
55	4-Nitroaniline	1815	BQL
56	Nitrobenzene	363	BQL
57	2-Nitrophenol	363	BQL
58	4-Nitrophenol	1815	BQL
59	N-Nitroso-di-n-propylamine	363	BQL
60	N-Nitrosodiphenylamine	363	BQL
61	Pentachlorophenol	1815	BQL
62	Phenanthrene	363	BQL
63	Phenol	363	BQL
64	Pyrene	363	420
65	1,2,4-Trichlorobenzene	363	BQL
66	2,4,5-Trichlorophenol	363	BQL
67	2,4,6-Trichlorophenol	363	BQL

Surrogate Standard Recovery:

2-Fluorophenol	84 %
Phenol-d6	65 %
Nitrobenzene-d5	46 %
2-Fluorobiphenyl	75 %
2,4,6-Tribromophenol	114 %
Terphenyl-d14	132 %

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.

Doc# MSF00200.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-003-04
Project:	01981-0010	Sample:	D42-B34-1021
Report Date:	11/07/94	Type:	Soil
Collected:	10/21/94	Container:	Glass
Received:	10/22/94		
Extracted:	10/25/94		
Analyzed:	10/26/94		
By:	LJT	Dilution Factor:	1.1

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
1	Acenaphthene	363	BQL
2	Acenaphthylene	363	BQL
3	Aniline	1815	BQL
4	Anthracene	363	BQL
5	Benzoic acid	1815	BQL
6	Benzo(a)anthracene	363	BQL
7	Benzo(b)fluoranthene	363	BQL
8	Benzo(k)fluoranthene	363	BQL
9	Benzo(g,h,i)perylene	363	BQL
10	Benzo(a)pyrene	363	BQL
11	Benzyl alcohol	726	BQL
12	bis(2-Chloroethoxy)methane	363	BQL
13	bis(2-Chloroethyl)ether	363	BQL
14	bis(2-Chloroisopropyl)ether	363	BQL
15	bis(2-Ethylhexyl)phthalate	363	BQL
16	4-Bromophenyl phenyl ether	363	BQL
17	Benzyl butyl phthalate	363	BQL
18	4-Chloroaniline	726	BQL
19	2-Chloronaphthalene	363	BQL
20	4-Chloro-3-methylphenol	726	BQL
21	2-Chlorophenol	363	BQL
22	4-Chlorophenyl phenyl ether	363	BQL
23	Chrysene	363	BQL
24	Dibenzo(a,h)anthracene	363	BQL
25	Dibenzofuran	363	BQL
26	Di-n-butyl phthalate	363	BQL
27	1,3-Dichlorobenzene	363	BQL
28	1,4-Dichlorobenzene	363	BQL
29	1,2-Dichlorobenzene	363	BQL
30	1,2-Diphenylhydrazine	363	BQL
31	3,3'-Dichlorobenzidine	726	BQL
32	2,4-Dichlorophenol	363	BQL
33	Diethyl phthalate	363	BQL
34	2,4-Dimethylphenol	363	BQL
35	Dimethyl phthalate	363	BQL
36	2-Methyl-4,6-dinitrophenol	1815	BQL
37	2,4-Dinitrophenol	1815	BQL
38	2,4-Dinitrotoluene	363	BQL

Doc# MSF00200.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010

IEA ID: T118-003-04
Sample: D42-B34-1021

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
39	2,6-Dinitrotoluene	363	BQL
40	Di-n-octylphthalate	363	BQL
41	Fluoranthene	363	BQL
42	Fluorene	363	BQL
43	Hexachlorobenzene	363	BQL
44	Hexachlorobutadiene	363	BQL
45	Hexachlorocyclopentadiene	363	BQL
46	Hexachloroethane	363	BQL
47	Indeno(1,2,3-cd)pyrene	363	BQL
48	Isophorcne	363	BQL
49	2-Methylnaphthalene	363	BQL
50	2-Methylphenol (o-cresol)	363	BQL
51	4-Methylphenol (p-cresol)	363	BQL
52	Naphthalene	363	BQL
53	2-Nitroaniline	1815	BQL
54	3-Nitroaniline	1815	BQL
55	4-Nitroaniline	1815	BQL
56	Nitrobenzene	363	BQL
57	2-Nitrophenol	363	BQL
58	4-Nitrophenol	1815	BQL
59	N-Nitroso-di-n-propylamine	363	BQL
60	N-Nitrosodiphenylamine	363	BQL
61	Pentachlorophenol	1815	BQL
62	Phenanthrene	363	490
63	Phenol	363	BQL
64	Pyrene	363	1,000
65	1,2,4-Trichlorobenzene	363	BQL
66	2,4,5-Trichlorophenol	363	BQL
67	2,4,6-Trichlorophenol	363	BQL

Surrogate Standard Recovery:

2-Fluorophenol	83 %
Phenol-d6	60 %
Nitrobenzene-d5	45 %
2-Fluorobiphenyl	57 %
2,4,6-Tribromophenol	95 %
Terphenyl-d14	132 %

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.

Doc# MSF00200.MA

IEA
An Aquarion Company

149 Rangeway Road
North Billerica, MA 01862

Phone 617·272·5212
Fax 508·667·7871

Mr. James Peronto
TRC Environmental
5 Waterside Crossing
Windsor, CT 06095

December 6, 1994

Dear Mr. Peronto:

Please find enclosed the analytical results of the sample(s) received at our laboratory on November 14, 1994. This report contains sections addressing the following information at a minimum:

- sample ID correspondence table
- analytical methodology
- analytical results
- chain-of-custody (if applicable)
- definitions of data qualifiers and terminology
- state certifications

Client Project #	01981-0010	**Client Project Name**	N/A
IEA Report #	T118-004	**Purchase Order #**	N/A

Copies of this analytical report and supporting data are maintained in our files for a minimum of 3 years unless special arrangements are made. Unless specifically indicated, all analytical testing was performed at the IEA-Massachusetts laboratory.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact your customer service representative at (617) 272-5212 for any additional information. Thank you for utilizing our services and we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.

Sincerely,

Michael F. Wheeler, Ph.D.
Laboratory Director
IEA-Massachusetts

MW/slh

Doc# RPF00100.MA

IEA
An Aquarion Company

QA/QC NOTICE

Report Date:	12/06/94	Received Date:	11/14/94
Client:	TRC Environmental	IEA Job Number:	T118-004
Project:	01981-0010		

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All EPA Region I holding times were satisfied in this project.

