N00129.AR.000823
NSB NEW LONDON
5090.3a

DRAFT

Round 3 Groundwater Monitoring Report for Area A Landfill

Naval Submarine Base New London

Groton, Connecticut

Northern Division Naval Facilities Engineering Command

Contract Number N62472-90-D-1298

Contract Task Order 0203

August 2000

TETRA TECH NUS, INC.

080014/P

ROUND 3 GROUNDWATER MONITORING REPORT
FOR
AREA A LANDFILL

NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Northern Division
Environmental Branch Code 18
Naval Facilities Engineering Command
10 Industrial Highway, Mail Stop #82
Lester, Pennsylvania 19113-2090

Submitted by:
Tetra Tech NUS, Inc.
600 Clark Avenue, Suite 3
King of Prussia, Pennsylvania 19406-1433

CONTRACT NUMBER N62472-90-D-1298
CONTRACT TASK ORDER 0203

AUGUST 2000

PREPARED BY:

Mark L. Mengel

MARK L. MENGEL
PROJECT MANAGER
TETRA TECH NUS, INC
PITTSBURGH, PENNSYLVANIA

APPROVED BY:

John Trepanowski

JOHN J. TREPANOWSKI, P.E.
PROGRAM MANAGER
TETRA TECH NUS, INC
KING OF PRUSSIA, PENNSYLVANIA

TABLE OF CONTENTS

SECTION		PAGE NO.
1.0	**INTRODUCTION**	**1-1**
1.1	SCOPE AND OBJECTIVE	1-1
1.2	BACKGROUND INFORMATION	1-1
1.2.1	Base Description	1-1
1.2.2	Site Description and History	1-2
1.2.3	Previous Site Investigations	1-4
1.3	REPORT ORGANIZATION	1-8
2.0	**FIELD INVESTIGATION ACTIVITIES**	**2-1**
2.1	WATER LEVEL MEASUREMENT	2-1
2.2	GROUNDWATER SAMPLING	2-1
2.3	SURFACE WATER SAMPLING	2-3
2.4	DECONTAMINATION AND INVESTIGATION-DERIVED WASTE	2-3
3.0	**MONITORING RESULTS**	**3-1**
REFERENCES		**R-1**

APPENDICES

A	**FIELD ACTIVITIES LOG BOOK**
B	**GROUNDWATER LEVEL MEASUREMENT SHEET**
C	**MONITORING INSTRUMENT CALIBRATION LOGS**
D	**GROUNDWATER SAMPLE LOGHSEETS AND LOW-FLOW PURGE DATA SHEETS**
E	**CHAIN OF CUSTODY RECORDS**
F	**DATA VALIDATON LETTERS AND LABORATORY DATA SHEETS**

TABLES

NUMBER		PAGE NO.
2-1	Water Level Elevations (April 2000)	2-5
3-1	Round 3 Groundwater Monitoring	3-3
3-2	Round 3 Surface Water Results	3-6

FIGURES

NUMBER		PAGE NO.
1-1	Location Map NSB-NLON Groton, Connecticut	1-9
1-2	Site Map	1-10
2-1	Sample Locations	2-7
2-2	Potentiometric Surface Map	2-9
3-1	COC Exceedances of Monitoring Criteria	3-7

1.0 INTRODUCTION

This Round 3 Groundwater Monitoring Report for the Area A Landfill at the Naval Submarine Base New London (NSB-NLON) in Groton, Connecticut was prepared for the U.S. Department of the Navy (Navy) by Tetra Tech NUS, Inc. (TtNUS) under the Comprehensive Long-Term Environmental Action Navy (CLEAN), Contract Number N62472-90-D-1298, Contract Task Order (CTO) 0203.

This document has been prepared in accordance with the Navy Installation Restoration Laboratory Quality Assurance Guide (Interim Guidance) of the Naval Facilities Engineering Service Center, (NFESC, February 1996).

1.1 SCOPE AND OBJECTIVE

An Interim Remedial Action (IRA) was completed in 1997 at the Area A Landfill site to address the risk from direct exposure to landfill material and to minimize the risk of migration of chemicals of concern (COCs) from the landfill to the surrounding areas via groundwater. The IRA consisted of capping the site with a multi-layer low-permeability cover system and installing a surface water and shallow groundwater interception and diversion system upgradient from the cover system. The groundwater monitoring is being conducted to evaluate the effectiveness of the IRA.

The objective of this Round 3 Groundwater Monitoring Report is to present the results of the third round of long-term groundwater monitoring at the Area A Landfill site. Five existing Phase I and Phase II Remedial Investigation (RI) monitoring wells and 11 monitoring wells installed in May 1999 were sampled and analyzed for a suite of analytes based on an evaluation of site history and previous analytical results. Seven surface water samples located adjacent to monitoring wells were also obtained. Three additional surface water locations were to be sampled; however, due to a lack of surface water at these locations, samples were not obtained. Sampling and analyses were performed in accordance to the Groundwater Monitoring Plan (GMP) prepared for the Area A Landfill (TtNUS, January 1999). Because this is an interim report for the third round of groundwater monitoring, evaluation of monitoring results is limited to a comparison of these results to the criteria identified in the GMP for the Area A Landfill (TtNUS, January 1999).

1.2 BACKGROUND INFORMATION

1.2.1 Base Description

NSB-NLON is located in southeastern Connecticut in the Towns of Ledyard and Groton. It encompasses approximately 576 acres and lies on the east bank of the Thames River, approximately 6 miles north of

Long Island Sound. NSB-NLON is bounded to the east by Connecticut Route 12, to the south by Crystal Lake Road, and to the west by the Thames River (Figure 1-1). The northern border is a low, east-southeast trending ridge extending from the Thames River to Baldwin Hill.

NSB-NLON currently provides base command for naval submarine activities in the Atlantic Ocean. It also provides housing for Navy personnel and their families and supports submarine training facilities, military offices, medical facilities, and facilities for the submarine maintenance, repair, and overhaul.

1.2.2 Site Description and History

The Area A Landfill is located in the northeastern and north central part of NSB-NLON and encompasses approximately 13 acres (Figure 1-2). The Area A Landfill is relatively flat and is bordered by a steep, wooded hillside that rises to the south, a steep wooded ravine to the west, and the Area A Wetland to the north. Access to the west end of the landfill is via a gate off Wahoo Avenue and access to the east end of the landfill is via a paved road and gate adjacent to a parking lot and the Area A recreational facilities.

Before the Area A Landfill was opened, dredge spoil from the Thames River was deposited continuously along a major portion of the hillside and within the former valley, which is currently the Area A Wetland. The Area A Landfill reportedly opened sometime before 1957. However, a 1957 aerial photograph (USEPA, EPIC, 1957) shows no apparent landfilling activities, indicating a somewhat later start-up date. After the NSB-NLON incinerator closed in 1963, most of the wastes generated by submarine and base operations were disposed of in the landfill, including all non-salvageable materials.

The area fill method was reportedly used in landfill operations at the Area A Landfill. The area fill method consists of filling an area in a sequence of cells and lifts. Each lift is a specified thickness and consists of several cells. Each cell can be viewed as a rectangular area that is filled from back to front. The front area is the "working face" and is the location were new refuse is placed and is the area that is covered on a daily basis. The cover material used on the landfill was gravel obtained from the Groton water supply reservoir. The Area A Landfill closed in 1973.

After closure, a bituminous concrete pad approximately 160 x 100 feet in size was constructed in the southwest portion of the landfill for above-ground storage of industrial wastes. Steel drums, transformers, and electrical switches were stored on this pad. All of these materials have been properly disposed of off-site. This pad was also used for crane testing and test weights were stored there. The remainder of the Area A Landfill was unpaved and included a gravel covered parking lot (deployed parking) that was located in the central part of the landfill.

Site investigations were conducted at the Area A Landfill as part of a base-wide Phase I Remedial Investigation (RI) (Atlantic, August 1992) and a base-wide Phase II RI (B&R Environmental, March 1997). A site-specific Area A Landfill Focused Feasibility Study (FFS) (Atlantic, May 1995), and a Proposed Remedial Action Plan (PRAP), (Atlantic, June 1995) were also prepared. A Record of Decision (ROD) was prepared and signed by the Navy and United States Environmental Protection Agency (USEPA) Region I on September 26, 1995. The major components of the selected alternative as described in the ROD were as follows:

- Restricting access to the contaminated areas of the site using perimeter fencing and institutional controls.
- Capping the site with a low-permeability multi-layer cover system to prevent water infiltration into the landfill.
- Constructing an interception system to collect shallow groundwater and storm water and re-route these around the landfill
- Establishing landfill gas controls to manage landfill gas migration.
- Developing a groundwater monitoring plan to monitor the quality of groundwater after the landfill closure is completed.

A remedial design for the proposed landfill cover system was first prepared by Atlantic Environmental Services, Inc. (Atlantic) (Atlantic, July 1994) and subsequently amended and finalized by Brown & Root Environmental, Inc. (B&R Environmental) (B&R Environmental, December 1996b). As part of the re-design effort, a Geotechnical Field Investigation (HNUS, May 1995), an Area A East End Investigation (B&R Environmental, December 1996a), and a Groundwater/Leachate Modeling Study (B&R Environmental, October 1996) were also conducted.

Construction of the landfill cover system (including gas control and storm water and shallow groundwater interception systems) was completed as part of an Interim Remedial Action (IRA) in September 1997 by Foster Wheeler Environmental Corporation. Prior to commencement of construction, a large quantity of metal, concrete and wood debris, several thousand sandbags, the Deployed Parking lot, the electrical storage building (Building 496), the Master at Arms Building (Building 373), salt storage shed, and various other items that had been located on the surface of the landfill were removed or relocated. The majority of the surficial debris was disposed of off-site as scrap metal or at an off-site landfill. The debris that was salvageable by NSB-NLON was removed and relocated to other areas of NSB-NLON.

The preparation of the subgrade to the cover required excavation from the northern slope of the landfill and placement of the excavated material on the southern slope. Also, approximately 4,000 cubic yards of soil from the Rubble Fill Area at Bunker A 86 (Site 4) and 1,000 cubic yards of common fill were placed over the eastern portion of the landfill, beneath the area of the relocated Deployed Parking. The soils were then compacted. During the subgrade preparation activities, two storm water drainage structures located within the limits of the site were decommissioned. These structures consisted of open catch basins on the southern edge of the landfill that discharged into a reinforced concrete culvert running through the landfill and ultimately into the Area A Wetland. Both culverts were entirely filled with flowable concrete to eliminate potential voids in the subgrade due to pipe collapse. The catch basins were filled with materials unsuitable for placement in the landfill subgrade (e.g., tires, large metal and wood debris, large concrete debris, etc.) followed by encapsulation with flowable concrete fill.

1.2.3 Previous Site Investigations

Six field investigations have been conducted at the Area A Landfill. These include the following:

- Field investigation performed for the base-wide Phase I RI (Atlantic, August 1992)
- Supplemental field investigation performed for the Area A Landfill FFS (Atlantic, May 1995)
- Field investigation performed for the base-wide Phase II RI (B&R Environmental, March 1997)
- Geotechnical Field Investigation (HNUS, May 1995) and Area A East End Investigation (B&R Environmental, December 1996a) performed in support of the Area A Landfill Remedial Design (B&R Environmental, December 1996b)
- Field investigation performed for the Groundwater/Leachate Modeling Study, which supported the Area A Landfill Remedial Design (B&R Environmental, October 1996).

1.2.3.1 Base-Wide Phase I RI

Atlantic conducted a field investigation at the Area A Landfill in 1990 as part of the base-wide Phase I RI (Atlantic, August 1992). A total of 13 monitoring wells (2LMW7S, 2LMW7D, 2LMW8S, 2LMW8D, 2LMW9S, 2LMW9D, 2LMW13S, 2LMW13D, 2LMW14D, 2LMW17S, 2LMW17D, 2LMW18S, 2LMW18D) and 7 test borings (2LTB1 through 2LTB7) were installed. A total of 12 soil and 12 groundwater samples were collected from these monitoring wells and test borings. Soil samples were analyzed for Target Compound List (TCL) organics, Target Analyte List (TAL) inorganics, polychlorinated biphenyls (PCBs),

pesticides, and Toxicity Characteristics Leaching Procedure (TCLP) pesticides and metals. Groundwater samples were analyzed for the same parameters, except TCLP, plus radiological elements.

1.2.3.2 Area A Landfill FFS

Atlantic conducted a supplemental field investigation at the Area A Landfill in October and November 1993 to support the Area A Landfill FFS (Atlantic, May 1995). The main purpose of these field activities was to characterize the subsurface soil in the vicinity of the bituminous concrete pad located at the southwestern end of the landfill.

Twenty-four soil borings (2LTB8 through 2LTB31) were drilled to a depth of 16 feet or auger refusal. Based on field screening for volatile organic compounds (VOCs), with an HNu organic vapor analyzer and for PCBs with a field gas chromatograph, 13 subsurface soil sample were selected for analysis of TCL organics, PCBs, pesticides and TAL inorganics. Selected samples were also analyzed for organic content, cation exchange capacity, total organic carbon (TOC), dioxin and geotechnical parameters, including grain-size distribution, moisture content, and specific gravity. Two samples were also analyzed by the TCLP for all toxicity constituents.

1.2.3.3 Base-Wide Phase II RI

B&R Environmental conducted a field investigation at the Area A Landfill in 1994 as part of the base-wide Phase II RI (B&R Environmental, March 1997). A total of 10 monitoring wells (2LPW1S, 2LOW1S, 2LOW1D, 2LOW2S, 2LOW3S, 2LOW4S, 2LMW19S, 2LMW19D, 2LMW20S, 2LMW20D) were installed. Eleven soil samples were collected from two soil borings (2LTB13, 2LTB23). Two rounds of groundwater level measurements and groundwater sampling were conducted, including one in March 1994 and one in August 1994. Groundwater samples were analyzed for TCL organics, TAL inorganics, PCBs, and radiological elements.

1.2.3.4 Geotechnical Field Investigation

B&R Environmental conducted field activities at the Area A Landfill in February and March 1995 as part of the Geotechnical Field Investigation (HNUS, March 1995) performed in support of the remedial design for a landfill cover system. The purpose of the Geotechnical Field Investigation was to confirm the areal extent of the fill material and obtain additional geotechnical field data.

Twenty test pits (LF-TP01 to LF-TP13 and LF-TP15 to LF-TP21) were excavated along the edges of the Area A Landfill to allow for visual observation of subsurface conditions. The purpose of excavating these

test pits was primarily to determine the lateral extent of the fill material and, wherever practical (especially along the southern edge of the landfill), establish the depth and competence of bedrock.

Eight soil borings were drilled at strategic locations on the landfill plateau to establish the depth of bedrock and thickness of the fill and dredge spoil material. The soil borings were also used to collect six soil samples to be tested for geotechnical parameters (particle size, moisture content, classification, Atterberg limits, and triaxial compression) and three soil samples to be tested for analytical parameters (TCL organics, PCBs, and pesticides, and TAL inorganics). Four borings (LF-SB01 and LF-SB03 through LF-SB05) were advanced through the overburden to auger refusal at the bedrock. Two borings (LF-SB02, LF-SB06) were advanced through the overburden and approximately 5 feet into competent bedrock. Two borings (LF-TP01 and LF-TP07) were drilled through approximately 5 feet of bedrock at the bottom of previously excavated test pits.

1.2.3.5 Area A East End Investigation

B&R Environmental conducted field activities at the Area A Landfill in September 1995 as part of the Area A East End Investigation (B&R Environmental, December 1996a), performed in support of the remedial design for the landfill cover system. The purpose of the Area A East End Investigation was to verify that the fill used for the construction of the recreational facilities (Racquetball Building, tennis courts, and ball field) located at the extreme east end of Area A is of a different nature from that placed in the rest of the Area A Landfill, i.e., does not contain contaminated waste material, and therefore, does not need to be capped.

Six test trenches (LF-TP22 through LF-TP27) were excavated along the eastern boundary of the Area A Landfill cover system as designed to verify the eastern limit of contaminated fill material. The test trenches were field-screened for the presence of VOCs, and four soil samples were collected and analyzed TCL organics, PCBs, and pesticides; TAL inorganics and cyanide; and, total petroleum hydrocarbon (TPH).

Three soil borings (SB06 through SB08) were drilled in the vicinity of the Area A East End recreational facilities. These soil borings were advanced through the overburden to the bedrock to auger refusal. A total of six soil samples were collected from the fill and dredge spoil material and analyzed for TCL organics, PCBs, and pesticides; TAL inorganics and cyanide; and, TPH.

1.2.3.6 Groundwater/Leachate Modeling Study

B&R Environmental conducted field activities at the Area A Landfill in November/December 1995 as part of the Groundwater/Leachate Modeling Study (B&R Environmental, October 1996) performed in support

of the remedial design for the landfill cover system. The purpose of the Groundwater/Leachate Modeling Study was to evaluate the impact of the proposed landfill cover system on the saturated thickness of landfill material and on the flow and composition of the groundwater/leachate discharge from the landfill.

The modeling field investigation activities included the performance of the following activities:

- Surface infiltration tests at 10 locations (2LT1 thru 2LT10) throughout the surface of the landfill
- Installation of 13 overburden monitoring wells, including 6 in the landfill material (2LMW28F through 2LMW33F) and 7 in the underlying dredge spoil or alluvium (2LMW28DS, 2LMW29A, 2LMW30DS through 2LMW34DS).
- Installation of three bedrock wells, including two located upgradient from the Area A Landfill (2LMW35B and 2LMW36B) and one at the northeast end of the landfill (2LMW32B).
- Installation of 10 piezometers, including 7 (2LPZ1DS thru 2LPZ7DS) along the boundary between the Area A Landfill and Area A Wetland and 3 (2LPZ1F, 2LPZ2F, and 2LMW32PZ) at the northeast end of the landfill.
- Installation of eight staff gauges (SG07 thru SG14) along the boundary between the Area A Landfill and Area A Wetland.
- Slug testing of the newly installed wells and one piezometer (2LMW32PZ).
- Water level measurement for all newly installed monitoring wells, piezometers, and staff gauges as well as for all previously existing monitoring wells.
- Flow measurement and sampling of the groundwater seep (3MSP01) from the western face of the Area A Landfill into the Overbank Disposal Area (OBDA) (Site 3) of the adjoining Area A Downstream site. This sample was analyzed for TCL organics and TAL inorganics.

The Groundwater/Leachate Modeling Study provided a comprehensive analysis of the site geology and hydrogeology. The report provided surface contour maps of the four units (landfill material, dredge spoil, alluvium and bedrock) underlying the site; thickness maps for the landfill material and dredge spoil; surface contour maps for the water table and bedrock groundwater; geologic cross-sections; conceptual flow nets; and an analysis of vertical flow gradients.

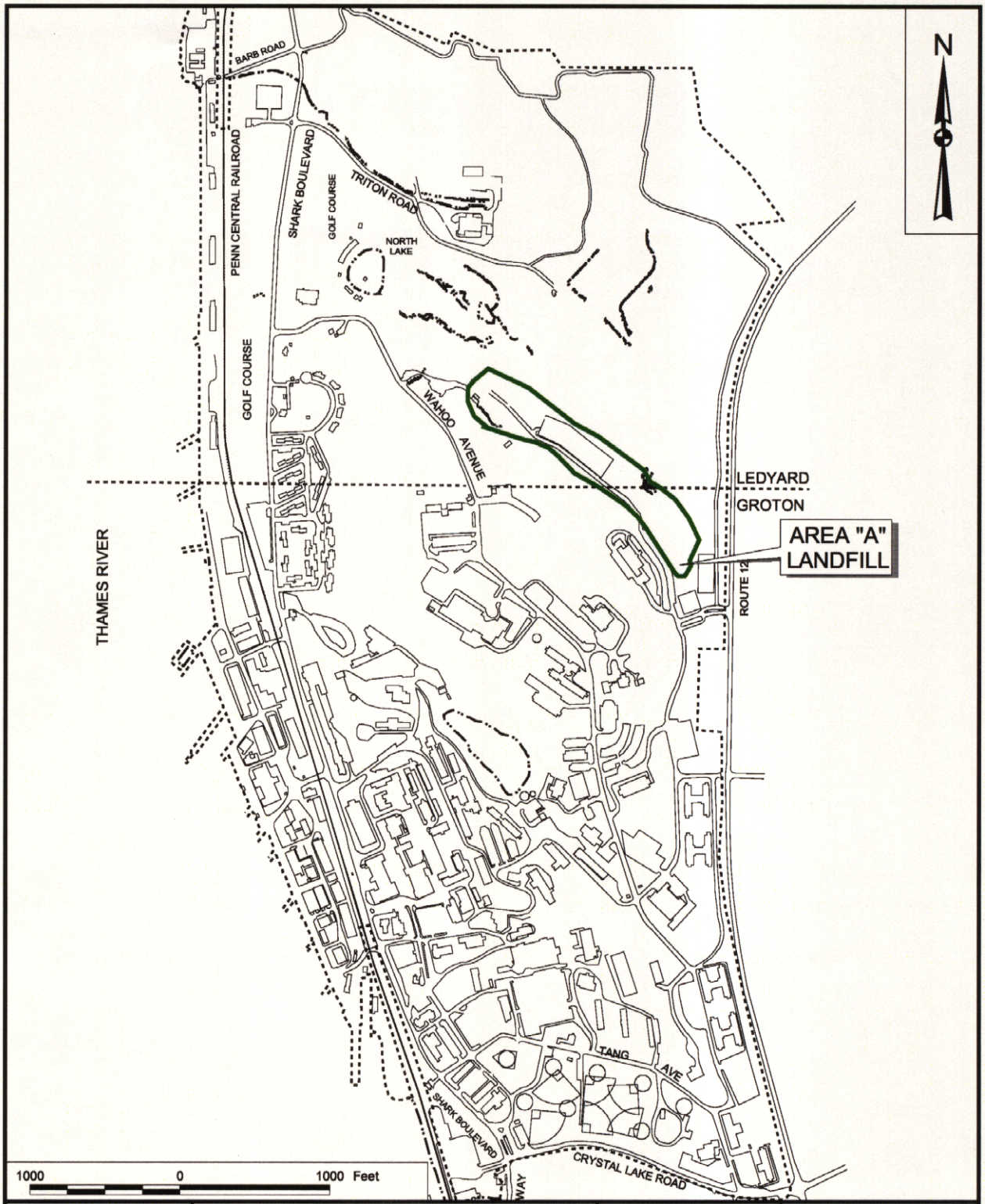
Additionally, the Groundwater/Leachate Modeling Study concluded that the Area A Landfill cover system would reduce the thickness of the saturated landfill material by approximately 0.1 foot along the Area A Wetland boundary, by approximately 0.5 foot at the eastern end of the landfill, by approximately 0.2 foot in the center of the landfill, and by over one foot at the western end of the landfill. The study concluded that the cover system would reduce the flux of groundwater COCs from the Area A Landfill to the Area A Wetland by 16 to 55 percent and that none of these COCs would exceed either the Federal AWQCs or the Connecticut's SWPCs.

1.3 REPORT ORGANIZATION

This report has been prepared in the following format to address the requirements for long-term groundwater monitoring at the Area A Landfill. Section 1.0 is this brief introduction including the project scope and objective and a discussion of previous investigations. Section 2.0 describes Round 3 field activities. Section 3.0 presents and evaluates the analytical results from the Round 3 sampling effort.

DRAWN BY	DATE	Tetra Tech NUS, Inc.	CONTRACT NUMBER	OWNER NO.
J. BELLONE	10/1/99		7363	
CHECKED BY	DATE	LOCATION MAP NSB - NLON GROTON, CONNECTICUT	APPROVED BY	DATE
MLM	8/22/00		Mark L Mengel	8/22/00
COST/SCHEDULE-AREA			APPROVED BY	DATE
			—	—
SCALE			DRAWING NO.	REV
AS NOTED			FIGURE 1-1	0

P:\GIS\NLON\7363ANNUAL.APR 10/1/99 JCB LOCATION MAP LAYOUT



DRAWN BY J. BELLONE — DATE 2/16/00	Tetra Tech NUS, Inc.	CONTRACT NUMBER 5082	OWNER NO. —
CHECKED BY MLM — DATE 2/18/00	SITE MAP NSB NLON GROTON, CONNECTICUT	APPROVED BY Mark L. Mengel — DATE 2/18/00	
COST/SCHEDULE-AREA		APPROVED BY — — DATE —	
SCALE AS NOTED		DRAWING NO. FIGURE 1-2	REV 0

P:\GIS\NLON\7363ANNUAL APR\AREA A LANDFILL SITE MAP JCB 2/21/00

2.0 FIELD INVESTIGATION ACTIVITIES

Field investigation activities performed as part of the third round of the groundwater monitoring at Area A Landfill included one round of water level measurements and a round of groundwater sampling of 16 existing monitoring wells, and sampling of seven surface water locations. Three additional surface water locations and one seep location were to be sampled; however, due to a lack of water, samples at these locations were not obtained. Round 3 field activities occurred in April 2000. Figure 2-1 illustrates the sampling locations. The 11 new monitoring wells and associated surface water staff gauges were installed in May 1999 prior to the Round 1 sampling event. These activities were performed in accordance with the procedures and methodologies described in GMP for Area A Landfill (TtNUS, January 1999). Copies of the field logbook, sample logsheets, calibration logs, field measurements, and sample chain-of custody records for Round 3 are provided in Appendices A through E.

2.1 WATER LEVEL MEASUREMENT

Prior to groundwater purging and sampling and surface water sampling, one round of water levels was measured from 11 new and 6 existing monitoring wells. Water levels were also measured at 11 new and 2 existing staff gauge locations; however, the survey data for the staff gauges is considered suspect due to some of the staff gauges being moved after installation. Therefore, the elevation data were not used in preparing the potentiometric surface map. The one existing staff gauge (SG-06) was located at the top of the headwall along the southern side of the dike. The other existing staff gauge (SG-25, formerly SG-12) was located along the shoreline of the pond northeast of the crane test pad. Table 2-1 summarizes the water level measurements minus the staff gauge data. Figure 2-2 illustrates the potentiometric surface map for the shallow groundwater at the Area A Landfill. Groundwater level measurement sheets are provided in Appendix B.

2.2 GROUNDWATER SAMPLING

A total of 16 monitoring wells comprised of 5 existing wells (2LMW20S, 2WMW21S, 4MW1S, 3MW12S and 3MW12D) and 11 newly installed monitoring wells (2WMW38DS through 2WMW47DS and 3MW37S), were sampled during the third round of groundwater monitoring. Low-flow purging and sampling techniques, as described in Sections 4.1.6 and 4.1.7 of the GMP (TtNUS, January 1999), were used.

The wells were purged using a peristaltic pump with disposable Teflon® tubing. Prior to purging, the initial static water level was measured in the well using a water-level indicator. During purging, the water level was measured every 3 to 5 minutes. The pumping rate was initially set at less than 0.3 liter per minute and

reduced to 0.1 to 0.2 liter per minute. The pumping rate was adjusted to not allow drawdown to exceed 0.3 foot during the purging (except for wells with low recharge rates). Copies of the low-flow purge data sheets are provided in Appendix D.

During purging, water quality parameters of pH, turbidity, specific conductance, temperature, Eh, salinity, and dissolved oxygen were measured and recorded every 5 minutes using a water quality meter and flow-through cell until all of the parameters stabilized and the minimum purge volume (equal to the stabilized drawdown volume plus the tubing volume) was removed. Stabilization of the above parameters is defined as follows:

- pH ± 0.2 standard units
- turbidity ± 10 % for values greater than 1 NTU
- specific conductance ± 10 %
- temperature ± 10 %
- Eh ± 10 mV
- dissolved oxygen ± 10 %.

Monitoring wells 2WMW38DS through 2WMW46DS were dewatered during purging due to the low recharge rate of the screened formation. The dewatered wells were sampled the following day. Well 2WMW38DS was sampled over 3 days due to insufficient recharge for supplying volume for the sample containers.

All purge water was containerized in 55-gallon drums for off-site disposal by a disposal subcontractor, as discussed in Section 2.4.

Following purging, samples were collected directly from the discharge end of the tubing. All sample containers were filled by allowing the discharge to flow gently down the inside of the container with minimal turbulence. Groundwater samples were analyzed for select TCL VOCs, SVOCs, PAHs, pesticides and PCBs; TAL metals (total and dissolved); TOC; chemical oxygen demand; and water chemistry parameters of total dissolved solids, alkalinity, chloride, sulfate, and hardness. Samples analyzed for VOCs were collected by drawing a column of water into the tubing with the pump; crimping the discharge end of the tubing; disconnecting the tubing from the well; releasing the tubing; and decanting the sample into the sample vials from an intake end of the tubing via gravity flow. For filtered inorganic samples, an in-line 0.45-micron filter was used, pre-rinsed with approximately 400 ml of deionized water and attached to the discharge end of the pump tubing. Copies of the groundwater sample logsheets and Chain of Custody Records are provided in Appendix D and E, respectively. Analytical results of the samples are discussed in Section 3.0.

2.3 SURFACE WATER SAMPLING

As detailed in Section 4.0 of the Groundwater Monitoring Plan for the Area A Landfill (TtNUS, January 1999), ten staff gauge locations and one seep sampling location were to be sampled as part of the sampling program. Due to the limited amount of surface water present within the wetland only seven of the surface water locations were sampled. Surface water samples were filled by directly filling sample containers in accordance with Section 4.1.3 of the GMP (TtNUS, January 1999). Surface water sample logsheets and chain of custody are provided in Appendix D and E, respectively. Analytical results for surface water samples are shown on Table 3-2.

2.4 DECONTAMINATION AND INVESTIGATION-DERIVED WASTE

All decontamination fluids were collected and containerized in 55-gallon drums. All water quality and water level meters were decontaminated by rinsing with deionized water prior to and after use.

All investigation derived waste (IDW), including purge water, and decontamination fluids were disposed off-site by Capitol Environmental Services, Inc, a licensed disposal company, subcontracted by TtNUS.

TABLE 2-1

WATER LEVEL ELEVATIONS (APRIL 2000)
ROUND 3 GROUNDWATER WATER MONITORING REPORT
AREA A LANDFILL, NSB-NLON, GROTON, CONNECTICUT
PAGE 1 OF 2

Well/ Staff Gauge Number	Ground Surface Elevation[1] (feet msl)	Reference Elevation[1] (feet msl)	Depth to Water (feet)	Water Elevation (feet msl)	Screened Unit[4]
2LMW20S	87.19	86.83	13.42[2]	73.41	F/A
2WMW21S	74.59	76.31	4.27[2]	72.04	DS
2WMW38DS	72.29	74.06	6.28[2]	67.78	DS
2WMW39DS	71.59	73.53	3.53[2]	70.00	SS/DS
2WMW40DS	71.49	73.21	2.95[2]	70.26	DS
2WMW41DS	70.99	73.39	2.18[2]	71.21	DS
2WMW42DS	71.19	73.65	1.94[2]	71.71	DS
2WMW43DS	71.39	74.36	2.37[2]	71.99	DS
2WMW44DS	70.99	73.72	1.64[2]	72.08	DS
2WMW45DS	72.19	74.24	1.94[2]	72.30	DS
2WMW46DS	71.69	73.53	1.23[2]	72.30	DS
2WMW47DS	71.99	73.39	1.94[2]	71.45	SS/DS
3MW12D	41.09	43.54	0.35[2]	43.19	BR
3MW12S	40.79	42.25	2.54[2]	39.71	A
3MW37S	44.09	47.39	3.57[2]	43.82	A
4MW1S	127.99	129.55	6.13[2]	123.42	BR
2LOW1S	[5]	88.57	11.08[3]	77.49	F/DS
2LMW28DS	[5]	87.61	12.54[3]	75.07	DS
SG-6	[6]	85.22	16.79	68.43	--
SG-15	71.29	74.03	--	--	--
SG-16	71.19	73.50	--	--	--
SG-17	71.19	73.57	--	--	--
SG-18	70.99	75.92	--	--	--
SG-19	70.99	75.83	--	--	--
SG-20	71.09	75.19	--	--	--
SG-21	70.39	75.32	--	--	--
SG-22	71.79	76.13	--	--	--
SG-23	71.09	75.83	--	--	--
SG-24	71.59	76.68	--	--	--
SG-25[7]	--	74.51	--	--	--

msl: mean sea level (1982 Base Traverse System)

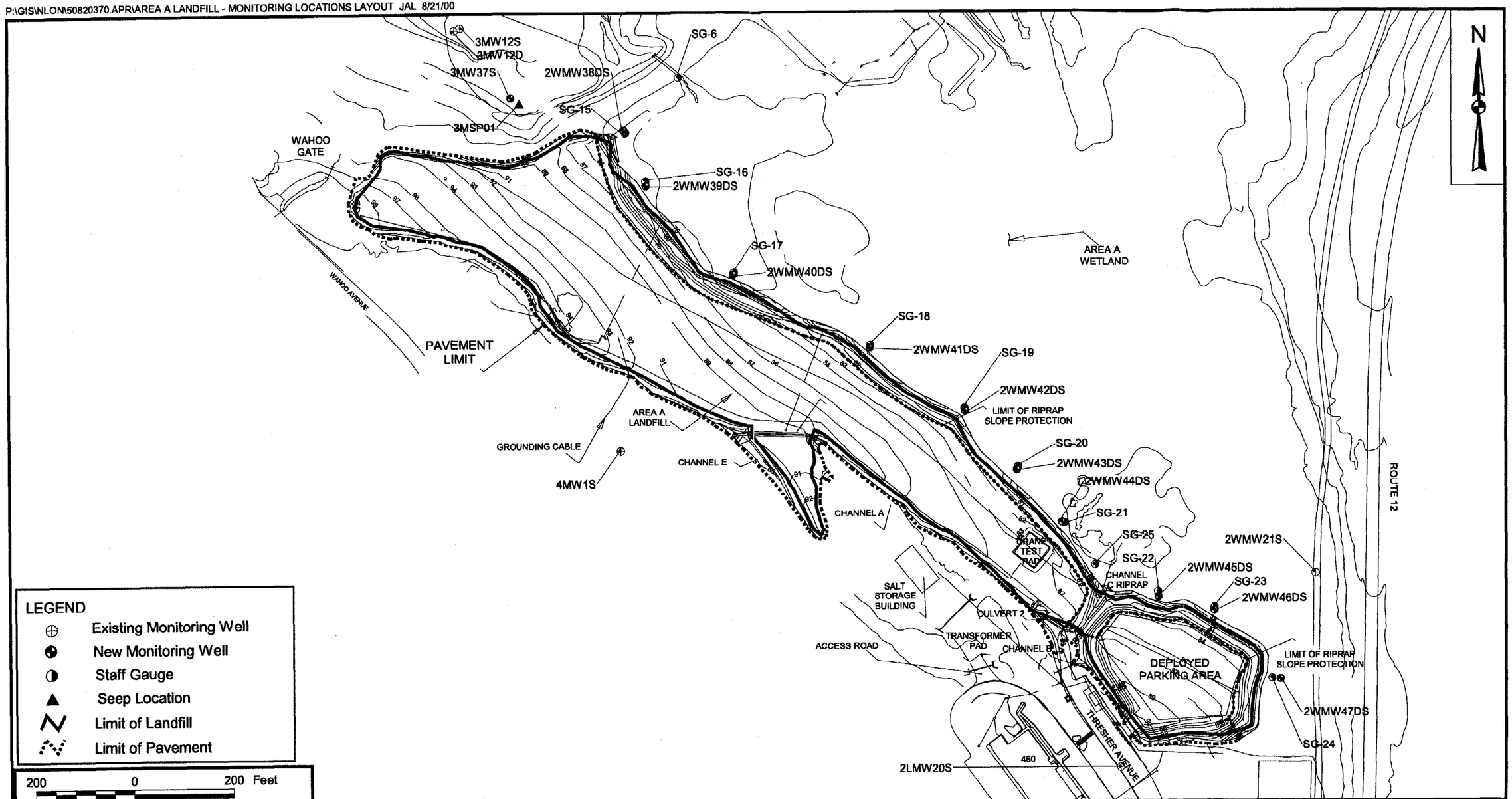
TABLE 2-1

WATER LEVEL ELEVATIONS (APRIL 2000)
ROUND 3 GROUNDWATER WATER MONITORING REPORT
AREA A LANDFILL, NSB-NLON, GROTON, CONNECTICUT
PAGE 2 OF 2

NOTES:

1 Reference elevation is top of well casing (1982 Base Traverse System)
2 Depth to water is from top of well casing. Measured January 17, 2000.
3 Depth to water is from top of well casing. Measured January 23, 2000.
4 F = fill; DS = dredge spoil; A = alluvium; BR = bedrock; SS = surficial sand
5 No survey data available. Ground surface not resurveyed after landfill cap installed.
6 Headwall of dike – ground surface elevation not surveyed.
7 Former staff gauge SG-12

P:\GIS\NLON\50820370.APR\AREA A LANDFILL - MONITORING LOCATIONS LAYOUT JAL 8/21/00



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY J. BELLONE	DATE 1/12/00
CHECKED BY MLM	DATE 8/22/00
COST/SCHEDULE-AREA	
SCALE AS NOTED	

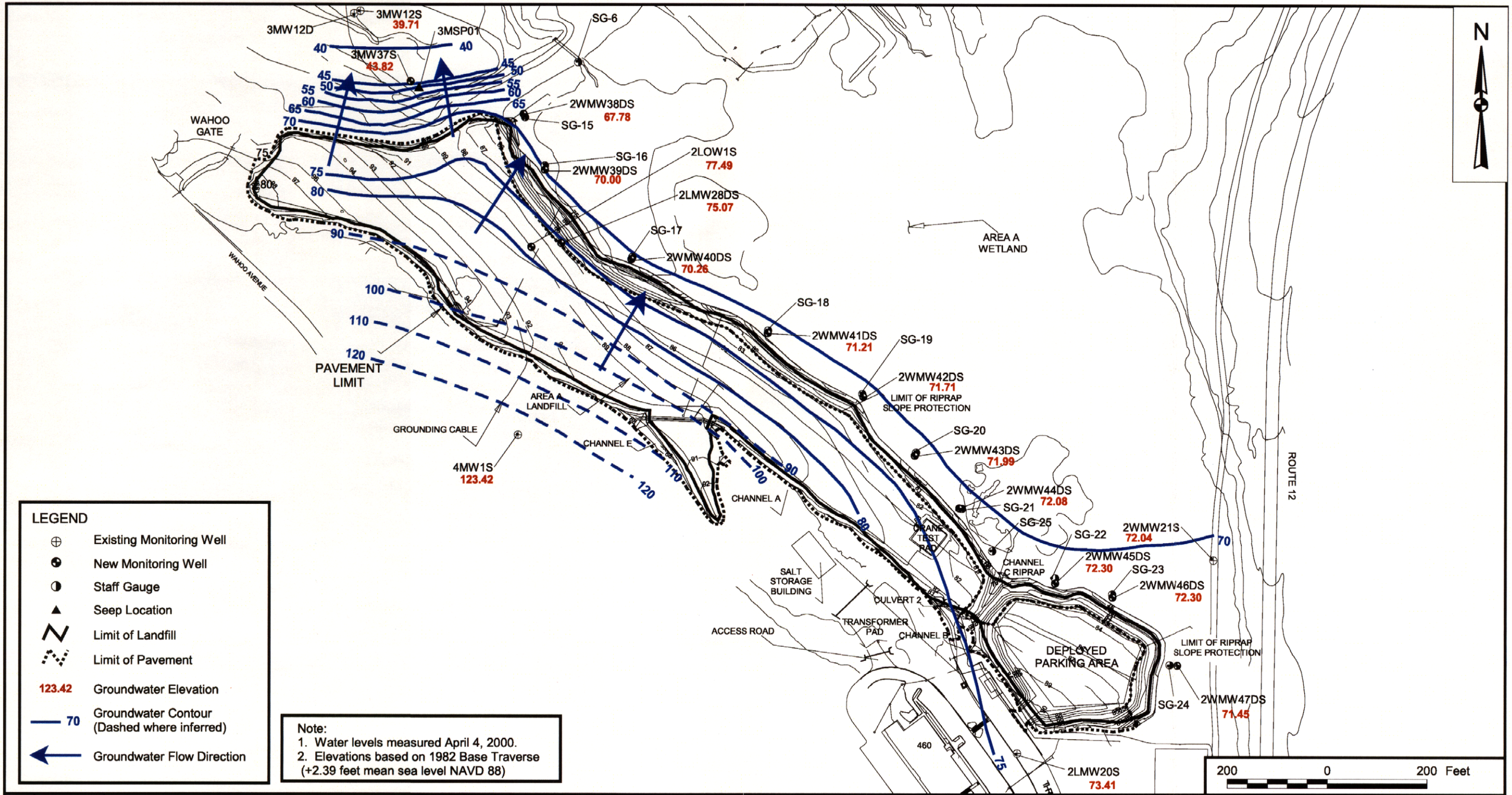
Tetra Tech NUS, Inc.

