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LETTER REPORT REGARDING THIRD QUARTER MONITORING REPORT FOR SOLID WASTE MANAGEMENT UNITS 6 AND 7 TREATABILITY STUDY NS MAYPORT FL
2/9/2004
TETRA TECH NUS

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Project Number N4259

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: Adrienne Wilson (Code ES31)
2155 Eagle Drive
North Charleston, South Carolina 29406
(PLA: NAVFAC EFD SOUTH
CHARLESTON SC)
UIC: 62467

Reference: CLEAN Contract Number N62467-94-D-0888
Contract Task Order Number 0253

Subject: Third Quarter Monitoring Report for Solid Waste Management Units (SWMUs) 6 and 7 Treatability Study
Naval Station (NAVSTA) Mayport, Mayport, Florida.

Dear Ms. Wilson:

Tetra Tech NUS, Inc. (TtNUS) is pleased to submit the Third Quarter Monitoring Letter Report for the subject site. This report was prepared for the United States Navy (Navy) Southern Division, Naval Facilities Engineering Command under Contract Task Order (CTO) 0253 for the Comprehensive Long-term Environmental Action Navy (CLEAN) Contract Number N62467-94-D-0888. This letter report provides the results of the third quarter natural attenuation (NA) sampling event conducted in May 2003, including a description of the fieldwork and results of the analytical sampling.

Site Summary

NAVSTA Mayport is located near the town of Mayport within the city limits of Jacksonville, Florida, in northeastern Duval County on the south shore of the confluence of the St. Johns River and the Atlantic Ocean (Figure 1). NAVSTA Mayport, occupying 3,401 acres, has been in service since 1942. Current activities include support services for surface fleet and aircraft, including ship and aircraft repair and maintenance. The general locations of SWMUs 6 and 7 at NAVSTA Mayport are shown on Figure 1. SWMU 6, located directly east and adjacent to SWMU 7 (see Figure 2), served as a waste oil pit and sludge drying bed prior to the installation of SWMU 7 in 1979. SWMU 7 was the Oily Water Treatment Plant (OWTP) sludge drying beds, which were enclosed by earthen berms. The sludge drying beds received sludge from the OWTP clarifiers and bilge water from receiving tanks. Records indicate that approximately 1,500 gallons of sludge were transferred to the drying beds on the average of twice per week until late 1994. The easternmost drying bed was excavated in 1989, at which time a lined, diked enclosure and three bilge water receiving tanks were constructed.

Between 1992 and 2001, SWMU 7 underwent two ex-situ pilot studies, low-temperature thermal desorption (LTTD), and bioventing/bioslurping. Neither of these methods successfully remediated the site.

During previous investigations and studies, free product has been detected at the site on numerous occasions. The wells at the site that have historically exhibited a measurable presence of free product are

as follows: MW01S, MW02S, MW03S, MW04S, MW06S, MW07S, MW11S, and MW15S. For brevity, the monitoring well identifiers have been abbreviated (for example: MPT-8-MW01S is simply MW01S). Any monitoring well with a different identifier (MPT-S-MW02S and MPT-S-MW03S) will not be abbreviated. Of these wells, MW07S and MW11S were converted to extraction wells for the bioslurping system and MW15S was destroyed and replaced by MW15SR. Figure 3 shows the locations of all monitoring wells associated with SWMUs 6 and 7.

Groundwater samples were collected on a semi-annual basis during 1999 and 2000. Four wells (MW04S, MW09S, MW15S, and MW16S) contained constituents detected in excess of Florida Department of Environmental Protection (FDEP) Groundwater Cleanup Target Levels (GCTLs) (TtNUS, 2002; *Draft Treatability Study Work Plan for SWMUs 6 & 7*). Well MW04S was reported to have exceedances of 1-methylnaphthalene, 2-methylnaphthalene, and Total Recoverable Petroleum Hydrocarbons (TRPH). The only reported constituent in excess of GCTLs in MW09S was TRPH during the fourth quarter sampling event of 2000. 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene were detected in MW15S before it was destroyed. MW16S had reported concentrations of 1-methylnaphthalene and 2-methylnaphthalene exceeding GCTLs.

Soil contamination has been documented at the site during many of the above-referenced assessment activities. However, the extent of soil contamination has yet to be completely defined. Most previous efforts focused on free-product recovery. Preliminary Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG) testing was completed in March 2002 and indicated exceedances of several individual petroleum hydrocarbon compounds and TRPH (TtNUS, 2002; *Draft Treatability Study Work Plan for SWMUs 6 & 7*).

Purpose and Goals

This Treatability Study is being conducted in order to evaluate the applicability of remediation alternatives for free-product recovery, soil bioremediation, and groundwater NA. Groundwater is presently being sampled and analyzed for NA parameters to determine if NA is a viable groundwater treatment alternative. Passive free-product recovery is being tested at the site to determine if this technology is a viable method for decreasing the free-product thickness on the groundwater surface. Ten soil samples were collected and analyzed for TPHCWG to further characterize the site soil. The analytical data from the 10 soil samples was used to determine the location where split soil samples were collected for the two soil bio-treatability tests. Split soil samples were collected and sent to two off-site in situ bio-treatability vendors for bench scale bioremediation tests to determine if nutrient injection will decrease soil contamination below FDEP Soil Cleanup Target Levels (SCTLs) and aid in the elimination of free product at the soil-water interface.

Previous TtNUS Field Activities

First Quarter

Prior to this Third Quarter Groundwater Monitoring event, TtNUS personnel had conducted the first quarter (three monthly sampling events in November 2002, December 2002, and January 2003) and second quarter (February 2003) NA sampling events. Field events for the first quarter began on November 2002 with the installation of an up gradient (background) well for NA monitoring activities. On November 13, 2002, TtNUS personnel supervised the installation of shallow monitoring well MW19S, just south of SWMUs 6 and 7 (see Figure 3). The November sampling event was the baseline sampling event in which 10 wells were sampled for volatile organic compound (VOC), polynuclear aromatic hydrocarbon (PAH), TRPH, and NA parameters. Four additional wells were sampled during the baseline event for PAHs and VOCs only. During the December 2002 and January 2003 first quarter sampling events, 10 groundwater monitoring wells were sampled for field and laboratory NA parameters only.

Baseline Event
No PAH, VOC, or TRPH detections were reported to exceed FDEP GCTLs during the baseline sampling event. Laboratory NA, biogenic gases, and field NA analysis results are summarized in Table 1. Free-product measurements of 0.54 feet and 0.01 feet were measured in monitoring wells MW02S and

MW03S, respectively.

Event 2 – First Quarter
NA parameters, biogenic gases, and field NA analysis results are summarized in Table 1. Free product was measured at 0.40 feet in monitoring well MW02S.

Event 3 – First Quarter
NA parameters, biogenic gases, and field NA analysis results are summarized in Table 1. Free-product measurements of 0.45 feet and 0.02 feet were encountered in monitoring wells MW02S and MW03S, respectively.

Second Quarter

The second quarter NA sampling event consisted of 10 groundwater monitoring wells being sampled for field and laboratory NA parameters. Soil samples from 10 locations were collected and sent to a fixed-based laboratory for TPHCWG analysis during the second quarter. A 4-inch recovery well (RW01) was installed on February 18, 2003 and a passive skimmer was placed in the recovery well to test if free-product recovery was feasible.

NA parameters, biogenic gases, and field NA analysis results are summarized in Table 1. Free-product measurements of 0.40 foot and 0.10 foot were recorded for monitoring wells MW02S and MW03S, respectively.

TtNUS Field Activities – Third Quarter

In May 2003, TtNUS conducted the Third Quarter Groundwater Monitoring Event, which included measuring of depth to groundwater and collecting groundwater samples from 10 site monitoring wells. The samples were analyzed for NA parameters only. Groundwater samples were collected from monitoring wells MW01S, MW04S, MW06S, MW09S, MW16S, MW17S, MW18S, MW19S, MPT-S-MW02S, and MPT-S-MW03S and analyzed for iron and manganese, alkalinity, select anions, ammonia, total organic carbon (TOC), biogenic gases (methane, ethene, ethane, hydrogen, oxygen, nitrogen, and carbon dioxide) by laboratory analysis. Field NA parameters [ferrous iron, sulfide, carbon dioxide, dissolved oxygen (DO), and hydrogen sulfide] were measured by TtNUS field personnel.

Groundwater samples were collected from all wells in general accordance with the current FDEP Standard Operating Procedures (SOPs). A depth-to-water measurement was collected for each well prior to purging and sample collection. Purging was accomplished with a peristaltic pump using a low flow purge technique. During purging, field parameters (pH, conductivity, temperature, DO, and oxidation-reduction potential) were measured at approximately 5 to 10 minute intervals using either a YSI® Model 556 or Horiba U-22 water quality meter. The instrument was calibrated according to the manufacturer's specifications and FDEP SOPs at the beginning of each day and at the end of the last sampling event day. A Field Calibration Log is provided in Attachment A. In addition, turbidity was monitored using a LaMotte 2020 Turbidimeter. Following well purging activities, groundwater samples were analyzed in the field for the following NA parameters: ferrous iron, carbon dioxide, DO, hydrogen sulfide, and sulfide. Groundwater Sample Log Sheets, Low Flow Purge Data Sheets, and Natural Attenuation Parameter Sheets compiled during purging and sampling at each location are also provided in Attachment A. Additional groundwater samples were collected for NA analysis [alkalinity by United States Environmental Protection Agency (USEPA) Method E310.1, cations and anions by USEPA 300 series, TOC by USEPA Method 415.1, Dissolved Organic Carbon (DOC) by USEPA SW-846 Method 9060, Fractional Organic Carbon (FOC) by USEPA SW-846 Method 900, iron and manganese by USEPA Method SW-846 6010B, and ammonia by USEPA Method 350.1] at an off-site laboratory. Groundwater samples were transported to Environmental Conservation Laboratories (ENCO) in Jacksonville, Florida by the TtNUS field personnel. In addition, biogenic gas samples were shipped on ice via Federal Express to Microseeps Inc., in Pittsburgh, Pennsylvania for analysis by AMG20GAX. The validated groundwater analytical reports are included in Attachment B.

As part of the third quarter sampling, a split soil sample was collected for the soil bio-treatability study. The

split soil sample was collected near recovery well RW01, which is located in an area of known soil contamination. RW01 was installed beside a bioventing/bioslurping well that contained nearly one foot of free-product. This area also contained the highest TPHCWG concentrations of the 10 soil samples that were previously collected at SWMU 6 and 7 during the second quarter sampling event. Two five-gallon buckets of contaminated soil were sent to Enzyme Technologies in Portland, Oregon and Catalina BioSolutions in Tucson, Arizona (one bucket per lab). These two independent laboratories conducted bench scale bioremediation tests on the soil samples. The purpose of the bio-treatability tests was to determine if enhanced bioremediation was an effective alternative for soil remediation.

Free-product recovery was checked weekly in the passive skimmer that was installed in recovery well RW01. PIG SKIMMER® absorbent socks were placed in groundwater monitoring wells MW02S, MW03S, and four bioslurping wells that were found to contain free-product. The absorbent socks were selected for free-product recovery because of their size and function. The 1.5 inch diameter by 18 inch long socks fit into 2 inch monitoring wells and are designed to absorb oil while repelling water. The absorbent socks were checked weekly and replaced as needed when they became saturated with oil. All oil saturated absorbent socks were containerized in a 55-gallon drum stored on the site.

Groundwater Sampling Results

Table 2 provides a summary of depth-to-water measurements from top of casing. Figure 4 provides a graphical representation of groundwater flow at this site. Groundwater flow is generally north toward the St. Johns River. Table 1 provides a summary of the groundwater NA parameters and biogenic gases that were sent to a fixed-based laboratory during the third quarter sampling event. Groundwater NA parameters that were collected and analyzed in the field are summarized in Table 3. The monitoring well locations are presented on Figure 3.

Free-Product Recovery Results

Free-product recovery using the Keck passive skimmer proved to be ineffective at removing free-product from the soil-groundwater interface. Free-product measurements in the recovery well were approximately 0.02 foot each week. However, weekly inspection of the skimmer showed no free-product was being recovered by the skimmer.

The PIG SKIMMER® absorbent socks absorbed oil from the wells and had to be periodically replaced. Free-product levels in the wells following sock changing were reduced to only a skim (less than 0.01 foot).

Conclusion

NA attenuation parameters will continually be monitored Free-product recovery using passive skimmers has been ineffective thus far. Based on conversations with the passive skimmer vendor (Geotech Environmental Equipment, Inc.), it is believed that the free-product (a bunker C type fuel oil) is too viscous to flow through the screen of the passive skimmer. The absorbent socks are effectively removing free-product from the wells. Weekly maintenance of the passive skimmers and absorbent socks will continue until the next groundwater NA sampling event. The fourth quarter groundwater sampling event was performed in August 2003.

If you have any questions with regard to this submittal, please contact me at (850) 385-9866 or via e-mail at hansent@ttnus.com.

Sincerely, Charles Mitchell for

Terry Hansen P.G.
Task Order Manager

TH/cm

Attachments (4)

c: Mr. J. Cason P.G., FDEP (2 copies)
Ms. C. Mitchell, NAVSTA Mayport
Ms. D. Lancaster, NAVSTA Mayport
Mr. C. Benedikt, USEPA
Mr. M. Halil P.E., JA Jones
Ms. D. Wroblewski, TtNUS (cover letter only)
Mr. M. Perry, TtNUS (unbound copy)
Mr. G. Roof P.E., TtNUS
Mr. Mike Albert P.E., TtNUS
Project File

TABLES

TABLE 1
SUMMARY OF ANALYTES DETECTED IN GROUNDWATER - SWMUs 6 & 7
MAY 2003 SAMPLING EVENT

THIRD QUARTER GROUNDWATER MONITORING LETTER REPORT
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

Sample ID			**MPT-S-MW02S**					**MPT-S-MW03S**				
Sample Location			**S - MW02S**					**S - MW03S**				
Collect Date			**11/20/02**	**12/17/02**	**01/15/03**	**02/11/03**	**05/20/04**	**11/21/02**	**12/17/02**	**01/15/03**	**02/11/03**	**05/20/04**
	Units	**GCTL[1]**										
Metals[2]												
Iron	µg/L	300	85.7	62.3	--	--	1300	8280	NS	NS	4020	920
Manganese	µg/L	50	14.2	10.7	23.3	8.4	--	556	NS	NS	190	110
Miscellaneous[3]												
Alkalinity	mg/L	NC	370	380	380	380	350	410	NS	NS	370	320
Ammonia	mg/L	2.8	0.91	0.6	1.2 J	0.78	1.1	1.2	NS	NS	0.48	0.26
Chloride	mg/L	250	420	420	110 J	150	160	15 J	NS	NS	14	16
Dissolved Organic Carbon	mg/L	NC	12	NA	NA	NA	NA	NA	NS	NS	NA	NA
Fractional Organic Carbon	mg/L	NC	77	NA	NA	NA	NA	NA	NS	NS	NA	NA
Nitrate	mg/L	10	0.36 J	0.18	0.25 J	0.80 J	0.14	--	NS	NS	--	0.13
Nitrite	mg/L	1	--	--	--	--	--	--	NS	NS	--	--
Orthophosphate	mg/L	NC	--	--	--	--	0.2	--	NS	NS	--	0.18
Sulfate	mg/L	250	46 J	32	20	25	11	50 J	NS	NS	40	31
Total Organic Carbon	mg/L	NC	13	13	11	13	20	28	NS	NS	2	5
Biogenic Gases[4]												
Carbon Dioxide	mg/L	NC	61	51 J	47	52 J	66000	110	NS	NS	56 J	56000
Ethane	µg/L	NC	0.29	0.25 J	0.22	0.24 J	0.2	0.830	NS	NS	0.48 J	1
Ethene	µg/L		0.003 J	--	--	--	--	0.007	NS	NS	--	0.013
Hydrogen	nM	NC	2.2	1.1 J	0.71	1.3 J	1.1	12	NS	NS	1.8 J	0.48
Methane	mg/L	NC	2300	2.1 J	2.5	2.8 J	3900	550	NS	NS	0.18	56
Nitrogen	mg/L	NC	14	15 J	14	13 J	13000	14	NS	NS	16 J	16000
Oxygen	mg/L	NC	2	2.4 J	4.1	4.6 J	3000	2.4	NS	NS	2.8 J	4300

See notes at end of table

TABLE 1
SUMMARY OF ANALYTES DETECTED IN GROUNDWATER - SWMUs 6 & 7
MAY 2003 SAMPLING EVENT

THIRD QUARTER GROUNDWATER MONITORING LETTER REPORT
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

Sample ID			MPT-8-MW01S					MPT-8-MW03S				
Sample Location			MW01S					8 - MW03S				
Collect Date			11/19/02	12/19/02	01/13/03	02/10/03	05/20/03	11/19/02	12/19/03	01/13/03	02/10/03	05/20/03
	Units	GCTL[1]										
Metals[2]												
Iron	µg/L	300	815	826	183	--	420	NS	486	NS	NS	NS
Manganese	µg/L	50	34.5	26.6	22.4	26.4	--	NS	132	NS	NS	NS
Miscellaneous[3]												
Alkalinity	mg/L	NC	180	170	160 J	170	160	NS	510	NS	NS	NS
Ammonia	mg/L	2.8	0.17	NA	0.38	0.39	0.26	NS	NA	NS	NS	NS
Chloride	mg/L	250	17	16	18	17	13	NS	17	NS	NS	NS
Dissolved Organic Carbon	mg/L	NC	4.8	NA	2.7	NA	NA	NS	NA	NS	NS	NS
Fractional Organic Carbon	mg/L	NC	34	NA	46	NA	NA	NS	NA	NS	NS	NS
Nitrate	mg/L	10	--	--	0.14 J	--	--	NS	--	NS	NS	NS
Nitrite	mg/L	1	--	--	--	--	--	NS	--	NS	NS	NS
Orthophosphate	mg/L	NC	--	--	--	--	0.54	NS	--	NS	NS	NS
Sulfate	mg/L	250	39 J	29	31	31	36	NS	18	NS	NS	NS
Total Organic Carbon	mg/L	NC	5.8	2.9	2.4	3.1	45	NS	50	NS	NS	NS
Biogenic Gases[4]												
Carbon Dioxide	mg/L	NC	11	11 J	8.9	6.6 J	7.4	NS	160 J	NS	NS	NS
Ethane	µg/L	NC	0.008	0.02 J	0.015	0.012 J	0.013	NS	0.053 J	NS	NS	NS
Ethene	µg/L	NC	0.009	--	0.006	--	0.005	NS	--	NS	NS	NS
Hydrogen	nM	NC	2	1.1 J	2.1	2 J	0.4	NS	3.6 J	NS	NS	NS
Methane	mg/L	NC	0.045	0.12 J	0.087	0.11 J	0.18	NS	5.2 J	NS	NS	NS
Nitrogen	mg/L	NC	16	18 J	18	17 J	17	NS	11 J	NS	NS	NS
Oxygen	mg/L	NC	3.8	1.2 J	1.1	3.4 J	3.5	NS	3.2 J	NS	NS	NS

See notes at end of table.

TABLE 1
SUMMARY OF ANALYTES DETECTED IN GROUNDWATER - SWMUs 6 & 7
MAY 2003 SAMPLING EVENT

THIRD QUARTER GROUNDWATER MONITORING LETTER REPORT
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

Sample ID			MPT-8-MW04S					MPT-8-MW-06S				
Sample Location			MW04S					MW06S				
Collect Date			11/19/02	12/17/02	01/15/03	02/13/04	05/21/04	11/21/02	12/18/02	01/14/03	02/13/03	05/19/04
	Units	GCTL[1]										
Metals[2]												
Iron	µg/L	300	NS	12900	13600	14100	14000	60.1	--	--	--	1600
Manganese	µg/L	50	NS	212	233	226	250	6.7	8.0	4.3	40.9	95
Miscellaneous[3]												
Alkalinity	mg/L	NC	NS	280	280	500	500	180	190	170 J	180	160
Ammonia	mg/L	2.8	NS	5.3	4.2 J	5	5.1	0.37	--	--	0.24	--
Chloride	mg/L	250	NS	16	16 J	15	14	7.4 J	7.7	6.3	11	8
Dissolved Organic Carbon	mg/L	NC	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fractional Organic Carbon	mg/L	NC	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate	mg/L	10	NS	--	--	--	--	0.98 J	0.44	0.33 J	--	0.88
Nitrite	mg/L	1	--	--	--	--	--	--	--	--	--	--
Orthophosphate	mg/L	NC	NS	--	--	--	0.79	--	--	--	--	--
Sulfate	mg/L	250	NS	3	4	0.19	--	16 J	15	17	14	17
Total Organic Carbon	mg/L	NC	NS	30	38	34	35	2.1	1.1	1.8	2.9	3
Biogenic Gases[4]												
Carbon Dioxide	mg/L	NC	NS	150 J	160	140	190000	12	9.9 J	8.6	9.5	10000 J
Ethane	µg/L	NC	NS	0.13 J	0.022	0.01	--	--	--	0.001 J	--	0.003 J
Ethene	µg/L	NC	NS	0.01 J	--	--	--	0.012	--	0.003 J	--	0.013 J
Hydrogen	nM	NC	NS	2.2 J	1.8	3	2.5	1.7	1.2 J	1.4	0.5	0.21 J
Methane	mg/L	NC	NS	7.5 J	6.7	9.4	10000	0.00014	0.00008 J	0.00003	0.00006	0.1 J
Nitrogen	mg/L	NC	NS	10 J	9.5	8.2	6500	14	17 J	15	16	16000 J
Oxygen	mg/L	NC	NS	2.1 J	3.5	1.5	1800	7	5.4 J	6.6	4.3	5400 J

See notes at end of table.

TABLE 1
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MAY 2003 SAMPLING EVENT

THIRD QUARTER GROUNDWATER MONITORING LETTER REPORT
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

Sample ID			MPT-8-MW09S					MPT-8-MW15SR				
Sample Location			MW09S					MW15SR				
Collect Date			11/19/02	12/18/02	01/14/03	02/10/03	05/21/04	11/21/02	12/18/02	01/15/03	02/10/03	05/21/04
	Units	GCTL[1]										
Metals[2]												
Iron	µg/L	300	--	1200	1580	1650	900	14000	NS	4330	NS	NS
Manganese	µg/L	50	44.0	211	214	231	280	118	NS	58.0	NS	NS
Miscellaneous[3]												
Alkalinity	mg/L	NC	310	370	390 J	330	360	610	NS	640	NS	NS
Ammonia	mg/L	2.8	0.22	0.24	0.41	3.9	0.66	4	NS	--	NS	NS
Chloride	mg/L	250	140	190	83 J	17	120	370 J	NS	400 J	NS	NS
Dissolved Organic Carbon	mg/L	NC	5.6	NA	NA	NA	NA	NA	NS	NA	NS	NS
Fractional Organic Carbon	mg/L	NC	68	NA	NA	NA	NA	NA	NS	NA	NS	NS
Nitrate	mg/L	10	0.42 J	0.16	0.15 J	--	--	--	NS	--	NS	NS
Nitrite	mg/L	1	--	--	--	--	--	--	NS	--	NS	NS
Orthophosphate	mg/L	NC	--	--	--	--	0.90	2.5	NS	4.6 J	NS	NS
Sulfate	mg/L	250	33 J	20	11	0.67	10	46 J	NS	150	NS	NS
Total Organic Carbon	mg/L	NC	5.5	15	16	35	16	160	NS	44	NS	NS
Biogenic Gases[4]												
Carbon Dioxide	mg/L	NC	54	72 J	68	55 J	82000	60	NS	44	NS	NS
Ethane	µg/L	NC	0.002 J	0.011 J	--	--	--	0.68	NS	0.55	NS	NS
Ethene	µg/L	NC	0.01	--	--	--	--	0.022	NS	0.01	NS	NS
Hydrogen	nM	NC	2	1.6 J	3.4	2.9 J	2.2	2.8	NS	1.8	NS	NS
Methane	mg/L	NC	0.005	0.340 J	1.1	0.87 J	650	2.7	NS	2.4	NS	NS
Nitrogen	mg/L	NC	14	17 J	16	16 J	15000	13	NS	14	NS	NS
Oxygen	mg/L	NC	6.2	2 J	2.2	2.4 J	3500	3.4	NS	4.3	NS	NS

See notes at end of table.

TABLE 1
SUMMARY OF ANALYTES DETECTED IN GROUNDWATER - SWMUs 6 & 7
MAY 2003 SAMPLING EVENT

THIRD QUARTER GROUNDWATER MONITORING LETTER REPORT
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

Sample ID			MPT-8-MW16S					MPT-8-MW17S				
Sample Location			MW16S					MW17S				
Collect Date			11/19/02	12/18/02	01/15/03	02/11/03	05/20/04	11/21/02	12/17/02	01/13/03	02/13/03	05/19/04
	Units	GCTL[1]										
Metals[2]												
Iron	µg/L	300	NS	5120	10500	14800	13000	6690	3340	3100	2390	4800
Manganese	µg/L	50	NS	141	206	270	270	133	83.1	99.1	78.8	110
Miscellaneous[3]												
Alkalinity	mg/L	NC	NS	510	140	570	580	380	350	320 J	300	320
Ammonia	mg/L	2.8	NS	2.4	1.4 J	3.9	5.5	0.91	0.23	0.4	0.25	0.32
Chloride	mg/L	250	NS	20	23 J	17	19	20 J	13	11	11	11
Dissolved Organic Carbon	mg/L	NC	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fractional Organic Carbon	mg/L	NC	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate	mg/L	10	NS	0.12	0.22 J	--	2.3 J	--	--	--	--	--
Nitrite	mg/L	1	--	--	--	--	--	--	--	--	--	--
Orthophosphate	mg/L	NC	NS	--	--	--	--	--	--	--	--	0.12
Sulfate	mg/L	250	NS	14	11	0.67	--	11 J	13	15	14	9
Total Organic Carbon	mg/L	NC	NS	22	37	35	41	10	6.3	2.9	2.9	6
Biogenic Gases[4]												
Carbon Dioxide	mg/L	NC	NS	180 J	180	200 J	210000	100	68 J	61	56	58000 J
Ethane	µg/L	NC	NS	0.13 J	0.027	0.056 J	--	0.009	--	--	--	--
Ethene	µg/L	NC	NS	--	--	--	--	0.006 J	--	0.004	--	--
Hydrogen	nM	NC	NS	3.5 J	1.2	1.9 J	2	2.1 J	1.3 J	2.8	1.1	0.37 J
Methane	mg/L	NC	NS	7.4 J	5.8	8 J	11000	2	0.610 J	0.310	0.51	690 J
Nitrogen	mg/L	NC	NS	10 J	10	7.8 J	5100	14	17 J	17	16	16000 J
Oxygen	mg/L	NC	NS	0.98 J	3.4	3.1 J	2900	2.5	1.4 J	2.5	1.1	2300 J

See notes at end of table.

TABLE 1
SUMMARY OF ANALYTES DETECTED IN GROUNDWATER - SWMUs 6 & 7
MAY 2003 SAMPLING EVENT

THIRD QUARTER GROUNDWATER MONITORING LETTER REPORT
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

Sample ID			MPT-8-MW18S					MPT-8-MW19S				
Sample Location			MW18S					MW19S				
Collect Date			11/20/02	12/19/02	01/14/03	02/13/03	05/19/04	11/20/02	12/18/02	01/14/03	02/11/03	05/20/04
	Units	GCTL[1]										
Metals[2]												
Iron	µg/L	300	1230	1280	1410	1300	2100	84.2	--	--	--	--
Manganese	µg/L	50	59.0	77.4	67.5	58.8	95	3.7	2.9	2.4	94.4	--
Miscellaneous[3]												
Alkalinity	mg/L	NC	240	230	230 J	220	290	160	170	130 J	130	98
Ammonia	mg/L	2.8	0.22	NA	0.15		0.049	0.21	--	0.14	--	--
Chloride	mg/L	250	9.9	9.1	7.2 J	6.6	9	28	24	21	23	11
Dissolved Organic Carbon	mg/L	NC	NA	NA	NA	NA	NA	4.8	5.6	5.7	4.2	7
Fractional Organic Carbon	mg/L	NC	45	NA	NA	NA	NA	32	31	27	29	NA
Nitrate	mg/L	10	0.11 J	--	--	--	--	1.1 J	1.5	1.3 J	2.0 J	0.78
Nitrite	mg/L	1	--	--	--	--	--	--	--	--	--	--
Orthophosphate	mg/L	NC	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/L	250	17 J	15	18	15	3 J	33 J	33	34	36	28
Total Organic Carbon	mg/L	NC	7.4	3.8	3.5	2.8	5	5	4.8	6.1	4.6	22
Biogenic Gases[4]												
Carbon Dioxide	mg/L	NC	34	13 J	17	23	35000 J	7.3	4 J	3.3	4 J	7800
Ethane	µg/L	NC	0.007	--	0.002	--	0.005 J	--	--	0.001 J	--	0.002
Ethene	µg/L	NC	0.011	--	--	--	0.008 J	0.01	--	0.001 J	--	0.016
Hydrogen	nM	NC	1.9	1.4 J	1.6 J	2	0.39 J	2.5	1 J	1.5	1.1 J	0.3
Methane	mg/L	NC	0.097	0.068 J	0.100	0.18	120 J	0.00009	0.0002 J	0.00014	0.0004 J	0.42
Nitrogen	mg/L	NC	16	18 J	17	18	17000 J	13	16 J	16	16 J	15000
Oxygen	mg/L	NC	2.1	1.5 J	2.5	1.7	2100 J	10	5.8 J	5.7	7 J	6800

Notes:

[1] GCTLs = Groundwater Cleanup Taget Levels from Chapter 62-777, F.A.C.
[2] SW-846 6010B (Metals)
[3] USEPA 310.1 (Alkalinity); USEPA 350.2 (Ammonia); USEPA 300.0 (Anions); SW-846 9060 (DOC, FOC, TOC)
[4] AMG20GAX (Biogenic Gases)
-- = Compound not detected
J = Compound detected at an estimated concentration

NA = Not analyzed
NS = Not Sampled
NC = No criteria
nM = nanomolar
mg/L = milligrams per liter
µg/L = micrograms per liter

TABLE 2
SUMMARY OF GROUNDWATER ELEVATIONS - SWMUs 6 & 7
MAY 2003 SAMPLING EVENT

THIRD QUARTER GROUNDWATER MONITORING LETTER REPORT
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

Well Number	Total Depth of Well (ft)	Top of Casing Elevation[1] (ft)	Depth to Water, ft (BTOC)					Groundwater Elevation[1]				
			11/19/02	12/17/02	01/13/03	02/13/03	05/21/03	11/19/02	12/17/02	01/13/03	02/13/03	05/21/03
MPT-8-MW01S	16.30	19.75	8.51	9.10	8.81	9.51	9.21	11.24	10.65	10.94	10.24	10.54
MPT-8-MW02S	15.22	NA	11.54	11.94	11.85	12.22	11.81	NA	NA	NA	NA	NA
MPT-8-MW03S	15.40	NA	11.58	11.48	10.92	12.23	11.33	NA	NA	NA	NA	NA
MPT-8-MW04S	15.50	11.90	10.04	10.33	10.14	10.39	9.62	1.86	1.57	1.76	1.51	2.28
MPT-8-MW06S	15.20	NA	7.06	7.53	7.42	8.18	6.99	NA	NA	NA	NA	NA
MPT-8-MW08S	14.60	NA	9.02	9.64	NM	NM	9.43	NA	NA	NA	NA	NA
MPT-8-MW09S	14.85	12.55	8.96	9.09	9.03	9.54	8.95	3.59	3.46	3.52	3.01	3.60
MPT-8-MW12S	18.10	NA	10.97	11.33	11.25	11.65	10.65	NA	NA	NA	NA	NA
MPT-8-MW13S	15.25	NA	10.45	10.70	10.55	10.95	10.01	NA	NA	NA	NA	NA
MPT-8-MW13I	39.45	NA	10.65	10.83	10.55	11.06	10.17	NA	NA	NA	NA	NA
MPT-8-MW15SR	35.50	NA	10.15	10.61	10.47	10.91	10.12	NA	NA	NA	NA	NA
MPT-8-MW16S	15.00	NA	8.55	8.77	8.67	9.00	8.22	NA	NA	NA	NA	NA
MPT-8-MW17S	14.89	NA	9.22	9.46	9.26	9.40	8.77	NA	NA	NA	NA	NA
MPT-8-MW18S	15.02	8.80	5.61	6.92	6.86	7.12	6.22	3.19	1.88	1.94	1.68	2.58
MPT-8-MW19S	16.30	NA	5.82	5.47	5.26	NM	5.81	NA	NA	NA	NA	NA
MPT-S-MW02S	15.22	NA	7.85	8.58	8.83	9.98	8.31	NA	NA	NA	NA	NA
MPT-S-MW03S	15.40	11.90	10.20	10.57	10.43	10.82	NM	1.70	1.33	1.47	1.08	NM

Notes:
[1] Based on benchmark elevation of southeast corner of concrete transformer slab assumed to be 30.00 ft.
ft = feet
BTOC = below top of casing
NM = not measured
NA = not available

TABLE 3
SUMMARY OF FIELD SAMPLED NATURAL ATTENUATION PARAMETERS - SWMUs 6 & 7
MAY 2003 SAMPLING EVENT

THIRD QUARTER GROUNDWATER MONITORING LETTER REPORT
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

Sample ID	MPT-8-MW01S					MPT-8-MW04S					MPT-8-MW06S				
Collect Date	**11/19/02**	**12/19/02**	**01/13/03**	**02/10/03**	**05/20/03**	**11/22/02**	**12/19/02**	**01/15/03**	**02/13/03**	**05/21/03**	**11/21/02**	**12/18/02**	**01/14/03**	**02/13/03**	**05/19/03**
Temperature (^{o}C)	26.31	22.97	21.21	21.12	23.33	NS	24.99	22.88	23.25	23.88	25.11	22.42	19.86	19.91	23.05
pH (Standard Units)	7.51	11.13	7.54	8.02	7.56	NS	10.12	6.70	7.22	6.64	7.54	8.49	7.32	7.88	7.39
Conductivity (mS/cm)	0.495	0.349	0.342	0.404	0.343	NS	0.832	0.780	1.030	0.852	0.423	0.33	0.294	0.362	0.307
Turbidity (NTU)	2.8	2.6	0	0	0.59	NS	8.2	0	11.6	0.93	0	0	0	0.2	0
Redox Potential (Millivolts)	-149	-162	-227	-198	-59.3	NS	-175	-181	-129	-59.1	-47	87	74	7	92.1
Dissolved Oxygen (mg/L)	0.4	0.8	0.6	1.0	0.6	NS	0.2	0.6	0.3	0.6	4.0	5.0	6.0	5.0	4.0
Carbon Dioxide (mg/L)	13	10	<10	<10	<10	NS	90	145	110	170	<10	<10	10	12	<10
Sulfide (mg/L)	0.06	0.05	0.03	0.19	0.03	NS	0.23	0.32	0.15	0.10	0.03	0	0	0	0.01
Ferrous Iron (mg/L)	0.05	0.13	0.23	0.12	0.13	NS	4.3	6.4	6.0	6.8	0.01	0.01	0.01	0.05	0.06
Hydrogen Sulfide (mg/L)	0.1	0.1	0	0.5	0.3	NS	2	2.0	2.0	2.0	0	0	0	0	0

Sample ID	MPT-8-MW09S					MPT-8-MW015SR					MPT-8-MW016S				
Collect Date	**11/19/02**	**12/18/02**	**01/14/03**	**02/10/03**	**05/21/03**	**11/21/02**	**12/19/02**	**1/15/03**	**02/13/03**	**05/21/03**	**11/21/02**	**12/18/02**	**1/15/03**	**2/11/03**	**5/20/03**
Temperature (^{o}C)	25.15	23.45	21.45	20.70	23.67	24.48	NS	22.23	NS	NS	25.90	24.41	22.45	22.50	23.42
pH (Standard Units)	7.22	10.34	6.85	7.20	6.86	7.40	NS	7.41	NS	NS	6.84	10.39	6.70	7.30	6.64
Conductivity (mS/cm)	1.100	1.620	0.768	0.669	0.898	2.580	NS	2.670	NS	NS	0.908	0.863	1.200	1.180	0.936
Turbidity (NTU)	0	0	0	0.2	0.55	>999	NS	277	NS	NS	0	8.4	0	16.9	1.47
Redox Potential (Millivolts)	-97	-97	-59	-74	35	-394	NS	-368	NS	NS	-169	-120	-215	-120	-44
Dissolved Oxygen (mg/L)	2.0	1.0	1.0	0.8	1.0	0.3	NS	0.40	NS	NS	0.20	0.8	0.4	1.0	1.0
Carbon Dioxide (mg/L)	25	45	50	29	70	35	NS	50	NS	NS	50	160	70	160	200
Sulfide (mg/L)	0.01	0.01	0	0.01	0.05	>0.8	NS	>0.80	NS	NS	0.09	0.06	0.09	0.07	0.03
Ferrous Iron (mg/L)	0	0.98	1.27	1.49	0.4	1.60	NS	0.1	NS	NS	4.80	4	6	5.6	2.81
Hydrogen Sulfide (mg/L)	0	0	0.3	0.5	0.3	>5	NS	>5.0	NS	NS	0.5	0.1	0.5	0.1	0.5

See notes at end of table.

