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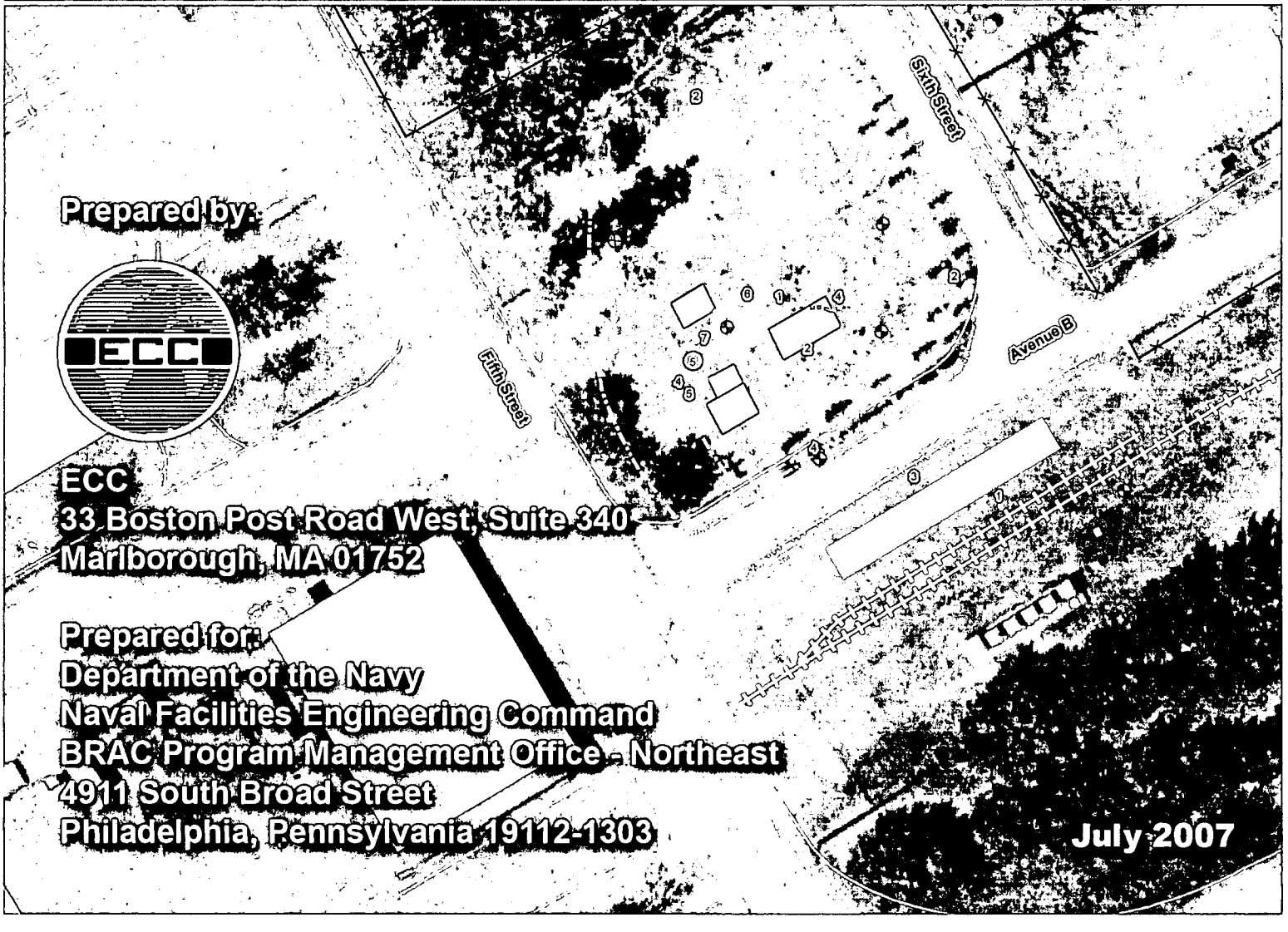
Final
Sit 17 (Building 95)
Monitoring Event 23 Report
June 2006

Contract No. N62472-02-D-0810
Contract Task Order No. 007

Naval Air Station
Brunswick, Maine



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BRAC Program Management Office - Northeast
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Philadelphia, Pennsylvania 19112-1303

July 2007

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Alexander C. Easterday, P.G. Date
Senior Project Manager

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Project Manager/Hydrogeologist

QUALITY REVIEW STATEMENT

Contract No. N62472-02-D-0810 ECC Project No.: 5700.007
Contract Task Order No. 007
Activity: Naval Air Station, Brunswick, Maine

Description of Final Report/Deliverable:

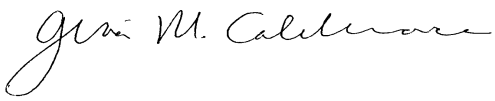
Final Monitoring Event 23 Report – June 2006 for Site 17 (Building 95), Naval Air Station, Brunswick, Maine

ECC CTO Senior Project Manager: Alexander C. Easterday, P.G.

As per State of Maine Department of Professional and Financial Regulations, Title 32 Chapter 73, Law, the sections of this document related to geology and geologic data interpretation have been reviewed for its technical content by the undersigned State of Maine Certified Geologist.

This document has been reviewed by the undersigned for their geological interpretive content. This statement is based upon the review of the undersigned conducted during the preparation of this report, as dated below.

State of Maine Geologist Reviewer:



7/31/07

Gina M. Calderone, P.G., C.P.G. Date
State of Maine Certified Geologist (No. GE442)
ECC Project Manager/Hydrogeologist

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Appendix D Analytical Report Form I Data Sheets
Appendix E Engineering Inspection Report
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Appendix G Response to Comments from the Regulators on the Draft Report

LIST OF ABBREVIATIONS AND ACRONYMS

4,4'-DDT	dichlorodiphenyltrichloroethane
4,4'-DDD	dichlorodiphenyldichloroethane
AMSL	above Mean Sea Level
°C	degrees Celsius
EPA	U.S. Environmental Protection Agency
LTMP	Long-Term Monitoring Plan
MCL	Maximum Contaminant Level
MDL	method detection limit
MEG	maximum exposure guideline
MRL	method reporting limit
NEL/ME	Northeast Laboratory Services
U	non-detect
µg/L	micrograms per liter
µmhos/cm	micromhos per centimeter
mg/L	milligrams per liter
mV	millivolt
NAS	Naval Air Station
NTU	nephelometric turbidity units
ORP	oxidation reduction potential
PRG	Preliminary Remediation Goal
PVC	polyvinyl chloride
TCL	Target Compound List

1.0 PROJECT ACTIVITIES AND MONITORING EVENT RESULTS

Under Contract Number N62472-02-D-0810, Contract Task Order No. 007, Engineering Field Activity Northeast, Naval Facilities Engineering Command contracted with ECC to perform long-term monitoring at Site 17 (Building 95), Naval Air Station (NAS), Brunswick, Maine (Figure 1-1).