Doc# QAF00100.MA

IEA
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Sample ID Correspondence Table

Client Sample ID	IEA Sample ID
D42-MW2-1110	T118-004-01
D42-MW3-1110	T118-004-02
D42-MW6-1110	T118-004-03
D42-MW4-1111	T118-004-04
01981-FBW-1111	T118-004-05
D42-TB-1111	T118-004-06
D42-MW1-1111	T118-004-07
D42-MW5-1111	T118-004-08

IEA
An Aquarion Company

Analytical Methodology

IEA utilizes approved environmental methodologies whenever possible and appropriate. Due to the varying nature of sample matrices submitted to our laboratories we utilize a wide variety of analytical methodologies and quality assurance protocols. Analytical results and Quality Assurance protocols employed by our network laboratories are based on guidelines specified in the following documents:

- "Methods of Organic Chemical Analysis of Municipal and Industrial Wastewater", Federal Register Vol. 49, No. 209, October 26, 1984;
- "Test Methods for Evaluating Solid Waste", SW-846 Third Edition, September 1986, USEPA;
- "Standard Methods for the Examination of Water and Wastewater" 1985, 14th, 15th and 16th Edition;
- "Methods for Chemical Analysis of Water and Wastes" March 1983, EMSL, EPA;
- "Manual of Analytical Methods for the Analysis of Pesticides in Humans and Environmental Samples", EPA 600/8-80-038, June 1980;
- Organic Analysis: Multi-media, Multi-Concentration-IFB-CLP, January 1991, Document Number OLM01.2 (plus revisions);
- Inorganic Analysis: Multi-media, Multi-Concentration-IFB-CLP, Document Number ILM01.0;
- "Handbook for Analytical Quality Control in Water and Wastewater Laboratories", EPA-600/4-79-019, March 1979;
- National Enforcement Investigation Center Policies and Procedures Manual, EPA-330/9/78/001-R, Revised May 1986
- "Manual for the Certification of Laboratories Analyzing Drinking Water", April 1990, EPA/570/9-90/008.
- "NIOSH Manual of Analytical Methods", February 1984, 3rd Edition.

IEA
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State Certifications

In some instances it may be necessary for environmental data to be reported to a regulatory authority with reference to a certified laboratory. For your convenience, the laboratory identification numbers for the IEA-Massachusetts laboratory are provided in the following table. Many states certify laboratories for specific parameters or tests within a category (e.g. EPA method 624 for wastewater). The information in the following table indicates the lab is certified in a general category of testing such as drinking water or wastewater analysis. The laboratory should be contacted directly if parameter specific certification information is required.

IEA-Massachusetts
Certification Summary, as of November 1993

State	Responsible Agency	Area of Certification	Lab Number
Connecticut	Department of Health Services	General Environmental	0646
Maine	Department of Human Services	Drinking Water	Provisional
Massachusetts	Department of Environmental Protection	Drinking Water Wastewater	MA038
New Hampshire	Department of Environmental Services	Drinking Water Wastewater	C300
New York	Department of Public Health	Wastewater	10838
North Carolina	Department of Natural Resources	Wastewater	333
Rhode Island	Department of Health	Chemistry	A58
Virginia	Department of General Services	Drinking Water	00157

IEA
An Aquarion Company

Definitions of Data Qualifiers and Terminology

A number of data qualifiers are widely used within the environmental testing industry and may be utilized in our data reports. The following definitions of these qualifiers are included as a service to our clientele. The majority of the qualifiers have evolved from the EPA contract laboratory program (CLP).

B - This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to use caution when applying the results of this analyte.

BQL - Below Quantitation Limit indicates the compound was not detected in the sample above the practical quantitation limit.

D - Indicates the compound was diluted below the calibration range.

E - Indicates that the concentration of the specific compound exceeded the calibration range of the instrument for that particular analysis.

J - Indicates an estimated value. The compound is determined to be present in the sample based on GC/MS criteria, but the amount is less than the sample quantitation limit. IEA - MA GC/MS reports do not typically report J - marked results. If requested, J - marked results are provided and the report flagged to verify that the data was appropriately reviewed.

MDL - The method detection limit is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero.

NA - Not applicable or not available.

ND - Indicates the compound or analyte was not detected in the sample above the method detection limit or the practical quantitation limit for the particular analysis.

PQL - The practical quantitation limit is the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine operating conditions.

IEA
An Aquarion Company

IEA LABORATORY RESULTS

Report Date: 11/30/94
Client: TRC Environmental
Project: 01981-0010

Received Date: 11/14/94
IEA Job Number: T118-004

IEA Sample #	Client ID	Parameter	Results	Units	PQL	Date Analyzed
		TOTAL METALS				
1	D42-MW2-1110	Antimony	BQL	mg/L	0.20	11/29/94
1	D42-MW2-1110	Arsenic	0.0860	mg/L	0.0050	11/25/94
1	D42-MW2-1110	Beryllium	BQL	mg/L	0.010	11/28/94
1	D42-MW2-1110	Cadmium	BQL	mg/L	0.010	11/28/94
1	D42-MW2-1110	Chromium	0.202	mg/L	0.030	11/28/94
1	D42-MW2-1110	Copper	0.611	mg/L	0.020	11/28/94
1	D42-MW2-1110	Lead	0.455	mg/L	0.025	11/28/94
1	D42-MW2-1110	Mercury	BQL	mg/L	0.00050	11/21/94
1	D42-MW2-1110	Nickel	0.400	mg/L	0.030	11/28/94
1	D42-MW2-1110	Selenium	BQL	mg/L	0.013	11/25/94
1	D42-MW2-1110	Silver	BQL	mg/L	0.020	11/28/94
1	D42-MW2-1110	Thallium	BQL	mg/L	0.0050	11/28/94
1	D42-MW2-1110	Zinc	0.804	mg/L	0.020	11/28/94
1	D42-MW2-1110	Chloride	372	mg/L	1.0	11/18/94
1	D42-MW2-1110	Total Dissolved Solids	631	mg/L	50	11/18/94
		TOTAL METALS				
2	D42-MW3-1110	Antimony	BQL	mg/L	0.20	11/29/94
2	D42-MW3-1110	Arsenic	0.238	mg/L	0.025	11/25/94
2	D42-MW3-1110	Beryllium	BQL	mg/L	0.010	11/28/94
2	D42-MW3-1110	Cadmium	BQL	mg/L	0.010	11/28/94
2	D42-MW3-1110	Chromium	0.433	mg/L	0.030	11/28/94
2	D42-MW3-1110	Copper	0.442	mg/L	0.020	11/28/94
2	D42-MW3-1110	Lead	0.318	mg/L	0.025	11/28/94
2	D42-MW3-1110	Mercury	BQL	mg/L	0.00050	11/21/94
2	D42-MW3-1110	Nickel	0.540	mg/L	0.030	11/28/94
2	D42-MW3-1110	Selenium	BQL	mg/L	0.013	11/25/94
2	D42-MW3-1110	Silver	BQL	mg/L	0.020	11/28/94
2	D42-MW3-1110	Thallium	BQL	mg/L	0.0050	11/28/94
2	D42-MW3-1110	Zinc	1.19	mg/L	0.020	11/28/94
2	D42-MW3-1110	Chloride	324	mg/L	1.0	11/18/94
2	D42-MW3-1110	Total Dissolved Solids	752	mg/L	50	11/18/94