SAMPLING LOCATIONS
ROUND 3 GROUNDWATER MONITORING
AREA A LANDFILL
NSB-NEW LONDON, GROTON, CONNECTICUT

CONTRACT NUMBER 5082	OWNER NUMBER —
APPROVED BY Mark R. Mercyl	DATE 8/22/00
APPROVED BY —	DATE —
DRAWING NO. FIGURE 2-1	REV 0

1083B022

P:\GIS\NLON\50820370.APR\AREA A - POTENTIOMETRIC CONTOURS - ROUND 3 LAYOUT 8/4/00 JCB



LEGEND

- Existing Monitoring Well
- New Monitoring Well
- Staff Gauge
- Seep Location
- Limit of Landfill
- Limit of Pavement
- 123.42 Groundwater Elevation
- 70 Groundwater Contour (Dashed where inferred)
- Groundwater Flow Direction

Note:
1. Water levels measured April 4, 2000.
2. Elevations based on 1982 Base Traverse (+2.39 feet mean sea level NAVD 88)

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY J. LAMEY DATE 7/19/00
CHECKED BY MLM DATE 8/22/00
COST/SCHEDULE-AREA
SCALE AS NOTED

Tetra Tech NUS, Inc.

POTENTIOMETRIC SURFACE MAP
ROUND 3 GROUNDWATER MONITORING
AREA A LANDFILL
NSB-NEW LONDON, GROTON, CONNECTICUT

CONTRACT NUMBER 5082
OWNER NUMBER —
APPROVED BY Mark K. Mengel DATE 8/22/00
APPROVED BY — DATE —
DRAWING NO. FIGURE 2-2
REV 0

3.0 MONITORING RESULTS

The groundwater samples collected from 16 monitoring wells and seven surface water locations were analyzed for TCL organic compounds, TAL inorganic (total and dissolved) analytes, and water chemistry parameters. Monitoring focused on the following organic and inorganic chemicals of potential concern, as identified in the GMP Monitoring Plan (TtNUS, January 1999).

- Ethylbenzene
- 1,1,2,2-Tetrachloroethane
- Xylenes
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Bis(2-ethylhexyl)phthalate
- Phenanthrene
- Aroclor 1016
- Aroclor 1254
- Aroclor 1260
- Dieldrin
- Heptachlor
- Arsenic
- Beryllium
- Cadmium
- Chromium
- Copper
- Lead
- Zinc

The contaminants listed above have been detected either in groundwater at concentrations exceeding the Connecticut Department of Environmental Protection (CTDEP) Surface Water Protection Criteria (SWPCs) or in soil and landfill material at concentrations above their respective CTDEP Pollutant Mobility Criteria for GB groundwater.

The Round 3 analytical results are summarized on Tables 3-1 and 3-2. Within each table, the analytical results are compared to the primary and secondary monitoring criteria, as established in the GMP (TtNUS, January 1999). Chemicals exceeding either primary or secondary monitoring criteria are noted by shading. Data validation letters and laboratory data sheets are attached to this report as Appendix F. The results of this comparison may be summarized as follows:

- There were no detections of organic compounds (VOCs, SVOCs, pesticides, or PCBs) in groundwater or surface water.

- No detections of inorganics in surface water exceeded the primary or secondary monitoring criteria.

- Detections of arsenic in 5 of 16 groundwater samples exceeded the primary monitoring criteria, which is the Connecticut SWPC for substances in groundwater.

- Arsenic was detected in the 4 unfiltered and 4 filtered samples from monitoring wells as shown on Figure 3-1. The concentrations in unfiltered samples ranged from 6.2 to 24.4 µg/L, while the

concentrations in the filtered sample ranged from 13 to 30.6 µg/L. All detections exceeded the primary criterion of 4 µg/L, which is the Connecticut SWPC for substances in groundwater. No detections exceeded the secondary criterion of 150 µg/L, which is the Federal Ambient Water Quality Criterion (AWQC) for protection of aquatic life (chronic, freshwater).

- Chromium was detected in the unfiltered sample from monitoring wells 2WMW41S and 2WMW46DS at concentrations of 12.2 µg/L and 17 µg/L, respectively. These detections exceeded the secondary monitoring criterion of 11 µg/L, which is the Federal AWQC for protection of aquatic life (chronic, freshwater).

- Copper was detected in the filtered sample from monitoring wells 2WMW41S and 2WMW43DS at concentrations of 8.3 µg/L and 11.2 µg/L, respectively. These detections exceeded the secondary monitoring criterion of 4.8 µg/L, which is the Federal AWQC for protection of aquatic life (chronic, freshwater).

- Lead was detected in the filtered sample from monitoring wells 2WMW21S and 2WMW41DS at concentrations of 3.4 µg/L and 2.6 µg/L, respectively. These detections exceeded the secondary monitoring criterion of 1.2 µg/L, which is the Federal AWQC for protection of aquatic life (chronic, freshwater).

- Zinc was detected in the unfiltered sample from monitoring wells 2WMW46DS at a concentration 146 µg/L, which exceeded the primary criterion of 123 µg/L, which is the Connecticut SWPC for substances in groundwater. Zinc was also detected in both the filtered (84.6 µg/L) and unfiltered (80.4 µg/L) sample collected from monitoring well 2LMW20S at concentrations in excess of the secondary monitoring criterion of 58.2 µg/L.

As discussed in Section 1.2, because this is only an interim report for the initial round of groundwater monitoring, the evaluation of the analytical results is limited to the above comparison. No conclusions or recommendations are drawn from this comparison. Initial conclusions and recommendations will be addressed in the Year 1 Summary Report based on the first four quarterly rounds of results.

TABLE 3-1

ROUND 3 GROUNDWATER MONITORING
AREA A LANDFILL
NSB - NEW LONDON, GROTON, CONNECTICUT
PAGE 1 OF 3

Chemical	Primary Monitoring Criterion [1]	Secondary Monitoring Criterion	2LMW20S 2LGW20S-02 1/22/00	2LMW20S (DUP) GWFD012200 1/22/00	2WMW21S 2WGW21S-02 1/23/00	2WMW38DS 2WGW38DS-02 1/25/00	2WMW39DS 2WGW39DS-02 1/21/00	2WMW40DS 2WGW40DS-02 1/21/00	2WMW41DS 2WGW41DS-02 1/21/00
VOCs (ug/L)									
1,1,2,2-TETRACHLOROETHANE	110	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U
ETHYLBENZENE	580,000	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U
XYLENES, TOTAL	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U
SVOCs (ug/L)									
BENZO(A)ANTHRACENE	0.3	NA	0.17 U	0.16 U	0.17 U	2 U	0.17 U	0.19 U	0.17 U
BENZO(A)PYRENE	0.3	NA	0.17 U	0.16 U	0.17 U	2 U	0.17 U	0.19 U	0.17 U
BENZO(B)FLUORANTHENE	0.3	NA	0.17 U	0.16 U	0.17 U	2 U	0.17 U	0.19 U	0.17 U
BENZO(K)FLUORANTHENE	0.3	NA	0.17 U	0.16 U	0.17 U	2 U	0.17 U	0.19 U	0.17 U
BIS(2-ETHYLHEXYL)PHTHALATE	59	NA	2.1 U	2 U	2.1 U	2 U	2 U	2 U	2 U
PHENANTHRENE	0.077	NA	1.1 U	1 U	1.1 U	2 U	1.1 U	1.2 U	1.1 U
Pesticides/PCBs (ug/L)									
AROCLOR-1016	0.5	0.014[2]	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
AROCLOR-1254	0.5	0.014[2]	0.21 U	0.21 U	2 U	0.21 U	0.21 U	0.21 U	0.21 U
AROCLOR-1260	0.5	0.014[2]	0.21 U	0.21 U	2 U	0.21 U	0.21 U	0.21 U	0.21 U
DIELDRIN	0.1	0.0019[3]	0.021 U	0.021 U	0.2 U	0.021 U	0.021 U	0.021 U	0.021 U
HEPTACHLOR	0.05	0.0038[2]	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Inorganics (total/dissolved) (ug/L)									
ARSENIC	4	150[2]	2.6 U/2.6 U	2.6 U/2.6 U	2.6 UJ/2.6 UJ	/5.1 J	2.6 U/2.6 U	2.6 UJ/5.2 J	3.5 J/2.6 UJ
BERYLLIUM	4	NA	0.48 U/0.2 U	0.57 U/0.2 U	0.67 U/0.2 U	/0.2 U	0.41 U/0.2 U	0.44 U/0.2 U	0.4 U/0.2 U
CADMIUM	6	0.62[3]	0.3 U/0.3 U	0.3 U/0.3 U	0.3 UJ/0.3 UJ	/0.3 U	0.3 U/0.3 U	0.3 UJ/0.3 UJ	0.3 UJ/0.3 UJ
CHROMIUM[4]	110	11[2]	1 UJ/1 UJ	1 UJ/1.4 U	1 UJ/5.6 U	/2.7 U	2.2 U/1.3 U	1 UJ/3.2 U	1 UJ/2.5 U
COPPER	48	4.8[3]	1.3 UJ/1.3 UJ	1.3 UJ/1.3 UJ	5.8 U/2 U	/6.7 U	1.3 UJ/1.3 U	1.3 UJ/1.4 U	1.3 UJ/1.3 UJ
LEAD	13	1.2[3]	1.8 U/1.8 U	1.8 U/1.8 U	1.8 UJ/1.8 UJ	/1.8 U	1.8 U/1.8 U	1.8 UJ/1.8 UJ	1.8 UJ/1.8 UJ
ZINC	123	58.2[3]	11.2/58.1 J	35.9/7.8 J	7.6 J/4.9 J	/27.7 J	11.1/7.2 J	6.8 J/10.8 J	7.5 J/6.6 J
Miscellaneous Parameters (mg/L)									
CHEMICAL OXYGEN DEMAND	NA	NA	20 U	20 U	1030	46.2	914	1280	914
CHLORIDE	NA	NA	67.4	70.2	9740	202	452	9090	9370
SULFATE	NA	NA	20 U	20 U	246	69.6	20 U	948	274
TOTAL DISSOLVED SOLIDS	NA	NA	242	201	15100	760	974	15600	15900
TOTAL ORGANIC CARBON	NA	NA	2.1 J	2.1 J	33.3 J	15.1 J	137 J	32.2 J	45.3 J

NOTES:
Bold numbers denote exceedance of primary or secondary monitoring criterion.
(1) Surface Water Protection Criteria for substances in groundwater. (CTDEP, January 1996)
(2) Federal Ambient Water Quality Criteria for protection of aquatic life (chronic, freshwater). (USEPA, 1999)
(3) *Connecticut Water Quality Criteria for protection of human health from consumption of organisms.* (CTDEP, 1997)
(4) Hexavalent Chromium
(5) No samples was collected from this well due to below freezing water temperatures.
J Estimated Value
R Rejected Value
U Undetected
NA Not Available

TABLE 3-1

ROUND 3 GROUNDWATER MONITORING
AREA A LANDFILL
NSB - NEW LONDON, GROTON, CONNECTICUT

Chemical	Primary Monitoring Criterion [1]	Secondary Monitoring Criterion	2WMW42DS 2WGW42DS-02 1/21/00	2WMW43DS 2WGW43DS-02 1/22/00	2WMW44DS 2WGW44DS-02	2WMW45DS 2WGW45DS-02 1/23/00	2WMW46DS 2WGW46DS-02 1/24/00	2WMW47DS 2WGW47DS-02 1/24/00	3MW12D 3GW12D-02 1/24/00
VOCs (ug/L)									
1,1,2,2-TETRACHLOROETHANE	110	NA	1 U	1 U	[5]	1 U	1 U	1 U	1 U
ETHYLBENZENE	580,000	NA	1 U	1 U	[5]	1 U	1 U	1 U	1 U
XYLENES, TOTAL	NA	NA	1 U	1 U	[5]	1 U	1 U	1 U	1 U
SVOCs (ug/L)									
BENZO(A)ANTHRACENE	0.3	NA	0.17 U	0.19 U	[5]	0.17 U	0.17 U	0.15 U	0.16 U
BENZO(A)PYRENE	0.3	NA	0.17 U	0.19 U	[5]	0.17 U	0.17 U	0.15 U	0.16 U
BENZO(B)FLUORANTHENE	0.3	NA	0.17 U	0.19 U	[5]	0.17 U	0.17 U	0.15 U	0.16 U
BENZO(K)FLUORANTHENE	0.3	NA	0.17 U	0.19 U	[5]	0.17 U	0.17 U	0.15 U	0.16 U
BIS(2-ETHYLHEXYL)PHTHALATE	59	NA	2 U	1.3 J	[5]	2.1 U	2 U	2 U	2 U
PHENANTHRENE	0.077	NA	1.1 U	1.2 U	[5]	1.1 U	1.2 U	1 U	1.1 U
Pesticides/PCBs (ug/L)									
AROCLOR-1016	0.5	0.014[2]	0.21 U	0.21 U	[5]	0.22 U	0.21 U	0.2 U	0.2 U
AROCLOR-1254	0.5	0.014[2]	0.21 U	0.21 U	[5]	0.22 U	0.21 U	0.2 U	0.2 U
AROCLOR-1260	0.5	0.014[2]	0.21 U	0.21 U	[5]	0.22 U	0.21 U	0.2 U	0.2 U
DIELDRIN	0.1	0.0019[3]	0.021 U	0.021 U	[5]	0.022 U	0.021 U	0.02 U	0.02 U
HEPTACHLOR	0.05	0.0038[2]	0.01 U	0.01 U	[5]	0.011 U	0.01 U	0.01 U	0.01 U
Inorganics (total/dissolved) (ug/L)									
ARSENIC	4	150[2]	**20.5 J/11.2 J**	2.6 J/3 J	[5]	2.9 J/3.2 J	**9.4 J/10.6 J**	**11.8 J/12.2 J**	2.6 U/2.6 U
BERYLLIUM	4	NA	0.82 U/0.2 U	0.52 J/0.2 U	[5]	0.48 U/0.2 U	0.79 U/0.2 U	0.63 U/1.1 U	0.24 U/0.2 U
CADMIUM	6	0.62[3]	0.3 UJ/0.3 UJ	0.3 U/0.3 UJ	[5]	0.3 U/0.81 U	0.3 UJ/0.3 UJ	0.3 U/2.1 U	0.3 U/0.41 U
CHROMIUM[4]	110	11[2]	1 UJ/2 U	1 UJ/9.6 J	[5]	1 UJ/3.1 U	6 U/4.6 U	1 UJ/2.4 U	4.7 U/1 UJ
COPPER	48	4.8[3]	1.3 UJ/1.3 UJ	1.3 UJ/2.5 U	[5]	1.3 UJ/1.5 U	8.6 U/1.3 UJ	1.3 UJ/1.3 UJ	1.3 UJ/1.3 UJ
LEAD	13	1.2[3]	1.8 UJ/1.8 UJ	1.8 UJ/1.8 UJ	[5]	1.8 U/1.8 U	1.8 UJ/1.8 UJ	1.8 U/6.4 U	1.8 U/1.8 U
ZINC	123	58.2[3]	18.7 J/4.4 J	10.6 J/3.8 U	[5]	10.8/4.5 J	50.4 J/9.5 J	12.4/7.4 J	12/8.1 J
Miscellaneous Parameters (mg/L)									
CHEMICAL OXYGEN DEMAND	NA	NA	686	1030	[5]	59	1260	20 U	20.5
CHLORIDE	NA	NA	7140	12700	[5]	1720	16300	1500	964
HARDNESS AS CaCO3	NA	NA	193	340	[5]	20 U	437	20 U	85.8
SULFATE	NA	NA	12900	19100	[5]	3100	26200	2790	1830
TOTAL ALKALINITY	NA	NA	29.3 J	31.9 J	[5]	12.9 J	4.2 J	10.5 J	3.9 J

NOTES:
Bold numbers denote exceedance of primary or secondary monitoring criterion.
(1) Surface Water Protection Criteria for substances in groundwater. (CTDEP, January 1996)
(2) Federal Ambient Water Quality Criteria for protection of aquatic life (chronic, freshwater). (USEPA, 1999)
(3) Connecticut Water Quality Criteria for protection of human health from consumption of organisms. (CTDEP, 1997)
(4) Hexavalent Chromium
(5) No samples was collected from this well due to below freezing water temperatures.
J Estimated Value
R Rejected Value
U Undetected
NA Not Available

TABLE 3-1

ROUND 3 GROUNDWATER MONITORING
AREA A LANDFILL
NSB - NEW LONDON, GROTON, CONNECTICUT

Chemical	Primary Monitoring Criterion (1)	Secondary Monitoring Criterion	3MW12S 3GW12S-02 1/24/00	3MW12S (DUP) GWFD012400 1/24/00	3MW37S 3GW37S-02 1/22/00	4MW1S 4GW01S-02 1/23/00
VOCs (ug/L)						
1,1,2,2-TETRACHLOROETHANE	110	NA	1 U	1 U	1 U	1 U
ETHYLBENZENE	580,000	NA	1 U	1 U	1 U	1 U
XYLENES, TOTAL	NA	NA	1 U	1 U	1 U	1 U
SVOCs (ug/L)						
BENZO(A)ANTHRACENE	0.3	NA	0.17 U	0.17 U	0.16 U	0.17 U
BENZO(A)PYRENE	0.3	NA	0.17 U	0.17 U	0.16 U	0.17 U
BENZO(B)FLUORANTHENE	0.3	NA	0.17 U	0.17 U	0.16 U	0.17 U
BENZO(K)FLUORANTHENE	0.3	NA	0.17 U	0.17 U	0.16 U	0.17 U
BIS(2-ETHYLHEXYL)PHTHALATE	59	NA	2 U	2 U	2 U	2 U
PHENANTHRENE	0.077	NA	1.2 U	1.1 U	1 U	1.1 U
Pesticides/PCBs (ug/L)						
AROCLOR-1016	0.5	0.014(2)	0.2 U	0.2 U	0.2 U	0.21 U
AROCLOR-1254	0.5	0.014(2)	0.2 U	0.2 U	0.2 U	0.21 U
AROCLOR-1260	0.5	0.014(2)	0.2 U	0.2 U	0.2 U	0.21 U
DIELDRIN	0.1	0.0019(3)	0.02 U	0.02 U	0.02 U	0.021 U
HEPTACHLOR	0.05	0.0038(2)	0.01 U	0.01 U	0.01 U	0.01 U
Inorganics (total/dissolved) (ug/L)						
ARSENIC	4	150(2)	2.6 U/2.6 U	2.6 U/2.6 U	2.6 U/2.6 U	2.6 U/2.6 U
BERYLLIUM	4	NA	0.2 U/0.2 U	0.87 U/0.2 U	0.7 U/0.2 U	0.53 U/0.2 U
CADMIUM	6	0.62(3)	0.3 U/0.56 U	0.62 U/0.3 U	0.3 U/0.3 U	0.3 U/0.3 U
CHROMIUM(4)	110	11(2)	**36.2 J/1 U**	1 UJ/1 UJ	1 UJ/1.1 U	1 UJ/1.6 U
COPPER	48	4.8(3)	1.3 UJ/1.3 UJ	1.3 UJ/1.3 UJ	1.3 UJ/2.4 U	1.3 UJ/2 U
LEAD	13	1.2(3)	1.8 U/1.8 U	1.8 U/1.8 U	1.8 U/1.8 U	1.8 U/1.8 U
ZINC	123	58.2(3)	6.1 J/31.8 J	26.7/20.2 J	18.3/6 J	26.8/51.3 J
Miscellaneous Parameters (mg/L)						
CHEMICAL OXYGEN DEMAND	NA	NA	23.1	20 U	20 U	20 U
CHLORIDE	NA	NA	913	1000	238	23.9
HARDNESS AS CaCO3	NA	NA	74.4	85.1	21.9	43.1
SULFATE	NA	NA	1730	1840	481	156
TOTAL ALKALINITY	NA	NA	3.8 J	36.3 J	3.5 J	1.4 J

NOTES:
Bold numbers denote exceedance of primary or secondary monitoring criterion.
(1) Surface Water Protection Criteria for substances in groundwater. (CTDEP, January 1996)
(2) Federal Ambient Water Quality Criteria for protection of aquatic life (chronic, freshwater). (USEPA, 1999)
(3) Connecticut Water Quality Criteria for protection of human health from consumption of organisms. (CTDEP, 1997)
(4) Hexavalent Chromium
(5) No samples was collected from this well due to below freezing water temperatures.
J Estimated Value
R Rejected Value
U Undetected
NA Not Available

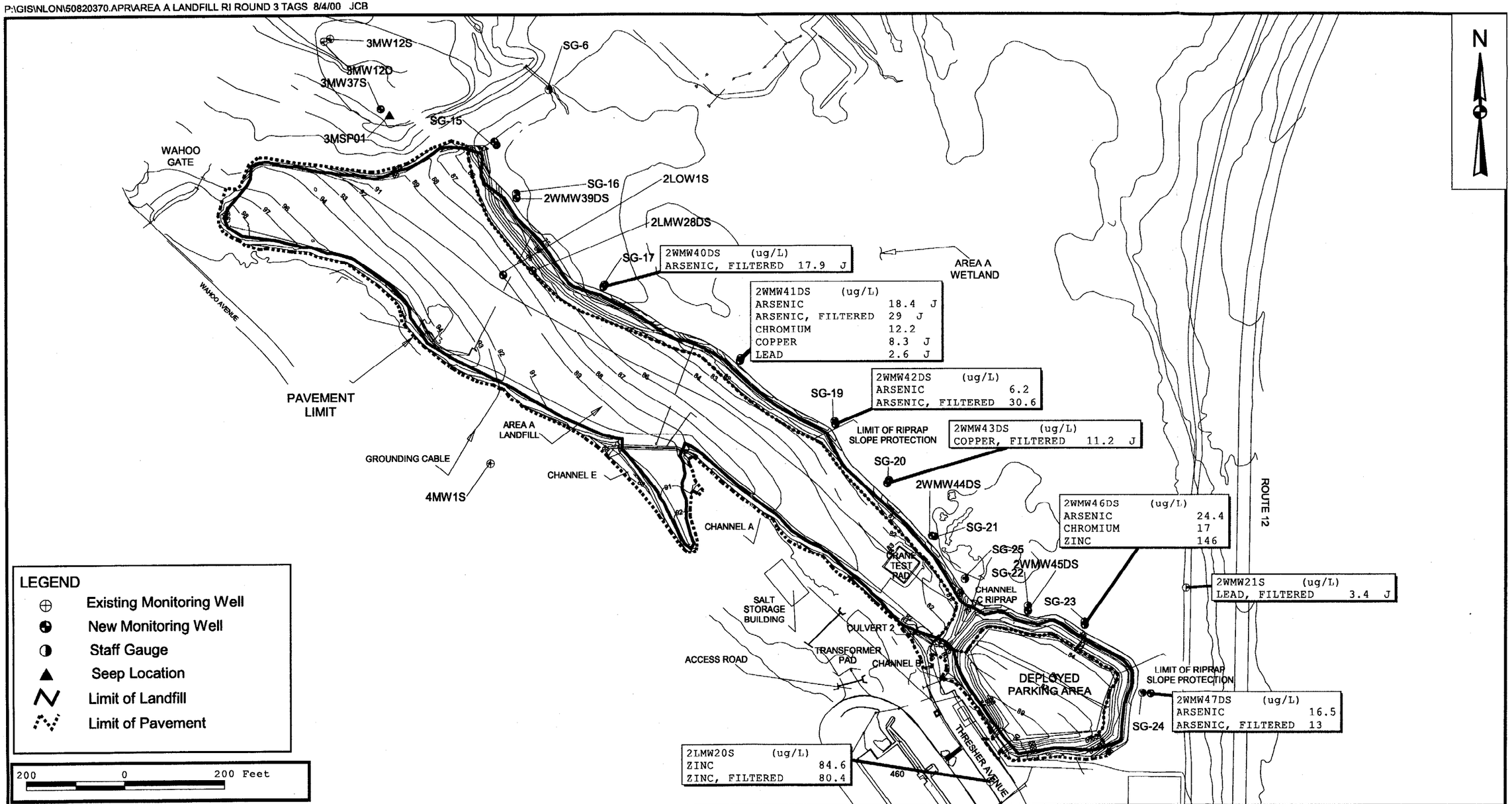
TABLE 3-2

ROUND 3 SURFACE WATER RESULTS
AREA A LANDFILL
NSB - NEW LONDON, GROTON, CONNECTICUT

Chemical	Primary Monitoring Criterion [1]	Secondary Monitoring Criterion	SG-18 SWSG18-03 4/5/00	SG-19 SWSG19-03 4/5/00	SG-20 SWSG20-03 4/4/00	SG-20 (DUP) SWFD040400-03 4/4/00	SG-21 SWSG21-03 4/4/00	SG-22 SWSG22-03 4/5/00	SG-23 SWSG23-03 4/5/00	SG-24 SWSG24-03 4/5/00
VOCs (ug/L)										
1,1,2,2-TETRACHLOROETHANE	110	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
ETHYLBENZENE	580,000	NA	1 U	0.2 J	1 U	1 U	1 U	1 U	1 U	1 U
XYLENES, TOTAL	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
SVOCs (ug/L)										
BENZO(A)ANTHRACENE	0.3	NA	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.16 U
BENZO(A)PYRENE	0.3	NA	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.16 U
BENZO(B)FLUORANTHENE	0.3	NA	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.16 U
BENZO(K)FLUORANTHENE	0.3	NA	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.16 U
BIS(2-ETHYLHEXYL)PHTHALATE	59	NA	2 U	2 U	2 U	2 U	2 U	2 U	2.1 U	2 U
PHENANTHRENE	0.077	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Pesticides/PCBs (ug/L)										
AROCLOR-1016	0.5	0.014[2]	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
AROCLOR-1254	0.5	0.014[2]	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
AROCLOR-1260	0.5	0.014[2]	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
DIELDRIN	0.1	0.0019[3]	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
HEPTACHLOR	0.05	0.0038[2]	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Inorganics (total/dissolved) (ug/L)										
ARSENIC	4	150[2]	2.6 U/2.6 U	2.6 U/2.6 U	2.6 U/2.6 U	2.6 U/2.6 U	2.6 U/2.6 U	2.6 U/2.6 U	2.6 U/2.6 U	3.7 J/2.6 U
BERYLLIUM	4	NA	0.2 U/0.2 U	0.2 U/0.2 U	0.2 U/0.2 U	0.2 U/0.2 U	0.2 U/0.2 U	0.2 U/0.2 U	0.2 U/0.2 U	0.2 U/0.2 U
CADMIUM	6	0.62[3]	0.3 U/0.3 U	0.3 U/0.3 U	0.3 U/0.3 U	0.3 U/0.3 U	0.3 U/0.3 U	0.32 U/0.3 U	0.3 U/0.3 U	0.3 U/0.3 U
CHROMIUM[4]	110	11[2]	1 U/1 U	1 U/1 U	2.2 U/1 U	1 U/1 U	1 U/1 U	1.3 U/1 U	1 U/1 U	1 U/1.5 U
COPPER	48	4.8[3]	3.8 U/0.88 U	3.3 U/0.7 U	2.9 U/0.7 U	2.9 U/0.7 U	2.5 U/0.7 U	6.5 U/1.8 U	4 U/4.2 U	7.2 U/18.4
LEAD	13	1.2[3]	1.8 U/1.3 U	1.8 U/2.5 U	1.8 U/1.3 U	1.8 U/1.4 U	2.6 U/1.3 U	4.8 U/2.8 U	1.8 U/1.5 U	2.5 U/2 U
ZINC	123	58.2[3]	31/1.8 U	48.9/1.8 U	16.3/1.8 U	16/1.8 U	15.2/1.8 U	14.6/1.8 U	27.9/1.8 U	20.8/1.8 U
Miscellaneous Parameters (mg/L)										
ALKALINITY AS CACO3	NA	NA	47.9	66.4	24	33.2	34.9	74	78.4	40.3
CHEMICAL OXYGEN DEMAND	NA	NA	20 U	20 U	20 U	20 U	20 U	31.4	20 U	21
CHLORIDE	NA	NA	95.5 J	121 J	87.2 J	87.9 J	89 J	53.4 J	89.2 J	398 J
HARDNESS as CaCO3	NA	NA	67	78.4	51.9	52	54.4	70.6	68.2	131
SULFATE	NA	NA	20 U	20 U	20.8	20.9	20.5	20 U	20 U	20 U
TOTAL DISSOLVED SOLIDS	NA	NA	202	248	211	224	193	179	280	643
TOTAL ORGANIC CARBON	NA	NA	3.4	3.9	4.5	3.3	4.5	6.2	3.3	9.2

NOTES:
Bold numbers denote exceedance of secondary monitoring criterion. There are no exceedances of primary monitoring criteria.
(1) Surface Water Protection Criteria for substances in groundwater. (CTDEP, January 1996)
(2) Federal Ambient Water Quality Criteria for protection of aquatic life (chronic, freshwater). (USEPA, 1999)
(3) Connecticut Water Quality Criteria for protection of human health from consumption of organisms. (CTDEP, 1997)
(4) Hexavalent Chromium
J Estimated Value
R Rejected Value
U Undetected
NA Not Available

P:\GIS\NLON\50820370.APR\AREA A LANDFILL RI ROUND 3 TAGS 8/4/00 JCB



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY J. LAMEY DATE 7/27/00
CHECKED BY MLM DATE 8/17/00
COST/SCHEDULE-AREA
SCALE AS NOTED

Tetra Tech NUS, Inc.

COC EXCEEDANCES OF MONITORING CRITERIA
ROUND 3 GROUNDWATER SAMPLING
AREA A LANDFILL
NSB-NLON, GROTON, CONNECTICUT

CONTRACT NUMBER 5082
OWNER NUMBER —
APPROVED BY Mark L Mengel DATE 8/17/00
APPROVED BY — DATE —
DRAWING NO. FIGURE 3-1
REV 0

1083B042

REFERENCES

Atlantic Environmental Services, Inc (Atlantic). (August 1992). Phase I Remedial Investigation Report, Naval Submarine Base - New London, Groton, Connecticut. Colchester Connecticut: Author.

Atlantic. (July 1994). Design Document (Design Analysis Report, Technical Specifications, Construction Drawings), Area A Landfill, Naval Submarine Base - New London, Groton, Connecticut. Colchester Connecticut: Author.

Atlantic. (May 1995). Focused Feasibility Study Report and Addendum, Area A Landfill, Naval Submarine Base - New London, Groton, Connecticut. Colchester Connecticut: Author.

Atlantic. (June 1995): Proposed Remedial Action Plan, Area A Landfill, Naval Submarine Base - New London, Groton, Connecticut, Colchester Connecticut: Author.

Brown & Root Environmental, Inc. (B&R Environmental). (October 1996). Groundwater/Leachate Modeling Study Report, Area A Landfill, Naval Submarine Base - New London, Groton, Connecticut. Wayne, Pennsylvania: Author.

B&R Environmental. (December 1996a). Area A East End Investigation Report, Area A Landfill, Naval Submarine Base - New London, Groton, Connecticut, Brown & Root Environmental. Wayne, Pennsylvania: Author.

B&R Environmental. (December 1996b). Revised Design Analysis Report, Area A Landfill, Naval Submarine Base – New London, Groton, Connecticut. Wayne, Pennsylvania: Author.

B&R Environmental. (March 1997). Phase II Remedial Investigation Report, Naval Submarine Base - New London, Groton, Connecticut. Wayne, Pennsylvania: Author.

Connecticut Department of Environmental Protection (CTDEP). (January 1996). Remediation Standard Regulations, Connecticut Department of Environmental Protection, Bureau of Water Management, Permitting.

CTDEP. (April 1996). Ground Water Quality Standards, Connecticut Department of Environmental Protection, Bureau of Water Management, Planning & Standards Division.

Halliburton NUS, Inc. (HNUS). May 1995. Geotechnical Field Investigation, Area A Landfill Design, Naval Submarine Base - New London, Groton, Connecticut. Wayne, Pennsylvania: Author.

Naval Facilities Engineering Service Center (NFESC). (February 1996). Navy Installation Restoration Laboratory Quality Assurance Guide (Interim Guidance), Naval Facilities Engineering Service Center.

United States Environmental Protection Agency (USEPA). (1957): Environmental Photographic Interpretation Center Report, Frame No. 2971:144-149.

USEPA. (April 1999). National Recommended Water Quality Criteria - Correction. EPA 822-Z-99-001. Office of Water.

Tetra Tech NUS, Inc. (TtNUS). (January 1999). Groundwater Monitoring Plan for Area A Landfill, Naval Submarine Base - New London, Groton, Connecticut. King of Prussia, Pennsylvania: Author

APPENDIX A

FIELD ACTIVITIES LOG BOOK

MONDAY 4/3/00

WORK CONTINUED FROM PAGE — WEATHER (AM): Overnight showers; overcast, breezy, 50's.

1245 Keith Simpson (KS) and Scott Neil arrive on-site. Unpack equipment, put equipment on charge, and make bottle sets. Prepare for sampling for this shift.

1435 KS and SN depart for Goss Cove water levels per Mike Ameel.

1630 Arrive back at Building 166 to continue prep.

1730 KS + SN depart for store (supplies) then to hotel

WEATHER (PM): Light rain off and on, low 60's.

20

VOID
SWN 4/3/00

30

WORK CONTINUED TO PAGE —

SIGNATURE Scott W. Neil DATE 4/3/00

I DISCLOSED TO AND UNDERSTOOD B DATE WITNESS DATE

SUMMARY FOR AREA A SAMPLE LOCATIONS

SAMPLE LOCATIONS	DATE SAMPLED	QA	COMMENTS
3MW37S	4/9/00	—	
2WMW38DS	4/7,9/00	—	Purged on 4/5/00
SG15	—	—	DRY
2WMW39DS	4/6/00	—	Purged on 4/5/00
SG16	—	—	DRY
2WMW40DS	4/7/00	—	4/5/00-Purged
SG17	—	—	DRY
2WMW41DS	4/7/00	—	Purged on 4/5/00
SG18	4/5/00	—	~~4/5/00~~
2WMW42DS	4/6/00	—	Purged on 4/5/00
SG19	4/5/00	—	~~4/5/00~~
2WMW43DS	4/8/00	—	Purged on 4/6/00
SG20	4/4/00	DUPLICATE	
2WMW44DS	4/9/00	—	Purged on 4/8/00
SG21	4/4/00	MS/MSD	
2WMW45DS	4/8/00	—	Purged on 4/6/00
SG22	4/5/00	—	
2WMW46DS	4/7/00	—	Purged on 4/6/00
SG23	4/6/00	—	
2WMW47DS	4/6/00	—	Purged on 4/6/00
SG24	4/5/00	—	~~4/5/00~~
2LMW20S	4/8/00		
2WMW21S	4/8/00		
3MW12S	4/7/00	DUPLICATE	Purged on 4/7/00
3MW12D	4/7/00	DUPLICATE	↓
4MW1S	4/8/00	MS/MSD	
3MSP01	—	—	Seep. Not Flowing - Dry.

NOTE: Refer to the Surface Water Sample Log Sheet that corresponds to each surface water location for specific sampling data; refer to the Ground Water Sample Log Sheet that corresponds to each ground water location for specific purge/sampling data.

Tuesday, April 4, 2000

WEATHER (AM): Overcast, overnight rain (LIGHT), WINDY, 50'S.

0700 KS and SN arrive at Building 166. Begin prep for water levels at Area A. Calibrate PID.

0723 KS & SN depart for water levels at Area A. Refer to the GW Level Measurement Form(s) for water level info.

1105 KS & SN return to Building 166 for supplies, then return to Area A to continue H_2O levels. Refer to the GW Level Measurement Forms for water level data.

1215 KS & SN depart for lunch and auto parts store for hammer.

1255 KS & SN at Area A to resume H_2O levels.

1430 Moderate - heavy rain showers begin.

1543 End H_2O levels - return to Building 166 for clean-up, note QA, and prep for sampling. Calibrate YSIs.

1630 KS & SN depart Building 166 for Area A surface water sampling. Rain still persists.

1720 Sample surface water at Staff Gauge 21; sample ID SWSG21-03. Refer to the corresponding SW Sample Log Sheet for detailed sampling data. Also sampled for MS/MSD.

1740 Sample surface water at Staff Gauge 20; sample ID SWSG20-03. Refer to the corresponding SW Sample Log Sheet for detailed sampling data. Also sampled for MS/MSD.

1810 Return to Building 166. Complete notes, bag samples, and prep samples for shipping/pick-up. Depart for hotel (1915).

WEATHER (PM): Overcast early afternoon, then rain, 50's.

Scott A. [illegible] 4/4/00

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60715 MADE IN U.S.A.

WEDNESDAY 4/5/00

Work continued from Page — Weather (Am): Partly sunny, 40's.

0655 KS and SN on site. Prep for purging / sampling of wells. Calibrate PID. Pack samples for shipment (pick-up by Accutest courier) - COC # 040400-03 for sample #'s SWSG20-03 (plus duplicate # SWFD040400-03) and SWSG21-03 (plus MS/MSD).

0745 Accutest courrier picked up samples.

0805 KS & SN to Area A for well purging / sampling.

0844 KS begins purging well 2WMW38DS. Refer to the Low Flow Purge Data Sheet that corresponds to this well for specific purge data.

0845 SN begins purging well 2WMW41DS. Refer to the Low Flow Purge Data Sheet that corresponds to this well for specific purge data.

0930 KS ends purging well 2WMW38DS. Well was purged dry. This well has historically been a very slow recovering well, therefore sampling will not begin for at least 48 HRS.

1006 KS begins purging well 2WMW39DS. Refer to the correspondi Low Flow Purge Data Sheet for specific purge data.

1036 SN ends purging well 2WMW41DS. Well was purged dry. Will let recharge for 24-48 HRS, depending on rate of recharge, before sampling. Sample SG18 at 1120. (SWSG18-03

1143 KS ends purging well 2WMW39DS. Well was purged dry. Will let recharge for 24-48 hours, depending on rate of recharge, before sampling. KS departs Area A for Building 166.

Work continued to Page 79

SIGNATURE Scott W. Reid DATE 4/5/00

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

1156 SN departs Area A for Building 166; upon arrival at BLDG 166, unload samples and filter for dissolved metals.

1234 KS + SN depart for lunch.

1317 KS + SN arrive at Building 166, prep for this afternoon's tasks, and depart for Area A.

1352 KS begins purging well 2WMW40DS. Refer to the corresponding purge sheet for purge data.

1410 SN begins purging well 2WMW42DS. Refer to the corresponding purge sheet for purge data.

1510 KS ends purging well 2WMW40DS. well was purged dry. will attempt to sample within 24-48 hours, depending on recharge.

1547 SN ends purging well 2WMW42DS. well was purged dry. will attempt to sample within 24-48 hours, depending on recharge.

1550 KS samples SG24; sample ID SWSG24-03. Returns to Building 166 to filter for dissolved metals and catch-up on paperwork.

1630 SN samples SG19; sample ID SWSG19-03. Returns to Building 166 and unloads samples — KS filters for dissolved metals.

1730 KS departs for Area A. SN unloads van and does paperwork.

1800 KS samples SG22; sample ID SWSG22-03.

WORK CONTINUED ON PAGE 81

SIGNATURE [signature] DATE 4/5/00

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

TITLE NSB-NLON

5082
1244

WEDNESDAY 4/5/00

CONTINUE 79

1815 KS returns to Building 166. Unloads samples and filters for dissolved metals.

1940 KS + SN finish day's work. Depart for hotel.

WEATHER (PM): Mostly sunny, windy, upper 40's.

VOID
4/5/00
SWN

SIGNATURE

DATE 4/5/00

DISCLOSED TO AND UNDERSTOOD BY

DATE

DATE

THURSDAY APRIL 6, 2000

WEATHER (Am): Mostly cloudy, breezy, low 30's - low 40's.