At the Site 17 (Building 95) site (Figure 1-2), the Navy is currently performing long-term monitoring, maintenance, and corrective measures as part of the long-term remedial actions required by the Action Memorandum dated April 1993 (ABB-ES 1993), and in accordance with the May 2000 Long-Term Monitoring Plan (LTMP) (EA Engineering, Science and Technology [EA] 2000) and the optimized groundwater sampling proposal (EA 2004). The Site 17 (Building 95) Long-Term Monitoring Plan well designation and sample parameters are summarized in Table 1-1.

This report provides a summary of the monitoring and sampling completed during Monitoring Event 23 (June 2006). The appendices provide supporting information. Appendix A is a history of the site, Appendix B is field data, Appendix C is the analytical data quality review, Appendix D provides the Form I data sheets, Appendix E provides the engineering inspection report, Appendix F provides trend graphs, and Appendix G will contain ECC's response to comments from the regulators (when the final version of this report is submitted).

1.1 Site History

Appendix A provides a historical summary of the site.

1.2 Measurement of Water Level Elevations

Water level measurements were obtained on June 6, 2006 at six groundwater monitoring wells (MW-NASB-065, MW-NASB-066, MW-NASB-067, MW-NASB-068, MW-NASB-097, and MW-NASB-098) located at the Site 17 (Building 95) site and two groundwater monitoring wells (MW-NASB-210 and MW-NASB-209R) located south of the Site 17 (Building 95) site. Water level gauging data are summarized in Table 1-2, and the completed monitoring well gauging forms are included in Appendix B. The gauging measurements were used to interpret the groundwater potentiometic surface for the Site 17 (Building 95) site (Figure 1-3).

1.3 Groundwater Monitoring, Sampling, and Analysis

The Site 17 (Building 95) sampling program was performed on June 6, 2006. Groundwater samples were collected from well MW-NASB-067 using a dedicated submersible pumping system and from wells MW-NASB-097 and MW-NASB-098 using a non-dedicated submersible pump.

The non-dedicated pump was thoroughly decontaminated between wells. A rinsate blank sample was collected and analyzed to evaluate the effectiveness of the decontamination procedure. The low-flow sampling technique presented in the LTMP (EA 2000) and in the optimized groundwater sampling proposal (EA 2004) was followed. Water quality indicator parameters including pH, specific conductance, temperature, dissolved oxygen, oxidation-reduction potential, and turbidity were monitored and recorded during well purging to ensure that these parameters were stable before samples were collected (Table1-3). The Low Flow/Low Stress Groundwater Sampling Forms for the June 2006 sampling event can be found in Appendix B.

Groundwater samples were submitted to Northeast Laboratory Services (NEL-ME) located in Winslow, Maine for analysis of LTMP Target Compound List (TCL) pesticides and other reportable pesticides by the U.S. Environmental Protection Agency (EPA) Method 8081A. The sample cooler was delivered to the laboratory by laboratory sample courier.

All results reported as non-detect were evaluated against the method detection limit (MDL), which is the lowest limit of quantitative detection for a compound. By convention, non-detects are reported using the higher method reporting limit (MRL) with the non-detect qualifier (U). For the following compounds, the MRL is higher than the project action limits but the MDL is less than the project action limits:

- Aldrin (Maine Maximum Exposure Guideline [MEG] 0.02 µg/L, MDL 0.0053 µg/L, and MRL 0.05 µg/L);
- Chlordane (MEG 0.27 µg/L, MDL 0.21 µg/L, and MRL 0.5 µg/L);
- Dieldrin (MEG 0.02 µg/L, MDL 0.0149 µg/L, and MRL 0.1 µg/L); and
- Heptachlor epoxide (MEG 0.04 µg/L, Federal Maximum Contaminant Level [MCL] 0.2 µg/L, MDL 0.0083 µg/L, MRL 0.05 µg/L).

Due to the limitations of current analytical technology, toxaphene (MEG 0.3 µg/L, MCL 3 µg/L) can only be assessed to an MDL of 0.678 µg/L. Toxaphene is not a site constituent of concern.

1.4 Quality Assurance and Quality Control

The data obtained during the June 2006 sampling event were determined to be of sufficient quality to be used to evaluate groundwater quality at the Site 17 (Building 95) site (all pesticide data are usable, as qualified). One field duplicate sample was collected from well MW-NASB-098
(BN-95-22-XD1) and analyzed as a field quality control sample. (Note: field sample identification numbers listed on the Chain-of-Custody Form were not changed to read BN-95-23-XXX for this sampling round). Table 1-4 provides a summary of analytical results for groundwater samples collected at the Site 17 (Building 95) site on June 6, 2006. The data quality evaluation is included in Appendix C (Analytical Data Quality Review) and Appendix D (Analytical Report Form I Data Sheets).

1.5 Visual Inspection

Site inspection activities were completed in accordance with the Final LTMP (EA 2000) on June 5, 2006 (Appendix E). Inspection of the area confirmed no exposures of the geotextile marker fabric at the ground surface. The six on-site monitoring wells were found to be intact. Groundwater monitoring wells MW-NASB-065, MW-NASB-066, MW-NASB-067, MW-NASB-068, and MW-NASB-098 were adequately labeled, capped, and locked. Well MW-NASB-097 was capped but not labeled, and the flush-mounted roadbox was bolted but not locked. The two wells located south of the Site 17 (Building 95) site were in good condition. Well MW-NASB-209R was capped, and the flush-mounted roadbox was bolted but not locked. Well MW-NASB-210 was adequately capped and locked. Well MW-NASB-097 suffered damage by snowplow activities during the previous winter, and temporary repairs were installed until permanent repairs can be affected. There was no indication of vandalism of any of the six on-site wells or the two off-site wells. In June 2006 all vegetation appeared healthy and very well watered; however, some browning vegetation was observed during the September 2005 sampling event.

2.0 OBSERVATIONS AND TRENDS

The following sections present field and analytical results and data trends observed during Monitoring Event 23 conducted in June 2006.

2.1 Groundwater Levels

The results of the groundwater level gauging program (Table 1-2 and Appendix B) indicate that the groundwater flow direction in the immediate area of the Site 17 (Building 95) site is generally towards the southeast (Figure 1-3). The hydraulic gradient between wells MW-NASB-066 and MW-NASB-098 is approximately 0.0065. In general, the hydraulic gradient across the Site 17 (Building 95) site is relatively flat. The groundwater levels, after peaking in April 2005 at the highest levels in eight monitoring events, returned to average levels in September 2005, but rose slightly in June 2006.

2.2 Field Water Quality Parameters

Water quality parameters, including pH, specific conductance, oxidation-reduction potential, temperature, dissolved oxygen and turbidity, were measured during well purging and were recorded on the field sampling forms (Appendix B). Per the LTMP, the ECC Field Team Leader reviewed the pre- and post-field equipment calibration records and the field data forms for accuracy. Table 1-3 lists the results of field water quality measurements. All field water quality parameters were found to be within previous overall monitoring event ranges.