IEA
An Aquarion Company

IEA LABORATORY RESULTS

Report Date: 11/30/94
Client: TRC Environmental
Project: 01981-0010

Received Date: 11/14/94
IEA Job Number: T118-004

IEA Sample #	Client ID	Parameter	Results	Units	PQL	Date Analyzed
		TOTAL METALS				
3	D42-MW6-1110	Antimony	BQL	mg/L	0.20	11/29/94
3	D42-MW6-1110	Arsenic	0.0181	mg/L	0.0050	11/25/94
3	D42-MW6-1110	Beryllium	BQL	mg/L	0.010	11/28/94
3	D42-MW6-1110	Cadmium	BQL	mg/L	0.010	11/28/94
3	D42-MW6-1110	Chromium	BQL	mg/L	0.030	11/28/94
3	D42-MW6-1110	Copper	BQL	mg/L	0.020	11/28/94
3	D42-MW6-1110	Lead	BQL	mg/L	0.0050	11/28/94
3	D42-MW6-1110	Mercury	BQL	mg/L	0.00050	11/21/94
3	D42-MW6-1110	Nickel	BQL	mg/L	0.030	11/28/94
3	D42-MW6-1110	Selenium	BQL	mg/L	0.0050	11/25/94
3	D42-MW6-1110	Silver	BQL	mg/L	0.020	11/28/94
3	D42-MW6-1110	Thallium	BQL	mg/L	0.0050	11/28/94
3	D42-MW6-1110	Zinc	0.034	mg/L	0.020	11/28/94
		TOTAL METALS				
5	01981-FBW-1111	Antimony	BQL	mg/L	0.20	11/29/94
5	01981-FBW-1111	Arsenic	BQL	mg/L	0.0050	11/25/94
5	01981-FBW-1111	Beryllium	BQL	mg/L	0.010	11/28/94
5	01981-FBW-1111	Cadmium	BQL	mg/L	0.010	11/28/94
5	01981-FBW-1111	Chromium	BQL	mg/L	0.030	11/28/94
5	01981-FBW-1111	Copper	BQL	mg/L	0.020	11/28/94
5	01981-FBW-1111	Lead	BQL	mg/L	0.0050	11/28/94
5	01981-FBW-1111	Mercury	BQL	mg/L	0.00050	11/21/94
5	01981-FBW-1111	Nickel	BQL	mg/L	0.030	11/28/94
5	01981-FBW-1111	Selenium	BQL	mg/L	0.0050	11/25/94
5	01981-FBW-1111	Silver	BQL	mg/L	0.020	11/28/94
5	01981-FBW-1111	Thallium	BQL	mg/L	0.0050	11/28/94
5	01981-FBW-1111	Zinc	BQL	mg/L	0.020	11/28/94
5	01981-FBW-1111	Chloride	1.0	mg/L	1.0	11/18/94
5	01981-FBW-1111	Total Dissolved Solids	BQL	mg/L	50	11/18/94

IEA
An Aquarion Company

IEA LABORATORY RESULTS

Report Date: 11/30/94
Client: TRC Environmental
Project: 01981-0010

Received Date: 11/14/94
IEA Job Number: T118-004

IEA Sample #	Client ID	Parameter	Results	Units	PQL	Date Analyzed
		TOTAL METALS				
7	D42-MW1-1111	Antimony	BQL	mg/L	0.20	11/29/94
7	D42-MW1-1111	Arsenic	BQL	mg/L	0.0050	11/25/94
7	D42-MW1-1111	Beryllium	BQL	mg/L	0.010	11/28/94
7	D42-MW1-1111	Cadmium	BQL	mg/L	0.010	11/28/94
7	D42-MW1-1111	Chromium	BQL	mg/L	0.030	11/28/94
7	D42-MW1-1111	Copper	0.021	mg/L	0.020	11/28/94
7	D42-MW1-1111	Lead	0.0058	mg/L	0.0050	11/28/94
7	D42-MW1-1111	Mercury	BQL	mg/L	0.00050	11/21/94
7	D42-MW1-1111	Nickel	BQL	mg/L	0.030	11/28/94
7	D42-MW1-1111	Selenium	BQL	mg/L	0.0050	11/25/94
7	D42-MW1-1111	Silver	BQL	mg/L	0.020	11/28/94
7	D42-MW1-1111	Thallium	BQL	mg/L	0.0050	11/28/94
7	D42-MW1-1111	Zinc	0.030	mg/L	0.020	11/28/94
7	D42-MW1-1111	Chloride	24.9	mg/L	1.0	11/18/94
7	D42-MW1-1111	Total Dissolved Solids	101	mg/L	50	11/18/94
		TOTAL METALS				
8	D42-MW5-1111	Antimony	BQL	mg/L	0.20	11/29/94
8	D42-MW5-1111	Arsenic	0.0184	mg/L	0.0050	11/25/94
8	D42-MW5-1111	Beryllium	BQL	mg/L	0.010	11/28/94
8	D42-MW5-1111	Cadmium	BQL	mg/L	0.010	11/28/94
8	D42-MW5-1111	Chromium	BQL	mg/L	0.030	11/28/94
8	D42-MW5-1111	Copper	0.020	mg/L	0.020	11/28/94
8	D42-MW5-1111	Lead	BQL	mg/L	0.0050	11/28/94
8	D42-MW5-1111	Mercury	BQL	mg/L	0.00050	11/21/94
8	D42-MW5-1111	Nickel	BQL	mg/L	0.030	11/28/94
8	D42-MW5-1111	Selenium	BQL	mg/L	0.0050	11/25/94
8	D42-MW5-1111	Silver	BQL	mg/L	0.020	11/28/94
8	D42-MW5-1111	Thallium	BQL	mg/L	0.0050	11/28/94
8	D42-MW5-1111	Zinc	0.040	mg/L	0.020	11/28/94
8	D42-MW5-1111	Chloride	23.8	mg/L	1.0	11/18/94
8	D42-MW5-1111	Total Dissolved Solids	86	mg/L	50	11/18/94

COMMENTS:

PQL = Practical Quantitation Limit
BQL = Below Quantitation Limit

Results3.wk1

IEA
An Aquarion Company

IEA LABORATORY RESULTS

Report Date: 11/23/94
Client: TRC Environmental Corporation
Project: 01981-0010

Received Date: 11/14/94
IEA Job Number: T118-004

IEA Sample #	Client ID	Parameter	Results	Units	PQL	Date Analyzed
1	D42-MW2-1110	TPH-IR	BQL	mg/L	0.30	11/16/94
2	D42-MW3-1110	TPH-IR	BQL	mg/L	0.30	11/16/94
3	D42-MW6-1110	TPH-IR	BQL	mg/L	0.30	11/16/94
4	D42-MW4-1111	TPH-IR	BQL	mg/L	0.30	11/16/94
5	01981-FBW-1111	TPH-IR	BQL	mg/L	0.30	11/16/94
6	D42-TB-1111	TPH-IR	BQL	mg/L	0.30	11/16/94
7	D42-MW1-1111	TPH-IR	BQL	mg/L	0.30	11/16/94
8	D42-MW5-1111	TPH-IR	BQL	mg/L	0.30	11/16/94

COMMENTS:
PQL = Practical Quantitation Limit
BQL = Below Quantitation Limit

Result3.wk1 Rev. 041393

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-004-01
Project:	01981-0010	Sample:	D42-MW2-1110
Report Date:	11/29/94	Type:	Water
Collected:	11/10/94	Container:	VOA
Received:	11/14/94		
Analyzed:	11/22/94		
By:	GMT	Dilution Factor:	1

Priority Pollutant Compounds

Number	Compound	PQL (ug/L)	Result (ug/L)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	BQL
13	1,3-Dichlorobenzene	5	BQL
14	1,4-Dichlorobenzene	5	BQL
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	1,2-Dichloroethene (Total)	5	BQL
19	1,2-Dichloropropane	5	BQL
20	cis-1,3-Dichloropropene	5	BQL
21	trans-1,3-Dichloropropene	5	BQL
22	Ethylbenzene	5	BQL
23	Methylene chloride	5	BQL
24	1,1,2,2-Tetrachloroethane	5	BQL
25	Tetrachloroethene	5	BQL
26	Toluene	5	BQL
27	1,1,1-Trichloroethane	5	BQL
28	1,1,2-Trichloroethane	5	BQL
29	Trichloroethene	5	BQL
30	Trichlorofluoromethane	5	BQL
31	Vinyl chloride	10	BQL

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010

IEA ID: T118-004-01
Sample: D42-MW2-1110

Number	Compound	PQL (ug/L)	Result (ug/L)
Other TCL Compounds:			
32	Acetone	100	BQL
33	2-Butanone	100	BQL
34	Carbon disulfide	5	BQL
35	1,2-Dibromoethane	5	BQL
36	2-Hexanone	50	BQL
37	Methyl-t-butylether	5	BQL
38	4-Methyl-2-pentanone	50	BQL
39	Styrene	5	BQL
40	Vinyl Acetate	50	BQL
41	Xylenes (Total)	5	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	96 %
Toluene-d8	108 %
Bromofluorobenzene	86 %

Comments:

BQL = Below Quantitation Limit.
PQL = Practical Quantitation Limit.

