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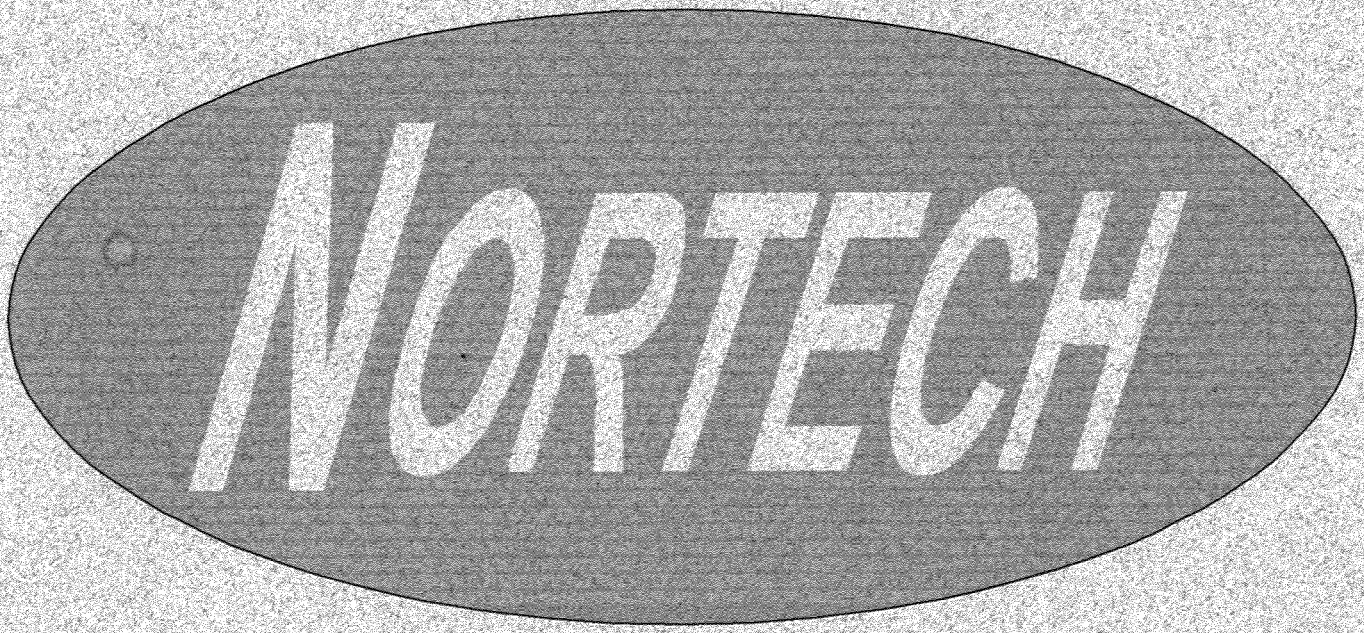
City of Fairbanks
Public Works Facility
2001 Groundwater Sampling Event

Prepared for:
City of Fairbanks
Engineering Department
800 Cushman Street
Fairbanks, AK 99701-4615



September 20, 2002

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APPENDICES

1.0 EXECUTIVE SUMMARY

Mr. Chris Haigh of the City of Fairbanks, contracted with ***NORTECH*** in 2000 to perform a release investigation of the City of Fairbanks' Public Works Facility's fueling system at 2121 Peger Road in Fairbanks, Alaska. Field screening and investigative effort during tank upgrades, trenching, and monitoring well installation indicated contaminated soil around the UST system and groundwater contamination. ***NORTECH*** recommended the development of a work plan in accordance with ADEC guidelines to address the long-term soil and groundwater contamination issues at the site. The City of Fairbanks contracted with ***NORTECH*** to collect groundwater samples from the existing wells as an interim measure while the process of creating and implementing and groundwater monitoring plan is under way. To accomplish the interim goal, ***NORTECH*** collected groundwater samples in October 2001.

Frozen ground was encountered across most of the investigation area during excavation, drilling, and sampling events in 2000. Based on the frost encountered during drilling, ice was expected in many of the wells until at least late summer, if thawing occurred at all. Sampling in October 2001 confirmed that three wells upgradient and nearest to the fueling island appeared to be frozen solid. The other four wells were sampled without difficulty. Gasoline range organics (GRO) remain about three times the cleanup level in the source area and benzene levels remain about two orders of magnitude above the cleanup level in the source area. GRO was not detected in any of the perimeter wells and benzene was observed slightly above the cleanup level in one perimeter well. DRO levels in the source area are slightly below the cleanup level.

Based on the field observations and sample results, ***NORTECH*** concludes that site conditions and the level of groundwater contaminants have not significantly changed from last year and confirm last year's findings. GRO and benzene are the only contaminants observed over the cleanup levels on the site and are the primary contaminants of concern. Although not detected above the cleanup levels, DRO is a secondary contaminant of concern and sampling should be done in the source area only. Other volatile organic compounds (including chlorinated compounds), polycyclic aromatic hydrocarbons, and lead are not contaminants of concern on this site.

Road and Wilbur and Peger Roads. The southwest corner of the block, closest to the intersection of Peger and Davis Roads, contains two other properties, the Fairbanks North Star Borough Animal Shelter and Interior Alaska Fish Processors (see Figure 2).

The terrain around the site is flat and vegetation consists mainly of black spruce. Climate data for the Site is estimated from the long-term weather observations taken at the Fairbanks International Airport (less than 2 miles west at an elevation of approximately 440 feet). Over the 65-year station record for Fairbanks, the average air temperature has been 25.9 degrees Fahrenheit. The average annual precipitation in Fairbanks is 11.2 inches water equivalent. Average monthly temperatures are generally below freezing from October through April.

2.2 Site Description

The Public Works facility consists of a large office/garage complex that serves as the headquarters of the Public Works Department. There are a number of other improvements on the site, including a large warehouse structure, the City impound lot, several smaller storage building, and the fuel islands. The surface of most of the site is gravel and used as a parking area for vehicles and equipment. The area is primarily flat, although some drainage swales are present across the parking area. Drainage is primarily to unused portions of the property, not to a surface water body.

The Public Works underground storage tank (UST) fueling system, installed in 1980, is used to fuel the City's vehicle and equipment fleet. The UST system initially consisted of three 10,000-gallon tanks with piping to two fueling islands. One of the tanks contained diesel, while the other two contained unleaded gasoline. One of the gasoline tanks has been taken out of service and closed in place.

2.3 Previous Investigations

In August 1999, the City contracted with Alaska Lining and Retrofit (ALR) to upgrade the two gasoline USTs and remove the fuel from the diesel tank in order to take it out of service. During the upgrades, a petroleum release was encountered and ALR performed environmental screening of the soils. The soils were screened using a photo ionization detector (PID) and over 130 tons of soil were removed from the area and remediated. There were indications of more soil impacts and the potential for groundwater contamination.

The city contracted with ***NORTECH*** in the summer of 2000 conduct a release investigation at the site. The investigation confirmed and defined the areal extent of soil contamination at the site. There is soil contamination at various levels from 4' to 12' bgs (feet below ground surface) within an approximate 25-foot radius around the

north dispenser island. The gravel bedding and backfill around the USTs is considered impacted. Approximately 125-150 cubic yards of contaminated material were excavated during exploratory trenching at the site. During excavation for the UST repiping, an additional 75-100 cubic yards of contaminated material from beneath the northern dispenser island were removed. Limited soil impacts were observed starting at a depth of 7' bgs around the southern dispenser island. Excavation of this area confirmed the depth of the contamination, indicating a subsurface source.

Approximately 500-1000 cubic yards of contaminated soil are estimated to exist around the UST system and excavation of the majority (70%) of this soil is not possible without undermining the structural integrity of the UST system. The portions that are accessible for excavation are the outer edges where contamination is attenuating, so further excavation was not recommended at the time.

Groundwater impacts have been confirmed 75' to 175' from the center of the UST system in all major compass directions. Non-detect or background levels have been confirmed to the west and northwest, and are estimated for the south and east. Sample results indicate that groundwater contamination does not extend across or come within 350' of existing property lines. A minimal hydraulic gradient of approximately 0.001 feet per foot towards the northwest was observed in the summer and fall months.

Irregular and intermittent seasonal and permafrost underlies the majority of the site for most or all of the year to depths exceeding 20' bgs in close proximity to the UST system. The typical frost depth is to between 8' and 12' bgs. The frozen ground variations over time and season has impacted the migration of soil and groundwater contamination from one or more continuous and/or bulk spill events, which may account for the spreading of soil contamination at depth across the site, particularly towards the south dispenser island and northwest around the north dispenser island. Additionally, the frost has produced ice in the monitoring wells closest to the UST system. Based on drilling logs, these wells were not expected to thaw until very late in the summer/fall, if at all.

2.5 2001 Investigation Objectives

While the City of Fairbanks is negotiating with the State of Alaska Department of Environmental Conservation (ADEC) about long-term monitoring and alternative cleanup plans, ***NORTECH*** was contracted to collect and analyze groundwater samples from the existing wells at the Site. The analyte list was slightly expanded to provide additional information regarding contaminants of concern (COCs) at the site. In addition, groundwater levels and new survey data were collected to evaluate groundwater flow direction.

3.0 METHODOLOGY

Groundwater samples were collected following ADEC procedures outline in the *Underground Storage Tanks Procedures Manual* dated December 1, 1999. Groundwater samples were collected from the installed wells on the site.

CT&E Laboratories performed all laboratory analysis was by in accordance with the methods identified below:

- Gasoline Range Organics (GRO)/State of Alaska Method AK 101 with BTEX
- Diesel Range Organics (DRO) /State of Alaska Method AK 102
- Volatile Organic Compounds (VOC)/EPA Method 8260 Full
- Lead by SW6020 ICP-MS

John Hargesheimer, PE, DEE, CIH, Principal-In-Charge, for ***NORTECH***, had overall contractual responsibility for this project. Peter Beardsley and Toos Omtzigt conducted field activities; both are ADEC approved qualified personnel for collecting groundwater samples.

4.0 FIELD ACTIVITIES

October 26, 2001: Conducted groundwater sampling and monitoring well surveying. Monitoring wells MW-1, MW-2, and MW-9 were frozen and attempts to penetrate the ice were not successful and these wells were not sampled. Monitoring wells MW-3, 6, 7, and 8 were sampled successfully. In addition, groundwater levels were recorded and well elevations were surveyed. The samples were delivered to the laboratory for analysis.

5.0 GROUNDWATER CLEANUP LEVELS

Groundwater cleanup levels for drinking water are set out in Table C of 18AAC75. Cleanup levels for GRO, DRO, and BTEX are shown in the table below. The table for VOC cleanup levels is much longer and is therefore included in Appendix 2 with the full table of the laboratory results.

CONTAMINANT	GROUNDWATER CLEANUP LEVELS
Units	ug/L
Gasoline Range Organics (GRO)	1300
Diesel Range Organics (DRO)	1500
Benzene (B)	5
Toluene (T)	1000
Ethylbenzene (E)	700
Total Xylenes (X)	10000

6.0 LABORATORY RESULTS

Collection of groundwater samples was attempted from the seven wells on this site, however three were frozen and samples were only collected from four of the wells (MW-3, MW-6, MW-7, and MW-8). Samples from three of the four wells were analyzed for GRO/BTEX, VOCs, and Lead, and the sample from the fourth well was analyzed for only GRO/BTEX. These analytes that were detected have been compiled with the historical results from this site and the ADEC Cleanup level for each compound in Table 1, which is attached in Appendix 2. A copy of the original laboratory report is included in Appendix 3.

Lead was not detected in any of the samples. The sample (and field duplicate) from MW-3 showed the highest contaminant concentrations with GRO (4450 ug/L) and benzene (2350 ug/L) above the ADEC Cleanup levels (1300 ug/L and 5 ug/L respectively). Other BTEX compounds and four VOCs (dichlorodifluoromethane, chloromethane, 1,3,5-trimethylbenzene, and 1,2,4-trimethylbenzene) were detected at levels well below the cleanup levels. Benzene was also detected at 11.1 ug/L (above the cleanup level) in MW-7 and at 0.817 ug/L (below the cleanup level) in MW-6. No other compounds were detected in either of these wells. In MW-8, only dichlorodifluoromethane was observed and it was at a concentration of 5.81 ug/l, compared to a cleanup standard of 7300 ug/L.

7.0 QUALITY CONTROL SUMMARY

Quality control procedures are useful for estimating and evaluating the information content of analytical data. Some of the means used to evaluate this information content include precision, accuracy, detection limits, and other quantifiable indicators.

In this study, the ADEC's UST quality control procedures were followed and all requirements met. Any deviations or modifications in the procedures applied are discussed below.

7.1 Field Quality Control and Calculation of Data Quality Indicators

Completeness is a measure of the amount of valid data obtained compared to the amount expected. Because all of the soil samples collected and analyses performed for this project were "valid" as determined by Section 3.1 of the ADEC's SSP, the "Completeness" is calculated to be 100 %.