2.3 Analytical Results

The June 2006 Monitoring Event 23 results indicate that pesticides were not reported at concentrations above the instrument detection limits. All groundwater sampling data results were non-detect for pesticide analysis except for a detection (0.21 μg/L) at MW-NASB-097 for dichlorodiphenyltrichloroethane (4,4'-DDT). Since Monitoring Event 21 (April 2005) pesticides results for all monitoring wells sampled from Site 17 (Building 95) through Monitoring Event 23 (June 2006) have been non-detect. Appendix F provides trend graphs of analytical results through Monitoring Event 23. The following historical detections of pesticides are noted:

- **Monitoring Well MW-NASB-067** – Historically, 4,4'-DDT was detected during Monitoring Events 17 through 20, however, at levels below the MEG.

- **Monitoring Well MW-NASB-097** –Historically; heptachlor epoxide and alpha-chlordane exceeded the Maine MEGs (0.04 micrograms per liter [μg/L] and 0.27 μg/L, respectively) from 2000 through 2003 during all sampling events. Since the April 2004 sampling event, heptachlor epoxide no longer exceeded the State MEG and was not detected during Monitoring Events 21, 22, and 23.

In addition, alpha-chlordane, which reached a maximum observed concentration of 0.72 μg/L in October 2001, has shown a steadily decreasing trend, falling below the State MEG and has not been detected during the last three monitoring events.

Other pesticide compounds have not been detected, or were detected at levels below corresponding MEGs and MCLs, since well MW-NASB-097 was installed and first sampled in March 2000. Historically, dichlorodiphenyldichloroethane (4,4'-DDD) was detected from Monitoring Event 16 through Monitoring Event 20. This compound has no MEG or MCL, but it does have a Region IX Preliminary Remediation Goal (PRG) of 0.28 μg/L. Exceedances of the PRG occurred during Monitoring Event 16 (0.162 μg/L) and Monitoring Event 19 (0.11 J μg/L) at MW-NASB-097. In addition, for this monitoring event 4,4'-DDT was detected at 0.21 μg/L.

- **Monitoring Well MW-NASB-098 –** Pesticide compounds were not detected in this well during Monitoring Events 1 through 18 or 20 through 23. During Monitoring Event 19 in April 2004, 4,4'-DDT was detected at an estimated concentration of 0.0090 J μg/L.

3.0 LONG-TERM MONITORING OBJECTIVES AND RECOMMENDATIONS

The following lists the objectives specified in the Site 17 (Building 95) LTMP, and provides conclusions as to whether the long-term monitoring event was successful in achieving these objectives or whether changes to the monitoring program are recommended.

3.1 Long-Term Monitoring Objectives

- ***LTMP Objective*** *– Monitor and assess trends in the groundwater quality with emphasis on contaminants of concern to verify that the soil and debris removal action was effective.*

  The reported groundwater concentrations for pesticide analyses during Monitoring Event 23 were all non-detect except for a detection (0.21 µg/L) at MW-NASB-097 for dichlorodiphenyltrichloroethane (4,4'-DDT). Further, pesticides have not exceeded any Federal MCL or State MEGs for the past four monitoring events (i.e., 2 years). Historically, heptachlor epoxide and alpha-chlordane have exceeded their respective State MEGs in the past at one site well (MW-NASB-097). Heptachlor epoxide fell below the State MEG (0.04 µg/L) during Monitoring Event 19 and alpha-chlordane has been below the State MEG (0.27 µg/L) since Monitoring Event 17. Since these events, heptachlor epoxide and alpha-chlordane, have exhibited a relatively stable decreasing concentration trend.

- ***LTMP Objective****—Assess the potential for adverse environmental impacts by monitoring for evidence of stressed vegetation.*

  In June 2006, all vegetation appeared to be health and very well watered. During Monitoring Event 22 (September 2005) browning in the tips of about 10% of the pine trees was observed at the Site 17 (Building 95) site. This condition appears to have passed and the vegetation in the area will continue to be monitored.

- ***LTMP Objective****—Monitor and maintain the structural integrity of the groundwater monitoring wells.*

  The integrity of the groundwater monitoring wells was evaluated during this monitoring event. The condition of all the wells was reported as good; however, MW-NASB-097 had apparently suffered some damage as a result of snowplowing during the previous winter. It was temporarily repaired until a permanent repair could be affected.

3.2 Recommendations

Based on an analysis of the data collected at the Site 17 (Building 95) site as part of the LTMP, the following recommendations are provided:

- Continue to perform long-term monitoring as necessary to provide additional data to identify groundwater trends and to assess the effectiveness of the 1994 soil removal actions at the site. The Navy is planning to investigate the soil north and south of Avenue B in the 2007 field season in order to determine if any impacted soil remains in the site area. Once the investigation has been completed, the results will be used to re-evaluate the need for continued sampling or further remedial action.

- It is recommended that the groundwater Long-Term Monitoring Program at Site 17 (Building 95) be optimized, whereby frequency or constituents of concern are reduced, or eliminated, since the data has consistently reported non-detections for pesticides in groundwater at the Site 17 (Building 95) site.

- Generate an up-to date Consensus Statement on the Site 17 (Building 95) site in order to document the changes to the site. The Consensus Statement would document the history of the site, long-term monitoring decisions, regulatory decisions based on new data collected, and related activities such as new well installations, so that future site decision-makers have a complete understanding of site management by the current project stakeholders.

4.0 REFERENCES

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TABLES

TABLE 1-1

SUMMARY OF THE LONG-TERM MONITORING PROGRAM
BUILDING 95, NAS BUNSWICK, ME

Well Designation	Sample Parameters			
	Sampling Frequency[a]	Target Compound List Pesticides[b]	Bi-Annual Gauging	Field Parameters[c]
MW-NASB-065	Bi-Annual	NR	X	NR
MW-NASB-066	Bi-Annual	NR	X	NR
MW-NASB-067	Bi-Annual	X	X	X
MW-NASB-068	Bi-Annual	NR	X	NR
MW-NASB-097	Bi-Annual	X	X	X
MW-NASB-098	Bi-Annual	X	X	X
MW-NASB-209R[d]	Bi-Annual	NR	X	NR
MW-NASB-210[d]	Bi-Annual	NR	X	NR

NOTES:

(a) Bi-annual samples are collected in April and September of each year.
(b) Pesticide Target Compound List (TCL) for SW-846 8081A: Lindane and 4,4'-DDT (LTMP 2004); however, other non-TCL SW-846 Method 8081A pesticides are reported
(c) Determination of field parameters in accordance with U.S. Environmental Protection Agency/600/4-79/020 using the following methods: pH (Method 150.1), temperature (Method 170.1), specific conductance (Method 120.1), and turbidity (180.1); optional field parameters, including dissolved oxygen (Method 360.1) and oxidation-reduction potential (ORP), as $ORP_{Ag/AgCl}$, are also recorded.
(d) MW-NASB-210 and MW-NASB-209R are located at the Old Navy Fuel Farm.