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IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-004-02
Project:	01981-0010	Sample:	D42-MW3-1110
Report Date:	11/29/94	Type:	Water
Collected:	11/10/94	Container:	VOA
Received:	11/14/94		
Analyzed:	11/22/94		
By:	GMT	Dilution Factor:	1

Priority Pollutant Compounds

Number	Compound	PQL (ug/L)	Result (ug/L)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	BQL
13	1,3-Dichlorobenzene	5	BQL
14	1,4-Dichlorobenzene	5	BQL
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	1,2-Dichloroethene (Total)	5	BQL
19	1,2-Dichloropropane	5	BQL
20	cis-1,3-Dichloropropene	5	BQL
21	trans-1,3-Dichloropropene	5	BQL
22	Ethylbenzene	5	BQL
23	Methylene chloride	5	BQL
24	1,1,2,2-Tetrachloroethane	5	BQL
25	Tetrachloroethene	5	BQL
26	Toluene	5	BQL
27	1,1,1-Trichloroethane	5	BQL
28	1,1,2-Trichloroethane	5	BQL
29	Trichloroethene	5	BQL
30	Trichlorofluoromethane	5	BQL
31	Vinyl chloride	10	BQL

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010
IEA ID: T118-004-02
Sample: D42-MW3-1110

Number	Compound	PQL (ug/L)	Result (ug/L)
Other TCL Compounds:			
32	Acetone	100	BQL
33	2-Butanone	100	BQL
34	Carbon disulfide	5	BQL
35	1,2-Dibromoethane	5	BQL
36	2-Hexanone	50	BQL
37	Methyl-t-butylether	5	BQL
38	4-Methyl-2-pentanone	50	BQL
39	Styrene	5	BQL
40	Vinyl Acetate	50	BQL
41	Xylenes (Total)	5	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	102 %
Toluene-d8	100 %
Bromofluorobenzene	86 %

Comments:

BQL = Below Quantitation Limit.
PQL = Practical Quantitation Limit.

Doc# MSF10800.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-004-05
Project:	01981-0010	Sample:	01981-FBW-1111
Report Date:	11/29/94	Type:	Water
Collected:	11/11/94	Container:	VOA
Received:	11/14/94		
Analyzed:	11/22/94		
By:	GMT	Dilution Factor:	1

Priority Pollutant Compounds

Number	Compound	PQL (ug/L)	Result (ug/L)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	BQL
13	1,3-Dichlorobenzene	5	BQL
14	1,4-Dichlorobenzene	5	BQL
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	1,2-Dichloroethene (Total)	5	BQL
19	1,2-Dichloropropane	5	BQL
20	cis-1,3-Dichloropropene	5	BQL
21	trans-1,3-Dichloropropene	5	BQL
22	Ethylbenzene	5	BQL
23	Methylene chloride	5	BQL
24	1,1,2,2-Tetrachloroethane	5	BQL
25	Tetrachloroethene	5	BQL
26	Toluene	5	BQL
27	1,1,1-Trichloroethane	5	BQL
28	1,1,2-Trichloroethane	5	BQL
29	Trichloroethene	5	BQL
30	Trichlorofluoromethane	5	BQL
31	Vinyl chloride	10	BQL

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010

IEA ID: T118-004-05
Sample: 01981-FBW-1111

Number	Compound	PQL (ug/L)	Result (ug/L)
Other TCL Compounds:			
32	Acetone	100	BQL
33	2-Butanone	100	BQL
34	Carbon disulfide	5	BQL
35	1,2-Dibromoethane	5	BQL
36	2-Hexanone	50	BQL
37	Methyl-t-butylether	5	BQL
38	4-Methyl-2-pentanone	50	BQL
39	Styrene	5	BQL
40	Vinyl Acetate	50	BQL
41	Xylenes (Total)	5	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	99 %
Toluene-d8	104 %
Bromofluorobenzene	87 %

Comments:

BQL = Below Quantitation Limit.
PQL = Practical Quantitation Limit.

Doc# MSF10800.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-004-06
Project:	01981-0010	Sample:	D42-TB-1111
Report Date:	11/29/94	Type:	Water
Collected:	11/11/94	Container:	VOA
Received:	11/14/94		
Analyzed:	11/22/94		
By:	GMT	Dilution Factor:	1

Priority Pollutant Compounds

Number	Compound	PQL (ug/L)	Result (ug/L)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	BQL
13	1,3-Dichlorobenzene	5	BQL
14	1,4-Dichlorobenzene	5	BQL
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	1,2-Dichloroethene (Total)	5	BQL
19	1,2-Dichloropropane	5	BQL
20	cis-1,3-Dichloropropene	5	BQL
21	trans-1,3-Dichloropropene	5	BQL
22	Ethylbenzene	5	BQL
23	Methylene chloride	5	BQL
24	1,1,2,2-Tetrachloroethane	5	BQL
25	Tetrachloroethene	5	BQL
26	Toluene	5	BQL
27	1,1,1-Trichloroethane	5	BQL
28	1,1,2-Trichloroethane	5	BQL
29	Trichloroethene	5	BQL
30	Trichlorofluoromethane	5	BQL
31	Vinyl chloride	10	BQL

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010

IEA ID: T118-004-06
Sample: D42-TB-1111

Number	Compound	PQL (ug/L)	Result (ug/L)
Other TCL Compounds:			
32	Acetone	100	BQL
33	2-Butanone	100	BQL
34	Carbon disulfide	5	BQL
35	1,2-Dibromoethane	5	BQL
36	2-Hexanone	50	BQL
37	Methyl-t-butylether	5	BQL
38	4-Methyl-2-pentanone	50	BQL
39	Styrene	5	BQL
40	Vinyl Acetate	50	BQL
41	Xylenes (Total)	5	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	104 %
Toluene-d8	108 %
Bromofluorobenzene	87 %

Comments:

BQL = Below Quantitation Limit.
PQL = Practical Quantitation Limit.

