

**Rounds 1 – 3 Corrective Action  
Groundwater Monitoring Report  
For  
Former Building 44 (Pump House)  
UST Site**

**Naval Station Newport  
Newport, Rhode Island**



**Environmental Field Activity Northeast  
Naval Facilities Engineering Command**

**Contract No. N62467-94-D-0888**

**Contract Task Order 0809**

**July 2002**



**TETRA TECH NUS, INC.**

**ROUNDS 1 – 3 CORRECTIVE ACTION  
GROUNDWATER MONITORING REPORT  
FOR  
FORMER BUILDING 44 (PUMP HOUSE) UST SITE**

**NAVAL STATION NEWPORT  
NEWPORT, RHODE ISLAND**

**COMPREHENSIVE LONG-TERM  
ENVIRONMENTAL ACTION - NAVY (CLEAN) CONTRACT**

**Submitted to:  
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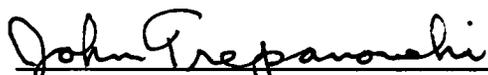
**Contract No. N62467-94-D-0888  
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## 1.0 INTRODUCTION

This Rounds 1 – 3 Corrective Action Groundwater Monitoring Report for the former Building 44 (Former Pump House) Underground Storage Tank (UST) Site has been prepared by Tetra Tech NUS, Inc. (TtNUS), under the Comprehensive Long-Term Environmental Action Navy (CLEAN) contract. This report describes monitoring activities conducted at the former Building 44 UST Site located at the Naval Station Newport (NAVSTA Newport) in Newport, Rhode Island from April 2001 to April 2002.

The site is located on the northern end of Gould Island, in the East Passage of Narragansett Bay, approximately 1.5 miles off the coast of Middletown, Rhode Island. Building 44 served as the pump house for seven USTs before it was demolished in 1989. The remainder of the island is inactive. A site location map is presented as Figure 1-1.

The USTs consisted of two 5,000-gallon steel tanks and five 50,000-gallon concrete tanks. These USTs were installed in the 1940s to supply fuel to the power generation plant on Gould Island. The UST area is located north of former Building 32 (abandoned torpedo overhaul facility). The locations of the former USTs and of Buildings 44 and 32 are shown on Figure 1-2.

In 1997, TtNUS performed a supplemental site investigation (SSI) of the groundwater and soil petroleum hydrocarbon contamination at this former location of seven underground storage tanks. In a follow-up investigation field-filtered groundwater samples were collected in 1998 to accurately determine the level of dissolved lead concentrations in groundwater at the site. A corrective action plan prepared by TtNUS recommended soil excavation and long-term groundwater monitoring. In the fall of 2000 another Navy contractor completed the UST removal and soil excavation phase in conjunction with the Building 32 demolition activities. Demolition debris (red brick and crushed concrete) were used to back fill the USTs excavation at the former Building 44 site. The long-term groundwater monitoring that is part of the corrective action plan was conducted by TtNUS.

The objectives of the groundwater monitoring program are to monitor groundwater to confirm contamination is not entering the surficial aquifer and to recover mobile free product, if detected. In addition, the monitoring will determine if the existing network of groundwater monitoring wells is adequate to monitor contaminant migration. This report has been prepared to summarize and evaluate the data collected from the three rounds of corrective action groundwater monitoring.

Detailed information on the former Building 44 UST Site description, history, and previous investigations is provided in the Corrective Action Plan (CAP), Former Building 44 (Former Pump House), January 1999, prepared by TtNUS.

## 2.0 GROUNDWATER MONITORING RESULTS

The former Building 44 UST Site corrective action groundwater monitoring program monitored for contamination migration in site groundwater over a 1-year period to confirm contamination is not entering the surficial aquifer. A discussion of the Rounds 1 through 3 monitoring activities and results is presented below.

### 2.1 ROUNDS 1 THROUGH 3 GROUNDWATER MONITORING ACTIVITIES

Three semi-annual groundwater sampling rounds were conducted at the site, beginning in April 2001. Site monitoring wells are shown in Figure 2-1. The designated wells for the corrective action groundwater monitoring program consisted of seven of the eleven overburden wells that existed at the site prior to the soil remediation. As a result of the soil excavation and Building 32 demolition several of the previously installed monitoring wells were damaged or destroyed, including some of the seven wells designated to be sampled during the corrective action monitoring program.

To ensure the effectiveness of the former Building 44 UST Site corrective action monitoring program, monitoring network rehabilitation activities were conducted in December 2000 and June 2001. In December 2000 four wells were installed to replace wells destroyed during the soil excavation. The presence of demolition debris piles prevented evaluation of the remaining wells. In April 2001, during Round 1, it was determined that additional existing monitoring wells had been damaged or destroyed by the demolition activities. Five of the seven designated wells were serviceable in Round 1. In June 2001 additional monitoring network rehabilitation activities consisting of well repair, redevelopment, abandonment and replacement were carried out. At that time three monitoring wells were replaced. Table 2-1 presents a list of wells sampled during Rounds 1 through 3 and monitoring well network rehabilitation activities.

During each sampling round, designated wells were sampled using bailers and groundwater levels were measured using an electronic oil/water interface probe. Table 2-2 presents groundwater elevation data. The probe was also used to check for the presence of dense or light non-aqueous phase liquid (DNAPL or LNAPL) or free product layers in all serviceable monitoring wells. Wells and sample bailers were also inspected for evidence of free product. Evidence of free product, if present, was recorded. A table of observed groundwater field parameters is presented in Appendix A. Each sampling event was completed within a 24-hour period. Samples were shipped to an off-site laboratory to be analyzed for the following analytes:

- volatile organic compounds (VOCs) by USEPA SW-846 Method 8260B
- semivolatile organic compounds (SVOCs) by USEPA SW-846 Method 8270C

- gasoline range organics (GRO) by USEPA SW-846 Method 8015M
- diesel range organics-total petroleum hydrocarbons (DRO-TPH) by USEPA SW-846 Method 8015M/8100M
- RCRA total and dissolved metals by USEPA SW-846 Methods 6010B/7471A

A partial Tier II data validation was performed on the analytical results. Complete analytical results are provided in Appendix B. Analytical results for detected VOCs and SVOCs are presented in Table 2-3; analytical results for GRO, DRO-TPH and detected total and dissolved RCRA metals are presented in Table 2-4. (Note: The laboratory reported naphthalene in both the VOC and SVOC results. For consistency with previous analyses at the site the SVOC results for naphthalene were used in evaluating the data.) Analytical results are compared to GA groundwater quality standards (GWQS) in Tables 2-3 and 2-4. Chemical concentrations at or higher than the preventive action limit (PAL) are italicized, while chemical concentrations at or higher than the GA groundwater quality standard are bolded and italicized. The data review noted that some organic constituents were detected in the field quality control and laboratory blank samples. As a result, positive water results for acetone, 2-butanone, bis(2-ethylhexyl)phthalate, methylene chloride, naphthalene and phenol may be false positives or biased high. The data user is cautioned in using positive results of low value for these chemicals because they may be solely attributable to blank contamination. Low level results for these compounds were not included in the groundwater sampling results discussion below.

## **2.2 GROUNDWATER ELEVATIONS**

As discussed in the CAP, the surficial materials at the site primarily consist of silty sand and sand with silt and some gravel. These materials become more compacted with depth and overlie weathered bedrock. The USTs were removed in fall of 2000 and the excavation backfilled with demolition debris (red brick and crushed concrete) from the Building 32 demolition activities. The bedrock consists of a phyllite, with depth to refusal ranging from 9 to 25 feet in the on-site borings. Depths to groundwater were measured during all three sampling rounds and were converted to elevations to construct water table maps for each sampling round. During Round 1, monitoring wells MW003, MW201, and MW202 could not be located. Therefore, groundwater measurements could not be taken at these wells.

A review of the water level maps (Figures 2-2 through 2-3) shows that the highest measured groundwater elevations occur at the monitoring wells located in the immediate vicinity of the former USTs, at MW203R for Round 1, and at MW205R, MW001R, and MW204R for Round 2 (the groundwater levels for each of these three wells are within 0.01 feet of each other). Groundwater generally flows away from the former UST area to the north, east and west toward Narragansett Bay. This groundwater flow direction is consistent with the groundwater flow directions determined in the CAP report.

The water table map for Round 3, Figure 2-4, shows that the highest groundwater elevation was measured in monitoring well MW209, located west of the former USTs. A review of Figure 2-4 shows that the groundwater flow is toward the north and east through the former USTs area.

It is suspected that after the demolition of Building 32, gaps between the concrete floor slabs have allowed precipitation to flow to the overburden increasing the rate of groundwater recharge in this area resulting in a higher groundwater elevation compared to previous sampling rounds.

However, the groundwater flow directions from all three sampling rounds indicate that the current groundwater monitoring well network should provide suitable data to evaluate the potential for contaminants to migrate from the former USTs area.

### **2.3 UPGRADIENT WELL MONITORING RESULTS**

One upgradient well, MW-204R, installed in December 2000 to replace a well at the same location (MW204), provides background water quality data. MW-204R is located just south of the former USTs.

#### SSI Groundwater Results

During the SSI field investigation total petroleum hydrocarbon (TPH) (Method 418.1) was not detected in the MW204 sample. Two VOC detections (chloroform and total xylenes) were reported at low levels for MW204 during the SSI field investigation. In addition, lead was detected at 15.8 ug/L in the unfiltered bailer sample, slightly above the GWQS of 15 ug/L. Lead was not detected in the field-filtered groundwater sample collected in 1998 from MW204 to determine the level of dissolved lead concentrations in groundwater at the site.

#### Rounds 1 through 3 Groundwater Results

In Rounds 1 through 3 no indication of free product was observed in MW204R (see Appendix A) and no GRO detections were reported. DRO-TPH was detected during all three rounds at low levels ranging from 0.69 to 2.0 mg/L. No VOCs were detected during Rounds 1 through 3. Ten SVOCs were detected in the Round 1 and 2 MW204R samples, including naphthalene and pentachlorophenol above the GWQS, however no SVOCs were detected in Round 3. Naphthalene was detected in Round 2 at 22 ug/L, just above the GWQS of 20 ug/L and pentachlorophenol was detected at 6 ug/L in Round 1, above the GWQS of 1 ug/L. Two metals were detected in the unfiltered bailer samples at levels above the GWQS. Lead, with a GWQS of 15 ug/L, was detected in the Rounds 1 and 3 samples at 16 ug/L and 29.7 ug/L, respectively. Mercury was detected in the Round 3 sample at 2.1 ug/L, slightly above the mercury GWQS of 2 ug/L for GA areas. No exceedances of the GWQS were observed for the filtered metals samples;

lead was only detected in one filtered sample collected during Round 3 at 2.6 ug/L and mercury was not detected in any of three rounds.

In summary, although low level of DRO-TPH compounds were detected, no visual evidence of petroleum hydrocarbon contamination or free product was found present in the upgradient well. A change in groundwater SVOC constituents was noted for the upgradient well location. During the SSI no SVOCs were detected in MW204, however during the corrective action monitoring at MW204R a number of SVOC compounds were detected during Rounds 1 and 2, including naphthalene and pentachlorophenol at levels above the GWQS. For metals, lead was detected in unfiltered samples at levels consistent with the 1997 SSI unfiltered results. Likewise, it was not detected or detected at a low level in the filtered samples, consistent with the 1998 groundwater sampling event. Also, mercury was detected in one of the unfiltered samples; it was not detected in the 1997 SSI.

## **2.4 SOURCE AREA WELLS MONITORING RESULTS**

Source area corrective action monitoring wells consisted of three wells: MW001R, MW203R and MW205R, all replacement wells installed in December 2000 to replace damaged or destroyed wells at the same locations. MW205R is located within the former USTs area. MW001R is located along the northeastern perimeter of the former UST area and MW205R is located along the southwestern perimeter of the former USTs area.

### SSI Groundwater Results

During the 1997 SSI a layer of floating free product, approximately 0.4 foot thick and most closely resembling No. 2 fuel oil, was observed in MW001. TPH was identified in the samples from MW001 at 1,700 mg/L and from MW203 at 6.4 mg/L; TPH was not identified in MW205. Low level detections of VOCs and SVOCs were noted in MW203 and MW205 during the SSI, however the highest detections of VOCs and SVOCs were observed in MW001. These include the VOCs toluene (69 ug/L), ethylbenzene (37 ug/L) and total xylenes (120 ug/L) and the SVOCs naphthalene (200 ug/L), 2-methylnaphthalene (720 ug/L), dibenzofuran (60 ug/L), fluorene (42 ug/L) and phenanthrene (65 ug/L). Lead was detected in the unfiltered bailer samples at 38.1 ug/L and 49.9 ug/L in MW203 and MW205, respectively. The MW001 sample was not analyzed for metals during the 1997 study. In the 1998 field-filtered groundwater samples, low level results for lead were noted for MW001 (1.7 ug/L), and MW205 (1.5 ug/L). Lead was not detected in the MW203 field-filtered groundwater sample.

### Rounds 1 through 3 Groundwater Results

During three rounds of monitoring no evidence of free product was observed in any of the source area wells (see Appendix A). DRO-TPH was identified in all source area wells during all three rounds with levels ranging from 1.4 mg/L to a maximum of 20 mg/L in MW203R during Round 1. GRO was only detected once in the MW001R Round 3 sample (57 ug/L).

No VOC detections were reported in MW203R and MW205R during Rounds 1 through 3. Low level detections of the VOCs 4-methyl-2-pentanone and toluene were reported in MW001R during Rounds 1 through 3. No exceedances of the GA standards were observed.

Several SVOCs were detected in the source area wells during Rounds 1 through 3. Exceedances of the GWQS were observed for three compounds: benzo(a)pyrene, naphthalene and pentachlorophenol. Benzo(a)pyrene, with a GWQS of 0.2 ug/L, was not detected during the SSI but was detected at a maximum of 26 ug/L in MW203R during Round 1. Pentachlorophenol, with a GWQS of 1 ug/L, was also not detected in the SSI but was detected at a maximum level of 77 ug/L in MW001R during Round 2. Levels of naphthalene, with a GWQS of 20 ug/L, decreased from the 200 ug/L detection reported during the SSI, to a maximum of 24 ug/L in MW205R during Round 2.

For metals analyses, lead was detected above the GA GWQS of 15 ug/L in five of the nine bailer unfiltered source area samples, with the highest levels measured at 278 ug/L in MW001R during Round 1. As explained previously, the SSI sample obtained at MW001 was not analyzed for metals. For the field-filtered samples, lead exceeded the GWQS in two samples with the maximum level reported at 37 ug/L, also in MW001R during Round 1. For both filtered and unfiltered samples, Round 3 lead levels were observed to be less than one half of Round 1 levels. Consistent with SSI results, no other metals were identified at levels exceeding the GWQS for GA areas during the three rounds.

In summary, source area wells observations and petroleum-related analyses indicate a significant reduction in groundwater petroleum hydrocarbon contamination. For organic compounds exceeding the GA GWQS, a significant decrease in the naphthalene concentration was noted for the source area wells. However, two SVOCs not detected in the SSI, benzo(a)pyrene and pentachlorophenol, were detected in the corrective action groundwater monitoring at concentrations above the groundwater standards. In addition, while lead concentrations in filtered samples exceeded the GA GWQS in Rounds 1 and 2, a decreasing trend is noted.