NR = Not required

TABLE 1-2

MONITORING WELL GAUGING SUMMARY, JUNE 2006
BUILDING 95, NAS BUNSWICK, ME

Well Designation	Well Riser Elevation (feet AMSL)	Depth to Well Bottom (feet below top of PVC well riser)	Monitoring Event 23 Gauging Data (5 June 2006)	
			Depth to Water (feet below top of PVC well riser)	Water Table Elevation (feet above AMSL)
MW-NASB-065	74.29	15.50	1.95	72.34
MW-NASB-066	78.79	19.79	6.02	72.77
MW-NASB-067	74.30	15.00	1.95	72.35
MW-NASB-068	74.86	15.05	2.70	72.16
MW-NASB-097	73.41	11.05	1.45	71.96
MW-NASB-098	76.53	16.00	4.90	71.63
MW-NASB-209R	72.94	10.00	3.82	69.12
MW-NASB-210	77.55	16.69	5.48	72.07

NOTE: AMSL = Above Mean sea level
PVC = Polyvinyl chloride

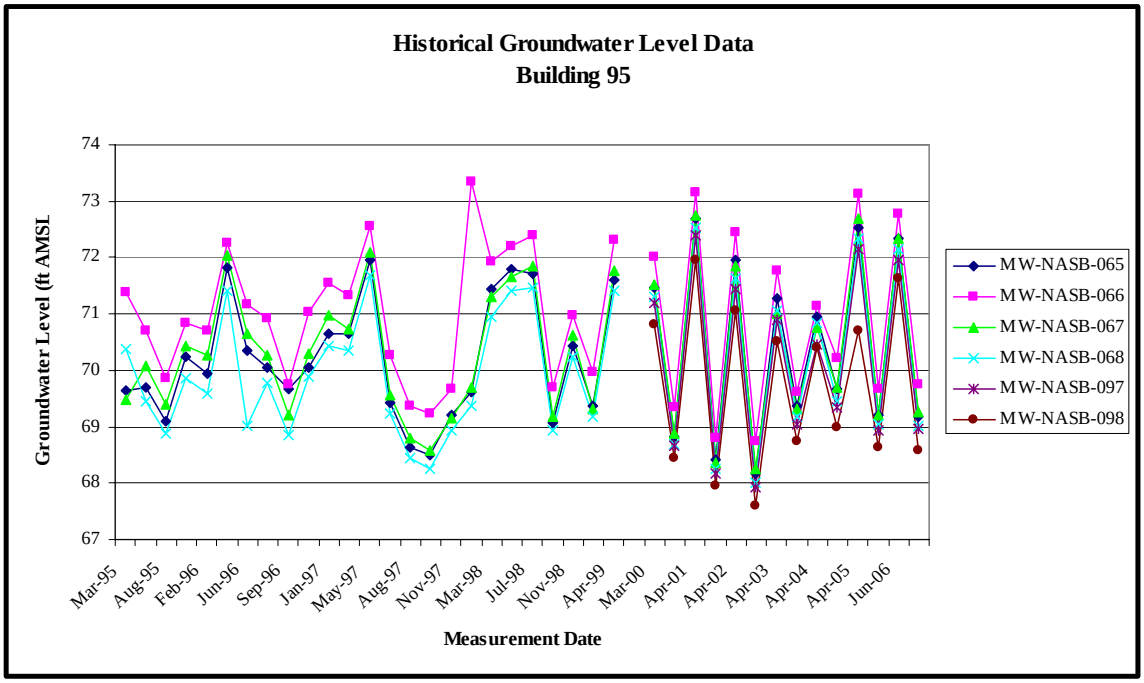
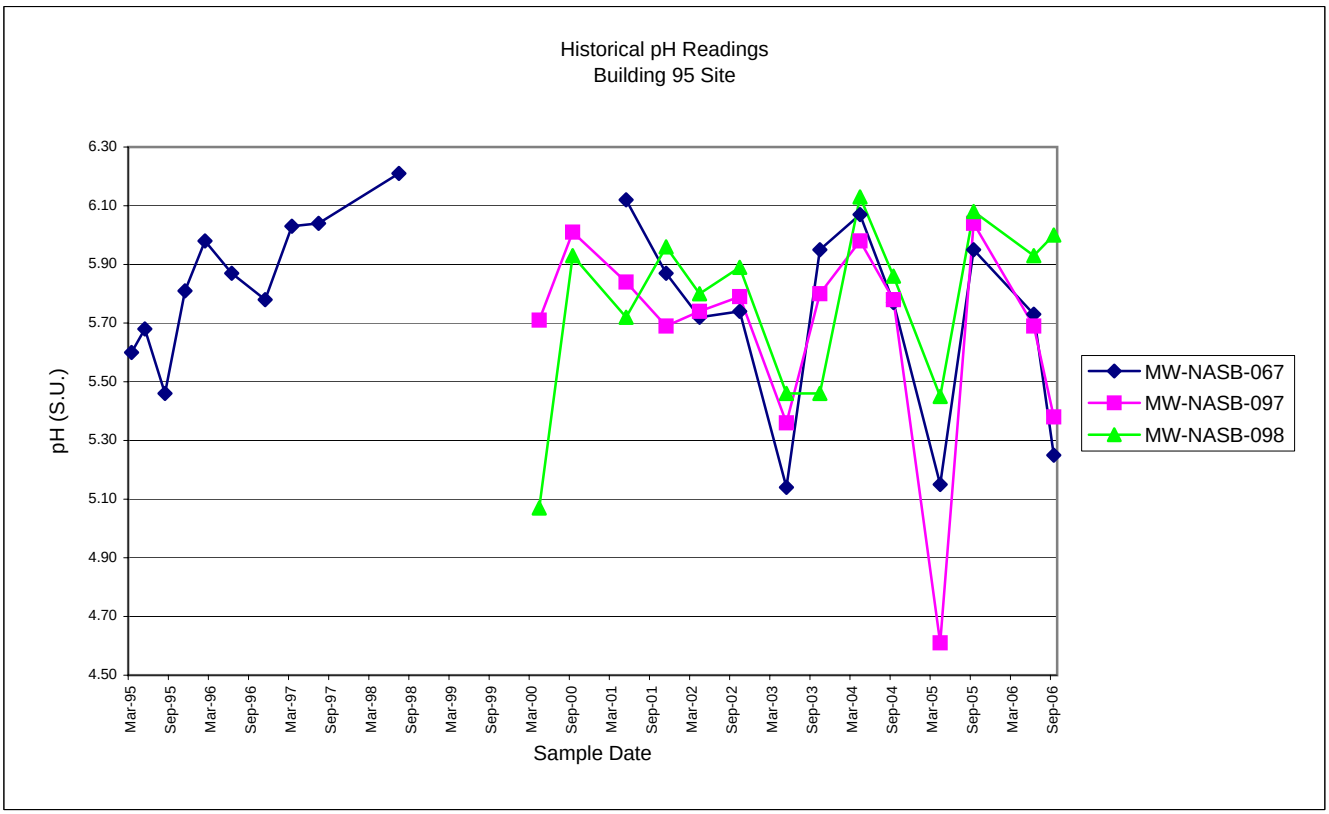