One duplicate groundwater samples was collected of MW-3 at the same time from the same location for the GRO, DRO, and BTEX analyses, meeting the ADEC requirement for 1 field duplicate sample per every 10 assessment samples.

Precision, expressed as the relative percentage difference (RPD) between field duplicate sample results, is an indication of the consistency of sampling, sample handling, preservation, and laboratory analysis. The RPD has been calculated according to the method described in the SSP (the difference between the field duplicate results expressed as a percentage of the average of those results). If the analyte was detected in neither the sample nor the field duplicate, then calculation of the RPD is meaningless; however the precision is acceptable. The RPD summary for MW-3 is shown in Table 2 of Appendix 2. All analytes were within acceptable parameters.

The RPD for GRO, DRO, and total BTEX were acceptable in the duplicate pair. Laboratory precision and accuracy parameters for this set samples were acceptable (see Appendix 3, Laboratory Reports).

7.2 Deviations from the ADEC's SSP.

No deviations from the ADEC's SSP were reported.

8.0 ANALYSIS

The City of Fairbanks contracted with ***NORTECH*** to perform a groundwater sampling event during the fall of 2001 at the Public Works facility. Soil and groundwater contamination was identified in 2000 during a series of tank retrofits, excavations, and monitoring well installations. Seven groundwater wells have been installed for groundwater monitoring purposes on the site. The City of Fairbanks is currently working with ADEC to implement a long-term groundwater monitoring plan for the site.

NORTECH conducted groundwater sampling and resurveyed the wells in October 2001. Three of the seven wells (MW-1, MW-2, and MW-9) were frozen and these wells were not sampled. All three of the frozen monitoring wells are in high traffic

areas around the dispenser island. The soil compaction resulting from the increased equipment traffic and the removal of snow (insulation) during the winter months appears to have created year-round frozen ground conditions in these areas. Seasonal frost is usually at its lowest (greatest depth) in fall and early winter and these wells have been frozen, or almost frozen (MW-9), for the last two year, indicating these wells will probably not provide groundwater sampling points in the future. The frozen ground conditions, including the frost to at least 24' below the ground surface encountered during well installation in 2000, are probably creating complex groundwater flow paths in and around the contaminant source area.

8.1 Frozen Ground and Hydraulic Gradient

The four wells that were sampled are located west, northwest and north of the tanks and dispenser system. Hydraulic gradient data gathered during 2000 indicated that the groundwater flow is generally to the west-northwest across the site. Groundwater elevation measurements and survey data from 2001 indicate that the groundwater flow direction may be more west and southwest (see Figure 2). Reevaluation of the data from 2000 that did not include MW-9 (which may be separated hydraulically from the other wells by the frozen ground) also indicated a west-southwest gradient. Overall, the hydraulic gradient seems to vary between northwest and southwest.

NORTECH understands that the City of Fairbanks is considering new monitoring wells as a component of the future groundwater monitoring work plan development with ADEC. New monitoring wells should be located away from vehicle traffic routes as much as possible. In addition, the City should consider direct push monitoring wells as a more cost-effective way to reduce monitoring well installation in frozen ground. These wells are less expensive to install and provide similar data to conventional monitoring wells. In addition, ***NORTECH*** is working on developing groundwater screening techniques that may be able to focus groundwater sampling efforts and reduce laboratory costs once well installation is complete.

8.2 Contaminants of Concern

The refueling system at the City Public Works facility includes both gasoline and diesel tanks and dispensers. The facility had used both leaded and unleaded gasoline at various times since installation. In order to properly characterize this site, ADEC regulations specify that the following analyses must be run: gasoline range organics (GRO, Method AK101), diesel range organics (DRO, Method AK102), benzene, toluene, ethylbenzene, xylenes (BTEX, Method 8021 or 8260), metals (lead only, Method 6020), solvents (VOCs, including chlorinated solvents and fuel additives, Method 8260) and polycyclic aromatic hydrocarbons (PAHs, Method 8270).

Initial sampling of soil and groundwater indicated that the contamination was primarily gasoline range organics and benzene. PAHs were not detected in the initial soil sampling in the most contaminated areas and are not considered contaminants of concern for the site. Additional soil and groundwater sampling confirmed that GRO and BTEX were the contaminants of concern. DRO contamination has been observed, but has not exceeded soil or groundwater cleanup levels.

Prior to the 2001 groundwater sampling event, ADEC suggested that the City analyze some samples for any additional parameters that may be important for risk determination, including PAHs, methyl-tertiary butyl ether (MTBE) and ethylene dibromide (EDB). In order to address these other contaminants of concern, lead and volatile organic compounds (VOCs, 8260) were added to the original analysis list of GRO/BTEX and DRO. PAH analysis was not considered necessary because no PAHs were detected in the most contaminated soil samples from 2000.

Lead analysis was performed on samples from three of the four wells, including the most contaminated well sampled. Lead was not detected in any of the three samples and is no longer considered a potential contaminant of concern on the site.

VOC analysis included BTEX compounds, other benzene derivatives, chlorinated solvents (tetrachloroethene, etc), and other chlorinated compounds (such as EDB and freons). Benzene was the only compound detected above the cleanup level in any of the samples and the results were consistent with the GRO/BTEX combination analysis. Two benzene derivatives, 1,3,5-trimethylbenzene and 1,2,4-trimethylbenzene were detected in only the most contaminated sample, but at levels at least an order of magnitude below the cleanup levels. These compounds are not contaminants of concern on for this site.

Dichlorodifluoromethane and chloromethane were the only two chlorinated compounds that were detected in the most contaminated sample and the concentrations were only slightly above the laboratory detection limit. Dichlorodifluoromethane, commonly known as Freon, was detected more than three orders of magnitude below the cleanup level and chloromethane does not have a cleanup level. Other major chlorinated solvents such as tetrachloroethene and trichloroethene were not detected. Chlorinated compounds, including solvents and freons, are not considered contaminants of concern for this site.

MTBE is included in the VOC analyte list, although it must be specifically requested. The North Pole refinery indicated that MTBE was added in Fairbanks for only one or two winters in the early 1990s. The State of Alaska does not currently have a cleanup level for MTBE in groundwater, however the Environmental Protection

Agency has established a threshold of 20-40 ug/L based on taste and odor in water. MTBE was observed in a well near the source area at about one-half the lower EPA threshold and was not detected in the other wells. The low concentrations of MTBE observed indicate that it is not a contaminant of concern for this site.

EDB, used as a lead scavenger in gasoline, was not observed in these samples, although the detection limit was higher than the groundwater cleanup level that has been established by ADEC. An EDB-specific analysis is available that can detect lower concentrations, but this is not considered necessary on this site.

Overall, the contaminants observed on this site are consistent with a gasoline release. Only GRO and benzene are above the ADEC cleanup levels. DRO concentrations approach the ADEC cleanup level in the most contaminated area, but are below the detection limit away from the source area. The DRO concentrations are about an order of magnitude below the GRO level and additional DRO testing on this site should be limited to new well locations and the source area to verify that DRO is not a primary contaminant of concern for the site. Other compounds, including PAHs, MTBE, EDB, chlorinated solvents, benzene derivatives, and freons are not considered contaminants of concern for the site.

8.3 Groundwater Contamination

MW-3 is the well closest to the source area that is not frozen. The GRO concentration remains at about twice the cleanup level and the benzene concentration remains about two orders of magnitude above the cleanup levels, similar to the concentrations observed in 2000. Toluene, ethylbenzene, and xylenes may have increased slightly, but are still at least an order of magnitude below the cleanup level. These results confirm the 2000 results and suggest that the source area of the plume may be stable.

The sample from MW-7 had about the same benzene concentration (about twice the cleanup level) as also the previous sampling events, suggesting that the plume is also stable in this direction (west). Only one compound, dichlorodifluoromethane, was detected in MW-8. The non-detect results of benzene and GRO in this direction are consistent with previous sampling events. MW-8 continues to act as a sentry well for contaminant migration north of the source area.

A trace amount of benzene was detected in MW-6, about 240 feet northwest of the source area. Although the benzene concentration was below the cleanup level, benzene was not previously detected at this concentration in the well. The presence of benzene in MW-6 may indicate that this well is on the northwest edge of the plume and that the plume may be expanding slightly in this direction. The property boundary is more than 400 feet from this well and more than 600 feet from the

source area, so offsite migration is not suspected or considered likely at this time. The next groundwater sampling event of this well may provide more insight into the groundwater contamination in this direction.

8.4 Summary

Three groundwater sampling efforts have been undertaken at the Public Work facility since the monitoring wells were installed in June 2000. Three monitoring wells (MW-1, MW-2, and MW-3) were sampled in July 2000 and revealed groundwater contamination around the tanks and dispenser islands. Four more wells were installed around the perimeter of the site (MW-6, MW-7, MW-8, and MW-9) and a total of five monitoring wells were sampled (MW-1 and MW-2 were frozen). The perimeter wells were near or beyond the edge of the plume and confirmed that most, if not all, of the contamination near the fuel system area was from the fuel system.

A third round of groundwater sampling was conducted in October 2001. Four wells west, northwest, and north of the dispenser island (MW-3, MW-6, MW-7, and MW-8) were sampled. Three wells (MW-1, MW-2, and MW-9) were not sampled because of ice in the wells as discussed in Section 8.1. The hydraulic gradient appears to fluctuate from southwest to northwest in the wells that have been monitored (these wells are all north and west of the source area). GRO and benzene have been identified as the primary contaminants of concern. Other potential contaminants of concern are addressed in Section 8.2.

The groundwater contamination plume is relatively well documented north and west of the site. However, the monitoring wells east and south of the site are frozen and expected to remain that way. Although it may be possible to thaw these wells and sample them, this is not expected to provide an accurate representation of the groundwater contamination in that area. If additional monitoring wells are pursued, direct-push technology should be used and wells should be placed in low-traffic areas fairly far from the source area. Additional wells should be considered more a sentry wells than plume characterization wells.

9.0 CONCLUSIONS AND RECOMMENDATIONS

While the City of Fairbanks is negotiating with the State of Alaska DEC about long-term monitoring and alternative cleanup plans, ***NORTECH*** was contracted to collect and analyze groundwater samples from the existing wells at the Site. Based on the field observations, sample results ***NORTECH*** concludes:

- Monitoring wells MW-1, MW-2 and MW-9 (east and south of the source area) are currently frozen and may remain frozen permanently,

- Frozen ground conditions in and around the source area are complicating the groundwater flow regime
- The hydraulic gradient at the site appears to vary from northwest to southwest
- New monitoring wells will not clarify source area groundwater flow due to the frozen subsurface conditions.
- GRO and benzene are the primary contaminants of concern.
- Groundwater contaminant concentrations in the source area have not changed significantly
- MW-6 may be at the northwestern edge of the plume and an additional well in that direction may not be necessary
- The plume edge is still more than 400 feet from the closest property boundary
- Annual groundwater monitoring is sufficient to identify threats to potential off-site receptors
- If more wells are required by ADEC, direct push monitoring wells should be considered as a less expensive alternative to conventional monitoring wells

Based on these conclusions, ***NORTECH*** has the following recommendations:

- Continue groundwater sampling once per year, preferably in the late fall when seasonal frost is lowest and historical data is available.
- Limit laboratory analyses to GRO/BTEX in all perimeter wells
- Continue working with ADEC to develop a long-term groundwater monitoring plan for the site
- If more wells are installed, the locations should be determined carefully so the wells are in low traffic areas to reduce the likelihood of permanent frozen well conditions.

10.0 LIMITATIONS AND NOTIFICATIONS

NORTECH provides a level of service that is performed within the standards of care and competence of the environmental engineering profession. However, it must be recognized that limitations exist within any site investigation. This report provides results based on a restricted work scope and from the analysis and observation of a limited number of samples. Therefore, while it is our opinion that these limitations are reasonable and adequate for the purposes of this report, actual site conditions may differ.

Specifically, the unknown nature of exact subsurface physical conditions, sampling locations, the analytical procedures' inherent limitations, as well as financial and

time constraints are limiting factors. The report is a record of observations and measurements made on the subject site as described. The data should be considered representative only of the time the site investigation was completed. No other warranty or presentation, expressed or implied, is included or intended.

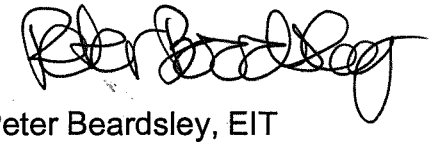
This report is prepared for the exclusive use of the owner. If it is made available to others, it should be for information on factual data only, and not as a warranty of conditions, such as those interpreted from the results presented or discussed in the report.

It is recommended that the owner or operator of the property maintain a copy of this report as a record and that a copy of this report be submitted to the ADEC.