TABLE 3
SUMMARY OF FIELD SAMPLED NATURAL ATTENUATION PARAMETERS - SWMUs 6 & 7
MAY 2003 SAMPLING EVENT

THIRD QUARTER GROUNDWATER MONITORING LETTER REPORT
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

Sample ID	MPT-8-MW017S					MPT-8-MW018S					MPT-8-MW019S				
Collect Date	**11/21/03**	**12/17/02**	**1/13/03**	**2/13/03**	**5/19/03**	**11/21/02**	**12/19/02**	**1/14/03**	**2/13/03**	**5/19/03**	**11/20/02**	**12/18/03**	**1/14/03**	**2/11/03**	**5/20/03**
Temperature (^{o}C)	25.90	24.09	21.81	22.08	23.07	26.12	24.10	22.47	21.70	23.24	23.63	18.40	16.80	16.44	29.17
pH (Standard Units)	6.84	10.41	6.99	7.59	6.95	7.16	11.26	7.05	7.63	7.11	7.54	8.11	7.54	8.42	7.61
Conductivity (mS/cm)	0.908	0.608	0.512	0.556	0.539	0.551	0.404	0.384	0.428	0.483	0.491	0.345	0.334	0.429	0.337
Turbidity (NTU)	0	0	0	6.7	0.21	0	0	0	0	0	0	0	0	4.7	0.14
Redox Potential (Millivolts)	-169	-182	-132	-128	-52.6	-157	-206	-133	-106	-49.1	51	98	75	42	130.5
Dissolved Oxygen (mg/L)	0.0	0.4	0.4	1.0	0.1	0.3	1.0	1.0	1.0	0.6	3.0	4.0	6.0	6.0	4.0
Carbon Dioxide (mg/L)	50	30	25	30	35	20	28	17	16	20	<10	<10	<10	<10	<10
Sulfide (mg/L)	0.09	0.09	0.04	0.08	0.03	0.01	0.01	0.03	0	0.01	0	0.01	0	0.03	0.01
Ferrous Iron (mg/L)	4.8	2.61	2.25	1.92	2.64	0.86	1.17	0.97	0.68	1.76	0	0.03	0.03	0.01	0.01
Hydrogen Sulfide (mg/L)	0.5	0.5	0	0	0	0	NM	0	0	0	0	0	0	0	0

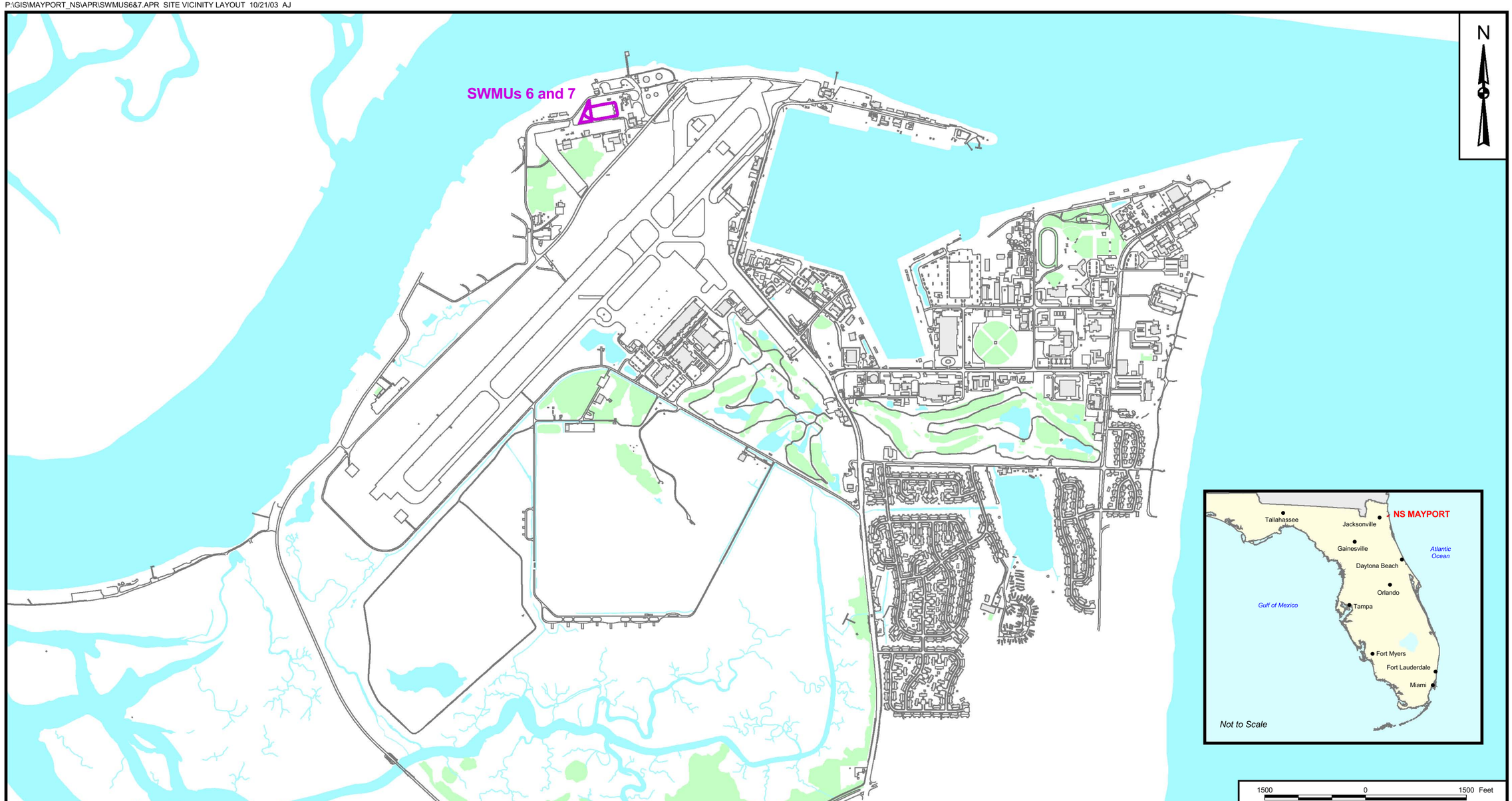
Sample ID	MPT-S-MW02S					MPT-S-MW03S				
Collect Date	**11/20/02**	**12/17/03**	**1/15/03**	**2/11/03**	**5/20/03**	**11/21/03**	**12/19/02**	**1/14/03**	**2/11/03**	**5/20/03**
Temperature (^{o}C)	23.52	23.14	21.14	21.38	22.47	25.82	NS	NS	21.69	23.60
pH (Standard Units)	7.47	10.36	7.29	7.70	7.04	6.93	NS	NS	7.53	7.01
Conductivity (mS/cm)	2.78	2.78	1.39	1.39	1.034	0.928	NS	NS	0.740	0.566
Turbidity (NTU)	0	0	0	5.7	0.48	2.5	NS	NS	0	1
Redox Potential (Millivolts)	-73	-160	-150	-57	-20.3	-253	NS	NS	-109	-1
Dissolved Oxygen (mg/L)	1.0	1.0	2.0	3.0	1.0	0.3	NS	NS	1.0	0.4
Carbon Dioxide (mg/L)	25	25	18	20	20	34	NS	NS	35	30
Sulfide (mg/L)	0.03	0.04	0.01	0	0.15	0.25	NS	NS	0.01	0.01
Ferrous Iron (mg/L)	0.03	0.06	0	0	1.13	4.6	NS	NS	2.81	0.87
Hydrogen Sulfide (mg/L)	0	0	0	0	2	5	NS	NS	0	0

Notes:

Ft = Feet
^{o}C = Degrees Celsius
mS/cm = Millisiemens per Centimeter
NTU = Nephelometric Turbidity Unit
Redox = Oxidation - Reduction
mg/L = Milligrams per Liter
NS = Not Sampled
NM = Not Measured

FIGURES

P:\GIS\MAYPORT_NS\APR\SWMUS6&7.APR SITE VICINITY LAYOUT 10/21/03 AJ



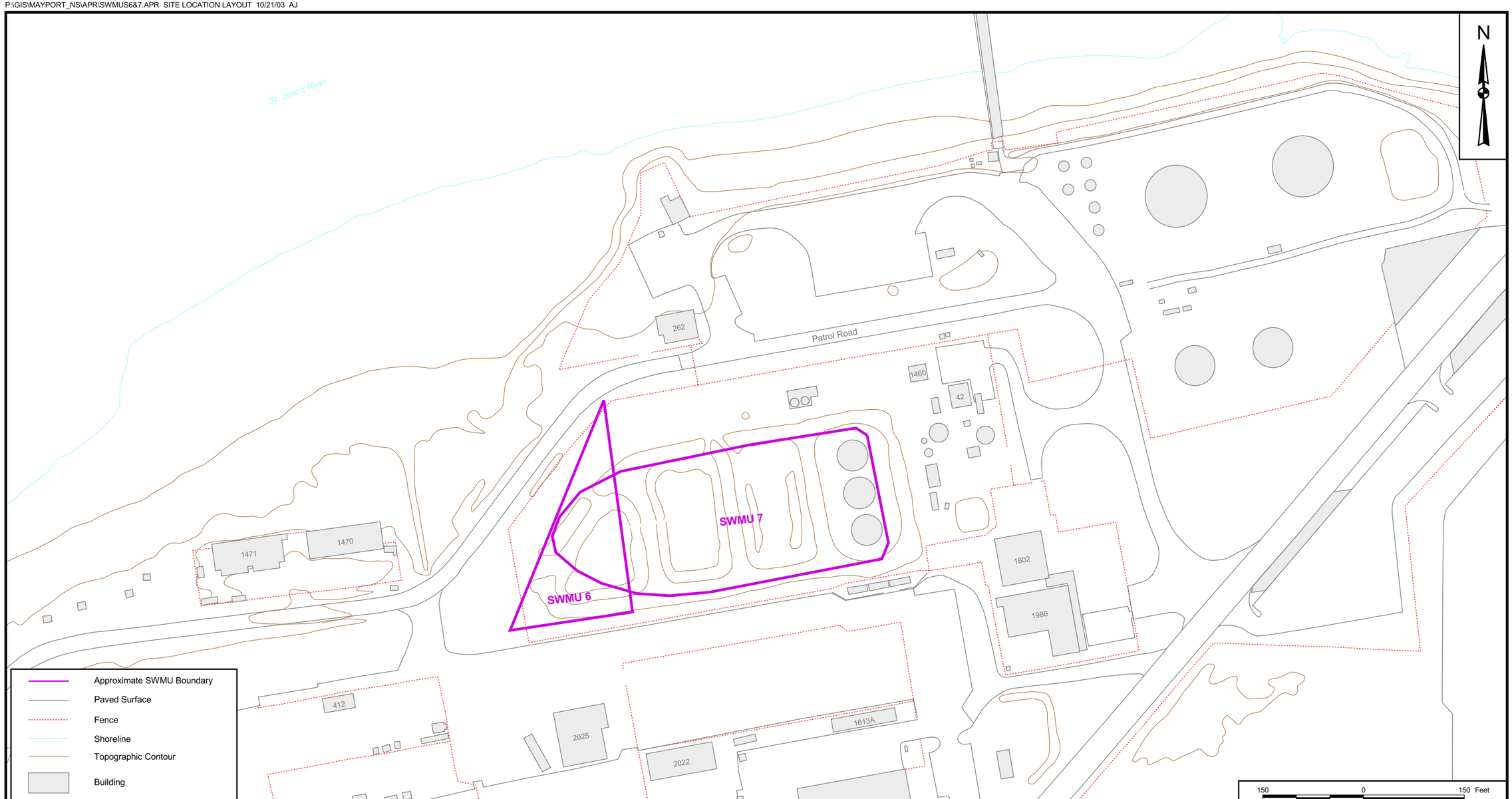
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY A. JANOCHA	DATE 8/01/03
CHECKED BY C. METZ	DATE 10/21/03
COST/SCHED-AREA	
SCALE AS NOTED	

SITE VICINITY MAP
THIRD QUARTER GROUNDWATER MONITORING LETTER REPORT
SWMUs 6 AND 7
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO. 4259	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 1	REV. 0

P:\GIS\MAYPORT_NS\APR\SWMUS6&7.APR SITE LOCATION LAYOUT 10/21/03 AJ



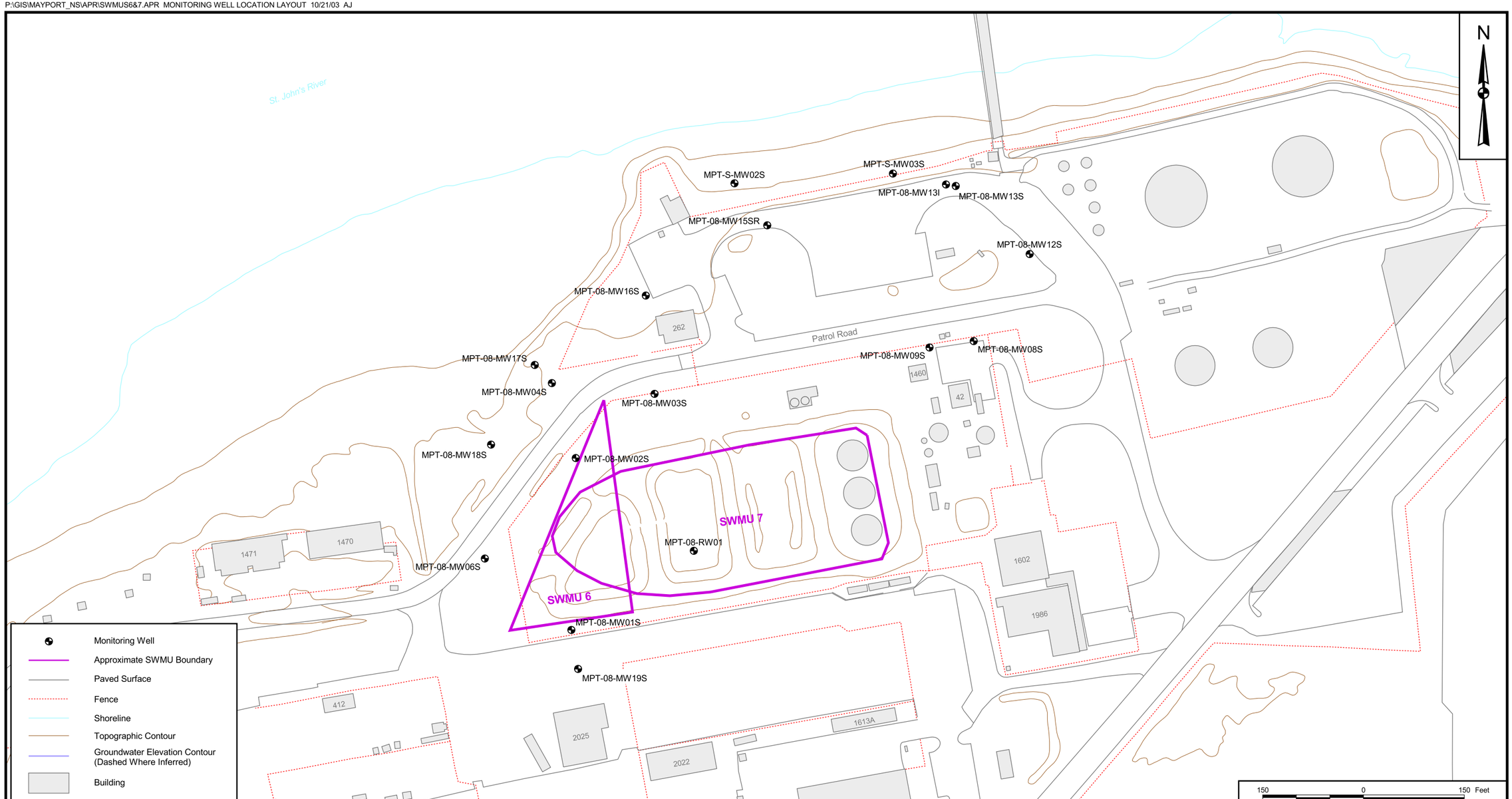
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY A. JANOCHA	DATE 8/01/03
CHECKED BY C. METZ	DATE 10/21/03
COST/SCHED-AREA	
SCALE AS NOTED	

SITE LOCATION MAP
THIRD QUARTER GROUNDWATER MONITORING LETTER REPORT
SWMUs 6 AND 7
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO. 4259	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 2	REV. 0

P:\GIS\MAYPORT_NS\APR\SWMUS6&7.APR MONITORING WELL LOCATION LAYOUT 10/21/03 AJ



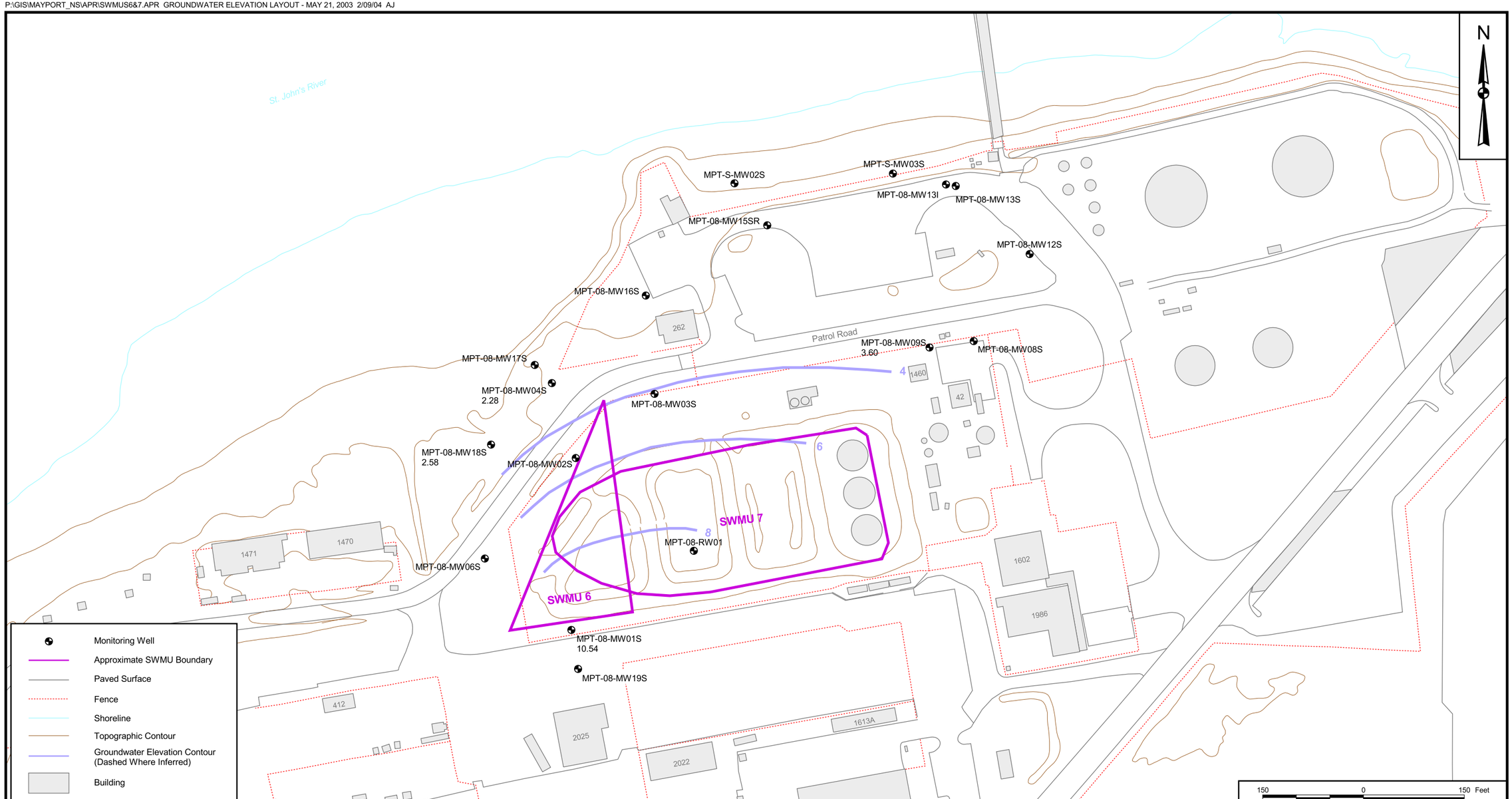
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY	DATE
A. JANOCHA	8/01/03
CHECKED BY	DATE
C. METZ	10/21/03
COST/SCHED-AREA	
SCALE	
AS NOTED	

MONITORING WELL LOCATION MAP
THIRD QUARTER GROUNDWATER MONITORING LETTER REPORT
SWMUs 6 AND 7
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO.	
4259	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO.	REV.
FIGURE 3	0

P:\GIS\MAYPORT_NS\APR\SWMUS6&7.APR GROUNDWATER ELEVATION LAYOUT - MAY 21, 2003 2/09/04 AJ



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY	DATE
A. JANOCHA	8/01/03
CHECKED BY	DATE
C. METZ	2/09/04
COST/SCHED-AREA	
SCALE	
AS NOTED	

GROUNDWATER ELEVATION AND CONTOUR MAP
MAY 21, 2003
THIRD QUARTER GROUNDWATER MONITORING LETTER REPORT
SWMUs 6 AND 7
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO.	
4259	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO.	REV.
FIGURE 4	0

ATTACHMENT A

FIELD DATA FORMS

Tetra Tech NUS, Inc.

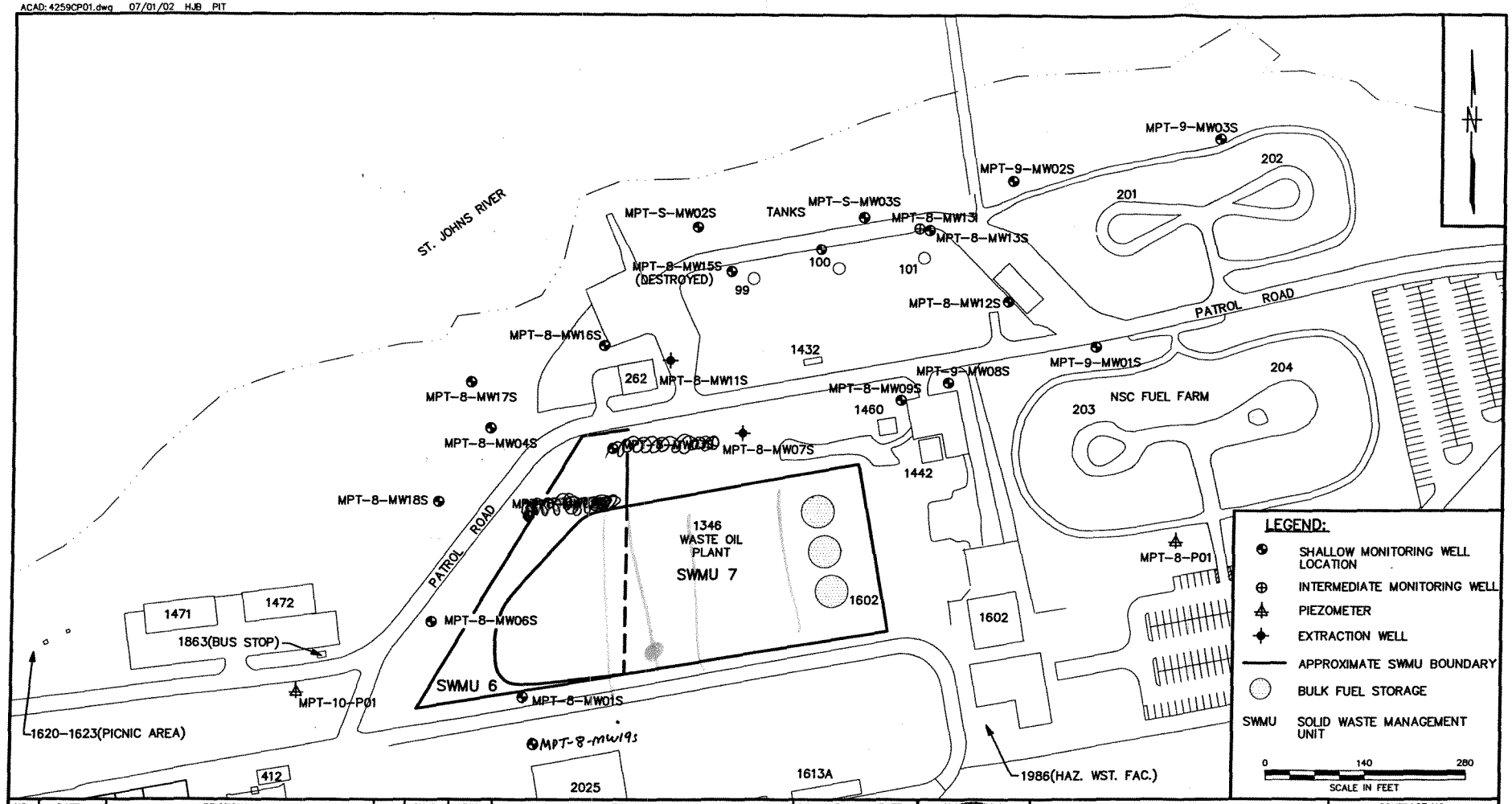
GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: SWMU 7 **Project No.:** N4259
Location: Mayport **Personnel:** C.Metz, P.Leverette
Weather Conditions: **Measuring Device:** Water interface probe
Tidally Influenced: Yes X No ___ **Remarks:**

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	PID Comments Reading
MPT-8-MW01S	5-21-03	0915	19.75	16.3	9.21			1.2 ppm
MPT-8-MW02S				15.22	11.81	11.18 0.63		33.9
MPT-8-MW03S				15.4	11.33			43.4
MPT-8-MW04S			11.9	15.5	9.67			0
MPT-8-MW06S				15.2	6.99			0
MPT-8-MW08S				14.6	9.43			0.2
MPT-8-MW09S			12.55	14.85	8.95			0.1
MPT-8-MW12S			12.93	18.1	10.65	—		0
MPT-8-MW13S			11.33	15.25	10.01			0
MPT-8-MW13I				39.45	10.17			0
MPT-8-MW15SR				35.5	10.12			0
MPT-8-MW16S				15	8.22	0.01		0
MPT-8-MW17S				14.89	8.77	0.01		0
MPT-8-MW18S			8.8	15.02	6.22			0
MPT-8-MW19S				16.3	5.81			0
MPT-S-MW02S			10.08	15.22	8.31	—		0
MPT-S-MW03S			11.9	15.4				0
		1000						

* All measurements to the nearest 0.01 foot

ACAD: 4259CP01.dwg 07/01/02 HJB PIT



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY HJB DATE 6/28/02
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

MONITORING WELL LOCATION MAP
TREATABILITY STUDY WORK PLAN
SWMUs 6 AND 7
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO. 4259
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 1-2
REV. 0

FORM CADD NO. SDIV_BH.DWG - REV 0 - 1/20/98

EQUIPMENT CALIBRATION LOG

PROJECT NAME : **SWMU 7**

PROJECT NUMBER : **N4259**

DATE	INSTRUMENT NAME/MODEL	SERIAL #	STANDARDS USED	INITIAL SETTINGS	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	Lot # + Exp. Date
5-19-03	YSI 556	01L0670	4.0 pH	4.16	calibration	4.0 pH	cm	#2760 / Exp (8-7-03)
5-19			7.00 pH	6.81	calibration	7.0 pH	cm	#2973 / Exp (1-8-04)
5-19			200-275 ORP		calibration	241.3 mV	cm	#6167 / Exp (7-05)
5-19			1413 Cond.	1438	calibration	1413 µS/m	cm	#2815 / Exp (9-4-03)
5-19	Perkins Elmer PID	EDJB302	100ppm Isob.	91.1	Cal	100ppm		All The Same
5-20	YSI 556	01L0670	4.0 pH	3.96	calibration	4.0 pH	CM	
			7.00 pH	6.98	calibration	7.0 pH	CM	
			200-275 ORP		calibration	244 mV	CM	
			1413 Cond.	1.428	calibration	1.413 µS/m	CM	
	LaMotte/2000	03673	1/10 NTU	0.89/10.08	Cal	1.01/10.0	CM	
	Perkins Elmer PID	EDJB302	100ppm Isob.	95.9	Cal	100ppm	CM	
5-21	YSI 556		4.0 pH	4.08	calibration	4.00	CM	
			7.00 pH	7.02	calibration	7.00	CM	
			200-275 ORP		calibration	240.3	CM	
			1413 Cond.	1428	calibration	1413		
	PID		100ppm Isob.	99.7	Cal	100		
5-21	YSI 556		4.0 pH		calibration	4.04	CM	
			7.00 pH		calibration	6.99	CM	
			200-275 ORP		calibration	239.6	CM	
			1413 Cond.		calibration	1419		
	PID		100ppm Isob.	98.6	Cal	100		
5-19-03	LaMotte/2000	03673	1 NTU	1.13	Cal	1.01	cm	#3592-L20 / Exp (3-28-04)
			10 NTU	8.62	Cal	9.99	cm	#3593-L20 / Exp (3-28-04)
5-21-03	LaMotte/2000	03673	1 NTU	0.91	Cal	1.00		
			10 NTU	10.17	Cal	10.02		
5-21-03	LaMotte/2000	03673	1 NTU		Cal	9.98		
			10 NTU		Cal	10.04		

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name:	SWMU 7	Sample ID No.:	**MPT-8-MW01S-04**
Project No.:	N4259 (CTO 253)	Sample Location:	MW01S
		Sampled By:	C. Metz, [redacted]
[ ] Domestic Well Data		C.O.C. No.:	
[X] Monitoring Well Data		Type of Sample:	
[ ] Other Well Type:		[X] Low Concentration	
[ ] QA Sample Type:		[ ] High Concentration	

SAMPLING DATA

Date: 5/20/2003	Color	pH	S.C.	Turbidity	DO	Temp.	ORP	Other
Time: 1430	Visual	Standard	mS/cm	NTU	mg/l	°C	mV	
Method: Low Flow Peristaltic	Clear	7.56	0.343	0.59	0.12	23.33	-59.3	

PURGE DATA

Date: 5/20/2003	Time	pH	S.C.	Turbidity	DO	Temp (°C)	ORP	
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0								
Well Casing Diameter: 2"								
Well Casing Material: PVC								
Total Well Depth (TD): **16.3'**								
Static H_2O 9.33'								
One Casing Volume(gal/L): 4.3								
Start Purge (hrs): 1355								
End Purge (hrs):								
Total Purge Time (min):								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TOC, Ammonia	H2SO4	500ml glass	✓
Alk, N, NO2, NO3, SO4, Cl, PO4,	None	1L Plastic	✓
Iron + Manganese	HNO3	1L Plastic	✓
Biogenic Gases	None	1-40mL glass water vial and ??mL glass air vial	✓

OBSERVATIONS / NOTES

Circle if Applicable:		Signature(s): Charles Metz
MS/MSD	Duplicate ID No.:	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: SWMU 7
PROJECT NUMBER: N4259 (CTO 253)

WELL ID: MPT-8-MW01S-04
DATE: 5-20-03

Time (Hrs.)	Water Level (Ft. below TOC)	Cumul. Volume (Liters)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (+/-mv)	Comments
1355	9.33	0	300	—	—	—	—	—	—	Start Purge
1405	9.54	3	300	—	—	—	—	—	—	
1410	9.54	4.5	300	7.56	0.341	2.87	0.17	23.38	-52.9	1 well vol purged
1413	9.54	5.5	300	7.56	0.341	1.89	0.15	23.37	-54.1	
1415	9.54	6.0	300	7.56	0.341	1.14	0.14	23.36	-55.9	
1418	9.54	7.0	300	7.55	0.342	1.13	0.13	23.35	-56.5	
1420	9.54	7.5	300	7.55	0.342	1.03	0.13	23.35	-57.8	
1423	9.54	8.5	300	7.56	0.343	0.83	0.11	23.33	-58.0	
1425	9.54	9.0	300	7.56	0.343	0.59	0.12	23.33	-59.3	

1430 = Sample Time

SIGNATURE(S): [illegible]

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SWMU 7

Project No.: N4259 (CTO 253)

Sampled By: C. Metz, ~~[illegible]~~

Field Analyst: CM

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: MPT-8-MW01S-04

Sample Location: MW01S

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Turbidity (NTU)	DO (Meter, mg/l)	Temp. (°C)	ORP (Eh) (+/- mv)
Date: 5-20-03							
Time: 1430							
Method: Low Flow Peristaltic	Clear	7.56	0.343	0.59	0.12	23.33	-59.3

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics (Range: 0-1 mg/L)

Analysis Time: 1436

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 0.6 mg/L

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C

Analysis Time: 1438

Concentration: 0.3 mg/L

Exceeded 5.0 mg/L range on color chart: ☐

Notes:

Carbon Dioxide:

Equipment: CHEMetrics (Range: ~~100-1000~~ 10-100 mg/L)

Analysis Time: 1441

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
_____	x 0.2	= mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: <10 mg/L

Notes:

☐

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET
NATURAL ATTENUATION PARAMETERS

Project Site Name: **SWMU 7**
Project No.: **N4259 (CTO 253)**

Sample ID No.: **MPT-8-MW01S-04**
Sample Location: MW01S
Sampled By: C. Metz, [redacted]

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide:

Equipment: HACH DR-890 Colorimeter
Analysis Time: 1449
Wave / Program: 93 / 610nm
TtNUS Serial No.: _____

Concentration: 0.03 mg/L

Ferrous Iron (Fe^{2+}):

Equipment: HACH DR-890 Colorimeter
Other: _____
Analysis Time: 1445
Program/Module: 33 / 500nm
Concentration: 0.13 mg/L
Filtered: ☐
Notes:

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name:	SWMU 7	Sample ID No.:	**MPT-8-MW04S-04**
Project No.:	N4259 (CTO 253)	Sample Location:	MW04S
		Sampled By:	C. Metz, [redacted]
[ ] Domestic Well Data		C.O.C. No.:	
[X] Monitoring Well Data		Type of Sample:	
[ ] Other Well Type:		[X] Low Concentration	
[ ] QA Sample Type:		[ ] High Concentration	

SAMPLING DATA

Date: 5/21/2003	Color	pH	S.C.	Turbidity	DO	Temp.	ORP	Other
Time: 1330	Visual	Standard	mS/cm	NTU	mg/l	°C	mV	
Method: Low Flow Peristaltic	Gray	6.64	0.852	0.93	0.08	23.88	-59.1	

PURGE DATA

Date: 5/21/2003	Time	pH	S.C.	Turbidity	DO	Temp (°C)	ORP	
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0								
Well Casing Diameter: 2"								
Well Casing Material: PVC								
Total Well Depth (TD): **15.5'**								
Static H_2O 9.42'								
One Casing Volume(gal/L): 3.7								
Start Purge (hrs): 1305								
End Purge (hrs): 1325								
Total Purge Time (min): 20								
Total Vol. Purged (gal/L): 8								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TOC, Ammonia	H2SO4	500ml glass	✓
Alk, N, NO2, NO3, SO4, Cl, PO4,	None	1L Plastic	✓
Iron + Manganese	HNO3	1L Plastic	
Biogenic Gases	None	1-40mL glass water vial and ??mL glass air vial	✓

OBSERVATIONS / NOTES

BG = 0ppm
BZ = 0ppm

Circle if Applicable:		Signature(s): Charles Metz
MS/MSD	Duplicate ID No.:	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: SWMU 7
PROJECT NUMBER: N4259 (CTO 253)