Doc# MSF10800.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-004-07
Project:	01981-0010	Sample:	D42-MW1-1111
Report Date:	11/29/94	Type:	Water
Collected:	11/11/94	Container:	VOA
Received:	11/14/94		
Analyzed:	11/22/94		
By:	GMT	Dilution Factor:	1

Priority Pollutant Compounds

Number	Compound	PQL (ug/L)	Result (ug/L)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	BQL
13	1,3-Dichlorobenzene	5	BQL
14	1,4-Dichlorobenzene	5	BQL
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	1,2-Dichloroethene (Total)	5	BQL
19	1,2-Dichloropropane	5	BQL
20	cis-1,3-Dichloropropene	5	BQL
21	trans-1,3-Dichloropropene	5	BQL
22	Ethylbenzene	5	BQL
23	Methylene chloride	5	BQL
24	1,1,2,2-Tetrachloroethane	5	BQL
25	Tetrachloroethene	5	BQL
26	Toluene	5	BQL
27	1,1,1-Trichloroethane	5	BQL
28	1,1,2-Trichloroethane	5	BQL
29	Trichloroethene	5	BQL
30	Trichlorofluoromethane	5	BQL
31	Vinyl chloride	10	BQL

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010

IEA ID: T118-004-07
Sample: D42-MW1-1111

Number	Compound	PQL (ug/L)	Result (ug/L)
Other TCL Compounds:			
32	Acetone	100	BQL
33	2-Butanone	100	BQL
34	Carbon disulfide	5	BQL
35	1,2-Dibromoethane	5	BQL
36	2-Hexanone	50	BQL
37	Methyl-t-butylether	5	BQL
38	4-Methyl-2-pentanone	50	BQL
39	Styrene	5	BQL
40	Vinyl Acetate	50	BQL
41	Xylenes (Total)	5	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	99 %
Toluene-d8	102 %
Bromofluorobenzene	87 %

Comments:

BQL = Below Quantitation Limit.
PQL = Practical Quantitation Limit.

Doc# MSF10800.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-004-08
Project:	01981-0010	Sample:	D42-MW5-1111
Report Date:	11/29/94	Type:	Water
Collected:	11/11/94	Container:	VOA
Received:	11/14/94		
Analyzed:	11/22/94		
By:	GMT	Dilution Factor:	1

Priority Pollutant Compounds

Number	Compound	PQL (ug/L)	Result (ug/L)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	BQL
13	1,3-Dichlorobenzene	5	BQL
14	1,4-Dichlorobenzene	5	BQL
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	1,2-Dichloroethene (Total)	5	BQL
19	1,2-Dichloropropane	5	BQL
20	cis-1,3-Dichloropropene	5	BQL
21	trans-1,3-Dichloropropene	5	BQL
22	Ethylbenzene	5	BQL
23	Methylene chloride	5	BQL
24	1,1,2,2-Tetrachloroethane	5	BQL
25	Tetrachloroethene	5	BQL
26	Toluene	5	BQL
27	1,1,1-Trichloroethane	5	BQL
28	1,1,2-Trichloroethane	5	BQL
29	Trichloroethene	5	BQL
30	Trichlorofluoromethane	5	BQL
31	Vinyl chloride	10	BQL

IEA
An Aquarion Company

Analysis Report: EPA Method 8240A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010

IEA ID: T118-004-08
Sample: D42-MW5-1111

Number	Compound	PQL (ug/L)	Result (ug/L)
Other TCL Compounds:			
32	Acetone	100	BQL
33	2-Butanone	100	BQL
34	Carbon disulfide	5	BQL
35	1,2-Dibromoethane	5	BQL
36	2-Hexanone	50	BQL
37	Methyl-t-butylether	5	BQL
38	4-Methyl-2-pentanone	50	BQL
39	Styrene	5	BQL
40	Vinyl Acetate	50	BQL
41	Xylenes (Total)	5	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	104 %
Toluene-d8	113 %
Bromofluorobenzene	89 %

Comments:

BQL = Below Quantitation Limit.
PQL = Practical Quantitation Limit.

Doc# MSF10800.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-004-01
Project:	01981-0010	Sample:	D42-MW2-1110
Report Date:	11/29/94	Type:	Water
Collected:	11/10/94	Container:	Glass
Received:	11/14/94		
Extracted:	11/16/94		
Analyzed:	11/17/94		
By:	MEW	Dilution Factor:	1

Number	Compound	PQL (ug/L)	Result (ug/L)
1	Acenaphthene	10	BQL
2	Acenaphthylene	10	BQL
3	Aniline	50	BQL
4	Anthracene	10	BQL
5	Benzoic acid	50	BQL
6	Benzo(a)anthracene	10	BQL
7	Benzo(b)fluoranthene	10	BQL
8	Benzo(k)fluoranthene	10	BQL
9	Benzo(g,h,i)perylene	10	BQL
10	Benzo(a)pyrene	10	BQL
11	Benzyl alcohol	20	BQL
12	bis(2-Chloroethoxy)methane	10	BQL
13	bis(2-Chloroethyl)ether	10	BQL
14	bis(2-Chloroisopropyl)ether	10	BQL
15	bis(2-Ethylhexyl)phthalate	10	BQL
16	4-Bromophenyl phenyl ether	10	BQL
17	Benzyl butyl phthalate	10	BQL
18	4-Chloroaniline	20	BQL
19	2-Chloronaphthalene	10	BQL
20	4-Chloro-3-methylphenol	20	BQL
21	2-Chlorophenol	10	BQL
22	4-Chlorophenyl phenyl ether	10	BQL
23	Chrysene	10	BQL
24	Dibenzo(a,h)anthracene	10	BQL
25	Dibenzofuran	10	BQL
26	Di-n-butyl phthalate	10	BQL
27	1,3-Dichlorobenzene	10	BQL
28	1,4-Dichlorobenzene	10	BQL
29	1,2-Dichlorobenzene	10	BQL
30	1,2-Diphenylhydrazine	10	BQL
31	3,3'-Dichlorobenzidine	20	BQL
32	2,4-Dichlorophenol	10	BQL
33	Diethyl phthalate	10	BQL
34	2,4-Dimethylphenol	10	BQL
35	Dimethyl phthalate	10	BQL
36	2-Methyl-4,6-dinitrophenol	50	BQL
37	2,4-Dinitrophenol	50	BQL
38	2,4-Dinitrotoluene	10	BQL

Doc # MSF00100.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010

IEA ID: T118-004-01
Sample: D42-MW2-1110

Number	Compound	PQL (ug/L)	Result (ug/L)
39	2,6-Dinitrotoluene	10	BQL
40	Di-n-octylphthalate	10	BQL
41	Fluoranthene	10	BQL
42	Fluorene	10	BQL
43	Hexachlorobenzene	10	BQL
44	Hexachlorobutadiene	10	BQL
45	Hexachlorocyclopentadiene	10	BQL
46	Hexachloroethane	10	BQL
47	Indeno(1,2,3-cd)pyrene	10	BQL
48	Isophorone	10	BQL
49	2-Methylnaphthalene	10	BQL
50	2-Methylphenol (o-cresol)	10	BQL
51	4-Methylphenol (p-cresol)	10	BQL
52	Naphthalene	10	BQL
53	2-Nitroaniline	50	BQL
54	3-Nitroaniline	50	BQL
55	4-Nitroaniline	50	BQL
56	Nitrobenzene	10	BQL
57	2-Nitrophenol	10	BQL
58	4-Nitrophenol	50	BQL
59	N-Nitroso-di-n-propylamine	10	BQL
60	N-Nitrosodiphenylamine	10	BQL
61	Pentachlorophenol	50	BQL
62	Phenanthrene	10	BQL
63	Phenol	10	BQL
64	Pyrene	10	BQL
65	1,2,4-Trichlorobenzene	10	BQL
66	2,4,5-Trichlorophenol	10	BQL
67	2,4,6-Trichlorophenol	10	BQL

Surrogate Standard Recovery:

2-Fluorophenol	64 %
Phenol-d6	71 %
Nitrobenzene-d5	64 %
2-Fluorobiphenyl	61 %
2,4,6-Tribromophenol	79 %
Terphenyl-d14	70 %

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.