We certify that except as specifically noted in this report, all statements and data appearing in this report are in conformance with ADEC's Standard Sampling Procedures. ***NORTECH*** has performed the work, made the findings, and proposed the recommendations described in this report in accordance with generally accepted environmental engineering practices.

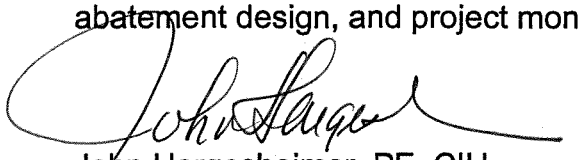
11.0 QUALIFICATIONS & SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

Peter Beardsley, EIT, Environmental Engineer, has a B.S. degree in Environmental Engineering. He has extensive field experience as a consulting environmental engineer. He has worked on all aspects of environmental investigations and cleanup efforts and is well versed in the applicable regulatory requirements.

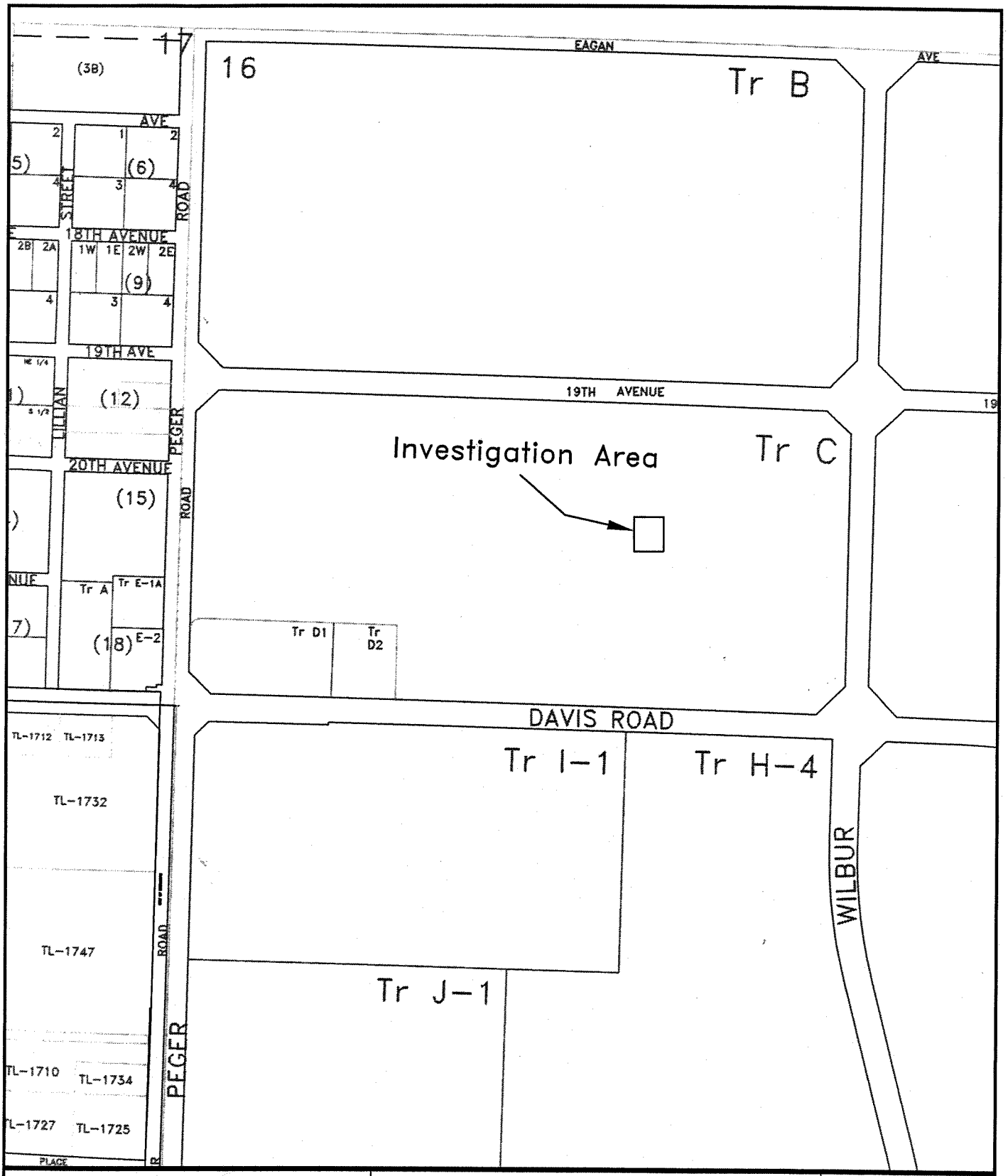


Peter Beardsley, EIT
Environmental Engineer

John Hargesheimer, PE, DEE, CIH Mr. Hargesheimer, Principal-In-Charge of ***NORTECH*** has a B.S. degree in Chemical Engineering and a M.S. in Environmental Engineering. John is a registered Professional Civil and Environmental Engineer. He has also a Certified Industrial Hygienist. He has over 25 years of experience in Environmental Engineering work, much of it in hazardous material inspections, abatement design, and project monitoring.



John Hargesheimer, PE, CIH
Principal



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Location Map
2001 Groundwater Sampling
City of Fairbanks, Public Works

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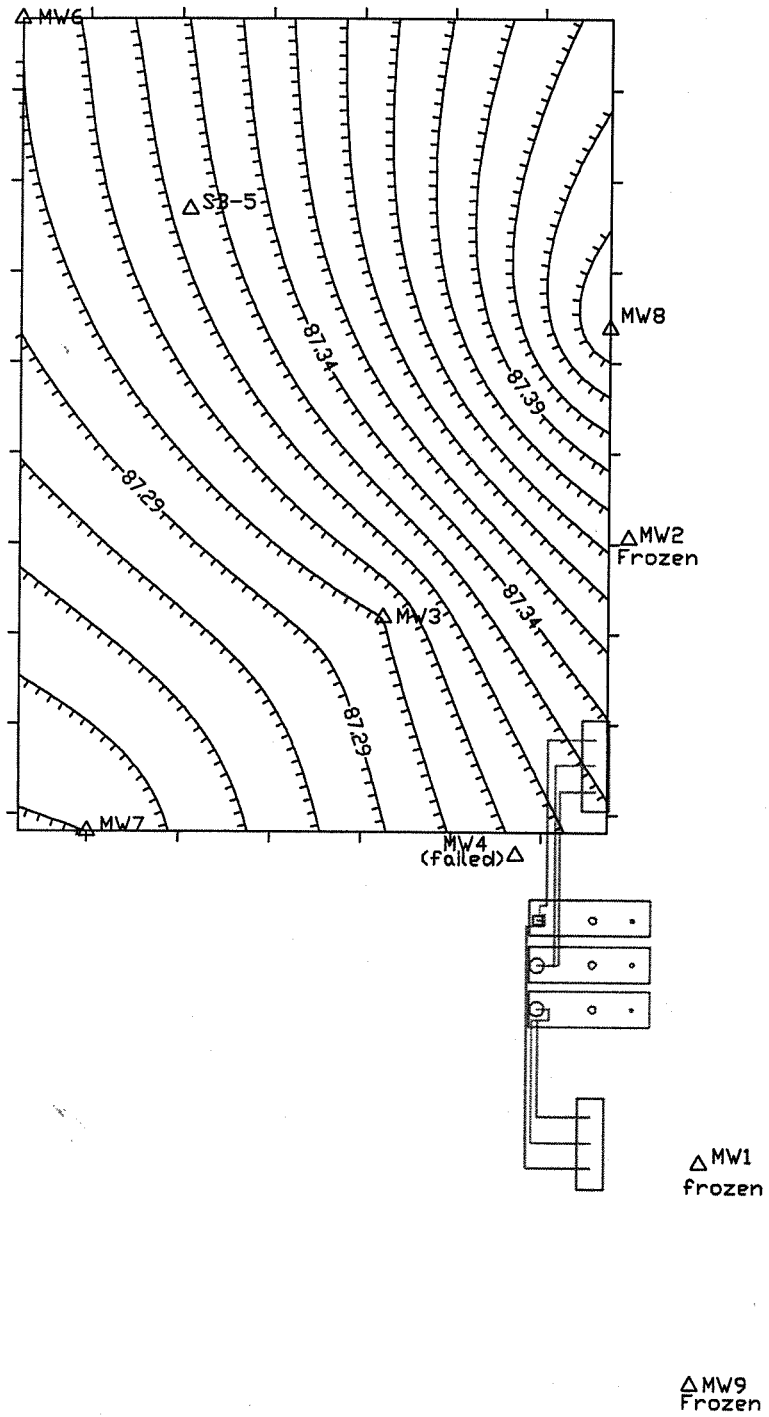
FIGURE 1

DATE:	02/01/02
DESIGN:	PLB
DRAWN:	PLB
PROJECT NO:	01197.1
DWG:	011971a(01-01)
SCALE:	1" = 500'



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Well Locations and Hydraulic Gradient
2001 Groundwatwer Sampling Event
City of Fairbanks, Public Works

N

FIGURE 2

DATE:	02/01/02
DESIGN:	PLB
DRAWN:	PLB
PROJECT NO:	01197.1
DWG:	011971a(01-02)
SCALE:	1" = 40'

Table 1

Historical Groundwater Analytical Summary

	Reg Limit	MW-1	MW-2	Dup MW-2	MW-3	MW-3	**MW-3**	**Dup MW-3**
Contaminant	ug/L	Jul-00	Jul-00	Jul-00	Jul-00	Oct-00	Oct-01	Oct-01
Lead	15						2.00U	
GRO	1300	8680	11400	12100	5330	3010	4450	3650
Benzene (8021)	5	3350	4830	5460	2440	1420	2100	2350
Toluene (8021)	1000	2.00U	2.00U	2.00U	2.00U	2.00U	3.82	2.00U
Ethylbenzene (8021)	700	90.1	2.00U	2.00U	2.00U	2.00U	25.8	23.1
Total Xylenes (8021)	10000	253	2.00U	211	83.1	26	67	58
DRO	1500	864	1330	1350	1230	1010	1050	880
dichlorodifluoromethane	7300						1.63	
chloromethane	NA						1.45	
1,2-dibromoethane (EDB)	0.05	1.00U					1.00U	
Benzene (8260)	5						2190	
Toluene (8260)	1000						1.00U	
Ethylbenzene (8260)	700						35.10	
Total Xylenes (8260)	10000						87.30	
1,3,5-trimethylbenzene	1850						3.15	
1,2,4-trimethylbenzene	70						2.35	
MTBE*	30						9.02	

	Analyte was not tested for in this sample
U	Indicates analyte was tested for by not detected
Shade	Analyte was detected below the ADEC Cleanup Level
Bold	Analyte was detected above the ADEC Cleanup Level
*	The MTBE cleanup Level of 30 ug/L is based on EPA standards of 20-40 ug/L.

Table 1

Historical Groundwater Analytical Summary

	Reg Limit	MW-6	**MW-6**	MW-7	Dup MW-7	**MW-7**	MW-8	**MW-8**	MW-9
Contaminant	ug/L	Oct-00	Oct-01	Oct-00	Oct-00	Oct-01	Oct-00	Oct-01	Oct-00
Lead	15					2.00U		2.00U	
GRO	1300	90.0U	90.0U	90.0U	90.0U	90.0U	90.0U	90.0U	90.0U
Benzene (8021)	5	0.50U	0.817	7.13	7.78	7.00	0.50U	0.50U	20.0
Toluene (8021)	1000	2.00U	2.00U	2.00U	2.00U	2.00U	2.00U	2.00U	2.00U
Ethylbenzene (8021)	700	2.00U	2.00U	2.00U	2.00U	2.00U	2.00U	2.00U	2.00U
Total Xylenes (8021)	10000	2.00U	2.00U	2.00U	2.00U	2.00U	2.00U	2.00U	2.00U
DRO	1500	316U	526Y	306U	316U	526U	316U	521U	433
dichlorodifluoromethane	7300					1.00U		5.81	
chloromethane	NA					1.00U		1.00U	
1,2-dibromoethane (EDB)	0.05					1.00U		1.00U	
Benzene (8260)	5					11.10		0.50U	
Toluene (8260)	1000					1.00U		1.00U	
Ethylbenzene (8260)	700					1.00U		1.00U	
Total Xylenes (8260)	10000					2.00U		2.00U	
1,3,5-trimethylbenzene	1850					1.00U		1.00U	
1,2,4-trimethylbenzene	70					1.00U		1.00U	
MTBE*	30					1.00U		1.00U	

	Analyte was not tested for in this sample
U	Indicates analyte was tested for by not detected
Shade	Analyte was detected below the ADEC Cleanup Level
Bold	Analyte was detected above the ADEC Cleanup Level
*	The MTBE cleanup Level of 30 ug/L is based on EPA standards of 20-40 ug/L.