WELL ID: MPT-8-MW04S-04
DATE: 5-21-03

Time (Hrs.)	Water Level (Ft. below TOC)	Cumul. Volume (Liters)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (+/-mv)	Comments
1305	9.42	0	400	—	—	—	—	—	—	
1310	9.52	2	400	—	—	—	—	—	—	
1315	9.52	4	400	6.65	0.855	1.67	0.15	24.25	-56.7	1 well vol. purged
1318	9.52	5	400	6.65	0.854	1.45	0.12	23.82	-54.8	
1320	9.52	6	400	6.64	0.853	1.25	0.10	23.83	-56.9	
1323	9.52	7	400	6.64	0.852	1.11	0.09	23.85	-57.5	
1325	9.52	8	400	6.64	0.852	0.93	0.08	23.88	-59.1	

1330 = Sample Time

SIGNATURE(S): Charles Mer

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: **SWMU 7**

Project No.: **N4259 (CTO 253)**

Sampled By: C. Metz, [redacted]

Field Analyst: CM

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: **MPT-8-MW04S-04**

Sample Location: **MW04S**

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Turbidity (NTU)	DO (Meter, mg/l)	Temp. (°C)	ORP (Eh) (+/- mv)
Date: 5-21-03							
Time: 1330							
Method: Low Flow Peristaltic	Gray	6.64	0.852	0.93	0.08	23.88	-59.1

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics (Range: 0-1 mg/L)

Analysis Time: 1336

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 0.6 mg/L

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C

Analysis Time: 1338

Concentration: 2.0 mg/L

Exceeded 5.0 mg/L range on color chart: ☐

Notes:

Carbon Dioxide:

Equipment: CHEMetrics (Range: 100-1000 mg/L)

Analysis Time: 1340

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
_____	x 0.2	= mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: 170 mg/L

Notes: exceeded 10-100 mg/L range

☐

GROUNDWATER SAMPLE LOG SHEET
NATURAL ATTENUATION PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SWMU 7
Project No.: N4259 (CTO 253)

Sample ID No.: MPT-8-MW04S-04
Sample Location: MW04S
Sampled By: C. Metz, [redacted]

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide:

Equipment: HACH DR-890 Colorimeter
Analysis Time: 1349
Wave / Program: 93 / 610nm
TtNUS Serial No.: _____

Concentration: 0.10 mg/L

Ferrous Iron (Fe^{2+}):

Equipment: HACH DR-890 Colorimeter X Hach Ferr. Test Kit
Other: _____
Analysis Time: 1346
Program/Module: 33 / 500nm
Concentration: 6.8 mg/L
Filtered: ☐
Notes: exceeded DR890 colorimeter's range of 3.30mg/L

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name:	SWMU 7	Sample ID No.:	**MPT-8-MW06S-04**
Project No.:	N4259 (CTO 253)	Sample Location:	MW06S
		Sampled By:	C. Metz, ~~P.Lewis~~
[ ] Domestic Well Data		C.O.C. No.:	
[X] Monitoring Well Data		Type of Sample:	
[ ] Other Well Type:		[X] Low Concentration	
[ ] QA Sample Type:		[ ] High Concentration	

SAMPLING DATA

Date: 5/19/2003	Color	pH	S.C.	Turbidity	DO	Temp.	ORP	Other
Time: 0930	Visual	Standard	mS/cm	NTU	mg/l	°C	mV	
Method: Low Flow Peristaltic	Clear	7.39	0.307	0	1.23	23.05	+92.1	

PURGE DATA

Date: 5/19/2003	Time	pH	S.C.	Turbidity	DO	Temp (°C)	ORP	
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0								
Well Casing Diameter: 2"								
Well Casing Material: PVC								
Total Well Depth (TD): **15.2'**								
Static H_2O = 7.93								
One Casing Volume(gal/L): 4.5								
Start Purge (hrs): ~~0930~~ 0850								
End Purge (hrs): 0925								
Total Purge Time (min): 35								
Total Vol. Purged (gal/L): 14								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TOC, Ammonia	H2SO4	500ml glass	✓
Alk, N, NO2, NO3, SO4, Cl, PO4,	None	1L Plastic	✓
Iron + Manganese	HNO3	1L Plastic	✓
Biogenic Gases	None	1-40mL glass water vial and ??mL glass air vial	✓

OBSERVATIONS / NOTES

Bg 0ppm
BZ=0 ppm

Circle if Applicable:		Signature(s): Charles Metz
MS/MSD	Duplicate ID No.:	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: SWMU 7
PROJECT NUMBER: N4259 (CTO 253)

WELL ID: MPT-8-MW06S-04
DATE: 5-19-03

Time (Hrs.)	Water Level (Ft. below TOC)	Cumul. Volume (Liters)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (+/-mv)	Comments
0850	7.93	0	400	—	—	—	—	—	—	Start Purge
0855	8.19	2	400	—	—	—	—	—	—	
0900	8.20	4	400	—	—	—	—	—	—	1 volume reached
0905	8.20	6	400	7.34	0.306	0.21	1.38	23.04	108.6	
0910	8.20	8	400	7.36	0.306	0.13	1.27	23.06	101.7	
0915	8.20	10	400	7.39	0.307	0.11	1.38	23.09	107.5	
0918	8.20	11	400	7.39	0.307	0	1.28	23.0	98.6	
0920	8.19	12	400	7.39	0.307	0	1.25	23.04	93.5	
0923	8.19	13	400	7.39	0.307	0	1.26	23.06	92.3	
0925	8.19	14	400	7.39	0.309	0	1.23	23.05	92.1	End Purge

0930 = Sample Time

SIGNATURE(S): Charla Mott

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: **SWMU 7**

Project No.: **N4259 (CTO 253)**

Sampled By: C. Metz, P. Zweifel

Field Analyst: CM

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: **MPT-8-MW06S-04**

Sample Location: **MW06S**

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Turbidity (NTU)	DO (Meter, mg/l)	Temp. (°C)	ORP (Eh) (+/- mv)
Date: 5-19-03							
Time: 0930							
Method: Low Flow Peristaltic	Clear	7.39	0.307	0	1.23	23.05	+92.1

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics (Range: 1-12 mg/L)

Analysis Time: 0940

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
	x 0.01	= mg/L
	x 0.02	= mg/L

CHEMetrics: 4.0 mg/L

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C

Analysis Time: 0943

Concentration: 0 mg/L

Exceeded 5.0 mg/L range on color chart: ☐

Notes:

Carbon Dioxide:

Equipment: CHEMetrics (Range: 10-100 mg/L)

Analysis Time: 0948

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
	x 0.1	= mg/L
	x 0.2	= mg/L
	x 1.0	= mg/L
	x 2.0	= mg/L

CHEMetrics: <10 mg/L

Notes:

☐

GROUNDWATER SAMPLE LOG SHEET
NATURAL ATTENUATION PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: **SWMU 7**

Project No.: **N4259 (CTO 253)**

Sample ID No.: **MPT-8-MW06S-04**

Sample Location: MW06S

Sampled By: C. Metz, [redacted]

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide:

Equipment: HACH DR-890 Colorimeter

Analysis Time: 1000

Wave / Program: 93 / 610nm

TtNUS Serial No.: _____

Concentration: 0.01 mg/L

Ferrous Iron (Fe^{2+}):

Equipment: HACH DR-890 Colorimeter

Other: _____

Analysis Time: 0955

Program/Module: 33 / 500nm

Concentration: 0.06 mg/L

Filtered: ☐

Notes:

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name:	SWMU 7	Sample ID No.:	**MPT-8-MW09S-04**
Project No.:	N4259 (CTO 253)	Sample Location:	MW09S
		Sampled By:	C. Metz, [redacted]
[ ] Domestic Well Data		C.O.C. No.:	
[X] Monitoring Well Data		Type of Sample:	
[ ] Other Well Type:		[X] Low Concentration	
[ ] QA Sample Type:		[ ] High Concentration	

SAMPLING DATA

Date: 5/21/2003	Color	pH	S.C.	Turbidity	DO	Temp.	ORP	Other
Time: 1225	Visual	Standard	mS/cm	NTU	mg/l	°C	mV	
Method: Low Flow Peristaltic	Clear	6.86	0.898	0.55	0.39	23.67	+35.0	

PURGE DATA

Date: 5/21/2003	Time	pH	S.C.	Turbidity	DO	Temp (°C)	ORP	
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0								
Well Casing Diameter: 2"								
Well Casing Material: PVC								
Total Well Depth (TD): **14.85'**								
Static H_2O 8.96'								
One Casing Volume(gal/L): 3.7								
Start Purge (hrs): 1150								
End Purge (hrs): 1218								
Total Purge Time (min): 28								
Total Vol. Purged (gal/L): 8.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TOC, Ammonia	H2SO4	500ml glass	✓
Alk, N, NO2, NO3, SO4, Cl, PO4,	None	1L Plastic	✓
Iron + Manganese	HNO3	1L Plastic	✓
Biogenic Gases	None	1-40mL glass water vial and ??mL glass air vial	✓

OBSERVATIONS / NOTES

BG = 0ppm
B2 = 0ppm

Circle if Applicable:		Signature(s): Charles Metz
MS/MSD	Duplicate ID No.:	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: SWMU 7
PROJECT NUMBER: N4259 (CTO 253)

WELL ID: MPT-8-MW09S-04
DATE: 5-21-03

Time (Hrs.)	Water Level (Ft. below TOC)	Cumul. Volume (Liters)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (+/-mv)	Comments
1150	8.96	0	300	—	—	—	—	—	—	Start Purge
1200	9.11	3	300	—	—	—	—	—	—	
1205	9.13	4.5	300	6.86	0.898	1.11	0.56	23.68	88.4	1 well vol purged
1208	9.13	5.5	300	6.85	0.898	0.87	0.53	23.53	74.9	
1210	9.14	6.0	300	6.85	0.897	0.68	0.50	23.45	65.9	
1213	9.14	7.0	300	6.85	0.897	0.62	0.42	23.40	55.6	
1215	9.14	7.5	300	6.85	0.898	0.70	0.38	23.43	46.4	
1218	9.14	8.5	300	6.86	0.898	0.55	0.39	23.67	35.0	

1225 = Sample Time

SIGNATURE(S): Charles Mott

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: **SWMU 7**

Project No.: **N4259 (CTO 253)**

Sampled By: C. Metz, F. Laverette

Field Analyst: CM

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: **MPT-8-MW09S-04**

Sample Location: **MW09S**

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Turbidity (NTU)	DO (Meter, mg/l)	Temp. (^{0}C)	ORP (Eh) (+/- mv)
Date: 5-21-03							
Time: 1225							
Method: Low Flow Peristaltic	Clear	6.86	0.898	0.55	0.39	23.67	+35.0

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics (Range: 1-12 mg/L)

Analysis Time: 1228

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 1.0 mg/L

Notes: Exceeded 0-1mg/L range

Hydrogen Sulfide (H_2S):

Equipment: HS-C

Analysis Time: 1231

Concentration: 0.3 mg/L

Exceeded 5.0 mg/L range on color chart: ☐

Notes:

Carbon Dioxide:

Equipment: CHEMetrics (Range: 10-100 mg/L)

Analysis Time: 1235

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
_____	x 0.2	= mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: 70 mg/L

Notes:

☐

GROUNDWATER SAMPLE LOG SHEET
NATURAL ATTENUATION PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: **SWMU 7**

Project No.: **N4259 (CTO 253)**

Sample ID No.: **MPT-8-MW09S-04**

Sample Location: MW09S

Sampled By: C. Metz, P. [illegible]

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide:

Equipment: HACH DR-890 Colorimeter

Analysis Time: 1247

Wave / Program: 93 / 610nm

TtNUS Serial No.: _____

Concentration: 0.05 mg/L

Ferrous Iron (Fe^{2+}):

Equipment: HACH DR-890 Colorimeter

Other: _____

Analysis Time: 1243

Program/Module: 33 / 500nm

Concentration: 0.40 mg/L

Filtered: ☐

Notes:

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name:	SWMU 7	Sample ID No.:	**MPT-8-MW16S-04**
Project No.:	N4259 (CTO 253)	Sample Location:	MW16S
		Sampled By:	C. Metz, [redacted]
[ ] Domestic Well Data		C.O.C. No.:	
[X] Monitoring Well Data		Type of Sample:	
[ ] Other Well Type:		[X] Low Concentration	
[ ] QA Sample Type:		[ ] High Concentration	

SAMPLING DATA

Date: 5/20/2003	Color	pH	S.C.	Turbidity	DO	Temp.	ORP	Other
Time: 1120	Visual	Standard	mS/cm	NTU	mg/l	°C	mV	
Method: Low Flow Peristaltic	clear	6.64	0.936	1.47	0.07	23.42	-44.0	

PURGE DATA

Date: 5/20/2003	Time	pH	S.C.	Turbidity	DO	Temp (°C)	ORP	
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0								
Well Casing Diameter: 2"								
Well Casing Material: PVC								
Total Well Depth (TD): **15.0'**								
Static H_2O 8.02								
One Casing Volume(gal/L): 4.3								
Start Purge (hrs): 1030								
End Purge (hrs): 1112								
Total Purge Time (min): 42								
Total Vol. Purged (gal/L): 12.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TOC, Ammonia	H2SO4	500ml glass	✓
Alk, N, NO2, NO3, SO4, Cl, PO4,	None	1L Plastic	✓
Iron + Manganese	HNO3	1L Plastic	✓
TOC (Diss.) + FOC			✓
Biogenic Gases	None	1-40mL glass water vial and ??mL glass air vial	✓

OBSERVATIONS / NOTES

BG = 0 ppm
BZ = 0 ppm

Circle if Applicable:

MS/MSD	Duplicate ID No.: MPT-8-Dup01-04	Signature(s): Charles Metz

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: SWMU 7
PROJECT NUMBER: N4259 (CTO 253)

WELL ID: MPT-8-MW16S-04
DATE: 5-20-03

Time (Hrs.)	Water Level (Ft. below TOC)	Cumul. Volume (Liters)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (+/-mv)	Comments
1030	8.02	0	300	—	—	—	—	—	—	Start Purge
1035	8.04	1.5	300	—	—	—	—	—	—	
1040	8.04	3	300	—	—	—	—	—	—	
1045	8.03	4.5	300	6.63	0.945	1.89	0.11	23.55	-38.9	
1050	8.03	6	300	6.64	0.943	1.55	0.09	23.46	-39.3	
1055	8.03	7.5	300	6.64	0.943	1.46	0.08	23.49	-39.9	
1100	8.03	9.0	300	6.65	0.941	1.58	0.09	23.51	-41.2	
1105	8.03	10.5	300	6.64	0.940	1.51	0.07	23.48	-42.8	
1108	8.03	11.5	300	6.65	0.938	1.49	0.07	23.44	-43.7	
~~1108~~ 1112	8.03	12.5	300	6.64	0.936	1.47	0.07	23.42	-44.0	

1120 = Sample Time

SIGNATURE(S): Charles Mix

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: **SWMU 7**

Project No.: **N4259 (CTO 253)**

Sampled By: C. Metz, [redacted]

Field Analyst: CM

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: **MPT-8-MW16S-04**

Sample Location: **MW16S**

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Turbidity (NTU)	DO (Meter, mg/l)	Temp. (°C)	ORP (Eh) (+/- mv)
Date: 5-20-03							
Time: 1120							
Method: Low Flow Peristaltic	Clear	6.64	0.936	1.47	0.07	23.42	-44.0

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics (Range: 1-12 mg/L)

Analysis Time: 1125

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 1 mg/L

Notes: exceed 0-1mg/L range

Hydrogen Sulfide (H_2S):

Equipment: HS-C

Analysis Time: 1128

Concentration: 0.5 mg/L

Exceeded 5.0 mg/L range on color chart: ☐

Notes:

Carbon Dioxide:

Equipment: CHEMetrics (Range: 100-400 mg/L)

Analysis Time: 1130

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
_____	x 0.2	= mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: 200 mg/L

Notes:

☐

GROUNDWATER SAMPLE LOG SHEET
NATURAL ATTENUATION PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: **SWMU 7**

Project No.: **N4259 (CTO 253)**

Sample ID No.: **MPT-8-MW16S-04**

Sample Location: MW16S

Sampled By: C. Metz, [redacted]

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide:

Equipment: HACH DR-890 Colorimeter

Analysis Time: 1140

Wave / Program: 93 / 610nm

TtNUS Serial No.: _____

Concentration: 0.03 mg/L

Ferrous Iron (Fe^{2+}):

Equipment: HACH DR-890 Colorimeter

Other: _____

Analysis Time: 1136

Program/Module: 33 / 500nm

Concentration: 2.81 mg/L

Filtered: ☐

Notes:

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name:	SWMU 7	Sample ID No.:	MPT-8-MW17S-04
Project No.:	N4259 (CTO 253)	Sample Location:	MW17S
		Sampled By:	C. Metz, [redacted]
[ ] Domestic Well Data		C.O.C. No.:	
[X] Monitoring Well Data		Type of Sample:	
[ ] Other Well Type:		[X] Low Concentration	
[ ] QA Sample Type:		[ ] High Concentration	

SAMPLING DATA

Date: 5/ 19 /2003	Color	pH	S.C.	Turbidity	DO	Temp.	ORP	Other
Time: 1245	Visual	Standard	mS/cm	NTU	mg/l	°C	mV	
Method: Low Flow Peristaltic	clear	6.95	0.539	0.21	0.11	23.07	-52.6	

PURGE DATA

Date: 5/ 19 /2003	Time	pH	S.C.	Turbidity	DO	Temp (°C)	ORP	
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0								
Well Casing Diameter: 2"								
Well Casing Material: PVC								
Total Well Depth (TD): **14.89'**								
Static H_2O 8.37								
One Casing Volume(gal/L): 0.44								
Start Purge (hrs): 1210								
End Purge (hrs): 1238								
Total Purge Time (min): 28								
Total Vol. Purged (gal/L): 10.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TOC, Ammonia	H2SO4	500ml glass	✓
Alk, N, NO2, NO3, SO4, Cl, PO4,	None	1L Plastic	✓
Iron + Manganese	HNO3	1L Plastic	✓
Biogenic Gases	None	1-40mL glass water vial and ??mL glass air vial	✓

OBSERVATIONS / NOTES

BG = 0ppm

BZ = 0ppm

Circle if Applicable:		Signature(s): Charla Metz
MS/MSD	Duplicate ID No.:	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: SWMU 7
PROJECT NUMBER: N4259 (CTO 253)

WELL ID: MPT-8-MW17S-04
DATE: 5-19-03

Time (Hrs.)	Water Level (Ft. below TOC)	Cumul. Volume (Liters)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (+/-mv)	Comments
1210	8.37	0	300	—	—	—	—	—	—	Start Purge
1215	8.42	1.5	300	—	—	—	—	—	—	
1220	8.43	3.5	400			3.11				
1225	8.43	5.5	400	6.97	0.544	1.86	0.15	23.12	-45.4	1 well volume achieved
1228	8.43	6.5	400	6.97	0.543	1.10	0.13	23.14	-50.0	
1230	8.43	7.5	400	6.95	0.541	0.51	0.12	23.13	-51.6	
1233	8.43	8.5	400	6.95	0.541	0.44	0.11	23.09	-51.5	
1235	8.43	9.5	400	6.95	0.541	0.31	0.09	23.09	-51.9	
1238	8.43	10.5	400	6.95	0.539	0.21	0.11	23.07	-52.6	

1245 = Sample Time

SIGNATURE(S): Charles Mer

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: **SWMU 7**

Project No.: **N4259 (CTO 253)**

Sampled By: C. Metz, [redacted]

Field Analyst: CM

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: **MPT-8-MW17S-04**

Sample Location: **MW17S**

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Turbidity (NTU)	DO (Meter, mg/l)	Temp. (°C)	ORP (Eh) (+/- mv)
Date: 5-19-03							
Time: 1245							
Method: Low Flow Peristaltic	Clear	6.95	0.539	0.21	0.11	23.07	-52.6

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics (Range: ~~(<200)~~ 0-1 mg/L)

Analysis Time: 1250

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 0.1 mg/L

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C

Analysis Time: 1248

Concentration: 0 mg/L

Exceeded 5.0 mg/L range on color chart: ☐

Notes:

Carbon Dioxide:

Equipment: CHEMetrics (Range: ~~100-1000~~ 10-100 mg/L)

Analysis Time: 1254

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
_____	x 0.2	= mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: ~~>100~~ mg/L

Notes: 35 mg/L

☐

GROUNDWATER SAMPLE LOG SHEET
NATURAL ATTENUATION PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: **SWMU 7**

Project No.: **N4259 (CTO 253)**

Sample ID No.: **MPT-8-MW17S-04**

Sample Location: MW17S

Sampled By: C. Metz, [redacted]

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide:

Equipment: HACH DR-890 Colorimeter

Analysis Time: 1304

Wave / Program: 93 / 610nm

TtNUS Serial No.: _____

Concentration: 0.03 mg/L

Ferrous Iron (Fe^{2+}):

Equipment: HACH DR-890 Colorimeter

Other: _____

Analysis Time: 1300

Program/Module: 33 / 500nm

Concentration: 2.64 mg/L

Filtered: ☐

Notes:

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name:	SWMU 7	Sample ID No.:	**MPT-8-MW18S-04**
Project No.:	N4259 (CTO 253)	Sample Location:	MW18S
		Sampled By:	C. Metz, [redacted]
[ ] Domestic Well Data		C.O.C. No.:	
[X] Monitoring Well Data		Type of Sample:	
[ ] Other Well Type:		[X] Low Concentration	
[ ] QA Sample Type:		[ ] High Concentration	

SAMPLING DATA

Date: 5/19 /2003	Color	pH	S.C.	Turbidity	DO	Temp.	ORP	Other
Time: 1135	Visual	Standard	mS/cm	NTU	mg/l	°C	mV	
Method: Low Flow Peristaltic	Clear	7.11	0.483	0	0.05	23.24	-49.1	

PURGE DATA

Date: 5/19 /2003	Time	pH	S.C.	Turbidity	DO	Temp (°C)	ORP	
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0								
Well Casing Diameter: 2"								
Well Casing Material: PVC								
Total Well Depth (TD): **15.02'**								
Static H_2O 6.59								
One Casing Volume(gal/L): 0.53								
Start Purge (hrs): 1100								
End Purge (hrs): 1130								
Total Purge Time (min): 30								
Total Vol. Purged (gal/L): 11.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TOC, Ammonia	H2SO4	500ml glass	✓
Alk, N, NO2, NO3, SO4, Cl, PO4,	None	1L Plastic	✓
Iron + Manganese	HNO3	1L Plastic	✓
Biogenic Gases	None	1-40mL glass water vial and ??mL glass air vial	✓

OBSERVATIONS / NOTES

BG = 0ppm
BZ = 0ppm

Circle if Applicable:		Signature(s): Charla Metz
MS/MSD	Duplicate ID No.:	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: SWMU 7
PROJECT NUMBER: N4259 (CTO 253)

WELL ID: MPT-8-MW18S-04
DATE: 5-19-03

Time (Hrs.)	Water Level (Ft. below TOC)	Cumul. Volume (Liters)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (+/-mv)	Comments
1100	6.57	0	300	—	—	—	—	—	—	
1105	6.60	1.5	300			0.07				
1110	6.59	3.5	400			0				
1115	6.59	5.5	400			0				1 well volume
1120	6.59	7.5	400	7.11	0.487	0	0.06	23.20	-56.1	
1123	6.59	8.5	400	7.11	0.486	0.00	0.05	23.21	-55.4	
1125	6.59	9.5	400	7.11	0.485	0	0.06	23.21	-54.3	
1128	6.59	10.5	400	7.11	0.484	0	0.05	23.27	-50.1	
1130	6.59	11.5	400	7.11	0.483	0	0.05	23.24	-49.1	
1135 = Sample Time										

SIGNATURE(S): Charla Mott

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: **SWMU 7**

Project No.: **N4259 (CTO 253)**

Sampled By: C. Metz, [redacted]

Field Analyst: CM

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: **MPT-8-MW18S-04**

Sample Location: **MW18S**

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Turbidity (NTU)	DO (Meter, mg/l)	Temp. (°C)	ORP (Eh) (+/- mv)
Date: 5-19-03							
Time: 1135							
Method: Low Flow Peristaltic	Clear	7.11	0.483	0	0.05	23.24	-49.1

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics (Range: 0-1 mg/L)

Analysis Time: 1140

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 0.6 mg/L

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C

Analysis Time: 1144

Concentration: 0 mg/L

Exceeded 5.0 mg/L range on color chart: ☐

Notes:

Carbon Dioxide:

Equipment: CHEMetrics (Range: 10-100 mg/L)

Analysis Time: 1142

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
_____	x 0.2	= mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: ~~400~~ mg/L

Notes: 20 mg/L

☐

GROUNDWATER SAMPLE LOG SHEET
NATURAL ATTENUATION PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SWMU 7
Project No.: N4259 (CTO 253)

Sample ID No.: MPT-8-MW18S-04
Sample Location: MW18S
Sampled By: C. Metz, [redacted]

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide:

Equipment: HACH DR-890 Colorimeter
Analysis Time: 1150
Wave / Program: 93 / 610nm
TtNUS Serial No.: _____

Concentration: 0.01 mg/L

Ferrous Iron (Fe^{2+}):

Equipment: HACH DR-890 Colorimeter
Other: _____
Analysis Time: 1148
Program/Module: 33 / 500nm
Concentration: 1.76 mg/L
Filtered: ☐
Notes:

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name:	SWMU 7	Sample ID No.:	**MPT-8-MW19S-04**
Project No.:	N4259 (CTO 253)	Sample Location:	MW19S
		Sampled By:	C. Metz, [redacted]
[ ] Domestic Well Data		C.O.C. No.:	
[X] Monitoring Well Data		Type of Sample:	
[ ] Other Well Type:		[X] Low Concentration	
[ ] QA Sample Type:		[ ] High Concentration	

SAMPLING DATA

Date: 5/20/2003	Color	pH	S.C.	Turbidity	DO	Temp.	ORP	Other
Time: 1600	Visual	Standard	mS/cm	NTU	mg/l	°C	mV	
Method: Low Flow Peristaltic	Clear	7.61	0.337	0.14	1.88	29.17	+130.5	

PURGE DATA

Date: 5/20/2003	Time	pH	S.C.	Turbidity	DO	Temp (°C)	ORP	
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0								
Well Casing Diameter: 2"								
Well Casing Material: PVC								
Total Well Depth (TD): **16.3'**								
Static H_2O 5.92								
One Casing Volume(gal/L): 6.2								
Start Purge (hrs): 1525								
End Purge (hrs): 1558								
Total Purge Time (min): 33								
Total Vol. Purged (gal/L): 10								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TOC, Ammonia	H2SO4	500ml glass	✓
Alk, N, NO2, NO3, SO4, Cl, PO4,	None	1L Plastic	✓
Iron + Manganese	HNO3	1L Plastic	✓
TOC/D + FOC			✓
Biogenic Gases	None	1-40mL glass water vial and ??mL glass air vial	✓

OBSERVATIONS / NOTES

BG = 0 ppm
BZ = 0 ppm

1 pumping system volume ≈ 600mL

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.:	Charles Metz

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: SWMU 7
PROJECT NUMBER: N4259 (CTO 253)

WELL ID: MPT-8-MW19S-04
DATE: 5-20-03

Time (Hrs.)	Water Level (Ft. below TOC)	Cumul. Volume (Liters)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (+/-mv)	Comments
1525	5.92	0	300	—	—	—	—	—	—	
1535	6.06	3	300	—	—	—	—	—	—	
1545	6.06	6	300	—	—	—	—	—	—	
1548	6.06	7	300	7.67	0.337	0.36	2.76	29.13	149.9	
1551	6.06	8	300	7.62	0.337	0.25	2.04	29.12	144.6	
1555	6.06	9	300	7.61	0.337	0.19	1.95	29.14	135.5	
1558	6.06	10	300	7.61	0.337	0.14	1.88	29.17	130.5	
1600 = Sample Time										

SIGNATURE(S): Charles Mc

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: **SWMU 7**

Project No.: **N4259 (CTO 253)**

Sampled By: C. Metz, P. Leverette

Field Analyst:

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: **MPT-8-MW19S-04**

Sample Location: **MW19S**

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Turbidity (NTU)	DO (Meter, mg/l)	Temp. (°C)	ORP (Eh) (+/- mv)
Date: 5-20-03							
Time: 1600							
Method: Low Flow Peristaltic	Clear	7.61	0.337	0.14	1.88	29.17	+130.5

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics (Range: 1-12 mg/L)

Analysis Time: 1610

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 4 mg/L

Notes: exceeded 0-1 mg/L range

Hydrogen Sulfide (H_2S):

Equipment: HS-C

Analysis Time: 1613

Concentration: 0 mg/L

Exceeded 5.0 mg/L range on color chart: ☐

Notes:

Carbon Dioxide:

Equipment: CHEMetrics (Range: ~~100-1000~~ 10-100 mg/L)

Analysis Time: 1610

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
_____	x 0.2	= mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: ~~<100~~ <10 mg/L

Notes:

☐

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET
NATURAL ATTENUATION PARAMETERS

Project Site Name: **SWMU 7**
Project No.: **N4259 (CTO 253)**

Sample ID No.: **MPT-8-MW19S-04**
Sample Location: MW19S
Sampled By: C. Metz, [redacted]

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide:

Equipment: HACH DR-890 Colorimeter
Analysis Time: 1628
Wave / Program: 93 / 610nm
TtNUS Serial No.: _____

Concentration: 0.01 mg/L

Ferrous Iron (Fe^{2+}):

Equipment: HACH DR-890 Colorimeter
Other: _____
Analysis Time: 1625
Program/Module: 33 / 500nm
Concentration: 0.01 mg/L
Filtered: ☐
Notes:

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name:	SWMU 7	Sample ID No.:	**MPT-S-MW02S-04**
Project No.:	N4259 (CTO 253)	Sample Location:	S-MW02S
		Sampled By:	C. Metz, [redacted]e
[ ] Domestic Well Data		C.O.C. No.:	
[X] Monitoring Well Data		Type of Sample:	
[ ] Other Well Type:		[X] Low Concentration	
[ ] QA Sample Type:		[ ] High Concentration	

SAMPLING DATA

Date: 5/20/2003	Color	pH	S.C.	Turbidity	DO	Temp.	ORP	Other
Time: 0945	Visual	Standard	mS/cm	NTU	mg/l	°C	mV	
Method: Low Flow Peristaltic	Clear	7.04	1.034	0.48	0.43	22.47	-20.3	

PURGE DATA

Date: 5/20/2003	Time	pH	S.C.	Turbidity	DO	Temp (°C)	ORP	
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0								
Well Casing Diameter: 2"								
Well Casing Material: PVC								
Total Well Depth (TD): **15.22'**								
Static H_2O 8.17'								
One Casing Volume(gal/L): 4.3								
Start Purge (hrs): 0905								
End Purge (hrs): 0940								
Total Purge Time (min): 35								
Total Vol. Purged (gal/L): 10.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TOC, Ammonia	H2SO4	500ml glass	✓
Alk, N, NO2, NO3, SO4, Cl, PO4,	None	1L Plastic	✓
Iron + Manganese	HNO3	1L Plastic	✓
Biogenic Gases	None	1-40mL glass water vial and ??mL glass air vial	✓

OBSERVATIONS / NOTES

BG = 0 ppm
B2 = 0 ppm

Circle if Applicable:		Signature(s): Charles Metz
MS/MSD	Duplicate ID No.:	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: SWMU 7
PROJECT NUMBER: N4259 (CTO 253)

WELL ID: MPT-S-MW02S-04
DATE: 5-20-03

Time (Hrs.)	Water Level (Ft. below TOC)	Cumul. Volume (Liters)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (+/-mv)	Comments
0905	8.17	0	300	—	—	—	—	—	—	Start Purge
0910	8.41	1.5	300	—	—	—	—	—	—	
0915	8.42	3	300	—	—	—	—	—	—	
0920	8.42	4.5	300	7.38	1.129	1.55	0.56	22.44	-11.0	1 well vol purged
0925	8.42	6.0	300	7.23	1.083	1.37	0.47	22.43	-18.8	
0930	8.42	7.5	300	7.12	1.075	1.28	0.38	22.47	-22.6	
0935	8.42	9.0	300	7.07	1.054	0.96	0.35	22.47	-22.7	
0938	8.42	10.0	300	7.05	1.038	0.51	0.41	22.48	-20.5	
0940	8.42	10.5	300	7.04	1.034	0.48	0.43	22.47	-20.3	

0945 = Sample Time

SIGNATURE(S): Charles [illegible]

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name:	SWMU 7	Sample ID No.:	MPT-S-MW02S-04
Project No.:	N4259 (CTO 253)	Sample Location:	S-MW02S
Sampled By:	C. Metz, [redacted]	Duplicate:	☐
Field Analyst:	CM	Blank:	☐
Field Form Checked as per QA/QC Checklist (initials):			

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Turbidity (NTU)	DO (Meter, mg/l)	Temp. (^{0}C)	ORP (Eh) (+/- mv)	
Date: 5-20-03								
Time: 0945								
Method: Low Flow Peristaltic	Clear	7.04	1.034	0.48	0.43	22.47	-20.3	

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics (Range: 1-12 mg/L) Analysis Time: 0948

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 1 mg/L

Notes: exceeded 0-1mg/L range

Hydrogen Sulfide (H_2S):

Equipment: HS-C Analysis Time: 0951

Concentration: 2.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

Carbon Dioxide:

Equipment: CHEMetrics (Range: 10-100 mg/L) Analysis Time: 954

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
_____	x 0.2	= mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: ~~[illegible] mg/L~~

Notes: 20 mg/L

☐

GROUNDWATER SAMPLE LOG SHEET
NATURAL ATTENUATION PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SWMU 7

Project No.: N4259 (CTO 253)

Sample ID No.: MPT-S-MW02S-04

Sample Location: S-MW02S

Sampled By: C. Metz, ~~B. Lavigne~~

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide:

Equipment: HACH DR-890 Colorimeter

Analysis Time: 1004

Wave / Program: 93 / 610nm

TtNUS Serial No.: _____

Concentration: 0.15 mg/L

Ferrous Iron (Fe^{2+}):

Equipment: HACH DR-890 Colorimeter

Other: _____

Analysis Time: 1000

Program/Module: 33 / 500nm

Concentration: 1.13 mg/L

Filtered: ☐

Notes:

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name:	SWMU 7	Sample ID No.:	MPT-S-MW03S-04
Project No.:	N4259 (CTO 253)	Sample Location:	S-MW03S
		Sampled By:	C. Metz, [redacted]
[ ] Domestic Well Data		C.O.C. No.:	
[X] Monitoring Well Data		Type of Sample:	
[ ] Other Well Type:		[X] Low Concentration	
[ ] QA Sample Type:		[ ] High Concentration	

SAMPLING DATA

Date: 5/20/2003	Color	pH	S.C.	Turbidity	DO	Temp.	ORP	Other
Time: 1305	Visual	Standard	mS/cm	NTU	mg/l	°C	mV	
Method: Low Flow Peristaltic	Clear	7.01	0.566	0.81	0.20	23.60	-1.4	

PURGE DATA

Date: 5/20/2003	Time	pH	S.C.	Turbidity	DO	Temp (°C)	ORP	
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0								
Well Casing Diameter: 2"								
Well Casing Material: PVC								
Total Well Depth (TD): **15.4'**								
Static H_2O 9.53								
One Casing Volume(gal/L): 3.17 = 6 ft								
Start Purge (hrs): 1230								
End Purge (hrs): 1309								
Total Purge Time (min): 39								
Total Vol. Purged (gal/L): 12								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TOC, Ammonia	H2SO4	500ml glass	✓
Alk, N, NO2, NO3, SO4, Cl, PO4,	None	1L Plastic	✓
Iron + Manganese	HNO3	1L Plastic	✓
			✓
Biogenic Gases	None	1-40mL glass water vial and ??mL glass air vial	✓

OBSERVATIONS / NOTES

BG = 0 ppm
BZ = 0 ppm

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s): Charles Metz

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: SWMU 7
PROJECT NUMBER: N4259 (CTO 253)

WELL ID: MPT-S-MW03S-04
DATE: 5-20-03

Time (Hrs.)	Water Level (Ft. below TOC)	Cumul. Volume (Liters)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (+/-mv)	Comments
1230	9.53	0	300	—	—	—	—	—	—	Start Purge
1240	9.73	3	300	—	—	—	—	—	—	
1245	9.74	4.5	300	7.41	0.002	1.34	5.84	27.87	+178.5	1 well vol purged
1248	9.74	5.5	300							
1250	9.74	6.0	300	7.36	0.002		5.84	27.48	+186.1	
1253	9.74	7.0	300	7.36	0.002		5.86	27.35	+184.8	
1255	9.74	7.5	300	7.35	0.002		5.88	27.17	+186.3	
1258	9.74	8.5	300	7.35	0.002		5.89	27.08	+187.8	
~~1300~~	~~9.74~~	~~9~~	~~300~~	~~7.34~~	~~0.002~~		~~5.90~~	~~26.91~~	~~+190.6~~	
1303	9.74		300	7.01	0.566	0.86	0.28	23.63	0.4	
1306	9.74		300	7.01	0.566	0.78	0.21	23.61	-1.1	
1309	9.74		300	7.01	0.566	0.81	0.20	23.60	-1.4	
1305 = Sample Time										

* forgot to hook up flow-thru cell

SIGNATURE(S): Charles M

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name:	SWMU 7	Sample ID No.:	MPT-S-MW03S-04
Project No.:	N4259 (CTO 253)	Sample Location:	S-MW03S
Sampled By:	C. Metz, [redacted]	Duplicate:	☐
Field Analyst:	CM	Blank:	☐
Field Form Checked as per QA/QC Checklist (initials):			

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Turbidity (NTU)	DO (Meter, mg/l)	Temp. (^{0}C)	ORP (Eh) (+/- mv)
Date: 5-20-03							
Time: 1305							
Method:	Clear	7.01	0.566	0.81	0.20	23.60	-1.4

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics (Range: 0-1 mg/L) Analysis Time: 1313

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 0.4 mg/L

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Analysis Time: 1315

Concentration: 0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

Carbon Dioxide:

Equipment: CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1320

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
_____	x 0.2	= mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: ~~<100 mg/L~~

Notes: 30 mg/L

☐

GROUNDWATER SAMPLE LOG SHEET
NATURAL ATTENUATION PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name:	SWMU 7	Sample ID No.:	MPT-S-MW03S-04
Project No.:	N4259 (CTO 253)	Sample Location:	S-MW03S
		Sampled By:	C. Metz, [redacted]

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide: Time: 1330

Equipment: HACH DR-890 Colorimeter

Wave / Program: 93 / 610nm

TtNUS Serial No.: _____

Concentration: 0.01 mg/L

Ferrous Iron (Fe^{2+}):

Equipment: HACH DR-890 Colorimeter Other: _____ Analysis Time: 1324

Program/Module: 33 / 500nm

Concentration: 0.87 mg/L Filtered: ☐

Notes:

SAFE WORK PERMIT FOR
IDW HANDLING, SAMPLING
NAVSTA MAYPORT, FLORIDA – CTO 0253

Permit No. 051903-A Date: 5-19-03 to 5-21-03 Time: From 0700 to 1930

SECTION I: General Job Scope

I. Work limited to the following (description, area, equipment used): IDW management and moving IDW to storage area.

II. Required Monitoring Instruments: PID with 10.6 eV (or higher) lamp detect presence of VOCs

III. Field Crew: C. Metz

IV. On-site Inspection conducted ☑ Yes ☐ No Initials of Inspector CM TtNUS

SECTION II: General Safety Requirements (To be filled in by permit issuer)

IV. Protective equipment required

Level D ☒ Level B ☐
Level C ☐ Level A ☐
Detailed on Reverse

Respiratory equipment required

Full face APR	☐	Escape Pack	☐
Half face APR	☐	Airline/SCBA	☐
PAPR	☐	Bottle trailer	☐
Skid Rig	☐	None	☒

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, safety shoes, hardhat, cotton/leather outer gloves with surgical-style inner gloves, impermeable bootcovers.