0700 KS + SW at Building 166. Prep for today's activities

0715 SW checks calibration of D.O. on YSI water quality meter because of consistently high readings on ground water but normal readings for surface water.

0730 D.O. calibration is OK. Call US Environmental — Todd Roberts tells SW to change the D.O. probe's membrane. SW proceeds to change the membrane and re-calibrate for D.O. KS to Area A; ~~samples 2WGW~~ (SW)

0815 Calibration of D.O. is successful. Call US Environmental to tell them of the findings.

0825 Load equipment in vehicle and depart ~~to~~ (SW) for Area A.

0740 KS samples well 2WMW39DS, sample ID 2WGW39DS-03. Refer to the G.W. Sample Log Sheet that corresponds to this well.

0900 SW begins ~~to~~ (SW) purging well 2WMW46DS. Refer to the purge data sheet for purge data.

0930 KS begins purging well 2WMW45DS. Refer to the purge data sheet for this well for purge data.

1105 SW samples SG23, sample ID SWSG23-03. Refer to the sample log sheet for this well for sampling data.

1140 SW + KS to Building 166; unload vehicles; filter for metals.

1215 SW + KS depart for lunch.

85

Scott W. Reid 4/6/00

NSB-NLON

5082
1244

THURSDAY, APRIL 6, 2000
83

1250 KS + SW at Building 166. Prep for this afternoon's tasks.

1315 KS + SW depart for Area A.

1331 KS begins purging well 2WMW47DS. Refer to the purge data sheet for purge data.

1400 SW begins sampling well 2WMW42DS, sample ID 2W-GW47DS-03. Refer to the sample log sheet for sampling data.

1529 SW begins purging well 2WMW43DS. Refer to the purge data sheet for purge data.

1530 KS begins sampling well 2WMW47DS, sample ID 2W-GW47DS-03. Refer to the sample log sheet for sampling data.

1640 KS finishes sampling. Loads vehicle and departs for well 2WMW47DS.

1705 KS at well 2WMW47DS to check with SW. Departs for Building 166 to prep for tomorrow.

1714 SW ends purging well 2WMW43DS. Cleans equipment and loads the van, then departs for Building 166.

1745 SW at Building 166. KS leaves to buy ice; SW unloads equipment and does paperwork.

1810 KS back at Building 166. KS + SW prepare samples for courier pick-up tomorrow AM. Depart for hotel 1840.

Scott W. Neil 4/6/00

NSB-NLON

5082
1244

FRIDAY, APRIL 7, 2000

WEATHER (AM): Sunny, upper 40's - mid 50's.

0748 KS & SN arrive at Building 166 after taking water levels at the DRMO. Prep for this morning's activities.

0800 KS + SN depart for Area A.

0815 KS at well 2WMW38DS to sample as many parameters as the well will produce (water). Sample ID 2W-GW38DS-03.

0820 SN at well 2WMW41DS and begins sampling - sample ID 2W-GW41DS-03. Refer to the sample log sheet for sampling information.

0920 KS at well 2WMW40DS and begins sampling - sample ID 2W-GW40DS. Refer to the sample log sheet for sampling information.

1010 SN at well 2WMW46DS and begins sampling - sample ID 2W-GW46DS-03. Refer to the sample log sheet for sampling information.

1110 KS to Building 166. Prep for the afternoon, DRMO water levels, then to lunch.

1130 SN to Building 166. KS left a note to meet him at DRMO.

1150 SN meets KS at DRMO. KS stays to do water levels and SN goes to lunch.

1230 SN at Building 166. Calls lab concerning lack of HCL in TOC sample containers.

Scott W. Neal 4/7/00

SN ~~13~~ 1245 KS at Building 166. KS + SN load vehicles for this afternoon's activities

1300 KS + SN at wells 3MW12S and 3MW12D Set up equipment to purge and sample

1318 KS begins purging well 3MW12S. Refer to the purge data sheet for purging information.

1325 SN begins purging well ~~3MW12D~~ (SN) 3MW12D. Refer to the purge data sheet for purge information

1430 KS + SN begin sampling; sample ID's are 3-GW12S-03 and 3-GW12D-03 Refer to the sample log sheets for sampling information. Both of these wells were sampled for duplicate analyses. Duplicate sample IDs are GWFD040700-01 and GWFD040700-02 for samples 3-GW12S-03 and 3-GW12D-03 respectively.

1700 ~~1500~~ (SN) Sampling is complete. KS + SN depart for Building 166. Unload vehicles and prep/paperwork

1740 KS + SN depart for hotel.

WEATHER (PM): Sunny, low 60's

KS 4/7/00
SN

Scott W. Neil 4/7/00

NSB-NLON

5082
1244

SATURDAY, 4/8/00

WEATHER (AM): Sunny and breezy, low-mid 50's.

~~0600~~ (SN) 0655 KS + SN at Building 166 to prep for this morning's activities.

0715 KS departs Building 166 for Area A.

0725 SN departs Building 166 for Area A.

0740 KS begins sampling well 2WMW45DS; sample ID 2W-GW45DS-03. Refer to the sample log sheet for sample information.

0800 SN begins sampling well 2WMW43DS; sample ID 2W-GW43DS-03. Refer to the sample log sheet for sample information.

0900 KS ends sampling 2WMW45DS. Heads to well 2LMW20S to purge and sample

0922 KS begins purging ~~2W~~ (SN) 2LMW20S. Refer to the purge data sheet for purge information.

0940 SN ends sampling 2WMW43DS.

0958 SN begins purging well 2WMW44DS. Refer to the purge data sheet for purge information.

1026 KS ends purging well 2LMW20S.

1030 KS begins sampling well 2LMW20S; sample ID 2L-GW20S-03. Refer to the sample log sheet for sample information.

1145 KS ends sampling. Returns to Building 166, then to lunch.

93

Scott W. Neil 4/8/00

SATURDAY, 4/8/00

91

1228 SW ends purging well 2WMW44DS. Loads equipment in van and departs for Building 166.

1300 SW to lunch. KS at well 4MW01S.

1320 KS begins purging well 4MW01S. Refer to the purge data sheet for purge information.

1430 SW begins purging well 2WMW21S. Refer to the purge data sheet for purge information.

1440 KS begins sampling well 4MW01S; sample ID 4GW01S-03. This well gets an MS/MSD. Refer to the sample log sheet for sample information

1615 SW begins sampling well 2WMW21S; sample ID 2W-GW21S-03. Refer to the sample log sheet for sample information.

1800 KS + SW at Building 166. Unload vehicles and re-ice samples for storage until Monday (4/10/00) morning pick-up by Accutest courier.

1825 KS + SW depart for hotel.

WEATHER (PM): Sunny for most of PM, breezy, lower-mid 60's.

KS 4/8/00
SW

Scott M. Reid 4/8/00

NSB - NLON

SUNDAY, 4/9/00

5082
1244

WEATHER (AM): Windy and rainy, slowly falling temps.

0700 KS & SN at Building 166. Calibrate / prep equipment and general maintenance before heading into the field. Prep sample bottles / sample sets for sampling.

0850 KS & SN to Area A for this mornings sampling activities.

0915 SN at well 2WMW44DS to sample - pad is totally submerged in water. Did not bring sample bottles - SN returns to Building 166 to get sample bottles -

0930 KS begins sampling well 2WMW38DS for remaining parameters. Refer to the sample log sheet for sampling information

1000 SN begins sampling well ~~2WMW~~ (SN) 2WMW44DS - Sample ID 2W-GW44DS-03. Refer to the sample log sheet for sample information.

1100 KS at Building 166. Preps samples for tomorrow's pick-up.

1138 SN at Building 166. Unloads samples from vehicle and assists KS.

1150 KS & SN to lunch.

1240 KS & SN at Building 166. Gather equipment and depart for AreaA.

1312 Begin purging well 3MW37S. Refer to the purge data sheet for purge information.

1400 Begin sampling. Refer to the sample log form for sample data.

97

Scott [illegible] 4/9/00

NSB-NLON
SUNDAY, 4/9/00
95

5082
1244

1555 KS + SN at Building 166. Unload equipment from vehicles and prep samples for pick-up by Accutest courier on 4/10/00.

1630 KS + SN depart for Hotel. Sampling at Area A is complete for Round 3.

WEATHER (AM): Snow, low 30's.

Void 4/9/00
SN

Scott [illegible]

4/9/00

APPENDIX B

GROUNDWATER LEVEL MEASUREMENT SHEET

WATER LEVEL MEASUREMENT SHEET

Project Name: NSB-NLON, Area A
Location: Groton, CT
Weather Conditions: OVERCAST 58°F RAIN OVERNITE, WINDY

Project No.: CTO 203 5082
Personnel:
Measuring Device: HERON
Remarks:

Well ID	Date	Time	Water Level *	Thickness of Free Product	PID Reading ppm RP	PID Reading ppm BZ	Comments
2LMW35B	4.4.00	0737	17.71	NA	0	0	CAN'T FIND 2LMW36B NEW CONSTRUCTION IN AREA
2LMW19S		0756	13.38	NA	0	0	
2LMW19D		0758	13.23	NA	0	0	
2WMW21D		0807	2.97	NA	0	0	
2WMW21S		0809	4.27	NA	0.03	0	
2WMW47DS		0814	1.94	NA	0	0	SG24 = 4.68
2WMW3S		0827	6.70	NA	0	0	
2WMW3D		0830	4.85	NA	0	0	
2LMW20S		0840	13.42	NA	0.01	0	2LMW20D DESTROYED
2LMW33DS		0900	15.96	NA	0	0	HIGH POINT ON 2" RISER
2LMW33F		0903	17.00	NA	0	0	
2LM32B		0911	11.02	NA	0.05	0	

DEPLOYED PARKING

* All measurements to the nearest 0.01 foot

ROUND 3

ALL SG ON OUTSIDE TO V

Signature(s): K. S. Simpson

WATER LEVEL MEASUREMENT SHEET

Project Name: NSB-NLON, Area A
Location: Groton, CT
Weather Conditions: OVERCAST 58°F RAIN OVER NITE, WINDY

Project No.: CTO 203 5082
Personnel: NEIL/SIMPSON
Measuring Device: HERON
Remarks:

Well ID	Date	Time	Water Level *	Thickness of Free Product	PID Reading ppm RP	PID Reading ppm BZ	Comments
DEMOLISHED PARKING 2LMW32F	4.4.00	0915	11.82	NA	0.04	0	
2LMW32DS		0920	11.23	NA	0.04	0	
2WMW46DS		0932	1.23	NA	0.04	0	SG23 = 3.83
2WMW45DS		0936	1.94	NA	0.04	0	SG22 = 4.13
SG25		0942	2.55	NA	NA	0	
2WMW44DS		0947	1.64	NA	1.3	0	SG21 = 3.24
2WMW43DS		0957	2.37	NA	21.5	0	SG20 = 3.17
2WMW42DS		1004	1.94	NA	0.6	0	SG19 = 3.83
2WMW41DS		1009	2.18	NA	1.4	0	SG18 = 3.95
2DMW11S		1030	~~B~~ 2.80	NA	0.6	0	(2.80)
3MW12D		1035	0.35	NA	0	0	
3MW12S		1038	2.54	NA	1.6	0	

* All measurements to the nearest 0.01 foot

ROUND 3

Signature(s): [illegible]

WATER LEVEL MEASUREMENT SHEET

Project Name: NSB-NLON, Area A
Location: Groton, CT
Weather Conditions: OVERCAST 58°F RAIN OVERNITE, WINDY

Project No.: CTO 203 5082
Personnel: SIMPSON/ NEIL
Measuring Device: HERON
Remarks:

Well ID	Date	Time	Water Level *	Thickness of Free Product	PID Reading ppm RP	PID Reading ppm BZ	Comments
KS ~~2W~~ 3MW37S	4-4-00	1041	3.57	NA	1.3	0	
SG-6		1118	16.79	NA	0	0	
2LMW9D		1121	25.74	NA	0	0	
2LMW9S		1124	8.41	NA	0	0	
2WMW38DS		1133	6.28	NA	0	0	SG15 = DRY
2LMW13D		1136	—	NA	—	0	NO ACCESS, NEED TO BREAK LOCK (BOLT CUTTERS WILL NOT FIT IN VAULT)
2LMW13S		1140	15.16	NA	0	0	
4MW40D KS 4MW~~4~~D		1145	4.07	NA	1.0	0	
4MW1S		1156	6.13	NA	1.1	0	
2WMW39DS		1159	3.53	NA	0	0	SG16 = DRY
2WMW40DS		1157	2.95	NA	1.2	0	SG17 = DRY
2LOW4S		1318	10.03	NA	0.6	0	

* All measurements to the nearest 0.01 foot

ROUND 3

Signature(s): [illegible]

WATER LEVEL MEASUREMENT SHEET

Project Name: NSB-NLON, Area A
Location: Groton, CT
Weather Conditions: OVERCAST 60°F RAIN OVERNITE

Project No.: CTO 203 5082
Personnel: SIMPSON / NEIL
Measuring Device: HERON
Remarks:

Well ID	Date	Time	Water Level *	Thickness of Free Product	PID Reading ppm RP	PID Reading ppm BZ	Comments
2LOW2S	4.4.00	1327	11.40	NA	1.8	0	
2LOW1S		1330	11.08	NA	0	0	
2LMW28DS		1336	12.54	NA	0	0	
2LMW28F		1340	10.40	NA	0	0	
2LMW14D		1352	7.08	NA	0	0	
2LMW29F		1358	10.49	NA	0	0	
2LMW29A		1401	8.32	NA	0	0	
1MW2S		1410	2.65	NA	23.5	0	
2LMW31DS		1416	2.80	NA	0	0	
2LMW17S		1424	9.88	NA	0	0	
2LMW17D		1426	0.30	NA	0	0	
2LMW34DS ~~2LMW48D~~		1440	12.28	NA	0	0	2LMW34DS

* All measurements to the nearest 0.01 foot

ROUND 3

Signature(s): Neil E. Simpson

WATER LEVEL MEASUREMENT SHEET

Project Name: NSB-NLON, Area A
Location: Groton, CT
Weather Conditions: LT. RAIN 58°F
HEAVY RAIN STARTING @ 1430

Project No.: CTO 203 5082
Personnel: SIMPSON/NEIL
Measuring Device: HERON
Remarks:

Well ID	Date	Time	Water Level *	Thickness of Free Product	PID Reading ppm RP	PID Reading ppm BZ	Comments
2LMW18D	4.4.00	1447	9.59	NA	5.3	0	
2LMW30DS	↓	1518	11.24	NA	1.1	0	
2LMW30F	↓	1520	10.82	NA	2.8	0	
	↓			NA			
	↓			NA			
	↓			NA			
	↓			NA			
	↓			NA			
	↓			NA			
	↓			NA			
	↓			NA			
	↓			NA			

* All measurements to the nearest 0.01 foot

ROUND 3

Signature(s): [illegible]

APPENDIX C

MONITORING INSTRUMENT CALIBRATION LOGS

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL: 610-DM & 6820 SOND

PROJECT NAME: NSB-NION

MANUFACTURER: YSI ENVIRONMENTAL

PROJECT NUMBER: 5082 & 7363
AREA A - DRMO

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
4.4.00						RSP	PH 7.00 LOT 2076
4.5.00						RSP	EXP. 12/01
4.6.00						RSP	
4.7.00						RSP	PH 4.00 LOT 2100
4.8.00						RSP	EXP. 12/01
4.9.00						RSP	
4.10.00						RSP	COND. 1,000 µS/cm
4.11.00						RSP	LOT 2133, EXP 01/01
4.12.00						RSP	
							ORP 100 MV
							LOT 2174, EXP 2/01
							HS DO 100% SAT. AIR

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : HOTDVAC 2020 PID

PROJECT NAME : NSB - NLON

MANUFACTURER : PERKIN - ELMER

PROJECT NUMBER : 5082 & 7363
AREA A - DRMO

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
4/3/00	0.0	ISOBUTYLENE	PER MAN.	NA	100 ppm	SWN	SPAN GAS = 100 ppm
4/4/00	0.0	"	"	"	100 ppm	SWN	"
4/5/00	0.0	"	"	"	100 ppm	SWN	"
4/6/00	0.0	"	"	"	100 ppm	SWN	"
4/7/00	0.0	"	"	"	100 ppm	SWN	"
4/8/00	0.0	"	"	"	100 ppm	SWN	"
4/9/00	0.0	"	"	"	100 ppm	SWN	"
4.10.00	0.0	"	"	"	100 PPM	TSP	"
4.11.00	0.0	"	"	"	100 PPM	TSP	"
4.12.00	0.0	"	"	"	100 PPM	TSP	"

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL: 610-DM & 6820ND

PROJECT NAME: NSB-NLON

MANUFACTURER: YSI ENVIRONMENTAL

PROJECT NUMBER: 5082 & 7363
AREA A - DRMO

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
4.4.00						RSP	PH 7.00 LOT 2076
4.5.00						RSP	EXP. 12/01
4.6.00						RSP	
4.7.00						RSP	PH 4.00 LOT 2106
4.8.00						RSP	EXP 12/01
4.9.00						RSP	
4.10.00						RSP	COND. 1000 µS/CM
4.11.00						RSP	LOT 2133, EXP 01/01
4.12.00						RSP	
							ORP 100 MV
							LOT 2174, EXP. 2/01
							DO 100 % SAT. AIR

APPENDIX D

GROUNDWATER SAMPLE LOGSHEETS AND LOW-FLOW PURGE DATA SHEETS

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / AREA A
Project No.: CTO 203 5082

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 3-GW37S-03
Sample Location: 3MW37S
Sampled By: S. NEIL / K. SIMPSON
C.O.C. No.: 040900-03
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 4/9/00								
Time: 1400								
Method: Peristaltic Pump	Clear	6.21	0.824	9.6	2.4		68	0.41

PURGE DATA:

Date: 4/9/00
Method: Peristaltic Pump
Monitor Reading (ppm): 0
Well Casing Diameter & Material
Type: 2" PVC
Total Well Depth (TD): 8.45
Static Water Level (WL): 3.22
One Casing Volume(gal): 0.9
Start Purge (hrs): 1312
End Purge (hrs): 1357
Total Purge Time (min): 45
Total Vol. Purged (gal): 0.9

ROUND 3

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	(3) 40 ml Vial	✓
TCL SEMIVOLATILES	4° C	(2) Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	(2) Qt. Amber Glass	✓
TCL PAH	4° C	(2) Qt. Amber Glass	✓
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	(1) L PE	✓
TAL METALS (DISSOLVED)	HNO_3 / 4° C	(1) L PE	✓
Total Organic Carbon (TOC)	HCL / 4° C	(1) 60 mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	(1) 250 mL PE	✓
Alkalinity, Chloride, Sulfate, TDS	4° C	(1) L PE	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A - ROUND 3
PROJECT NUMBER: CTO 203 job# 5082

WELL ID.: 3 MLV 375 (SN) ~~MW 3 7DS~~
DATE: 4/9/00

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. PPT.	Comments
1312	3.22								→	Begin purging
1317	3.51	85	6.21	0.907	50		7.8	110	0.45	
1322	3.50	85	6.21	0.876	17		7.8	98	0.43	
1327	3.50	85	6.21	0.864	9.7		7.7	93	0.43	
1332	3.51	85	6.22	0.862	5.3		7.5	88	0.42	
1337	3.51	85	6.22	0.857	3.6		7.6	83	0.42	
1342	3.51	85	6.22	0.844	4.1		7.8	79	0.42	
1347	3.51	85	6.22	0.830	2.5		7.9	75	0.41	
1352	3.51	85	6.21	0.825	2.3		7.8	71	0.41	
1357	3.51	85	6.21	0.824	2.4		7.6	68	0.41	End purging

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / AREA A
Project No.: CTO 203 5082

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 2W GW38DS-03
Sample Location: 2WMW38DS
Sampled By: K. SIMPSON
C.O.C. No.: 040900 -03
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA: 4.5.00

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	~~Eh~~ ORP mV	Salinity ppt
Date: 4.7/9.00								
Time: SEE BELOW								
Method: Peristaltic Pump	CLEAR	7.13	1.223	9.1	4.1	3.93	39	0.61

PURGE DATA:

Date: 4.5.00
Method: Peristaltic Pump
Monitor Reading (ppm):
Well Casing Diameter & Material
Type: 2" PVC
Total Well Depth (TD): 12.51
Static Water Level (WL): 5.61
One Casing Volume(gal): 1.1
Start Purge (hrs): 0844
End Purge (hrs): 0930
Total Purge Time (min): 46
Total Vol. Purged (gal): 1.6

ROUND 3

See Attached Low Flow Purge Data Sheet for Purge Data

4.7.00 WL = 9.02 @ 0808 PUMP RATE = 140 ML/MIN
4.9.00 WL = 9.00 @ 0940 PUMP RATE = 110 ML/MIN

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	40 ml Vial 0815	4.7.00
TCL SEMIVOLATILES	4° C	Qt. Amber Glass 0940	4.9.00
TCL PEST/PCBs	4° C	Qt. Amber Glass 0940	4.9.00
TCL PAH	4° C	Qt. Amber Glass 0815	4.7.00
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	L PE 0815	4.7.00
TAL METALS (DISSOLVED)	HNO_3 / 4° C	L PE 0815	4.7.00
Total Organic Carbon (TOC)	HCL / 4° C	60 mL Glass 0815	4.7.00
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	250 mL PE 0815	4.7.00
Alkalinity, Chloride, Sulfate, TDS	4° C	L PE 0940	4.9.00

OBSERVATIONS / NOTES:

TUBING INLET START 1'± OFF BTM
LOWERED TO PURGE DRY

Circle If Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): K. S. Simpson

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A - ROUND 3
PROJECT NUMBER: CTO 203 job# 5082

WELL ID.: 24MW38DS
DATE: 4.5.00

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh ORP mV	Sal. PPT.	Comments
0837	5.61	150								START PURGE
0849	6.69	↓	7.06	1.217	1.2	12.75	9.9	184	0.61	
0855	7.11	140	7.03	1.210	1.0	10.22	9.8	181	0.61	
0900	7.83		7.02	1.196	1.0	7.91	9.3	180	0.60	
0905	8.32		7.01	1.184	1.2	7.15	9.3	143	0.59	
0910	9.17		7.00	1.181	2.0	6.19	9.1	96	0.59	
0915	10.20		7.01	1.210	2.7	6.39	9.2	75	0.61	
0920	10.31		7.03	1.237	2.9	5.05	9.1	70	0.62	
0925	11.48		7.06	1.265	2.9	3.76	9.0	59	0.63	0926 MOVED INLET TO BTM.
0930	12.46	↓	7.13	1.223	4.1	3.93	9.1	39	0.61	DRY
										END PURGE

SIGNATURE(S): [illegible] S. Lemji

12.5 BTM

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / AREA A
Project No.: CTO 203 5082

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type: ___
[ ] QA Sample Type: ___

Sample ID No.: 2WGW39DS-03
Sample Location: AREA A
Sampled By: K. SIMPSON
C.O.C. No.: 040500 -03
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA: 4.6.00

	* Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh ORP mV	Salinity ppt
Date: 4.6.00								
Time: 0740								
Method: Peristaltic Pump	CLEAR	6.94	5.968	9.2	12	0.13	-110	3.24

PURGE DATA:

Date: 4.5.00
Method: Peristaltic Pump
Monitor Reading (ppm): 0
Well Casing Diameter & Material
Type: 2" PVC
Total Well Depth (TD): 16.70
Static Water Level (WL): 3.15
One Casing Volume(gal): 2.2
Start Purge (hrs): 1006
End Purge (hrs): 1143
Total Purge Time (min): 97
Total Vol. Purged (gal): 3.6

ROUND 3

*TRACE FINES IN SAMPLE, NO ODOR

See Attached Low Flow Purge Data Sheet for Purge Data

43
59
7

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	40 ml Vial	✓
TCL SEMIVOLATILES	4° C	Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	Qt. Amber Glass	✓
TCL PAH	4° C	Qt. Amber Glass	✓
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	L PE	✓
TAL METALS (DISSOLVED)	HNO_3 / 4° C	L PE	✓
Total Organic Carbon (TOC)	HCL / 4° C	60 mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	250 mL PE	✓
Alkalinity, Chloride, Sulfate, TDS	4° C	L PE	✓

OBSERVATIONS / NOTES:

PUMP INLET SET 1' ± OFF BTM (15.7')
PURGED 4.5.00 SAMPLED 4.6.00
END WL 4.6.00 @ 0858 = 10.73'
SAMPLED 4.6.00 WL = 2.59; PUMP RATE 100 ML/MIN

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s): K. S. Simpson

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A - ROUND 3
PROJECT NUMBER: CTO 203 job# 5082

WELL ID.: 2WMW39DS
DATE: 4.5.00

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh ORP mV	Sal. PPT.	Comments
1005	3.15	200								START PURGE
1010	4.68	140	7.00	7.243	1.3	1.09	9.1	-54	3.99	
1015	5.38		6.95	6.794	1.2	0.88	8.9	-68	3.74	
1020	5.97		6.92	6.299	1.0	0.84	8.7	-74	3.44	
1030	7.05		6.87	4.895	1.0	0.45	8.4	-87	2.68	
1035	7.86		6.84	4.172	1.2	0.34	8.6	-93	2.23	
1045	8.59		6.79	3.118	1.5	0.24	8.6	-98	1.65	
1055	9.85		6.78	2.990	1.9	0.18	8.8	-96	1.56	
1105	10.98		6.84	2.999	16	0.17	8.8	-97	1.57	
1115	12.01		6.85	3.401	18	0.17	9.0	-103	1.79	
1125	13.43		6.87	4.170	14	0.14	9.1	-109	2.22	
1130	14.57		6.88	4.767	13	0.14	9.2	-111	2.55	
1135	15.68		6.90	5.234	12	0.14	9.2	-111	2.82	
1140	15.88		6.94	5.968	12	0.13	9.2	-110	3.24	
1143	16:00									DRY, END PURGE

SIGNATURE(S): K-1 S. Sing

16.7' = BTM

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / AREA A
Project No.: CTO 203 5082

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 2WGW40DS-03
Sample Location: AREA A
Sampled By: R. SIMPSON
C.O.C. No.: 040700 -03
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA: 4.5.00

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh ORP mV	Salinity ppt
Date: 4.7.00								
Time: 0920								
Method: Peristaltic Pump	CLEAR	6.95	25.33	8.9	51	0	-319	15.35

PURGE DATA:

Date: 4.5.00
Method: Peristaltic Pump
Monitor Reading (ppm): 1.2
Well Casing Diameter & Material
Type: 2" PVC
Total Well Depth (TD): 17.38
Static Water Level (WL): 2.84
One Casing Volume(gal): 2.4
Start Purge (hrs): 1352
End Purge (hrs): 1510
Total Purge Time (min): 78
Total Vol. Purged (gal): 3.0

ROUND 3

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE
4.7.00 @ 0911 WL = 7.47' PUMP RATE 110 ML/MIN
60
15
75
BLACK FINES INCREASING AS WL DROPS

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	40 ml Vial	—
TCL SEMIVOLATILES	4° C	Qt. Amber Glass	—
TCL PEST/PCBs	4° C	Qt. Amber Glass	—
TCL PAH	4° C	Qt. Amber Glass	—
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	L PE	—
TAL METALS (DISSOLVED)	HNO_3 / 4° C	L PE	—
Total Organic Carbon (TOC)	HCL / 4° C	60 mL Glass	—
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	250 mL PE	—
Alkalinity, Chloride, Sulfate, TDS	4° C	L PE	—

OBSERVATIONS / NOTES:

BLACK FINES IN PURGE WATER, SULFUR ODOR
PUMP INLET SET 1' ± OFF BTM.

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A - ROUND 3
PROJECT NUMBER: CTO 203 job# 5082

WELL ID.: 2WMW40DS-03
DATE: 4-5-00

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh ORP mV	Sal. PPT.	Comments
1350	2.84	150								START PURGE
1356	4.40	↓	7.05	37.88	4.3	0	9.4	-316	23.17	
1405	5.32	140	6.98	36.07	3.5	0	9.5	-318	22.80	
1410	6.78		6.96	33.05	2.9	0	9.3	-312	20.51	
1415	7.35		6.93	31.23	2.9	0	9.1	-307	19.41	
1420	7.90		6.90	28.83	2.9	0	8.9	-301	17.75	
1430	9.00	↓	6.91	23.87	7.8	0	8.9	-303	14.46	
1440	10.35	150	6.86	18.63	56	0.19	8.7	-352	11.04	WATER TURNING BLACK
1450	12.30		6.93	19.03	43	0	8.6	-331	11.25	
1500	14.04		6.94	22.50	48	0	8.8	-319	13.50	
1505	15.22		6.94	24.31	50	0	8.9	-318	14.80	
1510	16.43	↓	6.95	25.33	51	0	8.9	-319	15.35	DRY END PURGE

SIGNATURE(S): [illegible]

BTM = 17.4

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / AREA A
Project No.: CTO 203 5082

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 2W-GW41DS-03
Sample Location: 2WMW41DS
Sampled By: S. NEIL
C.O.C. No.: 040700-03
Type of Sample:
[X] Low Concentration
[ ] High Concentration

* **SAMPLING DATA:**

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 4/7/00								
Time: 0820								
Method: Peristaltic Pump	V.LT. BRN	6.55	27.06	9.1	23	17.06	-325	16.59

PURGE DATA:

Date: 4/5/00
Method: Peristaltic Pump
Monitor Reading (ppm): 1.4
Well Casing Diameter & Material
Type: 2" PVC
Total Well Depth (TD): 16.65'
Static Water Level (WL): 2.20'
One Casing Volume(gal): 2.4
Start Purge (hrs): 0845
End Purge (hrs): 1036
Total Purge Time (min): 111
Total Vol. Purged (gal): 3.8

ROUND 3

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	(3) 40 ml Vial	✓
TCL SEMIVOLATILES	4° C	(2) Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	(2) Qt. Amber Glass	✓
TCL PAH	4° C	(2) Qt. Amber Glass	✓
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	(1) L PE	✓
TAL METALS (DISSOLVED)	HNO_3 / 4° C	(1) L PE	✓
Total Organic Carbon (TOC)	HCL / 4° C	(1) 60 mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	(1) 250 mL PE	✓
Alkalinity, Chloride, Sulfate, TDS	4° C	(1) L PE	✓

OBSERVATIONS / NOTES:

* Parameters are final purge parameters taken on 4/5/00.
Returned on 4/6/00 @ 1535 to sample - water level at 8.45 ft - insufficient volume for samples - will return on 4/7/00 to sample.
water level prior to sampling: 6.19 ft. Sample effervesces in VOAs.

Circle if Applicable:

MS/MSD —
Duplicate ID No.:

Signature(s): Scott W. Neil

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A - ROUND 3
PROJECT NUMBER: CTO 203 job# 5082

WELL ID.: 2WMW 41DS
DATE: 4/5/00

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. PPT.	Comments
0845	2.20								→	BEGIN PURGING.
0850	2.86	120	6.75	32.18	8.7	10.67	8.5	-224	19.97	
0855 ~~0900~~	3.91	120	6.74	30.51	4.9	26.76	8.6	-265	18.82	
0900	4.48	120	6.65	29.67	3.7	9.53	8.5	-272	18.26	
0905	5.32	125	6.62	27.85	6.8	29.62	8.5	-283	17.04	
0910	6.03	125	6.61	26.97	3.9	21.88	8.5	-290	16.45	
0915	6.78	125	6.62	24.75	3.3	14.47	8.5	-293	14.98	
0920	7.24	125	6.61	22.79	16	11.36	8.5	-300	13.69	
0925	7.69	130	6.60	20.91	14	12.32	8.4	-304	12.48	
0930	8.17	130	6.57	19.11	6.7	15.19	8.4	-302	11.31	
0935	8.54	130	6.54	16.62	5.4	14.47	8.3	-312	9.72	
0940	9.31	130	6.53	16.35	7.6	16.32	8.2	-330	9.54	
0945	9.78	130	6.54	15.85	13	17.07	8.1	-334	9.24	
0950	10.16	130	6.54	16.05	15	17.79	8.1	-332	9.38	
0955	10.59	130	6.53	16.45	19	18.59	8.2	-333	9.63	
1000	11.14	130	6.52	16.85	16	19.34	8.2	-330	9.90	
1005	11.63	130	6.52	17.72	18	19.93	8.3	-332	10.45	
1010	12.16	125	6.53	18.96	18	20.27	8.4	-333	11.23	
1015	12.82	125	6.54	20.30	20	19.70	8.5	-332	12.13	
1020	13.43	155	6.54	21.13	20	22.06	8.6	-331	12.63	
1025	14.26	150	6.54	22.50	22	23.27	8.7	-330	13.53	
1030	14.87	150	6.54	24.10	22	24.83	8.9	-329	14.58	
1035	15.24	150	6.54	26.63	22	27.81	9.1	-326	16.33	
1036	15.29	150	6.55	27.06	23	17.06	9.1	-325	16.59	END PURGING.
	well purged dry; will sample in 24-48 Hrs.									

SIGNATURE(S): Scott W. Reid

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / AREA A
Project No.: CTO 203 5082

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 2N-GW42DS-03
Sample Location: 2NMW42DS
Sampled By: J. NEIL
C.O.C. No.: 040500-03
Type of Sample:
[X] Low Concentration
[ ] High Concentration

*** SAMPLING DATA:**

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 4/6/00								
Time: 1400								
Method: Peristaltic Pump	V. LT. BRN	6.67	29.97	9.1	25	26.81	-338	18.49

PURGE DATA:

Date: 4/5/00
Method: Peristaltic Pump
Monitor Reading (ppm): 0.6
Well Casing Diameter & Material
Type: 2" PVC
Total Well Depth (TD): 16.91'
Static Water Level (WL): 1.90'
One Casing Volume(gal): 2.5
Start Purge (hrs): 1410
End Purge (hrs): 1547
Total Purge Time (min): 97
Total Vol. Purged (gal): 3.1

ROUND 3

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	(3) 40 ml Vial	✓
TCL SEMIVOLATILES	4° C	(2) Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	(2) Qt. Amber Glass	✓
TCL PAH	4° C	(2) Qt. Amber Glass	✓
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	(1) L PE	✓
TAL METALS (DISSOLVED)	HNO_3 / 4° C	(1) L PE	✓
Total Organic Carbon (TOC)	HCL / 4° C	(1) 60 mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	(1) 250 mL PE	✓
Alkalinity, Chloride, Sulfate, TDS	4° C	(1) L PE	✓

OBSERVATIONS / NOTES:

*Parameters are final purge parameters from 4/5/00.
Well was purged dry and will be sampled within 24-48 HRS, depending on recharge.
Water level prior to sampling on 4/6/00 is 4.5 FT.
Suspended black fines in sample; VOAs effervesce.

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Scott W. Reid

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A - ROUND 3
PROJECT NUMBER: CTO 203 job# 5082

WELL ID.: 2NMW42DS
DATE: 4/5/00

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. PPT.	Comments
1410	1.90								→	BEGIN PURGING
1415	3.11	140	6.76	36.45	6.8	15.81	9.2	-344	22.87	REDUCE FLOW.
1420	3.91	120	6.73	36.14	4.1	14.73	9.1	-342	22.69	
1425	4.67	120	6.72	35.17	3.4	18.08	9.0	-340	22.01	
1430	5.44	120	6.71	33.52	3.5	15.64	9.0	-337	20.88	
1435	6.23	120	6.71	31.14	2.9	14.32	8.9	-333	19.62	
1440	6.98	120	6.68	28.66	2.8	14.25	8.8	-330	17.56	
1445	7.76	120	6.57	22.39	3.9	15.42	8.7	-325	13.42	
1450	8.58	120	6.52	20.37	11	17.42	8.7	-329	12.13	
1455	9.10	120	6.50	19.25	19	17.68	8.7	-332	11.42	
1500	9.68	120	6.54	17.68	37	17.91	8.6	-339	10.39	
1505	10.25	120	6.65	16.17	35	21.04	8.6	-340	9.45	
1510	10.78	120	6.75	15.31	30	18.57	8.5	-341	8.91	
1515	11.34	120	6.76	15.46	25	16.60	8.5	-335	9.03	
1520	11.95	120	6.72	17.00	20	20.37	8.6	-334	9.99	
1525	12.44	120	6.70	18.41	18	22.31	8.6	-334	11.21	
1530	13.15	120	6.67	21.03	16	22.24	8.7	-336	12.59	
1535	13.79	120	6.66	23.20	16	23.97	8.7	-339	14.01	
1540	14.38	120	6.64	26.06	21	28.10	8.9	-340	15.98	
1545	14.81	120	6.64	27.59	24	29.59	9.0	-342	16.92	
1547 1550	15.10	120	6.67	29.97	25	26.81	9.1	-338	18.49	END PURGING.
	WELL PURGED DRY; WILL SAMPLE IN 24-48 HRS.									

SIGNATURE(S): Scott A. Neil

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / AREA A
Project No.: CTO 203 5082

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 2W-GW43DS-03
Sample Location: 2W/MW43DS
Sampled By: S. NEIL
C.O.C. No.: 040700-03
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 4/8/00								
Time: 0800								
Method: Peristaltic Pump	LT. BRN	6.46	38.31	10.6	133	11.76	-355	24.31

PURGE DATA:

Date: 4/6/00
Method: Peristaltic Pump
Monitor Reading (ppm): 21.5
Well Casing Diameter & Material
Type: 2" PVC
Total Well Depth (TD): 15.67'
Static Water Level (WL): 2.36'
One Casing Volume(gal): 2.2
Start Purge (hrs): 1529
End Purge (hrs): 1714
Total Purge Time (min): 105
Total Vol. Purged (gal): 3.4

ROUND 3

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	(3) 40 ml Vial	✓
TCL SEMIVOLATILES	4° C	(2) Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	(2) Qt. Amber Glass	✓
TCL PAH	4° C	(2) Qt. Amber Glass	✓
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	(1) L PE	✓
TAL METALS (DISSOLVED)	HNO_3 / 4° C	(1) L PE	✓
Total Organic Carbon (TOC)	HCL / 4° C	(1) 60 mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	(1) 250 mL PE	✓
Alkalinity, Chloride, Sulfate, TDS	4° C	(1) L PE	✓

OBSERVATIONS / NOTES:

Purged dry on 4/6/00. Field parameters are final purge parameters.
Water level prior to sampling on 4/8/00 = 4.79 FT.
Sample effervesces in VOAs.

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A - ROUND 3
PROJECT NUMBER: CTO 203 job# 5082

WELL ID.: 2WMW43DS
DATE: 4/6/00

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. PPT.	Comments
1529	2.36									→ Begin purging.
1534	3.24	150	6.64	41.96	13	5.05	10.9	-356	26.84	
1539	4.08	150	6.60	40.09	14	3.83	10.8	-353	25.48	Decrease flow. 1500
1544	5.01	135	6.59	37.74	5.9	6.01	10.6	-353	23.85	Decrease flow. 65
1549	5.85	120	6.58	36.44	9.3	6.33	10.6	-352	22.97	
1554	6.35	120	6.57	35.52	8.5	7.94	10.6	-353	22.31	
1559	6.83	120	6.58	34.65	8.4	8.56	10.6	-353	21.72	
1604	7.25	120	6.61	33.91	8.4	8.07	10.6	-353	21.21	
1609	7.62	120	6.62	33.97	9.4	8.00	10.5	-348	21.27	
1614	8.11	120	6.64	32.97	12	7.85	10.4	-351	20.55	
1619	8.60	120	6.65	32.56	13	7.90	10.4	-349	20.30	
1624	9.12	120	6.68	32.44	16	7.71	10.4	-350	20.21	
1629	9.60	120	6.68	32.25	16	8.45	10.3	-349	20.08	
1634	10.18	120	6.67	32.31	19	8.04	10.1	-348	20.11	
1639	10.78	120	6.65	32.50	18	8.31	10.2	-351	20.26	
1644	11.37	120	6.62	32.93	20	8.23	10.0	-352	20.53	
1649	11.97	120	6.60	33.15	28	9.51	10.2	-352	20.70	
1654	12.70	120	6.56	33.81	40	9.68	10.3	-353	21.15	
1659 ~~1659~~	13.12	120	6.55	34.42	53	9.28	10.2	-355	21.56	
1704	13.77	120	6.52	35.13	87	10.75	10.4	-355	22.06	
1709	14.48	120	6.48	36.80	129	11.69	10.6	-356	23.24	
1714	14.91	120	6.46	38.31	133	11.76	10.6	-355	24.31	End purging. Purged dry to the pump inlet.