Table 2
QA/QC Summary

	MW-3	MW-3 dup	**Average**	**Difference**	**RPD**
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	**%**
GRO	**4.45**	**3.65**	4.05	0.8	**20%**
DRO	1.05	0.880	0.965	0.17	**18%**
Benzene	**2.1**	**2.35**	2.225	-0.25	**-11%**
Toluene	0.00382	0.00200U	0.00382	NA	**NC**
Ethylbenzene	0.0258	0.0231	0.02445	0.0027	**11%**
Total Xylenes	0.0674	0.0580	0.0627	0.0094	**15%**
Total BTEX	2.19702	2.4311	2.31406	-0.23408	**-10%**

CTE Environmental Services
Alaska Division
Laboratory Data Report

Project: City PW

Client: Nortech

CTE Work Order: 1017233

Contents:

Chain of Custody
Quality Control Summary Forms

Note:

Unless otherwise noted, all quality assurance/quality control criteria is in compliance with the proper regulatory authority and/or CTE's Quality Assurance Program Plan.

Case Narrative

Customer: NORTECH **Nortech**

Project: 1017233 **City PW**

1017233001 PS

DRO - Pattern consistent with highly weathered middle distillate.

GRO/BTEX - Surrogate recovery is biased high due to matrix interference. Results are not affected.

1017233005 PS

DRO - Pattern consistent with highly weathered middle distillate.

GRO/BTEX - Surrogate recovery is biased high due to matrix interference. Results are not affected.

404278 MS

8260 - Several compounds fail to meet laboratory QC goals. LCS/LCSD meet QC goals. Results are not affected.

8260 - MS/MSD recoveries for 2-Chloroethyl vinyl ether do not meet laboratory QC goals due to sample pH. Results are not affected.

404279 MSD

8260 - Several compounds fail to meet laboratory QC goals. LCS/LCSD meet QC goals. Results are not affected.

8260 - MS/MSD recoveries for 2-Chloroethyl vinyl ether do not meet laboratory QC goals due to sample pH. Results are not affected.

402407 LCS

DRO LCS/LCSD - Surrogate is biased high due to interference by method required petroleum spike.

402408 LCSD

DRO LCS/LCSD - Surrogate is biased high due to interference by method required petroleum spike.

404277 LCSD

8260 - LCSD recovery for 2,2-Dichloropropane is biased high and does not meet laboratory QC goals. LCS meets QC goals. LCS/LCSD meet QC RPD goals. Results are not affected.

404237 CCV

8260 - CCV recoveries for Dichlorodifluoromethane, Trichlorofluoromethane, 1,1-Dichloroethane, 2,2-Dichloropropane, 1,1,1-Trichloroethane and Carbon tetrachloride are biased high and dont meet laboratory QC goals. Results for these analytes may be biased high in the associated samples.

CHAIN OF CUSTODY RE 1017233

CT&E Environmental Services Inc.
Laboratory Division

• Alaska • Maryland
• Michigan • New Jersey
• West Virginia • New Orleans
www.cteesi.com

(1)
CLIENT: NORTECH
CONTACT: Peter Boardsday PHONE NO: (907 452 5688
PROJECT: ~~AF~~ City PW PWSID#:
REPORTS TO: NORTECH FAX NO: (907 452 5694
INVOICE TO: NORTECH QUOTE#
P.O. NUMBER: 01197.1

CT&E Reference:

PAGE 1 OF 1

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	Preservatives Used	Analysis Required (3) GRO/BTEX	DRO	8260	Pb	TPH	Flashpoint	REMARKS
1	MW-3	10/26/01	1000	W	9	G	HCl	X	X	X	X			
2	MW-6		1100	W	5	G		X	X					
3	MW-7		1200	W	9	G		X	X	X	X			
4	MW-8		1300	W	9	G		X	X	X	X			
5	~~DUP~~ DUP1		1030	W	5	G		X	X					
6	PW		1515	W	2	G						X	X	
7	TB			W	3	G		X						
						~~G~~								

(5)

Collected/Relinquished By: (1)	Date	Time	Received By:
Peter Boardsday	10/26/01	1605	Rhonda Stuck
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date 10/27/01	Time 1135	Received For Laboratory By: Tuesday

(4)

Shipping Carrier:
Shipping Ticket No:
Temperature C: 4.8°C
Data Deliverables: (Level I) Level II Level III EDD Type:
Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT
Requested Turnaround Time and Special Instructions:

200 W. Potter Drive **Anchorage, AK 99518** Tel: (907) 562-2343 Fax: (907) 561-5301
3180 Peger Road **Fairbanks, AK 99701** Tel: (907) 474-8656 Fax: (907) 474-9685

White - Retained by Lab (Project File) Yellow - Returned with Report Pink - Retained by Sampler
0-720

CT&E Environmental Services Inc.

SAMPLE RECEIPT FORM

CT&E WO **1017233**

Yes	No	
	✓	Are samples **RUSH**, priority, or *within 72 hrs.* of hold time?
		If yes have you done *e-mail notification*?
	✓	Are samples *within 24 hrs.* of hold time or due date?
		If yes, have you *spoken with* Supervisor?
✓ *	~~FRT~~ 10/29/01	Are there any problems (e.g., ids, analyses)?
✓		Were samples preserved correctly and pH verified?

*Missing 3 @ 40 ml vials from #4

Yes	No		
		Has Project Manager been notified of problems?	
	.	Is this an ACOE / AFCEE / ADEC project?	
✓		Will a data package be required?	Level I
	✓	If this is for PWS, provide PWSID.	
		Is there a quote for this project?	
	✓	Will courier charges apply?	

Completed by (sign): [signature] (print): Forest Taylor

*******The following *must* be completed for *all* ACOE & AFCEE: *******

Yes	No		
		Is received temperature 4 ± 2°C? Temp:	
		Thermometer used:	
		Was there an airbill, etc.? Note #:	
		Was cooler sealed with custody seals? Fax'd to COE?	
		# / where:	
		Were seals intact upon arrival?	
		Was there a COC with cooler?	
		Was the COC filled out properly?	
		Did the COC indicate ACOE / AFCEE project? (if applicable)	
		Did the COC and samples correspond?	
		Were all samples packed to prevent breakage?	
		packing material:	
		Were all samples unbroken and clearly labeled?	
		Were all samples sealed in separate plastic bags?	
		Were all bottles for volatiles free of headspace?	
		Were correct container / sample sizes submitted?	
		Is sample condition good?	
		Was client notified of problems? (specify below)	

Individual contacted:

Date / Time: Phone / Fax:

Log-in proofed by: [initials]

Due Date: 11/06/01

Received Date/Time: 10/26/01 1605

Received Temperature: 4.8°C

Matrix of each Sample:

1	" "	#1-6
	" "	
	" "	
1	Trip Blank	#7
	BMS/BMSD	

Additional Sample Remarks:

	Extra Sample Volume?	
✓	Limited Sample Volume?	8260 BTEX & 8260 FR #4
	Field pres'd for volatiles?	
	Field-filtered for dissolved	?
	Lab-filtered for dissolved	?
	Ref Lab required?	

Notes:

# of each Container Received:

1	950 ml amber unpres'd
12	950 ml amber w / HCl
	500 ml amber w / H_2SO_4
	1L cubies unpres'd
3	1L cubies w / HNO_3
	1L cubies w / H_2SO_4
	1L cubies w / NaOH + ZnAc
	120 ml coli bottles
	60 ml Nalgene
	8 oz amber unpres'd
	4 oz amber unpres'd
	4 oz w / septa w / MeOH
24	40 ml vials w / HCl
	Other (specify)
	Other (specify)

TO BE COMPLETED IN ANCHORAGE UPON ARRIVAL FROM FAIRBANKS:

DATE / TIME: 10/27/01 1135 COOLER TEMP: 2.5°C

CUSTODY SEALS INTACT: (YES) / NO # / WHERE: 2011

CT&E Environmental Services Inc.
Laboratory Division

200 W. Potter Drive
Anchorage, AK 99518-1605
Tel: (907) 562-2343
Fax: (907) 561-5301
Web: http://www.cteesi.com

Laboratory Analysis Report

Peter Beardsley
Nortech
2400 College Rd.
Fairbanks, AK 99709

Work Order:	1017233
	City PW
Client:	Nortech
Report Date:	November 13, 2001

Enclosed are the analytical results associated with the above workorder.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by CT&E. A copy of our Quality Control Manual that outlines this program is available at your request.

Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth in our Quality Assurance Program Plan.

If you have any questions regarding this report or if we can be of any other assistance, please call your CT&E Project Manager at (907) 562-2343.

The following descriptors may be found on your report which will serve to further qualify the data.

U	Indicates the analyte was analyzed for but not detected.
F	Indicates an estimated value that falls below PQL, but is greater than the MDL.
B	Indicates the analyte is found in the blank associated with the sample.
*	The analyte has exceeded allowable limits.
GT	Greater Than
D	Secondary Dilution
LT	Less Than
!	Surrogate out of range

CT&E Environmental Services Inc.

CT&E Ref.#	1017233001	**Client PO#**	
Client Name	Nortech	**Printed Date/Time**	02/01/2002 11:55
Project Name/#	City PW	**Collected Date/Time**	10/26/2001 10:00
Client Sample ID	MW-3	**Received Date/Time**	10/26/2001 16:05
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	Stephen C. Ede
Ordered By		**Released By**	Rhonda Stucker

Sample Remarks:

DRO - Pattern consistent with highly weathered middle distillate.
GRO/BTEX - Surrogate recovery is biased high due to matrix interference. Results are not affected.
Corrected report: MTBE reported in comments.
MTBE detected at 9.02 ug/L.

Parameter	Results		PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Metals by ICP/MS									
Lead	2.00 U		2.00	ug/L	SW846 6020		10/30/01	11/05/01	KG
Volatile Fuels Department									
Gasoline Range Organics	4.45		0.0900	mg/L	AK101/8021B		11/08/01	11/08/01	RMV
Benzene	2.10		0.0100	mg/L	AK101/8021B		11/08/01	11/09/01	JLP
Toluene	0.00382		0.00200	mg/L	AK101/8021B		11/08/01	11/08/01	RMV
Ethylbenzene	0.0258		0.00200	mg/L	AK101/8021B		11/08/01	11/08/01	RMV
P & M -Xylene	0.0625		0.00200	mg/L	AK101/8021B		11/08/01	11/08/01	RMV
o-Xylene	0.00491		0.00200	mg/L	AK101/8021B		11/08/01	11/08/01	RMV
Surrogates									
1,4-Difluorobenzene <Surr>	233	!		%	AK101/8021B	60-120	11/08/01	11/08/01	RMV
4-Bromofluorobenzene <Surr>	99.4			%	AK101/8021B	50-150	11/08/01	11/08/01	RMV
Semivolatile Organic Fuels Department									
Diesel Range Organics	1.05		0.526	mg/L	AK102 DRO		10/31/01	11/01/01	DS
Surrogates									
5a Androstane <surr>	124			%	AK102 DRO	50-150	10/31/01	11/01/01	DS
Volatile Gas Chromatography/Mass Spectroscopy									
Dichlorodifluoromethane	0.00163		0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Chloromethane	0.00145		0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Vinyl chloride	0.00200 U		0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Bromomethane	0.00200 U		0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	1017233001	**Client PO#**	
Client Name	Nortech	**Printed Date/Time**	02/01/2002 11:55
Project Name/#	City PW	**Collected Date/Time**	10/26/2001 10:00
Client Sample ID	MW-3	**Received Date/Time**	10/26/2001 16:05
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	**Stephen C. Ede**
Ordered By			

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
Chloroethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Trichlorofluoromethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,1-Dichloroethene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Methylene chloride	0.00500 U	0.00500	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Carbon disulfide	0.0100 U	0.0100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
trans-1,2-Dichloroethene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,1-Dichloroethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
2,2-Dichloropropane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
cis-1,2-Dichloroethene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
2-Butanone (MEK)	0.0500 U	0.0500	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Bromochloromethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Chloroform	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,1,1-Trichloroethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Carbon tetrachloride	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,1-Dichloropropene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Benzene	2.19	0.0250	mg/L	SW846-8260B		11/07/01	11/08/01	MAH
Trichloroethene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2-Dichloropropane	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Dibromomethane	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Bromodichloromethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
2-Chloroethyl Vinyl Ether	0.0100 U	0.0100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
cis-1,3-Dichloropropene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Toluene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
trans-1,3-Dichloropropene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,1,2-Trichloroethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Tetrachloroethene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,3-Dichloropropane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Dibromochloromethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2-Dibromoethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Chlorobenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Ethylbenzene	0.0351	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
P & M -Xylene	0.0873	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
O-Xylene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,1,1,2-Tetrachloroethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	1017233001	**Client PO#**	
Client Name	Nortech	**Printed Date/Time**	02/01/2002 11:55
Project Name/#	City PW	**Collected Date/Time**	10/26/2001 10:00
Client Sample ID	MW-3	**Received Date/Time**	10/26/2001 16:05
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	**Stephen C. Ede**
Ordered By			