Downgradient monitoring wells consisted of MW003R, located immediately west of the former USTs area; MW202R, located northwest of the former USTs area; and MW207, located north of the former USTs area. MW003 and MW202 were not sampled during Round 1.

#### SSI Groundwater Results

During the SSI field investigation TPH (Method 418.1) was not detected in four of six downgradient wells, and was detected at low levels (1.8 mg/L) in the other two downgradient wells. SSI VOCs detections included benzene in MW201 (0.8J ug/L), and xylenes in MW003 (2 ug/L) and MW202 (0.7J ug/L). In addition, VOCs were detected at low levels in MW209 (chloroform at 1 ug/L, bromodichloromethane at 1J ug/L, trichloroethene at 1 ug/L, and dibromochloromethane at 0.8 J ug/L). Only one SVOC, acenaphthene, was detected in MW207 (15 ug/L). No VOCs or SVOCs were identified at levels in excess of the groundwater standards. For unfiltered metals samples (collected with a bailer), lead was identified in three of the seven downgradient wells at levels exceeding the GWQS for GA areas (15 ug/L). Exceedances ranged from 30 ug/L (MW201) to 243 ug/L (MW003). In addition, cadmium was detected above the GWQS of 5 ug/L in MW003 (8.8 ug/L). No other metals were identified at levels exceeding the GWQS. Analyses of filtered samples yielded lead concentrations ranging from non-detect to a maximum of 1.9 ug/L.

#### Rounds 1 through 3 Groundwater Results

During the three rounds no evidence of free product was observed in any of the downgradient wells (see Appendix A). DRO-TPH was identified in all samples collected from the three downgradient wells, with levels ranging from 0.76 mg/L to 3.4 mg/L. GRO was only detected once, in the MW202R Round 3 sample (140 ug/L).

Only one VOC detection was observed: toluene was detected in the Round 3 MW202R sample at 1 J ug/L. For SVOCs, exceedances of the GA GWQS were observed for benzo(a)pyrene in MW207 in Rounds 2 and 3 (1 J ug/l and 9 J ug/L, respectively); naphthalene in MW207 in Round 3 (39 ug/L); and pentachlorophenol in MW003R in Rounds 2 and 3 (4 J ug/l and 3 ug/L, respectively). As stated above, the only SVOC detected in the downgradient wells during the SSI was acenaphthene. For unfiltered metals samples, exceedances of the GA area groundwater lead standard were observed in MW003R in Rounds 2 and 3 (30.6 ug/l and 26.6 ug/L, respectively) and in MW207 in Rounds 2 and 3 (256 ug/l and 1380 ug/L, respectively). Lead was only detected in one of the filtered downgradient well samples, from MW207 at 1ug/L during Round 3. In addition, cadmium was detected above the GA GWQS during

Round 2 in MW202R (5.6 ug/L), and above the PAL of 2.5 ug/L during Round 1 in MW003R (4.3 ug/L) and during Round 3 in MW207 (4.5 ug/L).

In summary, petroleum-related analytical results for downgradient wells sampled during Rounds 1 through 3 indicate no significant change in petroleum hydrocarbon groundwater contamination. As noted for the source area wells, a number of SVOCs not detected in the SSI were detected in the three corrective action sampling rounds. While unfiltered lead concentrations in the downgradient wells increased significantly from the SSI results, lead was only detected once in the filtered sample analysis, in the MW207 Round 3 sample, at 1 ug/L.

## **2.6 ROUNDS 1 THROUGH 3 GROUNDWATER ASSESSMENT**

The groundwater analytical data collected during the three rounds of monitoring conducted as part of the Building 44 corrective action shows that petroleum contamination has decreased significantly. However, exceedances of the GA groundwater standards were observed for six contaminants: benzo(a)pyrene; naphthalene; pentachlorophenol; cadmium; lead; and mercury. Naphthalene was detected in the 1997 SSI and concentrations appear to be decreasing, however the other two SVOC compounds, benzo(a)pyrene and pentachlorophenol, were not detected during the SSI. The observed changes in these concentrations occurred after the removal of the UST at Building 44 and placement of demolition debris in the UST tank graves.

Detections of all three metals were documented during the 1997 SSI. Cadmium and mercury have been detected at approximately the same levels as observed in the SSI, while concentrations of lead detected in unfiltered (total) samples during the corrective action monitoring are at higher levels in some downgradient wells. However, dissolved (filtered) lead concentrations are much lower than the total (unfiltered) concentrations, indicating that the lead concentrations are related to turbidity in the samples.

The detection of naphthalene and benzo(a)pyrene may be related to small amounts of residual oil that may be present at the site, since both of these compounds are constituents of fuel oil. This is consistent with the low-level DRO-TPH detections in all wells.

### 3.0 FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The findings and conclusions for the three rounds of groundwater monitoring conducted from April 2001 to April 2002 at the former Building 44 UST Site at Naval Station Newport are presented below. Recommendations for additional corrective actions are also presented.

#### 3.1 FINDINGS

The findings of the former Building 44 UST Site corrective action groundwater monitoring program are as follows.

##### Groundwater Elevations

Groundwater elevation measurements during Rounds 1 and 2 show that the groundwater flows away from the former UST area to the north, east and west toward Narragansett Bay. This groundwater flow direction is consistent with the groundwater flow directions determined in the CAP report. Measurements during Round 3 show a slightly different groundwater pattern at the site in which the highest groundwater elevation was measured in a monitoring well west of the former USTs. Generally, the groundwater flow is toward the north and east through the tank grave with some groundwater flowing west, with all of the groundwater eventually discharging into Narragansett Bay. The groundwater flow directions from all three sampling rounds indicate that the current groundwater monitoring well network should provide data to evaluate the potential for contaminants to migrate from the former UST site.

##### Upgradient Groundwater Monitoring

No GRO detections were reported for the upgradient monitoring well, MW204R, while DRO-TPH was detected during all three rounds at low levels. No visual evidence of petroleum hydrocarbon contamination or free product was found present in the upgradient well.

No VOCs were detected, however SVOCs were detected and included naphthalene and pentachlorophenol above the GWQS. No SVOCs were detected in MW204 during the 1997 SSI.

Two metals, lead and mercury, were detected in the unfiltered (total) metals bailer samples at levels above the GWQS. No exceedances of the GWQS were observed for the filtered (dissolved) metals samples.

### Source Area Groundwater Monitoring

Source area well observations and petroleum-related analyses indicate a significant reduction in source area groundwater petroleum hydrocarbon contamination when compared to the SSI results. No evidence of free product was observed in any of the source area wells. DRO-TPH was identified in all source area wells during all three rounds, but at low levels. GRO was only detected once in one well. During the 1997 SSI a layer of floating free product, approximately 0.4 foot thick and most closely resembling No. 2 fuel oil, was observed in MW001, and TPH was identified in the sample from MW001 at 1,700 mg/L.

The only VOC detections were low level detections of 4-methyl-2-pentanone and toluene in MW001R during Rounds 1 through 3. No exceedances of the GA standards were observed.

Several SVOCs were detected in the three corrective action groundwater monitoring rounds from the source area wells. Levels of three compounds, benzo(a)pyrene, naphthalene and pentachlorophenol, exceeded the GWQS. Neither benzo(a)pyrene nor pentachlorophenol were detected during the SSI. Levels of naphthalene decreased from 200 ug/L reported during the SSI to a maximum of 24 ug/L in MW205R, following the soil remediation action.

Lead was detected in unfiltered samples at levels higher than those found in the SSI. For the field-filtered samples, lead exceeded the GWQS in two samples. For both filtered and unfiltered samples, Round 3 lead levels were observed to be less than one half of Round 1 levels, indicating a decreasing trend.

### Downgradient Groundwater Monitoring

No evidence of free product was observed in any of the downgradient wells. DRO-TPH was identified in all samples collected from the three downgradient wells at low levels. GRO was only detected once in the MW202R Round 3 sample (140 ug/L).

Only one low level VOC detection was observed in the downgradient wells. For SVOCs, exceedances of the GA GWQS were observed for benzo(a)pyrene, naphthalene and pentachlorophenol, none of which were detected in the downgradient wells during the SSI. Exceedances of the GA lead GWQS were observed in unfiltered samples, but not in the filtered downgradient well samples. Cadmium was detected at one location above the GA GWQS.

## 3.2 CONCLUSIONS

Based on three rounds of groundwater monitoring, the following conclusions have been made regarding the former Building 44 UST Site corrective action.

The tank closure and corrective action activities were successful in removing most petroleum-related contamination at the former USTs. No free product was observed in these rounds, therefore product recovery efforts are not necessary. The analytical results indicate that low-level residual petroleum in the subsurface is potentially being released to the groundwater, based on the detection of low-level DRO-TPH in all monitoring wells.

However, even though the soil removal has resulted in a decrease in petroleum-related groundwater contamination, six contaminants were found at levels exceeding the GWQS for GA areas. The observed changes in these concentrations occurred after the removal of the USTs at Building 44 and placement of demolition debris backfill in the UST excavation. These six contaminants consist of three SVOCs (benzo(a)pyrene, naphthalene, and pentachlorophenol) and three metals (cadmium, lead, and mercury). Detections of all three metals and naphthalene were documented during the 1997 SSI. Naphthalene concentrations have decreased in response to the soil remediation, however, benzo(a)pyrene and pentachlorophenol, were not detected during the SSI. Cadmium and mercury were detected at approximately the same levels as observed in the SSI, while concentrations of lead were detected in unfiltered (total) samples at higher levels than found in the SSI in some downgradient wells. It should be noted that dissolved (filtered) lead concentrations are much lower than the total (unfiltered) concentrations, indicating that the lead concentrations are related to turbidity in the samples. The elevated metal concentrations in unfiltered samples may result from suspended solids imparted to groundwater by fines in the debris fill.

Groundwater elevation measurements during Rounds 1 and 2 show that groundwater flows away from the former UST area to the north, east and west, toward Narragansett Bay, while measurements during Round 3 show a general groundwater flow toward the north and east through the former UST area. This change is believed to have resulted from precipitation recharging through the foundation of demolished buildings adjacent to the site. An increase in the groundwater recharge rate west of the site could result in a higher groundwater elevation in this area compared to previous sampling rounds. The groundwater flow directions for all three sampling rounds indicate that the current groundwater monitoring well network should provide sufficient data to evaluate the potential for contaminants to migrate from the former UST area.

### 3.3 RECOMMENDATIONS

Based on the above findings and conclusions it is recommended that three additional semi-annual sampling rounds be conducted, and that they include the same designated wells sampled in Rounds 2 and 3. After this proposed monitoring period a letter report would be prepared that summarizes the additional sampling results and groundwater flow patterns, and recommends further actions needed at the site, if any.

**TABLES**

**TABLE 2-1  
MONITORING WELL SUMMARY  
CORRECTIVE ACTION GROUNDWATER MONITORING  
ROUNDS 1 - 3 (APRIL 2002 - APRIL 2002)  
FORMER BUILDING 44 UST SITE  
NAVAL STATION NEWPORT, RHODE ISLAND**

Monitoring Wells <sup>(1)</sup>	Designated Corrective Action Well	Round 1 (April 19-20, 2001)	Round 2 (Oct. 10-11, 2001)	Round 3 (April 2-3, 2002)	Comments
<b>Upgradient wells</b>					
MW204/MW204R	X	X	X	X	MW204R installed December 2000 - replaced MW204 destroyed during soil remediation
MW206	wl <sup>(3)</sup>	wl	wl	wl	Repaired June 2001
<b>Source area wells</b>					
MW001/MW001R	X	X	X	X	MW001R installed December 2000 - replaced MW001 destroyed during soil remediation
MW203R/MW203R	X	X	X	X	MW203R installed December 2000 - replaced MW203 destroyed during soil remediation
MW205/MW205R	X	X	X	X	MW205R installed December 2000 - replaced MW205 destroyed during soil remediation
<b>Downgradient wells</b>					
MW003/MW003R	X	NS <sup>(2)</sup>	X	X	MW003R installed June 2001 - replaced MW003 destroyed during soil remediation
MW201/MW201R	wl	NS	wl	wl	MW201 damaged during soil remediation - abandoned and replaced by MA201R in June 2001
MW202/MW202R	X	NS	X	X	MW202R installed June 2001 - replaced MW202 not serviceable in Round 1 due to obstruction and/or damage
MW207	X	X	X	X	Repaired June 2001
MW208	wl	NS	NA	NA	Abandoned June 2001 - not replaced
MW209	wl	wl	wl	wl	Repaired and redeveloped June 2001
<b>Total Wells Sampled</b>	<b>7</b>	<b>5</b>	<b>7</b>	<b>7</b>	

(1) "R" designates a replacement well at that location

(2) NS - not serviceable

(3) wl - water level measurement

**TABLE 2-2  
WELL CONSTRUCTION SUMMARY AND GROUNDWATER ELEVATIONS  
CORRECTIVE ACTION GROUNDWATER MONITORING  
ROUNDS 1 THROUGH 3  
FORMER BUILDING 44 UST SITE  
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND**

Well No. <sup>(1)</sup>	Well Diam. (inches)	Well Screen Interval (feet bgs)	Ground Surface Elev. (feet - MLW) <sup>(2)</sup>	MP Elev. (feet - MLW) <sup>(2)</sup>	Well Screen Elev. (feet - MLW)	Round 1		Round 2		Round 3	
						Water Depth (ft bpvc) 4/19/01	Ground-water Elev. (feet - MLW) 4/19/01	Water Depth (ft bpvc) 10/10/01	Ground-water Elev. (feet-MLW) 10/10/01	Water Depth (ft bpvc) 4/2/02	Ground-water Elev. (feet-MLW) 4/2/02
<u>Upgradient wells</u>											
MW204R	2.0	4.0 - 9.0	12.2	11.63	8.2 - 3.2	4.36	7.27	4.54	7.09	4.05	7.58
MW206	2.0	4.0 - 9.5	12.1	11.75	8.1 - 2.6	5.11	6.64	5.75	6.00	4.93	6.82
<u>Source area wells</u>											
MW001R	2.0	4.0 - 9.0	11.72	11.30	7.7 - 2.7	3.95	7.35	4.2	7.10	3.71	7.59
MW203R	2.0	4.5 - 9.5	12.8	12.44	8.3 - 3.3	4.15	8.29	5.67	6.77	4.65	7.79
MW205R	2.0	4.0 - 9.0	12.6	12.21	8.6 - 3.6	4.93	7.28	5.1	7.11	4.63	7.58
<u>Downgradient wells</u>											
MW003/MW003R <sup>(3)</sup>	2.0	4.0 - 14.0	12.4	12.05	8.4 - -1.6	NA	NA	6.21	5.84	5.27	6.78
MW201/MW201R <sup>(3)</sup>	2.0	4.0 - 14.0	11.9	11.49	7.9 - -2.1	NA	NA	5.71	5.78	5.45	6.04
Mw202/MW202R <sup>(3)</sup>	2.0	4.5 - 14.5	12.1	11.72	7.6 - -2.4	NA	NA	6.6	5.12	6.04	5.68
MW207	2.0	5.0 - 10.0	12.0	11.80	7.0 - 2.0	7.07	4.73	6.97	4.83	6.51	5.29
MW209	2.0	4.0 - 9.0	12.7	12.48	8.7 - 3.7	5.14	7.34	6.21	6.27	4.62	7.86