Doc # MSF00100.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-004-02
Project:	01981-0010	Sample:	D42-MW3-1110
Report Date:	11/29/94	Type:	Water
Collected:	11/10/94	Container:	Glass
Received:	11/14/94		
Extracted:	11/16/94		
Analyzed:	11/17/94		
By:	MEW	Dilution Factor:	1

Number	Compound	PQL (ug/L)	Result (ug/L)
1	Acenaphthene	10	BQL
2	Acenaphthylene	10	BQL
3	Aniline	50	BQL
4	Anthracene	10	BQL
5	Benzoic acid	50	BQL
6	Benzo(a)anthracene	10	BQL
7	Benzo(b)fluoranthene	10	BQL
8	Benzo(k)fluoranthene	10	BQL
9	Benzo(g,h,i)perylene	10	BQL
10	Benzo(a)pyrene	10	BQL
11	Benzyl alcohol	20	BQL
12	bis(2-Chloroethoxy)methane	10	BQL
13	bis(2-Chloroethyl)ether	10	BQL
14	bis(2-Chloroisopropyl)ether	10	BQL
15	bis(2-Ethylhexyl)phthalate	10	BQL
16	4-Bromophenyl phenyl ether	10	BQL
17	Benzyl butyl phthalate	10	BQL
18	4-Chloroaniline	20	BQL
19	2-Chloronaphthalene	10	BQL
20	4-Chloro-3-methylphenol	20	BQL
21	2-Chlorophenol	10	BQL
22	4-Chlorophenyl phenyl ether	10	BQL
23	Chrysene	10	BQL
24	Dibenzo(a,h)anthracene	10	BQL
25	Dibenzofuran	10	BQL
26	Di-n-butyl phthalate	10	BQL
27	1,3-Dichlorobenzene	10	BQL
28	1,4-Dichlorobenzene	10	BQL
29	1,2-Dichlorobenzene	10	BQL
30	1,2-Diphenylhydrazine	10	BQL
31	3,3'-Dichlorobenzidine	20	BQL
32	2,4-Dichlorophenol	10	BQL
33	Diethyl phthalate	10	BQL
34	2,4-Dimethylphenol	10	BQL
35	Dimethyl phthalate	10	BQL
36	2-Methyl-4,6-dinitrophenol	50	BQL
37	2,4-Dinitrophenol	50	BQL
38	2,4-Dinitrotoluene	10	BQL

Doc # MSF00100.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010

IEA ID: T118-004-02
Sample: D42-MW3-1110

Number	Compound	PQL (ug/L)	Result (ug/L)
39	2,6-Dinitrotoluene	10	BQL
40	Di-n-octylphthalate	10	BQL
41	Fluoranthene	10	BQL
42	Fluorene	10	BQL
43	Hexachlorobenzene	10	BQL
44	Hexachlorobutadiene	10	BQL
45	Hexachlorocyclopentadiene	10	BQL
46	Hexachloroethane	10	BQL
47	Indeno(1,2,3-cd)pyrene	10	BQL
48	Isophorone	10	BQL
49	2-Methylnaphthalene	10	BQL
50	2-Methylphenol (o-cresol)	10	BQL
51	4-Methylphenol (p-cresol)	10	BQL
52	Naphthalene	10	BQL
53	2-Nitroaniline	50	BQL
54	3-Nitroaniline	50	BQL
55	4-Nitroaniline	50	BQL
56	Nitrobenzene	10	BQL
57	2-Nitrophenol	10	BQL
58	4-Nitrophenol	50	BQL
59	N-Nitroso-di-n-propylamine	10	BQL
60	N-Nitrosodiphenylamine	10	BQL
61	Pentachlorophenol	50	BQL
62	Phenanthrene	10	BQL
63	Phenol	10	BQL
64	Pyrene	10	BQL
65	1,2,4-Trichlorobenzene	10	BQL
66	2,4,5-Trichlorophenol	10	BQL
67	2,4,6-Trichlorophenol	10	BQL

Surrogate Standard Recovery:

2-Fluorophenol	76 %
Phenol-d6	79 %
Nitrobenzene-d5	76 %
2-Fluorobiphenyl	66 %
2,4,6-Tribromophenol	86 %
Terphenyl-d14	71 %

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.

Doc # MSF00100.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-004-05
Project:	01981-0010	Sample:	01981-FBW-1111
Report Date:	11/29/94	Type:	Water
Collected:	11/11/94	Container:	Glass
Received:	11/14/94		
Extracted:	11/18/94		
Analyzed:	11/21/94		
By:	MEW	Dilution Factor:	1

Number	Compound	PQL (ug/L)	Result (ug/L)
1	Acenaphthene	10	BQL
2	Acenaphthylene	10	BQL
3	Aniline	50	BQL
4	Anthracene	10	BQL
5	Benzoic acid	50	BQL
6	Benzo(a)anthracene	10	BQL
7	Benzo(b)fluoranthene	10	BQL
8	Benzo(k)fluoranthene	10	BQL
9	Benzo(g,h,i)perylene	10	BQL
10	Benzo(a)pyrene	10	BQL
11	Benzyl alcohol	20	BQL
12	bis(2-Chloroethoxy)methane	10	BQL
13	bis(2-Chloroethyl)ether	10	BQL
14	bis(2-Chloroisopropyl)ether	10	BQL
15	bis(2-Ethylhexyl)phthalate	10	BQL
16	4-Bromophenyl phenyl ether	10	BQL
17	Benzyl butyl phthalate	10	BQL
18	4-Chloroaniline	20	BQL
19	2-Chloronaphthalene	10	BQL
20	4-Chloro-3-methylphenol	20	BQL
21	2-Chlorophenol	10	BQL
22	4-Chlorophenyl phenyl ether	10	BQL
23	Chrysene	10	BQL
24	Dibenzo(a,h)anthracene	10	BQL
25	Dibenzofuran	10	BQL
26	Di-n-butyl phthalate	10	BQL
27	1,3-Dichlorobenzene	10	BQL
28	1,4-Dichlorobenzene	10	BQL
29	1,2-Dichlorobenzene	10	BQL
30	1,2-Diphenylhydrazine	10	BQL
31	3,3'-Dichlorobenzidine	20	BQL
32	2,4-Dichlorophenol	10	BQL
33	Diethyl phthalate	10	BQL
34	2,4-Dimethylphenol	10	BQL
35	Dimethyl phthalate	10	BQL
36	2-Methyl-4,6-dinitrophenol	50	BQL
37	2,4-Dinitrophenol	50	BQL
38	2,4-Dinitrotoluene	10	BQL