V.

Chemicals of Concern	Action Level(s)	Response Measures
Diesel Fuel, BTEX, and Naphthalene	Any sustained readings >10 ppm above background in worker breathing zones	Suspend site activities and report to an unaffected area until levels return to normal

VI. Additional Safety Equipment/Procedures

Hard-hat	☒ Yes	☐ No	Hearing Protection (Plugs/Muffs)	☐ Yes	☐ No
Safety Glasses	☒ Yes	☐ No	Safety belt/harness	☐ Yes	☒ No
Chemical/splash goggles	☐ Yes	☒ No	Radio	☐ Yes	☒ No
Splash Shield	☐ Yes	☒ No	Barricades	☐ Yes	☒ No
Splash suits/coveralls	☐ Yes	☐ No	Gloves (Type - Nitrile)	☒ Yes	☐ No
Steel toe Work shoes or boots	☒ Yes	☐ No	Work/rest regimen	☐ Yes	☒ No

Modifications/Exceptions: Tyvek coverall if there is a potential for soiling clothes. Work/rest regimen to be determined by SSO & site personnel

VII. Procedure review with permit acceptors

	Yes	NA		Yes	NA
Safety shower/eyewash (Location & Use)	☒	☐	Emergency alarms	☒	☐
Procedure for safe job completion	☒	☐	Evacuation routes	☒	☐
Contractor tools/equipment/PPE inspected	☐	☐	Assembly points	☒	☐

VIII. Site Preparation

	Yes	No	NA
Utility Locating and Excavation Clearance completed	☐	☐	☒
Vehicle and Foot Traffic Routes Cleared and Established	☐	☐	☒
Physical Hazards Barricaded and Isolated	☐	☐	☒
Emergency Equipment Staged	☒	☐	☐

IX. Additional Permits required (Hot work, confined space entry, excavation etc.). ☐ Yes ☐ No
If yes, complete permit required or contact Health Sciences, Pittsburgh Office

X. Special instructions, precautions: Absorbent socks and liquid from skimmer devices will be placed in 55-gallon recovery drums.

Permit Issued by: C. Metz Permit Accepted by: CM

SAFE WORK PERMIT FOR
MULTI-MEDIA SAMPLING
NAVSTA MAYPORT, FLORIDA – CTO 0253

Permit No. 051903-B Date: 5-19 to 5-21 Time: From 0700 to 1930

SECTION I: General Job Scope

I. Work limited to the following (description, area, equipment used): Multi-media sampling including soils, groundwater and IDW sampling. Removal of absorbent socks and skimmers is also included in this task.

II. Required Monitoring Instrument(s): FID or PID with 10.6 eV lamp (or higher) lamp source

III. Field Crew: C. Metz

IV. On-site Inspection conducted ☒ Yes ☐ No Initials of Inspector cm
TtNUS

SECTION II: General Safety Requirements (To be filled in by permit issuer)

IV. Protective equipment required
Level D ☒ Level B ☐
Level C ☐ Level A ☐
Detailed on Reverse

Respiratory equipment required
Full face APR ☐ Escape Pack ☐
Half face APR ☐ SCBA ☐
PAPR ☐ Bottle Trailer ☐
Skid Rig ☐ None ☒

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, safety shoes, surgical style gloves, and safety glasses. Hard hats and hearing protection will be worn when working near operating equipment or when required by the SSO.

V. Chemicals of Concern	Action Level(s)	Response Measures
Diesel Fuel. BTEX, and Naphthalene	Any sustained readings >10 ppm above background in worker breathing zones	Suspend site activities and report to an unaffected area until levels return to normal

VI. Additional Safety Equipment/Procedures

Hard-hat	☐ Yes	☒ No	Hearing Protection (Plugs/Muffs)	☐ Yes	☒ No
Safety Glasses	☒ Yes	☐ No	Safety belt/harness	☐ Yes	☒ No
Chemical/splash goggles	☐ Yes	☒ No	Radio	☐ Yes	☒ No
Splash Shield	☐ Yes	☐ No	Barricades	☐ Yes	☒ No
Splash suits/coveralls	☐ Yes	☒ No	Gloves (Type – Surgical Style)	☒ Yes	☐ No
Steel toe Work shoes or boots	☒ Yes	☐ No	Work/rest regimen	☐ Yes	☒ No

Modifications/Exceptions: Reflective vests for high traffic areas. Tyvek coverall if there is a potential for soiling work clothes. Splash shield should be worn when removing absorbent socks and skimmers from the wells

VII. Procedure review with permit acceptors

	Yes	NA		Yes	NA
Safety shower/eyewash (Location & Use)	☒	☐	Emergency alarms	☒	☐
Procedure for safe job completion	☒	☐	Evacuation routes	☒	☐
Contractor tools/equipment/PPE inspected	☐	☒	Assembly points	☒	☐

VIII. Site Preparation

	Yes	No	NA
Utility Locating and Excavation Clearance completed	☐	☐	☒
Vehicle and Foot Traffic Routes Cleared and Established	☐	☐	☒
Physical Hazards Barricaded and Isolated	☐	☐	☒
Emergency Equipment Staged	☒	☐	☐

IX. Additional Permits required (Hot work, confined space entry, excavation etc.) ☐ Yes ☒ No
If yes, complete permit required or contact Health Sciences, Pittsburgh Office

X. Special instructions, precautions: Free product may be encountered in monitoring wells at SWMU 7. Use caution when removing socks and skimmers. Stand up wind of the well head. Use caution when cutting acetate sleeves or when handling heavy objects such as sample coolers.

Permit Issued by: C. Metz Permit Accepted by: cm

ATTACHMENT B

LABORATORY ANALYTICAL REPORTS

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**T. HANSEN**	**DATE:**	**JULY 16, 2003**
FROM:	**BERNARD F SPADA III**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION- OVG/MISC**
CTO 253, NS MAYPORT
SDG P0305388

SAMPLES: 12/Aqueous

MPT-8-DUP01-04	MPT-8-EB01-04	MPT-8-MW01S-04
MPT-8-MW04S-04	MPT-8-MW06S-04	MPT-8-MW09S-04
MPT-8-MW16S-04	MPT-8-MW17S-04	MPT-8-MW18S-04
MPT-8-MW19S-04	MPT-5-MW02S-04	MPT-5-MW03S-04

OVERVIEW

The sample set for CTO 253, NS Mayport, SDG P0305388 consists of ten (10) environmental aqueous samples, one (1) equipment blank, and one (1) field duplicate. The samples were analyzed for methane, ethane, and ethene organic volatile gases (OVG), carbon dioxide, hydrogen, nitrogen, and oxygen. The field duplicate pair included in this SDG is MPT-8-DUP01-04 and MPT-8-MW16S-04.

The samples were collected by Tetra Tech NUS on May 19, 20, and 21, 2003 and analyzed by Microseeps. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using Method AM20GAX analytical and reporting protocols. The data contained in this SDG were validated with regard to the following parameters:

- Data completeness
- Holding times
- * Initial and continuing calibration
- * Blank results
- * Surrogate spike recoveries
- * Blank Spike/Blank Spike Duplicate Results
- * Compound Quantitation
- * Compound Identification
- * Field Duplicate Precision
- Detection Limits

The symbol (*) indicates that all quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A. Results as reported by the laboratory are presented in Appendix B.

Organic Volatile Gases

Samples MPT-8-MW06S-04, MPT-8-MW17S-04, and MPT-8-MW18S-04 were analyzed outside of the 14 day holding time quality control criteria. All positive and non-detected results were qualified as estimated (J, UJ).

MISC

Samples MPT-8-MW06S-04, MPT-8-MW17S-04, and MPT-8-MW18S-04 were analyzed outside of the 14 day holding time quality control criteria. All positive and non-detected results were qualified as estimated (J, UJ).

Additional Comments

The electronic data deliverable (EDD) did not match the Form Is for several samples. The positive results from the Form I's were used for validation. All results reported as "0" were changed to the appropriate detection limit for the compound.

The field samples MPT-5-MW02S-04 and MPT-5-MW03S-04 were reported with an "S" character instead of a "5" by the laboratory.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Qualifications were made based on holding time exceedances. Several errors were present in the EDD.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99) and the NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Bernard F. Spada III

Tetra Tech NUS
Bernard F. Spada III
Chemist/Data Validator

TetraTech NUS
Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is less than sample activity

PROJ_NO: 4259

SDG: P0305388 MEDIA: WATER DATA FRACTION: OVG

nsample	MPT-8-DUP01-04	nsample	MPT-8-EB01-04	nsample	MPT-8-MW01S-04
samp_date	5/20/2003	samp_date	5/20/2003	samp_date	5/20/2003
lab_id	P0305388-09	lab_id	P0305388-10	lab_id	P0305388-07
qc_type	NM	qc_type	NM	qc_type	NM
units	UG/L	units	UG/L	units	UG/L
Pct_Solids	0	Pct_Solids	0	Pct_Solids	0
DUP_OF:	MPT-8-MW16S-04	DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
ETHANE	0.005	U	
ETHENE	0.005	U	
METHANE	11000		

Parameter	Result	Val Qual	Qual Code
ETHANE	0.002		
ETHENE	0.012		
METHANE	0.1		

Parameter	Result	Val Qual	Qual Code
ETHANE	0.013		
ETHENE	0.005		
METHANE	180		

PROJ_NO: 4259

SDG: P0305388 MEDIA: WATER DATA FRACTION: OVG

nsample	MPT-8-MW04S-04	nsample	MPT-8-MW06S-04	nsample	MPT-8-MW09S-04
samp_date	5/21/2003	samp_date	5/19/2003	samp_date	5/21/2003
lab_id	P0305388-12	lab_id	P0305388-01	lab_id	P0305388-11
qc_type	NM	qc_type	NM	qc_type	NM
units	UG/L	units	UG/L	units	UG/L
Pct_Solids	0	Pct_Solids	0	Pct_Solids	0
DUP_OF:		DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
ETHANE	0.005	U	
ETHENE	0.005	U	
METHANE	10000		

Parameter	Result	Val Qual	Qual Code
ETHANE	0.003	J	HP
ETHENE	0.013	J	H
METHANE	0.1	J	H

Parameter	Result	Val Qual	Qual Code
ETHANE	0.005	U	
ETHENE	0.005	U	
METHANE	650		

PROJ_NO: 4259

SDG: P0305388 MEDIA: WATER DATA FRACTION: OVG

nsample	MPT-8-MW16S-04	nsample	MPT-8-MW17S-04	nsample	MPT-8-MW18S-04
samp_date	5/20/2003	samp_date	5/19/2003	samp_date	5/19/2003
lab_id	P0305388-05	lab_id	P0305388-03	lab_id	P0305388-02
qc_type	NM	qc_type	NM	qc_type	NM
units	UG/L	units	UG/L	units	UG/L
Pct_Solids	0	Pct_Solids	0	Pct_Solids	0
DUP_OF:		DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
ETHANE	0.005	U	
ETHENE	0.005	U	
METHANE	11000		

Parameter	Result	Val Qual	Qual Code
ETHANE	0.005	UJ	H
ETHENE	0.005	UJ	H
METHANE	690	J	H

Parameter	Result	Val Qual	Qual Code
ETHANE	0.005	J	HP
ETHENE	0.008	J	H
METHANE	120	J	H

PROJ_NO: 4259

SDG: P0305388 MEDIA: WATER DATA FRACTION: OVG

nsample	MPT-8-MW19S-04	nsample	MPT-~~8~~5-MW02S-04	nsample	MPT-~~8~~5-MW03S-04
samp_date	5/20/2003	samp_date	5/20/2003	samp_date	5/20/2003
lab_id	P0305388-08	lab_id	P0305388-04	lab_id	P0305388-06
qc_type	NM	qc_type	NM	qc_type	NM
units	UG/L	units	UG/L	units	UG/L
Pct_Solids	0	Pct_Solids	0	Pct_Solids	0
DUP_OF:		DUP_OF:		DUP_OF:	

JAS

Parameter	Result	Val Qual	Qual Code
ETHANE	0.002		
ETHENE	0.016		
METHANE	0.42		

Parameter	Result	Val Qual	Qual Code
ETHANE	0.2		
ETHENE	0.005	U	
METHANE	3900		

Parameter	Result	Val Qual	Qual Code
ETHANE	1		
ETHENE	0.013		
METHANE	56		

PROJ_NO: 4259

SDG: P0305388 MEDIA: WATER DATA FRACTION: MISC

nsample	MPT-8-DUP01-04
samp_date	5/20/2003
lab_id	P0305388-09
qc_type	NM
Pct_Solids	0
DUP_OF:	MPT-8-MW16S-04

Parameter	units	Result	Val Qual	Qual Code
CARBON DIOXIDE	MG/L	210		
HYDROGEN	NM	1.9		
NITROGEN	MG/L	5.3		
OXYGEN	MG/L	3.2		

nsample	MPT-8-EB01-04
samp_date	5/20/2003
lab_id	P0305388-10
qc_type	NM
Pct_Solids	0
DUP_OF:	

Parameter	units	Result	Val Qual	Qual Code
CARBON DIOXIDE	MG/L	0.7		
HYDROGEN	NM	0.54		
NITROGEN	MG/L	14		
OXYGEN	MG/L	9.8		

nsample	MPT-8-MW01S-04
samp_date	5/20/2003
lab_id	P0305388-07
qc_type	NM
Pct_Solids	0
DUP_OF:	

Parameter	units	Result	Val Qual	Qual Code
CARBON DIOXIDE	MG/L	7.4		
HYDROGEN	NM	0.4		
NITROGEN	MG/L	17		
OXYGEN	MG/L	3.5		

PROJ_NO: 4259

SDG: P0305388 MEDIA: WATER DATA FRACTION: MISC

nsample	MPT-8-MW04S-04	nsample	MPT-8-MW06S-04	nsample	MPT-8-MW09S-04
samp_date	5/21/2003	samp_date	5/19/2003	samp_date	5/21/2003
lab_id	P0305388-12	lab_id	P0305388-01	lab_id	P0305388-11
qc_type	NM	qc_type	NM	qc_type	NM
Pct_Solids	0	Pct_Solids	0	Pct_Solids	0
DUP_OF:		DUP_OF:		DUP_OF:	

Parameter	units	Result	Val Qual	Qual Code
CARBON DIOXIDE	MG/L	190		
HYDROGEN	NM	2.5		
NITROGEN	MG/L	6.5		
OXYGEN	MG/L	1.8		

Parameter	units	Result	Val Qual	Qual Code
CARBON DIOXIDE	MG/L	10	J	H
HYDROGEN	NM	0.21	J	H
NITROGEN	MG/L	16	J	H
OXYGEN	MG/L	5.4	J	H

Parameter	units	Result	Val Qual	Qual Code
CARBON DIOXIDE	MG/L	82		
HYDROGEN	NM	2.2		
NITROGEN	MG/L	15		
OXYGEN	MG/L	3.5		

PROJ_NO: 4259

SDG: P0305388 MEDIA: WATER DATA FRACTION: MISC

nsample	MPT-8-MW16S-04	nsample	MPT-8-MW17S-04	nsample	MPT-8-MW18S-04
samp_date	5/20/2003	samp_date	5/19/2003	samp_date	5/19/2003
lab_id	P0305388-05	lab_id	P0305388-03	lab_id	P0305388-02
qc_type	NM	qc_type	NM	qc_type	NM
Pct_Solids	0	Pct_Solids	0	Pct_Solids	0
DUP_OF:		DUP_OF:		DUP_OF:	

Parameter	units	Result	Val Qual	Qual Code
CARBON DIOXIDE	MG/L	210		
HYDROGEN	NM	2		
NITROGEN	MG/L	5.1		
OXYGEN	MG/L	2.9		

Parameter	units	Result	Val Qual	Qual Code
CARBON DIOXIDE	MG/L	58	J	H
HYDROGEN	NM	0.37	J	H
NITROGEN	MG/L	16	J	H
OXYGEN	MG/L	2.3	J	H

Parameter	units	Result	Val Qual	Qual Code
CARBON DIOXIDE	MG/L	35	J	H
HYDROGEN	NM	0.39	J	H
NITROGEN	MG/L	17	J	H
OXYGEN	MG/L	2.1	J	H

PROJ_NO: 4259

SDG: P0305388 MEDIA: WATER DATA FRACTION: MISC

nsample	MPT-8-MW19S-04	nsample	MPT-~~8~~S-MW02S-04	nsample	MPT-~~8~~S-MW03S-04
samp_date	5/20/2003	samp_date	5/20/2003	samp_date	5/20/2003
lab_id	P0305388-08	lab_id	P0305388-04	lab_id	P0305388-06
qc_type	NM	qc_type	NM	qc_type	NM
Pct_Solids	0	Pct_Solids	0	Pct_Solids	0
DUP_OF:		DUP_OF:		DUP_OF:	

Parameter	units	Result	Val Qual	Qual Code
CARBON DIOXIDE	MG/L	7.8		
HYDROGEN	NM	0.3		
NITROGEN	MG/L	15		
OXYGEN	MG/L	6.8		

Parameter	units	Result	Val Qual	Qual Code
CARBON DIOXIDE	MG/L	66		
HYDROGEN	NM	1.1		
NITROGEN	MG/L	13		
OXYGEN	MG/L	3		

Parameter	units	Result	Val Qual	Qual Code
CARBON DIOXIDE	MG/L	56		
HYDROGEN	NM	0.48		
NITROGEN	MG/L	16		
OXYGEN	MG/L	4.3		

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Client Name: TetraTech NUS, Inc.
Contact: Amy Thomson
Address: Foster Plaza 7
661 Anderson Drive

Pittsburgh, PA 15220

Lab Project #: P0305388
Report Date: 06/09/03
Client Proj Name: NAVSTA Mayport Jacksonville FL
Client project #: N4259 CTO 253

Lab Sample #: P0305388-09

Sample Description	Matrix	Sampled Date/Time	Received
MPT-8-DUP01-04	Vapor	20 May. 03	22 May. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Carbon dioxide	210	0.60	mg/L	AM20GAX	mm	6/3/03
Ethane	< 5.0	5.0	ng/L		mm	6/3/03
Ethene	< 5.0	5.0	ng/L		mm	6/3/03
Hydrogen	1.9	0.030	nM		mm	6/3/03
Methane	11000	0.02	ug/L		mm	6/3/03
Nitrogen	5.3	0.40	mg/L		mm	6/3/03
Oxygen	3.2	0.15	mg/L		mm	6/3/03

Client Name: TetraTech NUS, Inc.
Contact: Amy Thomson
Address: Foster Plaza 7
661 Anderson Drive

Pittsburgh, PA 15220

Lab Project #: P0305388
Report Date: 06/09/03
Client Proj Name: NAVSTA Mayport Jacksonville FL
Client project #: N4259 CTO 253

Lab Sample #: P0305388-10

Sample Description	Matrix	Sampled Date/Time	Received
MPT-8-EB01-04	Vapor	20 May. 03 12:00	22 May. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Carbon dioxide	0.70	0.60	mg/L	AM20GAX	mm	6/3/03
Ethane	2.0	5.0	ng/L		mm	6/3/03
Ethene	12	5.0	ng/L		mm	6/3/03
Hydrogen	0.54	0.030	nM		mm	6/3/03
Methane	0.10	0.02	ug/L		mm	6/3/03
Nitrogen	14	0.40	mg/L		mm	6/3/03
Oxygen	9.8	0.15	mg/L		mm	6/3/03

Client Name: TetraTech NUS, Inc.
Contact: Amy Thomson
Address: Foster Plaza 7
661 Anderson Drive

Pittsburgh, PA 15220

Lab Project #: P0305388
Report Date: 06/09/03
Client Proj Name: NAVSTA Mayport Jacksonville FL
Client project #: N4259 CTO 253

Lab Sample #: P0305388-07

Sample Description	Matrix	Sampled Date/Time	Received
MPT-8-MW01S-04	Vapor	20 May. 03 14:30	22 May. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Carbon dioxide	7.4	0.60	mg/L	AM20GAX	mm	6/3/03
Ethane	13	5.0	ng/L		mm	6/3/03
Ethene	5.0	5.0	ng/L		mm	6/3/03
Hydrogen	0.40	0.030	nM		mm	6/3/03
Methane	180	0.02	ug/L		mm	6/3/03
Nitrogen	17	0.40	mg/L		mm	6/3/03
Oxygen	3.5	0.15	mg/L		mm	6/3/03

Client Name: TetraTech NUS, Inc.
Contact: Amy Thomson
Address: Foster Plaza 7
661 Anderson Drive

Pittsburgh, PA 15220

Lab Project #: P0305388
Report Date: 06/09/03
Client Proj Name: NAVSTA Mayport Jacksonville FL
Client project #: N4259 CTO 253

Lab Sample #: P0305388-12

Sample Description	Matrix	Sampled Date/Time	Received
MPT-8-MW04S-04	Vapor	21 May. 03 13:30	22 May. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Carbon dioxide	190	0.60	mg/L	AM20GAX	mm	6/3/03
Ethane	< 5.0	5.0	ng/L		mm	6/3/03
Ethene	< 5.0	5.0	ng/L		mm	6/3/03
Hydrogen	2.5	0.030	nM		mm	6/3/03
Methane	10000	0.02	ug/L		mm	6/3/03
Nitrogen	6.5	0.40	mg/L		mm	6/3/03
Oxygen	1.8	0.15	mg/L		mm	6/3/03

Client Name: TetraTech NUS, Inc.
Contact: Amy Thomson
Address: Foster Plaza 7
661 Anderson Drive

Pittsburgh, PA 15220

Lab Project #: P0305388
Report Date: 06/09/03
Client Proj Name: NAVSTA Mayport Jacksonville FL
Client project #: N4259 CTO 253

Lab Sample #: P0305388-01

Sample Description	Matrix	Sampled Date/Time	Received
MPT-8-MW06S-04	Vapor	19 May. 03 9:30	22 May. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Carbon dioxide	10	0.60	mg/L	AM20GAX	mm	6/3/03
Ethane	3.0	5.0	ng/L		mm	6/3/03
Ethene	13	5.0	ng/L		mm	6/3/03
Hydrogen	0.21	0.030	nM		mm	6/3/03
Methane	0.10	0.02	ug/L		mm	6/3/03
Nitrogen	16	0.40	mg/L		mm	6/3/03
Oxygen	5.4	0.15	mg/L		mm	6/3/03

Client Name: TetraTech NUS, Inc.
Contact: Amy Thomson
Address: Foster Plaza 7
661 Anderson Drive

Pittsburgh, PA 15220

Lab Project #: P0305388
Report Date: 06/09/03
Client Proj Name: NAVSTA Mayport Jacksonville FL
Client project #: N4259 CTO 253

Lab Sample #: P0305388-11

Sample Description	Matrix	Sampled Date/Time	Received
MPT-8-MW09S-04	Vapor	21 May. 03 12:25	22 May. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Carbon dioxide	82	0.60	mg/L	AM20GAX	mm	6/3/03
Ethane	< 5.0	5.0	ng/L		mm	6/3/03
Ethene	< 5.0	5.0	ng/L		mm	6/3/03
Hydrogen	2.2	0.030	nM		mm	6/3/03
Methane	650	0.02	ug/L		mm	6/3/03
Nitrogen	15	0.40	mg/L		mm	6/3/03
Oxygen	3.5	0.15	mg/L		mm	6/3/03

Client Name: TetraTech NUS, Inc.
Contact: Amy Thomson
Address: Foster Plaza 7
661 Anderson Drive

Pittsburgh, PA 15220

Lab Project #: P0305388
Report Date: 06/09/03
Client Proj Name: NAVSTA Mayport Jacksonville FL
Client project #: N4259 CTO 253

Lab Sample #: P0305388-05

Sample Description	Matrix	Sampled Date/Time	Received
MPT-8-MW16S-04	Vapor	20 May. 03 11:20	22 May. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Carbon dioxide	210	0.60	mg/L	AM20GAX	mm	6/3/03
Ethane	< 5.0	5.0	ng/L		mm	6/3/03
Ethene	< 5.0	5.0	ng/L		mm	6/3/03
Hydrogen	2.0	0.030	nM		mm	6/3/03
Methane	11000	0.02	ug/L		mm	6/3/03
Nitrogen	5.1	0.40	mg/L		mm	6/3/03
Oxygen	2.9	0.15	mg/L		mm	6/3/03

Client Name: TetraTech NUS, Inc.
Contact: Amy Thomson
Address: Foster Plaza 7
661 Anderson Drive

Pittsburgh, PA 15220

Lab Project #: P0305388
Report Date: 06/09/03
Client Proj Name: NAVSTA Mayport Jacksonville FL
Client project #: N4259 CTO 253

Lab Sample #: P0305388-03

Sample Description	Matrix	Sampled Date/Time	Received
MPT-8-MW17S-04	Vapor	19 May. 03 12:45	22 May. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Carbon dioxide	58	0.60	mg/L	AM20GAX	mm	6/3/03
Ethane	< 5.0	5.0	ng/L		mm	6/3/03
Ethene	< 5.0	5.0	ng/L		mm	6/3/03
Hydrogen	0.37	0.030	nM		mm	6/3/03
Methane	690	0.02	ug/L		mm	6/3/03
Nitrogen	16	0.40	mg/L		mm	6/3/03
Oxygen	2.3	0.15	mg/L		mm	6/3/03

Client Name: TetraTech NUS, Inc.
Contact: Amy Thomson
Address: Foster Plaza 7
661 Anderson Drive

Pittsburgh, PA 15220

Lab Project #: P0305388
Report Date: 06/09/03
Client Proj Name: NAVSTA Mayport Jacksonville FL
Client project #: N4259 CTO 253

Lab Sample #: P0305388-02

Sample Description	Matrix	Sampled Date/Time	Received
MPT-8-MW18S-04	Vapor	19 May. 03 11:35	22 May. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Carbon dioxide	35	0.60	mg/L	AM20GAX	mm	6/3/03
Ethane	5.0	5.0	ng/L		mm	6/3/03
Ethene	8.0	5.0	ng/L		mm	6/3/03
Hydrogen	0.39	0.030	nM		mm	6/3/03
Methane	120	0.02	ug/L		mm	6/3/03
Nitrogen	17	0.40	mg/L		mm	6/3/03
Oxygen	2.1	0.15	mg/L		mm	6/3/03

Client Name: TetraTech NUS, Inc.
Contact: Amy Thomson
Address: Foster Plaza 7
661 Anderson Drive

Pittsburgh, PA 15220

Lab Project #: P0305388
Report Date: 06/09/03
Client Proj Name: NAVSTA Mayport Jacksonville FL
Client project #: N4259 CTO 253

Lab Sample #: P0305388-08

Sample Description	Matrix	Sampled Date/Time	Received
MPT-8-MW19S-04	Vapor	20 May. 03 16:00	22 May. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Carbon dioxide	7.8	0.60	mg/L	AM20GAX	mm	6/3/03
Ethane	2.0	5.0	ng/L		mm	6/3/03
Ethene	16	5.0	ng/L		mm	6/3/03
Hydrogen	0.30	0.030	nM		mm	6/3/03
Methane	0.42	0.02	ug/L		mm	6/3/03
Nitrogen	15	0.40	mg/L		mm	6/3/03
Oxygen	6.8	0.15	mg/L		mm	6/3/03

Client Name: TetraTech NUS, Inc.
Contact: Amy Thomson
Address: Foster Plaza 7
661 Anderson Drive

Pittsburgh, PA 15220

Lab Project #: P0305388
Report Date: 06/09/03
Client Proj Name: NAVSTA Mayport Jacksonville FL
Client project #: N4259 CTO 253

Lab Sample #: P0305388-04

Sample Description	Matrix	Sampled Date/Time	Received
MPT-S-MW02S-04	Vapor	20 May. 03 9:45	22 May. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Carbon dioxide	66	0.60	mg/L	AM20GAX	mm	6/3/03
Ethane	200	5.0	ng/L		mm	6/3/03
Ethene	< 5.0	5.0	ng/L		mm	6/3/03
Hydrogen	1.1	0.030	nM		mm	6/3/03
Methane	3900	0.02	ug/L		mm	6/3/03
Nitrogen	13	0.40	mg/L		mm	6/3/03
Oxygen	3.0	0.15	mg/L		mm	6/3/03

Client Name: TetraTech NUS, Inc.
Contact: Amy Thomson
Address: Foster Plaza 7
661 Anderson Drive

Pittsburgh, PA 15220

Lab Project #: P0305388
Report Date: 06/09/03
Client Proj Name: NAVSTA Mayport Jacksonville FL
Client project #: N4259 CTO 253

Lab Sample #: P0305388-06

Sample Description	Matrix	Sampled Date/Time	Received
MPT-S-MW03S-04	Vapor	20 May. 03 13:05	22 May. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Carbon dioxide	56	0.60	mg/L	AM20GAX	mm	6/3/03
Ethane	1000	5.0	ng/L		mm	6/3/03
Ethene	13	5.0	ng/L		mm	6/3/03
Hydrogen	0.48	0.030	nM		mm	6/3/03
Methane	56	0.02	ug/L		mm	6/3/03
Nitrogen	16	0.40	mg/L		mm	6/3/03
Oxygen	4.3	0.15	mg/L		mm	6/3/03

APPENDIX C

SUPPORT DOCUMENTATION

FIELD DUPLICATE PRECISION

ANALYTE	MPT-8-DUP01-04	MPT-8-MW16S-04	RPD	DIFFERENCE
Methane	11000	11000	0.00	0
Carbon dioxide	210	210	0.00	0
Hydrogen	1.9	2	5.13	0.1
Nitrogen	5.3	5.1	3.85	0.2
Oxygen	3.2	2.9	9.84	0.3

P0305388

HOLDING TIME

07/08/03

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MGL	MPT-8-DUP01-04	P0305388-09	NORMAL	P0305388	CO2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-EB01-04	P0305388-10	NORMAL	P0305388	CO2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-MW01S-04	P0305388-07	NORMAL	P0305388	CO2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-MW04S-04	P0305388-12	NORMAL	P0305388	CO2	05/21/03	/ /	06/03/03	0	0	13
MGL	MPT-8-MW06S-04	P0305388-01	NORMAL	P0305388	CO2	05/19/03	/ /	06/03/03	0	0	15
MGL	MPT-8-MW09S-04	P0305388-11	NORMAL	P0305388	CO2	05/21/03	/ /	06/03/03	0	0	13
MGL	MPT-8-MW16S-04	P0305388-05	NORMAL	P0305388	CO2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-MW17S-04	P0305388-03	NORMAL	P0305388	CO2	05/19/03	/ /	06/03/03	0	0	15
MGL	MPT-8-MW18S-04	P0305388-02	NORMAL	P0305388	CO2	05/19/03	/ /	06/03/03	0	0	15
MGL	MPT-8-MW19S-04	P0305388-08	NORMAL	P0305388	CO2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-S-MW02S-04	P0305388-04	NORMAL	P0305388	CO2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-S-MW03S-04	P0305388-06	NORMAL	P0305388	CO2	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-8-DUP01-04	P0305388-09	NORMAL	P0305388	ETHA	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-8-EB01-04	P0305388-10	NORMAL	P0305388	ETHA	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-8-MW01S-04	P0305388-07	NORMAL	P0305388	ETHA	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-8-MW04S-04	P0305388-12	NORMAL	P0305388	ETHA	05/21/03	/ /	06/03/03	0	0	13
NGL	MPT-8-MW06S-04	P0305388-01	NORMAL	P0305388	ETHA	05/19/03	/ /	06/03/03	0	0	15
NGL	MPT-8-MW09S-04	P0305388-11	NORMAL	P0305388	ETHA	05/21/03	/ /	06/03/03	0	0	13
NGL	MPT-8-MW16S-04	P0305388-05	NORMAL	P0305388	ETHA	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-8-MW17S-04	P0305388-03	NORMAL	P0305388	ETHA	05/19/03	/ /	06/03/03	0	0	15
NGL	MPT-8-MW18S-04	P0305388-02	NORMAL	P0305388	ETHA	05/19/03	/ /	06/03/03	0	0	15
NGL	MPT-8-MW19S-04	P0305388-08	NORMAL	P0305388	ETHA	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-S-MW02S-04	P0305388-04	NORMAL	P0305388	ETHA	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-S-MW03S-04	P0305388-06	NORMAL	P0305388	ETHA	05/20/03	/ /	06/03/03	0	0	14