SIGNATURE(S): Scott W. Neil

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / AREA A
Project No.: CTO 203 5082

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 2W-GW44DS-03
Sample Location: 2WMW44DS
Sampled By: S. NEIL
C.O.C. No.: 040900-03
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 4/9/00								
Time: 1000								
Method: Peristaltic Pump	GRAY	6.85	20.49	11.8	238	1.52	-329	12.26

PURGE DATA:

Date: 4/8/00
Method: Peristaltic Pump
Monitor Reading (ppm): 1.3
Well Casing Diameter & Material
Type: 2" PVC
Total Well Depth (TD): 16.77'
Static Water Level (WL): 1.65'
One Casing Volume(gal): 2.5
Start Purge (hrs): 0958
End Purge (hrs): 1228
Total Purge Time (min): 150
Total Vol. Purged (gal): 4.8

ROUND 3

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	(3) 40 ml Vial	✓
TCL SEMIVOLATILES	4° C	(2) Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	(2) Qt. Amber Glass	✓
TCL PAH	4° C	(2) Qt. Amber Glass	✓
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	(1) L PE	✓
TAL METALS (DISSOLVED)	HNO_3 / 4° C	(1) L PE	✓
Total Organic Carbon (TOC)	HCL / 4° C	(1) 60 mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	(1) 250 mL PE	✓
Alkalinity, Chloride, Sulfate, TDS	4° C	(1) L PE	✓

OBSERVATIONS / NOTES:

Light rain during sampling. Water level prior to sampling on 4/8/00 = 0.8 FT.
water has a strong sulphur odor.
water effervesces in VOAs.
Well pad is completely submerged in water.
Sample field parameters are final purge parameters from 4/8/00.

Circle if Applicable:

MS/MSD
Duplicate ID No.:

Signature(s): Scott L. Neil

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A - ROUND 3
PROJECT NUMBER: CTO 203 job# 5082

WELL ID.: 2WMW44DS
DATE: 4/8/00

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. PPT.	Comments
0958	1.65								→	Begin purging
1003	2.54	150	7.02	44.29	78	10.35	11.7	-359	28.52	Reduce flow. 750
1008	3.46	125	6.86	43.67	66	2.94	11.5	-363	28.11	
1013	4.10	125	6.83	43.52	51	3.08	11.6	-363	27.98	
1018	4.91	125	6.82	43.40	35	5.56	11.5	-363	27.93	
1023	5.34	125	6.80	42.34	29	8.29	11.8	-363	27.10	Reduce flow. 1030
1028	5.69	100	6.79	41.42	33	5.13	12.1	-366	26.55	
1033	6.00	100	6.78	40.45	34	4.17	12.1	-365	25.76	
1038	6.32	100	6.76	38.89	47	3.91	12.1	-365	24.66	
1043	6.63	100	6.74	36.92	46	3.62	12.1	-361	23.32	
1048	6.91	100	6.74	33.38	51	3.67	12.2	-358	20.87	
1053	7.12	100	6.72	32.65	55	3.39	12.0	-357	20.42	
1058	7.31	100	6.75	30.56	66	3.65	12.2	-355	18.91	
1103	7.53	100	6.77	23.43	75	3.50	12.3	-346	14.16	
1108	7.76	100	6.80	17.84	73	3.14	12.5	-345	10.53	
1113	8.05	100	6.80	13.60	77	2.74	12.4	-342	7.85	
1118	8.34	100	6.76	13.03	69	2.49	12.0	-338	7.52	
1123	8.67	100	6.73	13.39	70	2.27	11.8	-336	7.75	
1128	8.98	100	6.71	13.90	75	2.18	12.0	-336	8.07	
1133	9.37	100	6.71	14.43	76	2.07	11.7	-336	8.40	
1138	9.58	100	6.71	14.79	73	2.10	11.8	-336	8.63	
1143	9.89	100	6.71	15.17	71	2.07	11.7	-336	8.86	
1148	10.23	100	6.71	15.82	65	2.01	11.8	-335	9.28	Increase flow - water 1150
1153	10.96	160	6.71	16.04	76	2.14	11.2	-335	9.41	level not stabilizing
1158	11.44	160	6.71	16.08	78	2.22	11.2	-333	9.43	will dewater and
1203	12.13	160	6.72	16.17	83	2.11	11.2	-333	9.49	sample within 24 HRS.
1208	12.77	160	6.76	16.52	114	1.30	11.2	-324	9.72	
1213	13.36	160	6.79	17.59	157	1.08	11.3	-325	10.40	
1218	14.10	160	6.80	19.02	212	1.49	11.5	-327	11.33	
1223	14.72	160	6.82	20.07	210	1.62	11.6	-330	12.00	1560

SIGNATURE(S): Scott M. Neal

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A - ROUND 3
PROJECT NUMBER: CTO 203 job# 5082

WELL ID.: 2WMW44DS
DATE: 2/8/00

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. PPT.	Comments
1228	15.38	160	6.85	20.49	238	1.52	11.8	-329	12.26	End purging - well purged dry to pump inlet.

SIGNATURE(S): Scott W. Neil

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / AREA A
Project No.: CTO 203 5082

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 2WMW45DS-03 (GW)
Sample Location: AREA A
Sampled By: R. SIMPSON
C.O.C. No.: 040700 -03
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA: 4.6.00

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh or ORP mV	Salinity ppt
Date: 4.8.00								
Time: 0740								
Method: Peristaltic Pump		6.91	36.19	9.7	12.5	0.95	-350	22.49

PURGE DATA:

Date: 4.6.00
Method: Peristaltic Pump
Monitor Reading (ppm): 0.4
Well Casing Diameter & Material
Type: 2" PVC
Total Well Depth (TD): 16.75
Static Water Level (WL): 1.94
One Casing Volume(gal):
Start Purge (hrs): 0936
End Purge (hrs): 1106
Total Purge Time (min): 90
Total Vol. Purged (gal): 3.7

ROUND 3

See Attached Low Flow Purge Data Sheet for Purge Data

4.8.00 @ 0735 WL = 2.13 PUMP RATE = 120 ML/MIN
LITE SULFUR ODOR, GRAY/BLACK COLOR
END SAMPLING @ 0839 WL = 9.43

24
66
90

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	40 ml Vial	—
TCL SEMIVOLATILES	4° C	Qt. Amber Glass	—
TCL PEST/PCBs	4° C	Qt. Amber Glass	—
TCL PAH	4° C	Qt. Amber Glass	—
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	L PE	—
TAL METALS (DISSOLVED)	HNO_3 / 4° C	L PE	—
Total Organic Carbon (TOC)	HCL / 4° C	60 mL Glass	—
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	250 mL PE	—
Alkalinity, Chloride, Sulfate, TDS	4° C	L PE	—

OBSERVATIONS / NOTES:

PUMP INLET (TUBING) SET 1'± OFF BTM.

Circle if Applicable:

MS/MSD —
Duplicate ID No.: —

Signature(s): R. S. Simpson

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A - ROUND 3
PROJECT NUMBER: CTO 203 job# 5082

WELL ID.: 2WMW45DS
DATE: 4.6.00

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh ORP mV	Sal. PPT.	Comments
0935	1.94	150								START PURGE
0942	3.46		7.06	40.27	2.1	0	8.7	-349	25.50	BLACK FINES IN PURGE WATER
0950	4.41		6.90	40.09	2.4	0.18	8.6	-357	25.44	W/SULFUR ODOR
1000	5.95		6.91	37.58	2.5	0.48	8.6	-358	23.71	
1010	7.13		6.91	34.72	4.9	1.07	8.5	-356	21.71	
1020	8.62		6.89	26.03	5.5	0.65	8.7	-349	15.98	
1030	10.20	160	6.85	18.19	11.9	0.55	8.6	-333	10.71	
1040	11.95		6.88	23.27	10.4	0.63	8.8	-340	14.01	
1050	13.28		6.91	28.66	12.9	1.08	9.0	-348	17.52	
1055	13.95		6.92	31.52	12.7	0.86	9.1	-352	19.45	
1100	14.73		6.87	37.38	12.5	1.30	9.7	-355	23.49	
1105	15.70		6.91	36.19	12.5	0.95	9.7	-350	22.49	DRY TO INLET
										LOWERED TUBING TO BTM & PUMPED DRY

SIGNATURE(S): [illegible]

BTM = 16.75

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / AREA A
Project No.: CTO 203 5082

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 2W-GW46DS-03
Sample Location: 2WMW46DS
Sampled By: J. NEIL
C.O.C. No.: 040700-03
Type of Sample:
[X] Low Concentration
[ ] High Concentration

*** SAMPLING DATA:**

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 4/7/00								
Time: 1010								
Method: Peristaltic Pump	YELLOW	6.82	42.15	9.2	71	6.94	-366	26.89

PURGE DATA:

Date: 4/6/00
Method: Peristaltic Pump
Monitor Reading (ppm): 0.0
Well Casing Diameter & Material
Type: 2" PVC
Total Well Depth (TD): 17.32'
Static Water Level (WL): 1.24'
One Casing Volume(gal): 2.6
Start Purge (hrs): 0900
End Purge (hrs): 1042
Total Purge Time (min): 102
Total Vol. Purged (gal): 3.0

ROUND 3

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	2 40 ml Vial	✓
TCL SEMIVOLATILES	4° C	2 Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	2 Qt. Amber Glass	✓
TCL PAH	4° C	2 Qt. Amber Glass	✓
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	1 L PE	✓
TAL METALS (DISSOLVED)	HNO_3 / 4° C	1 L PE	✓
Total Organic Carbon (TOC)	HCL / 4° C	1 60 mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	1 250 mL PE	✓
Alkalinity, Chloride, Sulfate, TDS	4° C	1 L PE	✓

OBSERVATIONS / NOTES:

* Field parameters for sampling data are the final purge field parameters.
well purged dry.
water level prior to sampling on 4/7/00 = ~~6.37~~ 6.37 FT.
Sample effervesces in VOA vials.

Circle if Applicable:

MS/MSD
Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A - ROUND 3
PROJECT NUMBER: CTO 203 job# 5082

WELL ID.: 2WMW46DS
DATE: 4/6/00

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. PPT.	Comments
0900	1.24								→	BEGIN PURGING
0905	2.12	120	6.97	43.54	7.7	6.04	7.7	-336	27.76	Water is very light
0910	2.87	120	6.88	43.25	7.2	8.16	7.8	-350	27.56	brown w/ sulphur
0915	3.77	120	6.85	43.16	4.9	3.32	8.0	-350	27.51	odor.
0920	4.56	120	6.84	43.13	5.8	4.37	8.0	-350	27.50	Reduce flow. 1415
0925	5.10	95	6.82	43.25	5.4	3.67	7.8	-350	27.57	
0930	5.71	95	6.81	43.11	5.6	4.21	8.0	-348	27.48	
0935	6.23	95	6.81	43.09	5.3	3.73	8.1	-352	27.48	INCREASE FLOW → 1425
0940	6.72	115	6.81	43.10	6.1	3.90	8.3	-353	27.50	water level not
0945	7.47	115	6.79	43.18	5.8	4.51	8.5	-354	27.57	stabilizing @ 95mL.
0950	8.08	115	6.78	43.23	5.6	4.69	8.6	-353	27.61	Suspended black fines
0955	8.72	115	6.78	43.17	6.5	5.04	8.7	-355	27.58	
1000	9.35	115	6.79	42.97	9.4	5.44	8.7	-354	27.43	
1005	9.98	115	6.82	41.67	25	5.68	8.6	-354	26.51	
1010	10.73	115	6.86	41.64	41	5.37	8.5	-355	26.52	
1015	11.57	115	6.87	41.57	47	5.06	8.7	-354	26.45	
1020	12.24	115	6.86	41.60	56	5.93	8.7	-359	26.48	
1025	13.08	115	6.86	41.76	61	5.69	8.8	-360	26.59	
1030	13.92	115	6.85	41.82	64	6.69	8.9	-362	26.64	
1035	14.85	115	6.85	41.94	69	6.71	9.0	-364	26.73	
1040	15.67	115	6.84	42.13	73	6.79	9.1	-366	26.87	
1042	15.90	115	6.82	42.15	71	6.94	9.2	-366	26.89	END PURGING, well
										purged dry to tubing
										inlet (set ≈ 1.5 feet
										from bottom).

SIGNATURE(S): Scott W. Neil

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / AREA A
Project No.: CTO 203 5082

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 2WGW47DS-03
Sample Location: AREA A
Sampled By: K. SIMPSON
C.O.C. No.: 040500-03
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 4.6.00	KS							
Time: 1530								
Method: Peristaltic Pump	~~CLEAR~~	6.76	6.147	10.0	46	0.22	-230	3.31

PURGE DATA:

Date: 4.6.00
Method: Peristaltic Pump
Monitor Reading (ppm): 0.0
Well Casing Diameter & Material
Type: 2" PVC
Total Well Depth (TD): 16.20
Static Water Level (WL): 1.37
One Casing Volume(gal): 2.4
Start Purge (hrs): 1331
End Purge (hrs): 1521
Total Purge Time (min): 110
Total Vol. Purged (gal): 2.4

→ CLEAR

ROUND 3

See Attached Low Flow Purge Data Sheet for Purge Data

END SAMPLING 1640 WL = 5.61'

SAMPLE CLEARING AT START
TURB DROPPED TO 20 NTU @ 1535

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	40 ml Vial	✓
TCL SEMIVOLATILES	4° C	Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	Qt. Amber Glass	✓
TCL PAH	4° C	Qt. Amber Glass	✓
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	L PE	✓
TAL METALS (DISSOLVED)	HNO_3 / 4° C	L PE	✓
Total Organic Carbon (TOC)	HCL / 4° C	60 mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	250 mL PE	✓
Alkalinity, Chloride, Sulfate, TDS	4° C	L PE	✓

OBSERVATIONS / NOTES:

PUMP INLET (TUBING) SET 1'± OFF BTM.

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): KS / S. Simpson

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A - ROUND 3
PROJECT NUMBER: CTO 203 job# 5082

WELL ID.: 2WMW470S
DATE: 4.6.0

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	~~Eh~~ ORP mV	Sal. PPT.	Comments
1330	1.62	110								START PURGE
1337	2.50	↓	7.26	36.07	9.4	0.35	9.5	-343	22.62	
1345	3.11	↓	7.03	31.96	5.4	0	9.7	-349	19.99	SULFUR ODOR /
1355	3.61	100	6.89	25.98	3.0	1.50	9.1	-327	15.83	SWAMP ODOR
1405	3.96	↓	6.79	22.20	2.9	0.46	9.0	-319	13.33	
1415	4.15	↓	6.62	18.44	26	0.81	9.0	-314	10.86	TURNING BLACK IN COLOR
1420	4.43	150	6.50	16.12	62	0.68	9.0	-322	9.48	CAN NOT STABILIZE DRAWDOWN
1430	4.88	↓	6.51	9.134	92	0.56	8.9	-317	5.20	TURN-UP FLOW TO PUMP DRY
1440	4.87	100	6.69	7.939	94	0.50	9.1	-258	4.42	*BACK TO W/L STABILIZATION
1450	4.90	↓	6.71	7.316	71	0.31	9.3	-252	4.05	
1455	4.95	↓	6.70	7.080	73	0.33	9.5	-234	3.91	
1500	4.95	↓	6.73	6.775	72	0.34	10.0	-248	3.74	
1505	5.01	↓	6.73	6.573	54	0.29	10.0	-224	3.62	
1510	5.08	↓	6.75	6.309	54	0.16	10.0	-229	3.46	
1515	5.09	↓	6.76	6.172	50	0.20	10.0	-232	3.37	
1520	5.10	↓	6.76	6.147	46	0.22	10.0	-230	3.31	END PURGE
										START SAMPLING

SIGNATURE(S): K. J. S. Sampi

TD=16.2'

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / AREA A
Project No.: CTO 203 5082

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type: ___
[ ] QA Sample Type: ___

Sample ID No.: 2LGW20S-03
Sample Location: AREA A
Sampled By: K. SIMPSON
C.O.C. No.: 040700-03
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh ORP mV	Salinity ppt
Date: 4.8.00								
Time: 1030								
Method: Peristaltic Pump	CLEAR	6.31	0.439	12.3	3.1	0.02	28	0.21

PURGE DATA:

Date: 4.8.00
Method: Peristaltic Pump
Monitor Reading (ppm): 0.1
Well Casing Diameter & Material
Type: 2" PVC
Total Well Depth (TD): 18.85
Static Water Level (WL): 13.45
One Casing Volume(gal): 0.9
Start Purge (hrs): 0922
End Purge (hrs): 1026
Total Purge Time (min): 64
Total Vol. Purged (gal): 1.8

ROUND 3

See Attached Low Flow Purge Data Sheet
for Purge Data

START SAMPLING @ 1027
END SAMPLING @ 1151 WL = 13.70

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	40 ml Vial	✓
TCL SEMIVOLATILES	4° C	Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	Qt. Amber Glass	✓
TCL PAH	4° C	Qt. Amber Glass	✓
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	L PE	✓
TAL METALS (DISSOLVED)	HNO_3 / 4° C	L PE	✓
Total Organic Carbon (TOC)	HCL / 4° C	60 mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	250 mL PE	✓
Alkalinity, Chloride, Sulfate, TDS	4° C	L PE	✓

OBSERVATIONS / NOTES:

PUMP INLET SET 1'± OFF BTM.

Circle if Applicable:

MS/MSD ___ Duplicate ID No.: ___

Signature(s): K. J. Simpson

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A - ROUND 3
PROJECT NUMBER: CTO 203 job# 5082

WELL ID.: 2LMW20S
DATE: 4.8.00

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh ORP mV	Sal. ~~ORP~~ PPT.	Comments
0920	13.45	130	—	—	—	—	—	—	—	START PURGE
0927	13.57	↓	6.27	1.343	600	0.04	12.6	43	0.73	LT. RUST COLOR
0935	13.62	↓	6.15	0.603	95	0.02	12.1	49	0.30	CLEARING
0940	13.64	100	6.21	0.445	38	0.03	12.1	41	0.22	
0945	13.65	110	6.25	0.421	17	0.03	12.2	33	0.20	
0950	13.66	↓	6.26	0.421	9.6	0.02	12.1	32	0.20	
0955	13.69	100	6.27	0.425	4.8	0.02	12.1	30	0.21	
1000	13.69	↓	6.28	0.427	4.5	0.02	12.2	30	0.21	
1005	↓	↓	6.28	0.433	4.3	0.03	12.3	28	0.21	
1010	↓	↓	6.30	0.435	4.1	0.02	12.3	28	0.21	
1015	↓	↓	6.30	0.438	3.8	0.02	12.3	28	0.21	
1020	↓	↓	6.31	0.440	3.5	0.02	12.3	28	0.21	
1025	↓	↓	6.31	0.439	3.1	0.02	12.3	28	0.21	END PURGE

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / AREA A
Project No.: CTO 203 5082

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 3GW12D -03
Sample Location: AREA A
Sampled By: R. SIMPSON
C.O.C. No.: 040700 -03
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh ORP mV	Salinity ppt
Date: 4.7.00								
Time: 1430								
Method: Peristaltic Pump	CLEAR	6.77	3.499	10.8	2.6	0.03	-137	1.45

PURGE DATA:

Date: 4.7.00
Method: Peristaltic Pump
Monitor Reading (ppm): 0.0
Well Casing Diameter & Material
Type: ~~2" PVC~~ 4" STEEL
Total Well Depth (TD): 27.50
Static Water Level (WL): 0.33
One Casing Volume(gal): 17.7
Start Purge (hrs): 1323
End Purge (hrs): 1421
Total Purge Time (min): 58
Total Vol. Purged (gal): 1.9

ROUND 3

See Attached Low Flow Purge Data Sheet for Purge Data

END SAMPLING 1635 WL = 0.42

2X VOL. FOR DUP.

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	40 ml Vial	—
TCL SEMIVOLATILES	4° C	Qt. Amber Glass	—
TCL PEST/PCBs	4° C	Qt. Amber Glass	—
TCL PAH	4° C	Qt. Amber Glass	—
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	L PE	—
TAL METALS (DISSOLVED)	HNO_3 / 4° C	L PE	—
Total Organic Carbon (TOC)	HCL / 4° C	60 mL Glass	—
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	250 mL PE	—
Alkalinity, Chloride, Sulfate, TDS	4° C	L PE	—

OBSERVATIONS / NOTES:

4" STEEL RISER, EXISTING WELL, STICK-UP

4" = .653 GAL/FT

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	GWFD040700-01

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A - ROUND 3
PROJECT NUMBER: CTO 203 job# 5082

WELL ID.: 3MW12D
DATE: 4-7-00

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh ORP mV	Sal. PPT.	Comments
1318	0.33	125								START PURGE
1328	0.42		6.68	3.483	3.8	0.08	12.3	-110	1.84	CLEAR, NO ODOR
1335	0.42		6.70	3.485	1.7	0.05	11.8	-121	1.84	
1340	0.42		6.71	3.482	2.0	0.04	11.5	-126	1.84	
1345	0.42		6.72	3.480	2.3	0.02	11.4	-129	1.84	
1350	0.42		6.73	3.484	2.5	0.03	11.2	-131	1.84	
1355	0.42		6.74	3.490	2.7	0.02	11.1	-133	1.84	
1400			6.75	3.492	3.1	0.02	11.0	-134	1.84	
1405			6.75	3.492	3.0	0.02	11.0	-135	1.84	
1410			6.76	3.488	2.9	0.02	11.1	-135	1.84	
1415			6.76	3.498	2.6	0.03	10.9	-136	1.85	
1420			6.77	3.499	2.6	0.03	10.8	-137	1.85	END PURGE

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / AREA A
Project No.: CTO 203 5082

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 2W-GW21S-03
Sample Location: 2WMW21S
Sampled By: S. NEIL
C.O.C. No.: 040700-03
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 4/8/00								
Time: 1620								
Method: Peristaltic Pump	Yellow	6.62	34.20	12.1	41	4.49	-366	21.46

PURGE DATA:

Date: 4/8/00
Method: Peristaltic Pump
Monitor Reading (ppm): 0.3
Well Casing Diameter & Material
Type: 2" PVC
Total Well Depth (TD): 17.30'
Static Water Level (WL): 4.31'
One Casing Volume(gal): 2.1
Start Purge (hrs): 1430
End Purge (hrs): 1615
Total Purge Time (min): 105
Total Vol. Purged (gal): 2.7

ROUND 3

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	(3) 40 ml Vial	✓
TCL SEMIVOLATILES	4° C	(2) Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	(2) Qt. Amber Glass	✓
TCL PAH	4° C	(2) Qt. Amber Glass	✓
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	(1) L PE	✓
TAL METALS (DISSOLVED)	HNO_3 / 4° C	(1) L PE	✓
Total Organic Carbon (TOC)	HCL / 4° C	(1) 60 mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	(1) 250 mL PE	✓
Alkalinity, Chloride, Sulfate, TDS	4° C	(1) L PE	✓

OBSERVATIONS / NOTES:

Samples have sulphur odor. Fine black suspended solids in samples. Strong effervescence in VOAs. Sample turned black due to increasing black fines.

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Scott W. Neil

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A - ROUND 3
PROJECT NUMBER: CTO 203 job# 5082

WELL ID.: 2WMW21S
DATE: 4/8/00

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. PPT.	Comments
1430	4.31									Begin purging.
1435	4.90	135	6.91	43.63	15	3.59	12.9	-367	28.12	Decrease flow. 675
1440	5.26	110	6.85	43.21	2.8	2.98	13.6	-362	27.82	Decrease flow. 550
1445	5.49	100	6.83	42.76	4.4	3.24	13.6	-360	27.51	
1450	5.59	100	6.81	41.99	3.1	2.99	13.7	-359	26.98	
1455	5.70	100	6.80	41.65	1.3	6.35	13.4	-358	26.66	Decrease flow 1500
1500	5.78	95	6.80	41.23	1.3	2.99	13.2	-359	26.41	
1505	5.84	95	6.79	40.83	1.1	3.41	13.0	-356	26.11	
1510	5.90	95	6.77	40.15	1.0	2.96	12.9	-352	25.62	
1515	5.97	95	6.76	39.09	1.2	2.81	12.7	-352	24.87	
1520	6.01	95	6.75	38.51	1.5	2.74	12.7	-351	24.48	
1525	6.04	95	6.73	37.89	3.7	3.18	12.1	-350	24.02	
1530	6.06	95	6.71	37.01	2.3	3.07	12.7	-348	23.41	
1535	6.07	95	6.70	36.49	1.3	3.09	12.3	-348	23.07	
1540	6.09	95	6.68	35.90	2.5	3.18	12.3	-349	22.67	
1545	6.10	95	6.67	35.28	5.9	3.19	12.2	-351	22.21	Black suspended fines.
1550	6.11	95	6.65	34.41	22	3.55	12.3	-353	21.62	
1555	6.13	95	6.63	34.02	21	3.88	12.2	-356	21.35	
1600	6.16	95	6.63	33.97	40	4.01	12.1	-357	21.30	
1605	6.16	95	6.63	34.26	43	4.16	12.2	-361	21.49	
1610	6.17	95	6.63	34.29	44	4.39	12.1	-362	21.54	
1615	6.18	95	6.62	34.20	41	4.49	12.1	-366	21.46	End purging

SIGNATURE(S): Scott W. Steil

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / AREA A
Project No.: CTO 203 5082

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 3-GW125-03
Sample Location: 3MW125
Sampled By: S. NEIL
C.O.C. No.: 040700-03
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 4/7/00								
Time: 1430								
Method: Peristaltic Pump	CLEAR	5.96	3.620	10.2	2.4	2.84	-16	1.92

PURGE DATA:

Date: 4/7/00
Method: Peristaltic Pump
Monitor Reading (ppm): 0.0
Well Casing Diameter & Material
Type: 2" PVC
Total Well Depth (TD): 15.11'
Static Water Level (WL): 2.56'
One Casing Volume(gal): 2.0
Start Purge (hrs): 1325
End Purge (hrs): 1425
Total Purge Time (min): 60
Total Vol. Purged (gal): 2.1

ROUND 3

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	(6) 40 ml Vial	✓
TCL SEMIVOLATILES	4° C	(4) Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	(4) Qt. Amber Glass	✓
TCL PAH	4° C	(4) Qt. Amber Glass	✓
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	(2) L PE	✓
TAL METALS (DISSOLVED)	HNO_3 / 4° C	(2) L PE	✓
Total Organic Carbon (TOC)	HCL / 4° C	(2) 60 mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	(2) 250 mL PE	✓
Alkalinity, Chloride, Sulfate, TDS	4° C	(2) L PE	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
	GWFD040700-02

Signature(s): Scott W. Neil

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A - ROUND 3
PROJECT NUMBER: CTO 203 job# 5082

WELL ID.: 3MW125
DATE: 4/7/00

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. PPT.	Comments
1325	2.56	—	—	—	—	—	—	—	→	Begin purging.
1330	2.73	125	6.29	3.718	73	5.09	10.9	-43	1.97	
1335	2.75	125	6.14	3.691	27	3.31	10.8	-37	1.96	
1340	2.74	125	6.06	3.676	10	2.57	10.7	-32	1.95	
1345	2.74	125	6.03	3.666	4.3	3.62	10.4	-26	1.94	Increase flow. 250
1350	2.79	135	6.01	3.647	4.1	3.40	10.3	-23	1.93	
1355	2.79	135	5.98	3.637	3.1	3.59	10.2	-20	1.93	
1400	2.79	135	5.97	3.633	2.7	3.44	10.1	-19	1.92	
1405	2.78	135	5.96	3.628	2.6	3.61	10.2	-17	1.92	
1410	2.78	135	5.96	3.626	2.4	2.71	10.2	-16	1.92	
1415	2.79	135	5.96	3.631	2.7	2.87	10.1	-17	1.92	
1420	2.79	135	5.96	3.626	2.4	2.90	10.1	-16	1.92	
1425	2.79	135	5.96	3.620	2.4	2.84	10.2	-16	1.92	End purging

SIGNATURE(S): Beth Neil

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / AREA A
Project No.: CTO 203 5082

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 4GW01S-03
Sample Location: 4MW01
Sampled By: R. SIMPSON
C.O.C. No.: 040700-03
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Salinity ppt
Date: 4.8.00								
Time: 1440								
Method: Peristaltic Pump	CLEAR	5.65	0.418	10.2	0	0.06	180	0.20

PURGE DATA:

Date: 4.8.00
Method: Peristaltic Pump
Monitor Reading (ppm): 1.1
Well Casing Diameter & Material
Type: 2" PVC
Total Well Depth (TD): 20.30
Static Water Level (WL): 6.34
One Casing Volume(gal): 2.3
Start Purge (hrs): 1320
End Purge (hrs): 1431
Total Purge Time (min): 71
Total Vol. Purged (gal): 2.1

ROUND 3

See Attached Low Flow Purge Data Sheet for Purge Data

START SAMPLING 1431
END SAMPLING 1743 WL = 6.48'

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	40 ml Vial	—
TCL SEMIVOLATILES	4° C	Qt. Amber Glass	—
TCL PEST/PCBs	4° C	Qt. Amber Glass	—
TCL PAH	4° C	Qt. Amber Glass	—
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	L PE	—
TAL METALS (DISSOLVED)	HNO_3 / 4° C	L PE	—
Total Organic Carbon (TOC)	HCL / 4° C	60 mL Glass	—
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	250 mL PE	—
Alkalinity, Chloride, Sulfate, TDS	4° C	L PE	—

OBSERVATIONS / NOTES:

3 X VOL. FOR MS/MSD

Circle If Applicable:

MS/MSD: YES
Duplicate ID No.:

Signature(s): R. Simpson

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A - ROUND 3
PROJECT NUMBER: CTO 203 job# 5082

WELL ID.: 4MW01S
DATE: 4.8.00

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh ORP mV	Sal. PPT.	Comments
1320	6.34	130								START PURGE
1325	6.35		5.75	0.404	3.9	0.05	10.5	123	0.19	CLEAR, NO ODOR
1330	6.36		5.68	0.416	2.0	0.05	10.7	136	0.20	
1335	6.39		5.65	0.414	1.2	0.06	10.5	151		
1340		110	5.65	0.414	0.7	0.06	10.3	156		
1345			5.65	0.423	0.3	0.07	10.4	163		
1350			5.64	0.422	0.2	0.07	10.3	163		
1355	6.40		5.64	0.424	0.1	0.07	10.2	169	0.21	
1400			5.65	0.421	0.1	0.06	10.3	171	0.20	
1405			5.65	0.420	0	0.06	10.1	171		
1410	6.41		5.64	0.419	0	0.06	10.2	170		
1415			5.64	0.417		0.07	10.3	176		
1420			5.64	0.420		0.06	10.2	179		
1425	6.42		5.65	0.419		0.06	10.1	181		
1430	6.42		5.65	0.418		0.06	10.2	180		END PURGE
										START SAMPLING

SIGNATURE(S): [illegible]

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSB-NION/AREA A
Project No.: CTO 203 5082

Sample ID No.: SWSG18-03
Sample Location: SG18/2WMW41DS
Sampled By: S. NEIL
C.O.C. No.: 040500-03

- [ ] Stream
- [ ] Spring
- [ ] Pond
- [ ] Lake
- [x] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity PPT	Eh mV
Date: 4/5/00								
Time: 1120								
Depth: ≈ 10 INCHES	V. LGT							
Method: DIRECT FILL	BRWN	7.70	0.442	9.0	5.3	1.89	0.21	-221

SAMPLE COLLECTION INFORMATION:

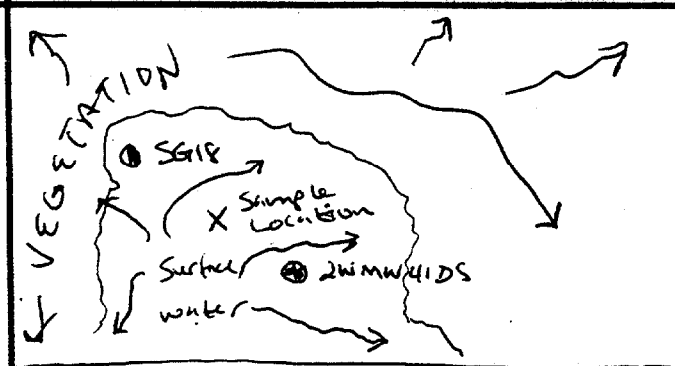
Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	(3) 40 ml Vial	✓
TCL SEMIVOLATILES	4° C	(2) Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	(2) Qt. Amber Glass	✓
TCL PAH	4° C	(2) Qt. Amber Glass	✓
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	(1) L PE	✓
TAL METALS (DISSOLVED)	HNO_3 / 4° C	(1) L PE	✓
Total Organic Carbon (TOC)	HCL / 4° C	(1) 60 mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	(1) 250 mL PE	✓
Alkalinity, Chloride, Sulfate, TDS	4° C	(1) L PE	✓

OBSERVATIONS / NOTES:

Weather: Partly sunny, windy, temperature: low 50's.

Some organic/plant material in samples.

MAP:



Gabion Baskets

Rip-Rap

Asphalt

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Scott Neil

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSB-NION/AREA A
Project No.: CTO 203 5082

Sample ID No.: SWSG19-03
Sample Location: 2WMW42DS
Sampled By: S. NEIL
C.O.C. No.: 040500-03

[] Stream
[] Spring
[] Pond
[] Lake
[■] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity PPT	Eh mV
Date: 4/5/00								
Time: 1630								
Depth: ≈ 8 INCHES	V. LGT							
Method: DIRECT FILL	BROWN	8.11	0.536	9.7	22	2.04	0.26	-219

SAMPLE COLLECTION INFORMATION:

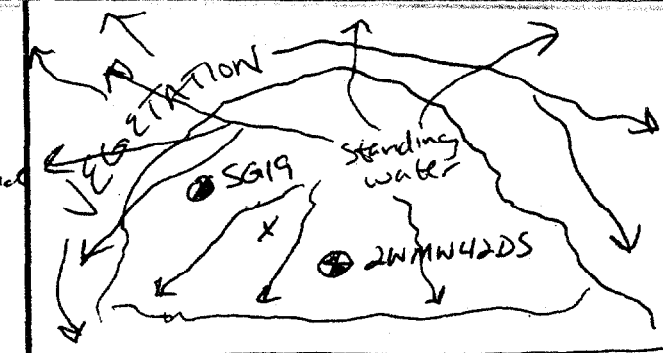
Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	(3) 40 ml Vial	✓
TCL SEMIVOLATILES	4° C	(2) Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	(2) Qt. Amber Glass	✓
TCL PAH	4° C	(2) Qt. Amber Glass	✓
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	(1) L PE	✓
TAL METALS (DISSOLVED)	HNO_3 / 4° C	(1) L PE	✓
Total Organic Carbon (TOC)	HCL / 4° C	(1) 60 mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	(1) 250 mL PE	✓
Alkalinity, Chloride, Sulfate, TDS	4° C	(1) L PE	✓

OBSERVATIONS / NOTES:

WEATHER: Mostly sunny, windy, Temperature = upper 40's.

Sheen on water surface with suspended orange "flock".

MAP:



Gabion Baskets

Rip-Rap

Asphalt

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Scott W. Neil

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSB-NION/AREA A
Project No.: CTO 203 5082

[] Stream
[] Spring
[] Pond
[] Lake
[X] Other: SURFACE WATER
[] QA Sample Type:

Sample ID No.: SWSG-20-03
Sample Location: AREA A - WELL 43
Sampled By: NEIL/SIMPSON
C.O.C. No.: 040400-03

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity PPT	Eh mV
Date: 04.04.00								
Time: 1740								
Depth: 0-10"	CLEAR TO LT. TEA	6.96	0.360	11.8	7.1	6.61	0.17	163
Method: DIRECT FILL								

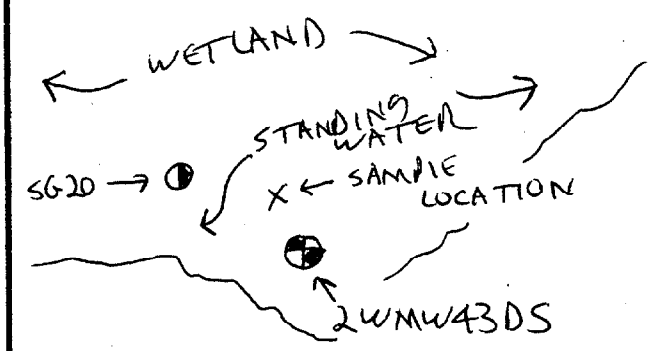
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	40 ml Vial	✓
TCL SEMIVOLATILES	4° C	Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	Qt. Amber Glass	✓
TCL PAH	4° C	Qt. Amber Glass	✓
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	L PE	✓
TAL METALS (DISSOLVED)	HNO_3 / 4° C	L PE	✓
Total Organic Carbon (TOC)	HCL / 4° C	60 mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	250 mL PE	✓
Alkalinity, Chloride, Sulfate, TDS	4° C	L PE	✓

OBSERVATIONS / NOTES:

2 X VOL. FOR DUP.
STANDING WATER, NO FLOW
RAIN DURING SAMPLING
SOME ORGANIC MATERIAL (PLANT) IN SAMPLE

MAP:



GABION BASKETS
RIPRAP
ASPHALT CAP

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	SWFD 040400-03

Signature(s): K. / S. Simp

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSB-NION/AREA A
Project No.: CTO 203 5082

Sample ID No.: SWSG-21 - 03
Sample Location: AREA A - 2WMW44DS
Sampled By: NEIL/ SIMPSON
C.O.C. No.: 040400 -03

- [ ] Stream
- [ ] Spring
- [ ] Pond
- [ ] Lake
- [x] Other: SURFACE WATER
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity PPT	Eh mV
Date: 4.4.00								
Time: 1720								
Depth: 0-14"	CLEAR TO LT YELLOW	7.74	0.401	12.1	7.0	7.68	0.19	145
Method: DIRECT FILL								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	40 ml Vial	✓
TCL SEMIVOLATILES	4° C	Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	Qt. Amber Glass	✓
TCL PAH	4° C	Qt. Amber Glass	✓
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	L PE	✓
TAL METALS (DISSOLVED)	HNO_3 / 4° C	L PE	✓
Total Organic Carbon (TOC)	HCL / 4° C	60 mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	250 mL PE	✓
Alkalinity, Chloride, Sulfate, TDS	4° C	L PE	✓

OBSERVATIONS / NOTES:

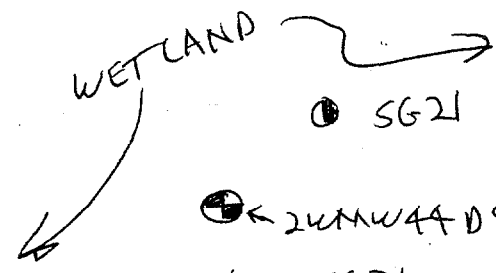
3X VOL FOR MS/MSD

TRACE ORGANIC MATERIAL IN SAMPLE.