Doc # MSF00100.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010

IEA ID: T118-004-05
Sample: 01981-FBW-1111

Number	Compound	PQL (ug/L)	Result (ug/L)
39	2,6-Dinitrotoluene	10	BQL
40	Di-n-octylphthalate	10	BQL
41	Fluoranthene	10	BQL
42	Fluorene	10	BQL
43	Hexachlorobenzene	10	BQL
44	Hexachlorobutadiene	10	BQL
45	Hexachlorocyclopentadiene	10	BQL
46	Hexachloroethane	10	BQL
47	Indeno(1,2,3-cd)pyrene	10	BQL
48	Isophorone	10	BQL
49	2-Methylnaphthalene	10	BQL
50	2-Methylphenol (o-cresol)	10	BQL
51	4-Methylphenol (p-cresol)	10	BQL
52	Naphthalene	10	BQL
53	2-Nitroaniline	50	BQL
54	3-Nitroaniline	50	BQL
55	4-Nitroaniline	50	BQL
56	Nitrobenzene	10	BQL
57	2-Nitrophenol	10	BQL
58	4-Nitrophenol	50	BQL
59	N-Nitroso-di-n-propylamine	10	BQL
60	N-Nitrosodiphenylamine	10	BQL
61	Pentachlorophenol	50	BQL
62	Phenanthrene	10	BQL
63	Phenol	10	BQL
64	Pyrene	10	BQL
65	1,2,4-Trichlorobenzene	10	BQL
66	2,4,5-Trichlorophenol	10	BQL
67	2,4,6-Trichlorophenol	10	BQL

Surrogate Standard Recovery:

2-Fluorophenol	68 %
Phenol-d6	67 %
Nitrobenzene-d5	64 %
2-Fluorobiphenyl	65 %
2,4,6-Tribromophenol	69 %
Terphenyl-d14	73 %

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.

Doc # MSF00100.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-004-07
Project:	01981-0010	Sample:	D42-MW1-1111
Report Date:	11/29/94	Type:	Water
Collected:	11/11/94	Container:	Glass
Received:	11/14/94		
Extracted:	11/16/94		
Analyzed:	11/17/94		
By:	MEW	Dilution Factor:	1

Number	Compound	PQL (ug/L)	Result (ug/L)
1	Acenaphthene	10	BQL
2	Acenaphthylene	10	BQL
3	Aniline	50	BQL
4	Anthracene	10	BQL
5	Benzoic acid	50	BQL
6	Benzo(a)anthracene	10	BQL
7	Benzo(b)fluoranthene	10	BQL
8	Benzo(k)fluoranthene	10	BQL
9	Benzo(g,h,i)perylene	10	BQL
10	Benzo(a)pyrene	10	BQL
11	Benzyl alcohol	20	BQL
12	bis(2-Chloroethoxy)methane	10	BQL
13	bis(2-Chloroethyl)ether	10	BQL
14	bis(2-Chloroisopropyl)ether	10	BQL
15	bis(2-Ethylhexyl)phthalate	10	BQL
16	4-Bromophenyl phenyl ether	10	BQL
17	Benzyl butyl phthalate	10	BQL
18	4-Chloroaniline	20	BQL
19	2-Chloronaphthalene	10	BQL
20	4-Chloro-3-methylphenol	20	BQL
21	2-Chlorophenol	10	BQL
22	4-Chlorophenyl phenyl ether	10	BQL
23	Chrysene	10	BQL
24	Dibenzo(a,h)anthracene	10	BQL
25	Dibenzofuran	10	BQL
26	Di-n-butyl phthalate	10	BQL
27	1,3-Dichlorobenzene	10	BQL
28	1,4-Dichlorobenzene	10	BQL
29	1,2-Dichlorobenzene	10	BQL
30	1,2-Diphenylhydrazine	10	BQL
31	3,3'-Dichlorobenzidine	20	BQL
32	2,4-Dichlorophenol	10	BQL
33	Diethyl phthalate	10	BQL
34	2,4-Dimethylphenol	10	BQL
35	Dimethyl phthalate	10	BQL
36	2-Methyl-4,6-dinitrophenol	50	BQL
37	2,4-Dinitrophenol	50	BQL
38	2,4-Dinitrotoluene	10	BQL

Doc # MSF00100.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010
IEA ID: T118-004-07
Sample: D42-MW1-1111

Number	Compound	PQL (ug/L)	Result (ug/L)
39	2,6-Dinitrotoluene	10	BQL
40	Di-n-octylphthalate	10	BQL
41	Fluoranthene	10	BQL
42	Fluorene	10	BQL
43	Hexachlorobenzene	10	BQL
44	Hexachlorobutadiene	10	BQL
45	Hexachlorocyclopentadiene	10	BQL
46	Hexachloroethane	10	BQL
47	Indeno(1,2,3-cd)pyrene	10	BQL
48	Isophorone	10	BQL
49	2-Methylnaphthalene	10	BQL
50	2-Methylphenol (o-cresol)	10	BQL
51	4-Methylphenol (p-cresol)	10	BQL
52	Naphthalene	10	BQL
53	2-Nitroaniline	50	BQL
54	3-Nitroaniline	50	BQL
55	4-Nitroaniline	50	BQL
56	Nitrobenzene	10	BQL
57	2-Nitrophenol	10	BQL
58	4-Nitrophenol	50	BQL
59	N-Nitroso-di-n-propylamine	10	BQL
60	N-Nitrosodiphenylamine	10	BQL
61	Pentachlorophenol	50	BQL
62	Phenanthrene	10	BQL
63	Phenol	10	BQL
64	Pyrene	10	BQL
65	1,2,4-Trichlorobenzene	10	BQL
66	2,4,5-Trichlorophenol	10	BQL
67	2,4,6-Trichlorophenol	10	BQL

Surrogate Standard Recovery:

2-Fluorophenol	51 %
Phenol-d6	59 %
Nitrobenzene-d5	52 %
2-Fluorobiphenyl	49 %
2,4,6-Tribromophenol	60 %
Terphenyl-d14	53 %

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.

Doc # MSF00100.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 1 OF 2 PAGES)

Client:	TRC Environmental	IEA ID:	T118-004-08
Project:	01981-0010	Sample:	D42-MW5-1111
Report Date:	11/29/94	Type:	Water
Collected:	11/11/94	Container:	Glass
Received:	11/14/94		
Extracted:	11/16/94		
Analyzed:	11/17/94		
By:	MEW	Dilution Factor:	1

Number	Compound	PQL (ug/L)	Result (ug/L)
1	Acenaphthene	10	BQL
2	Acenaphthylene	10	BQL
3	Aniline	50	BQL
4	Anthracene	10	BQL
5	Benzoic acid	50	BQL
6	Benzo(a)anthracene	10	BQL
7	Benzo(b)fluoranthene	10	BQL
8	Benzo(k)fluoranthene	10	BQL
9	Benzo(g,h,i)perylene	10	BQL
10	Benzo(a)pyrene	10	BQL
11	Benzyl alcohol	20	BQL
12	bis(2-Chloroethoxy)methane	10	BQL
13	bis(2-Chloroethyl)ether	10	BQL
14	bis(2-Chloroisopropyl)ether	10	BQL
15	bis(2-Ethylhexyl)phthalate	10	BQL
16	4-Bromophenyl phenyl ether	10	BQL
17	Benzyl butyl phthalate	10	BQL
18	4-Chloroaniline	20	BQL
19	2-Chloronaphthalene	10	BQL
20	4-Chloro-3-methylphenol	20	BQL
21	2-Chlorophenol	10	BQL
22	4-Chlorophenyl phenyl ether	10	BQL
23	Chrysene	10	BQL
24	Dibenzo(a,h)anthracene	10	BQL
25	Dibenzofuran	10	BQL
26	Di-n-butyl phthalate	10	BQL
27	1,3-Dichlorobenzene	10	BQL
28	1,4-Dichlorobenzene	10	BQL
29	1,2-Dichlorobenzene	10	BQL
30	1,2-Diphenylhydrazine	10	BQL
31	3,3'-Dichlorobenzidine	20	BQL
32	2,4-Dichlorophenol	10	BQL
33	Diethyl phthalate	10	BQL
34	2,4-Dimethylphenol	10	BQL
35	Dimethyl phthalate	10	BQL
36	2-Methyl-4,6-dinitrophenol	50	BQL
37	2,4-Dinitrophenol	50	BQL
38	2,4-Dinitrotoluene	10	BQL