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
NGL	MPT-8-DUP01-04	P0305388-09	NORMAL	P0305388	ETHE	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-8-EB01-04	P0305388-10	NORMAL	P0305388	ETHE	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-8-MW01S-04	P0305388-07	NORMAL	P0305388	ETHE	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-8-MW04S-04	P0305388-12	NORMAL	P0305388	ETHE	05/21/03	/ /	06/03/03	0	0	13
NGL	MPT-8-MW06S-04	P0305388-01	NORMAL	P0305388	ETHE	05/19/03	/ /	06/03/03	0	0	15
NGL	MPT-8-MW09S-04	P0305388-11	NORMAL	P0305388	ETHE	05/21/03	/ /	06/03/03	0	0	13
NGL	MPT-8-MW16S-04	P0305388-05	NORMAL	P0305388	ETHE	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-8-MW17S-04	P0305388-03	NORMAL	P0305388	ETHE	05/19/03	/ /	06/03/03	0	0	15
NGL	MPT-8-MW18S-04	P0305388-02	NORMAL	P0305388	ETHE	05/19/03	/ /	06/03/03	0	0	15
NGL	MPT-8-MW19S-04	P0305388-08	NORMAL	P0305388	ETHE	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-S-MW02S-04	P0305388-04	NORMAL	P0305388	ETHE	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-S-MW03S-04	P0305388-06	NORMAL	P0305388	ETHE	05/20/03	/ /	06/03/03	0	0	14
NM	MPT-8-DUP01-04	P0305388-09	NORMAL	P0305388	H2	05/20/03	/ /	06/03/03	0	0	14
NM	MPT-8-EB01-04	P0305388-10	NORMAL	P0305388	H2	05/20/03	/ /	06/03/03	0	0	14
NM	MPT-8-MW01S-04	P0305388-07	NORMAL	P0305388	H2	05/20/03	/ /	06/03/03	0	0	14
NM	MPT-8-MW04S-04	P0305388-12	NORMAL	P0305388	H2	05/21/03	/ /	06/03/03	0	0	13
NM	MPT-8-MW06S-04	P0305388-01	NORMAL	P0305388	H2	05/19/03	/ /	06/03/03	0	0	15
NM	MPT-8-MW09S-04	P0305388-11	NORMAL	P0305388	H2	05/21/03	/ /	06/03/03	0	0	13
NM	MPT-8-MW16S-04	P0305388-05	NORMAL	P0305388	H2	05/20/03	/ /	06/03/03	0	0	14
NM	MPT-8-MW17S-04	P0305388-03	NORMAL	P0305388	H2	05/19/03	/ /	06/03/03	0	0	15
NM	MPT-8-MW18S-04	P0305388-02	NORMAL	P0305388	H2	05/19/03	/ /	06/03/03	0	0	15
NM	MPT-8-MW19S-04	P0305388-08	NORMAL	P0305388	H2	05/20/03	/ /	06/03/03	0	0	14
NM	MPT-S-MW02S-04	P0305388-04	NORMAL	P0305388	H2	05/20/03	/ /	06/03/03	0	0	14
NM	MPT-S-MW03S-04	P0305388-06	NORMAL	P0305388	H2	05/20/03	/ /	06/03/03	0	0	14
UGL	MPT-8-DUP01-04	P0305388-09	NORMAL	P0305388	METH	05/20/03	/ /	06/03/03	0	0	14
UGL	MPT-8-EB01-04	P0305388-10	NORMAL	P0305388	METH	05/20/03	/ /	06/03/03	0	0	14
UGL	MPT-8-MW01S-04	P0305388-07	NORMAL	P0305388	METH	05/20/03	/ /	06/03/03	0	0	14

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UGL	MPT-8-MW04S-04	P0305388-12	NORMAL	P0305388	METH	05/21/03	/ /	06/03/03	0	0	13
UGL	MPT-8-MW06S-04	P0305388-01	NORMAL	P0305388	METH	05/19/03	/ /	06/03/03	0	0	15
UGL	MPT-8-MW09S-04	P0305388-11	NORMAL	P0305388	METH	05/21/03	/ /	06/03/03	0	0	13
UGL	MPT-8-MW16S-04	P0305388-05	NORMAL	P0305388	METH	05/20/03	/ /	06/03/03	0	0	14
UGL	MPT-8-MW17S-04	P0305388-03	NORMAL	P0305388	METH	05/19/03	/ /	06/03/03	0	0	15
UGL	MPT-8-MW18S-04	P0305388-02	NORMAL	P0305388	METH	05/19/03	/ /	06/03/03	0	0	15
UGL	MPT-8-MW19S-04	P0305388-08	NORMAL	P0305388	METH	05/20/03	/ /	06/03/03	0	0	14
UGL	MPT-S-MW02S-04	P0305388-04	NORMAL	P0305388	METH	05/20/03	/ /	06/03/03	0	0	14
UGL	MPT-S-MW03S-04	P0305388-06	NORMAL	P0305388	METH	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-DUP01-04	P0305388-09	NORMAL	P0305388	N2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-EB01-04	P0305388-10	NORMAL	P0305388	N2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-MW01S-04	P0305388-07	NORMAL	P0305388	N2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-MW04S-04	P0305388-12	NORMAL	P0305388	N2	05/21/03	/ /	06/03/03	0	0	13
MGL	MPT-8-MW06S-04	P0305388-01	NORMAL	P0305388	N2	05/19/03	/ /	06/03/03	0	0	15
MGL	MPT-8-MW09S-04	P0305388-11	NORMAL	P0305388	N2	05/21/03	/ /	06/03/03	0	0	13
MGL	MPT-8-MW16S-04	P0305388-05	NORMAL	P0305388	N2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-MW17S-04	P0305388-03	NORMAL	P0305388	N2	05/19/03	/ /	06/03/03	0	0	15
MGL	MPT-8-MW18S-04	P0305388-02	NORMAL	P0305388	N2	05/19/03	/ /	06/03/03	0	0	15
MGL	MPT-8-MW19S-04	P0305388-08	NORMAL	P0305388	N2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-S-MW02S-04	P0305388-04	NORMAL	P0305388	N2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-S-MW03S-04	P0305388-06	NORMAL	P0305388	N2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-DUP01-04	P0305388-09	NORMAL	P0305388	O2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-EB01-04	P0305388-10	NORMAL	P0305388	O2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-MW01S-04	P0305388-07	NORMAL	P0305388	O2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-MW04S-04	P0305388-12	NORMAL	P0305388	O2	05/21/03	/ /	06/03/03	0	0	13
MGL	MPT-8-MW06S-04	P0305388-01	NORMAL	P0305388	O2	05/19/03	/ /	06/03/03	0	0	15
MGL	MPT-8-MW09S-04	P0305388-11	NORMAL	P0305388	O2	05/21/03	/ /	06/03/03	0	0	13

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MGL	MPT-8-MW16S-04	P0305388-05	NORMAL	P0305388	O2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-MW17S-04	P0305388-03	NORMAL	P0305388	O2	05/19/03	/ /	06/03/03	0	0	15
MGL	MPT-8-MW18S-04	P0305388-02	NORMAL	P0305388	O2	05/19/03	/ /	06/03/03	0	0	15
MGL	MPT-8-MW19S-04	P0305388-08	NORMAL	P0305388	O2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-S-MW02S-04	P0305388-04	NORMAL	P0305388	O2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-S-MW03S-04	P0305388-06	NORMAL	P0305388	O2	05/20/03	/ /	06/03/03	0	0	14

P0305388

HOLDING TIME
07/08/03

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MGL	MPT-8-DUP01-04	P0305388-09	NORMAL	P0305388	CO2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-EB01-04	P0305388-10	NORMAL	P0305388	CO2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-MW01S-04	P0305388-07	NORMAL	P0305388	CO2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-MW04S-04	P0305388-12	NORMAL	P0305388	CO2	05/21/03	/ /	06/03/03	0	0	13
MGL	MPT-8-MW06S-04	P0305388-01	NORMAL	P0305388	CO2	05/19/03	/ /	06/03/03	0	0	15
MGL	MPT-8-MW09S-04	P0305388-11	NORMAL	P0305388	CO2	05/21/03	/ /	06/03/03	0	0	13
MGL	MPT-8-MW16S-04	P0305388-05	NORMAL	P0305388	CO2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-MW17S-04	P0305388-03	NORMAL	P0305388	CO2	05/19/03	/ /	06/03/03	0	0	15
MGL	MPT-8-MW18S-04	P0305388-02	NORMAL	P0305388	CO2	05/19/03	/ /	06/03/03	0	0	15
MGL	MPT-8-MW19S-04	P0305388-08	NORMAL	P0305388	CO2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-S-MW02S-04	P0305388-04	NORMAL	P0305388	CO2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-S-MW03S-04	P0305388-06	NORMAL	P0305388	CO2	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-8-DUP01-04	P0305388-09	NORMAL	P0305388	ETHA	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-8-EB01-04	P0305388-10	NORMAL	P0305388	ETHA	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-8-MW01S-04	P0305388-07	NORMAL	P0305388	ETHA	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-8-MW04S-04	P0305388-12	NORMAL	P0305388	ETHA	05/21/03	/ /	06/03/03	0	0	13
NGL	MPT-8-MW06S-04	P0305388-01	NORMAL	P0305388	ETHA	05/19/03	/ /	06/03/03	0	0	15
NGL	MPT-8-MW09S-04	P0305388-11	NORMAL	P0305388	ETHA	05/21/03	/ /	06/03/03	0	0	13
NGL	MPT-8-MW16S-04	P0305388-05	NORMAL	P0305388	ETHA	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-8-MW17S-04	P0305388-03	NORMAL	P0305388	ETHA	05/19/03	/ /	06/03/03	0	0	15
NGL	MPT-8-MW18S-04	P0305388-02	NORMAL	P0305388	ETHA	05/19/03	/ /	06/03/03	0	0	15
NGL	MPT-8-MW19S-04	P0305388-08	NORMAL	P0305388	ETHA	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-S-MW02S-04	P0305388-04	NORMAL	P0305388	ETHA	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-S-MW03S-04	P0305388-06	NORMAL	P0305388	ETHA	05/20/03	/ /	06/03/03	0	0	14

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
NGL	MPT-8-DUP01-04	P0305388-09	NORMAL	P0305388	ETHE	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-8-EB01-04	P0305388-10	NORMAL	P0305388	ETHE	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-8-MW01S-04	P0305388-07	NORMAL	P0305388	ETHE	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-8-MW04S-04	P0305388-12	NORMAL	P0305388	ETHE	05/21/03	/ /	06/03/03	0	0	13
NGL	MPT-8-MW06S-04	P0305388-01	NORMAL	P0305388	ETHE	05/19/03	/ /	06/03/03	0	0	15
NGL	MPT-8-MW09S-04	P0305388-11	NORMAL	P0305388	ETHE	05/21/03	/ /	06/03/03	0	0	13
NGL	MPT-8-MW16S-04	P0305388-05	NORMAL	P0305388	ETHE	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-8-MW17S-04	P0305388-03	NORMAL	P0305388	ETHE	05/19/03	/ /	06/03/03	0	0	15
NGL	MPT-8-MW18S-04	P0305388-02	NORMAL	P0305388	ETHE	05/19/03	/ /	06/03/03	0	0	15
NGL	MPT-8-MW19S-04	P0305388-08	NORMAL	P0305388	ETHE	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-S-MW02S-04	P0305388-04	NORMAL	P0305388	ETHE	05/20/03	/ /	06/03/03	0	0	14
NGL	MPT-S-MW03S-04	P0305388-06	NORMAL	P0305388	ETHE	05/20/03	/ /	06/03/03	0	0	14
NM	MPT-8-DUP01-04	P0305388-09	NORMAL	P0305388	H2	05/20/03	/ /	06/03/03	0	0	14
NM	MPT-8-EB01-04	P0305388-10	NORMAL	P0305388	H2	05/20/03	/ /	06/03/03	0	0	14
NM	MPT-8-MW01S-04	P0305388-07	NORMAL	P0305388	H2	05/20/03	/ /	06/03/03	0	0	14
NM	MPT-8-MW04S-04	P0305388-12	NORMAL	P0305388	H2	05/21/03	/ /	06/03/03	0	0	13
NM	MPT-8-MW06S-04	P0305388-01	NORMAL	P0305388	H2	05/19/03	/ /	06/03/03	0	0	15
NM	MPT-8-MW09S-04	P0305388-11	NORMAL	P0305388	H2	05/21/03	/ /	06/03/03	0	0	13
NM	MPT-8-MW16S-04	P0305388-05	NORMAL	P0305388	H2	05/20/03	/ /	06/03/03	0	0	14
NM	MPT-8-MW17S-04	P0305388-03	NORMAL	P0305388	H2	05/19/03	/ /	06/03/03	0	0	15
NM	MPT-8-MW18S-04	P0305388-02	NORMAL	P0305388	H2	05/19/03	/ /	06/03/03	0	0	15
NM	MPT-8-MW19S-04	P0305388-08	NORMAL	P0305388	H2	05/20/03	/ /	06/03/03	0	0	14
NM	MPT-S-MW02S-04	P0305388-04	NORMAL	P0305388	H2	05/20/03	/ /	06/03/03	0	0	14
NM	MPT-S-MW03S-04	P0305388-06	NORMAL	P0305388	H2	05/20/03	/ /	06/03/03	0	0	14
UGL	MPT-8-DUP01-04	P0305388-09	NORMAL	P0305388	METH	05/20/03	/ /	06/03/03	0	0	14
UGL	MPT-8-EB01-04	P0305388-10	NORMAL	P0305388	METH	05/20/03	/ /	06/03/03	0	0	14
UGL	MPT-8-MW01S-04	P0305388-07	NORMAL	P0305388	METH	05/20/03	/ /	06/03/03	0	0	14

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UGL	MPT-8-MW04S-04	P0305388-12	NORMAL	P0305388	METH	05/21/03	/ /	06/03/03	0	0	13
UGL	MPT-8-MW06S-04	P0305388-01	NORMAL	P0305388	METH	05/19/03	/ /	06/03/03	0	0	15
UGL	MPT-8-MW09S-04	P0305388-11	NORMAL	P0305388	METH	05/21/03	/ /	06/03/03	0	0	13
UGL	MPT-8-MW16S-04	P0305388-05	NORMAL	P0305388	METH	05/20/03	/ /	06/03/03	0	0	14
UGL	MPT-8-MW17S-04	P0305388-03	NORMAL	P0305388	METH	05/19/03	/ /	06/03/03	0	0	15
UGL	MPT-8-MW18S-04	P0305388-02	NORMAL	P0305388	METH	05/19/03	/ /	06/03/03	0	0	15
UGL	MPT-8-MW19S-04	P0305388-08	NORMAL	P0305388	METH	05/20/03	/ /	06/03/03	0	0	14
UGL	MPT-S-MW02S-04	P0305388-04	NORMAL	P0305388	METH	05/20/03	/ /	06/03/03	0	0	14
UGL	MPT-S-MW03S-04	P0305388-06	NORMAL	P0305388	METH	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-DUP01-04	P0305388-09	NORMAL	P0305388	N2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-EB01-04	P0305388-10	NORMAL	P0305388	N2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-MW01S-04	P0305388-07	NORMAL	P0305388	N2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-MW04S-04	P0305388-12	NORMAL	P0305388	N2	05/21/03	/ /	06/03/03	0	0	13
MGL	MPT-8-MW06S-04	P0305388-01	NORMAL	P0305388	N2	05/19/03	/ /	06/03/03	0	0	15
MGL	MPT-8-MW09S-04	P0305388-11	NORMAL	P0305388	N2	05/21/03	/ /	06/03/03	0	0	13
MGL	MPT-8-MW16S-04	P0305388-05	NORMAL	P0305388	N2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-MW17S-04	P0305388-03	NORMAL	P0305388	N2	05/19/03	/ /	06/03/03	0	0	15
MGL	MPT-8-MW18S-04	P0305388-02	NORMAL	P0305388	N2	05/19/03	/ /	06/03/03	0	0	15
MGL	MPT-8-MW19S-04	P0305388-08	NORMAL	P0305388	N2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-S-MW02S-04	P0305388-04	NORMAL	P0305388	N2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-S-MW03S-04	P0305388-06	NORMAL	P0305388	N2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-DUP01-04	P0305388-09	NORMAL	P0305388	O2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-EB01-04	P0305388-10	NORMAL	P0305388	O2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-MW01S-04	P0305388-07	NORMAL	P0305388	O2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-MW04S-04	P0305388-12	NORMAL	P0305388	O2	05/21/03	/ /	06/03/03	0	0	13
MGL	MPT-8-MW06S-04	P0305388-01	NORMAL	P0305388	O2	05/19/03	/ /	06/03/03	0	0	15
MGL	MPT-8-MW09S-04	P0305388-11	NORMAL	P0305388	O2	05/21/03	/ /	06/03/03	0	0	13

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MGL	MPT-8-MW16S-04	P0305388-05	NORMAL	P0305388	O2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-8-MW17S-04	P0305388-03	NORMAL	P0305388	O2	05/19/03	/ /	06/03/03	0	0	15
MGL	MPT-8-MW18S-04	P0305388-02	NORMAL	P0305388	O2	05/19/03	/ /	06/03/03	0	0	15
MGL	MPT-8-MW19S-04	P0305388-08	NORMAL	P0305388	O2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-S-MW02S-04	P0305388-04	NORMAL	P0305388	O2	05/20/03	/ /	06/03/03	0	0	14
MGL	MPT-S-MW03S-04	P0305388-06	NORMAL	P0305388	O2	05/20/03	/ /	06/03/03	0	0	14

MICROSEEPS

Client Name:	TetraTech NUS, Inc.	Page:	Page 1 of 18
Contact:	Amy Thomson	Lab Project #:	P0305388
Address:	Foster Plaza 7	Report Date:	06/09/03
	661 Anderson Drive	Client Proj Name:	NAVSTA Mayport Jacksonville FL
		Client project #:	N4259 CTO 253
	Pittsburgh, PA 15220		

Sample Identification

Lab Sample #	Client Sample ID
P0305388-01	MPT-8-MW06S-04
P0305388-02	MPT-8-MW18S-04
P0305388-03	MPT-8-MW17S-04
P0305388-04	MPT-S-MW02S-04
P0305388-05	MPT-8-MW16S-04
P0305388-06	MPT-S-MW03S-04
P0305388-07	MPT-8-MW01S-04
P0305388-08	MPT-8-MW19S-04
P0305388-09	MPT-8-DUP01-04
P0305388-10	MPT-8-EB01-04
P0305388-11	MPT-8-MW09S-04
P0305388-12	MPT-8-MW04S-04

Approved By: Debbie Hallo

220 William Pitt Way, Pittsburgh, PA 15238 • Phone (412) 826-5245, Fax (412) 826-3433

MICROSEEPS

Case Narrative
Tetra Tech NUS, Incorporated

Date: June 5, 2003

Project Number: N4259
Contract Task Order: CTO #253
Sample Mgmnt Coordinator: Ms. Amy Thomson
Site Name: NAVSTA Mayport Jacksonville FL
Laboratory Project Manager: Debbie Hallo
Analytical Method: AM20GAX
SDG: MPT-8-MW06S-04

Sample Name	Lab ID	Date Sampled	Date Rcvd.	Date Analyzed
MPT-8-MW06S-04	P0305388-01	5/19/03	5/22/03	6/03/03
MPT-8-MW18S-04	P0305388-02	5/19/03	5/22/03	6/03/03
MPT-8-MW17S-04	P0305388-03	5/19/03	5/22/03	6/03/03
MPT-S-MW02S-04	P0305388-04	5/20/03	5/22/03	6/03/03
MPT-8-MW16S-04	P0305388-05	5/20/03	5/22/03	6/03/03
MPT-S-WM03S-04	P0305388-06	5/20/03	5/22/03	6/03/03
MPT-8-MW01S-04	P0305388-07	5/20/03	5/22/03	6/03/03
MPT-8-MW19S-04	P0305388-08	5/20/03	5/22/03	6/03/03
MPT-8-DUP01-04	P0305388-09	5/20/03	5/22/03	6/03/03
MPT-8-EB01-04	P0305388-10	5/20/03	5/22/03	6/03/03
MPT-8-MW09S-04	P0305388-11	5/21/03	5/22/03	6/03/03
MPT-8-MW04S-04	P0305388-12	5/21/03	5/22/03	6/03/03

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Samples in SDG MPT-8-MW06S-04 were received at Microseeps on May 22, 2003. The samples were to be analyzed for Light Hydrocarbons, Permanent Gases and Hydrogen.
The analyses were conducted utilizing Analytical Method AM20GAX. Microseeps' Standard Operating Procedures for these methods were followed.
All samples were collected in the incorrect vials. Analyst added 21cc of nitrogen to each vial which would match normal collection procedure. All analyses were conducted without further anomalies.

Method Detection Limits
Dissolved Gases
Microseeps method
AM20GAX

Analyte	MDL
Methane	0.0005 ug/L
Ethane	.4 ng/L
Ethene	1.3 ng/L
Carbon Dioxide	0.27 mg/L
Nitrogen	0.004 mg/L
Oxygen	0.005 mg/L
Hydrogen	0.01 nM

Client Name:	TetraTech NUS, Inc.	Page:	Page 18 of 18
Contact:	Amy Thomson	Lab Project #:	P0305388
Address:	Foster Plaza 7	Report Date:	06/09/03
	661 Anderson Drive	Client Proj Name:	NAVSTA Mayport Jacksonville FL
		Client project #:	N4259 CTO 253
	Pittsburgh, PA 15220		

Case Narrative:See attached case narrative.

Case Narrative form

Batch numbers: various

Sample numbers: P0305388(1-12)

1.) **Out of Control Event:** All samples collected incorrectly. Evacuated vials w/ flat ~~#~~ septum were used, in place of vials at atmospheric pressure w/ N_2 and stoppered septum

Corrective Action Taken:

Analyst added 2cc of UHP N_2 to each vial (which would match normal collection procedure)

Result: Vials ready for analysis / Analysis OK

Observations to support use of data:

- each vial had two punctures, one to evacuate vial, one to add sample to the vial → therefore the need to add the N_2
- N_2 also added to make sure vials were able to hold sample

2.) **Out of Control Event:**

- All results should be considered "suspect" due to collection error

Corrective Action Taken:

Result:

Observations to support use of data:

Reviewed by: ML	**Date:** 6-4-03
Reviewed by:	**Date:**
Reviewed by:	**Date:**
Entered by:	**Date:**
Corrected by:	**Date:**

P0505200

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 052103B | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
N4259	CTO253 SWMU 7	Terry Hansen		
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
Charles Metz		Charles Metz	904-636-6125	
		CARRIER/WAYBILL NUMBER		CITY, STATE
		8371-1005-5617		Pittsburgh, PA

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G
PRESERVATIVE USED: None None
TYPE OF ANALYSIS: AMG20 GAX*

	DATE YEAR 2003	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAP (G) COMP (C)	No. OF CONTAINERS	AMG20	GAX*	COMMENTS
01	5-19	0930	MPT-8-MW06S-04				GW/Air	G	2	2		* Sampling for H^+, MEE, O_2, N_2, and CO_2
02	5-19	1135	MPT-8-MW18S-04					G	2	2		
03	5-19	1245	MPT-8-MW19S-04					G	2	2		
04	5-20	0945	MPT-5-MW02S-04					G	2	2		
05	5-20	1120	MPT-8-MW16S-04					G	2	2		
06	5-20	1305	MPT-5-MW03S-04					G	2	2		
07	5-20	1430	MPT-8-MW01S-04					G	2	2		
08	5-20	1600	MPT-8-MW19S-04					G	2	2		
09	5-20	0000	MPT-8-Dup01-04					G	2	2		
10	5-20	1200	MPT-8-EB01-04					G	2	2		
11	5-21	1225	MPT-8-MW09S-04					G	2	2		
12	5-21	1330	MPT-8-MW04S-04					G	2	2		

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Charles Metz	5-21-03	1600	1. RECEIVED BY [illegible]	5/22/03	10:15
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

Lab Project Summary

Lab Project Num: P0305388 **Received:** 5/22/03 **Report Due:** 6/6/03 **Lab Due:** 6/5/03

Client: TetraTech NUS, Inc.
661 Anderson Drive
Pittsburgh, PA 15220
Phone: 412-921-7090
Fax: 412-921-4040
E-mail:

Report Level: Standard QC Level 1
Quote #: Q02110012
Proj Mgr Amy Thomson

Client Project Name: NAVSTA Mayport Jacksonville FL

Lab Project Comment: Client requires QC data plus continuing and initial cal data. Report MDLs and J values.

Client Sample Name: MPT-8-MW06S-04
Sample Number: P0305388-01A
Sample Date/Time: 5/19/03 9:30:00AM
Sampled By:
Container Description: 20ml Air
Container Color: Clear
Container Composition: Glass

Container Volume: 20.00 ml
Container Preservative: NONE
Proposed Disposal Date: 6/30/03
Fraction Lab Created? No
Client Spike Requested? No
PH:

Comment: VAPOR VIALS RECD, NOT H2 VIALS FOR THIS PROJECT. ANALYZE ANYWAY AS PER CLIENT. Client requires data plus continuing and initial cal data. Report MDLs and J values

Test Pkg Name	Method	Lab	Subcontract(or)
RA Hydrogen by Bubble Strip	AM20GAX	Pittsburgh	None
RA Methane (C1) by Bubble Strip	AM20GAX	Pittsburgh	None
RA Permanent Gases by Bubble Stri	AM20GAX	Pittsburgh	None

Client Sample Name: MPT-8-MW18S-04
Sample Number: P0305388-02A
Sample Date/Time: 5/19/03 11:35:00AM
Sampled By:
Container Description: 20ml Air
Container Color: Clear
Container Composition: Glass

Container Volume: 20.00 ml
Container Preservative: NONE
Proposed Disposal Date: 6/30/03
Fraction Lab Created? No
Client Spike Requested? No
PH:

Comment: VAPOR VIALS RECD, NOT H2 VIALS FOR THIS PROJECT. ANALYZE ANYWAY AS PER CLIENT. Client requires data plus continuing and initial cal data. Report MDLs and J values

Test Pkg Name	Method	Lab	Subcontract(or)
RA Hydrogen by Bubble Strip	AM20GAX	Pittsburgh	None
RA Methane (C1) by Bubble Strip	AM20GAX	Pittsburgh	None
RA Permanent Gases by Bubble Stri	AM20GAX	Pittsburgh	None

CT0253
SDG P0305388
OUG
MBC

Lab Project Summary

Lab Project Num: P0305388 **Received:** 5/22/03 **Report Due:** 6/6/03 **Lab Due:** 6/5/03

Client Sample Name: MPT-8-MW17S-04
Sample Number: P0305388-03A
Sample Date/Time: 5/19/03 12:45:00PM
Sampled By:
Container Description: 20ml Air
Container Color: Clear
Container Composition: Glass
Container Volume: 20.00 ml
Container Preservative: NONE
Proposed Disposal Date: 6/30/03
Fraction Lab Created? No
Client Spike Requested? No
PH:
Comment: VAPOR VIALS RECD, NOT H2 VIALS FOR THIS PROJECT. ANALYZE ANYWAY AS PER CLIENT. Client requires data plus continuing and initial cal data. Report MDLs and J values

Test Pkg Name	Method	Lab	Subcontract(or)
RA Hydrogen by Bubble Strip	AM20GAX	Pittsburgh	None
RA Methane (C1) by Bubble Strip	AM20GAX	Pittsburgh	None
RA Permanent Gases by Bubble Stri	AM20GAX	Pittsburgh	None

Client Sample Name: MPT-S-MW02S-04
Sample Number: P0305388-04A
Sample Date/Time: 5/20/03 9:45:00AM
Sampled By:
Container Description: 20ml Air
Container Color: Clear
Container Composition: Glass
Container Volume: 20.00 ml
Container Preservative: NONE
Proposed Disposal Date: 6/30/03
Fraction Lab Created? No
Client Spike Requested? No
PH:
Comment: VAPOR VIALS RECD, NOT H2 VIALS FOR THIS PROJECT. ANALYZE ANYWAY AS PER CLIENT. Client requires data plus continuing and initial cal data. Report MDLs and J values

Test Pkg Name	Method	Lab	Subcontract(or)
RA Hydrogen by Bubble Strip	AM20GAX	Pittsburgh	None
RA Methane (C1) by Bubble Strip	AM20GAX	Pittsburgh	None
RA Permanent Gases by Bubble Stri	AM20GAX	Pittsburgh	None

Client Sample Name: MPT-8-MW16S-04
Sample Number: P0305388-05A
Sample Date/Time: 5/20/03 11:20:00AM
Sampled By:
Container Description: 20ml Air
Container Color: Clear
Container Composition: Glass
Container Volume: 20.00 ml
Container Preservative: NONE
Proposed Disposal Date: 6/30/03
Fraction Lab Created? No
Client Spike Requested? No
PH:
Comment: VAPOR VIALS RECD, NOT H2 VIALS FOR THIS PROJECT. ANALYZE ANYWAY AS PER CLIENT. Client requires data plus continuing and initial cal data. Report MDLs and J values

Test Pkg Name	Method	Lab	Subcontract(or)
RA Hydrogen by Bubble Strip	AM20GAX	Pittsburgh	None
RA Methane (C1) by Bubble Strip	AM20GAX	Pittsburgh	None
RA Permanent Gases by Bubble Stri	AM20GAX	Pittsburgh	None

Lab Project Summary

Lab Project Num: P0305388 **Received:** 5/22/03 **Report Due:** 6/6/03 **Lab Due:** 6/5/03

Client Sample Name: MPT-S-MW03S-04
Sample Number: P0305388-06A
Sample Date/Time: 5/20/03 1:05:00PM
Sampled By:
Container Description: 20ml Air
Container Color: Clear
Container Composition: Glass
Container Volume: 20.00 ml
Container Preservative: NONE
Proposed Disposal Date: 6/30/03
Fraction Lab Created? No
Client Spike Requested? No
PH:
Comment: VAPOR VIALS RECD, NOT H2 VIALS FOR THIS PROJECT. ANALYZE ANYWAY AS PER CLIENT. Client requires data plus continuing and initial cal data. Report MDLs and J values

Test Pkg Name	Method	Lab	Subcontract(or)
RA Hydrogen by Bubble Strip	AM20GAX	Pittsburgh	None
RA Methane (C1) by Bubble Strip	AM20GAX	Pittsburgh	None
RA Permanent Gases by Bubble Stri	AM20GAX	Pittsburgh	None

Client Sample Name: MPT-8-MW01S-04
Sample Number: P0305388-07A
Sample Date/Time: 5/20/03 2:30:00PM
Sampled By:
Container Description: 20ml Air
Container Color: Clear
Container Composition: Glass
Container Volume: 20.00 ml
Container Preservative: NONE
Proposed Disposal Date: 6/30/03
Fraction Lab Created? No
Client Spike Requested? No
PH:
Comment: VAPOR VIALS RECD, NOT H2 VIALS FOR THIS PROJECT. ANALYZE ANYWAY AS PER CLIENT. Client requires data plus continuing and initial cal data. Report MDLs and J values

Test Pkg Name	Method	Lab	Subcontract(or)
RA Hydrogen by Bubble Strip	AM20GAX	Pittsburgh	None
RA Methane (C1) by Bubble Strip	AM20GAX	Pittsburgh	None
RA Permanent Gases by Bubble Stri	AM20GAX	Pittsburgh	None

Client Sample Name: MPT-8-MW19S-04
Sample Number: P0305388-08A
Sample Date/Time: 5/20/03 4:00:00PM
Sampled By:
Container Description: 20ml Air
Container Color: Clear
Container Composition: Glass
Container Volume: 20.00 ml
Container Preservative: NONE
Proposed Disposal Date: 6/30/03
Fraction Lab Created? No
Client Spike Requested? No
PH:
Comment: VAPOR VIALS RECD, NOT H2 VIALS FOR THIS PROJECT. ANALYZE ANYWAY AS PER CLIENT. Client requires data plus continuing and initial cal data. Report MDLs and J values

Test Pkg Name	Method	Lab	Subcontract(or)
RA Hydrogen by Bubble Strip	AM20GAX	Pittsburgh	None
RA Methane (C1) by Bubble Strip	AM20GAX	Pittsburgh	None
RA Permanent Gases by Bubble Stri	AM20GAX	Pittsburgh	None

Lab Project Summary

Lab Project Num: P0305388 **Received:** 5/22/03 **Report Due:** 6/6/03 **Lab Due:** 6/5/03

Client Sample Name: MPT-8-DUP01-4
Sample Number: P0305388-09A
Sample Date/Time: 5/20/03 12:00:01AM
Sampled By:
Container Description: 20ml Air
Container Color: Clear
Container Composition: Glass
Container Volume: 20.00 ml
Container Preservative: NONE
Proposed Disposal Date: 6/30/03
Fraction Lab Created? No
Client Spike Requested? No
PH:
Comment: VAPOR VIALS RECD, NOT H2 VIALS FOR THIS PROJECT. ANALYZE ANYWAY AS PER CLIENT. Client requires data plus continuing and initial cal data. Report MDLs and J values

Test Pkg Name	Method	Lab	Subcontract(or)
RA Hydrogen by Bubble Strip	AM20GAX	Pittsburgh	None
RA Methane (C1) by Bubble Strip	AM20GAX	Pittsburgh	None
RA Permanent Gases by Bubble Strip	AM20GAX	Pittsburgh	None

Client Sample Name: MPT-8-EB01-04
Sample Number: P0305388-10A
Sample Date/Time: 5/20/03 12:00:00PM
Sampled By:
Container Description: 20ml Air
Container Color: Clear
Container Composition: Glass
Container Volume: 20.00 ml
Container Preservative: NONE
Proposed Disposal Date: 6/30/03
Fraction Lab Created? No
Client Spike Requested? No
PH:
Comment: VAPOR VIALS RECD, NOT H2 VIALS FOR THIS PROJECT. ANALYZE ANYWAY AS PER CLIENT. Client requires data plus continuing and initial cal data. Report MDLs and J values

Test Pkg Name	Method	Lab	Subcontract(or)
RA Hydrogen by Bubble Strip	AM20GAX	Pittsburgh	None
RA Methane (C1) by Bubble Strip	AM20GAX	Pittsburgh	None
RA Permanent Gases by Bubble Strip	AM20GAX	Pittsburgh	None

Client Sample Name: MPT-8-MW09S-04
Sample Number: P0305388-11A
Sample Date/Time: 5/21/03 12:25:00PM
Sampled By:
Container Description: 20ml Air
Container Color: Clear
Container Composition: Glass
Container Volume: 20.00 ml
Container Preservative: NONE
Proposed Disposal Date: 6/30/03
Fraction Lab Created? No
Client Spike Requested? No
PH:
Comment: VAPOR VIALS RECD, NOT H2 VIALS FOR THIS PROJECT. ANALYZE ANYWAY AS PER CLIENT. Client requires data plus continuing and initial cal data. Report MDLs and J values

Test Pkg Name	Method	Lab	Subcontract(or)
RA Hydrogen by Bubble Strip	AM20GAX	Pittsburgh	None
RA Methane (C1) by Bubble Strip	AM20GAX	Pittsburgh	None
RA Permanent Gases by Bubble Strip	AM20GAX	Pittsburgh	None

Lab Project Summary

Lab Project Num: P0305388 **Received:** 5/22/03 **Report Due:** 6/6/03 **Lab Due:** 6/5/03

Client Sample Name: MPT-8-MW04S-04
Sample Number: P0305388-12A
Sample Date/Time: 5/21/03 1:30:00PM
Sampled By:
Container Description: 20ml Air
Container Color: Clear
Container Composition: Glass
Container Volume: 20.00 ml
Container Preservative: NONE
Proposed Disposal Date: 6/30/03
Fraction Lab Created? No
Client Spike Requested? No
PH:
Comment: VAPOR VIALS RECD, NOT H2 VIALS FOR THIS PROJECT. ANALYZE ANYWAY AS PER CLIENT. Client requires data plus continuing and initial cal data. Report MDLs and J values

Test Pkg Name	Method	Lab	Subcontract(or)
RA Hydrogen by Bubble Strip	AM20GAX	Pittsburgh	None
RA Methane (C1) by Bubble Strip	AM20GAX	Pittsburgh	None
RA Permanent Gases by Bubble Stri	AM20GAX	Pittsburgh	None

Cooler Receipt Form

Client: TetraTech NUS, Inc. **Client Code:** TetraTechP **Order #:** P0305388
Project: NAVSTA Mayport Jacksonville FL

Cooler ID: 1

A. Preliminary Examination Phase: **Date cooler opened:** 5/22/03
Cooler opened by: CW **Signature:** CWashlash

1. **Was airbill Attached?** Yes **Airbill #:** 837110055617 **Carrier Name:** FedEx
2. **Custody Seals?** Yes **How many?** 1 **Location:** cooler top **Seal Name:** TT
3. **Seals intact?** Yes
4. **Screened for radiation?** N/A
5. **COC Attached?** Yes **Properly Completed?** Yes **Signed by AEL employee?** Yes
6. **Project Identification from custody paper:** NAVSTA Mayport Jacksonville FL
7. **Preservative:** Yes **Temperature:** 4

Have designate person initial here to aknowlege receipt of cooler: CW **Date:** 5/22/03

Comments:

B. Log-In Phase: Samples Log-in Date: 5/22/03 **Log-in By:** CW **Signature:** CWashlash

1. **Packing Type:** Bubble Wrap
2. **Were samples in separate bags?** Yes
3. **Were containers intact?** Yes **Labels agree with COC?** Yes
4. **Number of bottles received:** 24 **Number of samples received:** 12
5. **Correct containers used?** ~~Yes~~ NO CW 5/22/03 see non-conformance sheet **Correct preservatives added?** N/A
6. **Sufficient sample volume?** Yes
7. **Bubbles in VOA samples?** No
8. **Was Project manager called and status discussed?** N/A
9. **Was anyone called?** No **Who was called?** _____ **By whom?** _____ **Date:** _____

Comments:

NON-CONFORMANCE FORM

Date: 5/22/03 Receiver: CWashbash Time of Receipt: 10:15

Client: Tetra Tech NUS Number of Samples out of Conformance: _____

REASONS FOR NON-CONFORMANCE

- ☐ Samples received past holding time
- ☐ Broken bottles
- ☒ Incorrect containers
- ☐ Incorrect preservative
- ☐ Sample ID different from COC
- ☐ Labels missing or unreadable
- ☐ Analysis not written on COC
- ☒ Sample received not on COC
- ☒ Sample on COC not received
- ☐ Hold time not observed internally

Description:

– all vapor vials & 1 back-up (w). NO H_2 bubble strip vials.