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
Styrene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Bromoform	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Isopropylbenzene (Cumene)	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Bromobenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,1,2,2-Tetrachloroethane	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2,3-Trichloropropane	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
n-Propylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
2-Chlorotoluene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
4-Chlorotoluene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,3,5-Trimethylbenzene	0.00315	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
tert-Butylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2,4-Trimethylbenzene	0.00235	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
sec-Butylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,3-Dichlorobenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
4-Isopropyltoluene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,4-Dichlorobenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2-Dichlorobenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
n-Butylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2-Dibromo-3-chloropropane	0.00250 U	0.00250	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2,4-Trichlorobenzene	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Hexachlorobutadiene	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Naphthalene	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2,3-Trichlorobenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
4-Methyl-2-pentanone (MIBK)	0.0100 U	0.0100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
2-Hexanone	0.0100 U	0.0100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2-Dichloroethane	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Surrogates								
Dibromofluoromethane <surr>	103		%	SW846-8260B	89-116	11/07/01	11/07/01	MAH
1,2-Dichloroethane-D4 <surr>	108		%	SW846-8260B	82-123	11/07/01	11/07/01	MAH
Toluene-d8 <surr>	93.9		%	SW846-8260B	86-117	11/07/01	11/07/01	MAH
4-Bromofluorobenzene <Surr>	95.8		%	SW846-8260B	87-113	11/07/01	11/07/01	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	1017233002	**Client PO#**	
Client Name	Nortech	**Printed Date/Time**	11/13/2001 15:26
Project Name/#	City PW	**Collected Date/Time**	10/26/2001 11:00
Client Sample ID	MW-6	**Received Date/Time**	10/26/2001 16:05
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	Michael Riley

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department								
Gasoline Range Organics	0.0900 U	0.0900	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
Benzene	0.000817	0.000500	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
Toluene	0.00200 U	0.00200	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
Ethylbenzene	0.00200 U	0.00200	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
P & M -Xylene	0.00200 U	0.00200	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
O-Xylene	0.00200 U	0.00200	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
Surrogates								
1,4-Difluorobenzene <Surr>	87.4		%	AK101/8021B	60-120	11/07/01	11/07/01	RMV
Bromofluorobenzene <Surr>	75.3		%	AK101/8021B	50-150	11/07/01	11/07/01	RMV
Semivolatile Organic Fuels Department								
Diesel Range Organics	0.526 U	0.526	mg/L	AK102 DRO		10/31/01	11/01/01	DS
Surrogates								
5a Androstane <surr>	87.5		%	AK102 DRO	50-150	10/31/01	11/01/01	DS

CT&E Environmental Services Inc.

CT&E Ref.#	1017233003	**Client PO#**	
Client Name	Nortech	**Printed Date/Time**	02/01/2002 11:55
Project Name/#	City PW	**Collected Date/Time**	10/26/2001 12:00
Client Sample ID	MW-7	**Received Date/Time**	10/26/2001 16:05
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	Stephen C. Ede
Ordered By		**Released By**	Rhonda Stucker

Sample Remarks:

Corrected report: MTBE reported in comments.
MTBE was not detected at 1 ug/L.

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Metals by ICP/MS								
Lead	2.00 U	2.00	ug/L	SW846 6020		10/30/01	11/05/01	KGF
Volatile Fuels Department								
Gasoline Range Organics	0.0900 U	0.0900	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
Benzene	0.00700	0.000500	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
Toluene	0.00200 U	0.00200	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
Ethylbenzene	0.00200 U	0.00200	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
P & M -Xylene	0.00200 U	0.00200	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
o-Xylene	0.00200 U	0.00200	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
Surrogates								
1,4-Difluorobenzene <Surr>	86.1		%	AK101/8021B	60-120	11/07/01	11/07/01	RMV
4-Bromofluorobenzene <Surr>	83		%	AK101/8021B	50-150	11/07/01	11/07/01	RMV
Semivolatile Organic Fuels Department								
Diesel Range Organics	0.526 U	0.526	mg/L	AK102 DRO		10/31/01	11/01/01	DS
Surrogates								
5a Androstane <surr>	79		%	AK102 DRO	50-150	10/31/01	11/01/01	DS
Volatile Gas Chromatography/Mass Spectroscopy								
Dichlorodifluoromethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Chloromethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Vinyl chloride	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Bromomethane	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Chloroethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Trichlorofluoromethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	1017233003	**Client PO#**	
Client Name	Nortech	**Printed Date/Time**	02/01/2002 11:55
Project Name/#	City PW	**Collected Date/Time**	10/26/2001 12:00
Client Sample ID	MW-7	**Received Date/Time**	10/26/2001 16:05
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	**Stephen C. Ede**
Ordered By			

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
1,1-Dichloroethene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Methylene chloride	0.00500 U	0.00500	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Carbon disulfide	0.0100 U	0.0100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
trans-1,2-Dichloroethene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,1-Dichloroethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
2,2-Dichloropropane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
cis-1,2-Dichloroethene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
2-Butanone (MEK)	0.0500 U	0.0500	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Bromochloromethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Chloroform	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,1,1-Trichloroethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Carbon tetrachloride	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,1-Dichloropropene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Benzene	0.0111	0.000500	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Trichloroethene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2-Dichloropropane	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Dibromomethane	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Bromodichloromethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
2-Chloroethyl Vinyl Ether	0.0100 U	0.0100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
cis-1,3-Dichloropropene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Toluene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
trans-1,3-Dichloropropene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,1,2-Trichloroethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Tetrachloroethene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,3-Dichloropropane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Dibromochloromethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2-Dibromoethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Chlorobenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Ethylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
P & M -Xylene	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
o-Xylene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,1,1,2-Tetrachloroethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Styrene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Bromoform	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH

CT&E Ref.#	1017233003	**Client PO#**	
Client Name	Nortech	**Printed Date/Time**	02/01/2002 11:55
Project Name/#	City PW	**Collected Date/Time**	10/26/2001 12:00
Client Sample ID	MW-7	**Received Date/Time**	10/26/2001 16:05
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	**Stephen C. Ede**
Ordered By			

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
Isopropylbenzene (Cumene)	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Bromobenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,1,2,2-Tetrachloroethane	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2,3-Trichloropropane	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
n-Propylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
2-Chlorotoluene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
4-Chlorotoluene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,3,5-Trimethylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
tert-Butylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2,4-Trimethylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
sec-Butylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,3-Dichlorobenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
4-Isopropyltoluene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,4-Dichlorobenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2-Dichlorobenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
n-Butylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2-Dibromo-3-chloropropane	0.00250 U	0.00250	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2,4-Trichlorobenzene	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Hexachlorobutadiene	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Naphthalene	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2,3-Trichlorobenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
4-Methyl-2-pentanone (MIBK)	0.0100 U	0.0100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
2-Hexanone	0.0100 U	0.0100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2-Dichloroethane	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Surrogates								
Dibromofluoromethane <surr>	105		%	SW846-8260B	89-116	11/07/01	11/07/01	MAH
1,2-Dichloroethane-D4 <surr>	105		%	SW846-8260B	82-123	11/07/01	11/07/01	MAH
Toluene-d8 <surr>	94.2		%	SW846-8260B	86-117	11/07/01	11/07/01	MAH
4-Bromofluorobenzene <Surr>	95.8		%	SW846-8260B	87-113	11/07/01	11/07/01	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	1017233004	**Client PO#**	
Client Name	Nortech	**Printed Date/Time**	02/01/2002 11:55
Project Name/#	City PW	**Collected Date/Time**	10/26/2001 13:00
Client Sample ID	MW-8	**Received Date/Time**	10/26/2001 16:05
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	Stephen C. Ede
Ordered By		**Released By**	Rhonda Stroecker

Sample Remarks:
Corrected report: MTBE reported in comments.
MTBE was not detected at 1 ug/L.

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Metals by ICP/MS								
Lead	2.00 U	2.00	ug/L	SW846 6020		10/30/01	11/05/01	KGF
Volatile Fuels Department								
Gasoline Range Organics	0.0900 U	0.0900	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
Benzene	0.000500 U	0.000500	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
Toluene	0.00200 U	0.00200	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
Ethylbenzene	0.00200 U	0.00200	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
P & M -Xylene	0.00200 U	0.00200	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
o-Xylene	0.00200 U	0.00200	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
Surrogates								
1,4-Difluorobenzene <Surr>	84		%	AK101/8021B	60-120	11/07/01	11/07/01	RMV
4-Bromofluorobenzene <Surr>	82.9		%	AK101/8021B	50-150	11/07/01	11/07/01	RMV
Semivolatile Organic Fuels Department								
Diesel Range Organics	0.521 U	0.521	mg/L	AK102 DRO		10/31/01	11/01/01	DS
Surrogates								
5a Androstane <surr>	92.3		%	AK102 DRO	50-150	10/31/01	11/01/01	DS
Volatile Gas Chromatography/Mass Spectroscopy								
Dichlorodifluoromethane	0.00581	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Chloromethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Vinyl chloride	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Bromomethane	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Chloroethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Trichlorofluoromethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH

CT&E Ref.#	1017233004	**Client PO#**	
Client Name	Nortech	**Printed Date/Time**	02/01/2002 11:55
Project Name/#	City PW	**Collected Date/Time**	10/26/2001 13:00
Client Sample ID	MW-8	**Received Date/Time**	10/26/2001 16:05
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	**Stephen C. Ede**
Ordered By			

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
1,1-Dichloroethene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Methylene chloride	0.00500 U	0.00500	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Carbon disulfide	0.0100 U	0.0100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
trans-1,2-Dichloroethene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,1-Dichloroethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
2,2-Dichloropropane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
cis-1,2-Dichloroethene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
2-Butanone (MEK)	0.0500 U	0.0500	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Bromochloromethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Chloroform	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,1,1-Trichloroethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Carbon tetrachloride	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,1-Dichloropropene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Benzene	0.000500 U	0.000500	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Trichloroethene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2-Dichloropropane	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Dibromomethane	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Bromodichloromethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
2-Chloroethyl Vinyl Ether	0.0100 U	0.0100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
cis-1,3-Dichloropropene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Toluene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
trans-1,3-Dichloropropene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,1,2-Trichloroethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Tetrachloroethene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,3-Dichloropropane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Dibromochloromethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2-Dibromoethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Chlorobenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Ethylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
P & M -Xylene	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
o-Xylene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,1,1,2-Tetrachloroethane	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Styrene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Bromoform	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	1017233004	**Client PO#**	
Client Name	Nortech	**Printed Date/Time**	02/01/2002 11:55
Project Name/#	City PW	**Collected Date/Time**	10/26/2001 13:00
Client Sample ID	MW-8	**Received Date/Time**	10/26/2001 16:05
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	**Stephen C. Ede**
Ordered By			

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
Isopropylbenzene (Cumene)	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Bromobenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,1,2,2-Tetrachloroethane	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2,3-Trichloropropane	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
n-Propylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
2-Chlorotoluene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
4-Chlorotoluene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,3,5-Trimethylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
tert-Butylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2,4-Trimethylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
sec-Butylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,3-Dichlorobenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
4-Isopropyltoluene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,4-Dichlorobenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2-Dichlorobenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
n-Butylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2-Dibromo-3-chloropropane	0.00250 U	0.00250	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2,4-Trichlorobenzene	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Hexachlorobutadiene	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Naphthalene	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2,3-Trichlorobenzene	0.00100 U	0.00100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
4-Methyl-2-pentanone (MIBK)	0.0100 U	0.0100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
2-Hexanone	0.0100 U	0.0100	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
1,2-Dichloroethane	0.00200 U	0.00200	mg/L	SW846-8260B		11/07/01	11/07/01	MAH
Surrogates								
Dibromofluoromethane <surr>	108		%	SW846-8260B	89-116	11/07/01	11/07/01	MAH
1,2-Dichloroethane-D4 <surr>	116		%	SW846-8260B	82-123	11/07/01	11/07/01	MAH
Toluene-d8 <surr>	94.5		%	SW846-8260B	86-117	11/07/01	11/07/01	MAH
4-Bromofluorobenzene <Surr>	93.9		%	SW846-8260B	87-113	11/07/01	11/07/01	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	1017233005	**Client PO#**	
Client Name	Nortech	**Printed Date/Time**	11/13/2001 15:26
Project Name/#	City PW	**Collected Date/Time**	10/26/2001 10:30
Client Sample ID	Dup 1	**Received Date/Time**	10/26/2001 16:05
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	

Sample Remarks:

DRO - Pattern consistent with highly weathered middle distillate.
GRO/BTEX - Surrogate recovery is biased high due to matrix interference. Results are not affected.