(1) "R" designates a replacement well at that location

(2) "Ground Surface Elev" and "MP Elev" based on June 2001 survey

(3) Not serviceable in Round 1 due to obstruction and/or damage

feet - MLW = feet based on mean low water elevation datum

NA = not applicable

feet bgs = feet below ground surface

feet bpvc = feet below PVC riser

MP = measuring point (top of PVC riser)

**TABLE 2-3  
GROUNDWATER VOCS AND SVOCs ANALYTICAL SUMMARY  
CORRECTIVE ACTION GROUNDWATER MONITORING ROUNDS 1 THROUGH 3  
FORMER BUILDING 44 UST SITE,  
NAVAL STATION NEWPORT, RHODE ISLAND**

Monitoring Well	MW204R (Upgradient)			MW001R (Source Area)			MW203R (Source Area)				
	1	2	3	1	2	3	1	2	3		
Round	1	2	3	1	2	3	1	2	3		
Date Sampled	GWQS	PAL	Apr 01	Oct 01	Apr 02	Apr 01	Oct 01	Apr 02	Apr 01	Oct 01	Apr 02
<b>Volatile Organic Analysis (UG/L)</b>											
2-Butanone			5 U	5 U	10 U	12 U	6	10 U	5 U	5 U	10 U
4-Methyl-2-Pentanone			5 U	5 U	10 U	3 J	2	2 J	5 U	5 U	10 U
Acetone			5 U	5 U	10 U	67 U	35	29 U	5 U	9 U	10 U
Toluene	1000	500	5 U	5 U	10 U	1 J	1	2 J	5 U	5 U	10 U
<b>Semivolatile Organic Analysis (UG/L)</b>											
2,4,5-Trichlorophenol			20 U	20 U	20 U	1 J	180 U	20 U	20 U	20 U	20 U
2,4-Dichlorophenol			10 U	10 U	10 U	10 U	90 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol			10 U	10 U	10 U	8 J	16	8 J	10 U	10 U	10 U
2-Chloronaphthalene			10 U	10 U	10 U	10 U	90 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene			10 U	3 J	10 U	1 J	90 U	2 J	2 J	10 U	10 U
2-Methylphenol			10 U	10 U	10 U	4 J	90 U	4 J	10 U	10 U	10 U
4-Methylphenol			10 U	1 J	10 U	36	71	33	10 U	10 U	10 U
Acenaphthene			3	6 J	10 U	4 J	90 U	5 J	8 J	10 U	1 J
Acenaphthylene			10 U	10 U	10 U	10 U	90 U	10 U	10 U	10 U	10 U
Anthracene			3	3 J	10 U	4 J	90 U	3 J	18	1 J	2 J
Benzo(a)anthracene			10 U	10 U	10 U	3 J	90 U	3 J	32	2 J	7 J
Benzo(a)pyrene	0.2	0.1	10 U	10 U	10 U	3 J	90 U	3 J	26	1 J	7 J
Benzo(b)fluoranthene			10 U	10 U	10 U	4 J	90 U	4 J	34	2 J	9 J
Benzo(g,h,i)perylene			10 U	10 U	10 U	10 U	90 U	2 J	15	10 U	4 J
Benzo(k)fluoranthene			10 U	10 U	10 U	1 J	90 U	1 J	12	10 U	4 J
bis(2-Ethylhexyl)phthalate	6	3	10 U	10 U	10 U	10 U	90 U	2 J	10 U	10 U	1 J
Carbazole			4	54 J	10 U	5 J	33	5 J	11	3 J	1 J
Chrysene			10 U	10 U	10 U	3 J	90 U	3 J	33	2 J	8 J
Dibenzo(a,h)anthracene			10 U	10 U	10 U	10 U	90 U	10 U	4 J	10 U	1 J
Dibenzofuran			1	4 J	10 U	2 J	90 U	2 J	5 J	10 U	10 U
Diethylphthalate			10 U	10 U	10 U	10 U	90 U	10 U	10 U	10 U	10 U
Fluoranthene			2	1 J	10 U	8 J	90 U	7 J	68	5 J	17 J
Fluorene			1	4 J	10 U	2 J	90 U	2 J	9 J	10 U	1 J
Indeno(1,2,3-cd)pyrene			10 U	10 U	10 U	2 J	90 U	2 J	16	10 U	4 J
Naphthalene	20	10	3	22	10 U	11	22	15	4 J	10 U	10 U
Pentachlorophenol	1	0.5	6	1 J	20 U	34	77	30	4 J	20 U	20 U
Phenanthrene			1	4 J	10 U	7 J	90 U	7 J	52	5 J	11
Phenol			10 U	10 U	10 U	230 *J	980	280 *	10 U	10 U	10 U
Pyrene			2	10 U	10 U	7 J	90 U	6 J	59	4 J	15 J

Bold italics – GWQS exceeded; Italics – PAL exceeded; U – not detected; J – quantitation approximate, UJ – detection limit approximate

**TABLE 2-3 (CONT.)  
GROUNDWATER VOCS AND SVOCS ANALYTICAL SUMMARY  
CORRECTIVE ACTION GROUNDWATER MONITORING ROUNDS 1 THROUGH 3  
FORMER BUILDING 44 UST SITE  
NAVAL STATION NEWPORT, RHODE ISLAND  
PAGE 2 OF 2**

Monitoring Well	GWQS	PAL	MW205R (Source Area)			MW003R (Downgradient)		MW202R (Downgradient)		MW207 (Downgradient)		
			1	2	3	2	3	2	3	1	2	3
Round			1	2	3	2	3	2	3	1	2	3
Date Sampled			Apr 01	Oct 01	Apr 02	Apr 01	Oct 01	Apr 01	Oct 01	Apr 01	Oct 01	Apr 02
<b>Volatile Organic Analysis (UG/L)</b>												
2-Butanone			5 U	5 U	10 U	5 U	10 U	5 U	10 U	5 U	10 U	5 U
4-Methyl-2-Pentanone			5 U	5 U	10 U	5 U	10 U	5 U	10 U	5 U	10 U	5 U
Acetone			8 U	5 U	10 U	5 U	10 U	5 U	10 U	5 U	10 U	5 U
Toluene	1000	500	5 U	5 U	10 U	5 U	10 U	5 U	10 U	1 J	5 U	5 U
<b>Semivolatile Organic Analysis (UG/L)</b>												
2,4,5-Trichlorophenol			20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2,4-Dichlorophenol			10 U	1 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol			10 U	1 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chloronaphthalene			10 U	3 J	10 U	10 U	10 U	10 U	10 U	8 J	10 U	10 U
2-Methylnaphthalene			2 J	5 J	2 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol			10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol			10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthene			6 J	9 J	4 J	10 U	10 U	10 U	10 U	1 J	10 U	10 U
Acenaphthylene			10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	1 J
Anthracene			4 J	4 J	2 J	1 J	10 U	10 U	10 U	3 J	10 U	10 U
Benzo(a)anthracene			1 J	2 J	1 J	10 U	10 U	10 U	10 U	10 U	10 U	2 J
Benzo(a)pyrene	0.2	0.1	10 U	1 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	1 J
Benzo(b)fluoranthene			1 J	2 J	1 J	10 U	10 U	10 U	10 U	10 U	10 U	2 J
Benzo(g,h,i)perylene			10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	6 J
Benzo(k)fluoranthene			10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5 J
bis(2-Ethylhexyl)phthalate	6	3	10 U	10 U	2 J	10 U	10 U	10 U	10 U	1 J	10 U	10 U
Carbazole			4 J	36 J	4 J	3 J	10 U	10 U	10 U	18 J	5 J	10 U
Chrysene			1 J	2 J	1 J	10 U	10 U	10 U	10 U	10 U	10 U	2 J
Dibenzo(a,h)anthracene			10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzofuran			4 J	6 J	3 J	10 U	10 U	10 U	10 U	3 J	1 J	10 U
Diethylphthalate			1 J	2 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene			4 J	5 J	3 J	10 U	10 U	10 U	10 U	1 J	1 J	6 J
Fluorene			2 J	7 J	3 J	10 U	10 U	10 U	3 J	2 J	10 U	2 J
Indeno(1,2,3-cd)pyrene			10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	6 J
Naphthalene	20	10	5 J	24 J	12	4 J	10 U	1 J	9 J	10 U	10 U	39 J
Pentachlorophenol	1	0.5	16 J	3 J	2 J	4 J	3	20 U	20 U	20 U	20 U	20 U
Phenanthrene			1 J	5 J	6 J	10 U	10 U	10 U	10 U	10 U	10 U	4 J
Phenol			10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene			3 J	4 J	2 J	10 U	10 U	10 U	10 U	1 J	10 U	4 J

Bold italics – GWQS exceeded; Italics – PAL exceeded, U – not detected, J – quantitation approximate, UJ – detection limit approximate

**TABLE 2-4  
GROUNDWATER GRO, DRO-TPH AND METALS ANALYTICAL SUMMARY  
CORRECTIVE ACTION GROUNDWATER MONITORING ROUNDS 1 THROUGH 3  
FORMER BUILDING 44 UST SITE  
NAVAL STATION NEWPORT, RHODE ISLAND**

Monitoring Well	GWQS	PAL	MW204R (Upgradient)			MW001R (Source Area)			MW203R (Source Area)		
			1	2	3	1	2	3	1	2	3
Round			1	2	3	1	2	3	1	2	3
Date Sampled			Apr 01	Oct 01	Apr 02	Apr 01	Oct 01	Apr 02	Apr 01	Oct 01	Apr 02
Gasoline Range Organic Analysis (UG/L)											
Gasoline Range Organics			250 U	250 U	50 U	250 U	250 U	57	250 U	250 U	50 U
Total Petroleum Hydrocarbon Analysis (MG/L)											
Total Petroleum Hydrocarbons			2.0	1.5	0.69	6.2	5.5	3.5	20	2.2	3.4
TAL Metal Analysis (UG/L)											
Arsenic	50	25	3.8	6.4 U	3.0 U	14.5	8.3 U	4.3 J	9.9	11.5 U	9.1
Barium	2000	1000	70.0 U	57.7	67.9	144 U	177	111	250	162	225
Cadmium	5	2.5	0.88 U	0.56 U	2.0 U	4.1 U	2.6 U	2.0 U	2.3 U	2.4 U	2.0 U
Chromium	100	50	5.6 U	2.4 U	3.7 UJ	11.3 U	8.8	4.8 UJ	6.5 U	1.6 U	35.2
Lead	15	7.5	16.0	2.0 U	29.7	278	230	135	123	2.0 U	45.9
Mercury	2	1	0.14 U	0.14 U	2.1	1.0	0.42	0.40	0.13 U	0.14 U	0.14 U
Dissolved Metal Analysis (UG/L)											
Arsenic	50	25	2.6	4.8 U	3.0 U	7.9	7.2 U	3.7 J	6.2	10.7 U	3.0 U
Barium	2000	1000	41.9 U	60.1	53.5	84.6 UJ	82.8	67	169 UJ	152	89.0
Chromium	100	50	1.8 U	2.3 U	3.0 U	0.61 UJ	0.86 U	3.0 U	0.91 UJ	2.0 U	3.0 U
Lead	15	7.5	2.0 U	2.0 U	2.6	37.0	15.2	6.8	2.0 U	2.0 U	1.0 U
Mercury	2	1	0.13 U	0.16 U	0.14 U	0.15 J	0.36	0.14 U	0.13 U	0.15 U	0.13 U
Silver			1.0 U	1.0 U	2.3 J	1.0 UJ	1.0 U	2.0 U	1.0 UJ	1.0 U	2.2 J

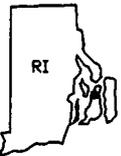
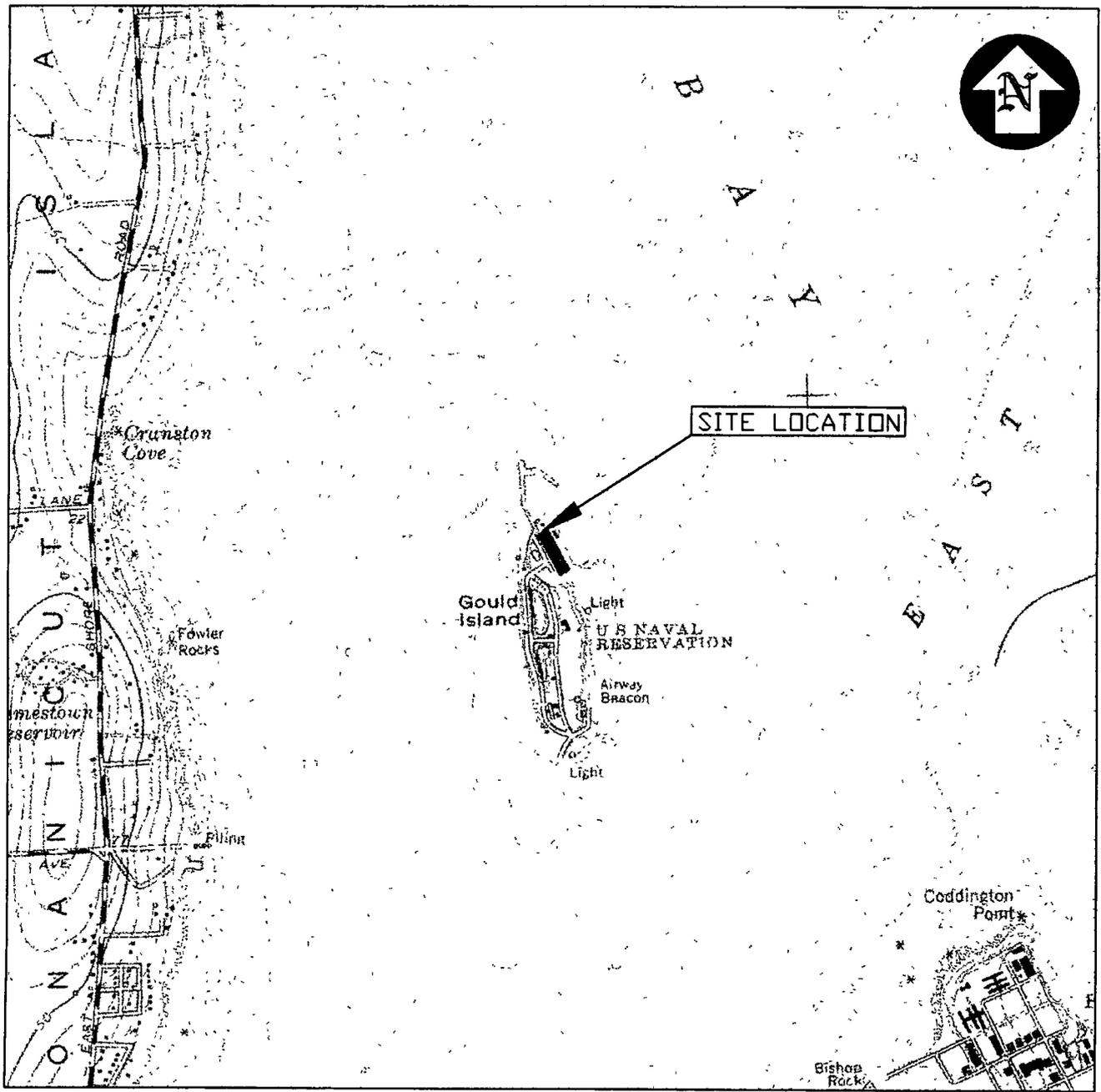
Bold italics – GWQS exceeded; Italics – PAL exceeded, U – not detected; J – quantitation approximate; UJ – detection limit approximate