– recd MPT-8-MW17S-04 5/19/03 @ 12:45

– did not rec. MPT-8-MW19S-04 5/19/03 @12:45.

Remarks:

Assistant Laboratory Director Initials: _____ Date: _____ (See other side for resolution)

(Customer Service to complete below)

Microseeps Project Number: _____

Action Taken: _____

☐ Client Contacted Date: 5/22 Time: 12:43

X Contact Name: TERRY HANSEN

Result: TERRY WILL CHECK W/ALAN PATE + CALL BACK
OK TO ANALYZE FROM VAPOR VIAL.

SAMPLE ID ON COC MPT-8-MW19S-04 5/19 12:45
SHOULD BE MPT-8-MW17S-04 PER ALAN PATE

☐ Attempted Contact Date: _____ Time: _____

Message: _____

☐ Not necessary to contact client

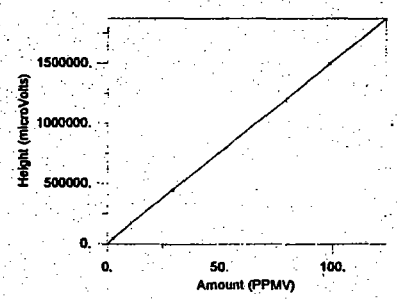
Take the following action: _____

Customer Service Initials: CM Date: 5/22/03

1 METHANE

Retention time = 0.520 min., Search window = 0.050 min.
Low alarm amount = 0, High alarm amount = 0
Group number = 0, Component constant = 1
No retention time reference component
Single peak quantification by height

Level	Amount	Height	Height/Amt	Source	Date and time
1	2.960	47328.0	15989.19	Manual	4/5/2003 3:31:37
2	29.600	437531.0	14781.45	Manual	4/5/2003 3:31:37
3	98.670	1497729.0	15179.17	Manual	4/5/2003 3:31:37

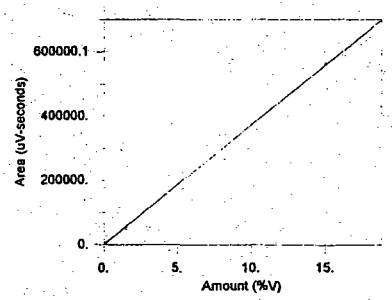


Calibration formula: Y = 15147.03 X
Fit type = Linear with equal weighting, forced to origin
Coefficient of determination = 0.9999, Average error = 2.73%
Average CF = 15316.6000 with RSD = 4.02%

1 CARBON DIOXIDE

Retention time = 5.150 min., Search window = 0.500 min.
Low alarm amount = 0, High alarm amount = 0
Group number = 0, Component constant = 1
No retention time reference component
Single peak quantification by area

Level	Amount	Area	Area/Amt	Source	Date and time
1	0.150	5121.0	34140	Manual	4/24/2003 12:44:
2	1.500	51019.0	34012.67	Manual	4/24/2003 12:44:
3	7.500	273815.0	36508.67	Manual	4/24/2003 1:00:1
4	15.000	560682.0	37378.8	Manual	4/24/2003 12:44:

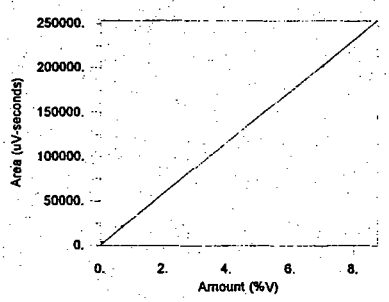


Calibration formula: Y = 37179.2 X
Fit type = Linear with equal weighting, forced to origin
Coefficient of determination = 0.9997, Average error = 4.76%
Average CF = 35510.0400 with RSD = 4.77%

2 OXYGEN

Retention time = 6.450 min., Search window = 0.350 min.
Low alarm amount = 0, High alarm amount = 0
Group number = 0, Component constant = 1
No retention time reference component
Single peak quantification by area

Level	Amount	Area	Area/Amt	Source	Date and time
1	0.070	2921.0	41728.57	Manual	4/24/2003 12:44:
2	0.700	20930.0	29900	Manual	4/24/2003 12:44:
3	3.500	100859.0	28816.86	Manual	4/24/2003 1:00:1
4	7.000	203062.0	29008.86	Manual	4/24/2003 12:44:

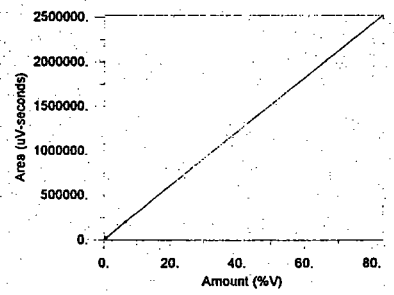


Calibration formula: Y = 28978.85 X
Fit type = Linear with equal weighting, forced to origin
Coefficient of determination = 0.9999, Average error = 11.96%
Average CF = 32363.5700 with RSD = 19.35%

3 NITROGEN

Retention time = 7.150 min., Search window = 0.700 min.
Low alarm amount = 0, High alarm amount = 0
Group number = 0, Component constant = 1
No retention time reference component
Single peak quantification by area

Level	Amount	Area	Area/Amt	Source	Date and time
1	0.665	23747.0	35709.77	Manual	4/24/2003 12:44:
2	6.650	205142.0	30848.42	Manual	4/24/2003 12:44:
3	33.250	1003964.0	30194.41	Manual	4/24/2003 1:00:1
4	66.500	2018393.0	30351.78	Manual	4/24/2003 12:44:

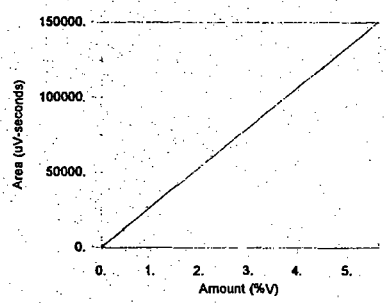


Calibration formula: Y = 30324.92 X
Fit type = Linear with equal weighting, forced to origin
Coefficient of determination = 1.0000, Average error = 5.00%
Average CF = 31776.0900 with RSD = 8.30%

4 METHANE

Retention time = 9.960 min., Search window = 0.500 min.
Low alarm amount = 0, High alarm amount = 0
Group number = 0, Component constant = 1
No retention time reference component
Single peak quantification by area

Level	Amount	Area	Area/Amt	Source	Date and time
1	0.045	1190.0	26444.44	Manual	4/24/2003 12:44:
2	0.450	11893.0	26428.89	Manual	4/24/2003 12:44:
3	2.250	60196.0	26753.78	Manual	4/24/2003 1:00:1
4	4.500	120109.0	26690.89	Manual	4/24/2003 12:44:

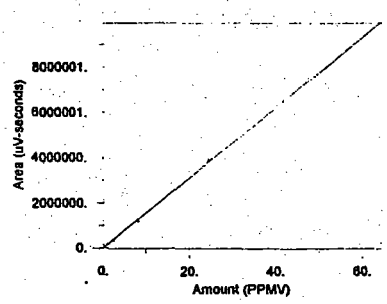


Calibration formula: Y = 26701.27 X
Fit type = Linear with equal weighting, forced to origin
Coefficient of determination = 1.0000, Average error = 0.55%
Average CF = 26579.5000 with RSD = 0.63%

1 HYDROGEN

Retention time = 4.400 min., Search window = 0.450 min.
Low alarm amount = 0, High alarm amount = 0
Group number = 0, Component constant = 1
No retention time reference component
Single peak quantification by area

Level	Amount	Area	Area/Amt	Source	Date and time
1	0.247	38662.0	156526.3	Manual	4/24/2003 5:41:2
2	2.470	364303.0	147491.1	Manual	4/24/2003 5:41:2
3	8.230	1225552.0	148912.8	Manual	4/24/2003 5:41:2
4	24.700	3898249.0	157823.8	Manual	4/24/2003 5:41:2
5	51.450	7983203.0	155164.3	Manual	4/24/2003 5:41:2

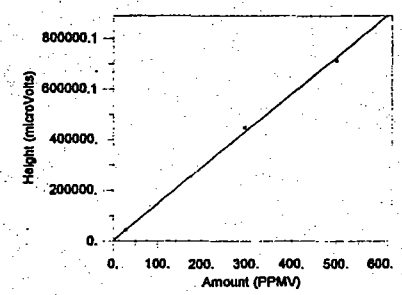


Calibration formula: Y = 155510.3 X
Fit type = Linear with equal weighting, forced to origin
Coefficient of determination = 0.9998, Average error = 2.35%
Average CF = 153183.7000 with RSD = 3.05%

1 METHANE

Retention time = 0.520 min., Search window = 0.050 min.
Low alarm amount = 0, High alarm amount = 0
Group number = 0, Component constant = 1
No retention time reference component
Single peak quantification by height

Level	Amount	Height	Height/Amt	Source	Date and time
1	29.600	43692.0	1476.081	Manual	1/21/2003 1:43:3
2	296.000	446682.0	1509.061	Manual	1/21/2003 1:43:3
3	500.000	712722.0	1425.444	Manual	1/21/2003 3:58:3



Calibration formula: Y = 1447.219 X
Fit type = Linear with equal weighting, forced to origin
Coefficient of determination = 0.9980, Average error = 2.59%
Average CF = 1470.1950 with RSD = 2.86%

Client Name: TetraTech NUS, Inc.
Contact: Amy Thomson
Address: Foster Plaza 7
661 Anderson Drive

Pittsburgh, PA 15220

Lab Project #: P0305388
Report Date: 06/09/03
Client Proj Name: NAVSTA Mayport Jacksonville FL
Client project #: N4259 CTO 253

Prep Method: Methane by Bubble Strip/ GC-FID/TCD/RGD
Analysis Method: Methane by Bubble Strip/ GC-FID/TCD/RGD

M030603022-MB

	Result		TrueSpikeConc.	RDL	%Recovery	Ctl Limits
Methane	< 0.02	ug/L		0.02		- NA

M030603022-LCS

			TrueSpikeConc.	%Recovery	Ctl Limits
Methane	320	ug/L	296.00	108	80 - 120

M030603022-LCSD

			TrueSpikeConc.	%Recovery	Ctl Limits	RPD	RPD Ctl Limits
Methane	320	ug/L	296.00	108	80 - 120	0.00	0 - 20

Outlined Results indicate results outside of Control limits

Client Name: TetraTech NUS, Inc.
Contact: Amy Thomson
Address: Foster Plaza 7
661 Anderson Drive

Pittsburgh, PA 15220

Lab Project #: P0305388
Report Date: 06/09/03
Client Proj Name: NAVSTA Mayport Jacksonville FL
Client project #: N4259 CTO 253

Prep Method: Permanent Gases by Bubble Strip
Analysis Method: Permanent Gases by Bubble Strip

M030603023-MB

	Result		TrueSpikeConc.	RDL	%Recovery	Ctl Limits
Carbon dioxide	< 0.60	mg/L		0.60		- NA
Oxygen	< 0.15	mg/L		0.15		- NA
Nitrogen	< 0.40	mg/L		0.40		- NA

M030603023-LCS

			TrueSpikeConc.	%Recovery	Ctl Limits
Carbon dioxide	5.3	mg/L	4.99	106	80 - 120
Oxygen	2.1	mg/L	1.99	106	80 - 120

M030603023-LCSD

			TrueSpikeConc.	%Recovery	Ctl Limits	RPD	RPD Ctl Limits
Carbon dioxide	5.3	mg/L	4.99	106	80 - 120	0.00	0 - 20
Oxygen	2.1	mg/L	1.99	106	80 - 120	0.00	0 - 20

[ ] Outlined Results indicate results outside of Control limits

Client Name: TetraTech NUS, Inc.
Contact: Amy Thomson
Address: Foster Plaza 7
661 Anderson Drive

Pittsburgh, PA 15220

Lab Project #: P0305388
Report Date: 06/09/03
Client Proj Name: NAVSTA Mayport Jacksonville FL
Client project #: N4259 CTO 253

Prep Method: Hydrogen by Bubble Strip
Analysis Method: Hydrogen by Bubble Strip

M030603024-MB

	Result		TrueSpikeConc.	RDL	%Recovery	Ctl Limits
Hydrogen	< 0.030	nM		0.030		- NA

M030603024-LCS

			TrueSpikeConc.	%Recovery	Ctl Limits
Hydrogen	21	nM	24.70	85	79 - 118

M030603024-LCSD

			TrueSpikeConc.	%Recovery	Ctl Limits	RPD	RPD Ctl Limits
Hydrogen	21	nM	24.70	85	79 - 118	0.00	0 - 20

Outlined Results indicate results outside of Control limits

Client Name: TetraTech NUS, Inc.
Contact: Amy Thomson
Address: Foster Plaza 7
661 Anderson Drive

Pittsburgh, PA 15220

Lab Project #: P0305388
Report Date: 06/09/03
Client Proj Name: NAVSTA Mayport Jacksonville FL
Client project #: N4259 CTO 253

Prep Method: Light Hydrocarbons by Bubble Strip/GC-FID/TCD/RGD
Analysis Method: Light Hydrocarbons by Bubble Strip/GC-FID/TCD/RGD

M030605033-MB

	Result		TrueSpikeConc.	RDL	%Recovery	Ctl Limits
Ethane	< 5.0	ng/L		5.0		- NA
Ethene	< 5.0	ng/L		5.0		- NA

M030605033-LCS

			TrueSpikeConc.	%Recovery	Ctl Limits
Ethane	100	ng/L	100.00	100	87 - 112
Ethene	100	ng/L	99.00	101	83 - 120

M030605033-LCSD

			TrueSpikeConc.	%Recovery	Ctl Limits	RPD	RPD Ctl Limits
Ethane	100	ng/L	100.00	100	87 - 112	0.00	0 - 20
Ethene	100	ng/L	99.00	101	83 - 120	0.00	0 - 20

[ ] Outlined Results indicate results outside of Control limits

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE ____ OF ____

CLIENT NS Mayport CTO-253		JOB NUMBER Job-4259 SDG-P6305388	
SUBJECT Sample Calculation			
BASED ON		DRAWING NUMBER	
BY Bernard F Spada III	CHECKED BY	APPROVED BY VAd 7-18-03	DATE 16-July 03

Sample MPT-8-DOP01-04 Methane = 11000 ug/L

$$\text{Methane} = \frac{551048.5}{2670127} = 20.6375\ \%V$$

$$(20.6375)(524) = 10814\ \text{ug/L}$$

Slope = 3.743×10^{-5}
Int. = 0.001214

$$y = mx + b$$

$$= (3.743 \times 10^{-5})(551048.5) + 0.001214$$

$$20.627$$

Client Name: TetraTech NUS, Inc.
Contact: Amy Thomson
Address: Foster Plaza 7
661 Anderson Drive

Pittsburgh, PA 15220

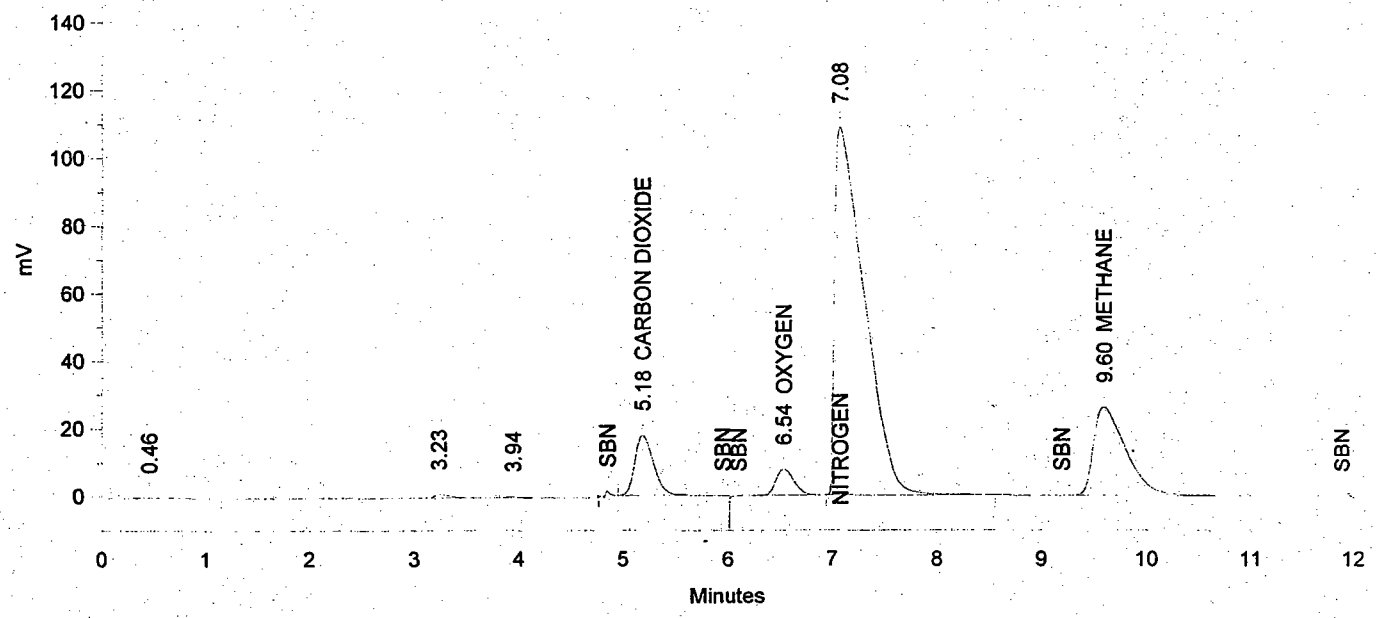
Lab Project #: P0305388
Report Date: 06/09/03
Client Proj Name: NAVSTA Mayport Jacksonville FL
Client project #: N4259 CTO 253

Lab Sample #: P0305388-09

Sample Description	Matrix	Sampled Date/Time	Received
MPT-8-DUP01-04	Vapor	20 May. 03	22 May. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Carbon dioxide	210	0.60	mg/L	AM20GAX	mm	6/3/03
Ethane	< 5.0	5.0	ng/L		mm	6/3/03
Ethene	< 5.0	5.0	ng/L		mm	6/3/03
Hydrogen	1.9	0.030	nM		mm	6/3/03
Methane	11000	0.02	ug/L		mm	6/3/03
Nitrogen	5.3	0.40	mg/L		mm	6/3/03
Oxygen	3.2	0.15	mg/L		mm	6/3/03

P0305388-09



Sample Name: **P0305388-09**
Acquired from BIOREM 1--TCD via port 2 on 6/3/03 01:19:07pm by MM
header 1 for chan 1B
header 2 for chan 1B

Data File: **C:\CPWIN\T73\T73B.16R**
Date Stamp: 6/3/03 01:19:06pm
Sequence File: T73A.SEQ #16
Method File: C:\CPWIN\T73\T73BV1.MET
Version 1. Date Stamp: 6/3/03 08:53:24am
Calibration File: C:\CPWIN\T73\T73BV1.CAL
Version 1. Date Stamp: 6/3/03 08:50:38am

Run Time = 12.0 min Sample Rate = 3.0 per sec.
Amount Inj. = 0.000 Dilution Factor = 0.000
Sample Weight = 0.000 Int Std Amount = 0.000

Starting Peak Width = 0.07 min. Peak Threshold = 3 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.457		0.0180	0.018	667.6	0.022	BB	0.122	91.31	0.057
2	3.233		0.2802	0.280	10417.4	0.347	BV	0.164	1059.47	0.658
3	3.944		0.0835	0.083	3103.5	0.103	VB	0.163	316.64	0.197
4	5.183	CARBON DIOXIDE	5.8128	5.799	216117.0	7.196	BB	0.204	17622.51	10.952
5	6.536	OXYGEN	3.1880	3.180	92385.0	3.076	BV	0.201	7645.03	4.751
6	7.083	NITROGEN	70.2250	70.053	2129569.0	70.907	VB	0.328	108237.90	67.264
7	9.599	METHANE	20.6375	20.587	551048.5	18.348	BB	0.354	25941.09	16.121

Total Area = 3003308.0, Total Amount = 100.245, Total Height = 160914.0, Sample Units = %V

Table 7.1
Conversion Factors

Analyte	Vapor Units	Conversion Factor	Water Units
Hydrogen	ppmv	1.98	nm*
Carbon Dioxide	% by volume	36.6	mg/L
Oxygen	% by volume	0.998	mg/L
Nitrogen	% by volume	0.444	mg/L
**Methane	% by volume	524	µg/L
Methane	ppmv	0.0524	µg/L
Ethane	ppmv	136	ng/L
Ethene	ppmv	329	ng/L
Propane	ppmv	151	ng/L
Propene	ppmv	482	ng/L
i-butane	ppmv	121	ng/L
n-butane	ppmv	148	ng/L

* nM (nanomoles per liter) is the industry standard unit for hydrogen.
~~**High level methane is quantified off of the TCD as %~~ volume.

8.0 Sampling Safety

All sampling shall be conducted in accordance with the site-specific Health and Safety Plan. The specific safety issue with the Bubble Strip Sampling Method is handling needles with care. Needles shall always be capped when not in use and when being handled, especially when being transferred between persons. When placing a cap on a needle it is important to not hold the cap, but place the cap on a solid object and then slide the needle into the cap.

9.0 Waste Disposal

All sampling waste disposal shall be in accordance with the site-specific Work Plan.

10.0 References

Cao, X.L., Hewitt, C.N., Waterhouse, K.S., Determination of Reactive Hydrocarbons by Capillary Gas Chromatography with the Reduction Gas Detector. Journal of Chromatography A. May 1994.

Microseeps

P0305388,P0305389

Sample Names	Carbon Dioxide mg/l	Oxygen mg/l	Nitrogen mg/l	Methane ug/l	Ethane ng/l	Ethylene ng/l	Hydrogen nM	Date Analyzed	Analyst
P0305388-01	10.07	5.41	15.83	0.105	3	13	0.21	6/3/03	MM
P0305388-02	34.73	2.13	16.87	116.248	5	8	0.39	6/3/03	MM
P0305388-03	57.65	2.31	15.96	687.538	0	0	0.37	6/3/03	MM
P0305388-04	66.54	3.01	12.91	3873.884	195	0	1.08	6/3/03	MM
P0305388-05	210.67	2.88	5.06	11294.900	0	0	1.99	6/3/03	MM
P0305388-06	56.07	4.26	15.56	56.553	1006	13	0.48	6/3/03	MM
P0305388-07	7.39	3.50	16.62	175.943	13	5	0.40	6/3/03	MM
P0305388-08	7.80	6.85	14.95	0.418	2	16	0.30	6/3/03	MM
P0305388-09	212.76	3.18	5.29	10806.868	0	0	1.92	6/3/03	MM
P0305388-10	0.70	9.76	14.13	0.104	2	12	0.54	6/3/03	MM
P0305388-11	81.91	3.54	15.03	646.171	0	2	2.20	6/3/03	MM
P0305388-12	186.77	1.82	6.50	10459.695	0	0	2.50	6/3/03	MM
P0305389-01	51.86			10.403	13	48	2.20	6/3/03	MM
P0305389-02	152.37			7.315	8	14	2.63	6/3/03	MM
P0305389-03	142.19			6.621	8	17	2.77	6/3/03	MM
P0305389-04	83.70			16.161	265	9	1.76	6/3/03	MM
P0305389-05	1.39			0.045	1	8	1.30	6/3/03	MM
DETECTION LIMITS	0.60mg/l	0.15mg/l	0.40mg/l	0.015ug/l	5ng/l	5ng/l	0.03nM		

ANALYST MM.

REVIEW_____

Microseeps

Data Work-Up Sheet

P0305388,P0305389

Sample Name	Carbon Dioxide %	Oxygen %	Nitrogen %	Net Nitrogen %	Methane %	Methane PPMV	Ethane PPMV	Ethylene PPMV	Hydrogen PPMV	Date Analyzed	Analyst
P0305388-01	0.28	5.42	94.00	85.61		2.01	0.02	0.04	0.11	6/3/03	MM
P0305388-02	0.95	2.14	96.35	91.24	0.22		0.04	0.02	0.20	6/3/03	MM
P0305388-03	1.58	2.31	94.30	86.32	1.31		0.00	0.00	0.19	6/3/03	MM
P0305388-04	1.82	3.02	87.43	69.85	7.40		1.43	0.00	0.56	6/3/03	MM
P0305388-05	5.76	2.88	69.71	27.36	21.57		0.00	0.00	1.04	6/3/03	MM
P0305388-06	1.53	4.27	93.39	84.15	0.11		7.39	0.04	0.25	6/3/03	MM
P0305388-07	0.20	3.51	95.80	89.94	0.34		0.09	0.02	0.21	6/3/03	MM
P0305388-08	0.21	6.86	92.02	80.86		7.98	0.02	0.05	0.16	6/3/03	MM
P0305388-09	5.81	3.19	70.23	28.60	20.64		0.00	0.00	1.00	6/3/03	MM
P0305388-10	0.02	9.78	90.17	76.42		2.00	0.01	0.04	0.28	6/3/03	MM
P0305388-11	2.24	3.55	92.21	81.32	1.23		0.00	0.01	1.15	6/3/03	MM
P0305388-12	5.10	1.82	72.97	35.17	19.98		0.00	0.00	1.30	6/3/03	MM
P0305389-01	1.42					198.67	0.10	0.15	1.15	6/3/03	MM
P0305389-02	4.16					139.69	0.06	0.04	1.37	6/3/03	MM
P0305389-03	3.89					126.44	0.06	0.05	1.44	6/3/03	MM
P0305389-04	2.29					308.64	1.94	0.03	0.92	6/3/03	MM
P0305389-05	0.04					0.85	0.01	0.02	0.68	6/3/03	MM

ANALYST INITIALS

REVIEW_____

METHOD DETECTION LIMITS - BIOREM 1

	Lab ID	Hydrogen	Date Analyzed
REP. #		(PPMV)	01/31/03
1	T68 370	0.106	
2	T68 371	0.087	
3	T68 372	0.088	
4	T68 373	0.086	
5	T68 374	0.103	
6	T68 375	0.094	
7	T68 376	0.113	
AVERAGE		0.097	
KNOWN		0.049	
STD DEV		0.011	
MDL (VAPOR)		0.03	
MDL (BUBBLE)		0.02nM	
MDL (H2O)		0.44nM	

		Carbon	Oxygen	Nitrogen	Methane	Carbon	Date Analyzed
	Lab ID	Dioxide				Monoxide	01/23/03
REP. #		(%v)	(%v)	(%v)	(%v)	(%v)	
1	T68 224	0.124	0.067	0.583	0.048	0.077	
2	T68 225	0.122	0.066	0.564	0.036	0.083	
3	T68 226	0.114	0.063	0.567	0.044	0.074	
4	T68 227	0.125	0.059	0.566	0.040	0.070	
5	T68 228	0.113	0.064	0.563	0.038	0.071	
6	T68 229	0.117	0.074	0.574	0.049	0.088	
7	T68 230	0.130	0.069	0.576	0.046	0.068	
AVERAGE		0.121	0.066	0.570	0.043	0.076	
KNOWN		0.150	0.070	0.665	0.045	0.070	
STD. DEV.		0.006	0.005	0.007	0.005	0.007	
MDL (VAPOR)		0.02	0.01	0.02	0.02	0.02	
MDL (BUBBLE)		0.30 mg/L	0.004 mg/L	0.004 mg/L	0.004 mg/L	0.003 mg/L	
MDL (H2O)		0.43 mg/L	0.05 mg/L	0.08 mg/L	0.05 mg/L	0.08 mg/L	

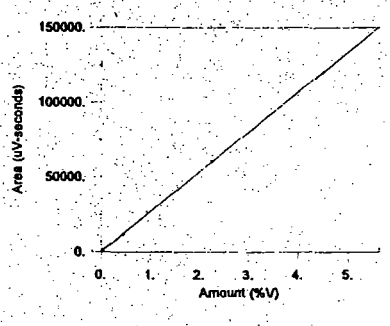
	Lab ID	Methane	Ethane	Ethylene	Propane	Lab ID	Propylene	Iso-Butane	N-Butane	Date Analyzed
REP. #		(PPMV)	(PPMV)	(PPMV)	(PPMV)		(PPMV)	(PPMV)	(PPMV)	01/30/03
1	T68 347	0.193	0.048	0.047	0.046	T68 354	0.092	0.097	0.100	
2	T68 348	0.199	0.052	0.057	0.054	T68 355	0.092	0.098	0.095	
3	T68 349	0.204	0.048	0.053	0.051	T68 356	0.102	0.101	0.103	
4	T68 350	0.200	0.052	0.047	0.055	T68 357	0.100	0.083	0.097	
5	T68 351	0.205	0.052	0.054	0.053	T68 358	0.097	0.108	0.107	
6	T68 352	0.211	0.052	0.050	0.052	T68 359	0.099	0.102	0.102	
7	T68 353	0.210	0.047	0.047	0.051	T68 360	0.104	0.100	0.096	
AVERAGE		0.203	0.050	0.051	0.052		0.098	0.096	0.100	
KNOWN		0.150	0.050	0.050	0.050		0.100	0.100	0.100	
STD DEV		0.006	0.002	0.004	0.003		0.005	0.008	0.004	
MDL (VAPOR)		0.02	0.01	0.01	0.01		0.01	0.02	0.01	
MDL (BUBBLE)		0.0004 ug/L	0.6 ng/L	1.4ng/L	0.6 ng/L		2.0 ng/L	1.0 ng/L	0.6 ng/L	
MDL (H2O)		0.005 ug/L	5 ng/L	5 ng/L	8 ng/L		8 ng/L	17 ng/L	9 ng/L	

MDL= 3.143*STD DEV OF 7 REPLICATES

4 METHANE

Retention time = 9.960 min., Search window = 0.500 min.
Low alarm amount = 0, High alarm amount = 0
Group number = 0, Component constant = 1
No retention time reference component
Single peak quantification by area

Level	Amount	Area	Area/Amt	Source	Date and time
1	0.045	1190.0	26444.44	Manual	4/24/2003 12:44:
2	0.450	11893.0	26428.89	Manual	4/24/2003 12:44:
3	2.250	60196.0	26753.78	Manual	4/24/2003 1:00:1
4	4.500	120109.0	26690.89	Manual	4/24/2003 12:44:



Calibration formula: Y = 26701.27 X
Fit type = Linear with equal weighting, forced to origin
Coefficient of determination = 1.0000, Average error = 0.55%
Average CF = 26579.5000 with RSD = 0.63%

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**T. HANSEN**	**DATE:**	**JULY 18, 2003**
FROM:	**BERNARD F SPADA III**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – METALS AND MISCELLANEOUS PARAMETERS**
CTO-253 NS MAYPORT
SAMPLE DELIVERY GROUP (SDG) – 31819

SAMPLES: 7/Aqueous

MPT-5-MW02S-04	MPT-5-MW03S-04	MPT-8-DUP01-04
MPT-8-EB01-04*	MPT-8-MW01S-04	MPT-8-MW16S-04
MPT-8-MW19S-04*		

Overview

The sample set for CTO 253, NS Mayport, SDG 31819, consists of five (5) environmental aqueous samples, one (1) equipment blank, and one (1) field duplicate. The field duplicate pair included in this SDG is MPT-8-DUP01-04 and MPT-8-MW16S-04.

All samples were analyzed for iron, manganese, alkalinity, ammonia, chloride, nitrate, nitrite, nitrate/nitrite, orthophosphate, sulfate, and TOC. The samples denoted with an asterisk was also analyzed for dissolved organic carbon (DOC). The samples were collected by TetraTech NUS on May 20, 2003 and analyzed by ENCO Laboratories under Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Metals analyses were conducted using EPA Method 200.7. Alkalinity analyses were conducted using EPA Method 310.1. Ammonia analyses were conducted using EPA Method 350.1. Chloride analyses were conducted using EPA Method 325.3. Nitrate and Nitrate/Nitrite analyses were conducted using EPA Method 353.1. Nitrite analyses were conducted using EPA Method 354.1. Orthophosphate analyses were conducted using EPA Method 365.3. Sulfate analyses were conducted using EPA Method 375.4. TOC analyses were conducted using EPA Method 415.1.

These data were evaluated based on the following parameters:

- Data Completeness
- * Holding Times
- * Field Duplicate Precision
- * Blank Spike Recovery
- * Matrix Spike/Matrix Spike Duplicate Recovery
- * Detection Limits

* - All quality control criteria were met for this parameter.

Matrix Spike/Matrix Spike Duplicate

The MS/MSD percent recovery was not calculated for ammonia because the concentration of ammonia in the un-spiked sample was greater than the amount spiked. No qualifications were made on this basis.

Additional Comments

The laboratory provided only Form I's and LCS/MS/MSD recovery forms.

The variance of results for nitrate and nitrate/nitrite exceeded the >2X RL control criteria in the field duplicate pair. The results for the aforementioned analytes were qualified as estimated (J, UJ) in the field duplicate pair.

Several results in the EDD did not match the Form I's. The results from the Form I's were added to the database and used for validation.

Executive Summary

Laboratory Performance: The laboratory did not provide a full data package.

Other Factors Affecting Data Quality: Qualifications were made based on field duplicate imprecision.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994 and the NFESC document entitled "Navy IRCDQM" (September 1999).