Parameter	Results		PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	3.65		0.0900	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
Benzene	2.35		0.000500	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
Toluene	0.00200 U		0.00200	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
Ethylbenzene	0.0231		0.00200	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
P & M -Xylene	0.0580		0.00200	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
o-Xylene	0.00200 U		0.00200	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
Surrogates									
1,4-Difluorobenzene <Surr>	151	!		%	AK101/8021B	60-120	11/07/01	11/07/01	RMV
4-Bromofluorobenzene <Surr>	99.1			%	AK101/8021B	50-150	11/07/01	11/07/01	RMV
Semivolatile Organic Fuels Department									
Diesel Range Organics	0.880		0.515	mg/L	AK102 DRO		10/31/01	11/01/01	D
Surrogates									
5a Androstane <surr>	129			%	AK102 DRO	50-150	10/31/01	11/01/01	D

CT&E Environmental Services Inc.

CT&E Ref.#	1017233006	**Client PO#**	
Client Name	Nortech	**Printed Date/Time**	11/13/2001 15:26
Project Name/#	City PW	**Collected Date/Time**	10/26/2001 15:15
Client Sample ID	PW	**Received Date/Time**	10/26/2001 16:05
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Waters Department								
PH Silica Gel HEM	5.00 U	5.00	mg/L	EPA 1664		10/29/01	10/29/01	JJB
Oils Laboratory								
Ignitability Seta Flash	GT 200 F		degrees F	SW846 1020A	(>140)		11/06/01	MTG

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CT&E Environmental Services Inc.

CT&E Ref.#	1017233007	**Client PO#**	
Client Name	Nortech	**Printed Date/Time**	11/13/2001 15:26
Project Name/#	City PW	**Collected Date/Time**	10/26/2001 0:00
Client Sample ID	TB	**Received Date/Time**	10/26/2001 16:05
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department								
Gasoline Range Organics	0.0900 U	0.0900	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
Benzene	0.000500 U	0.000500	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
Toluene	0.00200 U	0.00200	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
Ethylbenzene	0.00200 U	0.00200	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
P & M -Xylene	0.00200 U	0.00200	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
o-Xylene	0.00200 U	0.00200	mg/L	AK101/8021B		11/07/01	11/07/01	RMV
Surrogates								
1,4-Difluorobenzene <Surr>	84.3		%	AK101/8021B	60-120	11/07/01	11/07/01	RMV
4-Bromofluorobenzene <Surr>	79.7		%	AK101/8021B	50-150	11/07/01	11/07/01	RMV

A_BCH	P_BCH	ANALYTE	LAB_ID	TYPE	RUN_DATE	RESUL	FLG	REPD	DF	UNITS	TRU	REC	LCL	UCL	P/F
2729FHV	NONE	Ignitability Seta Flash	403711	LCS	11/06/01 12:	79	=	70	1	degre		79			

2729FHV
LCS

CT&E Environmental Services Inc.

CT&E Ref.#	403712	Duplicate	**Printed Date/Time**	11/13/2001 15:26
Client Name	Nortech		**Prep Batch**	
Project Name/#	City PW		**Method**	
Original	1017228002		**Date**	
Matrix	Other Solids (Wet Weight)			

QC results affect the following production samples:
1017233006

Parameter	Original Result	QC Result	RPD	RPD Limits	Analysis Date	Init
Oils Laboratory						
Ignitability Seta Flash		111	0	(< 3)	11/06/01	MTG

Batch FHV 2729
Method SW846 1020A
Instrument Seta-Flash Flsh Pnt Tester

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CT&E Environmental Services Inc.

CT&E Ref.#	402299	Method Blank	**Printed Date/Time**		11/13/2001 15:26
Client Name	Nortech		**Prep**	**Batch**	TPHX 1603
Project Name/#	City PW			**Method**	
Matrix	Water (Surface, Eff., Ground)			**Date**	10/29/2001

QC results affect the following production samples:

1017233006

Parameter	Results	PQL	Units	Analysis Date	Init
Waters Department					
TPH Silica Gel HEM	1.40F	5.00	mg/L	10/29/01	JJB

Batch TPH 1786
Method EPA 1664
Instrument

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CT&E Environmental Services Inc.

CT&E Ref.#	402300	Lab Control Sample	**Printed Date/Time**		11/13/2001 15:26
	402301	Lab Control Sample Duplicate	**Prep**	**Batch**	TPHX 1603
Client Name	Nortech			**Method**	
Project Name/#	City PW			**Date**	10/29/2001
Matrix	Water (Surface, Eff., Ground)				

QC results affect the following production samples:

1017233006

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
TPH Silica Gel HEM	LCS	22.3	112	(64-132)			20 mg/L	10/29/01	JJB
	LCSD	23.3	117		4	(< 34)	20 mg/L	10/29/200	JJB

Batch TPH 1786
Method EPA 1664
Instrument

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CT&E Environmental Services Inc.

CT&E Ref.#	404068	Method Blank	**Printed Date/Time**	11/13/2001 15:26	
Client Name	Nortech		**Prep Batch**	VXX	8610
Project Name/#	City PW		**Method**		
Matrix	Water (Surface, Eff., Ground)		**Date**	11/07/2001	

QC results affect the following production samples:

1017233002, 1017233003, 1017233004, 1017233005, 1017233007

Parameter	Results	PQL	Units	Analysis Date	Init
Volatile Fuels Department					
Gasoline Range Organics	0.0900 U	0.0900	mg/L	11/07/01	RMV
Benzene	0.000176F	0.00050	mg/L	11/07/01	RMV
Toluene	0.00200 U	0.00200	mg/L	11/07/01	RMV
Ethylbenzene	0.00200 U	0.00200	mg/L	11/07/01	RMV
m & M -Xylene	0.00200 U	0.00200	mg/L	11/07/01	RMV
o-Xylene	0.00200 U	0.00200	mg/L	11/07/01	RMV

Batch VFC 4911
Method AK101/8021B
Instrument HP 5890 Series II PID+FID VCA

CT&E Environmental Services Inc.

CT&E Ref.#	404069	Lab Control Sample	**Printed Date/Time**		11/13/2001 15:26
	404070	Lab Control Sample Duplicate	**Prep**	**Batch**	VXX 8610
Client Name	Nortech			**Method**	
Project Name/#	City PW			**Date**	11/07/2001
Matrix	Water (Surface, Eff., Ground)				

QC results affect the following production samples:

1017233002, 1017233003, 1017233004, 1017233005, 1017233007

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
Toluene	LCS	0.147	104	(80-120)			0.141 mg/L	11/07/01	RMV
	LCSD	0.146	104		0	(< 20)	0.141 mg/L	11/07/200	RMV
Ethylbenzene	LCS	0.0263	107	(80-120)			0.0246 mg/L	11/07/01	RMV
	LCSD	0.0261	106		1	(< 20)	0.0246 mg/L	11/07/200	RMV
o-Xylene	LCS	0.0344	103	(80-120)			0.0333 mg/L	11/07/01	RMV
	LCSD	0.0339	102		1	(< 20)	0.0333 mg/L	11/07/200	RMV
Gasoline Range Organics	LCS	0.966	107	(60-120)			0.9 mg/L	11/07/01	RMV
	LCSD	0.963	107		0	(< 20)	0.9 mg/L	11/07/200	RMV
P & M -Xylene	LCS	0.0875	98	(80-120)			0.089 mg/L	11/07/01	RMV
	LCSD	0.0870	98		1	(< 20)	0.089 mg/L	11/07/200	RMV
Benzene	LCS	0.0403	103	(80-120)			0.0391 mg/L	11/07/01	RMV
	LCSD	0.0407	104		1	(< 20)	0.0391 mg/L	11/07/200	RMV

Batch VFC 4911
Method AK101/8021B
Instrument HP 5890 Series II PID+FID VCA

CT&E Environmental Services Inc.

CT&E Ref.#	404275	Method Blank	**Printed Date/Time**	11/13/2001 15:26	
Client Name	Nortech		**Prep Batch**	VXX	8619
Project Name/#	City PW		**Method**	SW5030	
Matrix	Water (Surface, Eff., Ground)		**Date**	11/07/2001	

QC results affect the following production samples:

1017233001, 1017233003, 1017233004

Parameter	Results	PQL	Units	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy					

CT&E Environmental Services Inc.

CT&E Ref.#	404275	Method Blank	**Printed Date/Time**	11/13/2001 15:26	
Client Name	Nortech		**Prep Batch**	VXX	8619
Project Name/#	City PW		**Method**	SW5030	
Matrix	Water (Surface, Eff., Ground)		**Date**	11/07/2001	

Parameter	Results	PQL	Units	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy					
Dichlorodifluoromethane	0.00100 U	0.00100	mg/L	11/07/01	MAH
Chloromethane	0.00100 U	0.00100	mg/L	11/07/01	MAH
Vinyl chloride	0.00200 U	0.00200	mg/L	11/07/01	MAH
Bromomethane	0.00200 U	0.00200	mg/L	11/07/01	MAH
Chloroethane	0.00100 U	0.00100	mg/L	11/07/01	MAH
Trichlorofluoromethane	0.00100 U	0.00100	mg/L	11/07/01	MAH
1,1-Dichloroethene	0.00100 U	0.00100	mg/L	11/07/01	MAH
Methylene chloride	0.00500 U	0.00500	mg/L	11/07/01	MAH
Carbon disulfide	0.0100 U	0.0100	mg/L	11/07/01	MAH
trans-1,2-Dichloroethene	0.00100 U	0.00100	mg/L	11/07/01	MAH
1,1-Dichloroethane	0.00100 U	0.00100	mg/L	11/07/01	MAH
2,2-Dichloropropane	0.00100 U	0.00100	mg/L	11/07/01	MAH
cis-1,2-Dichloroethene	0.00100 U	0.00100	mg/L	11/07/01	MAH
2-Butanone (MEK)	0.0500 U	0.0500	mg/L	11/07/01	MAH
Bromochloromethane	0.00100 U	0.00100	mg/L	11/07/01	MAH
Chloroform	0.00100 U	0.00100	mg/L	11/07/01	MAH
1,1,1-Trichloroethane	0.00100 U	0.00100	mg/L	11/07/01	MAH
Carbon tetrachloride	0.00100 U	0.00100	mg/L	11/07/01	MAH
1,1-Dichloropropene	0.00100 U	0.00100	mg/L	11/07/01	MAH
Benzene	0.000500 U	0.00050	mg/L	11/07/01	MAH
Trichloroethene	0.00100 U	0.00100	mg/L	11/07/01	MAH
1,2-Dichloropropane	0.00200 U	0.00200	mg/L	11/07/01	MAH
Dibromomethane	0.00200 U	0.00200	mg/L	11/07/01	MAH
Bromodichloromethane	0.00100 U	0.00100	mg/L	11/07/01	MAH
2-Chloroethyl Vinyl Ether	0.0100 U	0.0100	mg/L	11/07/01	MAH
cis-1,3-Dichloropropene	0.00100 U	0.00100	mg/L	11/07/01	MAH
Toluene	0.00100 U	0.00100	mg/L	11/07/01	MAH
1,1,2-Trichloroethane	0.00100 U	0.00100	mg/L	11/07/01	MAH
Tetrachloroethene	0.00100 U	0.00100	mg/L	11/07/01	MAH
trans-1,3-Dichloropropene	0.00100 U	0.00100	mg/L	11/07/01	MAH
1,3-Dichloropropane	0.00100 U	0.00100	mg/L	11/07/01	MAH
Dibromochloromethane	0.00100 U	0.00100	mg/L	11/07/01	MAH
1,2-Dibromoethane	0.00100 U	0.00100	mg/L	11/07/01	MAH
Chlorobenzene	0.00100 U	0.00100	mg/L	11/07/01	MAH
1,1,1,2-Tetrachloroethane	0.00100 U	0.00100	mg/L	11/07/01	MAH
Ethylbenzene	0.00100 U	0.00100	mg/L	11/07/01	MAH
P & M -Xylene	0.00200 U	0.00200	mg/L	11/07/01	MAH
o-Xylene	0.00100 U	0.00100	mg/L	11/07/01	MAH
Styrene	0.00100 U	0.00100	mg/L	11/07/01	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	404275	Method Blank	**Printed Date/Time**	11/13/2001 15:26	
Client Name	Nortech		**Prep Batch**	VXX	8619
Project Name/#	City PW		**Method**	SW5030	
Matrix	Water (Surface, Eff., Ground)		**Date**	11/07/2001	