**TABLE 2-4 (CONT.)  
GROUNDWATER GRO, DRO AND METALS ANALYTICAL SUMMARY  
CORRECTIVE ACTION GROUNDWATER MONITORING ROUNDS 1 THROUGH 3  
FORMER BUILDING 44 UST SITE  
NAVAL STATION NEWPORT, RHODE ISLAND  
PAGE 2 OF 2**

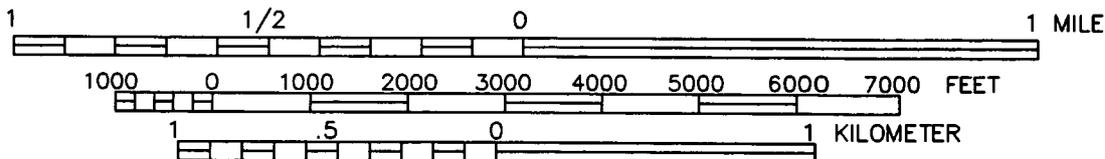
Monitoring Well			MW205R (Source Area)			MW003R (Downgradient)		MW202R (Downgradient)		MW207 (Downgradient)		
			1	2	3	2	3	2	3	1	2	3
Round												
Date Sampled	GWQS	PAL	Apr 01	Oct 01	Apr 02	Apr 01	Oct 01	Apr 01	Oct 01	Apr 01	Oct 01	Apr 02
<b>Gasoline Range Organic Analysis (UG/L)</b>												
Gasoline Range Organics			250 U	250 U	50 U	250 U	50 U	250 U	140	250 U	250 U	50 U
<b>Total Petroleum Hydrocarbon Analysis (MG/L)</b>												
Total Petroleum Hydrocarbons			2.1	2.3	1.4	2.1	0.76	2.1	3.4	2.2	2.0	2.7
<b>TAL Metal Analysis (UG/L)</b>												
Arsenic	50	25	5.9	5.2 U	3.0 U	24.3	11.9	7.7 U	3.0 U	2.0 U	9.8 U	11.9 U
Barium	2000	1000	31.9 U	58.6 U	43.4	166	107	119	92.9	93.2 U	230	364
Cadmium	5	2.5	0.40 U	0.40 U	2.0 U	4.3	2.0 U	5.6	2.0 U	0.53 UJ	3.3	4.5
Chromium	100	50	6.9 U	5.6	3.6 UJ	57.3	34.0	17.0	3.0 U	0.91 UJ	3.8 U	18.4 U
Lead	15	7.5	4.0 U	2.0 U	8.5	30.6	26.6	6.8	12.8	13.1	256	1380
Mercury	2	1	0.13 U	0.15 U	0.16 UJ	0.14 U	0.16 U	0.14 U	0.13 U	0.14 U	0.14 U	0.48
<b>Dissolved Metal Analysis (UG/L)</b>												
Arsenic	50	25	5.4	6.1 U	3.0 U	5.0 U	3.4	2.0 U	3.0 U	2.0 J	9.3 U	3.0 U
Barium	2000	1000	29.2 UJ	58.6	40.0 U	51.1	25.4 U	89.5	66.7	85.6 UJ	185	133
Chromium	100	50	3.2 UJ	5.5	3.2 J	2.4 U	3.0 U	1.3 U	3.0 U	0.50 UJ	0.99 UJ	3.0 U
Lead	15	7.5	2.0 U	2.0 U	1.9 J	2.0 U	1.0 U	2.0 U	1.0 U	2.0 U	2.0 U	1.0
Mercury	2	1	0.13 U	0.14 U	0.13 U	0.13 U	0.14 U	0.15 U	0.14 U	0.13 U	0.14 U	0.13 U
Silver			1.0 UJ	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 UJ	1.0 U	2.0 U

Bold italics – GWQS exceeded, italics – PAL exceeded, U – not detected, J – quantitation approximate, UJ – detection limit approximate

**FIGURES**



QUADRANGLE LOCATION



BASE MAP IS A PORTION OF THE FOLLOWING 7.5 X 15 MINUTE USGS QUADRANGLE:  
 PRUDENCE ISLAND, RHODE ISLAND, 1955, PHOTOREVISED 1970 AND 1975

**SITE LOCATION MAP**

**FIGURE 1-1**

**BUILDING 44 (FORMER PUMP HOUSE)**

**GOULD ISLAND - JAMESTOWN, RHODE ISLAND**



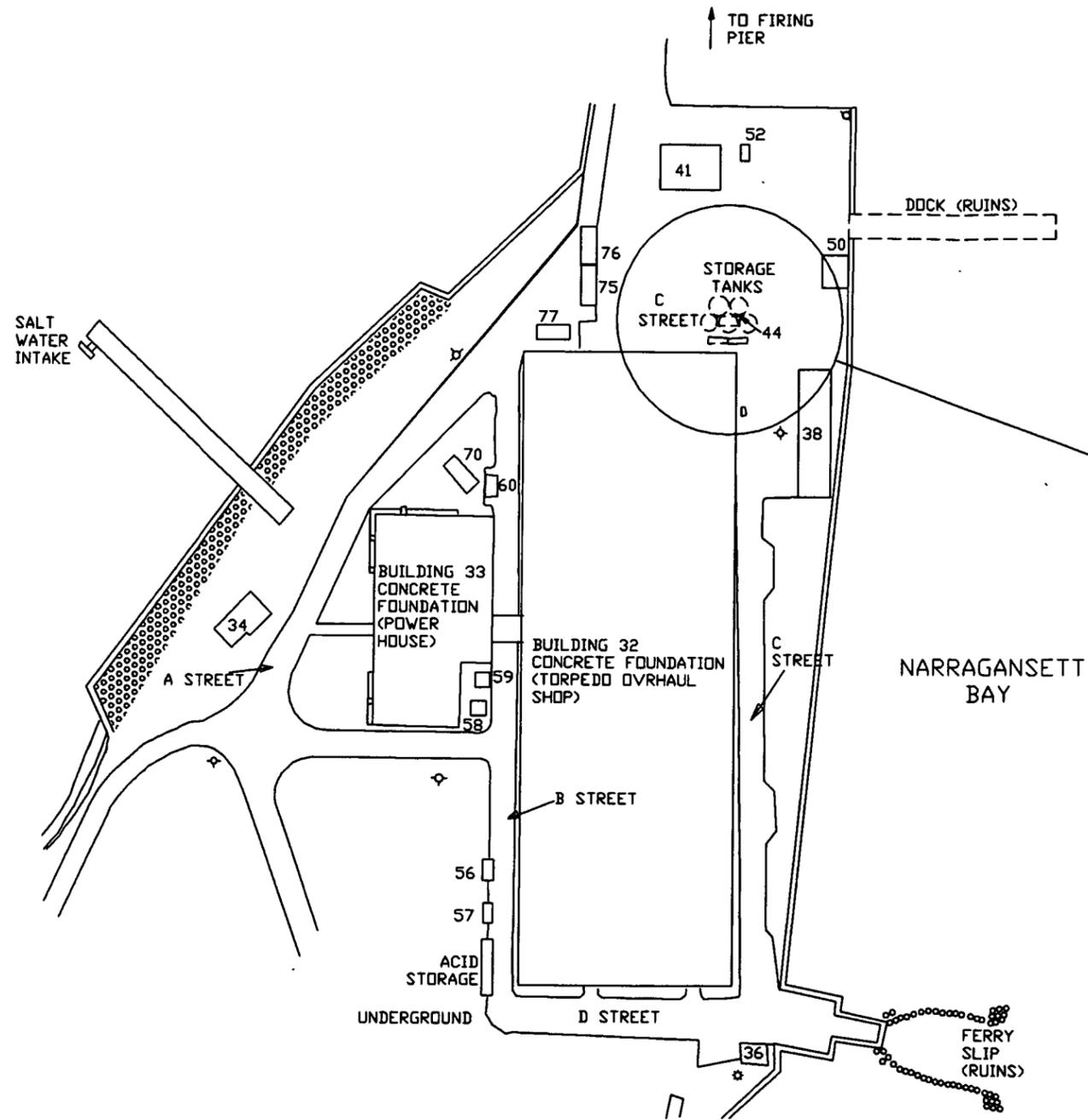
**TETRA TECH NUS, INC.**

DRAWN BY:	D.W. MACDOUGALL	REV.:	0
CHECKED BY:	J. FORRELLI	DATE:	JUNE 2002
SCALE:	AS NOTED	ACAD NAME:	DWG\2842\1076\FIG_1-1.DWG

55 Jonspin Road

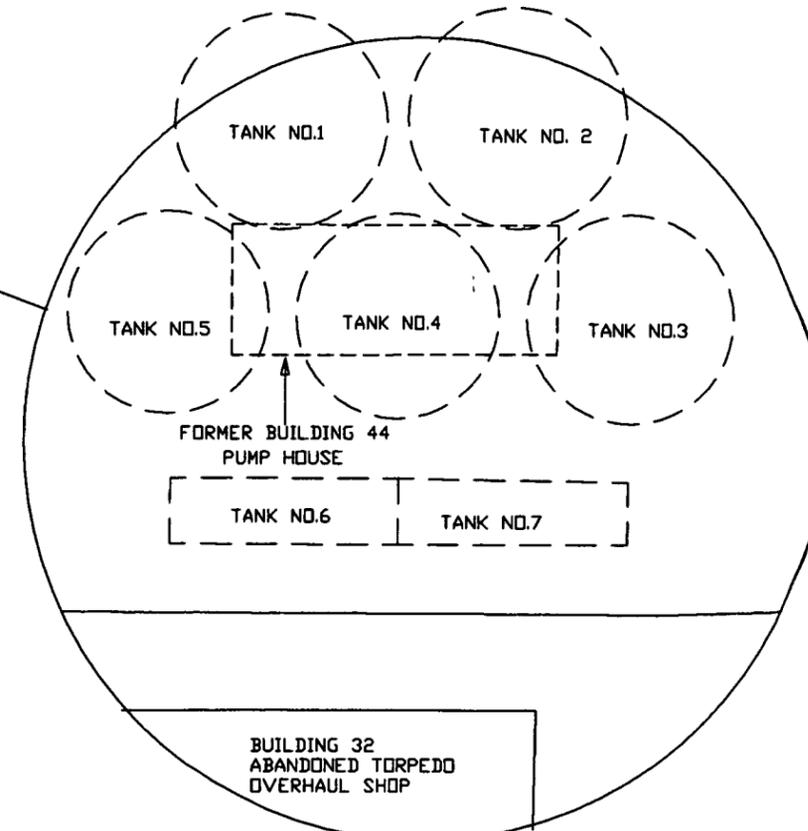
Wilmington, MA 01887

(978)658-7899

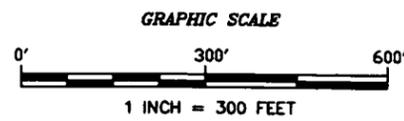


**FORMER BUILDING 44  
USTs LOCATIONS**

NOT TO SCALE



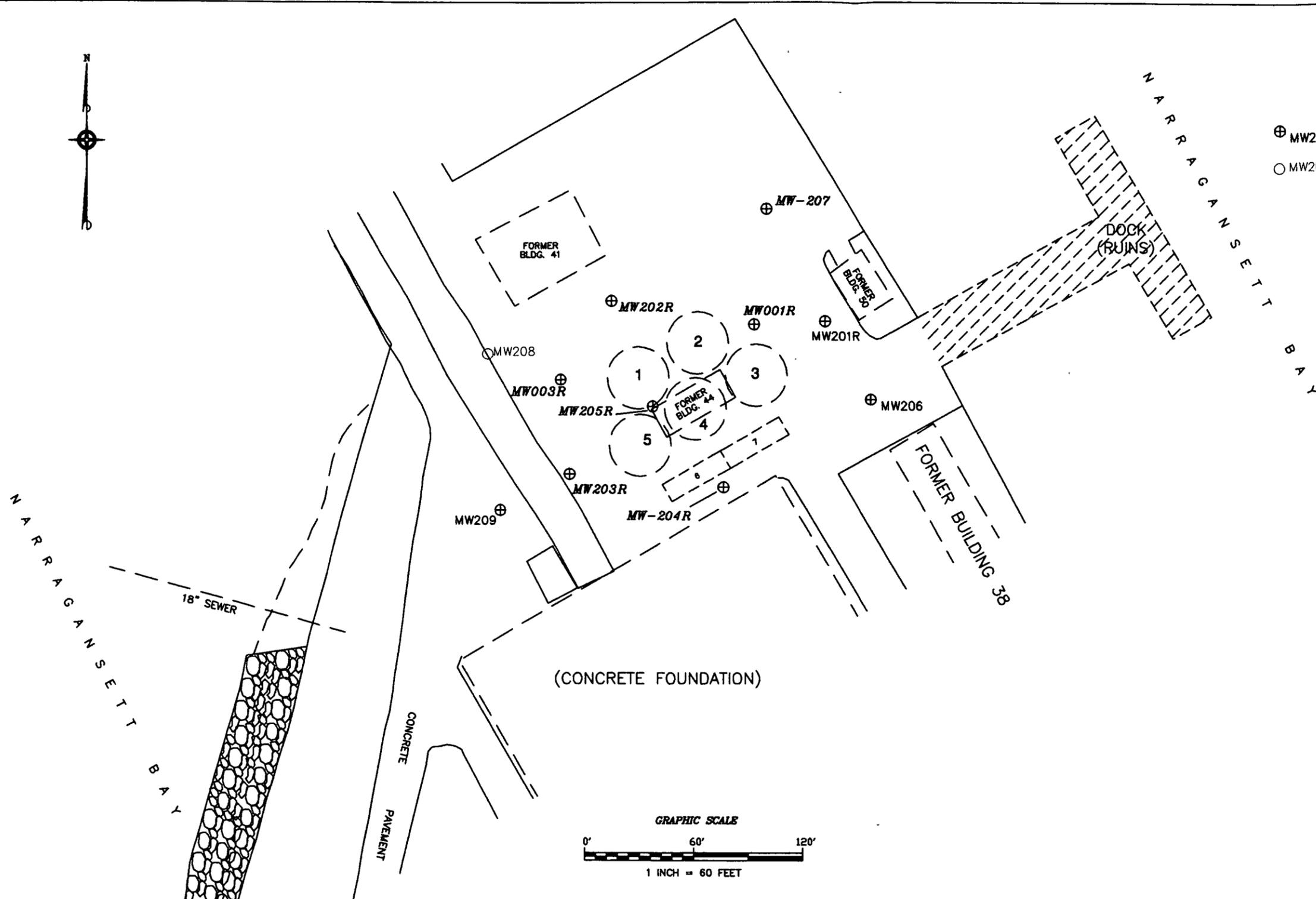
NOTES:



SITE MAP	
BUILDING 44 (FORMER PUMP HOUSE)	
GOULD ISLAND - JAMESTOWN, RHODE ISLAND	
DRAWN BY: D.W. MACDOUGALL	REV.: 0
CHECKED BY: J. FORRELLI	DATE: JUNE 20, 2002
SCALE: 1" = 300'	FILE NO.: DWG\2842\1076\FIG_1-2.DWG

FIGURE 1-2

**TETRA TECHNUS, INC.**  
 55 Jonspin Road Wilmington, MA 01887  
 (978)658-7899



**LEGEND**

- ⊕ MW206 EXISTING MONITORING WELL
- MW208 FORMER MONITORING WELL (ABANDONED)

DESIGNATED CORRECTIVE ACTION  
GROUNDWATER MONITORING WELL  
LABELS ARE ITALICIZED

R  
DESIGNATES REPLACEMENT  
WELL (REPLACED, DESTROYED,  
OR ABANDONED WELL)

1  
FORMER UST  
(DEMOLISHED)

6  
FORMER UST  
(REMOVED)

DEMOLISHED  
BUILDING  
FOOTPRINT

PREVIOUSLY EXISTING MONITORING  
WELLS DESTROYED OR  
ABANDONED AND REPLACED AT  
THE SAME LOCATION

MW001	MW202	MW205
MW003	MW203	
MW201	MW204	

REPLACEMENT WELLS INSTALLED  
DECEMBER 2000

MW001R	MW204R	MW205R
MW203R		

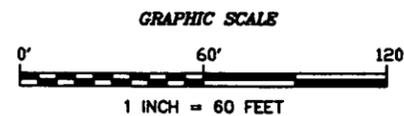
REPLACEMENT WELLS INSTALLED  
JUNE 2001

MW003R	MW201R	MW202R
--------	--------	--------

MW208 WAS ABANDONED AND  
NOT REPLACED

**NOTES:**

1. PLAN COMPILED FROM PORTIONS OF A DIGITIZED COPY OF "GOULD ISLAND, U.S. NAVAL TORPEDO STATION, NEWPORT R.I., SHOWING CONDITIONS ON JUNE 30, 1948". A PLAN ENTITLED "GEOTECHNICAL SURVEY PLAN AT BUILDING 32 - GOULD ISLAND, U.S. NAVAL BASE, NEW, RHODE ISLAND, FOR TETRA TECH NUS, INC.", PLAN DATE: 4/25/00, AND DONE BY LOUIS FEDERICI & ASSOCIATES, PROVIDENCE, RHODE ISLAND. A PLAN ENTITLED: "LOCATION OF MONITORING WELLS AT BUILDING 32 - GOULD ISLAND, U.S. NAVAL BASE, NEW, RHODE ISLAND, FOR TETRA TECH NUS, INC.", PLAN DATE: 5/9/00, AND DONE BY LOUIS FEDERICI & ASSOCIATES, PROVIDENCE, RHODE ISLAND.
2. ALL LOCATIONS ARE TO BE CONSIDERED APPROXIMATE.
3. PLAN NOT TO BE USED FOR DESIGN.



ROUNDS 1 THROUGH 3 MONITORING WELL LOCATIONS

FORMER BUILDING 44 UST SITE

GOULD ISLAND - NAVSTA NEWPORT, RHODE ISLAND

DRAWN BY:	D.W. MACDOUGALL	REV.:	0
CHECKED BY:	J.R. FORRELLI	DATE:	JUNE 20, 2002
SCALE:	1" = 60'	FILE NO.:	DWG\2842\1076\FIG_2-1.DWG

FIGURE 2-1

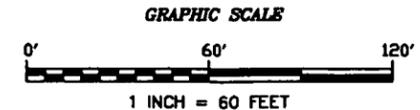
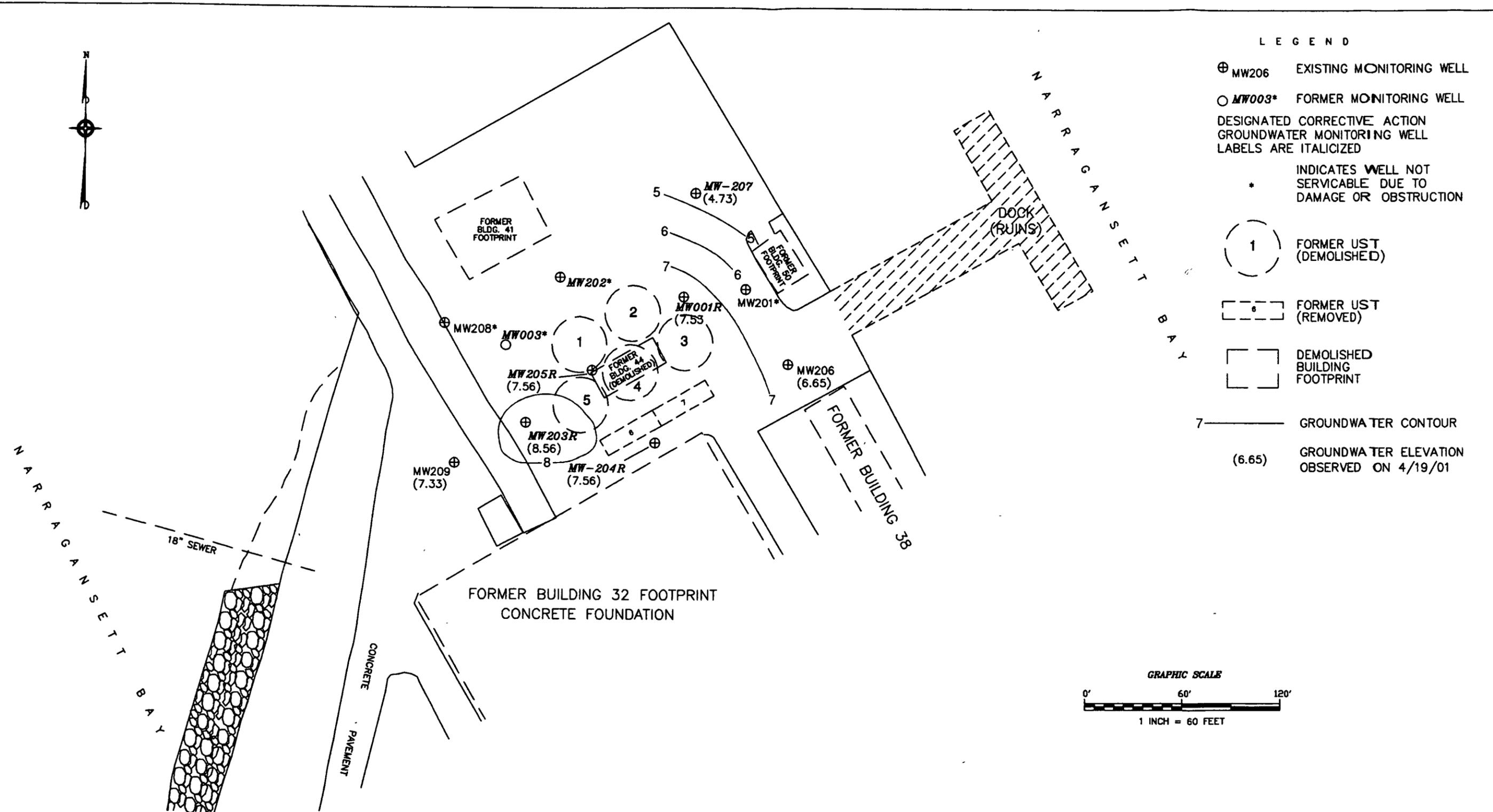


55 Jonspin Road  
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LEGEND

- ⊕ MW206 EXISTING MONITORING WELL
- MW003\* FORMER MONITORING WELL
- DESIGNATED CORRECTIVE ACTION  
GROUNDWATER MONITORING WELL  
LABELS ARE ITALICIZED
- \* INDICATES WELL NOT  
SERVICABLE DUE TO  
DAMAGE OR OBSTRUCTION
- 1 FORMER UST  
(DEMOLISHED)
- FORMER UST  
(REMOVED)
- DEMOLISHED  
BUILDING  
FOOTPRINT
- 7 GROUNDWATER CONTOUR
- (6.65) GROUNDWATER ELEVATION  
OBSERVED ON 4/19/01

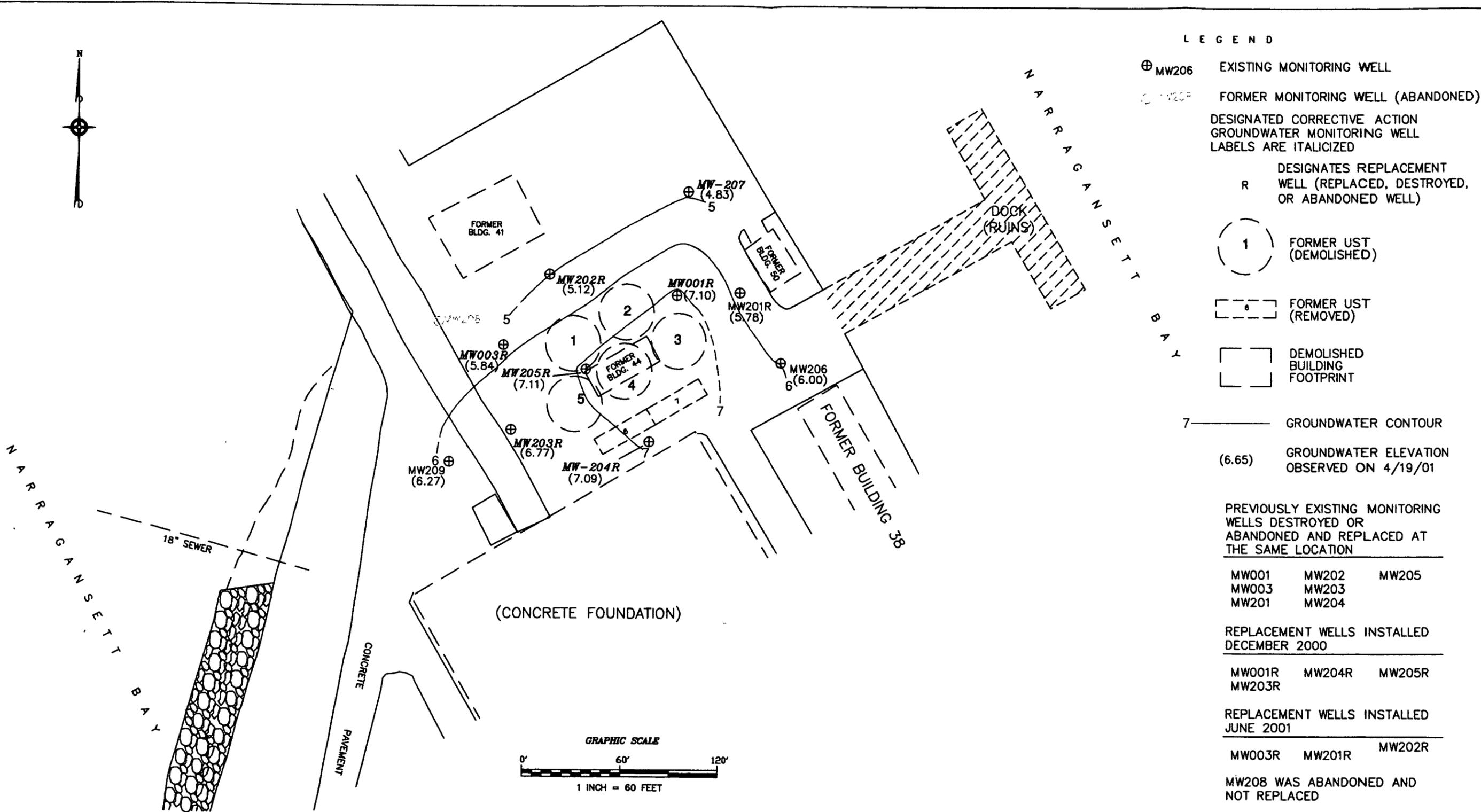


- NOTES:
1. PLAN COMPILED FROM PORTIONS OF A DIGITIZED COPY OF "GOULD ISLAND, U.S. NAVAL TORPEDO STATION, NEWPORT R.I., SHOWING CONDITIONS ON JUNE 30, 1948". A PLAN ENTITLED "GEOTECHNICAL SURVEY PLAN AT BUILDING 32 - GOULD ISLAND, U.S. NAVAL BASE, NEW, RHODE ISLAND, FOR TETRA TECH NUS, INC.", PLAN DATE: 4/25/00, AND DONE BY LOUIS FEDERICI & ASSOCIATES, PROVIDENCE, RHODE ISLAND. A PLAN ENTITLED: "LOCATION OF MONITORING WELLS AT BUILDING 32 - GOULD ISLAND, U.S. NAVAL BASE, NEW, RHODE ISLAND, FOR TETRA TECH NUS, INC.", PLAN DATE: 5/9/00, AND DONE BY LOUIS FEDERICI & ASSOCIATES, PROVIDENCE, RHODE ISLAND.
  2. ALL LOCATIONS ARE TO BE CONSIDERED APPROXIMATE.
  3. PLAN NOI TO BE USED FOR DESIGN.