RAIN DURING SAMPLING

NO FLOW, STANDING WATER

MAP:



GABION BASKETS

RIP RAP

Circle if Applicable:

MS/MSD: YES

Duplicate ID No.:

Signature(s): Neil E. Simpson

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSB-NION/AREA A
Project No.: CTO 203 5082

[] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: SW/SG 22 - 03
Sample Location: AREA A
Sampled By: K. SIMPSON
C.O.C. No.: 040400 -03

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity PPT	Eh ORP mV
Date: 4.5.00 Time: 1800 Depth: 0-10" Method: DIRECT FILL	LT. TAN	6.90	0.360	8.6	10.3	0.65	0.17	-57

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	40 ml Vial	✓
TCL SEMIVOLATILES	4° C	Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	Qt. Amber Glass	✓
TCL PAH	4° C	Qt. Amber Glass	✓
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	L PE	✓
TAL METALS (DISSOLVED)	HNO_3 / 4° C	L PE	✓
Total Organic Carbon (TOC)	HCL / 4° C	60 mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	250 mL PE	✓
Alkalinity, Chloride, Sulfate, TDS	4° C	L PE	✓

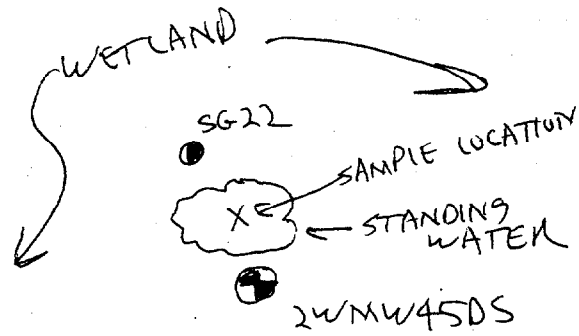
OBSERVATIONS / NOTES:

"CLEANED" SAMPLE LOCATION ON 4.4.00

STANDING WATER NO FLOW

TRACE PLANT MATERIAL IN SAMPLE

MAP:



GABION BASKETS

RIPRAP

DEPLOYED PARKING

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): K. S. Simpson

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSB-NION/AREA A
Project No.: CTO 203 5082

Sample ID No.: SWSG23-03
Sample Location: SG23
Sampled By: S. NEIL
C.O.C. No.: 040500-03

[] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity PPT	Eh mV
Date: 4/6/00 Time: 1105 Depth: ≈ 11 INCHES Method: DIRECT FILL	YELLOW	7.84	0.617	6.0	6.3	5.61	0.30	-246

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	(3) 40 ml Vial	✓
TCL SEMIVOLATILES	4° C	(2) Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	(2) Qt. Amber Glass	✓
TCL PAH	4° C	(2) Qt. Amber Glass	✓
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	(1) L PE	✓
TAL METALS (DISSOLVED)	HNO_3 / 4° C	(1) L PE	✓
Total Organic Carbon (TOC)	HCL / 4° C	(1) 60 mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	(1) 250 mL PE	✓
Alkalinity, Chloride, Sulfate, TDS	4° C	(1) L PE	✓

OBSERVATIONS / NOTES:

WEATHER: Overcast, breezy, upper 30's.

Some plant material in samples.

MAP:

Gabion Baskets

Rip - Rap

Deployed Parking

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSB-NION/AREA A
Project No.: CTO 203 5082

[] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: SW/SG24-03
Sample Location: AREA A
Sampled By: K. SIMPSON
C.O.C. No.: 040500-03

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity PPT	Eh ORP mV
Date: 4.5.00								
Time: 1550								
Depth: 0-10"	LT. TEA	6.80	4.501	13.7	10.1	1.12	2.54	-176
Method: DIRECT FILL								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES	HCL / 4° C	40 ml Vial	✓
TCL SEMIVOLATILES	4° C	Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	Qt. Amber Glass	✓
TCL PAH	4° C	Qt. Amber Glass	✓
TAL METALS (TOTAL) + Hardness	HNO_3 / 4° C	L PE	✓
TAL METALS (DISSOLVED)	HNO_3 / 4° C	L PE	✓
Total Organic Carbon (TOC)	HCL / 4° C	60 mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4 / 4° C	250 mL PE	✓
Alkalinity, Chloride, Sulfate, TDS	4° C	L PE	✓

OBSERVATIONS / NOTES:

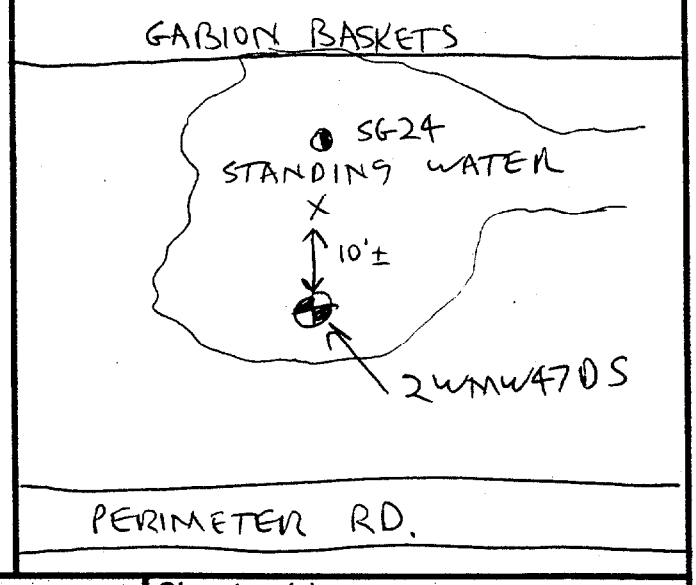
CLEARED SAMPLE AREA ON 4.4.00

NO FLOW STANDING WATER

SOME ORGANIC MATERIAL IN SAMPLE

X = SAMPLE LOCATION

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): K. S. Simpson

APPENDIX E

CHAIN OF CUSTODY RECORDS

AREA A CTO 203

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 040400-03 | PAGE 1 OF 1

PROJECT NO: 5082	SITE NAME: NSB-NION	PROJECT MANAGER AND PHONE NUMBER: MARK MENGEL 412 921 8723	LABORATORY NAME AND CONTACT: ACCUTEST
SAMPLERS (SIGNATURE): Keith S. Simpson		FIELD OPERATIONS LEADER AND PHONE NUMBER: KEITH SIMPSON 412 921 8131	ADDRESS: 2235 ROUTE 130
		CARRIER/WAYBILL NUMBER: ACCUTEST PICK-UP	CITY, STATE: DAYTON, NJ 08810

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

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TCL VOC 40 ml VIAL	TCL SVOC (L)	TCL PAH (L)	TCL PEST/PCBs (L)	AN, CHLORIDE, SULFATE TDS SW	TAL METALS (L)	HARDNESS DISSOLVED	TAL METALS (L)	TOC	COD	COMMENTS
		CONTAINER TYPE PLASTIC (P) or GLASS (G)				G	G	G	G	P	P	P	G	P		
		PRESERVATIVE USED				HCL	—	—	—	—	HNO3	HNO3	HCL	H2SO4		
4/4	1610	TB 040400	AQ	G	2	2										TRIP BLANK
	1720	SWSG21-03	SW	G	42	9	6	6	6	3	3	3	3	3		RUN ALSO MS/MSD
	1740	SWSG20-03	SW	G	14	3	2	2	2	1	1	1	1	1		
↓	0000	SWFD 040400-03	SW	G	14	3	2	2	2	1	1	1	1	1		DUP OF SWSG-20-03

1. RELINQUISHED BY: Keith S. Simpson	DATE 4.5.00	TIME 0800	1. RECEIVED BY: [signature]	DATE 4.5.00	TIME 0800
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

AREA A CTO 203

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 040500-03 | PAGE 1 OF 1

PROJECT NO:	SITE NAME:	PROJECT MANAGER AND PHONE NUMBER	LABORATORY NAME AND CONTACT:
5082	NSB-NLON	MARK MENGEL 412 921 8723	ACCUTEST
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER	ADDRESS
		KEITH SIMPSON 412 921 8131	2235 ROUTE 130
		CARRIER/WAYBILL NUMBER	CITY, STATE
		ACCUTEST PICK-UP	DAYTON NJ 08810

K. S. Simpson

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

CONTAINER TYPE PLASTIC (P) or GLASS (G)
PRESERVATIVE USED

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TCL VOC (40 mL vials) HCL	TCL SVOC (1 LITER) NA	TCL PAH (1 LITER) NA	TCL PEST/PCBs (1 LITER) NA	Alkalinity, chloride, sulfate, TDS (500 mL) NA	TAL metals (total), Hardness (1 LITER) HNO3	TAL METALS (DIS.) (1 LITER) HNO3	TOC (60 mL) HCL	COD (250 mL) H2SO4	COMMENTS
						G	G	G	G	P	P	P	G	P	
4/5	0730	TB 040500	AQ	G	2	2									
4/5	1120	SWSG18-03	SW	G	14	3	2	2	2	1	1	1	1	1	
4/5	1550	SWSG24-03	SW	G	14	3	2	2	2	1	1	1	1	1	
4/5	1630	SWSG19-03	SW	G	14	3	2	2	2	1	1	1	1	1	
4/5	1800	SWSG22-03	SW	G	14	3	2	2	2	1	1	1	1	1	
4/6	0740	2WGW39DS-03	GW	G	14	3	2	2	2	1	1	1	1	1	
4/6	1105	SWSG23-03	SW	G	14	3	2	2	2	1	1	1	1	1	
4/6	1400	2W GW42DS-03	GW	G	14	3	2	2	2	1	1	1	1	1	
4/6	1530	2W GW47DS-03	GW	G	14	3	2	2	2	1	1	1	1	1	
4/6	1400	2W GW42DS-03	GW	G	14	3	2	2	2	1	1	1	1	1	

OK

1. RELINQUISHED BY K. S. Simpson	DATE 4.7.00	TIME 0725	1. RECEIVED BY		DATE 4.7.00	TIME 0725
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY		DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY		DATE	TIME

COMMENTS

PINK (FILE COPY)

3/99

AREA A CTO 203

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 040900-03 | PAGE 2 OF 2

PROJECT NO: 5082	SITE NAME: NSB-NIUN	PROJECT MANAGER AND PHONE NUMBER: MARK MENGEL 412 921 8723	LABORATORY NAME AND CONTACT: ACCUTEST
SAMPLERS (SIGNATURE): K. S. Simpson		FIELD OPERATIONS LEADER AND PHONE NUMBER: KEITH SIMPSON 412 921 8131	ADDRESS: 2235 ROUTE 130
		CARRIER/WAYBILL NUMBER: ACCUTEST PICK-UP	CITY, STATE: DAYTON, NJ 08810

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

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TCL VOC 40 ML VIAL	TCL SVOC (L)	TCL PAH (L)	TCL PEST/PCB (L)	ALK, CHLORIDE, SULFATE, TDS, SOIL	TAL METALS HARDNESS (L)	TAL DIS. METALS (L)	TOC (L)	COD 60 ML 250 ML	COMMENTS
						HCL	/	/	/	/	HNO3	HNO3	HCL	H2SO4	
						G	G	G	G	P	P	P	G	P	
4/7	0815	2GW38DS-03	GW	G	8	3		1			1	1	1	1	LOW VOL.
4/9	0940	2GW38DS-03	GW	G	3		1		1	1					LOW VOL.
4/9	1000	2WGW44DS-03	GW	G	14	3	2	2	2	1	1	1	1	1	
4/9	1400	3GW37S-03	GW	G	14	3	2	2	2	1	1	1	1	1	

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY K. S. Simpson	4.10.00	0720	1. RECEIVED BY	4.10.00	0720
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

100

AREA A CTO 203

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 040700-03 | PAGE 1 OF 2

PROJECT NO:	SITE NAME:	PROJECT MANAGER AND PHONE NUMBER	LABORATORY NAME AND CONTACT:
5082	NSB-NLON	MARK MENGEL 412 921 8723	ACCUTEST
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER	ADDRESS
		KEITH SIMPSON 412 921 9131	2235 ROUTE 130
		CARRIER/WAYBILL NUMBER	CITY, STATE
		ACCUTEST PICK-UP	DAYTON NJ 08810

K. S. Simpson

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

K. S. Simpson

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TCL VOC 40 ML VIAL	TCL SVOC (L)	TCL PAH (L)	TCL PEST/PCB (L)	ALK, CHLORIDE, SULFATE, TDS 500 ML	TAL METALS (L) HARDNESS	TAL METALS (L) DISSOLVED	TOC (L)	COD 250 ML	COMMENTS
		CONTAINER TYPE PLASTIC (P) or GLASS (G)				G	G	G	G	P	P	P	G	P	
		PRESERVATIVE USED				HCL	-	-	-	-	HNO_3	HNO_3	HCL	H_2SO_4	
4/7	0810	TB 040700	AQ	G	2	2									TRIP BLANK
	0920	2WGW40DS-03	GW	G	14	3	2	2	2	1	1	1	1	1	
	1430	3GW12D-03	GW	G	14	3	2	2	2	1	1	1	1	1	
	1430	3GW12S-03	GW	G	14	3	2	2	2	1	1	1	1	1	
	0000	GWFD040700-01	GW	G	14	3	2	2	2	1	1	1	1	1	DUP OF 3GW12D-03
	0000	GWFD040700-02	GW	G	14	3	2	2	2	1	1	1	1	1	3GW12S-03
	0820	2WGW41DS-03	GW	G	14	3	2	2	2	1	1	1	1	1	
	1010	2WGW46DS-03	GW	G	14	3	2	2	2	1	1	1	1	1	
4/8	0740	2WGW45DS-03	GW	G	14	3	2	2	2	1	1	1	1	1	
	0800	2WGW43DS-03	GW	G	14	3	2	2	2	1	1	1	1	1	
	1030	2LGW20S-03	GW	G	14	3	2	2	2	1	1	1	1	1	
	1620	2WGW21S-03	GW	G	14	3	2	2	2	1	1	1	1	1	
	1440	2GW01S-03	GW	G	41	9	6	6	5	3	3	3	3	3	RUN MS/MSD ALSO

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY K. S. Simpson	4.10.00	0720	1. RECEIVED BY [illegible]	4.10.00	0720
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

APPENDIX F

DATA VALIDATION LETTERS AND LABORATORY DATA SHEETS

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

PITT-06-0-080

TO: **MARK MENGEL** **DATE: JULY 13, 2000**

FROM: **JUSTIN ORBICH** **CC: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – SVOA/PAH**
CTO 203 – NSB NEW LONDON
SDG E67040A

SAMPLES: 15/Aqueous

2LGW20S-03	2WGW21S-03
2WGW38DS-03	2WGW40DS-03
2WGW41DS-03	2WGW43DS-03
2WGW44DS-03	2WGW45DS-03
2WGW46DS-03	3GW12D-03
3GW12S-03	3GW37S-03
4GW01S-03	GWFD040700-01
GWFD040700-02	

OVERVIEW

The sample set for CTO 203, SDG E67040A, Naval Submarine Base (NSB) New London; consists of fifteen (15) aqueous environmental samples. The environmental samples were analyzed for semivolatile and Polynuclear Aromatic Hydrocarbon (PAH) organic compounds. Two (2) field duplicate pairs (3GW12D-03/GWFD040700-01 and 3GW12S-03/GWFD040700-02) were included within this SDG.

The samples were collected by Tetra Tech, NUS on June 7th, 8th, and 9th, 2000 and analyzed by Accutest Laboratories. All analyses were performed in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria and analyzed according to SW 846 Method 8270C and 8310 analytical and reporting protocols. The data in this SDG was validated with regard to the following parameters:

- Data Completeness
- * Holding Times
- Initial/continuing calibrations
- * Laboratory method/field quality control blank results
- * Surrogate Spike Recoveries
- * Matrix Spike/Matrix Spike Duplicate Results
- * Laboratory Control Sample Results
- * Detection Limits
- * Field Duplicate Precision
- * Compound Identification
- * Compound Quantitation

MEMO TO: MARK MENGEL
DATE: JULY 13, 2000 – PAGE 2

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains Region I worksheets, and Appendix D contains the documentation to support the findings as discussed in this data validation report. The attached Table I summarize the validation qualifications, which were based on the following information:

CALIBRATIONS

The following tables summarize calibration non-compliance and corresponding actions:

Semivolatiles

Compound	IC 4/17/00	CC 4/28/00	CC 5/1/00
2-Nitroaniline			X

Samples Affected:

2LGW20S-03
2WGW21S-03
2WGW38DS-03
2WGW40DS-03
2WGW41DS-03
2WGW43DS-03
2WGW44DS-03
2WGW45DS-03
2WGW46DS-03
3GW37S-03
GWFD040700-01
GWFD040700-02

Calibration Actions:

X - Percent Difference > 25%; Estimate (J) positive and (UJ) nondetected results.

In the PAH fraction, several continuing calibration %Ds exceeded the 15% quality control limits on column one. No action was warranted since only nondetected results were reported and the %Ds were within the quality control limits on column two.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

The Matrix Spike/Matrix Spike Duplicate (MS/MSD) Percent Recovery (%R) were below the quality control limits for 4,6-dinitro-2-methylphenol, 3-nitroaniline, and pentachlorophenol. The nondetected results were qualified as estimated (UJ), in sample 4GW01S-03.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the reporting limits were qualified as estimated (J).

It should be noted that several compounds were analyzed and reported via method 8270C and 8310. The validator eliminated the compounds in method 8270C and used the compounds in method 8310 for validation purposes.

MEMO TO: MARK MENGEL
DATE: JULY 13, 2000 – PAGE 3

EXECUTIVE SUMMARY

Laboratory performance: The continuing calibration %D exceeded the quality control limit for 2-nitroaniline. Several continuing calibration %Ds exceeded the quality control limits for several compounds on column one. Several compounds were analyzed and reported via method 8270C and 8310.

Other Factors Affecting Data Quality: None.

MEMO TO: MARK MENGEL
DATE: JULY 13, 2000 – PAGE 4

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (December 1996). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"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

Justin Orbich
Chemist/Data Validator

Tetra Tech 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 - Regional Worksheets
4. Appendix D - Support Documentation

DATA QUALIFIER DEFINITIONS:

U	-	Value is a nondetected result as reported by the laboratory and should not be considered present.
J	-	Positive result is estimated as a result of a value below the CRQL or a technical noncompliance.
UJ	-	Nondetected results is estimated as a result of a technical noncomplicane.

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD 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 - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
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)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-linear calibrations, tuning r < 0.995 (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040A

SAMPLE NUMBER:	2LGW20S-03			2WGW21S-03			2WGW38DS-03			2WGW40DS-03		
SAMPLE DATE:	04/08/00			04/08/00			04/09/00			04/07/00		
LABORATORY ID:	E67040-11A			E67040-12A			E67040-15A			E67040-2A		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
1,2,4-TRICHLOROBENZENE	2.1	U		2	U		2.1	U		2	U	
1,2-DICHLOROBENZENE	2.1	U		2	U		2.1	U		2	U	
1,3-DICHLOROBENZENE	2.1	U		2	U		2.1	U		2	U	
1,4-DICHLOROBENZENE	2.1	U		2	U		2.1	U		2	U	
2,4,5-TRICHLOROPHENOL	5.2	U		5.1	U		5.2	U		5.1	U	
2,4,6-TRICHLOROPHENOL	5.2	U		5.1	U		5.2	U		5.1	U	
2,4-DICHLOROPHENOL	5.2	U		5.1	U		5.2	U		5.1	U	
2,4-DIMETHYLPHENOL	5.2	U		5.1	U		5.2	U		5.1	U	
2,4-DINITROPHENOL	21	U		20	U		21	U		20	U	
2,4-DINITROTOLUENE	2.1	U		2	U		2.1	U		2	U	
2,6-DINITROTOLUENE	2.1	U		2	U		2.1	U		2	U	
2-CHLORONAPHTHALENE	5.2	U		5.1	U		5.2	U		5.1	U	
2-CHLOROPHENOL	5.2	U		5.1	U		5.2	U		5.1	U	
2-METHYLPHENOL	5.2	U		5.1	U		5.2	U		5.1	U	
2-NITROANILINE	5.2	UJ	C	5.1	UJ	C	5.2	UJ	C	5.1	UJ	C
2-NITROPHENOL	5.2	U		5.1	U		5.2	U		5.1	U	
3&4-METHYLPHENOL	5.2	U		5.1	U		5.2	U		5.1	U	
3,3'-DICHLOROBENZIDINE	5.2	U		5.1	U		5.2	U		5.1	U	
3-NITROANILINE	5.2	U		5.1	U		5.2	U		5.1	U	
4,6-DINITRO-2-METHYLPHENOL	21	U		20	U		21	U		20	U	
4-BROMOPHENYL PHENYL ETHER	2.1	U		2	U		2.1	U		2	U	
4-CHLORO-3-METHYLPHENOL	5.2	U		5.1	U		5.2	U		5.1	U	
4-CHLOROANILINE	5.2	U		5.1	U		5.2	U		5.1	U	
4-CHLOROPHENYL PHENYL ETHER	2.1	U		2	U		2.1	U		2	U	
4-NITROANILINE	5.2	U		5.1	U		5.2	U		5.1	U	
4-NITROPHENOL	21	U		20	U		21	U		20	U	
BIS(2-CHLOROETHOXY)METHANE	2.1	U		2	U		2.1	U		2	U	
BIS(2-CHLOROETHYL)ETHER	2.1	U		2	U		2.1	U		2	U	
BIS(2-CHLOROISOPROPYL)ETHER	2.1	U		2	U		2.1	U		2	U	
BIS(2-ETHYLHEXYL)PHTHALATE	2.1	U		2	U		2.1	U		2	U	
BUTYLBENZYL PHTHALATE	2.1	U		2	U		2.1	U		2	U	
CARBAZOLE	2.1	U		2	U		2.1	U		2	U	
DI-N-BUTYL PHTHALATE	2.1	U		2	U		2.1	U		2	U	
DI-N- PHT E				2			2.1	U				

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040A

SAMPLE NUMBER:	2LGW20S-03			2WGW21S-03			2WGW38DS-03			2WGW40DS-03		
SAMPLE DATE:	04/08/00			04/08/00			04/09/00			04/07/00		
LABORATORY ID:	E67040-11A			E67040-12A			E67040-15A			E67040-2A		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
DIBENZOFURAN	5.2	U		5.1	U		5.2	U		5.1	U	
DIETHYL PHTHALATE	2.1	U		2	U		2.1	U		2	U	
DIMETHYL PHTHALATE	2.1	U		2	U		2.1	U		2	U	
HEXACHLOROBENZENE	2.1	U		2	U		2.1	U		2	U	
HEXACHLOROBUTADIENE	2.1	U		2	U		2.1	U		2	U	
HEXACHLOROCYCLOPENTADIENE	21	U		20	U		21	U		20	U	
HEXACHLOROETHANE	5.2	U		5.1	U		5.2	U		5.1	U	
ISOPHORONE	2.1	U		2	U		2.1	U		2	U	
N-NITROSO-DI-N-PROPYLAMINE	2.1	U		2	U		2.1	U		2	U	
N-NITROSODIPHENYLAMINE	5.2	U		5.1	U		5.2	U		5.1	U	
NITROBENZENE	2.1	U		2	U		2.1	U		2	U	
PENTACHLOROPHENOL	21	U		20	U		21	U		20	U	
PHENOL	5.2	U		5.1	U		5.2	U		5.5		

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040A

SAMPLE NUMBER:	2WGW41DS-03			2WGW43DS-03			2WGW44DS-03			2WGW45DS-03		
SAMPLE DATE:	04/07/00			04/08/00			04/09/00			04/08/00		
LABORATORY ID:	E67040-7A			E67040-10A			E67040-16A			E67040-9A		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
1,2,4-TRICHLOROBENZENE	2	U		2	U		2	U		2.1	U	
1,2-DICHLOROBENZENE	2	U		2	U		2	U		2.1	U	
1,3-DICHLOROBENZENE	2	U		2	U		2	U		2.1	U	
1,4-DICHLOROBENZENE	2	U		2	U		2	U		2.1	U	
2,4,5-TRICHLOROPHENOL	5.1	U		5.1	U		5.1	U		5.2	U	
2,4,6-TRICHLOROPHENOL	5.1	U		5.1	U		5.1	U		5.2	U	
2,4-DICHLOROPHENOL	5.1	U		5.1	U		5.1	U		5.2	U	
2,4-DIMETHYLPHENOL	5.1	U		5.1	U		5.1	U		5.2	U	
2,4-DINITROPHENOL	20	U		20	U		20	U		21	U	
2,4-DINITROTOLUENE	2	U		2	U		2	U		2.1	U	
2,6-DINITROTOLUENE	2	U		2	U		2	U		2.1	U	
2-CHLORONAPHTHALENE	5.1	U		5.1	U		5.1	U		5.2	U	
2-CHLOROPHENOL	5.1	U		5.1	U		5.1	U		5.2	U	
2-METHYLPHENOL	5.1	U		5.1	U		5.1	U		5.2	U	
2-NITROANILINE	5.1	UJ	C	5.1	UJ	C	5.1	UJ	C	5.2	UJ	C
2-NITROPHENOL	5.1	U		5.1	U		5.1	U		5.2	U	
3&4-METHYLPHENOL	5.1	U		5.1	U		5.1	U		5.2	U	
3,3'-DICHLOROBENZIDINE	5.1	U		5.1	U		5.1	U		5.2	U	
3-NITROANILINE	5.1	U		5.1	U		5.1	U		5.2	U	
4,6-DINITRO-2-METHYLPHENOL	20	U		20	U		20	U		21	U	
4-BROMOPHENYL PHENYL ETHER	2	U		2	U		2	U		2.1	U	
4-CHLORO-3-METHYLPHENOL	5.1	U		5.1	U		5.1	U		5.2	U	
4-CHLOROANILINE	5.1	U		5.1	U		5.1	U		5.2	U	
4-CHLOROPHENYL PHENYL ETHER	2	U		2	U		2	U		2.1	U	
4-NITROANILINE	5.1	U		5.1	U		5.1	U		5.2	U	
4-NITROPHENOL	20	U		20	U		20	U		21	U	
BIS(2-CHLOROETHOXY)METHANE	2	U		2	U		2	U		2.1	U	
BIS(2-CHLOROETHYL)ETHER	2	U		2	U		2	U		2.1	U	
BIS(2-CHLOROISOPROPYL)ETHER	2	U		2	U		2	U		2.1	U	
BIS(2-ETHYLHEXYL)PHTHALATE	2	U		2	U		2	U		2.1	U	
BUTYLBENZYL PHTHALATE	2	U		2	U		2	U		2.1	U	
CARBAZOLE	2	U		2	U		2	U		2.1	U	
DI-N-BUTYL PHTHALATE	2	U		2	U		2	U		2.1	U	
DI-N- PHT E				2			2	U		2.1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040A

SAMPLE NUMBER:	2WGW41DS-03			2WGW43DS-03			2WGW44DS-03			2WGW45DS-03		
SAMPLE DATE:	04/07/00			04/08/00			04/09/00			04/08/00		
LABORATORY ID:	E67040-7A			E67040-10A			E67040-16A			E67040-9A		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
DIBENZOFURAN	5.1	U		5.1	U		5.1	U		5.2	U	
DIETHYL PHTHALATE	2	U		2	U		2	U		2.1	U	
DIMETHYL PHTHALATE	2	U		2	U		2	U		2.1	U	
HEXACHLOROBENZENE	2	U		2	U		2	U		2.1	U	
HEXACHLOROBUTADIENE	2	U		2	U		2	U		2.1	U	
HEXACHLOROCYCLOPENTADIENE	20	U		20	U		20	U		21	U	
HEXACHLOROETHANE	5.1	U		5.1	U		5.1	U		5.2	U	
ISOPHORONE	2	U		2	U		2	U		2.1	U	
N-NITROSO-DI-N-PROPYLAMINE	2	U		2	U		2	U		2.1	U	
N-NITROSODIPHENYLAMINE	5.1	U		5.1	U		5.1	U		5.2	U	
NITROBENZENE	2	U		2	U		2	U		2.1	U	
PENTACHLOROPHENOL	20	U		20	U		20	U		21	U	
PHENOL	5.1	U		5.1	U		5.1	U		5.2	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040A

SAMPLE NUMBER:	2WGW46DS-03			3GW12D-03			3GW12S-03			3GW37S-03		
SAMPLE DATE:	04/07/00			04/07/00			04/07/00			04/09/00		
LABORATORY ID:	E67040-8A			E67040-3A			E67040-4A			E67040-17A		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
1,2,4-TRICHLOROBENZENE	2.1	U		2.1	U		2	U		2	U	
1,2-DICHLOROBENZENE	2.1	U		2.1	U		2	U		2	U	
1,3-DICHLOROBENZENE	2.1	U		2.1	U		2	U		2	U	
1,4-DICHLOROBENZENE	2.1	U		2.1	U		2	U		2	U	
2,4,5-TRICHLOROPHENOL	5.2	U		5.2	U		5	U		5.1	U	
2,4,6-TRICHLOROPHENOL	5.2	U		5.2	U		5	U		5.1	U	
2,4-DICHLOROPHENOL	5.2	U		5.2	U		5	U		5.1	U	
2,4-DIMETHYLPHENOL	5.2	U		5.2	U		5	U		5.1	U	
2,4-DINITROPHENOL	21	U		21	U		20	U		20	U	
2,4-DINITROTOLUENE	2.1	U		2.1	U		2	U		2	U	
2,6-DINITROTOLUENE	2.1	U		2.1	U		2	U		2	U	
2-CHLORONAPHTHALENE	5.2	U		5.2	U		5	U		5.1	U	
2-CHLOROPHENOL	5.2	U		5.2	U		5	U		5.1	U	
2-METHYLPHENOL	5.2	U		5.2	U		5	U		5.1	U	
2-NITROANILINE	5.2	UJ	C	5.2	U		5	U		5.1	UJ	C
2-NITROPHENOL	5.2	U		5.2	U		5	U		5.1	U	
3&4-METHYLPHENOL	6.1			5.2	U		5	U		5.1	U	
3,3'-DICHLOROBENZIDINE	5.2	U		5.2	U		5	U		5.1	U	
3-NITROANILINE	5.2	U		5.2	U		5	U		5.1	U	
4,6-DINITRO-2-METHYLPHENOL	21	U		21	U		20	U		20	U	
4-BROMOPHENYL PHENYL ETHER	2.1	U		2.1	U		2	U		2	U	
4-CHLORO-3-METHYLPHENOL	5.2	U		5.2	U		5	U		5.1	U	
4-CHLOROANILINE	5.2	U		5.2	U		5	U		5.1	U	
4-CHLOROPHENYL PHENYL ETHER	2.1	U		2.1	U		2	U		2	U	
4-NITROANILINE	5.2	U		5.2	U		5	U		5.1	U	
4-NITROPHENOL	21	U		21	U		20	U		20	U	
BIS(2-CHLOROETHOXY)METHANE	2.1	U		2.1	U		2	U		2	U	
BIS(2-CHLOROETHYL)ETHER	2.1	U		2.1	U		2	U		2	U	
BIS(2-CHLOROISOPROPYL)ETHER	2.1	U		2.1	U		2	U		2	U	
BIS(2-ETHYLHEXYL)PHTHALATE	2.1	U		2.1	U		2	U		2	U	
BUTYLBENZYL PHTHALATE	2.1	U		2.1	U		2	U		2	U	
CARBAZOLE	2.1	U		2.1	U		2	U		2	U	
DI-N-BUTYL PHTHALATE	2.1	U		2.1	U		2	U		2	U	
DI-N- PHT E	[illegible]	[illegible]		2 [illegible]	[illegible]		2	U		2	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040A

SAMPLE NUMBER:	2WGW46DS-03			3GW12D-03			3GW12S-03			3GW37S-03		
SAMPLE DATE:	04/07/00			04/07/00			04/07/00			04/09/00		
LABORATORY ID:	E67040-8A			E67040-3A			E67040-4A			E67040-17A		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
DIBENZOFURAN	5.2	U		5.2	U		5	U		5.1	U	
DIETHYL PHTHALATE	2.1	U		2.1	U		2	U		2	U	
DIMETHYL PHTHALATE	2.1	U		2.1	U		2	U		2	U	
HEXACHLOROBENZENE	2.1	U		2.1	U		2	U		2	U	
HEXACHLOROBUTADIENE	2.1	U		2.1	U		2	U		2	U	
HEXACHLOROCYCLOPENTADIENE	21	U		21	U		20	U		20	U	
HEXACHLOROETHANE	5.2	U		5.2	U		5	U		5.1	U	
ISOPHORONE	2.1	U		2.1	U		2	U		2	U	
N-NITROSO-DI-N-PROPYLAMINE	2.1	U		2.1	U		2	U		2	U	
N-NITROSODIPHENYLAMINE	5.2	U		5.2	U		5	U		5.1	U	
NITROBENZENE	2.1	U		2.1	U		2	U		2	U	
PENTACHLOROPHENOL	21	U		21	U		20	U		20	U	
PHENOL	2.2	J	P	5.2	U		5	U		5.1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040A

SAMPLE NUMBER:	4GW01S-03			GWFD040700-01			GWFD040700-02			/ /		
SAMPLE DATE:	04/08/00			04/07/00			04/07/00					
LABORATORY ID:	E67040-13A			E67040-5A			E67040-6A					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L					
FIELD DUPLICATE OF:				3GW12D-03			3GW12S-03					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
1,2,4-TRICHLOROBENZENE	2.1	U		2.1	U		2.1	U				
1,2-DICHLOROBENZENE	2.1	U		2.1	U		2.1	U				
1,3-DICHLOROBENZENE	2.1	U		2.1	U		2.1	U				
1,4-DICHLOROBENZENE	2.1	U		2.1	U		2.1	U				
2,4,5-TRICHLOROPHENOL	5.2	U		5.2	U		5.2	U				
2,4,6-TRICHLOROPHENOL	5.2	U		5.2	U		5.2	U				
2,4-DICHLOROPHENOL	5.2	U		5.2	U		5.2	U				
2,4-DIMETHYLPHENOL	5.2	U		5.2	U		5.2	U				
2,4-DINITROPHENOL	21	U		21	U		21	U				
2,4-DINITROTOLUENE	2.1	U		2.1	U		2.1	U				
2,6-DINITROTOLUENE	2.1	U		2.1	U		2.1	U				
2-CHLORONAPHTHALENE	5.2	U		5.2	U		5.2	U				
2-CHLOROPHENOL	5.2	U		5.2	U		5.2	U				
2-METHYLPHENOL	5.2	U		5.2	U		5.2	U				
2-NITROANILINE	5.2	U		5.2	UJ	C	5.2	UJ	C			
2-NITROPHENOL	5.2	U		5.2	U		5.2	U				
3&4-METHYLPHENOL	5.2	U		5.2	U		5.2	U				
3,3'-DICHLOROBENZIDINE	5.2	U		5.2	U		5.2	U				
3-NITROANILINE	5.2	UJ	D	5.2	U		5.2	U				
4,6-DINITRO-2-METHYLPHENOL	21	UJ	D	21	U		21	U				
4-BROMOPHENYL PHENYL ETHER	2.1	U		2.1	U		2.1	U				
4-CHLORO-3-METHYLPHENOL	5.2	U		5.2	U		5.2	U				
4-CHLOROANILINE	5.2	U		5.2	U		5.2	U				
4-CHLOROPHENYL PHENYL ETHER	2.1	U		2.1	U		2.1	U				
4-NITROANILINE	5.2	U		5.2	U		5.2	U				
4-NITROPHENOL	21	U		21	U		21	U				
BIS(2-CHLOROETHOXY)METHANE	2.1	U		2.1	U		2.1	U				
BIS(2-CHLOROETHYL)ETHER	2.1	U		2.1	U		2.1	U				
BIS(2-CHLOROISOPROPYL)ETHER	2.1	U		2.1	U		2.1	U				
BIS(2-ETHYLHEXYL)PHTHALATE	2.1	U		2.1	U		2.1	U				
BUTYLBENZYL PHTHALATE	2.1	U		2.1	U		2.1	U				
CARBAZOLE	2.1	U		2.1	U		2.1	U				
DI-N-BUTYL PHTHALATE	2.1	U		2.1	U		2.1	U				
DI-N-[illegible] PHTHALATE				2			2.1	U				

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040A

SAMPLE NUMBER:	4GW01S-03			GWFD040700-01			GWFD040700-02			/ /		
SAMPLE DATE:	04/08/00			04/07/00			04/07/00					
LABORATORY ID:	E67040-13A			E67040-5A			E67040-6A					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L					
FIELD DUPLICATE OF:				3GW12D-03			3GW12S-03					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
DIBENZOFURAN	5.2	U		5.2	U		5.2	U				
DIETHYL PHTHALATE	2.1	U		2.1	U		2.1	U				
DIMETHYL PHTHALATE	2.1	U		2.1	U		2.1	U				
HEXACHLOROBENZENE	2.1	U		2.1	U		2.1	U				
HEXACHLOROBUTADIENE	2.1	U		2.1	U		2.1	U				
HEXACHLOROCYCLOPENTADIENE	21	U		21	U		21	U				
HEXACHLOROETHANE	5.2	U		5.2	U		5.2	U				
ISOPHORONE	2.1	U		2.1	U		2.1	U				
N-NITROSO-DI-N-PROPYLAMINE	2.1	U		2.1	U		2.1	U				
N-NITROSODIPHENYLAMINE	5.2	U		5.2	U		5.2	U				
NITROBENZENE	2.1	U		2.1	U		2.1	U				
PENTACHLOROPHENOL	21	UJ	D	21	U		21	U				
PHENOL	5.2	U		5.2	U		5.2	U				

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040A

SAMPLE NUMBER:	2LGW20S-03			2WGW21S-03			2WGW38DS-03			2WGW40DS-03		
SAMPLE DATE:	04/08/00			04/08/00			04/07/00			04/07/00		
LABORATORY ID:	E67040-11A			E67040-12A			E67040-14A			E67040-2A		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	1	U		1	U		1.1	U		1.1	U	
2-METHYLNAPHTHALENE	1	U		1	U		1.1	U		1.1	U	
ACENAPHTHENE	1	U		1	U		1.1	U		1.1	U	
ACENAPHTHYLENE	1	U		1	U		1.1	U		1.1	U	
ANTHRACENE	1	U		1	U		1.1	U		1.1	U	
BENZO(A)ANTHRACENE	0.16	U		0.15	U		0.17	U		0.17	U	
BENZO(A)PYRENE	0.16	U		0.15	U		0.17	U		0.17	U	
BENZO(B)FLUORANTHENE	0.16	U		0.15	U		0.17	U		0.17	U	
BENZO(G,H,I)PERYLENE	0.16	U		0.15	U		0.17	U		0.17	U	
BENZO(K)FLUORANTHENE	0.16	U		0.15	U		0.17	U		0.17	U	
CHRYSENE	0.16	U		0.15	U		0.17	U		0.17	U	
DIBENZO(A,H)ANTHRACENE	0.16	U		0.15	U		0.17	U		0.17	U	
FLUORANTHENE	1	U		1	U		1.1	U		1.1	U	
FLUORENE	1	U		1	U		1.1	U		1.1	U	
INDENO(1,2,3-CD)PYRENE	0.16	U		0.15	U		0.17	U		0.17	U	
NAPHTHALENE	1	U		1	U		1.1	U		1.1	U	
PHENANTHRENE	1	U		1	U		1.1	U		1.1	U	
PYRENE	1	U		1	U		1.1	U		1.1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040A

SAMPLE NUMBER:	2WGW41DS-03			2WGW43DS-03			2WGW44DS-03			2WGW45DS-03		
SAMPLE DATE:	04/07/00			04/08/00			04/09/00			04/08/00		
LABORATORY ID:	E67040-7A			E67040-10A			E67040-16A			E67040-9A		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	1.1	U		1	U		1	U		1.1	U	
2-METHYLNAPHTHALENE	1.1	U		1	U		1	U		1.1	U	
ACENAPHTHENE	1.1	U		1	U		1	U		1.1	U	
ACENAPHTHYLENE	1.1	U		1	U		1	U		1.1	U	
ANTHRACENE	1.1	U		1	U		1	U		1.1	U	
BENZO(A)ANTHRACENE	0.17	U		0.15	U		0.16	U		0.17	U	
BENZO(A)PYRENE	0.17	U		0.15	U		0.16	U		0.17	U	
BENZO(B)FLUORANTHENE	0.17	U		0.15	U		0.16	U		0.17	U	
BENZO(G,H,I)PERYLENE	0.17	U		0.15	U		0.16	U		0.17	U	
BENZO(K)FLUORANTHENE	0.17	U		0.15	U		0.16	U		0.17	U	
CHRYSENE	0.17	U		0.15	U		0.16	U		0.17	U	
DIBENZO(A,H)ANTHRACENE	0.17	U		0.15	U		0.16	U		0.55		
FLUORANTHENE	1.1	U		1	U		1	U		1.1	U	
FLUORENE	1.1	U		1	U		1	U		1.1	U	
INDENO(1,2,3-CD)PYRENE	0.17	U		0.15	U		0.16	U		0.17	U	
NAPHTHALENE	1.1	U		1	U		1	U		1.1	U	
PHENANTHRENE	1.1	U		1	U		1	U		1.1	U	
PYRENE	1.1	U		1	U		1	U		1.1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040A

SAMPLE NUMBER:	2WGW46DS-03			3GW12D-03			3GW12S-03			3GW37S-03		
SAMPLE DATE:	04/07/00			04/07/00			04/07/00			04/09/00		
LABORATORY ID:	E67040-8A			E67040-3A			E67040-4A			E67040-17A		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	1.1	U		1	U		1	U		1.1	U	
2-METHYLNAPHTHALENE	1.1	U		1	U		1	U		1.1	U	
ACENAPHTHENE	1.1	U		1	U		1	U		1.1	U	
ACENAPHTHYLENE	1.1	U		1	U		1	U		1.1	U	
ANTHRACENE	1.1	U		1	U		1	U		1.1	U	
BENZO(A)ANTHRACENE	0.17	U		0.15	U		0.15	U		0.17	U	
BENZO(A)PYRENE	0.17	U		0.15	U		0.15	U		0.17	U	
BENZO(B)FLUORANTHENE	0.17	U		0.15	U		0.15	U		0.17	U	
BENZO(G,H,I)PERYLENE	0.17	U		0.15	U		0.15	U		0.17	U	
BENZO(K)FLUORANTHENE	0.17	U		0.15	U		0.15	U		0.17	U	
CHRYSENE	0.17	U		0.15	U		0.15	U		0.17	U	
DIBENZO(A,H)ANTHRACENE	0.17	U		0.15	U		0.15	U		0.17	U	
FLUORANTHENE	1.1	U		1	U		1	U		1.1	U	
FLUORENE	1.1	U		1	U		1	U		1.1	U	
INDENO(1,2,3-CD)PYRENE	0.17	U		0.15	U		0.15	U		0.17	U	
NAPHTHALENE	1.1	U		1	U		1	U		1.1	U	
PHENANTHRENE	1.1	U		1	U		1	U		1.1	U	
PYRENE	1.1	U		1	U		1	U		1.1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040A

SAMPLE NUMBER:	4GW01S-03			GWFD040700-01			GWFD040700-02					
SAMPLE DATE:	04/08/00			04/07/00			04/07/00			/ /		
LABORATORY ID:	E67040-13A			E67040-5A			E67040-6A					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L					
FIELD DUPLICATE OF:				3GW12D-03			3GW12S-03					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	1	U		1.1	U		1	U				
2-METHYLNAPHTHALENE	1	U		1.1	U		1	U				
ACENAPHTHENE	1	U		1.1	U		1	U				
ACENAPHTHYLENE	1	U		1.1	U		1	U				
ANTHRACENE	1	U		1.1	U		1	U				
BENZO(A)ANTHRACENE	0.15	U		0.17	U		0.15	U				
BENZO(A)PYRENE	0.15	U		0.17	U		0.15	U				
BENZO(B)FLUORANTHENE	0.15	U		0.17	U		0.15	U				
BENZO(G,H,I)PERYLENE	0.15	U		0.17	U		0.15	U				
BENZO(K)FLUORANTHENE	0.15	U		0.17	U		0.15	U				
CHRYSENE	0.15	U		0.17	U		0.15	U				
DIBENZO(A,H)ANTHRACENE	0.15	U		0.17	U		0.15	U				
FLUORANTHENE	1	U		1.1	U		1	U				
FLUORENE	1	U		1.1	U		1	U				
INDENO(1,2,3-CD)PYRENE	0.15	U		0.17	U		0.15	U				
NAPHTHALENE	1	U		1.1	U		1	U				
PHENANTHRENE	1	U		1.1	U		1	U				
PYRENE	1	U		1.1	U		1	U				

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **MARK MENGEL** **DATE: JULY 13, 2000**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION: SVOA/PAH**
CTO 203, NEW LONDON
SDG E66703A

SAMPLES: 11/Aqueous/

2WGW39DS-03	2WGW42DS-03	2WGW47DS-03
SWFD-040400-03	SWSG18-03	SWSG19-03
SWSG20-03	SWSG21-03	SWSG22-03
SWSG23-03	SWSG24-03	

Overview

The sample set for the CTO 203, New London, SDG E66703A consists of eleven (11) aqueous environmental samples. All samples were analyzed for volatile organic compounds. The environmental samples were also analyzed for semivolatile organic compounds and polynuclear aromatic hydrocarbons (PAH). One field duplicate pair was included in the SDG: SWFD-040400-03 and SWSG20-03.