Table 1-3
Summary of Water Quality Indicator Parameters - September 2006 and Historical Water Quality Parameter Trends
Building 95, Naval Air Station, Brunswick, Maine

Well Designation	Sample Date	pH (S.U.)	Temperature (°C)	Specific Conductance (µmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	$ORP_{Ag.AgCl}$ (mV)
MW-NASB-067	9/11/2006	5.25	21.66	212	0.33	5	335
	Historical Average	5.77	14.50	218.00	0.83	14.01	77.33
MW-NASB-097	9/13/2006	5.38	20.82	31	0.52	9.2	122.1
	Historical Average	5.67	14.68	114.14	2.58	9.16	191.50
MW-NASB-098	9/14/2006	6	19.05	151	0.22	8	-9
	Historical Average	5.77	15.89	140.93	1.66	8.54	86.65

NOTES:
NTU = mephelometric turbidity unit
$ORP_{Ag.AgCl}$ = Oxidation/Reduction Potential
°C = degrees Celsius
µmhos/cm = microohms per centimeter
mV = millivolt
mg/L = milligram per liter
S.U. = Standard Units



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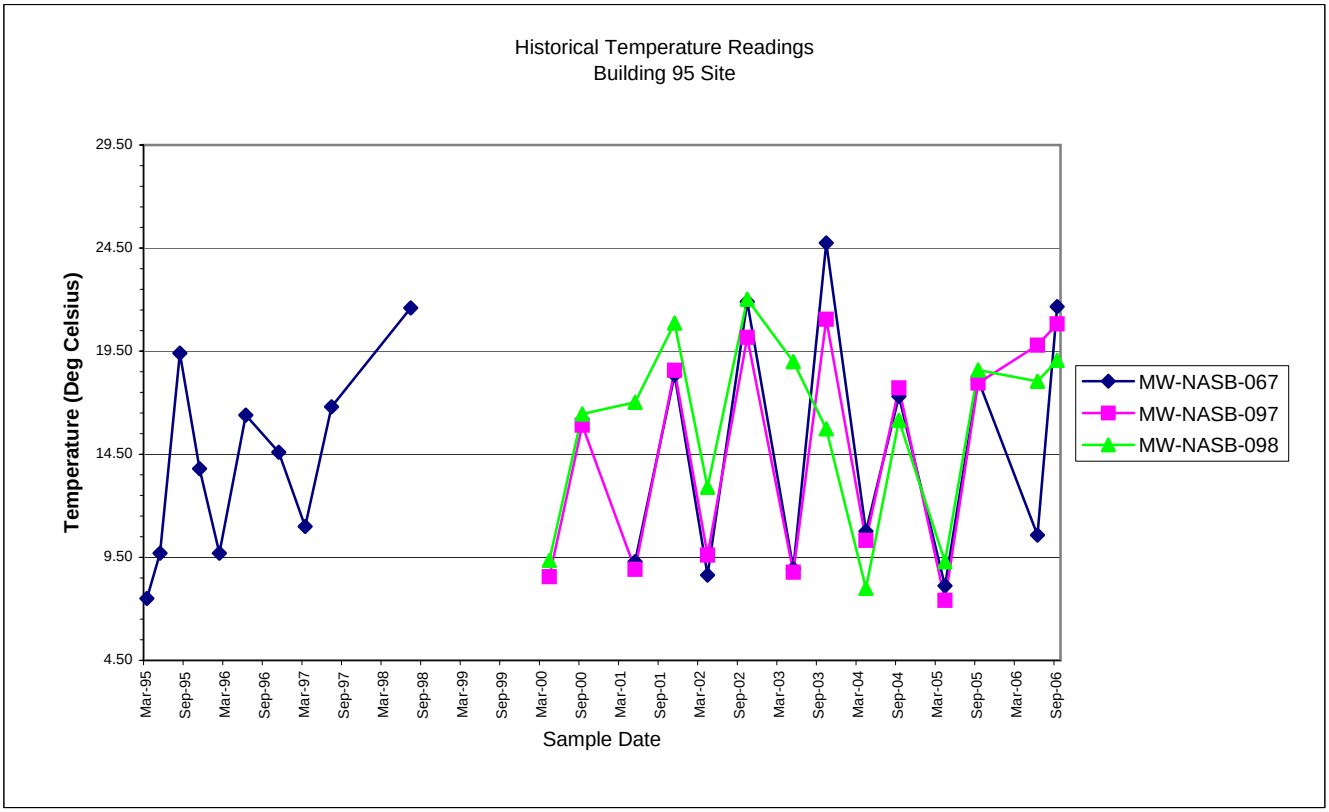
Building 95, Naval Air Station, Brunswick, Maine