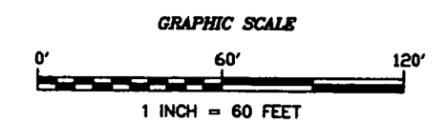
ROUND-1 (APRIL 2001) GROUNDWATER LEVEL MAP	
FORMER BUILDING 44 UST SITE	
GOULD ISLAND - NAVSTA NEWPORT, RHODE ISLAND	
DRAWN BY: D.W. MACDOUGALL	REV.: 0
CHECKED BY: J.R. FORRELLI	DATE: JUNE 20, 2002
SCALE: 1" = 60'	FILE NO.: DWG\2842\1076\FIG_2-2.DWG

FIGURE 2-2

**TETRA TECH NUS, INC.**  
 55 Jonspin Road  
 Wilmington, MA 01887  
 (978)658-7899



- LEGEND**
- ⊕ MW206 EXISTING MONITORING WELL
  - ⊖ MW208 FORMER MONITORING WELL (ABANDONED)
  - DESIGNATED CORRECTIVE ACTION GROUNDWATER MONITORING WELL LABELS ARE ITALICIZED
  - R* DESIGNATES REPLACEMENT WELL (REPLACED, DESTROYED, OR ABANDONED WELL)
  - 1 FORMER UST (DEMOLISHED)
  - 6 FORMER UST (REMOVED)
  - DEMOLISHED BUILDING FOOTPRINT
  - 7 GROUNDWATER CONTOUR
  - (6.65) GROUNDWATER ELEVATION OBSERVED ON 4/19/01
- PREVIOUSLY EXISTING MONITORING WELLS DESTROYED OR ABANDONED AND REPLACED AT THE SAME LOCATION
- |       |       |       |
|-------|-------|-------|
| MW001 | MW202 | MW205 |
| MW003 | MW203 |       |
| MW201 | MW204 |       |
- REPLACEMENT WELLS INSTALLED DECEMBER 2000
- |        |        |        |
|--------|--------|--------|
| MW001R | MW204R | MW205R |
| MW203R |        |        |
- REPLACEMENT WELLS INSTALLED JUNE 2001
- |        |        |        |
|--------|--------|--------|
| MW003R | MW201R | MW202R |
|--------|--------|--------|
- MW208 WAS ABANDONED AND NOT REPLACED



**NOTES:**

1. PLAN COMPILED FROM PORTIONS OF A DIGITIZED COPY OF "GOULD ISLAND, U.S. NAVAL TORPEDO STATION, NEWPORT R.I., SHOWING CONDITIONS ON JUNE 30, 1948". A PLAN ENTITLED "GEOTECHNICAL SURVEY PLAN AT BUILDING 32 - GOULD ISLAND, U.S. NAVAL BASE, NEW, RHODE ISLAND, FOR TETRA TECH NUS, INC.", PLAN DATE: 4/25/00, AND DONE BY LOUIS FEDERICI & ASSOCIATES, PROVIDENCE, RHODE ISLAND. A PLAN ENTITLED: "LOCATION OF MONITORING WELLS AT BUILDING 32 - GOULD ISLAND, U.S. NAVAL BASE, NEW, RHODE ISLAND, FOR TETRA TECH NUS, INC.", PLAN DATE: 5/9/00, AND DONE BY LOUIS FEDERICI & ASSOCIATES, PROVIDENCE, RHODE ISLAND.
2. ALL LOCATIONS ARE TO BE CONSIDERED APPROXIMATE.
3. PLAN NOT TO BE USED FOR DESIGN.

ROUND 2 (OCTOBER 2001) GROUNDWATER LEVEL MAP		
FORMER BUILDING 44 UST SITE		
GOULD ISLAND - NAVSTA NEWPORT, RHODE ISLAND		
DRAWN BY:	D.W. MACDOUGALL	REV.: 0
CHECKED BY:	J.R. FORRELLI	DATE: JUNE 20, 2002
SCALE:	1" = 60'	FILE NO.: DWG\2842\1076\FIG_2-3.DWG

FIGURE 2-3

**TETRA TECH NUS, INC.**  
 55 Jonspin Road Wilmington, MA 01887  
 (978)658-7899

LEGEND

- ⊕ MW206 EXISTING MONITORING WELL
- MW208 FORMER MONITORING WELL (ABANDONED)

DESIGNATED CORRECTIVE ACTION  
GROUNDWATER MONITORING WELL  
LABELS ARE ITALICIZED

R  
DESIGNATES REPLACEMENT  
WELL (REPLACED, DESTROYED,  
OR ABANDONED WELL)

1  
FORMER UST  
(DEMOLISHED)

6  
FORMER UST  
(REMOVED)

DEMOLISHED  
BUILDING  
FOOTPRINT

7  
GROUNDWATER CONTOUR  
(6.65)  
GROUNDWATER ELEVATION  
OBSERVED ON 4/19/01

PREVIOUSLY EXISTING MONITORING  
WELLS DESTROYED OR  
ABANDONED AND REPLACED AT  
THE SAME LOCATION

MW001	MW202	MW205
MW003	MW203	
MW201	MW204	

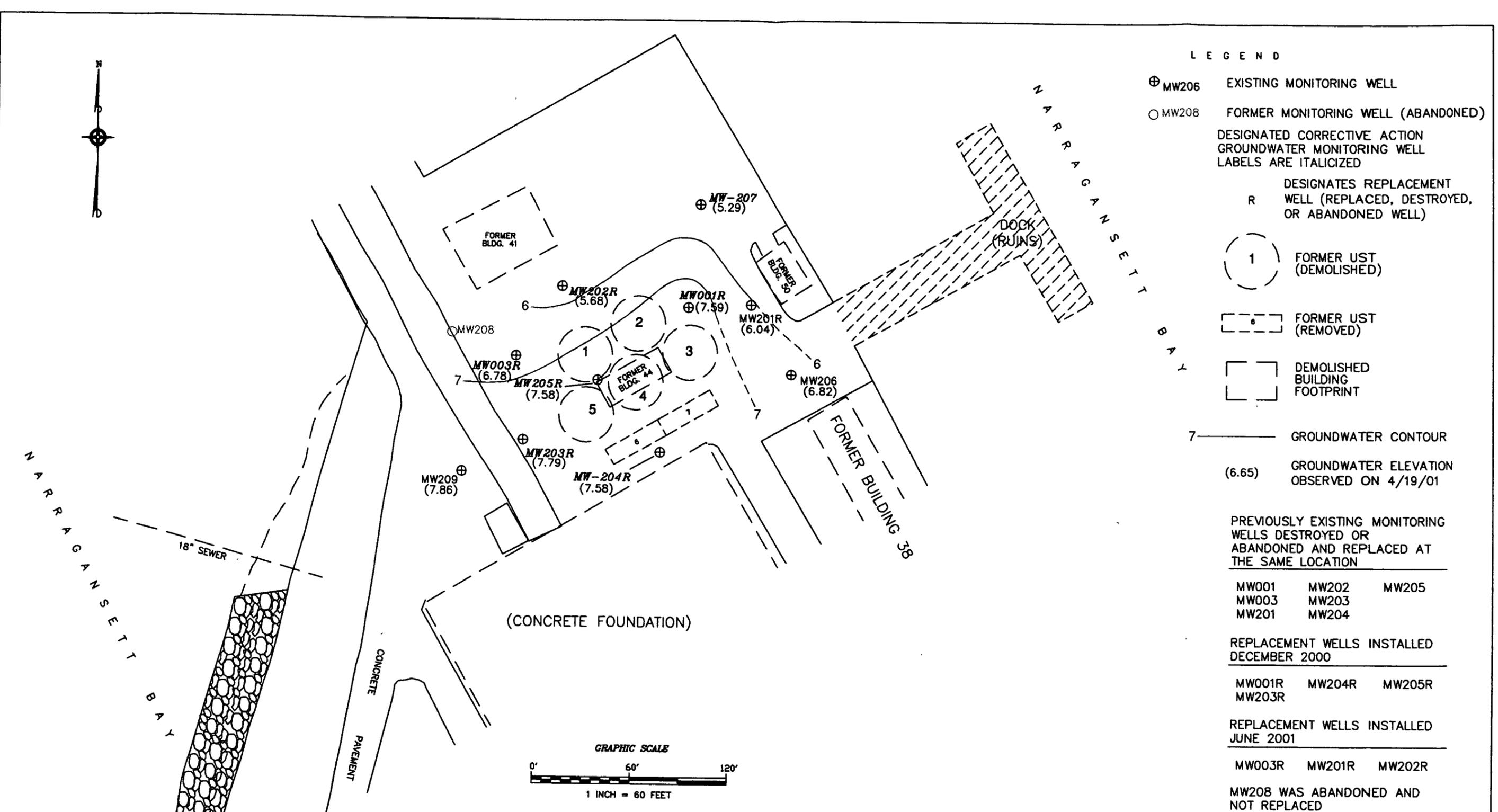
REPLACEMENT WELLS INSTALLED  
DECEMBER 2000

MW001R	MW204R	MW205R
MW203R		

REPLACEMENT WELLS INSTALLED  
JUNE 2001

MW003R	MW201R	MW202R
--------	--------	--------

MW208 WAS ABANDONED AND  
NOT REPLACED



**NOTES:**

1. PLAN COMPILED FROM PORTIONS OF A DIGITIZED COPY OF "GOULD ISLAND, U.S. NAVAL TORPEDO STATION, NEWPORT R.I., SHOWING CONDITIONS ON JUNE 30, 1948". A PLAN ENTITLED "GEOTECHNICAL SURVEY PLAN AT BUILDING 32 - GOULD ISLAND, U.S. NAVAL BASE, NEW, RHODE ISLAND, FOR TETRA TECH NUS, INC.", PLAN DATE: 4/25/00, AND DONE BY LOUIS FEDERICI & ASSOCIATES, PROVIDENCE, RHODE ISLAND. A PLAN ENTITLED: "LOCATION OF MONITORING WELLS AT BUILDING 32 - GOULD ISLAND, U.S. NAVAL BASE, NEW, RHODE ISLAND, FOR TETRA TECH NUS, INC.", PLAN DATE: 5/9/00, AND DONE BY LOUIS FEDERICI & ASSOCIATES, PROVIDENCE, RHODE ISLAND.
2. ALL LOCATIONS ARE TO BE CONSIDERED APPROXIMATE.
3. PLAN NQI TO BE USED FOR DESIGN.

ROUND 3 (APRIL 2002) GROUNDWATER LEVEL MAP	
FORMER BUILDING 44 UST SITE	
GOULD ISLAND - NAVSTA NEWPORT, RHODE ISLAND	
DRAWN BY: D.W. MACDOUGALL	REV.: 0
CHECKED BY: J.R. FORRELLI	DATE: JUNE 20, 2002
SCALE: 1" = 60'	FILE NO.: DWG\2842\1076\FIG_2-4.DWG

FIGURE 2-4

**TETRA TECH NUS, INC.**

55 Jonspin Road      Wilmington, MA 01887  
(978)658-7899

**APPENDIX A  
FIELD PARAMETERS  
ROUNDS 1 THROUGH 3**

**FIELD PARAMETER SUMMARY  
CORRECTIVE ACTION GROUNDWATER MONITORING  
ROUNDS 1 THROUGH 3  
FORMER BUILDING 44 UST SITE (GOULD ISLAND)  
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND**

Well ID <sup>(1)</sup>	Round	Date	pH (S U)	Spec Cond (mS/cm)	Temp (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mv)	Salinity (%)	Interface Probe Signal (Yes/No)	NAPL Thickness via Signal (ft)	Visual Petroleum Impact (Yes/No)	Type of Visual Impact	TPVC Elevation (feet - MSL) <sup>(2)</sup>	Water Depth (feet - TPVC or Steel)	Water Elevation (feet - MSL)	Comments
<b>Upgradient wells</b>																	
MW204R (1)	1	4/20/01	9.29	2.14	9.18	6.0	3.19	-64	0.1	No	---	No	---	12.24	4.36	7.88	
MW204R	2	10/11/01	7.59	1.92	20.40	1.6	3.43	-105	---	No	---	No	---	11.63	4.54	7.09	
MW204R	3	4/2/02	7.19	0.97	8.90	3.3	7.44	-158	---	No	---	No	---	11.63	4.0	7.63	
MW206	1	4/19/01	---	---	---	---	---	---	---	No	---	No	---	12.02	5.11	6.91	not sampled
MW206	2	10/10/01	---	---	---	---	---	---	---	No	---	No	---	11.75	5.75	6.00	not sampled
MW206	3	4/2/02	---	---	---	---	---	---	---	No	---	No	---	11.75	4.93	6.82	not sampled
<b>Source area wells</b>																	
MW001R	1	4/19/01	11.83	6.67	9.10	260.0	(2)	-104	0.4	No	---	No	---	11.72	3.95	7.77	
MW001R	2	10/10/01	11.47	5.48	19.70	2.5	1.92	-138	---	No	---	No	---	11.3	4.2	7.10	
MW001R	3	4/3/02	11.63	4.69	10.60	80.1	(3)	-81	---	No	---	No	---	11.3	3.71	7.59	
MW203R	1	4/20/01	6.59	3.38	10.78	122.0	4.25	-50	0.2	No	---	No	---	12.74	4.15	8.59	
MW203R	2	10/11/01	6.50	2.82	21.20	2.7	6.91	-99	---	No	---	No	---	12.44	5.67	6.77	
MW203R	3	4/3/02	6.84	1.80	10.50	5.8	3.10	-3	---	No	---	No	---	12.44	4.95	7.49	
MW205R	1	4/20/01	8.88	3.63	10.52	7.0	2.76	-116	0.2	No	---	No	---	12.62	4.93	7.69	
MW205R	2	10/11/01	7.21	3.27	19.60	6.6	4.18	-145	---	No	---	No	---	12.21	5.1	7.11	
MW205R	3	4/2/02	8.27	1.99	9.70	5.1	16.58	-85	---	No	---	No	---	12.21	4.7	7.51	
<b>Downgradient</b>																	
MW003	1	4/19/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Destroyed (replaced 06/2001)
MW003R	2	10/11/01	6.96	6.16	19.10	0.7	2.34	-128	---	No	---	No	---	12.05	6.21	5.84	
MW003R	3	4/3/02	6.78	1.37	9.40	2.6	2.43	-82	---	No	---	No	---	12.05	5.46	6.59	
MW201	1	4/19/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11.92	NA	NA	Not serviceable - obstruction and/or damage (existing well abandoned and replaced 06/2001)
MW201R	2	10/10/01	---	---	---	---	---	---	---	No	---	No	---	11.49	5.71	5.78	not sampled
MW201R	3	4/2/02	---	---	---	---	---	---	---	No	---	No	---	11.49	5.45	6.04	not sampled
MW202	1	4/19/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12.07	NA	NA	Not serviceable - obstruction and/or damage (existing well abandoned and replaced 06/2001)
MW202R	2	10/11/01	7.09	4.24	19.00	0.7	2.27	-204	---	No	---	No	---	11.72	6.6	5.12	
MW202R	3	4/2/02	6.94	3.76	10.00	1.5	(3)	-118	---	No	---	No	---	11.72	6.0	5.72	
MW207	1	4/20/01	8.87	2.67	8.82	170.0	10.24	-36	0.1	No	NA	No	NA	11.95	7.07	4.88	
MW207	2	10/10/01	6.34	4.92	20.50	1.8	6.38	-89	---	No	---	No	---	11.8	6.97	4.83	
MW207	3	4/3/02	6.88	4.15	10.20	509.0	(3)	-76	---	No	---	No	---	11.8	6.5	5.30	
MW208	1	4/19/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12.39	NA	NA	Not serviceable - obstruction and/or damage (abandoned 06/2001)
MW209	1	4/19/01	---	---	---	---	---	---	---	No	---	NA	---	12.73	5.14	7.59	not sampled
MW209	2	10/10/01	---	---	---	---	---	---	---	No	---	No	---	12.48	6.21	6.27	not sampled
MW209	3	4/2/02	---	---	---	---	---	---	---	No	---	No	---	12.48	4.62	7.86	not sampled

(1) "R" designates a replacement well at that location

(2) Round 1 TPVC Elevation based on April 2001 survey, Rounds 2 and 3 TPVC Elevation based on June 2001 survey

**APPENDIX B**  
**ANALYTICAL RESULTS**  
**ROUNDS 1 THROUGH 3**

ROUNDS 1-3 ANALYTICAL RESULTS  
CORRECTIVE ACTION GROUNDWATER MONITORING  
FORMER BUILDING 44 UST SITE  
NAVSTA NEWPORT, RI