The samples were collected by TetraTech NUS on April 4-6, 2000 and were analyzed by Accutest. Analyses were conducted using CLP SOW OLC02.1 and SW-846 Method 8310 analytical and reporting protocols.

The data were evaluated based on the following parameters:

- Data Completeness
- * Holding Times
- * GC/MS Tuning
- Calibration
- Blanks
- * Surrogate Spike Recoveries
- * Field Duplicate Precision
- * Internal Standards Performance
- * Instrument Performance
- * Compound Identification
- * Compound Quantitation
- * Detection Limits

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains Region I worksheets, and Appendix D contains the documentation to support the findings as discussed in this data validation report. The attached Table I summarizes the validation qualifications which were based on the following information:

COMPLETENESS

The laboratory failed to calculate continuing calibration percent differences for the semivolatile standard analyzed on 04/19/00 at 2141. Percent differences were calculated by the reviewer and the data qualified accordingly.

CALIBRATIONS

The following tables summarize calibration noncompliances and corresponding actions:

Compound	IC 04/10/00
Hexachlorocyclopentadiene	X
Associated Samples:	SWFD-040400-03 SWSG20-03 SWSG21-03

Compound	IC 04/10/00	CCV 04/19/00	CCV 04/19/00
Bis(2-chloroisopropyl)ether		D	
2-Nitroanline		D	
2,4-Dinitrophenol			D
Associated Samples:		SWSG18-03 SWSG19-03 SWSG24-03	2WGW39DS-03 2WGW42DS-03 2WGW47DS-03 SWSG22-03 SWSG23-03

Compound	IC 04/07/00
1-Methylnaphthalene	X
Associated Samples:	All

Calibration Actions:

X - %RSD > 30% (20% PAH); Estimate (J) positive.

D - %D > 25%; Estimate (J and UJ) positive and nondetected results.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Recovery of 4-chloroaniline fell below 10% in the MS and MSD. The nondetected result in the unspiked sample, SWSG18-03, was rejected, UR. Recovery of 4-chloro-3-methylphenol, 2,4-dichlorophenol, 4,6-dinitro-2-methylphenol, pentachlorophenol, 2,4,5-trichlorophenol, 2,4,6-trichlorophenol, and 3-nitroanline fell below the lower quality control limit. These compounds were not detected in the unspiked sample. The nondetected results were qualified as estimated, UJ, on this basis.

Matrix spike and/or matrix spike recoveries of 4,6-dinitro-2-methylphenol, pentachlorophenol, and 3-nitroanline fell below the lower quality control limit. The compounds were not detected in the unspiked sample, SWSG21-03. The nondetected results were qualified as estimated, UJ, on this basis.

BLANK SPIKE RESULTS

Blank spike recoveries of 4,6-dinitro-3-methylphenol and 3-nitroanline fell below the lower quality control limit. The compounds were not detected in the samples. No qualifiers were assigned on this basis.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the CRQL were qualified as estimated, (J).

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

The method blank associated with these samples had reporting limits that were higher than the reporting limits in the samples. The laboratory may have incorrectly reported solid reporting limits for the method blank or some other discrepancy.

OVERALL ASSESSMENT

Laboratory Performance: Several compounds failed to meet initial and/or continuing calibration quality control criteria.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (12/96).

"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)."

TetraTech NUS

Linda Karsonovich
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 - Regional Worksheets
4. Appendix D - Support Documentation

TABLE I
FIELD DUPLICATES

COMPOUND	SWFD-041400-03	SWSG20-03	%RPD
Semivolatile			
	ND	ND	
PAH			
	ND	ND	

ND – Not Detected

NEW LONDON NSB

SDG E66703A

TABLE II. Summary of Tentatively Identified Semivolatile Compounds

TIC	None Reported

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD 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 - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
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)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703A

SAMPLE NUMBER:	2WGW39DS-03			2WGW42DS-03			2WGW47DS-03			SWFD040400-03		
SAMPLE DATE:	04/05/00			04/05/00			04/05/00			04/04/00		
LABORATORY ID:	E66703-13A			E66703-15A			E66703-16A			E66703-4A		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:										SWSG20-03		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
1,2,4-TRICHLOROBENZENE	2	U		2.1	U		2	U		2	U	
1,2-DICHLOROBENZENE	2	U		2.1	U		2	U		2	U	
1,3-DICHLOROBENZENE	2	U		2.1	U		2	U		2	U	
1,4-DICHLOROBENZENE	2	U		2.1	U		2	U		2	U	
2,4,5-TRICHLOROPHENOL	5.1	U		5.2	U		5.1	U		5	U	
2,4,6-TRICHLOROPHENOL	5.1	U		5.2	U		5.1	U		5	U	
2,4-DICHLOROPHENOL	5.1	U		5.2	U		5.1	U		5	U	
2,4-DIMETHYLPHENOL	5.1	U		5.2	U		5.1	U		5	U	
2,4-DINITROPHENOL	20	UJ	C	21	UJ	C	20	UJ	C	20	U	
2,4-DINITROTOLUENE	2	U		2.1	U		2	U		2	U	
2,6-DINITROTOLUENE	2	U		2.1	U		2	U		2	U	
2-CHLORONAPHTHALENE	5.1	U		5.2	U		5.1	U		5	U	
2-CHLOROPHENOL	5.1	U		5.2	U		5.1	U		5	U	
2-METHYLPHENOL	5.1	U		5.2	U		5.1	U		5	U	
2-NITROANILINE	5.1	U		5.2	U		5.1	U		5	U	
2-NITROPHENOL	5.1	U		5.2	U		5.1	U		5	U	
3&4-METHYLPHENOL	5.1	U		5.2	U		5.1	U		5	U	
3,3'-DICHLOROBENZIDINE	5.1	U		5.2	U		5.1	U		5	U	
3-NITROANILINE	5.1	U		5.2	U		5.1	U		5	U	
4,6-DINITRO-2-METHYLPHENOL	20	U		21	U		20	U		20	U	
4-BROMOPHENYL PHENYL ETHER	2	U		2.1	U		2	U		2	U	
4-CHLORO-3-METHYLPHENOL	5.1	U		5.2	U		5.1	U		5	U	
4-CHLOROANILINE	5.1	U		5.2	U		5.1	U		5	U	
4-CHLOROPHENYL PHENYL ETHER	2	U		2.1	U		2	U		2	U	
4-NITROANILINE	5.1	U		5.2	U		5.1	U		5	U	
4-NITROPHENOL	20	U		21	U		20	U		20	U	
BIS(2-CHLOROETHOXY)METHANE	2	U		2.1	U		2	U		2	U	
BIS(2-CHLOROETHYL)ETHER	2	U		2.1	U		2	U		2	U	
BIS(2-CHLOROISOPROPYL)ETHER	2	U		2.1	U		2	U		2	U	
BIS(2-ETHYLHEXYL)PHTHALATE	2	U		2.1	U		2	U		2	U	
BUTYLBENZYL PHTHALATE	2	U		2.1	U		2	U		2	U	
CARBAZOLE	2	U		2.1	U		2	U		2	U	
DI-N-BUTYL PHTHALATE	2	U		2.1	U		2	U		2	U	
DI-N-OCTYL PHTHALATE	2	U		2.1	U		2	U		2	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703A

SAMPLE NUMBER:	2WGW39DS-03			2WGW42DS-03			2WGW47DS-03			SWFD040400-03		
SAMPLE DATE:	04/05/00			04/05/00			04/05/00			04/04/00		
LABORATORY ID:	E66703-13A			E66703-15A			E66703-16A			E66703-4A		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:										SWSG20-03		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
DIBENZOFURAN	5.1	U		5.2	U		5.1	U		5	U	
DIETHYL PHTHALATE	2	U		2.1	U		2	U		2	U	
DIMETHYL PHTHALATE	2	U		2.1	U		2	U		2	U	
HEXACHLOROBENZENE	2	U		2.1	U		2	U		2	U	
HEXACHLOROBUTADIENE	2	U		2.1	U		2	U		2	U	
HEXACHLOROCYCLOPENTADIENE	20	U		21	U		20	U		20	U	
HEXACHLOROETHANE	5.1	U		5.2	U		5.1	U		5	U	
ISOPHORONE	2	U		2.1	U		2	U		2	U	
N-NITROSO-DI-N-PROPYLAMINE	2	U		2.1	U		2	U		2	U	
N-NITROSODIPHENYLAMINE	5.1	U		5.2	U		5.1	U		5	U	
NITROBENZENE	2	U		2.1	U		2	U		2	U	
PENTACHLOROPHENOL	20	U		21	U		20	U		20	U	
PHENOL	5.1	U		5.2	U		5.1	U		5	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703A

SAMPLE NUMBER:	SWSG18-03			SWSG19-03			SWSG20-03			SWSG21-03		
SAMPLE DATE:	04/05/00			04/05/00			04/04/00			04/04/00		
LABORATORY ID:	E66703-9A			E66703-11A			E66703-3A			E66703-2A		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
1,2,4-TRICHLOROBENZENE	2	U		2	U		2	U		2	U	
1,2-DICHLOROBENZENE	2	U		2	U		2	U		2	U	
1,3-DICHLOROBENZENE	2	U		2	U		2	U		2	U	
1,4-DICHLOROBENZENE	2	U		2	U		2	U		2	U	
2,4,5-TRICHLOROPHENOL	5	UJ	D	5	U		5	U		5	U	
2,4,6-TRICHLOROPHENOL	5	UJ	D	5	U		5	U		5	U	
2,4-DICHLOROPHENOL	5	UJ	D	5	U		5	U		5	U	
2,4-DIMETHYLPHENOL	5	U		5	U		5	U		5	U	
2,4-DINITROPHENOL	20	U		20	U		20	U		20	U	
2,4-DINITROTOLUENE	2	U		2	U		2	U		2	U	
2,6-DINITROTOLUENE	2	U		2	U		2	U		2	U	
2-CHLORONAPHTHALENE	5	U		5	U		5	U		5	U	
2-CHLOROPHENOL	5	U		5	U		5	U		5	U	
2-METHYLPHENOL	5	UJ	D	5	U		5	U		5	U	
2-NITROANILINE	5	UJ	C	5	UJ	C	5	U		5	U	
2-NITROPHENOL	5	U		5	U		5	U		5	U	
3&4-METHYLPHENOL	5	U		5	U		5	U		5	U	
3,3'-DICHLOROBENZIDINE	5	U		5	U		5	U		5	U	
3-NITROANILINE	5	UJ	D	5	U		5	U		5	UJ	D
4,6-DINITRO-2-METHYLPHENOL	20	UJ	D	20	U		20	U		20	UJ	D
4-BROMOPHENYL PHENYL ETHER	2	U		2	U		2	U		2	U	
4-CHLORO-3-METHYLPHENOL	5	UJ	D	5	U		5	U		5	U	
4-CHLOROANILINE	5	UR	D	5	U		5	U		5	U	
4-CHLOROPHENYL PHENYL ETHER	2	U		2	U		2	U		2	U	
4-NITROANILINE	5	U		5	U		5	U		5	U	
4-NITROPHENOL	20	U		20	U		20	U		20	U	
BIS(2-CHLOROETHOXY)METHANE	2	U		2	U		2	U		2	U	
BIS(2-CHLOROETHYL)ETHER	2	U		2	U		2	U		2	U	
BIS(2-CHLOROISOPROPYL)ETHER	2	UJ	C	2	UJ	C	2	U		2	U	
BIS(2-ETHYLHEXYL)PHTHALATE	2	U		2	U		2	U		2	U	
BUTYLBENZYL PHTHALATE	2	U		2	U		2	U		2	U	
CARBAZOLE	2	U		2	U		2	U		2	U	
DI-N-BUTYL PHTHALATE	2	U		2	U		2	U		2	U	
DI-N-OCTYL PHTHALATE	2	U		2	U		2	U		2	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703A

SAMPLE NUMBER:	SWSG18-03			SWSG19-03			SWSG20-03			SWSG21-03		
SAMPLE DATE:	04/05/00			04/05/00			04/04/00			04/04/00		
LABORATORY ID:	E66703-9A			E66703-11A			E66703-3A			E66703-2A		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
DIBENZOFURAN	5	U		5	U		5	U		5	U	
DIETHYL PHTHALATE	2	U		2	U		2	U		2	U	
DIMETHYL PHTHALATE	2	U		2	U		2	U		2	U	
HEXACHLOROBENZENE	2	U		2	U		2	U		2	U	
HEXACHLOROBUTADIENE	2	U		2	U		2	U		2	U	
HEXACHLOROCYCLOPENTADIENE	20	U		20	U		20	U		20	U	
HEXACHLOROETHANE	5	U		5	U		5	U		5	U	
ISOPHORONE	2	U		2	U		2	U		2	U	
N-NITROSO-DI-N-PROPYLAMINE	2	U		2	U		2	U		2	U	
N-NITROSODIPHENYLAMINE	5	U		5	U		5	U		5	U	
NITROBENZENE	2	U		2	U		2	U		2	U	
PENTACHLOROPHENOL	20	UJ	D	20	U		20	U		20	UJ	D
PHENOL	5	U		5	U		5	U		5	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703A

SAMPLE NUMBER:	SWSG22-03			SWSG23-03			SWSG24-03					
SAMPLE DATE:	04/05/00			04/05/00			04/05/00			/ /		
LABORATORY ID:	E66703-12A			E66703-14A			E66703-10A					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L					
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
1,2,4-TRICHLOROBENZENE	2	U		2.1	U		2	U				
1,2-DICHLOROBENZENE	2	U		2.1	U		2	U				
1,3-DICHLOROBENZENE	2	U		2.1	U		2	U				
1,4-DICHLOROBENZENE	2	U		2.1	U		2	U				
2,4,5-TRICHLOROPHENOL	5	U		5.2	U		5	U				
2,4,6-TRICHLOROPHENOL	5	U		5.2	U		5	U				
2,4-DICHLOROPHENOL	5	U		5.2	U		5	U				
2,4-DIMETHYLPHENOL	5	U		5.2	U		5	U				
2,4-DINITROPHENOL	20	UJ	C	21	UJ	C	20	U				
2,4-DINITROTOLUENE	2	U		2.1	U		2	U				
2,6-DINITROTOLUENE	2	U		2.1	U		2	U				
2-CHLORONAPHTHALENE	5	U		5.2	U		5	U				
2-CHLOROPHENOL	5	U		5.2	U		5	U				
2-METHYLPHENOL	5	U		5.2	U		5	U				
2-NITROANILINE	5	U		5.2	U		5	UJ	C			
2-NITROPHENOL	5	U		5.2	U		5	U				
3&4-METHYLPHENOL	5	U		5.2	U		5	U				
3,3'-DICHLOROBENZIDINE	5	U		5.2	U		5	U				
3-NITROANILINE	5	U		5.2	U		5	U				
4,6-DINITRO-2-METHYLPHENOL	20	U		21	U		20	U				
4-BROMOPHENYL PHENYL ETHER	2	U		2.1	U		2	U				
4-CHLORO-3-METHYLPHENOL	5	U		5.2	U		5	U				
4-CHLOROANILINE	5	U		5.2	U		5	U				
4-CHLOROPHENYL PHENYL ETHER	2	U		2.1	U		2	U				
4-NITROANILINE	5	U		5.2	U		5	U				
4-NITROPHENOL	20	U		21	U		20	U				
BIS(2-CHLOROETHOXY)METHANE	2	U		2.1	U		2	U				
BIS(2-CHLOROETHYL)ETHER	2	U		2.1	U		2	U				
BIS(2-CHLOROISOPROPYL)ETHER	2	U		2.1	U		2	UJ	C			
BIS(2-ETHYLHEXYL)PHTHALATE	2	U		2.1	U		2	U				
BUTYLBENZYL PHTHALATE	2	U		2.1	U		2	U				
CARBAZOLE	2	U		2.1	U		2	U				
DI-N-BUTYL PHTHALATE	2	U		2.1	U		2	U				
DI-N-OCTYL PHTHALATE	2	U		2.1	U		2	U				

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703A

SAMPLE NUMBER:	SWSG22-03	SWSG23-03	SWSG24-03	
SAMPLE DATE:	04/05/00	04/05/00	04/05/00	/ /
LABORATORY ID:	E66703-12A	E66703-14A	E66703-10A	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	0.0 %	0.0 %	0.0 %	100.0 %
UNITS:	UG/L	UG/L	UG/L	
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
DIBENZOFURAN	5	U		5.2	U		5	U				
DIETHYL PHTHALATE	2	U		2.1	U		2	U				
DIMETHYL PHTHALATE	2	U		2.1	U		2	U				
HEXACHLOROBENZENE	2	U		2.1	U		2	U				
HEXACHLOROBUTADIENE	2	U		2.1	U		2	U				
HEXACHLOROCYCLOPENTADIENE	20	U		21	U		20	U				
HEXACHLOROETHANE	5	U		5.2	U		5	U				
ISOPHORONE	2	U		2.1	U		2	U				
N-NITROSO-DI-N-PROPYLAMINE	2	U		2.1	U		2	U				
N-NITROSODIPHENYLAMINE	5	U		5.2	U		5	U				
NITROBENZENE	2	U		2.1	U		2	U				
PENTACHLOROPHENOL	20	U		21	U		20	U				
PHENOL	5	U		5.2	U		5	U				

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703A

SAMPLE NUMBER:	2WGW39DS-03	2WGW42DS-03	2WGW47DS-03	SWFD040400-03
SAMPLE DATE:	04/05/00	04/05/00	04/05/00	04/04/00
LABORATORY ID:	E66703-13A	E66703-15A	E66703-16A	E66703-4A
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	0.0 %	0.0 %	0.0 %	0.0 %
UNITS:	UG/L	UG/L	UG/L	UG/L
FIELD DUPLICATE OF:				SWSG20-03

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	1.1	U		1.1	U		1.1	U		1	U	
2-METHYLNAPHTHALENE	1.1	U		1.1	U		1.1	U		1	U	
ACENAPHTHENE	1.1	U		1.1	U		1.1	U		1	U	
ACENAPHTHYLENE	1.1	U		1.1	U		1.1	U		1	U	
ANTHRACENE	1.1	U		1.1	U		1.1	U		1	U	
BENZO(A)ANTHRACENE	0.17	U		0.17	U		0.17	U		0.15	U	
BENZO(A)PYRENE	0.17	U		0.17	U		0.17	U		0.15	U	
BENZO(B)FLUORANTHENE	0.17	U		0.17	U		0.17	U		0.15	U	
BENZO(G,H,I)PERYLENE	0.17	U		0.17	U		0.17	U		0.15	U	
BENZO(K)FLUORANTHENE	0.17	U		0.17	U		0.17	U		0.15	U	
CHRYSENE	0.17	U		0.17	U		0.17	U		0.15	U	
DIBENZO(A,H)ANTHRACENE	0.17	U		0.17	U		0.17	U		0.15	U	
FLUORANTHENE	1.1	U		1.1	U		1.1	U		1	U	
FLUORENE	1.1	U		1.1	U		1.1	U		1	U	
INDENO(1,2,3-CD)PYRENE	0.17	U		0.17	U		0.17	U		0.15	U	
NAPHTHALENE	1.1	U		1.1	U		1.1	U		1	U	
PHENANTHRENE	1.1	U		1.1	U		1.1	U		1	U	
PYRENE	1.1	U		1.1	U		1.1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703A

SAMPLE NUMBER:	SWSG18-03			SWSG19-03			SWSG20-03			SWSG21-03		
SAMPLE DATE:	04/05/00			04/05/00			04/04/00			04/04/00		
LABORATORY ID:	E66703-9A			E66703-11A			E66703-3A			E66703-2A		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	1	U		1.4	J	C	1	U		1	U	
2-METHYLNAPHTHALENE	1	U		1	U		1	U		1	U	
ACENAPHTHENE	1	U		1	U		1	U		1	U	
ACENAPHTHYLENE	1	U		1	U		1	U		1	U	
ANTHRACENE	1	U		1	U		1	U		1	U	
BENZO(A)ANTHRACENE	0.15	U		0.15	U		0.15	U		0.15	U	
BENZO(A)PYRENE	0.15	U		0.15	U		0.15	U		0.15	U	
BENZO(B)FLUORANTHENE	0.15	U		0.15	U		0.15	U		0.15	U	
BENZO(G,H,I)PERYLENE	0.15	U		0.15	U		0.15	U		0.15	U	
BENZO(K)FLUORANTHENE	0.15	U		0.15	U		0.15	U		0.15	U	
CHRYSENE	0.15	U		0.15	U		0.15	U		0.15	U	
DIBENZO(A,H)ANTHRACENE	0.15	U		0.15	U		0.15	U		0.15	U	
FLUORANTHENE	1	U		1	U		1	U		1	U	
FLUORENE	1	U		1	U		1	U		1	U	
INDENO(1,2,3-CD)PYRENE	0.15	U		0.15	U		0.15	U		0.15	U	
NAPHTHALENE	1	U		1	U		1	U		1	U	
PHENANTHRENE	1	U		1	U		1	U		1	U	
PYRENE	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703A

SAMPLE NUMBER:	SWSG22-03			SWSG23-03			SWSG24-03					
SAMPLE DATE:	04/05/00			04/05/00			04/05/00			/ /		
LABORATORY ID:	E66703-12A			E66703-14A			E66703-10A					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L					
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	1	U		1	U		1	U				
2-METHYLNAPHTHALENE	1	U		1	U		1	U				
ACENAPHTHENE	1	U		1	U		1	U				
ACENAPHTHYLENE	1	U		1	U		1	U				
ANTHRACENE	1	U		1	U		1	U				
BENZO(A)ANTHRACENE	0.15	U		0.15	U		0.16	U				
BENZO(A)PYRENE	0.15	U		0.15	U		0.16	U				
BENZO(B)FLUORANTHENE	0.15	U		0.15	U		0.16	U				
BENZO(G,H,I)PERYLENE	0.15	U		0.15	U		0.16	U				
BENZO(K)FLUORANTHENE	0.15	U		0.15	U		0.16	U				
CHRYSENE	0.15	U		0.15	U		0.16	U				
DIBENZO(A,H)ANTHRACENE	0.15	U		0.15	U		0.16	U				
FLUORANTHENE	1	U		1	U		1	U				
FLUORENE	1	U		1	U		1	U				
INDENO(1,2,3-CD)PYRENE	0.15	U		0.15	U		0.16	U				
NAPHTHALENE	1	U		1	U		1	U				
PHENANTHRENE	1	U		1	U		1	U				
PYRENE	1	U		1	U		1	U				

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **MARK MENGEL** **DATE: JULY 12, 2000**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION: VOA/PEST/PCB**
CTO 203, NEW LONDON
SDG E66703

SAMPLES: 13/Aqueous/

2WGW39DS-03	2WGW42DS-03	2WGW47DS-03
SWFD040400-03	SWSG18-03	SWSG19-03
SWSG20-03	SWSG21-03	SWSG22-03
SWSG23-03	SWSG24-03	TB040400
TB040500		

Overview

The sample set for the CTO 203, New London, SDG E66703 consists of eleven (11) aqueous environmental samples and two (2) trip blanks (TB). All samples were analyzed for volatile organic compounds. The environmental samples were also analyzed for pesticides/PCBs. One field duplicate pair was included in the SDG: SWFD040400-03 and SWSG20-03.

The samples were collected by TetraTech NUS on April 4-5, 2000 and were analyzed by Accutest. Analyses were conducted using CLP SOW OLC02.1 analytical and reporting protocols.

The data were evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- * GC/MS Tuning
- Calibration
- Blanks
- Surrogate Spike Recoveries
- * Field Duplicate Precision
- * Internal Standards Performance
- * Instrument Performance
- * Compound Identification
- * Compound Quantitation
- * Detection Limits

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains Region I worksheets, and Appendix D contains the documentation to support the findings as discussed in this data validation report.

CALIBRATIONS

The following tables summarize calibration noncompliances and corresponding actions:

Compound	IC 04/10/00
Methylene chloride	X

Associated Samples: SWSG21-03

Calibration Actions:
X - %RSD > 30%; Estimate (J) positive.

BLANKS

The maximum concentration of contaminants found in associated laboratory method blank and/or field quality control blank analyses (designated *) are summarized below:

Compound	Maximum Concentration	Blank Action Level
Methylene chloride*	0.5 µg/L	5 µg/L
Chloroform*	1 µg/L	5 µg/L

Samples Affected: All

Blank Actions:

- Value < Contract Required Quantitation Limit (CRQL); report CRQL followed by a U.
- Value > CRQL and < action level; report value followed by a U.
- Value > CRQL and > action level; report value unqualified.

Dilution factors and sample aliquots used for analysis were taken into consideration prior to the application of all action levels. Positive results for methylene chloride and chloroform below the blank action level were qualified as nondetected, U. Field blank results were not qualified based on contamination in other field quality control samples.

SURROGATE RECOVERY

Surrogate recovery exceeded the upper quality control limit for decachlorobiphenyl (DCB) on one analytical column in sample SWSG24-03. The remaining three surrogates were compliant. No target compounds were detected in the sample. No qualifiers were assigned on this basis.

Surrogate recovery fell below the lower quality control limit for DCB on one analytical column in sample SWSG23-03. The remaining three surrogates were compliant. No target compounds were detected in the sample. No qualifiers were assigned on this basis.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike and matrix spike recoveries of vinyl chloride, 1,2-dichloroethane, and carbon tetrachloride exceeded the upper quality control limit. The compounds were not detected in the unspiked sample, SWSG21-03. No qualifiers were assigned on this basis.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the CRQL were qualified as estimated, (J).

The volatile fraction of samples TB040400 and TB040500 were re-analyzed to confirm positive results. Only the original sample results were used as the basis for data validation.

Naphthalene was tentatively identified in sample SWSG19-03. As per Region 1 guidelines the compound was lined out be the reviewer since it is a semivolatile target compound. The compound was not summarized in Table II Tentatively Identified Compounds.

Form 1s for samples 2WGW39DS-03, 2WGW42DS-03, and 2WGW47DS-03 were misidentified. Correction were made to the Form 1s by the reviewer.

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

OVERALL ASSESSMENT

Laboratory Performance: Methylene chloride and chloroform were detected in the field quality control blank analyses.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (12/96).

"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)."

TetraTech NUS

Linda Karsonovich
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 - Regional Worksheets
4. Appendix D - Support Documentation

TABLE I
FIELD DUPLICATES

COMPOUND	SWFD040400-03	SWSG20-03	%RPD
Volatile			
Acetone	4 J	3 J	29%
Pest/PCB			
	ND	ND	

ND – Not Detected
NC – Not Calculated, positive result less than the reporting limit.

NEW LONDON NSB

SDG E66703

TABLE II. Summary of Tentatively Identified Volatile Compounds

TIC	2WGW42DS-03	SWSG18-03	SWSG19-03
Unknown	X		
Methane, chlorofluoro-		X	X
Methane, dichlorofluoro-			X

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD 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 - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
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)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703

SAMPLE NUMBER:	2WGW39DS-03			2WGW42DS-03			2WGW47DS-03			SWFD040400-03		
SAMPLE DATE:	04/05/00			04/05/00			04/05/00			04/04/00		
LABORATORY ID:	E66703-13			E66703-15			E66703-16			E66703-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:										SWSG20-03		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE	1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1-DICHLOROETHENE	1	U		1	U		1	U		1	U	
1,2-DIBROMO-3-CHLOROPROPANE	1	U		1	U		1	U		1	U	
1,2-DIBROMOETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
1,2-DICHLOROETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROPROPANE	1	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
1,4-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
2-BUTANONE	4	J	P	7			5	U		5	U	
2-HEXANONE	5	U		5	U		5	U		5	U	
4-METHYL-2-PENTANONE	5	U		5	U		5	U		5	U	
ACETONE	16			32			5	U		4	J	P
BENZENE	1	U		1	U		1	U		1	U	
BROMOCHLOROMETHANE	1	U		1	U		1	U		1	U	
BROMODICHLOROMETHANE	1	U		1	U		1	U		1	U	
BROMOFORM	1	U		1	U		1	U		1	U	
BROMOMETHANE	1	U		1	U		1	U		1	U	
CARBON DISULFIDE	0.7	J	P	4			1	U		1	U	
CARBON TETRACHLORIDE	1	U		1	U		1	U		1	U	
CHLOROBENZENE	1	U		1	U		1	U		1	U	
CHLOROETHANE	1	U		1	U		1	U		1	U	
CHLOROFORM	1	U	B	1	U	B	1	U	B	1	U	B
CHLOROMETHANE	1	U		1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE	1	U		1	U		1	U		1	U	
CIS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
DIBROMOCHLOROMETHANE	1	U		1	U		1	U		1	U	
ETHYLBENZENE	1	U		1	U		1	U		1	U	
METHYLENE CHLORIDE	2	U	B	2	U		2	U		2	U	
STYRENE	1	U		1	U		1	U		1	U	
TETRACHLOROETHENE	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703

SAMPLE NUMBER:	2WGW39DS-03			2WGW42DS-03			2WGW47DS-03			SWFD040400-03		
SAMPLE DATE:	04/05/00			04/05/00			04/05/00			04/04/00		
LABORATORY ID:	E66703-13			E66703-15			E66703-16			E66703-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:										SWSG20-03		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
TOLUENE	4			1			1	U		1	U	
TRANS-1,2-DICHLOROETHENE	1	U		1	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
TRICHLOROETHENE	1	U		1	U		1	U		1	U	
VINYL CHLORIDE	1	U		1	U		1	U		1	U	
XYLENES, TOTAL	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703

SAMPLE NUMBER:	SWSG18-03			SWSG19-03			SWSG20-03			SWSG21-03		
SAMPLE DATE:	04/05/00			04/05/00			04/04/00			04/04/00		
LABORATORY ID:	E66703-9			E66703-11			E66703-3			E66703-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE	1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1-DICHLOROETHENE	1	U		1	U		1	U		1	U	
1,2-DIBROMO-3-CHLOROPROPANE	1	U		1	U		1	U		1	U	
1,2-DIBROMOETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
1,2-DICHLOROETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROPROPANE	1	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
1,4-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
2-BUTANONE	5	U		5	U		5	U		5	U	
2-HEXANONE	5	U		5	U		5	U		5	U	
4-METHYL-2-PENTANONE	5	U		5	U		5	U		5	U	
ACETONE	5	U		5	U		3	J	P	6		
BENZENE	1	U		0.4	J	P	1	U		1	U	
BROMOCHLOROMETHANE	1	U		1	U		1	U		1	U	
BROMODICHLOROMETHANE	1	U		1	U		1	U		1	U	
BROMOFORM	1	U		1	U		1	U		1	U	
BROMOMETHANE	1	U		1	U		1	U		1	U	
CARBON DISULFIDE	1	U		1	U		1	U		1	U	
CARBON TETRACHLORIDE	1	U		1	U		1	U		1	U	
CHLOROBENZENE	1	U		0.3	J	P	1	U		1	U	
CHLOROETHANE	1	U		1	U		1	U		1	U	
CHLOROFORM	1	U	B	1	U	B	1	U	B	1	U	B
CHLOROMETHANE	1	U		1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE	1	U		1	U		1	U		1	U	
CIS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
DIBROMOCHLOROMETHANE	1	U		1	U		1	U		1	U	
ETHYLBENZENE	1	U		0.2	J	P	1	U		1	U	
METHYLENE CHLORIDE	2	U		2	U		2	U		2	U	
STYRENE	1	U		1	U		1	U		1	U	
TETRACHLOROETHENE	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703

SAMPLE NUMBER:	SWSG18-03			SWSG19-03			SWSG20-03			SWSG21-03		
SAMPLE DATE:	04/05/00			04/05/00			04/04/00			04/04/00		
LABORATORY ID:	E66703-9			E66703-11			E66703-3			E66703-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
TOLUENE	1	U		0.1	J	P	1	U		1	U	
TRANS-1,2-DICHLOROETHENE	1	U		1	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
TRICHLOROETHENE	1	U		1	U		1	U		1	U	
VINYL CHLORIDE	1	U		1	U		1	U		1	U	
XYLENES, TOTAL	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703

SAMPLE NUMBER:	SWSG22-03			SWSG23-03			SWSG24-03			TB040400		
SAMPLE DATE:	04/05/00			04/05/00			04/05/00			04/04/00		
LABORATORY ID:	E66703-12			E66703-14			E66703-10			E66703-1		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE	1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1-DICHLOROETHENE	1	U		1	U		1	U		1	U	
1,2-DIBROMO-3-CHLOROPROPANE	1	U		1	U		1	U		1	U	
1,2-DIBROMOETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
1,2-DICHLOROETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROPROPANE	1	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
1,4-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
2-BUTANONE	5	U		5	U		5	U		5	U	
2-HEXANONE	5	U		5	U		5	U		5	U	
4-METHYL-2-PENTANONE	5	U		5	U		5	U		5	U	
ACETONE	3	J	P	5	U		6			5	U	
BENZENE	1	U		1	U		1	U		1	U	
BROMOCHLOROMETHANE	1	U		1	U		1	U		1	U	
BROMODICHLOROMETHANE	1	U		1	U		1	U		1	U	
BROMOFORM	1	U		1	U		1	U		1	U	
BROMOMETHANE	1	U		1	U		1	U		1	U	
CARBON DISULFIDE	1	U		1	U		1	U		1	U	
CARBON TETRACHLORIDE	1	U		1	U		1	U		1	U	
CHLOROBENZENE	1	U		1	U		1	U		1	U	
CHLOROETHANE	1	U		1	U		1	U		1	U	
CHLOROFORM	1	U	B	1	U	B	1	U	B	0.7	J	P
CHLOROMETHANE	1	U		1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE	1	U		1	U		1	U		1	U	
CIS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
DIBROMOCHLOROMETHANE	1	U		1	U		1	U		1	U	
ETHYLBENZENE	1	U		1	U		1	U		1	U	
METHYLENE CHLORIDE	2	U		2	U		2	U		0.4	J	P
STYRENE	1	U		1	U		1	U		1	U	
TETRACHLOROETHENE	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703

SAMPLE NUMBER:	SWSG22-03			SWSG23-03			SWSG24-03			TB040400		
SAMPLE DATE:	04/05/00			04/05/00			04/05/00			04/04/00		
LABORATORY ID:	E66703-12			E66703-14			E66703-10			E66703-1		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
TOLUENE	0.2	J	P	6			2			1	U	
TRANS-1,2-DICHLOROETHENE	1	U		1	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
TRICHLOROETHENE	1	U		1	U		1	U		1	U	
VINYL CHLORIDE	1	U		1	U		1	U		1	U	
XYLENES, TOTAL	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703

SAMPLE NUMBER:	TB040500											
SAMPLE DATE:	04/05/00			/ /			/ /			/ /		
LABORATORY ID:	E66703-8											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	1	U										
1,1,2,2-TETRACHLOROETHANE	1	U										
1,1,2-TRICHLOROETHANE	1	U										
1,1-DICHLOROETHANE	1	U										
1,1-DICHLOROETHENE	1	U										
1,2-DIBROMO-3-CHLOROPROPANE	1	U										
1,2-DIBROMOETHANE	1	U										
1,2-DICHLOROBENZENE	1	U										
1,2-DICHLOROETHANE	1	U										
1,2-DICHLOROPROPANE	1	U										
1,3-DICHLOROBENZENE	1	U										
1,4-DICHLOROBENZENE	1	U										
2-BUTANONE	5	U										
2-HEXANONE	5	U										
4-METHYL-2-PENTANONE	5	U										
ACETONE	5	U										
BENZENE	1	U										
BROMOCHLOROMETHANE	1	U										
BROMODICHLOROMETHANE	1	U										
BROMOFORM	1	U										
BROMOMETHANE	1	U										
CARBON DISULFIDE	1	U										
CARBON TETRACHLORIDE	1	U										
CHLOROBENZENE	1	U										
CHLOROETHANE	1	U										
CHLOROFORM	1											
CHLOROMETHANE	1	U										
CIS-1,2-DICHLOROETHENE	1	U										
CIS-1,3-DICHLOROPROPENE	1	U										
DIBROMOCHLOROMETHANE	1	U										
ETHYLBENZENE	1	U										
METHYLENE CHLORIDE	0.5	J	P									
STYRENE	1	U										
TETRACHLOROETHENE	1	U										

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703

SAMPLE NUMBER:	TB040500											
SAMPLE DATE:	04/05/00			/ /			/ /			/ /		
LABORATORY ID:	E66703-8											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
TOLUENE	1	U										
TRANS-1,2-DICHLOROETHENE	1	U										
TRANS-1,3-DICHLOROPROPENE	1	U										
TRICHLOROETHENE	1	U										
VINYL CHLORIDE	1	U										
XYLENES, TOTAL	1	U										