Parameter	Results	PQL	Units	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy					
Bromoform	0.00100 U	0.00100	mg/L	11/07/01	MAH
Isopropylbenzene (Cumene)	0.00100 U	0.00100	mg/L	11/07/01	MAH
Bromobenzene	0.00100 U	0.00100	mg/L	11/07/01	MAH
1,1,2,2-Tetrachloroethane	0.00200 U	0.00200	mg/L	11/07/01	MAH
1,2,3-Trichloropropane	0.00200 U	0.00200	mg/L	11/07/01	MAH
n-Propylbenzene	0.00100 U	0.00100	mg/L	11/07/01	MAH
2-Chlorotoluene	0.00100 U	0.00100	mg/L	11/07/01	MAH
4-Chlorotoluene	0.00100 U	0.00100	mg/L	11/07/01	MAH
1,3,5-Trimethylbenzene	0.00100 U	0.00100	mg/L	11/07/01	MAH
tert-Butylbenzene	0.00100 U	0.00100	mg/L	11/07/01	MAH
1,2,4-Trimethylbenzene	0.00100 U	0.00100	mg/L	11/07/01	MAH
sec-Butylbenzene	0.00100 U	0.00100	mg/L	11/07/01	MAH
1,3-Dichlorobenzene	0.00100 U	0.00100	mg/L	11/07/01	MAH
4-Isopropyltoluene	0.00100 U	0.00100	mg/L	11/07/01	MAH
1,4-Dichlorobenzene	0.00100 U	0.00100	mg/L	11/07/01	MAH
1,2-Dichlorobenzene	0.00100 U	0.00100	mg/L	11/07/01	MAH
n-Butylbenzene	0.00100 U	0.00100	mg/L	11/07/01	MAH
1,2-Dibromo-3-chloropropane	0.00250 U	0.00250	mg/L	11/07/01	MAH
1,2,4-Trichlorobenzene	0.00200 U	0.00200	mg/L	11/07/01	MAH
Hexachlorobutadiene	0.00200 U	0.00200	mg/L	11/07/01	MAH
Naphthalene	0.00200 U	0.00200	mg/L	11/07/01	MAH
1,2,3-Trichlorobenzene	0.00100 U	0.00100	mg/L	11/07/01	MAH
4-Methyl-2-pentanone (MIBK)	0.0100 U	0.0100	mg/L	11/07/01	MAH
2-Hexanone	0.0100 U	0.0100	mg/L	11/07/01	MAH
1,2-Dichloroethane	0.00200 U	0.00200	mg/L	11/07/01	MAH

Batch VMS 4900
Method SW846-8260B
Instrument HP 5890 Series II MS3 VKA

CT&E Environmental Services Inc.

CT&E Ref.#	404276	Lab Control Sample	**Printed Date/Time**		11/13/2001 15:26
	404277	Lab Control Sample Duplicate	**Prep**	**Batch**	VXX 8619
Client Name	Nortech			**Method**	SW5030
Project Name/#	City PW			**Date**	11/07/2001
Matrix	Water (Surface, Eff., Ground)				

QC results affect the following production samples:

1017233001, 1017233003, 1017233004

Parameter	QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init

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CT&E Environmental Services Inc.

CT&E Ref.#	404276	Lab Control Sample	**Printed Date/Time**	11/13/2001 15:26
	404277	Lab Control Sample Duplicate	**Prep Batch**	VXX 8619
Client Name	Nortech		**Method**	SW5030
Project Name/#	City PW		**Date**	11/07/2001
Matrix	Water (Surface, Eff., Ground)			

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
4-Isopropyltoluene	LCS	0.0101	101	(77-131)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0106	106		5	(< 20)	0.01 mg/L	11/07/200	MAH
Carbon disulfide	LCS	0.0158	106	(85-136)			0.015 mg/L	11/07/01	MAH
	LCSD	0.0169	113		7	(< 20)	0.015 mg/L	11/07/200	MAH
Bromomethane	LCS	0.0147	147	(57-166)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0156	156		6	(< 20)	0.01 mg/L	11/07/200	MAH
Bromoform	LCS	0.00909	91	(73-139)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0101	101		10	(< 20)	0.01 mg/L	11/07/200	MAH
Bromodichloromethane	LCS	0.0106	106	(87-126)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0114	114		7	(< 20)	0.01 mg/L	11/07/200	MAH
Bromochloromethane	LCS	0.0113	113	(86-129)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0112	112		1	(< 20)	0.01 mg/L	11/07/200	MAH
Bromobenzene	LCS	0.0103	103	(79-132)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0106	106		3	(< 20)	0.01 mg/L	11/07/200	MAH
Carbon tetrachloride	LCS	0.0105	105	(87-131)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0117	117		11	(< 20)	0.01 mg/L	11/07/200	MAH
4-Methyl-2-pentanone (MIBK)	LCS	0.0139	93	(74-148)			0.015 mg/L	11/07/01	MAH
	LCSD	0.0147	98		6	(< 20)	0.015 mg/L	11/07/200	MAH
Dibromomethane	LCS	0.00992	99	(82-132)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0106	106		7	(< 20)	0.01 mg/L	11/07/200	MAH
2-Chlorotoluene	LCS	0.00997	100	(77-134)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0102	102		2	(< 20)	0.01 mg/L	11/07/200	MAH
Benzene	LCS	0.0114	114	(89-120)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0118	118		4	(< 20)	0.01 mg/L	11/07/200	MAH
Chlorobenzene	LCS	0.0106	106	(87-127)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0109	109		3	(< 20)	0.01 mg/L	11/07/200	MAH
Chloroethane	LCS	0.0107	107	(75-154)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0103	103		4	(< 20)	0.01 mg/L	11/07/200	MAH
Chloroform	LCS	0.0111	111	(89-126)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0114	114		3	(< 20)	0.01 mg/L	11/07/200	MAH
Dibromochloromethane	LCS	0.00952	95	(79-142)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0101	101		6	(< 20)	0.01 mg/L	11/07/200	MAH
2-Hexanone	LCS	0.0135	90	(65-150)			0.015 mg/L	11/07/01	MAH
	LCSD	0.0143	95		5	(< 20)	0.015 mg/L	11/07/200	MAH
Dichlorodifluoromethane	LCS	0.0119	119	(57-181)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0134	134		12	(< 20)	0.01 mg/L	11/07/200	MAH
Ethylbenzene	LCS	0.0106	106	(84-123)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0109	109		4	(< 20)	0.01 mg/L	11/07/200	MAH
Hexachlorobutadiene	LCS	0.0104	104	(71-153)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0108	108		4	(< 20)	0.01 mg/L	11/07/200	MAH
Isopropylbenzene (Cumene)	LCS	0.00978	98	(79-131)			0.01 mg/L	11/07/01	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	404276	Lab Control Sample	**Printed Date/Time**	11/13/2001 15:26
	404277	Lab Control Sample Duplicate	**Prep Batch**	VXX 8619
Client Name	Nortech		**Method**	SW5030
Project Name/#	City PW		**Date**	11/07/2001
Matrix	Water (Surface, Eff., Ground)			

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
	LCSD	0.0103	103		5	(< 20)	0.01 mg/L	11/07/200	MAH
Methylene chloride	LCS	0.0107	107	(83-139)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0111	111		4	(< 20)	0.01 mg/L	11/07/200	MAH
1,1,1-Trichloroethane	LCS	0.0107	107	(84-127)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0117	117		9	(< 20)	0.01 mg/L	11/07/200	MAH
Chloromethane	LCS	0.0103	103	(72-156)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0105	105		2	(< 20)	0.01 mg/L	11/07/200	MAH
1,2-Dibromoethane	LCS	0.00919	92	(79-125)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0101	101		9	(< 20)	0.01 mg/L	11/07/200	MAH
1,1,1,2-Tetrachloroethane	LCS	0.0101	101	(84-134)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0107	107		6	(< 20)	0.01 mg/L	11/07/200	MAH
Styrene	LCS	0.0106	106	(77-136)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0109	109		3	(< 20)	0.01 mg/L	11/07/200	MAH
1,1,2,2-Tetrachloroethane	LCS	0.00941	94	(78-142)			0.01 mg/L	11/07/01	MAH
	LCSD	0.00974	97		3	(< 20)	0.01 mg/L	11/07/200	MAH
1,1-Dichloroethane	LCS	0.0116	116	(97-134)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0124	124		7	(< 20)	0.01 mg/L	11/07/200	MAH
1,1-Dichloroethene	LCS	0.0121	121	(81-146)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0122	122		0	(< 20)	0.01 mg/L	11/07/200	MAH
1,1-Dichloropropene	LCS	0.0107	107	(92-122)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0118	118		9	(< 20)	0.01 mg/L	11/07/200	MAH
1,2,3-Trichlorobenzene	LCS	0.00951	95	(79-146)			0.01 mg/L	11/07/01	MAH
	LCSD	0.00948	95		0	(< 20)	0.01 mg/L	11/07/200	MAH
1,2,3-Trichloropropane	LCS	0.00915	92	(75-141)			0.01 mg/L	11/07/01	MAH
	LCSD	0.00971	97		6	(< 20)	0.01 mg/L	11/07/200	MAH
1,2,4-Trichlorobenzene	LCS	0.00957	96	(82-140)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0101	101		6	(< 20)	0.01 mg/L	11/07/200	MAH
1,1,2-Trichloroethane	LCS	0.00980	98	(79-139)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0105	105		7	(< 20)	0.01 mg/L	11/07/200	MAH
1,2-Dibromo-3-chloropropane	LCS	0.00836	84	(69-144)			0.01 mg/L	11/07/01	MAH
	LCSD	0.00946	95		12	(< 20)	0.01 mg/L	11/07/200	MAH
2-Chlorotoluene	LCS	0.00999	100	(79-133)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0103	103		3	(< 20)	0.01 mg/L	11/07/200	MAH
1,2-Dichlorobenzene	LCS	0.0102	102	(87-136)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0103	103		1	(< 20)	0.01 mg/L	11/07/200	MAH
1,2-Dichloroethane	LCS	0.0101	101	(80-135)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0106	106		5	(< 20)	0.01 mg/L	11/07/200	MAH
1,2-Dichloropropane	LCS	0.0110	110	(94-128)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0114	114		4	(< 20)	0.01 mg/L	11/07/200	MAH
1,3,5-Trimethylbenzene	LCS	0.0103	103	(81-134)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0106	106		3	(< 20)	0.01 mg/L	11/07/200	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	404276	Lab Control Sample	**Printed Date/Time**	11/13/2001 15:26
	404277	Lab Control Sample Duplicate	**Prep Batch**	VXX 8619
lient Name	Nortech		**Method**	SW5030
Project Name/#	City PW		**Date**	11/07/2001
Matrix	Water (Surface, Eff., Ground)			

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
1,3-Dichlorobenzene	LCS	0.0102	102	(77-137)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0104	104		2	(< 20)	0.01 mg/L	11/07/200	MAH
,3-Dichloropropane	LCS	0.00910	91	(82-127)			0.01 mg/L	11/07/01	MAH
	LCSD	0.00976	98		7	(< 20)	0.01 mg/L	11/07/200	MAH
4-Dichlorobenzene	LCS	0.0102	102	(78-139)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0104	104		2	(< 20)	0.01 mg/L	11/07/200	MAH
2,2-Dichloropropane	LCS	0.0116	116	(84-122)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0124	124 *		7	(< 20)	0.01 mg/L	11/07/200	MAH
-Butanone (MEK)	LCS	0.0500 U	89	(77-138)			0.015 mg/L	11/07/01	MAH
	LCSD	0.0500 U	92		3	(< 20)	0.015 mg/L	11/07/200	MAH
-Chloroethyl Vinyl Ether	LCS	0.0135	90	(79-136)			0.015 mg/L	11/07/01	MAH
	LCSD	0.0151	101		11	(< 20)	0.015 mg/L	11/07/200	MAH
1,2,4-Trimethylbenzene	LCS	0.0104	104	(84-138)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0106	106		2	(< 20)	0.01 mg/L	11/07/200	MAH
ans-1,2-Dichloroethene	LCS	0.0120	120	(92-129)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0126	126		4	(< 20)	0.01 mg/L	11/07/200	MAH
aphthalene	LCS	0.00873	87	(76-143)			0.01 mg/L	11/07/01	MAH
	LCSD	0.00922	92		6	(< 20)	0.01 mg/L	11/07/200	MAH
trans-1,3-Dichloropropene	LCS	0.00952	95	(79-128)			0.01 mg/L	11/07/01	MAH
	LCSD	0.00997	100		5	(< 20)	0.01 mg/L	11/07/200	MAH
rt-Butylbenzene	LCS	0.0103	103	(78-138)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0105	105		1	(< 20)	0.01 mg/L	11/07/200	MAH
c-Butylbenzene	LCS	0.0104	104	(73-138)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0109	109		4	(< 20)	0.01 mg/L	11/07/200	MAH
o-Xylene	LCS	0.0102	102	(82-127)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0108	108		5	(< 20)	0.01 mg/L	11/07/200	MAH
-Propylbenzene	LCS	0.0106	106	(80-138)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0107	107		2	(< 20)	0.01 mg/L	11/07/200	MAH
-Butylbenzene	LCS	0.0104	104	(87-137)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0106	106		2	(< 20)	0.01 mg/L	11/07/200	MAH
cis-1,2-Dichloroethene	LCS	0.0113	113	(88-124)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0117	117		3	(< 20)	0.01 mg/L	11/07/200	MAH
inyl chloride	LCS	0.0102	102	(82-137)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0115	115		11	(< 20)	0.01 mg/L	11/07/200	MAH
Trichlorofluoromethane	LCS	0.0106	106	(64-130)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0114	114		7	(< 20)	0.01 mg/L	11/07/200	MAH
Trichloroethene	LCS	0.0105	105	(88-125)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0108	108		2	(< 20)	0.01 mg/L	11/07/200	MAH
oluene	LCS	0.0102	102	(84-120)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0104	104		1	(< 20)	0.01 mg/L	11/07/200	MAH
Tetrachloroethene	LCS	0.0107	107	(87-124)			0.01 mg/L	11/07/01	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	404276	Lab Control Sample	**Printed Date/Time**	11/13/2001	15:26
	404277	Lab Control Sample Duplicate	**Prep Batch**	VXX 8619	
Client Name	Nortech		**Method**	SW5030	
Project Name/#	City PW		**Date**	11/07/2001	
Matrix	Water (Surface, Eff., Ground)				

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
	LCSD	0.0112	112		4	(< 20)	0.01 mg/L	11/07/200	MAH
cis-1,3-Dichloropropene	LCS	0.0109	109	(85-121)			0.01 mg/L	11/07/01	MAH
	LCSD	0.0113	113		3	(< 20)	0.01 mg/L	11/07/200	MAH
P & M -Xylene	LCS	0.0214	107	(85-123)			0.02 mg/L	11/07/01	MAH
	LCSD	0.0219	109		2	(< 20)	0.02 mg/L	11/07/200	MAH

Batch VMS 4900
Method SW846-8260B
Instrument HP 5890 Series II MS3 VKA

CT&E Environmental Services Inc.