Doc # MSF00100.MA

IEA
An Aquarion Company

Analysis Report: EPA Method 8270A
(PAGE 2 OF 2 PAGES)

Client: TRC Environmental
Project: 01981-0010
IEA ID: T118-004-08
Sample: D42-MW5-1111

Number	Compound	PQL (ug/L)	Result (ug/L)
39	2,6-Dinitrotoluene	10	BQL
40	Di-n-octylphthalate	10	BQL
41	Fluoranthene	10	BQL
42	Fluorene	10	BQL
43	Hexachlorobenzene	10	BQL
44	Hexachlorobutadiene	10	BQL
45	Hexachlorocyclopentadiene	10	BQL
46	Hexachloroethane	10	BQL
47	Indeno(1,2,3-cd)pyrene	10	BQL
48	Isophorone	10	BQL
49	2-Methylnaphthalene	10	BQL
50	2-Methylphenol (o-cresol)	10	BQL
51	4-Methylphenol (p-cresol)	10	BQL
52	Naphthalene	10	BQL
53	2-Nitroaniline	50	BQL
54	3-Nitroaniline	50	BQL
55	4-Nitroaniline	50	BQL
56	Nitrobenzene	10	BQL
57	2-Nitrophenol	10	BQL
58	4-Nitrophenol	50	BQL
59	N-Nitroso-di-n-propylamine	10	BQL
60	N-Nitrosodiphenylamine	10	BQL
61	Pentachlorophenol	50	BQL
62	Phenanthrene	10	BQL
63	Phenol	10	BQL
64	Pyrene	10	BQL
65	1,2,4-Trichlorobenzene	10	BQL
66	2,4,5-Trichlorophenol	10	BQL
67	2,4,6-Trichlorophenol	10	BQL

Surrogate Standard Recovery:

2-Fluorophenol	82 %
Phenol-d6	85 %
Nitrobenzene-d5	82 %
2-Fluorobiphenyl	73 %
2,4,6-Tribromophenol	92 %
Terphenyl-d14	70 %

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.

Doc # MSF00100.MA

IEA
An Aquarion Company
149 Rangeway Road
N. Billerica, Massachusetts 01862
617 / 272-5212
Fax 508 / 667-7871
1-800-950-5212

CHAIN OF CUSTODY RECORD

REGULATORY CLASSIFICATION - PLEASE SPECIFY

☐ NPDES ☐ DRINKING WATER ☐ RCRA ☒ OTHER EPA Region I

REQUIRED

CUST. P.O. #

TURN AROUND

☐ 15 BUSINESS DAY
☒ 10 BUSINESS DAY
☐ RUSH
☐ OTHER

COMPANY	CONTACT PERSON	PROJECT I.D.	PHONE #	FAX #
TRC Environmental	J Peronto	01981-0010	203-298-6233	203-298-6399

ADDRESS		
5 Waterside Crossing		
CITY	STATE	ZIP
Windsor	CT	06095

DATE	TIME	SAMPLE I.D.	MATRIX	CONTAINER TYPE	# OF CONTAINERS	PRESERVATIVE	REQUESTED PARAMETERS: VOCs (8240)	SVOCs (8270)	TPH (418.1)	PP Metals	TDS	Total Chloride			(COMMENTS)
11/10/94	17:30	D42-MW2-1110	W	G/P	8	(*)	2	1	1	1	2	1			* VOCs - HCl Metals - HNO_3 TPH - H_2SO_4
11/10/94	16:45	D42-MW3-1110	W	G/P	8	(*)	2	1	1	1	2	1			
11/10/94	16:45	D42-MW6-1110	W	P	1	(*)				1					
11/11/94	12:30	D42-MW4-1111	W	G	1	(*)			1						Note:
															EPA Region I
															Holding Times
															Apply!
															Megan Brown 2

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED BY	DATE / TIME
IEA LAB	11/09/94	Federal Express	11/09/94
Federal Express	11/10/94	TRC/Megan Brown	11/10/94
TRC/Megan Brown	11/11/94	Federal Express	11/11/94 1130

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED FOR LAB BY	DATE / TIME
		[illegible]	11-14-94

IEA USE ONLY

94-0927-04D

FIELD REMARKS

IEA
An Aquarion Company
149 Rangeway Road
N. Billerica, Massachusetts 01862
617 / 272-5212
Fax 508 / 667-7871
1-800-950-5212

CHAIN OF CUSTODY RECORD

REGULATORY CLASSIFICATION - PLEASE SPECIFY

☐ NPDES ☐ DRINKING WATER ☐ RCRA ☒ OTHER EPA REGION I

REQUIRED

CUST. P.O. #

TURN AROUND

☐ 15 BUSINESS DAY
☒ 10 BUSINESS DAY
☐ RUSH
☐ OTHER

COMPANY	CONTACT PERSON	PROJECT I.D.	PHONE #	FAX #
TRC ENVIRONMENTAL	J. PERONTO	01981-0010	203 298 6233	203 298 6399

ADDRESS	CITY	STATE	ZIP
5 WATERSIDE CROSSING	WINDSOR	CT	06095

DATE	TIME	SAMPLE I.D.	MATRIX	CONTAINER TYPE	# OF CONTAINERS	PRESERVATIVE	REQUESTED PARAMETERS: VOCs (8290)	SVOCs (8270)	TPH (418.1)	PAHETALS	TDS	TOTAL CHROMIUM			(COMMENTS)
11/11/94	0830	01981-FBW-1111	W	G/P	8	(*)	2	1	1	1	2	1			(*) VOCs - HCl METALS - HNO_3
11/11/94	NA	D42-TB-1111 (TRIP BLANK)	W	G	1	HCl	1								TPH - H_2SO_4
		~~D42-MW6-1111~~ 9P													
11/11/94	0910	D42-MW1-1111	W	G/P	8	(*)	2	1	1	1	2	1			
11/11/94	1400	D42-MW5-1111	W	G/P	8	(*)	2	1	1	1	2	1			NOTE
															EPA REGION I
															HOLDING TIMES
															APPLY!!

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED BY	DATE / TIME
IEA LAB	11/09/94	FEDERAL EXPRESS	11/09/94
FED. EXPRESS	11/10/94	TRC/JIM PERONTO	11/10/94
TRC/JIM PERONTO	11/11/94	FEDERAL EXPRESS	11/11/94 1930
RELINQUISHED BY (SIGNATURE)	**DATE / TIME**	**RECEIVED FOR LAB BY**	**DATE / TIME**

IEA USE ONLY

94-0927-04D

FIELD REMARKS