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703

SAMPLE NUMBER:	2WGW39DS-03			2WGW42DS-03			2WGW47DS-03			SWFD040400-03		
SAMPLE DATE:	04/05/00			04/05/00			04/05/00			04/04/00		
LABORATORY ID:	E66703-13			E66703-15			E66703-16			E66703-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
4,4'-DDD	0.020	U		0.020	U		0.030			0.020	U	
4,4'-DDE	0.020	U		0.020	U		0.021	U		0.020	U	
4,4'-DDT	0.020	U		0.020	U		0.021	U		0.020	U	
ALDRIN	0.010	U		0.010	U		0.010	U		0.010	U	
ALPHA-BHC	0.010	U		0.010	U		0.010	U		0.010	U	
ALPHA-CHLORDANE	0.010	U		0.010	U		0.010	U		0.010	U	
AROCLOR-1016	0.20	U		0.20	U		0.21	U		0.20	U	
AROCLOR-1221	0.40	U		0.40	U		0.42	U		0.40	U	
AROCLOR-1232	0.20	U		0.20	U		0.21	U		0.20	U	
AROCLOR-1242	0.20	U		0.20	U		0.21	U		0.20	U	
AROCLOR-1248	0.20	U		0.20	U		0.21	U		0.20	U	
AROCLOR-1254	0.20	U		0.20	U		0.21	U		0.20	U	
AROCLOR-1260	0.20	U		0.20	U		0.21	U		0.20	U	
BETA-BHC	0.010	U		0.010	U		0.010	U		0.010	U	
DELTA-BHC	0.010	U		0.010	U		0.010	U		0.010	U	
DIELDRIN	0.020	U		0.020	U		0.021	U		0.020	U	
ENDOSULFAN I	0.010	U		0.010	U		0.010	U		0.010	U	
ENDOSULFAN II	0.020	U		0.020	U		0.021	U		0.020	U	
ENDOSULFAN SULFATE	0.020	U		0.020	U		0.021	U		0.020	U	
ENDRIN	0.020	U		0.020	U		0.021	U		0.020	U	
ENDRIN ALDEHYDE	0.020	U		0.020	U		0.021	U		0.020	U	
ENDRIN KETONE	0.020	U		0.020	U		0.021	U		0.020	U	
GAMMA-BHC (LINDANE)	0.010	U		0.010	U		0.010	U		0.010	U	
GAMMA-CHLORDANE	0.010	U		0.010	U		0.010	U		0.010	U	
HEPTACHLOR	0.010	U		0.010	U		0.010	U		0.010	U	
HEPTACHLOR EPOXIDE	0.010	U		0.010	U		0.010	U		0.010	U	
METHOXYCHLOR	0.10	U		0.10	U		0.10	U		0.10	U	
TOXAPHENE	1.0	U		1.0	U		1.0	U		1.0	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703

SAMPLE NUMBER:	SWSG18-03			SWSG19-03			SWSG20-03			SWSG21-03		
SAMPLE DATE:	04/05/00			04/05/00			04/04/00			04/04/00		
LABORATORY ID:	E66703-9			E66703-11			E66703-3			E66703-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
4,4'-DDD	0.020	U		0.020	U		0.020	U		0.020	U	
4,4'-DDE	0.020	U		0.020	U		0.020	U		0.020	U	
4,4'-DDT	0.020	U		0.020	U		0.020	U		0.020	U	
ALDRIN	0.010	U		0.010	U		0.010	U		0.010	U	
ALPHA-BHC	0.010	U		0.010	U		0.010	U		0.010	U	
ALPHA-CHLORDANE	0.010	U		0.010	U		0.010	U		0.010	U	
AROCLOR-1016	0.20	U		0.20	U		0.20	U		0.20	U	
AROCLOR-1221	0.40	U		0.40	U		0.40	U		0.40	U	
AROCLOR-1232	0.20	U		0.20	U		0.20	U		0.20	U	
AROCLOR-1242	0.20	U		0.20	U		0.20	U		0.20	U	
AROCLOR-1248	0.20	U		0.20	U		0.20	U		0.20	U	
AROCLOR-1254	0.20	U		0.20	U		0.20	U		0.20	U	
AROCLOR-1260	0.20	U		0.20	U		0.20	U		0.20	U	
BETA-BHC	0.010	U		0.010	U		0.010	U		0.010	U	
DELTA-BHC	0.010	U		0.010	U		0.010	U		0.010	U	
DIELDRIN	0.020	U		0.020	U		0.020	U		0.020	U	
ENDOSULFAN I	0.010	U		0.010	U		0.010	U		0.010	U	
ENDOSULFAN II	0.020	U		0.020	U		0.020	U		0.020	U	
ENDOSULFAN SULFATE	0.020	U		0.020	U		0.020	U		0.020	U	
ENDRIN	0.020	U		0.020	U		0.020	U		0.020	U	
ENDRIN ALDEHYDE	0.020	U		0.020	U		0.020	U		0.020	U	
ENDRIN KETONE	0.020	U		0.020	U		0.020	U		0.020	U	
GAMMA-BHC (LINDANE)	0.010	U		0.010	U		0.010	U		0.010	U	
GAMMA-CHLORDANE	0.010	U		0.010	U		0.010	U		0.010	U	
HEPTACHLOR	0.010	U		0.010	U		0.010	U		0.010	U	
HEPTACHLOR EPOXIDE	0.010	U		0.010	U		0.010	U		0.010	U	
METHOXYCHLOR	0.10	U		0.10	U		0.10	U		0.10	U	
TOXAPHENE	1.0	U		1.0	U		1.0	U		1.0	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703

SAMPLE NUMBER:	SWSG22-03	SWSG23-03	SWSG24-03	
SAMPLE DATE:	04/05/00	04/05/00	04/05/00	/ /
LABORATORY ID:	E66703-12	E66703-14	E66703-10	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	0.0 %	0.0 %	0.0 %	100.0 %
UNITS:	UG/L	UG/L	UG/L	
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
4,4'-DDD	0.020	U		0.020	U		0.020	U				
4,4'-DDE	0.020	U		0.020	U		0.020	U				
4,4'-DDT	0.020	U		0.020	U		0.020	U				
ALDRIN	0.010	U		0.010	U		0.010	U				
ALPHA-BHC	0.010	U		0.010	U		0.010	U				
ALPHA-CHLORDANE	0.010	U		0.010	U		0.010	U				
AROCLOR-1016	0.20	U		0.20	U		0.20	U				
AROCLOR-1221	0.40	U		0.40	U		0.40	U				
AROCLOR-1232	0.20	U		0.20	U		0.20	U				
AROCLOR-1242	0.20	U		0.20	U		0.20	U				
AROCLOR-1248	0.20	U		0.20	U		0.20	U				
AROCLOR-1254	0.20	U		0.20	U		0.20	U				
AROCLOR-1260	0.20	U		0.20	U		0.20	U				
BETA-BHC	0.010	U		0.010	U		0.010	U				
DELTA-BHC	0.010	U		0.010	U		0.010	U				
DIELDRIN	0.020	U		0.020	U		0.020	U				
ENDOSULFAN I	0.010	U		0.010	U		0.010	U				
ENDOSULFAN II	0.020	U		0.020	U		0.020	U				
ENDOSULFAN SULFATE	0.020	U		0.020	U		0.020	U				
ENDRIN	0.020	U		0.020	U		0.020	U				
ENDRIN ALDEHYDE	0.020	U		0.020	U		0.020	U				
ENDRIN KETONE	0.020	U		0.020	U		0.020	U				
GAMMA-BHC (LINDANE)	0.010	U		0.010	U		0.010	U				
GAMMA-CHLORDANE	0.010	U		0.010	U		0.010	U				
HEPTACHLOR	0.010	U		0.010	U		0.010	U				
HEPTACHLOR EPOXIDE	0.010	U		0.010	U		0.010	U				
METHOXYCHLOR	0.10	U		0.10	U		0.10	U				
TOXAPHENE	1.0	U		1.0	U		1.0	U				

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **MARK MENGEL** **DATE: JULY 13, 2000**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION: VOA/PEST/PCB**
CTO 203, NEW LONDON
SDG E67040

SAMPLES: 16/Aqueous/

2LGW20S-03	2WGW21S-03	2WGW38DS-03
2WGW40DS-03	2WGW41DS-03	2WGW43DS-03
2WGW44DS-03	2WGW45DS-03	2WGW46DS-03
3GW12D-03	3GW12S-03	3GW37S-03
4GW01S-03	GWFD-040700-01	GWFD-040700-02
TB-040700		

Overview

The sample set for the CTO 203, New London, SDG E67040 consists of fifteen (15) aqueous environmental samples and one (1) trip blank (TB). All samples were analyzed for volatile organic compounds. The environmental samples were also analyzed for pesticides/PCBs. Two field duplicate pairs were included in the SDG: GWFD-040700-01 and 3GW12D-03; and GWFD-040700-02 and 3GW12S-03.

The samples were collected by TetraTech NUS on April 7-9, 2000 and were analyzed by Accutest. Analyses were conducted using CLP SOW OLC02.1 analytical and reporting protocols.

The data were evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- * GC/MS Tuning
- Calibration
- Blanks
- Surrogate Spike Recoveries
- * Field Duplicate Precision
- * Internal Standards Performance
- * Instrument Performance
- * Compound Identification
- * Compound Quantitation
- * Detection Limits

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains Region I worksheets, and Appendix D contains the documentation to support the findings as discussed in this data validation report.

CALIBRATIONS

The following tables summarize calibration noncompliances and corresponding actions:

Compound	IC 04/14/00
Bromoform	X

Associated Samples: 3GW12S-03

Calibration Actions:
X - %RSD > 30%; Estimate (J) positive.

BLANKS

The maximum concentration of contaminants found in associated laboratory method blank and/or field quality control blank analyses (designated *) are summarized below:

Compound	Maximum Concentration	Blank Action Level
Methylene chloride*	1 µg/L	10 µg/L
Chloroform*	1 µg/L	5 µg/L

Samples Affected: All

Blank Actions:

- Value < Contract Required Quantitation Limit (CRQL); report CRQL followed by a U.
- Value > CRQL and < action level; report value followed by a U.
- Value > CRQL and > action level; report value unqualified.

Dilution factors and sample aliquots used for analysis were taken into consideration prior to the application of all action levels. Positive results for chloroform and methylene chloride below the blank action level were qualified as nondetected, U. Field blank results were not qualified based on contamination in laboratory method blanks.

SURROGATE RECOVERY

Recovery of tetrachloro-m-xylene exceeded the upper quality control limit on one analytical column in sample 2WGW45DS-03. No qualifiers were assigned on this basis since only one surrogate was noncompliant.

Recovery of decachlorobiphenyl exceeded the upper quality control limit on one analytical column in sample 2WGW21S-03. No qualifiers were assigned on this basis since only one surrogate was noncompliant.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike and/or matrix spike recoveries of Endrin exceeded the upper quality control limit. The compound was not detected in the unspiked sample. No qualifiers were assigned on this basis.

COMPOUND QUANTITATION

The percent difference between columns exceeded the 25% quality control limit for 4,4'-DDE in sample 2WGW21S-03. The positive result was qualified as estimated, J.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the CRQL were qualified as estimated, (J).

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

OVERALL ASSESSMENT

Laboratory Performance: Methylene chloride and chloroform were detected in the field quality control blank analyses.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (12/96).

"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)."

TetraTech NUS

Linda Karsonovich
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 - Regional Worksheets
4. Appendix D - Support Documentation

TABLE I
FIELD DUPLICATES

COMPOUND	GWFD-040700-01	3GW12D-03	%RPD
Volatile			
	ND	ND	
Pest/PCB			
	ND	ND	

COMPOUND	GWFD-040700-02	3GW12D-03	%RPD
Volatile			
	ND	ND	
Pest/PCB			
	ND	ND	

ND – Not Detected

NEW LONDON NSB

SDG E67040

TABLE II. Summary of Tentatively Identified Volatile Compounds

TIC	2WGW40DS-03	2WGW41DS-03	2WGW43DS-03
Unknown	X	X	X
Methanethiol	X	X	
Camphor			X

TIC	2WGW45DS-03	2WGW46DS-03
Unknown	X	X

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD 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 - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
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)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	2LGW20S-03			2WGW21S-03			2WGW38DS-03			2WGW40DS-03		
SAMPLE DATE:	04/08/00			04/08/00			04/07/00			04/07/00		
LABORATORY ID:	E67040-11			E67040-12			E67040-14			E67040-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE	1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1-DICHLOROETHENE	1	J	P	1	U		1	U		1	U	
1,2-DIBROMO-3-CHLOROPROPANE	1	U		1	U		1	U		1	U	
1,2-DIBROMOETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
1,2-DICHLOROETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROPROPANE	1	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
1,4-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
2-BUTANONE	5	U		5	U		5	U		5	U	
2-HEXANONE	5	U		5	U		5	U		5	U	
4-METHYL-2-PENTANONE	5	U		5	U		5	U		5	U	
ACETONE	5	U		5	U		5	U		5	U	
BENZENE	1	U		1	U		1	U		1	U	
BROMOCHLOROMETHANE	1	U		1	U		1	U		1	U	
BROMODICHLOROMETHANE	1	U		1	U		1	U		1	U	
BROMOFORM	1	U		1	U		1	U		1	U	
BROMOMETHANE	1	U		1	U		1	U		1	U	
CARBON DISULFIDE	1	U		1	U		1	U		1	U	
CARBON TETRACHLORIDE	1	U		1	U		1	U		1	U	
CHLOROBENZENE	1	U		1	U		1	U		1	U	
CHLOROETHANE	1	U		1	U		1	U		1	U	
CHLOROFORM	1	U	B	1	U	B	1	U	B	2	U	B
CHLOROMETHANE	1	U		1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE	1	U		1	U		1	U		1	U	
CIS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
DIBROMOCHLOROMETHANE	1	U		1	U		1	U		1	U	
ETHYLBENZENE	1	U		1	U		1	U		1	U	
METHYLENE CHLORIDE	2	U		2	U		2	U		2	U	
STYRENE	1	U		1	U		1	U		1	U	
TETRACHLOROETHENE	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	2LGW20S-03			2WGW21S-03			2WGW38DS-03			2WGW40DS-03		
SAMPLE DATE:	04/08/00			04/08/00			04/07/00			04/07/00		
LABORATORY ID:	E67040-11			E67040-12			E67040-14			E67040-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
TOLUENE	1	U		1	U		1	U		1	U	
TRANS-1,2-DICHLOROETHENE	1	U		1	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
TRICHLOROETHENE	1	U		1	U		1	U		1	U	
VINYL CHLORIDE	1	U		1	U		1	U		1	U	
XYLENES, TOTAL	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	2WGW41DS-03			2WGW43DS-03			2WGW44DS-03			2WGW45DS-03		
SAMPLE DATE:	04/07/00			04/08/00			04/09/00			04/08/00		
LABORATORY ID:	E67040-7			E67040-10			E67040-16			E67040-9		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE	1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1-DICHLOROETHENE	1	U		1	U		1	U		1	U	
1,2-DIBROMO-3-CHLOROPROPANE	1	U		1	U		1	U		1	U	
1,2-DIBROMOETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
1,2-DICHLOROETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROPROPANE	1	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
1,4-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
2-BUTANONE	5	U		2	J	P	2	J	P	6		
2-HEXANONE	5	U		5	U		5	U		5	U	
4-METHYL-2-PENTANONE	5	U		5	U		5	U		5	U	
ACETONE	8			12			7			25		
BENZENE	1	U		1	U		1	U		1	U	
BROMOCHLOROMETHANE	1	U		1	U		1	U		1	U	
BROMODICHLOROMETHANE	1	U		1	U		1	U		1	U	
BROMOFORM	1	U		1	U		1	U		1	U	
BROMOMETHANE	1	U		1	U		1	U		1	U	
CARBON DISULFIDE	3			3			1	J	P	3		
CARBON TETRACHLORIDE	1	U		1	U		1	U		1	U	
CHLOROBENZENE	1	U		1	U		1	U		1	U	
CHLOROETHANE	1	U		1	U		1	U		1	U	
CHLOROFORM	1	U	B	2	U	B	1	U	B	3	U	B
CHLOROMETHANE	1	U		1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE	1	U		1	U		1	U		1	U	
CIS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
DIBROMOCHLOROMETHANE	1	U		1	U		1	U		1	U	
ETHYLBENZENE	1	U		1	U		1	U		1	U	
METHYLENE CHLORIDE	1	U	B	2	U		2	U		2	U	
STYRENE	1	U		1	U		1	U		1	U	
TETRACHLOROETHENE	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	2WGW41DS-03			2WGW43DS-03			2WGW44DS-03			2WGW45DS-03		
SAMPLE DATE:	04/07/00			04/08/00			04/09/00			04/08/00		
LABORATORY ID:	E67040-7			E67040-10			E67040-16			E67040-9		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
TOLUENE	1	U		0.2	J	P	0.2	J	P	1	U	
TRANS-1,2-DICHLOROETHENE	1	U		1	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
TRICHLOROETHENE	1	U		1	U		1	U		1	U	
VINYL CHLORIDE	1	U		1	U		1	U		1	U	
XYLENES, TOTAL	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	2WGW46DS-03			3GW12D-03			3GW12S-03			3GW37S-03		
SAMPLE DATE:	04/07/00			04/07/00			04/07/00			04/09/00		
LABORATORY ID:	E67040-8			E67040-3			E67040-4			E67040-17		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE	1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1-DICHLOROETHENE	1	U		1	U		1	U		1	U	
1,2-DIBROMO-3-CHLOROPROPANE	1	U		1	U		1	U		1	U	
1,2-DIBROMOETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
1,2-DICHLOROETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROPROPANE	1	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
1,4-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
2-BUTANONE	1	J	P	5	U		5	U		5	U	
2-HEXANONE	5	U		5	U		5	U		5	U	
4-METHYL-2-PENTANONE	5	U		5	U		5	U		5	U	
ACETONE	5	U		5	U		5	U		5	U	
BENZENE	1	U		1	U		1	U		1	U	
BROMOCHLOROMETHANE	1	U		1	U		1	U		1	U	
BROMODICHLOROMETHANE	1	U		1	U		1	U		1	U	
BROMOFORM	1	U		1	U		1	U		1	U	
BROMOMETHANE	1	U		1	U		1	U		1	U	
CARBON DISULFIDE	2			1	U		1	U		1	U	
CARBON TETRACHLORIDE	1	U		1	U		1	U		1	U	
CHLOROBENZENE	1	U		1	U		1	U		1	U	
CHLOROETHANE	1	U		1	U		1	U		1	U	
CHLOROFORM	1	U	B	1	U	B	1	U	B	3	U	B
CHLOROMETHANE	1	U		1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE	1	U		1	U		1	U		0.4	J	P
CIS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
DIBROMOCHLOROMETHANE	1	U		1	U		1	U		1	U	
ETHYLBENZENE	1	U		1	U		1	U		1	U	
METHYLENE CHLORIDE	2	U		2	U		1	U	B	2	U	
STYRENE	1	U		1	U		1	U		1	U	
TETRACHLOROETHENE	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	2WGW46DS-03			3GW12D-03			3GW12S-03			3GW37S-03		
SAMPLE DATE:	04/07/00			04/07/00			04/07/00			04/09/00		
LABORATORY ID:	E67040-8			E67040-3			E67040-4			E67040-17		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
TOLUENE	1	U		1	U		0.1	J	P	1	U	
TRANS-1,2-DICHLOROETHENE	1	U		1	U		1	U		0.2	J	P
TRANS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
TRICHLOROETHENE	1	U		1	U		1	U		2		
VINYL CHLORIDE	1	U		1	U		1	U		1	U	
XYLENES, TOTAL	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	4GW01S-03			GWFD040700-01			GWFD040700-02			TB-040700		
SAMPLE DATE:	04/08/00			04/07/00			04/07/00			04/07/00		
LABORATORY ID:	E67040-13			E67040-5			E67040-6			E67040-1		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:				3GW12D-03			3GW12S-03					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE	1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1-DICHLOROETHENE	1	U		1	U		1	U		1	U	
1,2-DIBROMO-3-CHLOROPROPANE	1	U		1	U		1	U		1	U	
1,2-DIBROMOETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
1,2-DICHLOROETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROPROPANE	1	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
1,4-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
2-BUTANONE	5	U		5	U		5	U		5	U	
2-HEXANONE	5	U		5	U		5	U		5	U	
4-METHYL-2-PENTANONE	5	U		5	U		5	U		5	U	
ACETONE	5	U		5	U		5	U		5	U	
BENZENE	1	U		1	U		1	U		1	U	
BROMOCHLOROMETHANE	1	U		1	U		1	U		1	U	
BROMODICHLOROMETHANE	1	U		1	U		1	U		1	U	
BROMOFORM	1	U		1	U		1	U		1	U	
BROMOMETHANE	1	U		1	U		1	U		1	U	
CARBON DISULFIDE	1	U		1	U		1	U		1	U	
CARBON TETRACHLORIDE	1	U		1	U		1	U		1	U	
CHLOROBENZENE	1	U		1	U		1	U		1	U	
CHLOROETHANE	1	U		1	U		1	U		1	U	
CHLOROFORM	3	U	B	1	U	B	1	U	B	1		
CHLOROMETHANE	1	U		1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE	1	U		1	U		1	U		1	U	
CIS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
DIBROMOCHLOROMETHANE	1	U		1	U		1	U		1	U	
ETHYLBENZENE	1	U		1	U		1	U		1	U	
METHYLENE CHLORIDE	2	U		2	U		2	U		1	J	P
STYRENE	1	U		1	U		1	U		1	U	
TETRACHLOROETHENE	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	4GW01S-03			GWFD040700-01			GWFD040700-02			TB-040700		
SAMPLE DATE:	04/08/00			04/07/00			04/07/00			04/07/00		
LABORATORY ID:	E67040-13			E67040-5			E67040-6			E67040-1		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:				3GW12D-03			3GW12S-03					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
TOLUENE	1	U		1	U		1	U		1	U	
TRANS-1,2-DICHLOROETHENE	1	U		1	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
TRICHLOROETHENE	1	U		1	U		1	U		1	U	
VINYL CHLORIDE	1	U		1	U		1	U		1	U	
XYLENES, TOTAL	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	2LGW20S-03			2WGW21S-03			2WGW21S-03DL			2WGW38DS-03		
SAMPLE DATE:	04/08/00			04/08/00			04/08/00			04/09/00		
LABORATORY ID:	E67040-11			E67040-12			E67040-12			E67040-15		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
4,4'-DDD	0.02	U		52						0.02	U	
4,4'-DDE	0.02	U		0.048	J	U				0.02	U	
4,4'-DDT	0.02	U		0.02	U					0.02	U	
ALDRIN	0.01	U		0.01	U					0.01	U	
ALPHA-BHC	0.01	U		0.01	U					0.01	U	
ALPHA-CHLORDANE	0.01	U		0.01	U					0.01	U	
AROCLOR-1016	0.2	U		0.2	U					0.2	U	
AROCLOR-1221	0.4	U		0.4	U					0.4	U	
AROCLOR-1232	0.2	U		0.2	U					0.2	U	
AROCLOR-1242	0.2	U		0.2	U					0.2	U	
AROCLOR-1248	0.2	U		0.2	U					0.2	U	
AROCLOR-1254	0.2	U		0.2	U					0.2	U	
AROCLOR-1260	0.2	U		0.2	U					0.2	U	
BETA-BHC	0.01	U		0.01	U					0.01	U	
DELTA-BHC	0.01	U		0.01	U					0.01	U	
DIELDRIN	0.02	U		0.02	U					0.02	U	
ENDOSULFAN I	0.01	U		0.01	U					0.01	U	
ENDOSULFAN II	0.02	U		0.02	U					0.02	U	
ENDOSULFAN SULFATE	0.02	U		0.02	U					0.02	U	
ENDRIN	0.02	U		0.02	U					0.02	U	
ENDRIN ALDEHYDE	0.02	U		0.02	U					0.02	U	
ENDRIN KETONE	0.02	U		0.02	U					0.02	U	
GAMMA-BHC (LINDANE)	0.01	U		0.01	U					0.01	U	
GAMMA-CHLORDANE	0.01	U		0.01	U					0.01	U	
HEPTACHLOR	0.01	U		0.01	U					0.01	U	
HEPTACHLOR EPOXIDE	0.01	U		0.01	U					0.01	U	
METHOXYCHLOR	0.1	U		0.1	U					0.1	U	
TOXAPHENE	1	U		1	U					1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	2WGW40DS-03			2WGW41DS-03			2WGW43DS-03			2WGW44DS-03		
SAMPLE DATE:	04/07/00			04/07/00			04/08/00			04/09/00		
LABORATORY ID:	E67040-2			E67040-7			E67040-10			E67040-16		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
4,4'-DDD	0.02	U		0.02	U		0.02	U		0.02	U	
4,4'-DDE	0.02	U		0.02	U		0.02	U		0.02	U	
4,4'-DDT	0.02	U		0.02	U		0.02	U		0.02	U	
ALDRIN	0.01	U		0.01	U		0.01	U		0.01	U	
ALPHA-BHC	0.01	U		0.01	U		0.01	U		0.01	U	
ALPHA-CHLORDANE	0.01	U		0.01	U		0.01	U		0.01	U	
AROCLOR-1016	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1221	0.4	U		0.4	U		0.4	U		0.4	U	
AROCLOR-1232	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1242	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1248	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1254	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1260	0.2	U		0.2	U		0.2	U		0.2	U	
BETA-BHC	0.01	U		0.01	U		0.01	U		0.01	U	
DELTA-BHC	0.01	U		0.01	U		0.01	U		0.01	U	
DIELDRIN	0.02	U		0.02	U		0.02	U		0.02	U	
ENDOSULFAN I	0.01	U		0.01	U		0.01	U		0.01	U	
ENDOSULFAN II	0.02	U		0.02	U		0.02	U		0.02	U	
ENDOSULFAN SULFATE	0.02	U		0.02	U		0.02	U		0.02	U	
ENDRIN	0.02	U		0.02	U		0.02	U		0.02	U	
ENDRIN ALDEHYDE	0.02	U		0.02	U		0.02	U		0.02	U	
ENDRIN KETONE	0.02	U		0.02	U		0.02	U		0.02	U	
GAMMA-BHC (LINDANE)	0.01	U		0.01	U		0.01	U		0.01	U	
GAMMA-CHLORDANE	0.01	U		0.01	U		0.01	U		0.01	U	
HEPTACHLOR	0.01	U		0.01	U		0.01	U		0.01	U	
HEPTACHLOR EPOXIDE	0.01	U		0.01	U		0.01	U		0.01	U	
METHOXYCHLOR	0.1	U		0.1	U		0.1	U		0.1	U	
TOXAPHENE	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	2WGW45DS-03			2WGW46DS-03			3GW12D-03			3GW12S-03		
SAMPLE DATE:	04/08/00			04/07/00			04/07/00			04/07/00		
LABORATORY ID:	E67040-9			E67040-8			E67040-3			E67040-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
4,4'-DDD	0.02	U		0.02	U		0.02	U		0.02	U	
4,4'-DDE	0.02	U		0.02	U		0.02	U		0.02	U	
4,4'-DDT	0.02	U		0.02	U		0.02	U		0.02	U	
ALDRIN	0.01	U		0.01	U		0.01	U		0.01	U	
ALPHA-BHC	0.01	U		0.01	U		0.01	U		0.01	U	
ALPHA-CHLORDANE	0.01	U		0.01	U		0.01	U		0.01	U	
AROCLOR-1016	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1221	0.4	U		0.4	U		0.4	U		0.4	U	
AROCLOR-1232	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1242	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1248	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1254	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1260	0.2	U		0.2	U		0.2	U		0.2	U	
BETA-BHC	0.01	U		0.01	U		0.01	U		0.01	U	
DELTA-BHC	0.01	U		0.01	U		0.01	U		0.01	U	
DIELDRIN	0.02	U		0.02	U		0.02	U		0.02	U	
ENDOSULFAN I	0.01	U		0.01	U		0.01	U		0.01	U	
ENDOSULFAN II	0.02	U		0.02	U		0.02	U		0.02	U	
ENDOSULFAN SULFATE	0.02	U		0.02	U		0.02	U		0.02	U	
ENDRIN	0.02	U		0.02	U		0.02	U		0.02	U	
ENDRIN ALDEHYDE	0.02	U		0.02	U		0.02	U		0.02	U	
ENDRIN KETONE	0.02	U		0.02	U		0.02	U		0.02	U	
GAMMA-BHC (LINDANE)	0.01	U		0.01	U		0.01	U		0.01	U	
GAMMA-CHLORDANE	0.01	U		0.01	U		0.01	U		0.01	U	
HEPTACHLOR	0.01	U		0.01	U		0.01	U		0.01	U	
HEPTACHLOR EPOXIDE	0.01	U		0.01	U		0.01	U		0.01	U	
METHOXYCHLOR	0.1	U		0.1	U		0.1	U		0.1	U	
TOXAPHENE	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	3GW37S-03			4GW01S-03			GWFD040700-01			GWFD040700-02		
SAMPLE DATE:	04/09/00			04/08/00			04/07/00			04/07/00		
LABORATORY ID:	E67040-17			E67040-13			E67040-5			E67040-6		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:							3GW12D-03			3GW12S-03		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
4,4'-DDD	0.02	U		0.02	U		0.02	U		0.02	U	
4,4'-DDE	0.02	U		0.02	U		0.02	U		0.02	U	
4,4'-DDT	0.02	U		0.02	U		0.02	U		0.02	U	
ALDRIN	0.01	U		0.01	U		0.01	U		0.01	U	
ALPHA-BHC	0.01	U		0.01	U		0.01	U		0.01	U	
ALPHA-CHLORDANE	0.01	U		0.01	U		0.01	U		0.01	U	
AROCLOR-1016	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1221	0.4	U		0.4	U		0.4	U		0.4	U	
AROCLOR-1232	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1242	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1248	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1254	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1260	0.2	U		0.2	U		0.2	U		0.2	U	
BETA-BHC	0.01	U		0.01	U		0.01	U		0.01	U	
DELTA-BHC	0.01	U		0.01	U		0.01	U		0.01	U	
DIELDRIN	0.02	U		0.02	U		0.02	U		0.02	U	
ENDOSULFAN I	0.01	U		0.01	U		0.01	U		0.01	U	
ENDOSULFAN II	0.02	U		0.02	U		0.02	U		0.02	U	
ENDOSULFAN SULFATE	0.02	U		0.02	U		0.02	U		0.02	U	
ENDRIN	0.02	U		0.02	U		0.02	U		0.02	U	
ENDRIN ALDEHYDE	0.02	U		0.02	U		0.02	U		0.02	U	
ENDRIN KETONE	0.02	U		0.02	U		0.02	U		0.02	U	
GAMMA-BHC (LINDANE)	0.01	U		0.01	U		0.01	U		0.01	U	
GAMMA-CHLORDANE	0.01	U		0.01	U		0.01	U		0.01	U	
HEPTACHLOR	0.01	U		0.01	U		0.01	U		0.01	U	
HEPTACHLOR EPOXIDE	0.01	U		0.01	U		0.01	U		0.01	U	
METHOXYCHLOR	0.1	U		0.1	U		0.1	U		0.1	U	
TOXAPHENE	1	U		1	U		1	U		1	U	

Tetra Tech NUS INTERNAL CORRESPONDENCE

TO:	**M. MENGEL**	**DATE:**	**JULY 13, 2000**
FROM:	**JENNIFER MALLE**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION-TAL METALS**
CTO 267 –NSB NEW LONDON
SDG – E67040

SAMPLES: 30/Aqueous/

2LGW20S-03	2LGW20S-03-F	2WGW21S-03
2WGW21S-03-F	2WGW38DS-03	2WGW38DS-03-F
2WGW40DS-03	2WGW40DS-03-F	2WGW41DS-03
2WGW41DS-03-F	2WGW43DS-03	2WGW43DS-03-F
2WGW44DS-03	2WGW44DS-03-F	2WGW45DS-03
2WGW45DS-03-F	2WGW46DS-03	2WGW46DS-03-F
3GW12D-03	3GW12D-03-F	3GW12S-03
3GW12S-03-F	3GW37S-03	3GW37S-03-F
4GW01S-03	4GW01S-03-F	GWFD040700-01
GWFD040700-01-F	GWFD040700-02	GWFD040700-02-F

Overview

The sample set for CTO 203, NSB, New London, SDG E67040 consists of thirty (30) aqueous environmental samples. The field duplicate pairs 3GW12D-03/GWFD040700-01, 3GW12D-03-F/GWFD040700-01-F, 3GW12S-03/GWFD040700-02 and 3GW12S-03-F/GWFD0040700-02-F were included within this SDG.

All samples, with the exception of those designated with an "F", were analyzed for Target Analyte List (TAL) metals, alkalinity, chemical oxygen demand (COD), chloride, hardness, sulfate, total dissolved solids and total organic carbon (TOC). Samples designated with an "F", were analyzed for filtered TAL metals only. The samples were collected by Tetra Tech NUS on April 7-9, 2000 and analyzed by Accutest Laboratories in accordance with Naval Facilities Engineering Service Center (NFESC) Navy Installation Restoration Chemical Data Quality Manual, (September 1999). All metals were analyzed using CLP analytical method ILM04.0. Alkalinity analyses were conducted using EPA method 310.1 and COD analyses were conducted using EPA method 410.1. Analyses for the anions chloride and sulfate were conducted using EPA method 600.0. Hardness analyses were conducted using EPA method 200.7. Total dissolved solids analyses were conducted using EPA method 160.1 and TOC analyses were conducted using EPA method 415.1.

The data was evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- Calibration Verification
- Laboratory Blank Analysis
- ICP Interference Analysis
- * Matrix Spike Recoveries
- * Laboratory Duplicates

* • Laboratory Control Sample Recoveries
* • ICP Serial Dilution Percent Difference
* • Field Duplicate Precision
* • Sample Quanitation
* • Detection Limits

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

Calibration Recoveries

Several Contract Required Detection Limit (CRDL) Percent Recoveries (%Rs) reported for lead were less than the 80% quality control limit. The positive results reported for lead less than 3x the CRDL value were qualified as estimated, "J".

Several Contract Required Detection Limit (CRDL) Percent Recoveries (%Rs) reported for selenium were greater than the 120% quality control limit. The positive results reported for selenium less than 3x the CRDL value were qualified as estimated, "J".

Laboratory Blank Analyses

The following contaminants were detected in the laboratory method / preparation blanks at the following maximum concentrations:

Affected samples : All

Analyte	Maximum Concentration	Action Level (aqueous)
Antimony	3.3 ug/L	16.5 ug/L
Arsenic	3.5 ug/L	17.5 ug/L
Beryllium	0.8 ug/L	4.0 ug/L
Cadmium	1.2 ug/L	6.0 ug/L
Calcium	65.4 ug/L	327 ug/L
Cobalt	2.2 ug/L	11.0 ug/L
Copper	1.6 ug/L	8.0 ug/L
Magnesium	57.6 ug/L	288 ug/L
Manganese	0.6 ug/L	3.0 ug/L
Nickel	3.3 ug/L	16.5 ug/L
Potassium	142.3 ug/L	711.5 ug/L
Sodium	421.9 ug/L	2109.5 ug/L
Thallium	5.8 ug/L	29 ug/L
Vanadium	1.2 ug/L	6.0 ug/L
Zinc [1]	1.5 ug/L	7.5 ug/L

[1] Maximum concentration present in an aqueous preparation blank

An action level of 5X the maximum concentration was used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken into consideration in evaluation for blank contamination. Positive results less than the action level for antimony, arsenic, cadmium, cobalt, copper, nickel, thallium, vanadium and zinc were qualified as nondetect, "U", due to laboratory blank contamination. No validation action was required for the remaining analytes as all of the results reported were either greater than the blank action level or previously qualified as nondetected by the laboratory.

ICP Interference Check Sample Results

The interfering analyte magnesium was present in sample 2WGW21S-03 at a concentration which was comparable to the level of magnesium in the Interference Check Sample (ICS) solution. Several analytes namely antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, potassium, selenium, silver, sodium, thallium, vanadium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for antimony, barium, beryllium, chromium and selenium in the affected sample. The nondetected results reported for antimony and beryllium were qualified as estimated, "UJ". The positive results reported for barium, chromium and selenium were qualified as estimated, "J".

The interfering analyte magnesium was present in sample 2WGW21S-03-F at a concentration which was comparable to the level of magnesium in the Interference Check Sample (ICS) solution. Several analytes namely antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, potassium, selenium, silver, sodium, thallium, vanadium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for antimony, barium, beryllium, chromium, lead, selenium and vanadium in the affected sample. The nondetected results reported for antimony and beryllium were qualified as estimated, "UJ". The positive results reported for barium, chromium, lead, selenium and vanadium were qualified as estimated, "J".

The interfering analyte magnesium was present in sample 2WGW40DS-03 at a concentration which was comparable to the level of magnesium in the Interference Check Sample (ICS) solution. Several analytes namely antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, potassium, selenium, silver, sodium, thallium, vanadium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for antimony, barium, beryllium, chromium and selenium in the affected sample. The nondetected results reported for antimony and beryllium were qualified as estimated, "UJ". The positive results reported for barium, chromium and selenium were qualified as estimated, "J".

The interfering analyte magnesium was present in sample 2WGW40DS-03-F at a concentration which was comparable to the level of magnesium in the Interference Check Sample (ICS) solution. Several analytes namely antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, potassium, selenium, silver, sodium, thallium, vanadium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for antimony, arsenic, barium, beryllium, chromium, selenium and zinc in the affected sample. The nondetected results reported for antimony and beryllium were qualified as estimated, "UJ". The positive results reported for arsenic, barium, chromium, selenium and zinc were qualified as estimated, "J".

The interfering analyte magnesium was present in sample 2WGW41DS-03 at a concentration which was comparable to the level of magnesium in the Interference Check Sample (ICS) solution. Several analytes namely antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, potassium, selenium, silver, sodium, thallium, vanadium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for antimony, arsenic, barium, beryllium, selenium, vanadium and zinc in the affected sample. The nondetected results reported for antimony and beryllium were qualified as estimated, "UJ". The positive results reported for arsenic, barium, selenium, vanadium and zinc were qualified as estimated, "J".

The interfering analytes calcium and magnesium were present in sample 2WGW41DS-03-F at concentrations which were comparable to the levels of calcium and magnesium in the Interference Check Sample (ICS) solution. Several analytes namely antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, potassium, selenium, silver, sodium, thallium, vanadium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for antimony, arsenic, barium, beryllium, chromium, coppper, lead, selenium, vanadium and zinc in the affected sample. The nondetected results reported for antimony and beryllium were qualified as estimated, "UJ". The positive results reported for arsenic, barium, chromium, copper, lead, selenium, vanadium and zinc were qualified as estimated, "J".

The interfering analytes calcium and magnesium were present in sample 2WGW43DS-03 at concentrations which were comparable to the levels of calcium and magnesium in the Interference Check Sample (ICS) solution. Several analytes namely antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, potassium, selenium, silver, sodium, thallium, vanadium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for barium, beryllium, chromium, selenium, silver, and zinc in the affected sample. The nondetected result reported for beryllium was qualified as estimated, "UJ". The positive results reported for barium, chromium, selenium, silver and zinc were qualified as estimated, "J".

The interfering analytes calcium and magnesium were present in sample 2WGW43DS-03-F at concentrations which were comparable to the levels of calcium and magnesium in the Interference Check Sample (ICS) solution. Several analytes namely antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, potassium, selenium, silver, sodium, thallium, vanadium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for antimony, beryllium, chromium, copper, selenium, vanadium and zinc in the affected sample. The nondetected results reported for antimony and beryllium were qualified as estimated, "UJ". The positive results reported for chromium, copper, selenium, vanadium and zinc were qualified as estimated, "J".

The interfering analytes calcium and magnesium were present in sample 2WGW46DS-03 at concentrations which were comparable to the levels of calcium and magnesium in the Interference Check Sample (ICS) solution. Several analytes namely antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, potassium, selenium, silver, sodium, thallium, vanadium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for antimony, arsenic, barium, beryllium, chromium, selenium, silver and vanadium in the affected sample. The nondetected results reported for antimony and beryllium were qualified as estimated, "UJ". The positive results reported for arsenic, barium, chromium, selenium, silver and vanadium were qualified as estimated, "J".