Sample Location	MW001R		MW001R		MW001R		MW003R		MW003R		MW202R		MW202R		MW203R		MW203R
Date Sampled	4/19/2001		10/10/2001		4/3/2002		10/11/2001		4/3/2002		10/11/2001		4/3/2002		4/20/2001		10/11/2001
Volatile Organic Analysis (UG/L)																	
1,1,1,2-Tetrachloroethane	5 U		5 U		NA		5 U		NA		5 U		NA		5 U		5 U
1,1,1-Trichloroethane	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
1,1,2,2-Tetrachloroethane	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	NA		NA		10 U		NA		10 U		NA		10 U		NA		NA
1,1,2-Trichloroethane	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
1,1-Dichloroethane	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
1,1-Dichloroethene	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
1,1-Dichloropropene	5 U		5 U		NA		5 U		NA		5 U		NA		5 U		5 U
1,2,3-Trichlorobenzene	5 U		5 U		NA		5 U		NA		5 U		NA		5 U		5 U
1,2,3-Trichloropropane	5 U		5 U		NA		5 U		NA		5 U		NA		5 U		5 U
1,2,4-Trichlorobenzene	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
1,2,4-Tmethylbenzene	5 U		5 U		NA		5 U		NA		5 U		NA		5 U		5 U
1,2-Dibromo-3-chloropropane	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
1,2-Dibromoethane	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
1,2-Dichlorobenzene	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
1,2-Dichloroethane	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
1,2-Dichloropropane	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
1,3,5-Tmethylbenzene	5 U		5 U		NA		5 U		NA		5 U		NA		5 U		5 U
1,3-Dichlorobenzene	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
1,3-Dichloropropane	5 U		5 U		NA		5 U		NA		5 U		NA		5 U		5 U
1,4-Dichlorobenzene	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
2,2-Dichloropropane	5 U		5 U		NA		5 U		NA		5 U		NA		5 U		5 U
2-Butanone	12 U		6 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
2-Chlorotoluene	5 U		5 U		NA		5 U		NA		5 U		NA		5 U		5 U
2-Hexanone	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
4-Chlorotoluene	5 U		5 U		NA		5 U		NA		5 U		NA		5 U		5 U
4-Methyl-2-Pentanone	3 J		2 J		2 J		5 U		10 U		5 U		10 U		5 U		5 U
Acetone	67 U		35 U		29 U		5 U		10 U		5 U		10 U		5 U		9 U
Benzene	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
Bromobenzene	5 U		5 U		NA		5 U		NA		5 U		NA		5 U		5 U
Bromochloromethane	5 U		5 U		NA		5 U		NA		5 U		NA		5 U		5 U
Bromodichloromethane	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
Bromoform	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
Bromomethane	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
Carbon Disulfide	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
Carbon Tetrachloride	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
Chlorobenzene	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
Chloroethane	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
Chloroform	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
Chloromethane	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
cis-1,2-Dichloroethene	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
cis-1,3-Dichloropropene	5 U		5 U		10 U		5 U		10 U		5 U		10 U		5 U		5 U
Cyclohexane	NA		NA		10 U		NA		10 U		NA		10 U		NA		NA

U - Not detected, UJ - Detection limit approximate, J - Quantitation approximate,

\* - From dilution analysis, R - Rejected, NA - Not Analyzed

ROUNDS 1-3 ANALYTICAL RESULTS  
 CORRECTIVE ACTION GROUNDWATER MONITORING  
 FORMER BUILDING 44 UST SITE  
 NAVSTA NEWPORT, RI

Sample Location	MW001R	MW001R	MW001R	MW003R	MW003R	MW202R	MW202R	MW203R	MW203R
Date Sampled	4/19/2001	10/10/2001	4/3/2002	10/11/2001	4/3/2002	10/11/2001	4/3/2002	4/20/2001	10/11/2001
<b>Volatile Organic Analysis (UG/L) (cont.)</b>									
Dibromochloromethane	5 U	5 U	10 U	5 U	10 U	5 U	10 U	5 U	5 U
Dibromomethane	5 U	5 U	NA	5 U	NA	5 U	NA	5 U	5 U
Dichlorodifluoromethane	5 U	5 U	10 U	5 U	10 U	5 U	10 U	5 U	5 U
Ethylbenzene	5 U	5 U	10 U	5 U	10 U	5 U	10 U	5 U	5 U
Hexachlorobutadiene	5 U	5 U	NA	5 U	NA	5 U	NA	5 U	5 U
Iodomethane	5 U	5 U	NA	5 U	NA	5 U	NA	5 U	5 U
Isopropylbenzene	5 U	5 U	10 U	5 U	10 U	5 U	10 U	5 U	5 U
Methyl Acetate	NA	NA	10 U	NA	10 U	NA	10 U	NA	NA
Methyl tert-Butyl Ether	5 U	5 U	10 U	5 U	10 U	5 U	10 U	5 U	5 U
Methylcyclohexane	NA	NA	10 U	NA	10 U	NA	10 U	NA	NA
Methylene Chloride	5 U	5 U	10 U	5 U	10 U	5 U	10 U	5 U	5 U
n-Butylbenzene	5 U	5 U	NA	5 U	NA	5 U	NA	5 U	5 U
n-Propylbenzene	5 U	5 U	NA	5 U	NA	5 U	NA	5 U	5 U
Naphthalene	8 U	39	NA	9 U	NA	5 U	NA	5 U	5 U
p-Isopropyltoluene	5 U	5 U	NA	5 U	NA	5 U	NA	5 U	5 U
sec-Butylbenzene	5 U	5 U	NA	5 U	NA	5 U	NA	5 U	5 U
Styrene	5 U	5 U	10 U	5 U	10 U	5 U	10 U	5 U	5 U
tert-Butylbenzene	5 U	5 U	NA	5 U	NA	5 U	NA	5 U	5 U
Tetrachloroethene	5 U	5 U	10 U	5 U	10 U	5 U	10 U	5 U	5 U
Toluene	1 J	1	2 J	5 U	10 U	5 U	1 J	5 U	5 U
Total Xylenes	5 U	5 U	10 U	5 U	10 U	5 U	10 U	5 U	5 U
trans-1,2-Dichloroethene	5 U	5 U	10 U	5 U	10 U	5 U	10 U	5 U	5 U
trans-1,3-Dichloropropene	5 U	5 U	10 U	5 U	10 U	5 U	10 U	5 U	5 U
Trichloroethene	5 U	5 U	10 U	5 U	10 U	5 U	10 U	5 U	5 U
Trichlorofluoromethane	5 U	5 U	10 U	5 U	10 U	5 U	10 U	5 U	5 U
Vinyl Acetate	5 UJ	5 U	NA	5 U	NA	5 U	NA	5 U	5 U
Vinyl Chloride	5 U	5 U	10 U	5 U	10 U	5 U	10 U	5 U	5 U

U - Not detected, UJ - Detection limit approximate, J - Quantitation approximate,  
 \* - From dilution analysis, R - Rejected, NA - Not Analyzed

ROUNDS 1-3 ANALYTICAL RESULTS  
CORRECTIVE ACTION GROUNDWATER MONITORING  
FORMER BUILDING 44 UST SITE  
NAVSTA NEWPORT, RI

Sample Location	MW001R		MW001R		MW001R		MW003R		MW003R		MW202R		MW202R		MW203R		MW203R	
Date Sampled	4/19/2001		10/10/2001		4/3/2002		10/11/2001		4/3/2002		10/11/2001		4/3/2002		4/20/2001		10/11/2001	
<b>Semivolatile Organic Analysis (UG/L)</b>																		
1,2,4-Trichlorobenzene	10	U	90	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,2-Dichlorobenzene	10	U	90	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,3-Dichlorobenzene	10	U	90	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,4-Dichlorobenzene	10	U	90	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2,2'-oxybis(1-Chloropropane)	10	U	90	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2,4,5-Trichlorophenol	1	J	180	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U
2,4,6-Trichlorophenol	10	U	90	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2,4-Dichlorophenol	10	U	90	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2,4-Dimethylphenol	8	J	16		8	J	10	U	10	U	10	U	10	U	10	U	10	U
2,4-Dinitrophenol	20	U	180	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U
2,4-Dinitrotoluene	10	U	90	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2,6-Dinitrotoluene	10	U	90	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-Chloronaphthalene	10	U	90	U	10	U	10	U	10	U	8	J	10	U	10	U	10	U
2-Chlorophenol	10	U	90	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-Methylnaphthalene	1	J	90	U	2	J	10	U	10	U	10	U	10	U	2	J	10	U
2-Methylphenol	4	J	90	U	4	J	10	U	10	U	10	U	10	U	10	U	10	U
2-Nitroaniline	20	U	180	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U
2-Nitrophenol	10	U	90	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
3,3'-Dichlorobenzidine	10	U	90	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
3-Nitroaniline		R	180	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U
4,6-Dinitro-2-methylphenol	20	U	180	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U
4-Bromophenyl-phenylether	10	U	90	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
4-Chloro-3-methylphenol	10	U	90	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
4-Chloroaniline	10	U	90	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
4-Chlorophenyl-phenylether	10	U	90	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
4-Methylphenol	36		71		33		10	U	10	U	10	U	10	U	10	U	10	U
4-Nitroaniline	20	U	180	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U
4-Nitrophenol	20	U	180	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U
Acenaphthene	4	J	90	U	5	J	10	U	10	U	1	J	10	U	8	J	10	U
Acenaphthylene	10	U	90	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Anthracene	4	J	90	U	3	J	1	J	10	U	3	J	10	U	18		1	J
Benzo(a)anthracene	3	J	90	U	3	J	10	U	10	U	10	U	10	U	32		2	J
Benzo(a)pyrene	3	J	90	U	3	J	10	U	10	U	10	U	10	U	26		1	J
Benzo(b)fluoranthene	4	J	90	U	4	J	10	U	10	U	10	U	10	U	34		2	J
Benzo(g,h,i)perylene	10	U	90	U	2	J	10	U	10	U	10	U	10	U	15		10	U
Benzo(k)fluoranthene	1	J	90	U	1	J	10	U	10	U	10	U	10	U	12		10	U

U - Not detected, UJ - Detection limit approximate, J - Quantitation approximate,  
\* - From dilution analysis, R - Rejected, NA - Not Analyzed

ROUNDS 1-3 ANALYTICAL RESULTS  
CORRECTIVE ACTION GROUNDWATER MONITORING  
FORMER BUILDING 44 UST SITE  
NAVSTA NEWPORT, RI

Sample Location	MW001R	MW001R	MW001R	MW003R	MW003R	MW202R	MW202R	MW203R	MW203R
Date Sampled	4/19/2001	10/10/2001	4/3/2002	10/11/2001	4/3/2002	10/11/2001	4/3/2002	4/20/2001	10/11/2001
<b>Semivolatile Organic Analysis (UG/L) (cont.)</b>									
Bis(2-Chloroethoxy)methane	10 U	90 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bis(2-Chloroethyl)ether	10 U	90 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	10 U	90 U	2 J	10 U	10 U	10 U	1 J	10 U	10 U
Butylbenzylphthalate	10 U	90 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbazole	5 J	33	5 J	3 J	10 U	18 J	5 J	11	3 J
Chrysene	3 J	90 U	3 J	10 U	10 U	10 U	10 U	33	2 J
Di-n-Butylphthalate	10 U	90 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octylphthalate	10 U	90 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene	10 U	90 U	10 U	10 U	10 U	10 U	10 U	4 J	10 U
Dibenzofuran	2 J	90 U	2 J	10 U	10 U	3 J	1 J	5 J	10 U
Diethylphthalate	10 U	90 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dimethylphthalate	10 U	90 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	8 J	90 U	7 J	10 U	10 U	10 U	1 J	68	5 J
Fluorene	2 J	90 U	2 J	10 U	10 U	3 J	2 J	9 J	10 U
Hexachlorobenzene	10 U	90 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	10 U	90 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	10 U	90 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	10 U	90 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	2 J	90 U	2 J	10 U	10 U	10 U	10 U	16	10 U
Isophorone	10 U	90 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine	10 U	90 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-Nitroso-diphenylamine	10 U	90 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	11	22	15	4 J	10 U	1 J	9 J	4 J	10 U
Nitrobenzene	10 U	90 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	34	77	30	4 J	3	20 U	20 U	4 J	20 U
Phenanthrene	7 J	90 U	7 J	10 U	10 U	10 U	10 U	52	5 J
Phenol	230 *J	980	280 *	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	7 J	90 U	6 J	10 U	10 U	10 U	1 J	59	4 J

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ROUNDS 1-3 ANALYTICAL RESULTS  
CORRECTIVE ACTION GROUNDWATER MONITORING  
FORMER BUILDING 44 UST SITE  
NAVSTA NEWPORT, RI

Sample Location	MW001R	MW001R	MW001R	MW003R	MW003R	MW202R	MW202R	MW203R	MW203R
Date Sampled	4/19/2001	10/10/2001	4/3/2002	10/11/2001	4/3/2002	10/11/2001	4/3/2002	4/20/2001	10/11/2001
<b>Gasoline Range Organic Analysis (UG/L)</b>									
Gasoline Range Organics	250 U	250 U	57	250 U	50 U	250 U	140	250 U	250 U
<b>Total Petroleum Hydrocarbon Analysis (MG/L)</b>									
Total Petroleum Hydrocarbons	6.2	5.5	3.5	2.1	0.76	2.1	3.4	20	2.2
<b>TAL Metal Analysis (UG/L)</b>									
Arsenic	14.5	8.3 U	4.3 J	24.3	11.9	7.7 U	3.0 U	9.9	11.5 U
Banum	144 U	177	111	166	107	119	92.9	250	162
Cadmium	4.1 U	2.6 U	2.0 U	4.3	2.0 U	5.6	2.0 U	2.3 U	2.4 U
Chromium	11.3 U	8.8	4.8 UJ	57.3	34.0	17.0	3.0 U	6.5 U	1.6 U
Lead	278	230	135	30.6	26.6	6.8	12.8	123	2.0 U
Mercury	1.0	0.42	0.40	0.14 U	0.16 U	0.14 U	0.13 U	0.13 U	0.14 U
Selenium	6.0 U	6.0 U	8.0 U	6.0 U	8.0 U	6.0 U	8.0 U	6.0 U	6.0 U
Silver	1.0 U	1.1 U	2.6 UJ	1.0 U	2.0 U	1.0 U	3.8 UJ	1.0 U	1.0 U
<b>Dissolved Metal Analysis (UG/L)</b>									
Arsenic	7.9	7.2 U	3.7 J	5.0 U	3.4	2.0 U	3.0 U	6.2	10.7 U
Banum	84.6 UJ	82.8	67	51.1	25.4 U	89.5	66.7	169 UJ	152
Cadmium	0.80 U	0.40 U	2.0 U	0.89 U	2.0 U	0.43 UJ	2.0 U	0.88 U	2.4 U
Chromium	0.61 UJ	0.86 U	3.0 U	2.4 U	3.0 U	1.3 U	3.0 U	0.91 UJ	2.0 U
Lead	37.0	15.2	6.8	2.0 U	1.0 U	2.0 U	1.0 U	2.0 U	2.0 U
Mercury	0.15 J	0.36	0.14 U	0.13 U	0.14 U	0.15 U	0.14 U	0.13 U	0.15 U
Selenium	6.0 U	6.0 U	8.0 U	6.0 U	8.0 U	6.0 U	8.0 U	6.0 U	6.0 U
Silver	1.0 UJ	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 UJ	1.0 U