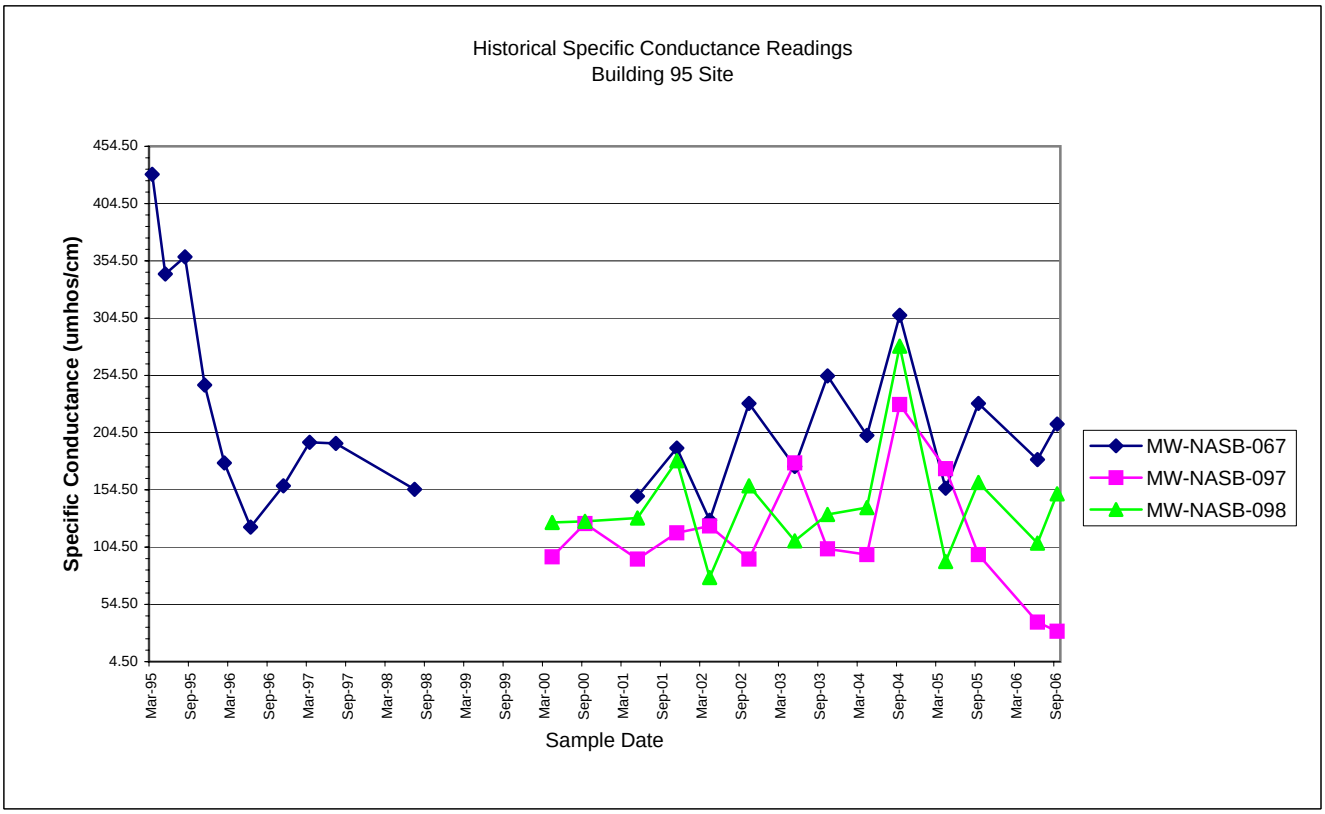
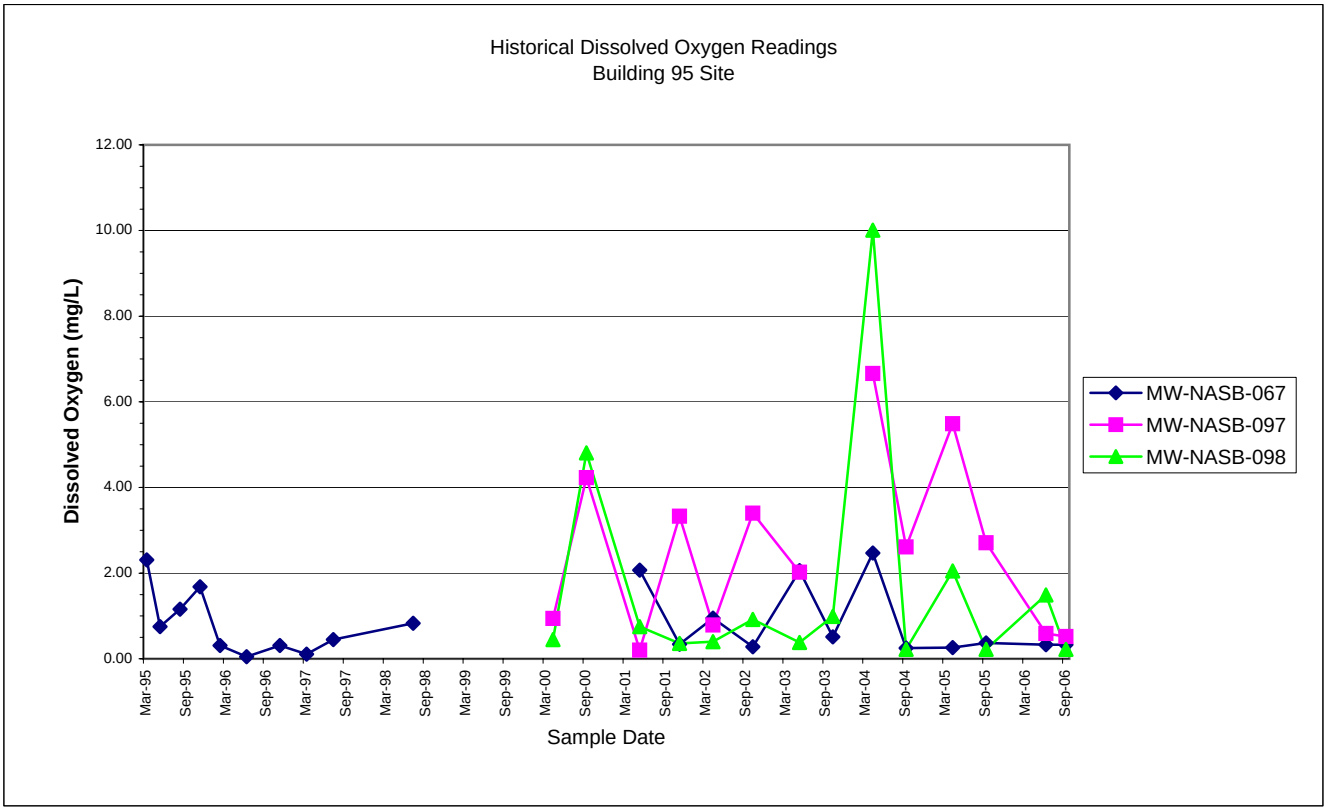


Table 1-3
Summary of Water Quality Indicator Parameters - September 2006 and Historical Water Quality Parameter Trends
Building 95, Naval Air Station, Brunswick, Maine