The interfering analytes calcium and magnesium were present in sample 2WGW46DS-03-F at concentrations which were comparable to the levels of calcium and magnesium in the Interference Check Sample (ICS) solution. Several analytes namely antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, potassium, selenium, silver, sodium, thallium, vanadium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for antimony, barium, beryllium, chromium and zinc in the affected sample. The nondetected results reported for antimony and beryllium were qualified as estimated, "UJ". The positive results reported for barium, chromium and zinc were qualified as estimated, "J".

Other Factors Affecting Data Quality

The result reported for lead in sample 2WGW21S-03-F was less than two times the Instrument Detection Limit (IDL) and therefore should be considered as an estimated value. The positive result reported for lead in the affected sample was qualified as estimated, "J".

The results reported for selenium in samples 2WGW40DS-03-F, 2WGW43DS-03-F, 2WGW21S-03, 2WGW38DS-03, 2WGW38DS-03, 2WGW40DS-03, 2WGW44DS-03, 2WGW46DS-03, 3GW37S-03 and GWFD040700-01 were less than two times the Instrument Detection Limit (IDL) and therefore should be considered as an estimated value. The positive results reported for selenium in the affected samples were qualified as estimated, "J".

The result reported for aluminum in sample 2WGW21S-03 was less than two times the Instrument Detection Limit (IDL) and therefore should be considered as an estimated value. The positive result reported for aluminum in the affected sample was qualified as estimated, "J".

The result reported for silver in sample 2WGW46DS-03 was less than two times the Instrument Detection Limit (IDL) and therefore should be considered as an estimated value. The positive result reported for silver in the affected sample was qualified as estimated, "J".

The results reported for chromium in samples 3GW12D-03, 3GW12S-03, GWFD040700-01 and GWFD0040700-02 were less than two times the Instrument Detection Limit (IDL) and therefore should be considered as an estimated value. The positive results reported for chromium in the affected samples were qualified as estimated, "J".

Notes

The sample listed on the Chain of Custody (COC) as 2GW01S-03 was changed to 4GW01S-03 due to a field identification error. Therefore, the COC is incorrect. Changes were made to the Form I by the data reviewer.

A continuing calibration verification (CCV) for calcium and potassium was greater than the 110% quality control limits. However, validation action was not required as the noncompliant CCV did not bracket any samples from this SDG.

The metals in this SDG package were analyzed on two different instruments. Therefore, blank action levels were determined from the maximum blank concentrations taken from both instruments.

The reporting limits for sulfate on the Electronic Deliverable Data (EDD) were not correct. However, the correct reporting limits were listed on the Form I's and the EDD was altered to reflect the Form I reporting limits.

It should be noted that two samples identified similarly as 2GW38DS-03 were taken from the same location on different days. Results reported for COD, hardness, and TOC were sampled on April 7, 2000 while the results reported for alkalinity, chloride, sulfate and total dissolved solids were sampled on April 9, 2000. The sample was distinguised on the COC by the sample date.

Executive Summary

Laboratory Performance: Several laboratory contaminants were present in the laboratory/preparation blanks. Lead and selenium were qualified for calibration noncompliances.

Other Factors Affecting Data Quality: The interfering analytes calcium and/or magnesium were present in several samples contained in this SDG. Aluminum, chromium, lead, selenium and silver were less than 2x the IDL in several samples.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", "EPA Region I Inorganic Data Validation Functional Guidelines", December 1996 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
Jennifer Malle
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 - Region I Worksheets
4. Appendix D - Support Documentation

APPENDIX A

Qualified Analytical Results

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	2LGW20S-03			2LGW20S-03-F			2WGW21S-03			2WGW21S-03-F		
SAMPLE DATE:	04/08/00			04/08/00			04/08/00			04/08/00		
LABORATORY ID:	E67040-11			E67040-27			E67040-12			E67040-28		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	66.6	U		98.7	U		74.9	J	P	98.7	U	
ANTIMONY	2.5	U		2.5	U		2.5	UJ	K	2.5	UJ	K
ARSENIC	3.5	U		2.3	U		4.2	U	A	2.7	U	A
BARIUM	49.5			47.8			61.5	J	K	82.5	J	K
BERYLLIUM	0.30	U		0.10	U		0.30	UJ	K	0.10	UJ	K
CADMIUM	2.4	U	A	2.1	U	A	0.30	U		0.20	U	
CALCIUM	32700			30900			182000			247000		
CHROMIUM	0.70	U		0.80	U		6.2	J	K	5.2	J	K
COBALT	2.2	U	A	3.6	U	A	0.90	U	A	1.9	U	A
COPPER	3.1	U	A	2.2	U	A	1.5	U	A	3.0	U	A
IRON	680			559			12200			2480		
LEAD	1.8	U		2.1	U		1.8	U		3.4	J	CKP
MAGNESIUM	5140			4770			570000			784000		
MANGANESE	538			491			177			204		
MERCURY	0.17	U		0.17	U		0.17	U		0.17	U	
NICKEL	5.9	U	A	6.6	U	A	1.2	U		3.4	U	A
POTASSIUM	4040			3830			250000			300000		
SELENIUM	3.8	U		4.1	U		4.8	J	CKP	5.3	J	CKP
SILVER	0.50	U		0.90	U		0.50	U		0.90	U	
SODIUM	40200			41900			4460000			5500000		
THALLIUM	3.7	U		4.6	U		3.7	U		4.6	U	A
VANADIUM	1.2	U	A	1.6	U	A	5.9	U	A	6.9	J	K
ZINC	84.6			80.4			1.3	U	A	7.4	U	A

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	2WGW38DS-03			2WGW38DS-03-F			2WGW40DS-03			2WGW40DS-03-F		
SAMPLE DATE:	04/07/00			04/07/00			04/07/00			04/07/00		
LABORATORY ID:	E67040-14			E67040-30			E67040-2			E67040-18		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	201			98.7	U		645			98.7	U	
ANTIMONY	2.5	U		3.6	U	A	2.5	UJ	K	2.5	UJ	K
ARSENIC	6.0	U	A	4.0	U	A	10.3	U	A	17.9	J	K
BARIUM	18.9			19.0			86.5	J	K	129	J	K
BERYLLIUM	0.30	U		0.10	U		0.30	UJ	K	0.10	UJ	K
CADMIUM	0.30	U		0.20	U		0.30	U		0.20	U	
CALCIUM	54400			54900			195000			235000		
CHROMIUM	2.8			1.7			3.8	J	K	2.4	J	K
COBALT	0.87	U	A	1.2	U	A	0.79	U	A	1.6	U	A
COPPER	4.6	U	A	5.2	U	A	2.3	U	A	1.6	U	A
IRON	534			52.2	U		14700			2270		
LEAD	1.8	U		2.1	U		1.8	U		2.1	U	
MAGNESIUM	23800			23100			622000			758000		
MANGANESE	304			101			762			834		
MERCURY	0.17	U		0.17	U		0.17	U		0.17	U	
NICKEL	3.1	U	A	6.0	U	A	2.4	U	A	3.8	U	A
POTASSIUM	18300			18300			289000			331000		
SELENIUM	7.0	J	CP	4.1	U		4.6	J	CKP	6.9	J	CKP
SILVER	0.50	U		0.90	U		0.50	U		0.90	U	
SODIUM	204000			203000			4700000			5660000		
THALLIUM	3.7	U		4.6	U		3.7	U		4.6	U	
VANADIUM	11.2			17.6			4.6	U	A	3.9	U	A
ZINC	19.2			24.7			5.8	U	A	11.8	J	K

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	2WGW41DS-03			2WGW41DS-03-F			2WGW43DS-03			2WGW43DS-03-F		
SAMPLE DATE:	04/07/00			04/07/00			04/08/00			04/08/00		
LABORATORY ID:	E67040-7			E67040-23			E67040-10			E67040-26		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	438			98.7	U		233			98.7	U	
ANTIMONY	2.5	UJ	K	2.5	UJ	K	16.0	U	A	5.0	UJ	K
ARSENIC	18.4	J	K	29.0	J	K	16.8	U	A	13.4	U	A
BARIUM	56.8	J	K	111	J	K	95.9	J	K	209		
BERYLLIUM	0.30	UJ	K	0.10	UJ	K	0.30	UJ	K	0.10	UJ	K
CADMIUM	0.30	U		0.20	U		1.6	U	A	0.20	U	
CALCIUM	166000			271000			278000			348000		
CHROMIUM	12.2			9.7	J	K	8.2	J	K	9.9	J	K
COBALT	2.1	U	A	3.0	U	A	5.9	U	A	1.7	U	A
COPPER	2.5	U	A	8.3	J	K	6.2	U	A	11.2	J	K
IRON	23500			465			2480			248		
LEAD	1.8	U		2.6	J	CK	1.8	U		4.2	U	
MAGNESIUM	498000			844000			863000			1090000		
MANGANESE	891			1020			1140			1120		
MERCURY	0.17	U		0.17	U		0.17	U		0.17	U	
NICKEL	11.8	U	A	7.0	U	A	8.1	U	A	3.8	U	A
POTASSIUM	221000			384000			345000			443000		
SELENIUM	8.0	J	K	8.4	J	CK	7.8	J	CK	10.6	J	CKP
SILVER	0.50	U		0.90	U		8.7	J	K	0.90	U	
SODIUM	3660000			6250000			6030000			7270000		
THALLIUM	3.7	U		4.6	U		5.1	U	A	9.2	U	
VANADIUM	7.0	J	K	8.0	J	K	5.4	U	A	7.9	J	K
ZINC	12.2	J	K	7.9	J	K	10.8	J	K	8.9	J	K

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	2WGW44DS-03			2WGW44DS-03-F			2WGW45DS-03			2WGW45DS-03-F		
SAMPLE DATE:	04/09/00			04/09/00			04/08/00			04/08/00		
LABORATORY ID:	E67040-16			E67040-31			E67040-9			E67040-25		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	359			98.7	U		179			98.7	U	
ANTIMONY	2.5	U		2.5	U		2.5	U		4.8	U	A
ARSENIC	3.5	U		2.3	U		11.0	U	A	9.6	U	A
BARIUM	46.4			38.1			18.2			18.8		
BERYLLIUM	0.30	U		0.10	U		0.30	U		0.10	U	
CADMIUM	0.30	U		0.31	U	A	0.30	U		0.86	U	A
CALCIUM	84200			87600			55300			56100		
CHROMIUM	1.9			0.80	U		3.5			1.8		
COBALT	0.60	U		1.5	U	A	0.60	U		1.6	U	A
COPPER	1.3	U	A	1.0	U		0.80	U		1.0	U	
IRON	23900			18400			45700			40900		
LEAD	1.8	U		2.1	U		1.8	U		2.1	U	
MAGNESIUM	81600			83100			118000			122000		
MANGANESE	992			1000			629			611		
MERCURY	0.17	U		0.17	U		0.17	U		0.17	U	
NICKEL	1.2	U		3.3	U	A	2.4	U	A	4.0	U	A
POTASSIUM	44900			42600			62500			64400		
SELENIUM	6.6	J	CP	4.1	U		3.8	U		4.1	U	
SILVER	0.50	U		0.90	U		0.50	U		0.90	U	
SODIUM	704000			653000			1010000			1000000		
THALLIUM	3.7	U		4.6	U		3.7	U		4.6	U	
VANADIUM	2.1	U	A	1.2	U	A	4.2	U	A	4.5	U	A
ZINC	13.4			9.6			9.1			17.9		

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	2WGW46DS-03			2WGW46DS-03-F			3GW12D-03			3GW12D-03-F		
SAMPLE DATE:	04/07/00			04/07/00			04/07/00			04/07/00		
LABORATORY ID:	E67040-8			E67040-24			E67040-3			E67040-19		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	3020			98.7	U		66.6	U		98.7	U	
ANTIMONY	5.0	UJ	K	5.0	UJ	K	2.5	U		2.5	U	
ARSENIC	24.4	J	K	31.6	U	A	3.5	U		2.3	U	
BARIUM	123	J	K	131	J	K	66.1			59.5		
BERYLLIUM	0.30	UJ	K	0.10	UJ	K	0.30	U		0.10	U	
CADMIUM	0.30	U	A	0.20	U		0.46	U	A	0.81	U	A
CALCIUM	316000			339000			76800			76100		
CHROMIUM	17.0	J	K	6.5	J	K	1.1	J	P	0.80	U	
COBALT	2.6	U	A	1.8	U	A	3.3	U	A	3.8	U	A
COPPER	6.4	U	A	4.0	U	A	3.7	U	A	1.0	U	
IRON	9490			270			69000			63000		
LEAD	3.6	U		4.2	U		1.8	U		2.1	U	
MAGNESIUM	969000			1090000			55200			53600		
MANGANESE	535			333			7240			7150		
MERCURY	0.17	U		0.17	U		0.17	U		0.17	U	
NICKEL	6.7	U	A	3.9	U	A	3.2	U	A	3.6	U	A
POTASSIUM	433000			451000			20000			18800		
SELENIUM	4.3	J	CKP	8.2	U		3.8	U		4.1	U	
SILVER	0.80	J	KP	0.90	U		0.50	U		0.90	U	
SODIUM	7330000			7490000			495000			474000		
THALLIUM	3.7	U		9.2	U		3.7	U		4.6	U	
VANADIUM	11.9	J	K	3.2	U	A	0.50	U		0.70	U	
ZINC	146			8.2	J	K	4.1	U	A	1.9	U	A

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	3GW12S-03			3GW12S-03-F			3GW37S-03			3GW37S-03-F		
SAMPLE DATE:	04/07/00			04/07/00			04/09/00			04/09/00		
LABORATORY ID:	E67040-4			E67040-20			E67040-17			E67040-32		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	66.6	U		98.7	U		66.6	U		98.7	U	
ANTIMONY	2.5	U		2.5	U		2.5	U		2.5	U	
ARSENIC	3.5	U		2.3	U		3.5	U	A	2.3	U	
BARIUM	63.3			58.2			72.3			70.4		
BERYLLIUM	0.30	U		0.10	U		0.30	U		0.10	U	
CADMIUM	0.31	U	A	0.28	U	A	0.30	U		0.29	U	A
CALCIUM	73400			71400			43400			43000		
CHROMIUM	1.1	J	D	0.80	U		0.70	U		0.80	U	
COBALT	17.5			18.5			8.3	U	A	9.1	U	A
COPPER	2.9	U	A	1.1	U	A	2.6	U	A	2.0	U	A
IRON	9700			8520			858			714		
LEAD	1.8	U		2.1	U		1.8	U		2.1	U	
MAGNESIUM	65400			62600			10700			10300		
MANGANESE	6930			6760			2150			2090		
MERCURY	0.17	U		0.17	U		0.17	U		0.17	U	
NICKEL	2.6	U	A	4.4	U	A	1.2	U		3.3	U	A
POTASSIUM	22100			20900			5490			5050		
SELENIUM	3.8	U		4.1	U		4.9	J	CP	4.1	U	
SILVER	0.50	U		0.90	U		0.50	U		0.90	U	
SODIUM	541000			513000			91600			90100		
THALLIUM	3.7	U		4.6	U		3.7	U		4.6	U	
VANADIUM	0.50	U		0.70	U		0.50	U		0.70	U	
ZINC	11.4			13.9			3.9	U	A	21.5		

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	4GW01S-03			4GW01S-03-F			GWFD040700-01			GWFD040700-01-F		
SAMPLE DATE:	04/08/00			04/08/00			04/07/00			04/07/00		
LABORATORY ID:	E67040-13			E67040-29			E67040-5			E67040-21		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:							3GW12D-03					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	66.6	U		98.7	U		66.6	U				
ANTIMONY	2.5	U		2.5	U		2.5	U				
ARSENIC	3.5	U		2.3	U		3.5	U				
BARIUM	67.9			66.3			65.3					
BERYLLIUM	0.30	U		0.10	U		0.30	U				
CADMIUM	0.30	U		0.26	U	A	0.54	U	A			
CALCIUM	28100			27500			77500					
CHROMIUM	0.70	U		0.80	U		1.3	J	P			
COBALT	0.60	U		1.2	U	A	3.2	U	A			
COPPER	0.80	U		1.0	U	A	3.7	U	A			
IRON	12.1	U		52.2	U		69700					
LEAD	1.8	U		2.1	U		1.8	U				
MAGNESIUM	4230			3970			55300					
MANGANESE	11.7			11.2			7240					
MERCURY	0.17	U		0.20			0.17	U				
NICKEL	1.4	U	A	3.5	U	A	3.3	U	A			
POTASSIUM	3360			3220			19700					
SELENIUM	3.8	U		4.1	U		4.5	J	CP			
SILVER	0.50	U		0.90	U		0.50	U				
SODIUM	39800			40800			498000					
THALLIUM	3.7	U		4.6	U		3.7	U				
VANADIUM	0.50	U		0.70	U		0.50	U				
ZINC	9.8			25.9			7.8					

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	GWFD040700-02			GWFD040700-02-F								
SAMPLE DATE:	04/07/00			04/07/00			/ /			/ /		
LABORATORY ID:	E67040-6			E67040-22								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:	3GW12S-03											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	66.6	U										
ANTIMONY	2.5	U										
ARSENIC	3.5	U										
BARIUM	61.1											
BERYLLIUM	0.30	U										
CADMIUM	0.30	U										
CALCIUM	70500											
CHROMIUM	1.0	J	P									
COBALT	17.6											
COPPER	3.0	U	A									
IRON	9370											
LEAD	1.8	U										
MAGNESIUM	62700											
MANGANESE	6670											
MERCURY	0.17	U										
NICKEL	1.6	U	A									
POTASSIUM	21400											
SELENIUM	3.8	U										
SILVER	0.50	U										
SODIUM	526000											
THALLIUM	3.7	U										
VANADIUM	0.50	U										
ZINC	20.4											

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	2LGW20S-03			2WGW21S-03			2WGW38DS-03			2WGW40DS-03		
SAMPLE DATE:	04/08/00			04/08/00			04/07/00			04/07/00		
LABORATORY ID:	E67040-11			E67040-12			E67040-14			E67040-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	MG/L			MG/L			MG/L			MG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
ALKALINITY	152			1620			427			1180		
CHEMICAL OXYGEN DEMAND	20	U		236			35.9			179		
CHLORIDE	85			8560			239			9350		
HARDNESS as CaCO3	99.3			3080			237			3070		
SULFATE	20	U		20	U		35			792		
TOTAL DISSOLVED SOLIDS	327			14700			841			15900		
TOTAL ORGANIC CARBON	1.4			39.1			12.7			3.3		

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	2WGW41DS-03			2WGW43DS-03			2WGW44DS-03			2WGW45DS-03		
SAMPLE DATE:	04/07/00			04/08/00			04/09/00			04/08/00		
LABORATORY ID:	E67040-7			E67040-10			E67040-16			E67040-9		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	MG/L			MG/L			MG/L			MG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
ALKALINITY	2190			2340			566			440		
CHEMICAL OXYGEN DEMAND	200			236			46.2			66.7		
CHLORIDE	7730			12600			1420			1970		
HARDNESS as CaCO3	2620			4070			6.6	U		576		
SULFATE	282			328			20	U		30.2		
TOTAL DISSOLVED SOLIDS	13400			23500			1910			4470		
TOTAL ORGANIC CARBON	41.2			34.1			9.0			12.3		

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	2WGW46DS-03			3GW12D-03			3GW12S-03			3GW37S-03		
SAMPLE DATE:	04/07/00			04/07/00			04/07/00			04/09/00		
LABORATORY ID:	E67040-8			E67040-3			E67040-4			E67040-17		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	MG/L			MG/L			MG/L			MG/L		
FIELD DUPLICATE OF:												
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
MISCELLANEOUS PARAMETERS												
ALKALINITY	2780			283			276			142		
CHEMICAL OXYGEN DEMAND	333			23.1			25.6			20	U	
CHLORIDE	16600			886			963			179		
HARDNESS as CaCO3	5020			389			413			150		
SULFATE	100	U		63.5			85.6			20.6		
TOTAL DISSOLVED SOLIDS	29200			1950			1890			471		
TOTAL ORGANIC CARBON	29.8			3.8			4.1			2.8		

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E67040

SAMPLE NUMBER:	4GW01S-03			GWFD040700-01			GWFD040700-02					
SAMPLE DATE:	04/08/00			04/07/00			04/07/00			/ /		
LABORATORY ID:	E67040-13			E67040-5			E67040-6					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	MG/L			MG/L			MG/L					
FIELD DUPLICATE OF:				3GW12D-03			3GW12S-03					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
ALKALINITY	19.1			239			263					
CHEMICAL OXYGEN DEMAND	20	U		25.6			23.1					
CHLORIDE	80.2			888			963					
HARDNESS as CaCO3	82.7			408			432					
SULFATE	38.9			63.7			85.4					
TOTAL DISSOLVED SOLIDS	254			1890			1830					
TOTAL ORGANIC CARBON	1.0	U		4.1			4.0					

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**M. MENGEL**	**DATE:**	**JULY 11, 2000**
FROM:	**GRETCHEN PHIPPS**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – TAL METALS AND MISCELLANEOUS PARAMETERS**
CTO 203 - NSB NEW LONDON
SDG – E66703

SAMPLES: 22/Aqueous/

2WGW39DS-03	2WGW39DS-03-F
2WGW42DS-03	2WGW42DS-03-F
2WGW47DS-03	2WGW42DS-03-F
SWFD040400-03	2WGW42DS-03-F
SWSG18-03	SWSG18-03-F
SWSG19-03	SWSG19-03-F
SWSG20-03	SWSG20-03-F
SWSG21-03	SWSG21-03-F
SWSG22-03	SWSG22-03-F
SWSG23-03	SWSG23-03-F
SWSG24-03	SWSG24-03-F

Overview

The sample set for CTO 203, NSB New London, SDG E66703, consists of twenty-two (22) aqueous environmental samples. Two (2) field duplicate pairs (SWSG20-03 / SWFD040400-03 and SWSG20-03-F / SWFD040400-03-F) were included within this SDG.

All samples, with exception to those designated –F, were analyzed for target analyte list (TAL) metals, chemical oxygen demand (COD), chloride, hardness, sulfate, total alkalinity, total dissolved solids (TDS) and total organic carbon (TOC). The samples designated –F were analyzed for dissolved TAL metals. The samples were collected by Tetra Tech NUS on April 4-6, 2000 and analyzed by Accutest Laboratories under Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Metals analyses were conducted in accordance with ILM04.0 methodologies. Total alkalinity analyses were conducted using EPA method 310.1. COD analyses were conducted using EPA method 410.1. Chloride and sulfate analyses were conducted using EPA method 300. TDS analyses were conducted using EPA method 160.1. TOC analyses were conducted using EPA method 415.1. Hardness analyses were conducted using EPA method 200.7.

All analyses, with the exception of mercury, were conducted using Inductively Couples Plasma (ICP) methodologies. Mercury analyses were conducted using cold vapor AA.

The data was evaluated based on the following parameters:

* • Data Completeness
* • Holding Times

- Calibration Verifications
- Laboratory Blank Analyses
- ICP Interference Check Sample Results
- * Laboratory Control Sample Results
- Matrix Spike Results
- Laboratory Duplicate Results
- * Field Duplicate Results
- * ICP Serial Dilution Results
- * Sample Quanitation
- * Detection Limits

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

Laboratory Blank Analyses

Affected samples: All

Analyte	Maximum Concentration	Action Level(aqueous)
Antimony	2.6µg/L	13µg/L
Beryllium	0.5µg/L	2.5µg/L
Cadmium	0.7µg/L	3.5µg/L
Calcium	47µg/L	235µg/L
Chromium(1)	1.430µg/L	7.15µg/L
Cobalt	0.9µg/L	4.5µg/L
Copper	3.1µg/L	15.5µg/L
Iron(1)	38.89µg/L	194µg/L
Lead	2.5µg/L	12.5µg/L
Magnesium	46.4µg/L	232µg/L
Potassium(1)	177.610µg/L	888µg/L
Sodium (1)	710.41µg/L	3550µg/L
Vanadium	1.0µg/L	5.0µg/L

(1) Maximum concentration present in a preparation blank.

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Dilution factors and sample aliquots were taken into consideration when evaluating for blank contamination. Positive results < the action level for cadmium, chromium, cobalt, copper, iron, lead and vanadium were qualified as, "U", as a result of blank contamination.

ICP Interference Check Sample Results

The interfering analyte magnesium was present in sample 2WGW42DS-03 at a concentration which was comparable to the level of magnesium in the Interference Check Sample (ICS) solution. Several analytes namely antimony, cadmium, chromium, cobalt, copper, lead, manganese, nickel, potassium, selenium, sodium, thallium and vanadium were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for antimony, nickel, selenium and thallium in the affected sample. The nondetected results reported for antimony and thallium were qualified as estimated, "UJ". The positive results reported for nickel and selenium were qualified as estimated, "J".

The interfering analytes calcium and magnesium were present in sample 2WGW42DS-03-F a concentrations which were comparable to the levels of calcium and magnesium in the Interference Check Sample (ICS) solution. Several analytes namely antimony, cadmium, chromium, cobalt, copper, lead, manganese, nickel, potassium, selenium, sodium, thallium and

vanadium were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for nickel and vanadium in the affected sample. The nondetected result reported for nickel was qualified as estimated, "UJ". The positive result reported for vanadium was qualified as estimated, "J".

Matrix Spike Results

The Matrix Spike (MS) Percent Recovery (%R) for chloride was <75% quality control limit. The positive results reported for chloride were qualified as estimated, "J".

Other Factor Affecting Data Quality

Positive results less than 2X the IDL reported for arsenic, nickel, selenium and zinc were qualified as estimated, "J".

Notes

A comparison of field duplicate pairs is included in Appendix C.

Laboratory duplicate imprecision was noted for lead affecting the total metals. However, all results reported for lead were either nondetected or qualified, "U", as a result of blank contamination. Therefore, no validation action was required.

Several samples IDs were incorrect on the Form 1s. The Forms were corrected by the data reviewer.

Concentrations of most analytes in were higher in the filtered sample 2WGW42DS-03-F compared to the unfiltered sample.

Executive Summary

Laboratory Performance: Several analytes were present in the laboratory method / preparation blanks.

Other Factors Affecting Data Quality: The interfering analytes calcium and/or magnesium were present in two samples. Positive results less than 2X the IDL reported for arsenic, nickel, selenium and zinc were qualified as estimated, "J".

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994, "EPA Region I Functional Guidelines for Evaluating Inorganic Analyses", February 1989 and the NFESC document entitled "Navy IRCDQM." (October, 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)."

Gretchen A. Phipps

Tetra Tech NUS
Gretchen A. Phipps

Tetra Tech NUS
Joseph A. Samchuck
Quality Control Officer

Attachments:

1. Appendix A - Qualified Analytical Data
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Regional Worksheets
4. Appendix D - Support Documentation

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD 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 - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
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)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703

SAMPLE NUMBER:	2WGW39DS-03			2WGW39DS-03-F			2WGW42DS-03			2WGW42DS-03-F		
SAMPLE DATE:	04/05/00			04/05/00			04/05/00			04/05/00		
LABORATORY ID:	E66703-13			E66703-21			E66703-15			E66703-23		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	72.5	U		72.5	U		321			72.5	U	
ANTIMONY	2.1	U		2.1	U		2.1	UJ	K	4.2	U	
ARSENIC	2.6	U		3.2	J	P	6.2			30.6		
BARIUM	64.1			61.0			75.3			107		
BERYLLIUM	0.20	U		0.20	U		0.20	U		0.20	U	
CADMIUM	0.30	U		0.30	U		0.39	U	A	0.30	U	
CALCIUM	45300			45400			137000			253000		
CHROMIUM	1.0	U		1.3	U	A	4.6	U	A	4.3	U	A
COBALT	0.86	U	A	1.1	U	A	1.4	U	A	0.83	U	A
COPPER	2.4	U	A	1.4	U	A	3.8	U	A	2.2	U	A
IRON	25000			22100			19600			243	U	A
LEAD	1.8	U		1.8	U		1.8	U		3.6	U	
MAGNESIUM	11500			11900			286000			791000		
MANGANESE	1460			1420			726			567		
MERCURY	0.17	U		0.17	U		0.17	U		0.17	U	
NICKEL	3.0	J	P	3.3	J	P	7.8	J	K	1.9	UJ	K
POTASSIUM	15200			15600			141000			349000		
SELENIUM	3.4	U		3.4	U		3.7	J	KP	6.8	U	
SILVER	1.1	U		1.1	U		1.1	U		1.1	U	
SODIUM	267000			273000			2260000			5980000		
THALLIUM	4.1	U		4.1	U		4.1	UJ	K	8.2	U	
VANADIUM	0.72	U	A	0.70	U		6.9			6.8	J	K
ZINC	8.9			7.1	J	P	9.7			6.2	J	P

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703

SAMPLE NUMBER:	2WGW47DS-03			2WGW47DS-03-F			SWFD040400-03			SWFD040400-03-F		
SAMPLE DATE:	04/05/00			04/05/00			04/04/00			04/04/00		
LABORATORY ID:	E66703-16			E66703-24			E66703-4			E66703-7		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:							SWSG20-03			SWSG20-03-F		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	72.5	U		72.5	U		72.5	U		72.5	U	
ANTIMONY	2.1	U		2.1	U		2.1	U		2.1	U	
ARSENIC	16.5			13.0			2.6	U		2.6	U	
BARIUM	184			179			20.4			19.8		
BERYLLIUM	0.20	U		0.20	U		0.20	U		0.20	U	
CADMIUM	0.32	U	A	0.42	U	A	0.30	U		0.30	U	
CALCIUM	36000			34500			14300			14400		
CHROMIUM	2.3	U	A	1.8	U	A	1.0	U	A	1.0	U	
COBALT	4.1	U	A	3.9	U	A	0.76	U	A	0.70	U	
COPPER	1.5	U	A	2.0	U	A	2.9	U		1.4	U	A
IRON	66200			66100			908			219		
LEAD	1.8	U		1.8	U		1.8	U		1.8	U	
MAGNESIUM	66800			60800			3950			3910		
MANGANESE	2680			2740			54.1			41.9		
MERCURY	0.17	U		0.17	U		0.17	U		0.17	U	
NICKEL	3.2	J	P	2.8	J	P	1.9	U		1.9	U	
POTASSIUM	48400			47400			2910			3020		
SELENIUM	3.4	U		3.4	U		3.4	U		3.4	U	
SILVER	1.1	U		1.1	U		1.1	U		1.1	U	
SODIUM	696000			656000			47300			47300		
THALLIUM	4.1	U		4.1	U		4.1	U		4.1	U	
VANADIUM	0.71	U	A	0.81	U	A	0.70	U		0.70	U	
ZINC	13.3			5.1	J	P	16.0			19.2		

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703

SAMPLE NUMBER:	SWSG18-03			SWSG18-03-F			SWSG19-03			SWSG19-03-F		
SAMPLE DATE:	04/05/00			04/05/00			04/05/00			04/05/00		
LABORATORY ID:	E66703-9			E66703-17			E66703-11			E66703-19		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	72.5	U		72.5	U		72.5	U		72.5	U	
ANTIMONY	2.1	U		2.1	U		2.1	U		2.1	U	
ARSENIC	2.6	U		2.6	U		2.6	U		2.6	U	
BARIUM	31.1			27.8			42.4			43.4		
BERYLLIUM	0.20	U		0.20	U		0.20	U		0.20	U	
CADMIUM	0.30	U		0.30	U		0.30	U		0.30	U	
CALCIUM	19400			18500			23300			24200		
CHROMIUM	1.0	U		1.0	U		1.0	U		1.0	U	
COBALT	0.92	U	A	0.88	U	A	0.70	U	A	0.70	U	
COPPER	3.8	U	A	1.3	U	A	3.3	U	A	2.5	U	A
IRON	1470			493			8530			6210		
LEAD	1.8	U		1.8	U		1.8	U		1.8	U	
MAGNESIUM	4510			4270			4900			5290		
MANGANESE	232			222			198			201		
MERCURY	0.17	U		0.17	U		0.17	U		0.17	U	
NICKEL	2.2	J	P	2.5	J	P	1.9	U		1.9	U	
POTASSIUM	3600			3280			3710			4030		
SELENIUM	3.4	U		3.4	U		3.4	U		3.4	U	
SILVER	1.1	U		1.1	U		1.1	U		1.1	U	
SODIUM	53800			50200			59200			64200		
THALLIUM	4.1	U		4.1	U		4.1	U		4.1	U	
VANADIUM	0.70	U		0.70	U		1.5	U	A	0.70	U	
ZINC	31.0			33.8			48.9			17.9		

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703

SAMPLE NUMBER:	SWSG20-03			SWSG20-03-F			SWSG21-03			SWSG21-03-F		
SAMPLE DATE:	04/04/00			04/04/00			04/04/00			04/04/00		
LABORATORY ID:	E66703-3			E66703-6			E66703-2			E66703-5		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	72.5	U		72.5	U		72.5	U		72.5	U	
ANTIMONY	2.1	U		2.1	U		2.1	U		2.1	U	
ARSENIC	2.6	U		2.6	U		2.6	U		2.6	U	
BARIUM	20.9			20.0			22.4			22.2		
BERYLLIUM	0.20	U		0.20	U		0.20	U		0.20	U	
CADMIUM	0.30	U		0.30	U		0.30	U		0.30	U	
CALCIUM	14300			14500			15300			15700		
CHROMIUM	2.2	U	A	1.0	U		1.0	U		1.0	U	
COBALT	0.79	U	A	0.70	U		0.95	U	A	0.70	U	
COPPER	2.9	U	A	1.3	U		2.5	U	A	1.3	U	A
IRON	884			227			854			239		
LEAD	1.8	U		1.8	U		2.6	U	A	1.8	U	
MAGNESIUM	3940			3890			3940			3950		
MANGANESE	44.9			42.4			62.8			85.7		
MERCURY	0.17	U		0.17	U		0.17	U		0.17	U	
NICKEL	1.9	U		1.9	U		2.1	J	P	1.9	U	
POTASSIUM	3030			2960			3190			3140		
SELENIUM	3.4	U		3.4	U		3.4	U		3.4	U	
SILVER	1.1	U		1.1	U		1.1	U		1.1	U	
SODIUM	47100			47200			47900			48800		
THALLIUM	4.1	U		4.1	U		4.1	U		4.1	U	
VANADIUM	0.70	U		0.70	U		0.77	U	A	0.70	U	
ZINC	16.3			16.9			15.2			21.9		

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703

SAMPLE NUMBER:	SWSG22-03			SWSG22-03-F			SWSG23-03			SWSG23-03-F		
SAMPLE DATE:	04/05/00			04/05/00			04/05/00			04/05/00		
LABORATORY ID:	E66703-12			E66703-20			E66703-14			E66703-22		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	340			72.5	U		154			72.5	U	
ANTIMONY	2.1	U		2.1	U		2.1	U		2.1	U	
ARSENIC	2.6	U		2.6	U		2.6	U		2.6	U	
BARIUM	37.0			31.6			37.1			36.1		
BERYLLIUM	0.20	U		0.20	U		0.20	U		0.20	U	
CADMIUM	0.32	U	A	0.30	U		0.30	U		0.30	U	
CALCIUM	21900			20000			20400			22800		
CHROMIUM	1.3	U	A	1.0	U		1.0	U		1.0	U	
COBALT	1.8	U	A	1.8	U	A	2.4	U	A	4.2	U	A
COPPER	6.5	U	A	2.8	U	A	4.0	U	A	1.5	U	A
IRON	18700			15700			13200			14600		
LEAD	4.8	U	A	1.8	U		1.8	U		1.8	U	
MAGNESIUM	3860			3480			4200			4550		
MANGANESE	445			404			596			657		
MERCURY	0.17	U		0.17	U		0.17	U		0.17	U	
NICKEL	4.3			3.7	J	P	3.2	J	P	3.1	J	P
POTASSIUM	3610			3360			3910			4170		
SELENIUM	3.4	U		3.4	U		3.4	U		3.4	U	
SILVER	1.1	U		1.1	U		1.1	U		1.1	U	
SODIUM	33900			32500			43000			46900		
THALLIUM	4.1	U		4.1	U		4.1	U		4.1	U	
VANADIUM	1.2	U	A	0.70	U		0.70	U		0.85	U	A
ZINC	14.6			10.2			27.9			24.0		

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703

SAMPLE NUMBER:	SWSG24-03			SWSG24-03-F								
SAMPLE DATE:	04/05/00			04/05/00			/ /			/ /		
LABORATORY ID:	E66703-10			E66703-18								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	222			72.5	U							
ANTIMONY	2.1	U		2.1	U							
ARSENIC	3.7	J	P	2.6	U							
BARIUM	184			178								
BERYLLIUM	0.20	U		0.20	U							
CADMIUM	0.30	U		0.30	U							
CALCIUM	16300			16300								
CHROMIUM	1.0	U		1.5	U	A						
COBALT	19.2			18.4								
COPPER	7.2	U	A	2.0	U	A						
IRON	40300			32000								
LEAD	2.5	U	A	1.8	U							
MAGNESIUM	21900			23500								
MANGANESE	3710			3590								
MERCURY	0.17	U		0.17	U							
NICKEL	10.0			8.9								
POTASSIUM	9110			9430								
SELENIUM	3.4	U		3.4	U							
SILVER	1.1	U		1.1	U							
SODIUM	178000			191000								
THALLIUM	4.1	U		4.1	U							
VANADIUM	2.3	U	A	1.1	U	A						
ZINC	20.8			28.4								

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703

SAMPLE NUMBER:	2WGW39DS-03	2WGW42DS-03	2WGW47DS-03	SWSG18-03
SAMPLE DATE:	04/05/00	04/05/00	04/05/00	04/05/00
LABORATORY ID:	E66703-13	E66703-15	E66703-16	E66703-9
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	0.0 %	0.0 %	0.0 %	0.0 %
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
ALKALINITY AS CACO3(MG/L)	155			1080			296			47.9		
CHEMICAL OXYGEN DEMAND(MG/L)	65.5			149			65.5			20	U	
CHLORIDE(MG/L)	508	J	D	5500	J	D	1420	J	D	95.5	J	D
HARDNESS as CaCO3(MG/L)	160			1520			365			67		
SULFATE(MG/L)	20	U		149			20	U		20	U	
TOTAL DISSOLVED SOLIDS(MG/L)	939			9490			2430			202		
TOTAL ORGANIC CARBON(MG/L)	42			64.2			11.4			3.4		

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703

SAMPLE NUMBER:	SWSG19-03			SWSG20-03			SWFD040400-03			SWSG21-03		
SAMPLE DATE:	04/05/00			04/04/00			04/04/00			04/04/00		
LABORATORY ID:	E66703-11			E66703-3			E66703-4			E66703-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
FIELD DUPLICATE OF:							SWSG20-03					
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
MISCELLANEOUS PARAMETERS												
ALKALINITY AS CACO3(MG/L)	66.4			24			33.2			34.9		
CHEMICAL OXYGEN DEMAND(MG/L)	20	U		20	U		20	U		20	U	
CHLORIDE(MG/L)	121	J	D	87.2	J	D	87.9	J	D	89	J	D
HARDNESS as CaCO3(MG/L)	78.4			51.9			52			54.4		
SULFATE(MG/L)	20	U		20.8			20.9			20.5		
TOTAL DISSOLVED SOLIDS(MG/L)	248			211			224			193		
TOTAL ORGANIC CARBON(MG/L)	3.9			4.5			3.3			4.5		

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E66703

SAMPLE NUMBER:	SWSG22-03			SWSG23-03			SWSG24-03					
SAMPLE DATE:	04/05/00			04/05/00			04/05/00			/ /		
LABORATORY ID:	E66703-12			E66703-14			E66703-10					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
ALKALINITY AS CACO3(MG/L)	74			78.4			40.3					
CHEMICAL OXYGEN DEMAND(MG/L)	31.4			20	U		21					
CHLORIDE(MG/L)	53.4	J	D	89.2	J	D	398	J	D			
HARDNESS as CaCO3(MG/L)	70.6			68.2			131					
SULFATE(MG/L)	20	U		20	U		20	U				
TOTAL DISSOLVED SOLIDS(MG/L)	179			280			643					
TOTAL ORGANIC CARBON(MG/L)	6.2			3.3			9.2					