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\* - From dilution analysis, R - Rejected, NA - Not Analyzed

ROUNDS 1-3 ANALYTICAL RESULTS  
CORRECTIVE ACTION GROUNDWATER MONITORING  
FORMER BUILDING 44 UST SITE  
NAVSTA NEWPORT, RI

Sample Location	MW203R	MW204R	MW204R	MW204R	MW205R	MW205R	MW205R	MW205R	MW207	MW207	MW207	
Date Sampled	4/2/2002	4/20/2001	10/11/2001	4/2/2002	4/20/2001	10/11/2001	4/2/2002	4/20/2001	10/10/2001	4/3/2002		
<b>Volatile Organic Analysis (UG/L)</b>												
1,1,1,2-Tetrachloroethane		NA	5 U	5 U	NA	5 U	5 U	5 U	NA	5 U	5 U	NA
1,1,1-Trichloroethane	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
1,1,2,2-Tetrachloroethane	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
1,1,2-Trichloro-1,2,2-trifluoroethane	10 U	NA	NA	10 U	NA	NA	10 U	NA	NA	NA	10 U	U
1,1,2-Trichloroethane	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
1,1-Dichloroethane	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
1,1-Dichloroethene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
1,1-Dichloropropane	NA	5 U	5 U	NA	5 U	5 U	NA	5 U	5 U	5 U	NA	NA
1,2,3-Trichlorobenzene	NA	5 U	5 U	NA	5 U	5 U	NA	5 U	5 U	5 U	NA	NA
1,2,3-Trichloropropane	NA	5 U	5 U	NA	5 U	5 U	NA	5 U	5 U	5 U	NA	NA
1,2,4-Trichlorobenzene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
1,2,4-Trimethylbenzene	NA	5 U	5 U	NA	5 U	5 U	NA	5 U	5 U	5 U	NA	NA
1,2-Dibromo-3-chloropropane	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
1,2-Dibromoethane	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
1,2-Dichlorobenzene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
1,2-Dichloroethane	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
1,2-Dichloropropane	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
1,3,5-Trimethylbenzene	NA	5 U	5 U	NA	5 U	5 U	NA	5 U	5 U	5 U	NA	NA
1,3-Dichlorobenzene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
1,3-Dichloropropane	NA	5 U	5 U	NA	5 U	5 U	NA	5 U	5 U	5 U	NA	NA
1,4-Dichlorobenzene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
2,2-Dichloropropane	NA	5 U	5 U	NA	5 U	5 U	NA	5 U	5 U	5 U	NA	NA
2-Butanone	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
2-Chlorotoluene	NA	5 U	5 U	NA	5 U	5 U	NA	5 U	5 U	5 U	NA	NA
2-Hexanone	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
4-Chlorotoluene	NA	5 U	5 U	NA	5 U	5 U	NA	5 U	5 U	5 U	NA	NA
4-Methyl-2-Pentanone	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
Acetone	10 U	5 U	5 U	10 U	8 U	5 U	10 U	5 U	5 U	5 U	10 U	U
Benzene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
Bromobenzene	NA	5 U	5 U	NA	5 U	5 U	NA	5 U	5 U	5 U	NA	NA
Bromochloromethane	NA	5 U	5 U	NA	5 U	5 U	NA	5 U	5 U	5 U	NA	NA
Bromodichloromethane	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
Bromoform	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
Bromomethane	10 UJ	5 U	5 U	10 UJ	5 U	5 U	10 UJ	5 U	5 U	5 U	10 UJ	UJ
Carbon Disulfide	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
Carbon Tetrachloride	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
Chlorobenzene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
Chloroethane	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
Chloroform	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
Chloromethane	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
cis-1,2-Dichloroethene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
cis-1,3-Dichloropropene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U	U
Cyclohexane	10 U	NA	NA	10 U	NA	NA	10 U	NA	NA	NA	10 U	U

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\* - From dilution analysis, R - Rejected, NA - Not Analyzed

ROUNDS 1-3 ANALYTICAL RESULTS  
CORRECTIVE ACTION GROUNDWATER MONITORING  
FORMER BUILDING 44 UST SITE  
NAVSTA NEWPORT, RI

Sample Location	MW203R	MW204R	MW204R	MW204R	MW205R	MW205R	MW205R	MW207	MW207	MW207
Date Sampled	4/2/2002	4/20/2001	10/11/2001	4/2/2002	4/20/2001	10/11/2001	4/2/2002	4/20/2001	10/10/2001	4/3/2002
Volatile Organic Analysis (UG/L) (cont)										
Dibromochloromethane	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U
Dibromomethane	NA	5 U	5 U	NA	5 U	5 U	NA	5 U	5 U	NA
Dichlorodifluoromethane	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U
Ethylbenzene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U
Hexachlorobutadiene	NA	5 U	5 U	NA	5 U	5 U	NA	5 U	5 U	NA
Iodomethane	NA	5 U	5 U	NA	5 U	5 U	NA	5 U	5 U	NA
Isopropylbenzene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U
Methyl Acetate	10 U	NA	NA	10 U	NA	NA	10 U	NA	NA	10 U
Methyl tert-Butyl Ether	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U
Methylcyclohexane	10 U	NA	NA	10 U	NA	NA	10 U	NA	NA	10 U
Methylene Chloride	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U
n-Butylbenzene	NA	5 U	5 U	NA	5 U	5 U	NA	5 U	5 U	NA
n-Propylbenzene	NA	5 U	5 U	NA	5 U	5 U	NA	5 U	5 U	NA
Naphthalene	NA	8 U	40	NA	22	5 U	NA	5 U	5 U	NA
p-Isopropyltoluene	NA	5 U	5 U	NA	5 U	5 U	NA	5 U	5 U	NA
sec-Butylbenzene	NA	5 U	5 U	NA	5 U	5 U	NA	5 U	5 U	NA
Styrene	10 UJ	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U
tert-Butylbenzene	NA	5 U	5 U	NA	5 U	5 U	NA	5 U	5 U	NA
Tetrachloroethene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U
Toluene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U
Total Xylenes	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U
trans-1,2-Dichloroethene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U
trans-1,3-Dichloropropene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U
Trichloroethene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U
Trichlorofluoromethane	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U
Vinyl Acetate	NA	5 U	5 U	NA	5 U	5 U	NA	5 U	5 U	NA
Vinyl Chloride	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U

U - Not detected, UJ - Detection limit approximate, J - Quantitation approximate,  
\* - From dilution analysis, R - Rejected, NA - Not Analyzed

ROUNDS 1-3 ANALYTICAL RESULTS  
 CORRECTIVE ACTION GROUNDWATER MONITORING  
 FORMER BUILDING 44 UST SITE  
 NAVSTA NEWPORT, RI

Sample Location	MW203R	MW204R	MW204R	MW204R	MW205R	MW205R	MW205R	MW207	MW207	MW207
Date Sampled	4/2/2002	4/20/2001	10/11/2001	4/2/2002	4/20/2001	10/11/2001	4/2/2002	4/20/2001	10/10/2001	4/3/2002
<b>Semivolatile Organic Analysis (UG/L)</b>										
1,2,4-Trichlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2,4,6-Trichlorophenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	10 U	10 U	10 U	10 U	10 U	10 U	1 J	10 U	10 U	10 U
2,4-Dimethylphenol	10 U	10 U	10 U	10 U	10 U	10 U	1 J	10 U	10 U	10 U
2,4-Dinitrophenol	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2,4-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chloronaphthalene	10 U	10 U	10 U	10 U	10 U	10 U	3 J	10 U	10 U	1 J
2-Chlorophenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	10 U	10 U	3 J	10 U	2 J	5 J	2 J	10 U	10 U	10 U
2-Methylphenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2-Nitrophenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4,6-Dinitro-2-methylphenol	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Bromophenyl-phenylether	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	10 U	10 U	1 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Nitrophenol	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Acenaphthene	1 J	3	6 J	10 U	6 J	9 J	4 J	10 U	3 J	20
Acenaphthylene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	1 J
Anthracene	2 J	3	3 J	10 U	4 J	4 J	2 J	10 U	2 J	2 J
Benzo(a)anthracene	7 J	10 U	10 U	10 U	1 J	2 J	1 J	10 U	2 J	8 J
Benzo(a)pyrene	7 J	10 U	10 U	10 U	10 U	1 J	10 U	10 U	1 J	9 J
Benzo(b)fluoranthene	9 J	10 U	10 U	10 U	1 J	2 J	1 J	10 U	2 J	13
Benzo(g,h,i)perylene	4 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	6 J
Benzo(k)fluoranthene	4 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5 J

U - Not detected, UJ - Detection limit approximate, J - Quantitation approximate,  
 \* - From dilution analysis, R - Rejected, NA - Not Analyzed

ROUNDS 1-3 ANALYTICAL RESULTS  
CORRECTIVE ACTION GROUNDWATER MONITORING  
FORMER BUILDING 44 UST SITE  
NAVSTA NEWPORT, RI

Sample Location	MW203R		MW204R		MW204R		MW204R		MW205R		MW205R		MW205R		MW207		MW207		MW207	
Date Sampled	4/2/2002		4/20/2001		10/11/2001		4/2/2002		4/20/2001		10/11/2001		4/2/2002		4/20/2001		10/10/2001		4/3/2002	
<b>Semivolatile Organic Analysis (UG/L) (cont.)</b>																				
Bis(2-Chloroethoxy)methane	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Bis(2-Chloroethyl)ether	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
bis(2-Ethylhexyl)phthalate	1	J	10	U	10	U	10	U	10	U	10	U	2	J	10	U	10	U	10	U
Butylbenzylphthalate	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Carbazole	1	J	4		54	J	10	U	4	J	36	J	4	J	10	U	10	U	10	J
Chrysene	8	J	10	U	10	U	10	U	1	J	2	J	1	J	10	U	2	J	11	
Di-n-Butylphthalate	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Di-n-octylphthalate	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Dibenzo(a,h)anthracene	1	J	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Dibenzofuran	10	U	1		4	J	10	U	4	J	6	J	3	J	10	U	3	J	8	J
Diethylphthalate	10	U	10	U	10	U	10	U	1	J	2	J	10	U	10	U	10	U	10	U
Dimethylphthalate	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Fluoranthene	17	J	2		1	J	10	U	4	J	5	J	3	J	1	J	6	J	22	
Fluorene	1	J	1		4	J	10	U	2	J	7	J	3	J	10	U	2	J	5	J
Hexachlorobenzene	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Hexachlorobutadiene	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Hexachlorocyclopentadiene	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Hexachloroethane	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Indeno(1,2,3-cd)pyrene	4	J	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	J
Isophorone	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
N-Nitroso-di-n-propylamine	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
N-Nitroso-diphenylamine	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Naphthalene	10	U	3		22		10	U	5	J	24		12		10	U	10	U	39	
Nitrobenzene	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Pentachlorophenol	20	U	6		1	J	20	U	16	J	3	J	2	J	20	U	20	U	20	U
Phenanthrene	11		1		4	J	10	U	1	J	5	J	6	J	10	U	4	J	13	
Phenol	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Pyrene	15	J	2		10	U	10	U	3	J	4	J	2	J	10	U	4	J	19	

U - Not detected, UJ - Detection limit approximate, J - Quantitation approximate,  
\* - From dilution analysis, R - Rejected, NA - Not Analyzed

ROUNDS 1-3 ANALYTICAL RESULTS  
CORRECTIVE ACTION GROUNDWATER MONITORING  
FORMER BUILDING 44 UST SITE  
NAVSTA NEWPORT, RI

Sample Location	MW203R		MW204R		MW204R		MW204R		MW205R		MW205R		MW205R		MW207		MW207		MW207	
Date Sampled	4/2/2002		4/20/2001		10/11/2001		4/2/2002		4/20/2001		10/11/2001		4/2/2002		4/20/2001		10/10/2001		4/3/2002	
<b>Gasoline Range Organic Analysis (UG/L)</b>																				
Gasoline Range Organics	50	U	250	U	250	U	50	U	250	U	250	U	50	U	250	U	250	U	50	U
<b>Total Petroleum Hydrocarbon Analysis (MGL)</b>																				
Total Petroleum Hydrocarbons	3.4		2.0		1.5		0.69		2.1		2.3		1.4		2.2		2.0		2.7	
<b>TAL Metal Analysis (UG/L)</b>																				
Arsenic	9.1		3.8		6.4	U	3.0	U	5.9		5.2	U	3.0	U	2.0	U	9.8	U	11.9	
Banum	225		70.0	U	57.7		67.9		31.9	U	58.6	U	43.4		93.2	U	230		364	
Cadmium	2.0	U	0.88	U	0.56	U	2.0	U	0.40	U	0.40	U	2.0	U	0.53	UJ	3.3		4.5	
Chromium	35.2		5.6	U	2.4	U	3.7	UJ	6.9	U	5.6		3.6	UJ	0.91	UJ	3.8	U	18.4	U
Lead	45.9		16.0		2.0	U	29.7		4.0	U	2.0	U	8.5		13.1		256		1380	
Mercury	0.14	U	0.14	U	0.14	U	2.1		0.13	U	0.15	U	0.16	UJ	0.14	U	0.14	U	0.48	
Selenium	8.0	U	6.0	U	6.0	U	8.0	U	6.0	U	6.0	U	8.0	U	6.0	U	6.0	U	8.0	U
Silver	2.9	UJ	1.0	U	1.0	U	4.4	U	1.0	U	1.0	U	3.5	UJ	1.0	U	1.0	U	4.3	U
<b>Dissolved Metal Analysis (UG/L)</b>																				
Arsenic	3.0	U	2.6		4.8	U	3.0	U	5.4		6.1	U	3.0	U	2.0	J	9.3	U	3.0	U
Banum	89.0		41.9	U	60.1		53.5		29.2	UJ	58.6		40.0	U	85.6	UJ	185		133	
Cadmium	2.0	U	0.55	U	0.40	U	2.0	U	0.40	U	0.45	UJ	2.0	U	0.46	UJ	2.2	U	2.0	U
Chromium	3.0	U	1.8	U	2.3	U	3.0	U	3.2	UJ	5.5		3.2	J	0.50	UJ	0.99	UJ	3.0	U
Lead	1.0	U	2.0	U	2.0	U	2.6		2.0	U	2.0	U	1.9	J	2.0	U	2.0	U	1.0	
Mercury	0.13	U	0.13	U	0.16	U	0.14	U	0.13	U	0.14	U	0.13	U	0.13	U	0.14	U	0.13	U
Selenium	8.0	U	6.0	U	6.0	U	8.0	U	6.0	U	6.0	U	8.0	U	6.0	U	6.0	U	8.0	U
Silver	2.2	J	1.0	U	1.0	U	2.3	J	1.0	UJ	1.0	U	2.0	U	1.0	UJ	1.0	U	2.0	U