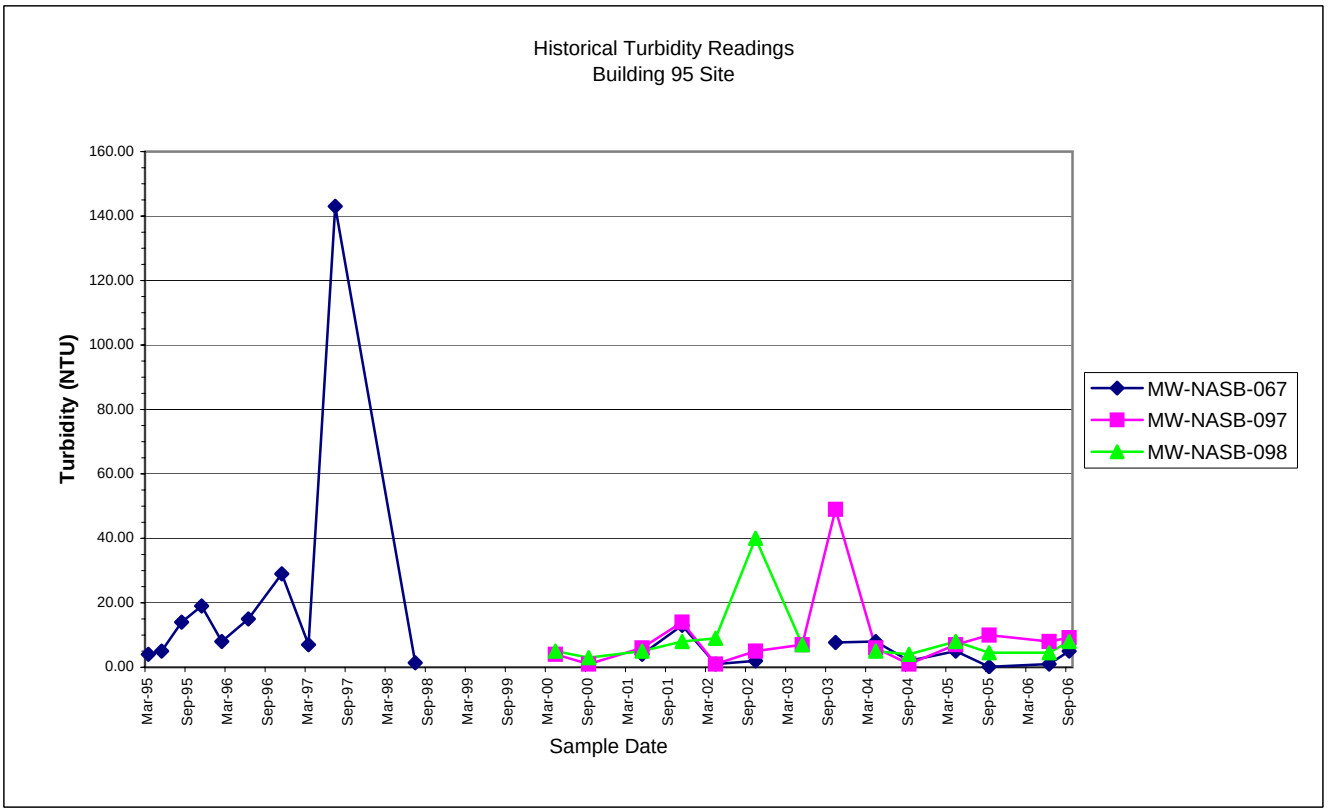


Table 1-3
Summary of Water Quality Indicator Parameters - September 2006 and Historical Water Quality Parameter Trends
Building 95, Naval Air Station, Brunswick, Maine

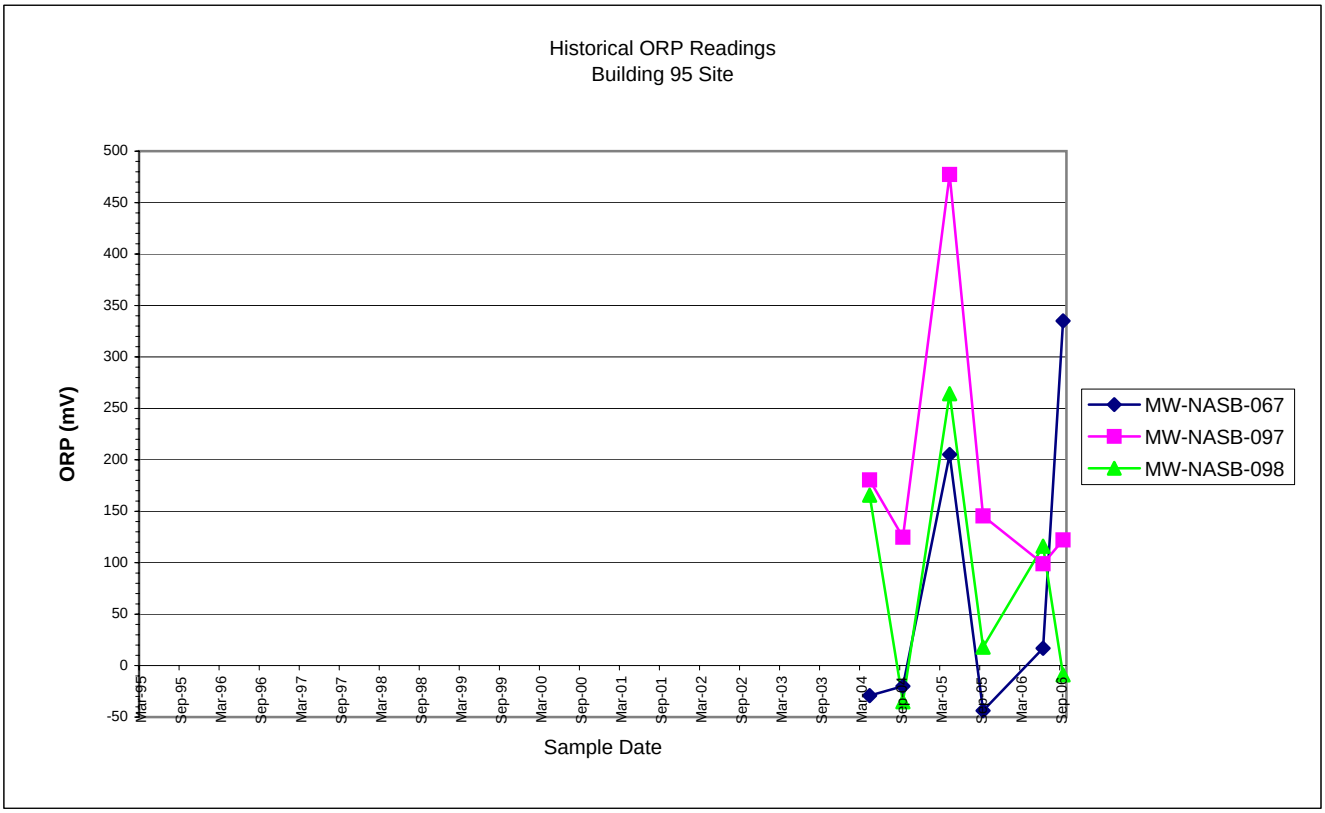


Table 1-4
Summary of Groundwater Analytical Results
Building 95 - NAS Brunswick, Maine
June 2006 (Monitoring Event 23)

Site Name: Building 95

			Station ID:	MW-NASB-067	MW-NASB-097	MW-NASB-098	MW-NASB-098	
			Field Sample ID:	BN-95-22-MW067	BN-95-22-MW097	BN-95-22-MW098	BN-95-22-XD1	
			Lab Sample ID:	AI05558	AI05559	AI05560	AI05561	
			Sample Date:	6/6/2006	6/6/2006	6/6/2006	6/6/2006	
			Lab Name:	NEL-ME	NEL-ME	NEL-ME	NEL-ME	
			Field QC:	Original data	Original data	Original data	Field duplicates	
			Sampling Method:	Low Flow	Low Flow	Low Flow	Low Flow	
	Units	**Federal MCL**	**Maine MEG**					
Pesticides								
4,4'-DDD	ug/l	NA	NA	0.1 U	0.1 U	0.1 U	0.1 U	-
4,4'-DDE	ug/l	NA	NA	0.1 U	0.1 U	0.1 U	0.1 U	-
4,4'-DDT	ug/l	NA	0.83	0.1 U	0.21	0.1 U	0.1 U	-
Aldrin	ug/l	NA	0.02	0.05 U	0.05 U	0.05 U	0.05 U	-
Alpha-BHC	ug/l	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	-
Alpha-chlordane	ug/l	NA	0.27	0.05 U	0.05 U	0.05 U	0.05 U	-
Beta-BHC	ug/l	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	-
Chlordane	ug/l	NA	0.27	0.5 U	0.5 U	0.5 U	0.5 U	-
Delta-BHC	ug/l	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	-
Dieldrin	ug/l	NA	0.02	0.1 U	0.1 U	0.1 U	0.1 U	-
Endosulfan I	ug/l	NA	0.42	0.05 U	0.05 U	0.05 U	0.05 U	-
Endosulfan II	ug/l	NA	0.42	0.1 U	0.1 U	0.1 U	0.1 U	-
Endosulfan Sulfate	ug/l	NA	NA	0.1 U	0.1 U	0.1 U	0.1 U	-
Endrin	ug/l	2	2	0.1 U	0.1 U	0.1 U	0.1 U	-
Endrin Aldehyde	ug/l	NA	NA	0.1 U	0.1 U	0.1 U	0.1 U	-
Endrin Ketone	ug/l	NA	NA	0.1 U	0.1 U	0.1 U	0.1 U	-
Gamma-BHC (Lindane)	ug/l	NA	0.2	0.05 U	0.05 U	0.05 U	0.05 U	-
Gamma-Chlordane	ug/l	NA	0.27	0.05 U	0.05 U	0.05 U	0.05 U	-