CT&E Ref.#	404315	Method Blank	**Printed Date/Time**	11/13/2001 15:26	
Client Name	Nortech		**Prep Batch**	VXX	8620
Project Name/#	City PW		**Method**		
Matrix	Water (Surface, Eff., Ground)		**Date**	11/08/2001	

QC results affect the following production samples:

1017233001

Parameter	Results	PQL	Units	Analysis Date	Init
Volatile Fuels Department					
Gasoline Range Organics	0.0900 U	0.0900	mg/L	11/08/01	RMV
Benzene	0.000500 U	0.00050	mg/L	11/08/01	RMV
Toluene	0.00200 U	0.00200	mg/L	11/08/01	RMV
Ethylbenzene	0.00200 U	0.00200	mg/L	11/08/01	RMV
m & M -Xylene	0.00200 U	0.00200	mg/L	11/08/01	RMV
o-Xylene	0.00200 U	0.00200	mg/L	11/08/01	RMV

Batch VFC 4912
Method AK101/8021B
Instrument HP 5890 Series II PID+FID VCA

CT&E Environmental Services Inc.

CT&E Ref.#	404316	Lab Control Sample	**Printed Date/Time**	11/13/2001	15:26
	404317	Lab Control Sample Duplicate	**Prep Batch**	VXX	8620
Client Name	Nortech		**Method**		
Project Name/#	City PW		**Date**	11/08/2001	
Matrix	Water (Surface, Eff., Ground)				

QC results affect the following production samples:

1017233001

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
Ethylbenzene	LCS	0.0261	106	(80-120)			0.0246 mg/L	11/08/01	RMV
	LCSD	0.0260	106		0	(< 20)	0.0246 mg/L	11/08/200	RMV
o-Xylene	LCS	0.0343	103	(80-120)			0.0333 mg/L	11/08/01	RMV
	LCSD	0.0337	101		2	(< 20)	0.0333 mg/L	11/08/200	RMV
Toluene	LCS	0.147	105	(80-120)			0.141 mg/L	11/08/01	RMV
	LCSD	0.146	104		1	(< 20)	0.141 mg/L	11/08/200	RMV
Gasoline Range Organics	LCS	0.902	100	(60-120)			0.9 mg/L	11/08/01	RMV
	LCSD	0.897	100		1	(< 20)	0.9 mg/L	11/08/200	RMV
Benzene	LCS	0.0400	102	(80-120)			0.0391 mg/L	11/08/01	RMV
	LCSD	0.0405	104		1	(< 20)	0.0391 mg/L	11/08/200	RMV
P & M -Xylene	LCS	0.0876	99	(80-120)			0.089 mg/L	11/08/01	RMV
	LCSD	0.0865	97		1	(< 20)	0.089 mg/L	11/08/200	RMV

Batch VFC 4912
Method AK101/8021B
Instrument HP 5890 Series II PID+FID VCA

F-701

CT&E Environmental Services Inc.

CT&E Ref.#	402313	Method Blank	**Printed Date/Time**	11/13/2001 15:26	
Client Name	Nortech		**Prep Batch**	MXX	9418
Project Name/#	City PW		**Method**		
Matrix	Water (Surface, Eff., Ground)		**Date**	10/30/2001	

QC results affect the following production samples:

1017233001, 1017233003, 1017233004

Parameter	Results	PQL	Units	Analysis Date	Init
Phosphorus	0.00		ug/L	11/05/01	KGF

Batch MMS 1837
Method SW846 6020
Instrument Perkin Elmer Sciex ICP-MS P3

Metals by ICP/MS

Aluminum	200 U	200	ug/L	11/05/01	KGF
Antimony	1.00 U	1.00	ug/L	11/05/01	KGF
Arsenic	5.00 U	5.00	ug/L	11/05/01	KGF
Barium	3.00 U	3.00	ug/L	11/05/01	KGF
Beryllium	1.00 U	1.00	ug/L	11/05/01	KGF
Cadmium	2.00 U	2.00	ug/L	11/05/01	KGF
Calcium	1000 U	1000	ug/L	11/05/01	KGF
Chromium	6.75	6.50	ug/L	11/05/01	KGF
Cobalt	0.800 U	0.800	ug/L	11/05/01	KGF
Copper	6.00 U	6.00	ug/L	11/05/01	KGF
Iron	1000 U	1000	ug/L	11/05/01	KGF
Lead	2.00 U	2.00	ug/L	11/05/01	KGF
Potassium	1000 U	1000	ug/L	11/05/01	KGF
Selenium	5.00 U	5.00	ug/L	11/05/01	KGF
Silver	2.00 U	2.00	ug/L	11/05/01	KGF
Sodium	1000 U	1000	ug/L	11/05/01	KGF
Thallium	2.00 U	2.00	ug/L	11/05/01	KGF
Vanadium	20.0	20.0	ug/L	11/05/01	KGF
Zinc	25.0 U	25.0	ug/L	11/05/01	KGF
Magnesium	1000 U	1000	ug/L	11/05/01	KGF
Manganese	10.0 U	10.0	ug/L	11/05/01	KGF
Molybdenum	3.00 U	3.00	ug/L	11/05/01	KGF
Nickel	4.00 U	4.00	ug/L	11/05/01	KGF

Batch MMS 1837
Method SW846 6020
Instrument Perkin Elmer Sciex ICP-MS P3

CT&E Environmental Services Inc.

CT&E Ref.# 402314 Lab Control Sample

Printed Date/Time 11/13/2001 15:26

Prep Batch MXX 9418

Method

Date 10/30/2001

Client Name Nortech

Project Name/# City PW

Matrix Water (Surface, Eff., Ground)

QC results affect the following production samples:

1017233001, 1017233003, 1017233004

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
Zinc	LCS	1050	92	(85-115)			1140 ug/L	11/05/01	KGF
Vanadium	LCS	1140	100	(85-115)			1140 ug/L	11/05/01	KGF
Thallium	LCS	1140	100	(85-115)			1150 ug/L	11/05/01	KGF
Sodium	LCS	10900	96	(85-115)			11400 ug/L	11/05/01	KGF
Silver	LCS	223	98	(85-115)			227 ug/L	11/05/01	KGF
Selenium	LCS	1130	100	(85-115)			1140 ug/L	11/05/01	KGF
Potassium	LCS	11400	100	(85-115)			11400 ug/L	11/05/01	KGF
Nickel	LCS	1160	103	(85-115)			1140 ug/L	11/05/01	KGF
Manganese	LCS	1090	96	(85-115)			1140 ug/L	11/05/01	KGF
Magnesium	LCS	11500	101	(85-115)			11400 ug/L	11/05/01	KGF
Beryllium	LCS	434	95	(85-115)			457 ug/L	11/05/01	KGF
Aluminum	LCS	1120	99	(85-115)			1140 ug/L	11/05/01	KGF
Antimony	LCS	1090	96	(85-115)			1140 ug/L	11/05/01	KGF
Barium	LCS	1150	101	(85-115)			1140 ug/L	11/05/01	KGF
Lead	LCS	1120	98	(85-115)			1140 ug/L	11/05/01	KGF
Cadmium	LCS	543	96	(85-115)			568 ug/L	11/05/01	KGF
Calcium	LCS	11600	102	(85-115)			11400 ug/L	11/05/01	KGF
Chromium	LCS	1240	109	(85-115)			1140 ug/L	11/05/01	KGF
Cobalt	LCS	1090	96	(85-115)			1140 ug/L	11/05/01	KGF
Copper	LCS	1150	101	(85-115)			1140 ug/L	11/05/01	KGF
Iron	LCS	1170	103	(85-115)			1140 ug/L	11/05/01	KGF
Arsenic	LCS	1170	103	(85-115)			1140 ug/L	11/05/01	KGF

Batch MMS 1837

Method SW846 6020

Instrument Perkin Elmer Sciex ICP-MS P3

CT&E Environmental Services Inc.

CT&E Ref.#	403424	Undigested Duplicate	**Printed Date/Time**	11/13/2001 15:26
Client Name	Nortech		**Prep Batch**	
Project Name/#	City PW		**Method**	
Original			**Date**	
Matrix	Water (Surface, Eff., Ground)			

QC results affect the following production samples:
1017233001, 1017233003, 1017233004

Parameter	Original Result	QC Result	RPD	RPD Limits	Analysis Date	Init
Nickel		16.0			11/05/01	KGF
Aluminum		100 U			11/05/01	KGF
Zinc		26.7			11/05/01	KGF
Vanadium		7.84F			11/05/01	KGF
Thallium		1.00 U			11/05/01	KGF
Sodium		19400			11/05/01	KGF
Silver		1.00 U			11/05/01	KGF
Selenium		2.49F			11/05/01	KGF
Phosphorus		0.00			11/05/01	KGF
Molybdenum		1.16F			11/05/01	KGF
Manganese		924			11/05/01	KGF
Magnesium		39700			11/05/01	KGF
Beryllium		0.500 U			11/05/01	KGF
Antimony		6.72			11/05/01	KGF
Potassium		9840			11/05/01	KGF
Barium		251			11/05/01	KGF
Lead	0.300 U	1.00 U	-143		11/05/01	KGF
Cadmium		1.00 U			11/05/01	KGF
Calcium		159000			11/05/01	KGF
Chromium		16.2			11/05/01	KGF
Cobalt		4.12			11/05/01	KGF
Copper		5.68			11/05/01	KGF
Iron		197F			11/05/01	KGF
Arsenic		1.10F			11/05/01	KGF

Batch MMS 1837
Method SW846 6020
Instrument Perkin Elmer Sciex ICP-MS P3

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CT&E Environmental Services Inc.

CT&E Ref.#	402406	Method Blank	**Printed Date/Time**	11/13/2001 15:26	
Client Name	Nortech		**Prep Batch**	XXX	9442
Project Name/#	City PW		**Method**		
Matrix	Water (Surface, Eff., Ground)		**Date**	10/31/2001	

QC results affect the following production samples:

1017233001, 1017233002, 1017233003, 1017233004, 1017233005

Parameter	Results	PQL	Units	Analysis Date	Init
Semivolatile Organic Fuels Department					
Diesel Range Organics	0.500 U	0.500	mg/L	11/01/01	DS
Residual Range Organics GC	1.00 U	1.00	mg/L	11/01/01	DS

Batch XFC 5263
Method AK102/103
Instrument HP 5890 Series II FID SV C F

CT&E Environmental Services Inc.

CT&E Ref.#	402407	Lab Control Sample	**Printed Date/Time**		11/13/2001 15:26
	402408	Lab Control Sample Duplicate	**Prep**	**Batch**	XXX 9442
Client Name	Nortech			**Method**	
Project Name/#	City PW			**Date**	10/31/2001
Matrix	Water (Surface, Eff., Ground)				

QC results affect the following production samples:

1017233001, 1017233002, 1017233003, 1017233004, 1017233005

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
Diesel Range Organics	LCS	5.56	111	(75-125)			5 mg/L	11/02/01	DS
	LCSD	5.33	107		4	(< 20)	5 mg/L	11/02/200	DS
Residual Range Organics GC	LCS	4.49	90	(60-120)			5 mg/L	11/02/01	DS
	LCSD	3.77	76		17	(< 20)	5 mg/L	11/02/200	DS

Batch XFC 5263
Method AK102/103
Instrument HP 5890 Series II FID SV C F

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