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Bernard F. Spada III

Tetra Tech NUS
Bernard F. Spada III
Environmental Scientist

TetraTech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is less than sample activity

PROJ_NO: 4259

SDG: 31819 MEDIA: WATER DATA FRACTION: M

nsample	MPT-5-MW02S-04
samp_date	5/20/2003
lab_id	JAX31819-2
qc_type	NM
units	MG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
IRON	1.3		
MANGANESE	0.05	U	

nsample	MPT-5-MW03S-04
samp_date	5/20/2003
lab_id	JAX31819-4
qc_type	NM
units	MG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
IRON	0.92		
MANGANESE	0.11		

nsample	MPT-8-DUP01-04
samp_date	5/20/2003
lab_id	JAX31819-1
qc_type	NM
units	MG/L
Pct_Solids	0
DUP_OF:	MPT-8-MW16S-04

Parameter	Result	Val Qual	Qual Code
IRON	14.0		
MANGANESE	0.28		

PROJ_NO: 4259

SDG: 31819 MEDIA: WATER DATA FRACTION: M

nsample	MPT-8-EB01-04
samp_date	5/20/2003
lab_id	JAX31819-5
qc_type	NM
units	MG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
IRON	0.1	U	
MANGANESE	0.05	U	

nsample	MPT-8-MW01S-04
samp_date	5/20/2003
lab_id	JAX31819-6
qc_type	NM
units	MG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
IRON	0.42		
MANGANESE	0.05	U	

nsample	MPT-8-MW16S-04
samp_date	5/20/2003
lab_id	JAX31819-3
qc_type	NM
units	MG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
IRON	13.0		
MANGANESE	0.27		

PROJ_NO: 4259

SDG: 31819 MEDIA: WATER DATA FRACTION: M

nsample	MPT-8-MW19S-04
samp_date	5/20/2003
lab_id	JAX31819-7
qc_type	NM
units	MG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
IRON	0.1	U	
MANGANESE	0.05	U	

PROJ_NO: 4259

SDG: 31819 MEDIA: WATER DATA FRACTION: MISC

nsample	MPT-5-MW02S-04
samp_date	5/20/2003
lab_id	JAX31819-2
qc_type	NM
Pct_Solids	0
DUP_OF:	

Parameter	units	Result	Val Qual	Qual Code
ALKALINITY	MG/L	350		
AMMONIA	MG/L	1.1		
CHLORIDE	MG/L	160		
NITRATE	MG/L	0.14		
NITRITE	MG/L	0.1	U	
NITRITE/NITRATE	MG/L	0.14		
ORTHOPHOSPHATE	MG/L	0.2		
SULFATE	MG/L	11		
TOTAL ORGANIC CARBON	MG/L	20		

nsample	MPT-5-MW03S-04
samp_date	5/20/2003
lab_id	JAX31819-4
qc_type	NM
Pct_Solids	0
DUP_OF:	

Parameter	units	Result	Val Qual	Qual Code
ALKALINITY	MG/L	320		
AMMONIA	MG/L	0.26		
CHLORIDE	MG/L	16		
NITRATE	MG/L	0.13		
NITRITE	MG/L	0.1	U	
NITRITE/NITRATE	MG/L	0.13		
ORTHOPHOSPHATE	MG/L	0.18		
SULFATE	MG/L	31		
TOTAL ORGANIC CARBON	MG/L	5		

nsample	MPT-8-DUP01-04
samp_date	5/20/2003
lab_id	JAX31819-1
qc_type	NM
Pct_Solids	0
DUP_OF:	MPT-8-MW16S-04

Parameter	units	Result	Val Qual	Qual Code
ALKALINITY	MG/L	610		
AMMONIA	MG/L	5.6		
CHLORIDE	MG/L	20		
NITRATE	MG/L	0.1	UJ	G
NITRITE	MG/L	0.1	U	
NITRITE/NITRATE	MG/L	0.1	UJ	G
ORTHOPHOSPHATE	MG/L	0.12	U	
SULFATE	MG/L	1	U	
TOTAL ORGANIC CARBON	MG/L	40		

PROJ_NO: 4259

SDG: 31819 MEDIA: WATER DATA FRACTION: MISC

nsample	MPT-8-EB01-04
samp_date	5/20/2003
lab_id	JAX31819-5
qc_type	NM
Pct_Solids	0
DUP_OF:	

Parameter	units	Result	Val Qual	Qual Code
ALKALINITY	MG/L	26		
AMMONIA	MG/L	0.02	U	
CHLORIDE	MG/L	1	U	
DISSOLVED ORGANIC CARBON	MG/L	2		
NITRATE	MG/L	0.1		
NITRITE	MG/L	0.1	U	
NITRITE/NITRATE	MG/L	0.1	U	
ORTHOPHOSPHATE	MG/L	0.12	U	
SULFATE	MG/L	1	U	
TOTAL ORGANIC CARBON	MG/L	14		

nsample	MPT-8-MW01S-04
samp_date	5/20/2003
lab_id	JAX31819-6
qc_type	NM
Pct_Solids	0
DUP_OF:	

Parameter	units	Result	Val Qual	Qual Code
ALKALINITY	MG/L	160		
AMMONIA	MG/L	0.26		
CHLORIDE	MG/L	13		
NITRATE	MG/L	0.1		
NITRITE	MG/L	0.1	U	
NITRITE/NITRATE	MG/L	0.1	U	
ORTHOPHOSPHATE	MG/L	0.54		
SULFATE	MG/L	36		
TOTAL ORGANIC CARBON	MG/L	45		

nsample	MPT-8-MW16S-04
samp_date	5/20/2003
lab_id	JAX31819-3
qc_type	NM
Pct_Solids	0
DUP_OF:	

Parameter	units	Result	Val Qual	Qual Code
ALKALINITY	MG/L	580		
AMMONIA	MG/L	5.5		
CHLORIDE	MG/L	19		
NITRATE	MG/L	2.3	J	G
NITRITE	MG/L	0.1	U	
NITRITE/NITRATE	MG/L	2.3	J	G
ORTHOPHOSPHATE	MG/L	0.6	U	
SULFATE	MG/L	1	U	
TOTAL ORGANIC CARBON	MG/L	41		

PROJ_NO: 4259

SDG: 31819 MEDIA: WATER DATA FRACTION: MISC

nsample	MPT-8-MW19S-04
samp_date	5/20/2003
lab_id	JAX31819-7
qc_type	NM
Pct_Solids	0
DUP_OF:	

Parameter	units	Result	Val Qual	Qual Code
ALKALINITY	MG/L	98		
AMMONIA	MG/L	0.02	U	
CHLORIDE	MG/L	11		
DISSOLVED ORGANIC CARBON	MG/L	7		
NITRATE	MG/L	0.78		
NITRITE	MG/L	0.1	U	
NITRITE/NITRATE	MG/L	0.78		
ORTHOPHOSPHATE	MG/L	0.12	U	
SULFATE	MG/L	28		
TOTAL ORGANIC CARBON	MG/L	22		

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

ENCO LABORATORIES
REPORT # : JAX31819
DATE REPORTED: June 5, 2003
REFERENCE : N4259
PROJECT NAME : NAS Mayport

RESULTS OF ANALYSIS

MISCELLANEOUS	METHOD	MPT-8-DUP01-04	MPT-5-MW02S-04	Units
Alkalinity	310.1	**610**	**350**	mg/L
Date Analyzed		05/21/03 12:00	05/21/03 12:00	
Ammonia-N	350.1	**5.6**	**1.1**	mg/L
Date Analyzed		05/27/03 14:59	05/27/03 13:40	
Chloride, Total	325.3	**20**	**160**	mg/L
Date Analyzed		05/23/03 19:00	05/23/03 19:00	
Nitrate-N	353.1	* 0.10 U	**0.14**	mg/L
Date Analyzed		05/23/03 16:45	05/23/03 16:45	
Nitrite-N	354.1	0.10 U	0.10 U	mg/L
Date Analyzed		05/21/03 11:00	05/21/03 11:00	
Nitrate-Nitrite-N	353.1	* 0.10 U	**0.14**	mg/L
Date Analyzed		05/23/03 15:01	05/23/03 15:02	
Orthophosphate-P	365.3	0.12 U	**0.20**	mg/L
Date Analyzed		05/21/03 12:00	05/21/03 12:00	
Sulfate, Total	375.4	1.0 U	**11**	mg/L
Date Analyzed		05/23/03 14:00	05/23/03 14:00	
Total Org. Carbon	415.1	**40**	**20**	mg/L
Date Analyzed		05/23/03 20:00	05/23/03 20:00	

TOTAL METALS	METHOD	MPT-8-DUP01-04	MPT-5-MW02S-04	Units
Iron	200.7	**14**	**1.3**	mg/L
Date Analyzed		05/22/03 18:07	05/22/03 18:14	
Manganese	200.7	**0.28**	0.050 U	mg/L
Date Analyzed		05/22/03 18:07	05/22/03 18:14	

* = Results confirmed secondary analysis.
U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES
REPORT # : JAX31819
DATE REPORTED: June 5, 2003
REFERENCE : N4259
PROJECT NAME : NAS Mayport

RESULTS OF ANALYSIS

MISCELLANEOUS	METHOD	MPT-8-MW16S-04	MPT-5-MW03S-04	Units
Alkalinity	310.1	**580**	**320**	mg/L
Date Analyzed		05/21/03 12:00	05/21/03 12:00	
Ammonia-N	350.1	**5.5**	**0.26**	mg/L
Date Analyzed		05/27/03 15:13	05/27/03 13:42	
Chloride, Total	325.3	**19**	**16**	mg/L
Date Analyzed		05/23/03 19:00	05/23/03 19:00	
Nitrate-N	353.1	* **2.3**	**0.13**	mg/L
Date Analyzed		05/23/03 16:45	05/23/03 16:45	
Nitrite-N	354.1	0.10 U	0.10 U	mg/L
Date Analyzed		05/21/03 11:00	05/21/03 11:00	
Nitrate-Nitrite-N	353.1	* **2.3**	**0.13**	mg/L
Date Analyzed		05/23/03 15:32	05/23/03 15:07	
Orthophosphate-P	365.3	0.60 U	**0.18**	mg/L
Date Analyzed		05/21/03 12:00	05/21/03 12:00	
Sulfate, Total	375.4	1.0 U	**31**	mg/L
Date Analyzed		05/23/03 14:00	05/23/03 14:00	
Total Org. Carbon	415.1	**41**	**5.0**	mg/L
Date Analyzed		05/23/03 20:00	05/23/03 20:00	

TOTAL METALS	METHOD	MPT-8-MW16S-04	MPT-5-MW03S-04	Units
Iron	200.7	**13**	**0.92**	mg/L
Date Analyzed		05/22/03 18:21	05/22/03 18:28	
Manganese	200.7	**0.27**	**0.11**	mg/L
Date Analyzed		05/22/03 18:21	05/22/03 18:28	

* = Results confirmed by secondary analysis.
U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES
REPORT # : JAX31819
DATE REPORTED: June 5, 2003
REFERENCE : N4259
PROJECT NAME : NAS Mayport

RESULTS OF ANALYSIS

MISCELLANEOUS	METHOD	MPT-8-EB01-04	MPT-8-MW01S-04	Units
Alkalinity	310.1	**26**	**160**	mg/L
Date Analyzed		05/21/03 12:00	05/21/03 12:00	
Ammonia-N	350.1	0.020 U	**0.26**	mg/L
Date Analyzed		05/27/03 13:43	05/27/03 13:44	
Chloride, Total	325.3	1.0 U	**13**	mg/L
Date Analyzed		05/23/03 19:00	05/23/03 19:00	
Nitrate-N	353.1	0.10 U	0.10 U	mg/L
Date Analyzed		05/23/03 16:45	05/23/03 16:45	
Nitrite-N	354.1	0.10 U	0.10 U	mg/L
Date Analyzed		05/21/03 11:00	05/21/03 11:00	
Nitrate-Nitrite-N	353.1	0.10 U	0.10 U	mg/L
Date Analyzed		05/23/03 15:08	05/23/03 15:09	
Orthophosphate-P	365.3	0.12 U	**0.54**	mg/L
Date Analyzed		05/21/03 12:00	05/21/03 12:00	
Sulfate, Total	375.4	1.0 U	**36**	mg/L
Date Analyzed		05/23/03 14:00	05/23/03 14:00	
Total Org. Carbon	415.1	**14**	**45**	mg/L
Date Analyzed		05/23/03 20:00	05/23/03 20:00	
Tot. Org. Carbon, dis.	415.1	**2.0** I	NA	mg/L
Date Analyzed		05/23/03 20:00		

NA = Analysis not applicable for this sample.
U = Compound was analyzed for but not detected to the level shown.
I = Analyte detected; value is between the Method Detection Level (MDL) and the Method Quantitation Level (MQL).

RESULTS OF ANALYSIS

TOTAL METALS	METHOD	MPT-8-EB01-04	MPT-8-MW01S-04	Units
Iron	200.7	0.10 U	**0.42**	mg/L
Date Analyzed		05/22/03 18:36	05/22/03 18:43	
Manganese	200.7	0.050 U	0.050 U	mg/L
Date Analyzed		05/22/03 18:36	05/22/03 18:43	

U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES
REPORT # : JAX31819
DATE REPORTED: June 5, 2003
REFERENCE : N4259
PROJECT NAME : NAS Mayport

RESULTS OF ANALYSIS

MISCELLANEOUS	METHOD	MPT-8-MW19S-04	LAB BLANK	Units
Alkalinity	310.1	**98**	2.0 U	mg/L
Date Analyzed		05/21/03 12:00	05/21/03 12:00	
Ammonia-N	350.1	0.020 U	0.020 U	mg/L
Date Analyzed		05/27/03 13:45	05/27/03 13:27	
Chloride, Total	325.3	**11**	1.0 U	mg/L
Date Analyzed		05/23/03 19:00	05/23/03 19:00	
Nitrate-N	353.1	**0.78**	NA	mg/L
Date Analyzed		05/23/03 16:45		
Nitrite-N	354.1	0.10 U	0.10 U	mg/L
Date Analyzed		05/21/03 11:00	05/21/03 11:00	
Nitrate-Nitrite-N	353.1	**0.78**	0.10 U	mg/L
Date Analyzed		05/23/03 15:33	05/23/03 14:51	
Orthophosphate-P	365.3	0.12 U	0.12 U	mg/L
Date Analyzed		05/21/03 12:00	05/21/03 12:00	
Sulfate, Total	375.4	**28**	1.0 U	mg/L
Date Analyzed		05/23/03 14:00	05/23/03 14:00	
Total Org. Carbon	415.1	**22**	1.0 U	mg/L
Date Analyzed		05/23/03 20:00	05/23/03 20:00	
Tot. Org. Carbon, dis.	415.1	**7.0**	**41**	mg/L
Date Analyzed		05/23/03 20:00	05/23/03 20:00	

TOTAL METALS	METHOD	MPT-8-MW19S-04	LAB BLANK	Units
Iron	200.7	0.10 U	0.10 U	mg/L
Date Analyzed		05/22/03 18:51	05/22/03 17:10	
Manganese	200.7	0.050 U	0.050 U	mg/L
Date Analyzed		05/22/03 18:51	05/22/03 17:10	

NA = Analysis not applicable for this sample.
U = Compound was analyzed for but not detected to the level shown.

APPENDIX C

SUPPORT DOCUMENTATION

FIELD DUPLICATE PRECISION

ANALYTE	MPT-8-DUP01-04	MPT-8-MW16S-04	RPD	DIFFERENCE
Iron	14	13	7.41	1
Manganese	0.28	0.27	3.64	0.01
Alkalinity	610	580	5.04	30
Ammonia	5.6	5.5	1.80	0.1
Chloride	20	19	5.13	1
Nitrate	0.1U	2.3	#VALUE!	#VALUE!
TOC	40	41	2.47	1
Nitrate/Nitrite	0.1U	2.3	#VALUE!	#VALUE!

>2xRL

31819

HOLDING TIME

07/03/03

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	ALK030521-1	ALK030521-1	P_BLANK	31819	ALK	/ /	/ /	05/21/03	0	0	0
%	ALK030521-2	ALK030521-2	LCS	31819	ALK	/ /	/ /	05/21/03	0	0	0
%	ALK030521-3	ALK030521-3	MS	31819	ALK	/ /	/ /	05/21/03	0	0	0
%	ALK030521-4	ALK030521-4	MSD	31819	ALK	/ /	/ /	05/21/03	0	0	0
MG/L	MPT-5-MW02S-04	JAX31819-2	NORMAL	31819	ALK	05/20/03	/ /	05/21/03	0	0	1
MG/L	MPT-5-MW03S-04	JAX31819-4	NORMAL	31819	ALK	05/20/03	/ /	05/21/03	0	0	1
MG/L	MPT-8-DUP01-04	JAX31819-1	NORMAL	31819	ALK	05/20/03	/ /	05/21/03	0	0	1
MG/L	MPT-8-EB01-04	JAX31819-5	NORMAL	31819	ALK	05/20/03	/ /	05/21/03	0	0	1
MG/L	MPT-8-MW01S-04	JAX31819-6	NORMAL	31819	ALK	05/20/03	/ /	05/21/03	0	0	1
MG/L	MPT-8-MW16S-04	JAX31819-3	NORMAL	31819	ALK	05/20/03	/ /	05/21/03	0	0	1
MG/L	MPT-8-MW19S-04	JAX31819-7	NORMAL	31819	ALK	05/20/03	/ /	05/21/03	0	0	1
MG/L	CL030523-1	CL030523-1	P_BLANK	31819	CL	/ /	/ /	05/23/03	0	0	0
%	CL030523-2	CL030523-2	LCS	31819	CL	/ /	/ /	05/23/03	0	0	0
%	CL030523-3	CL030523-3	MS	31819	CL	/ /	/ /	05/23/03	0	0	0
%	CL030523-4	CL030523-4	MSD	31819	CL	/ /	/ /	05/23/03	0	0	0
MG/L	MPT-5-MW02S-04	JAX31819-2	NORMAL	31819	CL	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-5-MW03S-04	JAX31819-4	NORMAL	31819	CL	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-DUP01-04	JAX31819-1	NORMAL	31819	CL	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-EB01-04	JAX31819-5	NORMAL	31819	CL	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-MW01S-04	JAX31819-6	NORMAL	31819	CL	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-MW16S-04	JAX31819-3	NORMAL	31819	CL	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-MW19S-04	JAX31819-7	NORMAL	31819	CL	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-EB01-04	JAX31819-5	NORMAL	31819	DOC	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-MW19S-04	JAX31819-7	NORMAL	31819	DOC	05/20/03	/ /	05/23/03	0	0	3

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	TOC030523-1	TOC030523-1	P_BLANK	31819	DOC	/ /	/ /	05/23/03	0	0	0
MG/L	JVB126-1	JVB126-1	P_BLANK	31819	M	/ /	/ /	05/22/03	0	0	0
%	JVB126-2	JVB126-2	LCS	31819	M	/ /	/ /	05/22/03	0	0	0
%	JVB126-3	JVB126-3	MS	31819	M	/ /	/ /	05/22/03	0	0	0
%	JVB126-4	JVB126-4	MSD	31819	M	/ /	/ /	05/22/03	0	0	0
MG/L	MPT-5-MW02S-04	JAX31819-2	NORMAL	31819	M	05/20/03	/ /	05/22/03	0	0	2
MG/L	MPT-5-MW03S-04	JAX31819-4	NORMAL	31819	M	05/20/03	/ /	05/22/03	0	0	2
MG/L	MPT-8-DUP01-04	JAX31819-1	NORMAL	31819	M	05/20/03	/ /	05/22/03	0	0	2
MG/L	MPT-8-EB01-04	JAX31819-5	NORMAL	31819	M	05/20/03	/ /	05/22/03	0	0	2
MG/L	MPT-8-MW01S-04	JAX31819-6	NORMAL	31819	M	05/20/03	/ /	05/22/03	0	0	2
MG/L	MPT-8-MW16S-04	JAX31819-3	NORMAL	31819	M	05/20/03	/ /	05/22/03	0	0	2
MG/L	MPT-8-MW19S-04	JAX31819-7	NORMAL	31819	M	05/20/03	/ /	05/22/03	0	0	2
MG/L	MPT-5-MW02S-04	JAX31819-2	NORMAL	31819	NH4	05/20/03	/ /	05/27/03	0	0	7
MG/L	MPT-5-MW03S-04	JAX31819-4	NORMAL	31819	NH4	05/20/03	/ /	05/27/03	0	0	7
MG/L	MPT-8-DUP01-04	JAX31819-1	NORMAL	31819	NH4	05/20/03	/ /	05/27/03	0	0	7
MG/L	MPT-8-EB01-04	JAX31819-5	NORMAL	31819	NH4	05/20/03	/ /	05/27/03	0	0	7
MG/L	MPT-8-MW01S-04	JAX31819-6	NORMAL	31819	NH4	05/20/03	/ /	05/27/03	0	0	7
MG/L	MPT-8-MW16S-04	JAX31819-3	NORMAL	31819	NH4	05/20/03	/ /	05/27/03	0	0	7
MG/L	MPT-8-MW19S-04	JAX31819-7	NORMAL	31819	NH4	05/20/03	/ /	05/27/03	0	0	7
MG/L	ORL-NH3052703-1	ORL-NH3052703-1	P_BLANK	31819	NH4	/ /	/ /	05/27/03	0	0	0
%	ORL-NH3052703-2	ORL-NH3052703-2	LCS	31819	NH4	/ /	/ /	05/27/03	0	0	0
%	ORL-NH3052703-3	ORL-NH3052703-3	MS	31819	NH4	/ /	/ /	05/27/03	0	0	0
%	ORL-NH3052703-4	ORL-NH3052703-4	MSD	31819	NH4	/ /	/ /	05/27/03	0	0	0
MG/L	MPT-5-MW02S-04	JAX31819-2	NORMAL	31819	NTA	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-5-MW03S-04	JAX31819-4	NORMAL	31819	NTA	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-DUP01-04	JAX31819-1	NORMAL	31819	NTA	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-EB01-04	JAX31819-5	NORMAL	31819	NTA	05/20/03	/ /	05/23/03	0	0	3

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	MPT-8-MW01S-04	JAX31819-6	NORMAL	31819	NTA	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-MW16S-04	JAX31819-3	NORMAL	31819	NTA	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-MW19S-04	JAX31819-7	NORMAL	31819	NTA	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-5-MW02S-04	JAX31819-2	NORMAL	31819	NTI	05/20/03	/ /	05/21/03	0	0	1
MG/L	MPT-5-MW03S-04	JAX31819-4	NORMAL	31819	NTI	05/20/03	/ /	05/21/03	0	0	1
MG/L	MPT-8-DUP01-04	JAX31819-1	NORMAL	31819	NTI	05/20/03	/ /	05/21/03	0	0	1
MG/L	MPT-8-EB01-04	JAX31819-5	NORMAL	31819	NTI	05/20/03	/ /	05/21/03	0	0	1
MG/L	MPT-8-MW01S-04	JAX31819-6	NORMAL	31819	NTI	05/20/03	/ /	05/21/03	0	0	1
MG/L	MPT-8-MW16S-04	JAX31819-3	NORMAL	31819	NTI	05/20/03	/ /	05/21/03	0	0	1
MG/L	MPT-8-MW19S-04	JAX31819-7	NORMAL	31819	NTI	05/20/03	/ /	05/21/03	0	0	1
MG/L	NIT030521-1	NIT030521-1	P_BLANK	31819	NTI	/ /	/ /	05/21/03	0	0	0
%	NIT030521-2	NIT030521-2	LCS	31819	NTI	/ /	/ /	05/21/03	0	0	0
%	NIT030521-3	NIT030521-3	MS	31819	NTI	/ /	/ /	05/21/03	0	0	0
%	NIT030521-4	NIT030521-4	MSD	31819	NTI	/ /	/ /	05/21/03	0	0	0
MG/L	MPT-5-MW02S-04	JAX31819-2	NORMAL	31819	NTIA	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-5-MW03S-04	JAX31819-4	NORMAL	31819	NTIA	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-DUP01-04	JAX31819-1	NORMAL	31819	NTIA	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-EB01-04	JAX31819-5	NORMAL	31819	NTIA	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-MW01S-04	JAX31819-6	NORMAL	31819	NTIA	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-MW16S-04	JAX31819-3	NORMAL	31819	NTIA	05/20/03	/ /	06/06/03	0	0	17
MG/L	MPT-8-MW19S-04	JAX31819-7	NORMAL	31819	NTIA	05/20/03	/ /	05/23/03	0	0	3
MG/L	ORL-NOX052303A-1	ORL-NOX052303A-1	P_BLANK	31819	NTIA	/ /	/ /	05/23/03	0	0	0
%	ORL-NOX052303A-2	ORL-NOX052303A-2	LCS	31819	NTIA	/ /	/ /	05/23/03	0	0	0
%	ORL-NOX052303A-3	ORL-NOX052303A-3	MS	31819	NTIA	/ /	/ /	05/23/03	0	0	0
%	ORL-NOX052303A-4	ORL-NOX052303A-4	MSD	31819	NTIA	/ /	/ /	05/23/03	0	0	0
MG/L	ORL-NOX060503-1	ORL-NOX060503-1	P_BLANK	31819	NTIA	/ /	/ /	06/05/03	0	0	0
%	ORL-NOX060503-2	ORL-NOX060503-2	LCS	31819	NTIA	/ /	/ /	06/05/03	0	0	0

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
%	ORL-NOX060503-3	ORL-NOX060503-3	MS	31819	NTIA	/ /	/ /	06/05/03	0	0	0
%	ORL-NOX060503-4	ORL-NOX060503-4	MSD	31819	NTIA	/ /	/ /	06/06/03	0	0	0
MG/L	MPT-5-MW02S-04	JAX31819-2	NORMAL	31819	OPO4	05/20/03	/ /	05/21/03	0	0	1
MG/L	MPT-5-MW03S-04	JAX31819-4	NORMAL	31819	OPO4	05/20/03	/ /	05/21/03	0	0	1
MG/L	MPT-8-DUP01-04	JAX31819-1	NORMAL	31819	OPO4	05/20/03	/ /	05/21/03	0	0	1
MG/L	MPT-8-EB01-04	JAX31819-5	NORMAL	31819	OPO4	05/20/03	/ /	05/21/03	0	0	1
MG/L	MPT-8-MW01S-04	JAX31819-6	NORMAL	31819	OPO4	05/20/03	/ /	05/21/03	0	0	1
MG/L	MPT-8-MW16S-04	JAX31819-3	NORMAL	31819	OPO4	05/20/03	/ /	05/21/03	0	0	1
MG/L	MPT-8-MW19S-04	JAX31819-7	NORMAL	31819	OPO4	05/20/03	/ /	05/21/03	0	0	1
MG/L	OP030521-1	OP030521-1	P_BLANK	31819	OPO4	/ /	/ /	05/21/03	0	0	0
%	OP030521-2	OP030521-2	LCS	31819	OPO4	/ /	/ /	05/21/03	0	0	0
%	OP030521-3	OP030521-3	MS	31819	OPO4	/ /	/ /	05/21/03	0	0	0
%	OP030521-4	OP030521-4	MSD	31819	OPO4	/ /	/ /	05/21/03	0	0	0
MG/L	MPT-5-MW02S-04	JAX31819-2	NORMAL	31819	SO4	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-5-MW03S-04	JAX31819-4	NORMAL	31819	SO4	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-DUP01-04	JAX31819-1	NORMAL	31819	SO4	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-EB01-04	JAX31819-5	NORMAL	31819	SO4	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-MW01S-04	JAX31819-6	NORMAL	31819	SO4	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-MW16S-04	JAX31819-3	NORMAL	31819	SO4	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-MW19S-04	JAX31819-7	NORMAL	31819	SO4	05/20/03	/ /	05/23/03	0	0	3
MG/L	SUL030523-1	SUL030523-1	P_BLANK	31819	SO4	/ /	/ /	05/23/03	0	0	0
%	SUL030523-2	SUL030523-2	LCS	31819	SO4	/ /	/ /	05/23/03	0	0	0
%	SUL030523-3	SUL030523-3	MS	31819	SO4	/ /	/ /	05/23/03	0	0	0
%	SUL030523-4	SUL030523-4	MSD	31819	SO4	/ /	/ /	05/23/03	0	0	0
MG/L	MPT-5-MW02S-04	JAX31819-2	NORMAL	31819	TOC	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-5-MW03S-04	JAX31819-4	NORMAL	31819	TOC	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-DUP01-04	JAX31819-1	NORMAL	31819	TOC	05/20/03	/ /	05/23/03	0	0	3

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	MPT-8-EB01-04	JAX31819-5	NORMAL	31819	TOC	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-MW01S-04	JAX31819-6	NORMAL	31819	TOC	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-MW16S-04	JAX31819-3	NORMAL	31819	TOC	05/20/03	/ /	05/23/03	0	0	3
MG/L	MPT-8-MW19S-04	JAX31819-7	NORMAL	31819	TOC	05/20/03	/ /	05/23/03	0	0	3
MG/L	TOC030523-1	TOC030523-1	P_BLANK	31819	TOC	/ /	/ /	05/23/03	0	0	0
%	TOC030523-2	TOC030523-2	LCS	31819	TOC	/ /	/ /	05/23/03	0	0	0
%	TOC030523-3	TOC030523-3	MS	31819	TOC	/ /	/ /	05/23/03	0	0	0
%	TOC030523-4	TOC030523-4	MSD	31819	TOC	/ /	/ /	05/23/03	0	0	0

Environmental Conservation Laboratories, Inc.
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Jacksonville, Florida 32216-6069
904 / 296-3007
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ENCO Laboratories

DHRS Certification No. E82277

CLIENT : Tetra Tech NUS
ADDRESS: 8640 Philips Highway
Suite 16
Jacksonville, FL 32256

REPORT # : JAX31819
DATE SUBMITTED: May 20, 2003
DATE REPORTED : June 5, 2003
DATE AMENDED : June 13, 2003

ATTENTION: T. Hansen

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

REFERENCE: N4259

NAS Mayport

05/20/03

#1 - MPT-8-DUP01-04 @ 00:00
#2 - MPT-5-MW02S-04 @ 09:45
#3 - MPT-8-MW16S-04 @ 11:20
#4 - MPT-5-MW03S-04 @ 13:05
#5 - MPT-8-EB01-04 @ 12:00
#6 - MPT-8-MW01S-04 @ 14:30
#7 - MPT-8-MW19S-04 @ 16:00

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. This data has been produced in accordance with NELAC Standards (July, 1999). This report shall not be reproduced except in full, without the written approval of the laboratory. Results for these procedures apply only to the samples as submitted.

The attached project narrative is an integral part of this report.

PROJECT MANAGER Scott D. Martin
Scott D. Martin

TETRA TECH NUS, INC. | **CHAIN OF CUSTODY** | **NUMBER** | **PAGE 1 OF 1**

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
N4259	CTO 253 SWMU 7	Terry Hansen		ENCO
SAMPLERS (SIGNATURE)		**FIELD OPERATIONS LEADER**	**PHONE NUMBER**	**ADDRESS**
Charles Metz		Charles Metz	904-636-6125	
		CARRIER/WAYBILL NUMBER		**CITY, STATE**
		Dropped samples @ Lab		JAX, FL

STANDARD TAT ☑
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

JAX 31819

DATE YEAR 2003	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAP (G) COMP (C)	No. OF CONTAINERS	365.3	350.1+353.1	Alk, Cl-, Nitrite, Sulfate	TOC/D	TOC	Fe+Mn			COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									P	P	P	G	G	P			
PRESERVATIVE USED									None	H_2SO_4	None	None	H_2SO_4	HNO_3			
5-20	0000	MPT-8-Dup01-04				GW	G	5	1	1	1	0	1	1			
5-20	0945	MPT-S-MW02s-04				GW	G	5	1	1	1	0	1	1			
5-20	1120	MPT-8-MW16s-04				GW	G	5	1	1	1	0	1	1			
5-20	1305	MPT-S-MW03s-04				GW	G	5	1	1	1	0	1	1			
5-20	1200	MPT-8-EB01-04 *				QC	G	6	1	1	1	1	1	1			*Analyze for FOC in addition to TOC/D
5-20	1430	MPT-8-MW01s-04				GW	G	5	1	1	1	0	1	1			
5-20	1600	MPT-8-MW19s-04 *				GW	G	6	1	1	1	1	1	1			

1. RELINQUISHED BY Charles Metz	DATE 5-20-03	TIME 1740	1. RECEIVED BY [signature]	DATE 5/20/03	TIME 1740
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

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FORM NO. TtNUS-001

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Fax 904 / 296-6210
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E82277

CASE NARRATIVE

Date: June 13, 2003

Client: Tetra Tech NUS

Project #: NAS Mayport N4259

Lab ID: JAX31819

Overview

1. Environmental Conservation Laboratories, Inc. was subcontracted to provide analytical data for the above referenced project. The request by chain of custody for fractional organic carbon (FOC) on sample ID's MPT-8-MW-19S-04 and MPT-8-EB01-04 was discussed as an analytical procedure that was not performed by ENCO Laboratories. Other options, which included subcontracting to another laboratory were discussed at the time of the analytical bottle request. This analytical procedure was not performed by ENCO Laboratories.

2. The report generated on June 5, 2003 was amended on June 13, 2003. The amended report was issued due to a mis-reported value for dissolved organic carbon in the laboratory blank. The initial value reported was 41 mg/L. This result was amended to the actual result of non-detect at 1.0 mg/L.

Released By:

Environmental Conservation Laboratories, Inc.

Scott D Martin

Scott Martin
Laboratory Manager

ENCO LABORATORIES
REPORT # : JAX31819
DATE REPORTED: June 5, 2003
REFERENCE : N4259
PROJECT NAME : NAS Mayport

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
MISCELLANEOUS				
Alkalinity (as CaCO3), 310.	98/ 98/ 96	73-126	<1	11
Ammonia-N, 350.1	* / * / 99	90-110	*	20
Chloride, Total, 325.3	80/ 85/102	83-118	6	12
Nitrite-N, 354.1	102/104/103	69-124	2	13
Nitrate-Nitrite-N, 353.1	109/107/ 99	61-144	2	21
Orthophosphate-P, 365.3	99/100/100	27-163	1	13
Sulfate, Total, 375.4	87/ 86/103	61-138	1	22
Total Org. Carbon, 415.1	103/101/107	69-132	2	16
Total Org. Carbon, 415.1	103/101/107	69-132	2	16
TOTAL METALS				
Iron, 200.7	103/106/103	48-144	3	23
Manganese, 200.7	105/112/106	74-127	6	19

< = Less Than
MS = Matrix Spike
MSD = Matrix Spike Duplicate
LCS = Laboratory Control Standard
RPD = Relative Percent Difference
* = MS/MSD/RPD unavailable due to high original sample concentration.

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**T. HANSEN**	**DATE:**	**JUNE 20, 2003**
FROM:	**ETHAN G. LEE**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – IRON, MANGANESE, AND MISCELLANEOUS PARAMETERS**
NS MAYPORT – CTO 253
SAMPLE DELIVERY GROUP (SDG) – 31849

SAMPLES: 2/AQUEOUS/

MPT-8-MW04S-04 MPT-8-MW09S-04

Overview

The sample set for NS Mayport, CTO 253, SDG 31849, consists of two (2) aqueous environmental samples.

All samples were analyzed for iron, manganese, alkalinity, ammonia, chloride, nitrate, nitrite, nitrate/nitrite, orthophosphate, sulfate, and total organic carbon (TOC). The samples were collected by Tetra Tech NUS on May 21, 2003 and analyzed by ENCO Laboratories. Metals analyses were conducted using EPA method 200.7. Alkalinity analyses were conducted using EPA method 310.1. Ammonia analyses were conducted using EPA method 350.1. Chloride analyses were conducted using EPA method 325.3. Nitrate and nitrate/nitrite analyses were conducted using EPA method 353.1. Nitrite analyses were conducted using EPA method 354.1. Orthophosphate analyses were conducted using EPA method 365.3. Sulfate analyses were conducted using EPA method 375.4. TOC analyses were conducted using EPA method 415.1.

Metals analyses were conducted using Inductively Coupled Plasma (ICP) methodology.

These data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • Calibration Recoveries
* • Laboratory Blank Analyses
* • Detection Limits

* - All quality control criteria were met for this parameter.

Notes

Results for manganese on the Form 1s and the electronic data deliverable did not agree. The data reviewer amended the database for both samples.

The detection limits reported by the laboratory for nitrite (0.10 mg/L) do not meet the detection limits in the laboratory specifications (0.01 mg/L).

The laboratory reported the nondetected results for the miscellaneous parameters in the electronic data deliverable (EDD) as zero (0). The data reviewer changed the zero values to the reporting limit values in the database.

Executive Summary

Laboratory Performance: No quality control issues were noted for this SDG.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", July 2002 and the NFESC document entitled "Navy IRCDQM" (September 1999).

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS
Ethan G. Lee
Environmental Scientist

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is less than sample activity

PROJ_NO: 4259

SDG: 31849 MEDIA: WATER DATA FRACTION: M

nsample	MPT-8-MW04S-04	nsample	MPT-8-MW09S-04
samp_date	5/21/2003	samp_date	5/21/2003
lab_id	JAX31849-2	lab_id	JAX31849-1
qc_type	NM	qc_type	NM
units	MG/L	units	MG/L
Pct_Solids	0	Pct_Solids	0
DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
IRON	14.0		
MANGANESE	0.25		

Parameter	Result	Val Qual	Qual Code
IRON	0.90		
MANGANESE	0.28		

PROJ_NO: 4259

SDG: 31849 MEDIA: WATER DATA FRACTION: MISC

nsample	MPT-8-MW04S-04	nsample	MPT-8-MW09S-04
samp_date	5/21/2003	samp_date	5/21/2003
lab_id	JAX31849-2	lab_id	JAX31849-1
qc_type	NM	qc_type	NM
Pct_Solids	0	Pct_Solids	0
DUP_OF:		DUP_OF:	

Parameter	units	Result	Val Qual	Qual Code
ALKALINITY	MG/L	500		
AMMONIA	MG/L	5.1		
CHLORIDE	MG/L	14		
NITRATE	MG/L	0.10	U	
NITRITE	MG/L	0.10	U	
NITRITE/NITRATE	MG/L	0.10	U	
ORTHOPHOSPHATE	MG/L	0.79		
SULFATE	MG/L	1.0	U	
TOTAL ORGANIC CARBON	MG/L	35		

Parameter	units	Result	Val Qual	Qual Code
ALKALINITY	MG/L	360		
AMMONIA	MG/L	0.66		
CHLORIDE	MG/L	120		
NITRATE	MG/L	0.10	U	
NITRITE	MG/L	0.10	U	
NITRITE/NITRATE	MG/L	0.10	U	
ORTHOPHOSPHATE	MG/L	0.90		
SULFATE	MG/L	10		
TOTAL ORGANIC CARBON	MG/L	16		

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

ENCO LABORATORIES
REPORT # : JAX31849
DATE REPORTED: May 28, 2003
REFERENCE : N4259
PROJECT NAME : NAS Mayport

RESULTS OF ANALYSIS

MISCELLANEOUS	METHOD	MPT-8-MW04S-04	Units
Alkalinity	310.1	**500**	mg/L
Date Analyzed		05/23/03 15:00	
Ammonia-N	350.1	**5.1**	mg/L
Date Analyzed		05/27/03 15:01	
Chloride, Total	325.3	**14**	mg/L
Date Analyzed		05/23/03 19:00	
Nitrate-N	353.1	0.10 U	mg/L
Date Analyzed		05/23/03 16:45	
Nitrite-N	354.1	0.10 U	mg/L
Date Analyzed		05/22/03 11:00	
Nitrate-Nitrite-N	353.1	0.10 U	mg/L
Date Analyzed		05/23/03 15:23	
Orthophosphate-P	365.3	**0.79**	mg/L
Date Analyzed		05/22/03 11:30	
Sulfate, Total	375.4	1.0 U	mg/L
Date Analyzed		05/23/03 14:00	
Total Org. Carbon	415.1	**35**	mg/L
Date Analyzed		05/23/03 20:00	

TOTAL METALS	METHOD	MPT-8-MW04S-04	Units
Iron	200.7	**14**	mg/L
Date Analyzed		05/24/03 15:53	
Manganese	200.7	**0.25**	mg/L
Date Analyzed		05/24/03 15:53	

U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES
REPORT # : JAX31849
DATE REPORTED: May 28, 2003
REFERENCE : N4259
PROJECT NAME : NAS Mayport

RESULTS OF ANALYSIS

MISCELLANEOUS	METHOD	MPT-8-MW09S-04	Units
Alkalinity	310.1	**360**	mg/L
Date Analyzed		05/23/03 15:00	
Ammonia-N	350.1	**0.66**	mg/L
Date Analyzed		05/27/03 13:54	
Chloride, Total	325.3	**120**	mg/L
Date Analyzed		05/23/03 19:00	
Nitrate-N	353.1	0.10 U	mg/L
Date Analyzed		05/23/03 16:45	
Nitrite-N	354.1	0.10 U	mg/L
Date Analyzed		05/22/03 11:00	
Nitrate-Nitrite-N	353.1	0.10 U	mg/L
Date Analyzed		05/23/03 15:22	
Orthophosphate-P	365.3	**0.90**	mg/L
Date Analyzed		05/22/03 11:30	
Sulfate, Total	375.4	**10**	mg/L
Date Analyzed		05/23/03 14:00	
Total Org. Carbon	415.1	**16**	mg/L
Date Analyzed		05/23/03 20:00	

TOTAL METALS	METHOD	MPT-8-MW09S-04	Units
Iron	200.7	**0.90**	mg/L
Date Analyzed		05/24/03 15:16	
Manganese	200.7	**0.28**	mg/L
Date Analyzed		05/24/03 15:16	

U = Compound was analyzed for but not detected to the level shown.

APPENDIX C

SUPPORT DOCUMENTATION

31849

HOLDING TIME

06/11/03

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	ALK030523-1	ALK030523-1	P_BLANK	31849	ALK	/ /	/ /	05/23/03	0	0	0
%	ALK030523-2	ALK030523-2	LCS	31849	ALK	/ /	/ /	05/23/03	0	0	0
%	ALK030523-3	ALK030523-3	MS	31849	ALK	/ /	/ /	05/23/03	0	0	0
%	ALK030523-4	ALK030523-4	MSD	31849	ALK	/ /	/ /	05/23/03	0	0	0
MG/L	MPT-8-MW04S-04	JAX31849-2	NORMAL	31849	ALK	05/21/03	/ /	05/23/03	0	0	2
MG/L	MPT-8-MW09S-04	JAX31849-1	NORMAL	31849	ALK	05/21/03	/ /	05/23/03	0	0	2
MG/L	CL030523-1	CL030523-1	P_BLANK	31849	CL	/ /	/ /	05/23/03	0	0	0
%	CL030523-2	CL030523-2	LCS	31849	CL	/ /	/ /	05/23/03	0	0	0
%	CL030523-3	CL030523-3	MS	31849	CL	/ /	/ /	05/23/03	0	0	0
%	CL030523-4	CL030523-4	MSD	31849	CL	/ /	/ /	05/23/03	0	0	0
MG/L	MPT-8-MW04S-04	JAX31849-2	NORMAL	31849	CL	05/21/03	/ /	05/23/03	0	0	2
MG/L	MPT-8-MW09S-04	JAX31849-1	NORMAL	31849	CL	05/21/03	/ /	05/23/03	0	0	2
MG/L	JVB128-1	JVB128-1	P_BLANK	31849	M	/ /	/ /	05/24/03	0	0	0
%	JVB128-2	JVB128-2	LCS	31849	M	/ /	/ /	05/24/03	0	0	0
%	JVB128-3	JVB128-3	MS	31849	M	/ /	/ /	05/24/03	0	0	0
%	JVB128-4	JVB128-4	MSD	31849	M	/ /	/ /	05/24/03	0	0	0
MG/L	MPT-8-MW04S-04	JAX31849-2	NORMAL	31849	M	05/21/03	/ /	05/24/03	0	0	3
MG/L	MPT-8-MW09S-04	JAX31849-1	NORMAL	31849	M	05/21/03	/ /	05/24/03	0	0	3
MG/L	MPT-8-MW04S-04	JAX31849-2	NORMAL	31849	NH4	05/21/03	/ /	05/27/03	0	0	6
MG/L	MPT-8-MW09S-04	JAX31849-1	NORMAL	31849	NH4	05/21/03	/ /	05/27/03	0	0	6
MG/L	ORL-NH3052703-1	ORL-NH3052703-1	P_BLANK	31849	NH4	/ /	/ /	05/27/03	0	0	0
%	ORL-NH3052703-2	ORL-NH3052703-2	LCS	31849	NH4	/ /	/ /	05/27/03	0	0	0
%	ORL-NH3052703-3	ORL-NH3052703-3	MS	31849	NH4	/ /	/ /	05/27/03	0	0	0
%	ORL-NH3052703-4	ORL-NH3052703-4	MSD	31849	NH4	/ /	/ /	05/27/03	0	0	0

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	MPT-8-MW04S-04	JAX31849-2	NORMAL	31849	NTA	05/21/03	/ /	05/23/03	0	0	2
MG/L	MPT-8-MW09S-04	JAX31849-1	NORMAL	31849	NTA	05/21/03	/ /	05/23/03	0	0	2
MG/L	MPT-8-MW04S-04	JAX31849-2	NORMAL	31849	NTI	05/21/03	/ /	05/22/03	0	0	1
MG/L	MPT-8-MW09S-04	JAX31849-1	NORMAL	31849	NTI	05/21/03	/ /	05/22/03	0	0	1
%	NIT030521-3	NIT030521-3	MS	31849	NTI	/ /	/ /	05/21/03	0	0	0
%	NIT030521-4	NIT030521-4	MSD	31849	NTI	/ /	/ /	05/21/03	0	0	0
MG/L	NIT030521-5	NIT030521-5	P_BLANK	31849	NTI	/ /	/ /	05/22/03	0	0	0
%	NIT030521-6	NIT030521-6	LCS	31849	NTI	/ /	/ /	05/22/03	0	0	0
MG/L	MPT-8-MW04S-04	JAX31849-2	NORMAL	31849	NTIA	05/21/03	/ /	05/23/03	0	0	2
MG/L	MPT-8-MW09S-04	JAX31849-1	NORMAL	31849	NTIA	05/21/03	/ /	05/23/03	0	0	2
MG/L	ORL-NOX052303A-1	ORL-NOX052303A-1	P_BLANK	31849	NTIA	/ /	/ /	05/23/03	0	0	0
%	ORL-NOX052303A-2	ORL-NOX052303A-2	LCS	31849	NTIA	/ /	/ /	05/23/03	0	0	0
%	ORL-NOX052303A-3	ORL-NOX052303A-3	MS	31849	NTIA	/ /	/ /	05/23/03	0	0	0
%	ORL-NOX052303A-4	ORL-NOX052303A-4	MSD	31849	NTIA	/ /	/ /	05/23/03	0	0	0
MG/L	MPT-8-MW04S-04	JAX31849-2	NORMAL	31849	OPO4	05/21/03	/ /	05/22/03	0	0	1
MG/L	MPT-8-MW09S-04	JAX31849-1	NORMAL	31849	OPO4	05/21/03	/ /	05/22/03	0	0	1
MG/L	OP030521-1	OP030521-1	P_BLANK	31849	OPO4	/ /	/ /	05/21/03	0	0	0
%	OP030521-2	OP030521-2	LCS	31849	OPO4	/ /	/ /	05/21/03	0	0	0
%	OP030521-3	OP030521-3	MS	31849	OPO4	/ /	/ /	05/21/03	0	0	0
%	OP030521-4	OP030521-4	MSD	31849	OPO4	/ /	/ /	05/21/03	0	0	0
MG/L	OP030521-5	OP030521-5	P_BLANK	31849	OPO4	/ /	/ /	05/22/03	0	0	0
%	OP030521-6	OP030521-6	LCS	31849	OPO4	/ /	/ /	05/22/03	0	0	0
MG/L	MPT-8-MW04S-04	JAX31849-2	NORMAL	31849	SO4	05/21/03	/ /	05/23/03	0	0	2
MG/L	MPT-8-MW09S-04	JAX31849-1	NORMAL	31849	SO4	05/21/03	/ /	05/23/03	0	0	2
MG/L	SUL030523-1	SUL030523-1	P_BLANK	31849	SO4	/ /	/ /	05/23/03	0	0	0
%	SUL030523-2	SUL030523-2	LCS	31849	SO4	/ /	/ /	05/23/03	0	0	0
%	SUL030523-3	SUL030523-3	MS	31849	SO4	/ /	/ /	05/23/03	0	0	0

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
%	SUL030523-4	SUL030523-4	MSD	31849	SO4	/ /	/ /	05/23/03	0	0	0
MG/L	MPT-8-MW04S-04	JAX31849-2	NORMAL	31849	TOC	05/21/03	/ /	05/23/03	0	0	2
MG/L	MPT-8-MW09S-04	JAX31849-1	NORMAL	31849	TOC	05/21/03	/ /	05/23/03	0	0	2
MG/L	TOC030523-1	TOC030523-1	P_BLANK	31849	TOC	/ /	/ /	05/23/03	0	0	0
%	TOC030523-2	TOC030523-2	LCS	31849	TOC	/ /	/ /	05/23/03	0	0	0
%	TOC030523-3	TOC030523-3	MS	31849	TOC	/ /	/ /	05/23/03	0	0	0
%	TOC030523-4	TOC030523-4	MSD	31849	TOC	/ /	/ /	05/23/03	0	0	0

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 052103 | PAGE 1 OF 1

PROJECT NO: N4259	FACILITY: NAS JAX	PROJECT MANAGER Terry Hansen	PHONE NUMBER	LABORATORY NAME AND CONTACT: ENCO
SAMPLERS (SIGNATURE) Charles Metz		FIELD OPERATIONS LEADER Charles Metz	PHONE NUMBER 904-636-6125	ADDRESS
		CARRIER/WAYBILL NUMBER Dropped Samples @ Lab		CITY, STATE JAX, FL

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

JA431849

DATE YEAR 2003	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAP (G) COMP (C)	No. OF CONTAINERS	365.3	350.1+353.1	Alk, Cl, Nitrite, Nitrate, Sulfate	TOC	Fe+MN				COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									P	P	P	G	P				
PRESERVATIVE USED									None	H_2SO_4	None	H_2SO_4	HNO_3				
5-21	1225	MPT-8-MW09s-04				GW	G	5	✓	✓	✓	✓	✓				
5-21	1330	MPT-8-MW04s-04				GW	G	5	✓	✓	✓	✓	✓				
																	*365.3 needs to be ~~field~~ filtered @ Lab

1. RELINQUISHED BY Charles Metz	DATE 5-21-03	TIME 1502	1. RECEIVED BY [signature]	DATE 5/21/03	TIME 1502
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

Environmental Conservation Laboratories, Inc.
4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
904 / 296-3007
Fax 904 / 296-6210
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E82277

CLIENT : Tetra Tech NUS
ADDRESS: 8640 Philips Highway
Suite 16
Jacksonville, FL 32256

REPORT # : JAX31849
DATE SUBMITTED: May 21, 2003
DATE REPORTED : May 28, 2003

ATTENTION: T. Hansen

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

REFERENCE: N4259

NAS Mayport

05/21/03

#1 - MPT-8-MW09S-04 @ 12:25
#2 - MPT-8-MW04S-04 @ 13:30

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. This data has been produced in accordance with NELAC Standards (July, 1999). This report shall not be reproduced except in full, without the written approval of the laboratory. Results for these procedures apply only to the samples as submitted.

NOTE: Orthophosphate was filtered in the laboratory upon receipt.

PROJECT MANAGER _____
Scott D. Martin

LABORATORY CERTIFICATIONS

Laboratory Certification: NELAC:E82277

All analyses reported with this project were analyzed by the facility indicated unless identified below.

PARAMETER	LAB CERT #'s
Ammonia as Nitrogen, EPA Method 350.1	NELAC:E83182
Nitrogen, Nitrate, EPA Method 353.1	NELAC:E83182
Nitrogen, NO3-NO2, EPA Method 353.1	NELAC:E83182

ENCO LABORATORIES
REPORT # : JAX31849
DATE REPORTED: May 28, 2003
REFERENCE : N4259
PROJECT NAME : NAS Mayport

RESULTS OF ANALYSIS

MISCELLANEOUS	METHOD	LAB BLANK	Units
Alkalinity	310.1	2.0 U	mg/L
Date Analyzed		05/23/03 15:00	
Ammonia-N	350.1	0.020 U	mg/L
Date Analyzed		05/27/03 13:27	
Chloride, Total	325.3	1.0 U	mg/L
Date Analyzed		05/23/03 19:00	
Nitrite-N	354.1	0.10 U	mg/L
Date Analyzed		05/22/03 11:00	
Nitrate-Nitrite-N	353.1	0.10 U	mg/L
Date Analyzed		05/23/03 14:51	
Orthophosphate-P	365.3	0.12 U	mg/L
Date Analyzed		05/21/03 12:00	
Sulfate, Total	375.4	1.0 U	mg/L
Date Analyzed		05/23/03 14:00	
Total Org. Carbon	415.1	1.0 U	mg/L
Date Analyzed		05/23/03 20:00	
Orthophosphate-P	365.3	0.12 U	mg/L
Date Analyzed		05/22/03 11:30	

TOTAL METALS	METHOD	LAB BLANK	Units
Iron	200.7	0.10 U	mg/L
Date Analyzed		05/24/03 15:02	
Manganese	200.7	0.050 U	mg/L
Date Analyzed		05/24/03 15:01	

U = Compound was analyzed for but not detected to the level shown.

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**T. HANSEN**	**DATE:**	**JUNE 20, 2003**
FROM:	**ETHAN G. LEE**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – IRON, MANGANESE, AND MISCELLANEOUS PARAMETERS**
NS MAYPORT – CTO 253
SAMPLE DELIVERY GROUP (SDG) – 31788

SAMPLES: 3/AQUEOUS/

MPT-8-MW06S-04 MPT-8-MW17S-04 MPT-8-MW18S-04

Overview

The sample set for NS Mayport, CTO 253, SDG 31788, consists of three (3) aqueous environmental samples.

All samples were analyzed for iron, manganese, alkalinity, ammonia, chloride, nitrate, nitrite, nitrate/nitrite, orthophosphate, sulfate, and total organic carbon (TOC). The samples were collected by Tetra Tech NUS on May 19, 2003 and analyzed by ENCO Laboratories. Metals analyses were conducted using EPA method 200.7. Alkalinity analyses were conducted using EPA method 310.1. Ammonia analyses were conducted using EPA method 350.1. Chloride analyses were conducted using EPA method 325.3. Nitrate and nitrate/nitrite analyses were conducted using EPA method 353.1. Nitrite analyses were conducted using EPA method 354.1. Orthophosphate analyses were conducted using EPA method 365.3. Sulfate analyses were conducted using EPA method 375.4. TOC analyses were conducted using EPA method 415.1.

Metals analyses were conducted using Inductively Coupled Plasma (ICP) methodology.

These data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • Calibration Recoveries
* • Laboratory Blank Analyses
• Detection Limits

* - All quality control criteria were met for this parameter.

Detection Limits

The positive result for sulfate in sample MPT-8-MW18S-04 was between the method detection limit (MDL) and the method quantitation limit (MQL). The positive result reported for sulfate was qualified as estimated (J) due to uncertainty near the detection limit.

Notes

Results for manganese on the Form 1s and the electronic data deliverable did not agree. The data reviewer amended the database for all samples.

The detection limits reported by the laboratory for nitrite (0.10 mg/L) do not meet the detection limits in the laboratory specifications (0.01 mg/L).

The laboratory reported the nondetected results for the miscellaneous parameters in the electronic data deliverable (EDD) as zero (0). The data reviewer changed the zero values to the reporting limit values in the database.

Executive Summary

Laboratory Performance: No laboratory quality control issues were noted for this SDG.

Other Factors Affecting Data Quality: Sulfate was qualified due to uncertainty near the detection limit.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", July 2002 and the NFESC document entitled "Navy IRCDQM" (September 1999).

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS
Ethan G. Lee
Environmental Scientist

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is less than sample activity

PROJ_NO: 4259

SDG: 31788 MEDIA: WATER DATA FRACTION: MISC

nsample	MPT-8-MW06S-04	nsample	MPT-8-MW17S-04	nsample	MPT-8-MW18S-04
samp_date	5/19/2003	samp_date	5/19/2003	samp_date	5/19/2003
lab_id	JAX31788-1	lab_id	JAX31788-3	lab_id	JAX31788-2
qc_type	NM	qc_type	NM	qc_type	NM
Pct_Solids	0	Pct_Solids	0	Pct_Solids	0
DUP_OF:		DUP_OF:		DUP_OF:	

Parameter	units	Result	Val Qual	Qual Code
ALKALINITY	MG/L	160		
AMMONIA	MG/L	0.020	U	
CHLORIDE	MG/L	8		
NITRATE	MG/L	0.88		
NITRITE	MG/L	0.10	U	
NITRITE/NITRATE	MG/L	0.88		
ORTHOPHOSPHATE	MG/L	0.12	U	
SULFATE	MG/L	17		
TOTAL ORGANIC CARBON	MG/L	3		

Parameter	units	Result	Val Qual	Qual Code
ALKALINITY	MG/L	320		
AMMONIA	MG/L	0.32		
CHLORIDE	MG/L	11		
NITRATE	MG/L	0.10	U	
NITRITE	MG/L	0.10	U	
NITRITE/NITRATE	MG/L	0.10	U	
ORTHOPHOSPHATE	MG/L	0.12		
SULFATE	MG/L	9		
TOTAL ORGANIC CARBON	MG/L	6		

Parameter	units	Result	Val Qual	Qual Code
ALKALINITY	MG/L	290		
AMMONIA	MG/L	0.049		
CHLORIDE	MG/L	9		
NITRATE	MG/L	0.10	U	
NITRITE	MG/L	0.10	U	
NITRITE/NITRATE	MG/L	0.10	U	
ORTHOPHOSPHATE	MG/L	0.12	U	
SULFATE	MG/L	3	J	P
TOTAL ORGANIC CARBON	MG/L	5		

PROJ_NO: 4259

SDG: 31788 MEDIA: WATER DATA FRACTION: M

nsample	MPT-8-MW06S-04	nsample	MPT-8-MW17S-04	nsample	MPT-8-MW18S-04
samp_date	5/19/2003	samp_date	5/19/2003	samp_date	5/19/2003
lab_id	JAX31788-1	lab_id	JAX31788-3	lab_id	JAX31788-2
qc_type	NM	qc_type	NM	qc_type	NM
units	MG/L	units	MG/L	units	MG/L
Pct_Solids	0	Pct_Solids	0	Pct_Solids	0
DUP_OF:		DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
IRON	1.6		
MANGANESE	0.095		

Parameter	Result	Val Qual	Qual Code
IRON	4.8		
MANGANESE	0.11		

Parameter	Result	Val Qual	Qual Code
IRON	2.1		
MANGANESE	0.095		

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

ENCO LABORATORIES
REPORT # : JAX31788
DATE REPORTED: May 27, 2003
REFERENCE : N4259
PROJECT NAME : NAS Mayport

RESULTS OF ANALYSIS

TOTAL METALS	METHOD	MPT-8-MW06S-04	MPT-8MW18S-04	Units
Iron	200.7	**1.6**	**2.1**	mg/L
Date Analyzed		05/21/03 16:06	05/21/03 18:01	
Manganese	200.7	**0.095**	**0.095**	mg/L
Date Analyzed		05/21/03 16:06	05/21/03 18:01	

ENCO LABORATORIES
REPORT # : JAX31788
DATE REPORTED: May 27, 2003
REFERENCE : N4259
PROJECT NAME : NAS Mayport

RESULTS OF ANALYSIS

TOTAL METALS	METHOD	MPT-8MW17S-04	LAB BLANK	Units
Iron	200.7	**4.8**	0.10 U	mg/L
Date Analyzed		05/21/03 18:08	05/21/03 15:54	
Manganese	200.7	**0.11**	0.050 U	mg/L
Date Analyzed		05/21/03 18:08	05/21/03 15:54	

U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES
REPORT # : JAX31788
DATE REPORTED: May 27, 2003
REFERENCE : N4259
PROJECT NAME : NAS Mayport

RESULTS OF ANALYSIS

MISCELLANEOUS	METHOD	MPT-8-MW06S-04	MPT-8MW18S-04	Units
Alkalinity (as CaCO3)	310.1	**160**	**290**	mg/L
Date Analyzed		05/21/03 12:00	05/21/03 12:00	
Ammonia-N	350.1	0.020 U	**0.049**	mg/L
Date Analyzed		05/23/03 16:49	05/23/03 16:50	
Chloride, Total	325.3	**8.0**	**9.0**	mg/L
Date Analyzed		05/23/03 19:00	05/23/03 19:00	
Nitrate-N	353.1	**0.88**	0.10 U	mg/L
Date Analyzed		05/21/03 16:55	05/21/03 16:55	
Nitrite-N	354.1	0.10 U	0.10 U	mg/L
Date Analyzed		05/19/03 20:30	05/19/03 20:30	
Nitrate-Nitrite-N	353.1	**0.88**	0.10 U	mg/L
Date Analyzed		05/21/03 11:15	05/21/03 11:09	
Orthophosphate-P	365.3	0.12 U	0.12 U	mg/L
Date Analyzed		05/19/03 18:00	05/19/03 18:00	
Sulfate, Total	375.4	**17**	**3.0** I	mg/L
Date Analyzed		05/23/03 14:00	05/23/03 14:00	
Total Org. Carbon	415.1	**3.0**	**5.0**	mg/L
Date Analyzed		05/23/03 20:00	05/23/03 20:00	

U = Compound was analyzed for but not detected to the level shown.
I = Analyte detected; value is between the Method Detection Level (MDL) and the Method Quantitation Level (MQL).

ENCO LABORATORIES
REPORT # : JAX31788
DATE REPORTED: May 27, 2003
REFERENCE : N4259
PROJECT NAME : NAS Mayport

RESULTS OF ANALYSIS

MISCELLANEOUS	METHOD	MPT-8MW17S-04	LAB BLANK	Units
Alkalinity (as CaCO3)	310.1	**320**	2.0 U	mg/L
Date Analyzed		05/21/03 12:00	05/21/03 12:00	
Ammonia-N	350.1	**0.32**	0.020 U	mg/L
Date Analyzed		05/23/03 16:51	05/23/03 16:41	
Chloride, Total	325.3	**11**	1.0 U	mg/L
Date Analyzed		05/23/03 19:00	05/23/03 19:00	
Nitrate-N	353.1	0.10 U	NR	mg/L
Date Analyzed		05/21/03 16:55		
Nitrite-N	354.1	0.10 U	0.10 U	mg/L
Date Analyzed		05/19/03 20:30	05/19/03 20:30	
Nitrate-Nitrite-N	353.1	0.10 U	0.10 U	mg/L
Date Analyzed		05/21/03 11:12	05/21/03 10:57	
Orthophosphate-P	365.3	**0.12**	0.12 U	mg/L
Date Analyzed		05/19/03 18:00	05/19/03 18:00	
Sulfate, Total	375.4	**9.0**	1.0 U	mg/L
Date Analyzed		05/23/03 14:00	05/23/03 14:00	
Total Org. Carbon	415.1	**6.0**	1.0 U	mg/L
Date Analyzed		05/23/03 20:00	05/23/03 20:00	

NR = Analysis not requested for this sample.
U = Compound was analyzed for but not detected to the level shown.

APPENDIX C

SUPPORT DOCUMENTATION

31788

HOLDING TIME

06/11/03

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	ALK030521-1	ALK030521-1	P_BLANK	31788	ALK	/ /	/ /	05/21/03	0	0	0
%	ALK030521-2	ALK030521-2	LCS	31788	ALK	/ /	/ /	05/21/03	0	0	0
%	ALK030521-3	ALK030521-3	MS	31788	ALK	/ /	/ /	05/21/03	0	0	0
%	ALK030521-4	ALK030521-4	MSD	31788	ALK	/ /	/ /	05/21/03	0	0	0
MG/L	MPT-8-MW06S-04	JAX31788-1	NORMAL	31788	ALK	05/19/03	/ /	05/21/03	0	0	2
MG/L	MPT-8-MW17S-04	JAX31788-3	NORMAL	31788	ALK	05/19/03	/ /	05/21/03	0	0	2
MG/L	MPT-8-MW18S-04	JAX31788-2	NORMAL	31788	ALK	05/19/03	/ /	05/21/03	0	0	2
MG/L	CL030523-1	CL030523-1	P_BLANK	31788	CL	/ /	/ /	05/23/03	0	0	0
%	CL030523-2	CL030523-2	LCS	31788	CL	/ /	/ /	05/23/03	0	0	0
%	CL030523-3	CL030523-3	MS	31788	CL	/ /	/ /	05/23/03	0	0	0
%	CL030523-4	CL030523-4	MSD	31788	CL	/ /	/ /	05/23/03	0	0	0
MG/L	MPT-8-MW06S-04	JAX31788-1	NORMAL	31788	CL	05/19/03	/ /	05/23/03	0	0	4
MG/L	MPT-8-MW17S-04	JAX31788-3	NORMAL	31788	CL	05/19/03	/ /	05/23/03	0	0	4
MG/L	MPT-8-MW18S-04	JAX31788-2	NORMAL	31788	CL	05/19/03	/ /	05/23/03	0	0	4
MG/L	JVB125-1	JVB125-1	P_BLANK	31788	M	/ /	/ /	05/21/03	0	0	0
%	JVB125-2	JVB125-2	LCS	31788	M	/ /	/ /	05/21/03	0	0	0
%	JVB125-3	JVB125-3	MS	31788	M	/ /	/ /	05/21/03	0	0	0
%	JVB125-4	JVB125-4	MSD	31788	M	/ /	/ /	05/21/03	0	0	0
MG/L	MPT-8-MW06S-04	JAX31788-1	NORMAL	31788	M	05/19/03	/ /	05/21/03	0	0	2
MG/L	MPT-8-MW17S-04	JAX31788-3	NORMAL	31788	M	05/19/03	/ /	05/21/03	0	0	2
MG/L	MPT-8-MW18S-04	JAX31788-2	NORMAL	31788	M	05/19/03	/ /	05/21/03	0	0	2
MG/L	MPT-8-MW06S-04	JAX31788-1	NORMAL	31788	NH4	05/19/03	/ /	05/23/03	0	0	4
MG/L	MPT-8-MW17S-04	JAX31788-3	NORMAL	31788	NH4	05/19/03	/ /	05/23/03	0	0	4
MG/L	MPT-8-MW18S-04	JAX31788-2	NORMAL	31788	NH4	05/19/03	/ /	05/23/03	0	0	4

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	ORL-NH3052303-1	ORL-NH3052303-1	P_BLANK	31788	NH4	/ /	/ /	05/23/03	0	0	0
%	ORL-NH3052303-2	ORL-NH3052303-2	LCS	31788	NH4	/ /	/ /	05/23/03	0	0	0
%	ORL-NH3052303-3	ORL-NH3052303-3	MS	31788	NH4	/ /	/ /	05/23/03	0	0	0
%	ORL-NH3052303-4	ORL-NH3052303-4	MSD	31788	NH4	/ /	/ /	05/23/03	0	0	0
MG/L	MPT-8-MW06S-04	JAX31788-1	NORMAL	31788	NTA	05/19/03	/ /	05/21/03	0	0	2
MG/L	MPT-8-MW17S-04	JAX31788-3	NORMAL	31788	NTA	05/19/03	/ /	05/21/03	0	0	2
MG/L	MPT-8-MW18S-04	JAX31788-2	NORMAL	31788	NTA	05/19/03	/ /	05/21/03	0	0	2
MG/L	MPT-8-MW06S-04	JAX31788-1	NORMAL	31788	NTI	05/19/03	/ /	05/19/03	0	0	0
MG/L	MPT-8-MW17S-04	JAX31788-3	NORMAL	31788	NTI	05/19/03	/ /	05/19/03	0	0	0
MG/L	MPT-8-MW18S-04	JAX31788-2	NORMAL	31788	NTI	05/19/03	/ /	05/19/03	0	0	0
MG/L	NIT030501-13	NIT030501-13	P_BLANK	31788	NTI	/ /	/ /	05/19/03	0	0	0
%	NIT030501-14	NIT030501-14	LCS	31788	NTI	/ /	/ /	05/19/03	0	0	0
%	NIT030501-3	NIT030501-3	MS	31788	NTI	/ /	/ /	05/01/03	0	0	0
%	NIT030501-4	NIT030501-4	MSD	31788	NTI	/ /	/ /	05/01/03	0	0	0
MG/L	MPT-8-MW06S-04	JAX31788-1	NORMAL	31788	NTIA	05/19/03	/ /	05/21/03	0	0	2
MG/L	MPT-8-MW17S-04	JAX31788-3	NORMAL	31788	NTIA	05/19/03	/ /	05/21/03	0	0	2
MG/L	MPT-8-MW18S-04	JAX31788-2	NORMAL	31788	NTIA	05/19/03	/ /	05/21/03	0	0	2
MG/L	ORL-NOX052103A-1	ORL-NOX052103A-1	P_BLANK	31788	NTIA	/ /	/ /	05/21/03	0	0	0
%	ORL-NOX052103A-2	ORL-NOX052103A-2	LCS	31788	NTIA	/ /	/ /	05/21/03	0	0	0
%	ORL-NOX052103A-3	ORL-NOX052103A-3	MS	31788	NTIA	/ /	/ /	05/21/03	0	0	0
%	ORL-NOX052103A-4	ORL-NOX052103A-4	MSD	31788	NTIA	/ /	/ /	05/21/03	0	0	0
MG/L	MPT-8-MW06S-04	JAX31788-1	NORMAL	31788	OPO4	05/19/03	/ /	05/19/03	0	0	0
MG/L	MPT-8-MW17S-04	JAX31788-3	NORMAL	31788	OPO4	05/19/03	/ /	05/19/03	0	0	0
MG/L	MPT-8-MW18S-04	JAX31788-2	NORMAL	31788	OPO4	05/19/03	/ /	05/19/03	0	0	0
MG/L	OP030426-15	OP030426-15	P_BLANK	31788	OPO4	/ /	/ /	05/19/03	0	0	0
%	OP030426-16	OP030426-16	LCS	31788	OPO4	/ /	/ /	05/19/03	0	0	0
%	OP030426-3	OP030426-3	MS	31788	OPO4	/ /	/ /	04/26/03	0	0	0

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
%	OP030426-4	OP030426-4	MSD	31788	OPO4	/ /	/ /	04/26/03	0	0	0
MG/L	MPT-8-MW06S-04	JAX31788-1	NORMAL	31788	SO4	05/19/03	/ /	05/23/03	0	0	4
MG/L	MPT-8-MW17S-04	JAX31788-3	NORMAL	31788	SO4	05/19/03	/ /	05/23/03	0	0	4
MG/L	MPT-8-MW18S-04	JAX31788-2	NORMAL	31788	SO4	05/19/03	/ /	05/23/03	0	0	4
MG/L	SUL030523-1	SUL030523-1	P_BLANK	31788	SO4	/ /	/ /	05/23/03	0	0	0
%	SUL030523-2	SUL030523-2	LCS	31788	SO4	/ /	/ /	05/23/03	0	0	0
%	SUL030523-3	SUL030523-3	MS	31788	SO4	/ /	/ /	05/23/03	0	0	0
%	SUL030523-4	SUL030523-4	MSD	31788	SO4	/ /	/ /	05/23/03	0	0	0
MG/L	MPT-8-MW06S-04	JAX31788-1	NORMAL	31788	TOC	05/19/03	/ /	05/23/03	0	0	4
MG/L	MPT-8-MW17S-04	JAX31788-3	NORMAL	31788	TOC	05/19/03	/ /	05/23/03	0	0	4
MG/L	MPT-8-MW18S-04	JAX31788-2	NORMAL	31788	TOC	05/19/03	/ /	05/23/03	0	0	4
MG/L	TOC030523-1	TOC030523-1	P_BLANK	31788	TOC	/ /	/ /	05/23/03	0	0	0
%	TOC030523-2	TOC030523-2	LCS	31788	TOC	/ /	/ /	05/23/03	0	0	0
%	TOC030523-3	TOC030523-3	MS	31788	TOC	/ /	/ /	05/23/03	0	0	0
%	TOC030523-4	TOC030523-4	MSD	31788	TOC	/ /	/ /	05/23/03	0	0	0

JTX01100

TETRA TECH NUS, INC. **CHAIN OF CUSTODY** | **NUMBER** 51903 | **PAGE** 1 **OF** 1

PROJECT NO: N4259	**FACILITY:** CROSS SWMU 7	**PROJECT MANAGER** Terry Hansen	**PHONE NUMBER**	**LABORATORY NAME AND CONTACT:** ENCO
SAMPLERS (SIGNATURE) Charles Metz		**FIELD OPERATIONS LEADER** Charles Metz	**PHONE NUMBER** 904-636-6125	**ADDRESS**
		CARRIER/WAYBILL NUMBER Dropped @ Lab		**CITY, STATE** JAX, FL

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2003	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	365.3	350.1+353.1	Alk, Cl, Nitrite, Sulfate	TOC	Fe+Mn				COMMENTS
								CONTAINER TYPE PLASTIC (P) or GLASS (G)	P	P	P	G	P				
								PRESERVATIVE USED	None	H_2SO_4	None	H_2SO_4	HNO_3				
5-19	0930	MPT-8-MW06s-04	—	—	—	GW	G	5	✓	✓	✓	✓	✓				
5-19	1135	MPT-8-MW18s-04	—	—	—	GW	G	5	✓	✓	✓	✓	✓				
5-19	1245	MPT-8-MW17s-04	—	—	—	GW	G	5	✓	✓	✓	✓	✓				

1. RELINQUISHED BY Charles Metz	DATE 5-19-03	TIME 1600	1. RECEIVED BY [signature]	DATE 5/19/03	TIME 1600
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

Environmental Conservation Laboratories, Inc.
4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
904 / 296-3007
Fax 904 / 296-6210
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E82277

CLIENT : Tetra Tech NUS
ADDRESS: 8640 Philips Highway
Suite 16
Jacksonville, FL 32256

REPORT # : JAX31788
DATE SUBMITTED: May 19, 2003
DATE REPORTED : May 27, 2003

ATTENTION: T. Hansen

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

REFERENCE: N4259

NAS Mayport

05/19/03

#1 - MPT-8-MW06S-04 @ 09:30
#2 - MPT-8-MW18S-04 @ 11:35
#3 - MPT-8-MW17S-04 @ 12:45

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. This data has been produced in accordance with NELAC Standards (July, 1999). This report shall not be reproduced except in full, without the written approval of the laboratory. Results for these procedures apply only to the samples as submitted.

PROJECT MANAGER Scott D Martin
Scott D. Martin

LABORATORY CERTIFICATIONS

Laboratory Certification: NELAC:E82277

All analyses reported with this project were analyzed by the facility indicated unless identified below.

PARAMETER	LAB CERT #'s
Ammonia as Nitrogen, EPA Method 350.1	NELAC:E83182
Nitrogen, Nitrate, EPA Method 353.1	NELAC:E83182
Nitrogen, NO3-NO2, EPA Method 353.1	NELAC:E83182