Table 1-4
Summary of Groundwater Analytical Results
Building 95 - NAS Brunswick, Maine
June 2006 (Monitoring Event 23)

Site Name: Building 95

			Station ID:	MW-NASB-067	MW-NASB-097	MW-NASB-098	MW-NASB-098	
			Field Sample ID:	BN-95-22-MW067	BN-95-22-MW097	BN-95-22-MW098	BN-95-22-XD1	
			Lab Sample ID:	AI05558	AI05559	AI05560	AI05561	
			Sample Date:	6/6/2006	6/6/2006	6/6/2006	6/6/2006	
			Lab Name:	NEL-ME	NEL-ME	NEL-ME	NEL-ME	
			Field QC:	Original data	Original data	Original data	Field duplicates	
			Sampling Method:	Low Flow	Low Flow	Low Flow	Low Flow	
	Units	**Federal MCL**	**Maine MEG**					
Pesticides								
Heptachlor	ug/l	0.4	0.08	0.05 U	0.05 U	0.05 U	0.05 U	-
Heptachlor Epoxide	ug/l	0.2	0.4	0.05 U	0.05 U	0.05 U	0.05 U	-
Hexachlorobenzene	ug/l	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	-
Methoxychlor	ug/l	40	42	0.5 U	0.5 U	0.5 U	0.5 U	-
Toxaphene	ug/l	3	0.3	1 U	1 U	1 U	1 U	-

Table 1-4

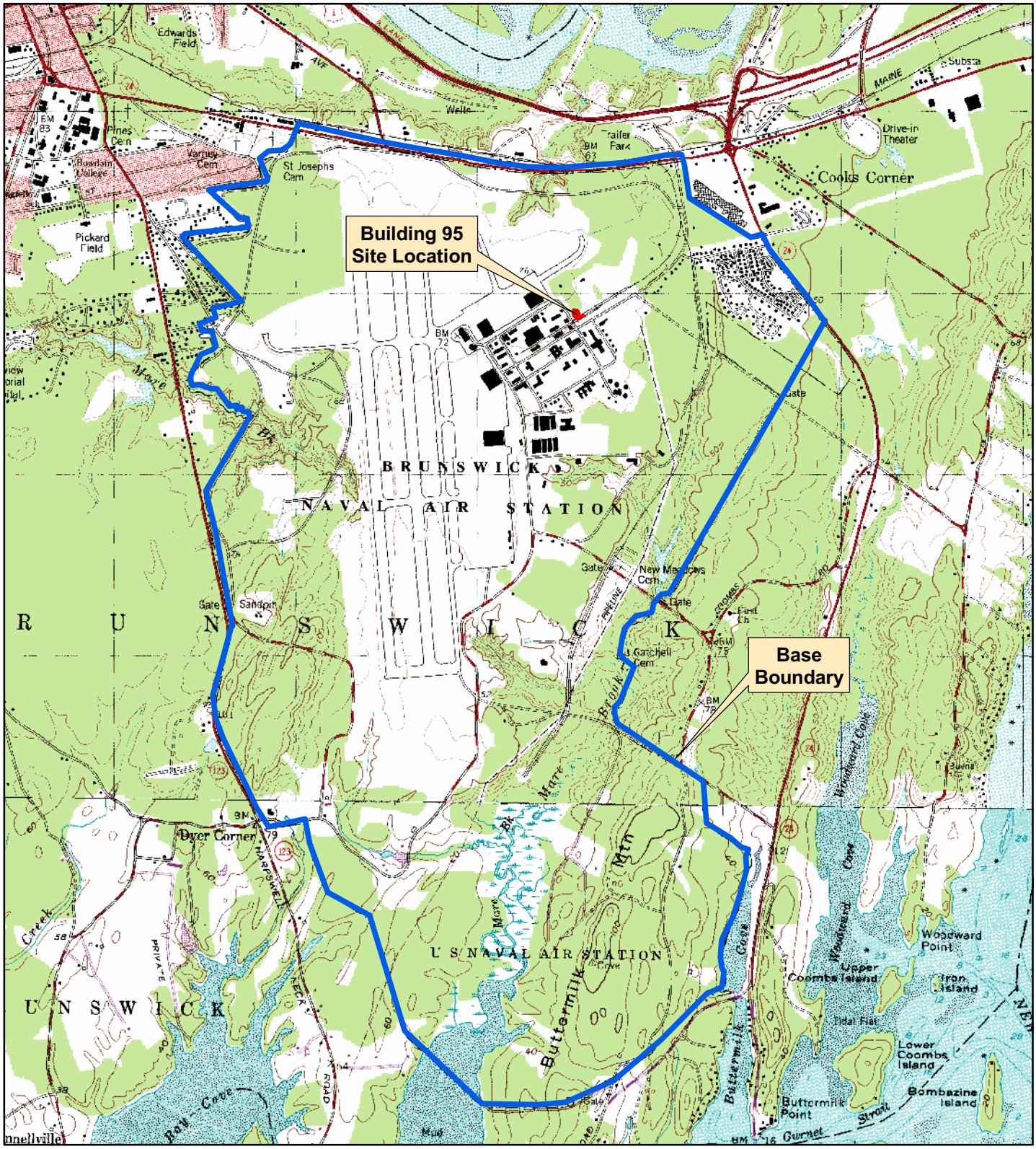
Notes

MEG (Maximum Exposure Guideline) - obtained from State of Maine Department of Human Services Maximum Exposure Guidelines, Memorandum dated 23 October 1992.
MCL (Maximum Contaminant Level) - obtained from 40 CFR Parts 141 and 142 (U.S. EPA 1998).

NA	Criteria not applicable
ug/L	micrograms per liter
-	Not sampled
U	Non detect down to the method detection limit (MDL). MDLs are provided in Appendix C (Analytical Data Quality Review).
J	Estimated concentration
UJ	Not detected. Sample quantitation limit is estimated.
R	Value rejected by data validator

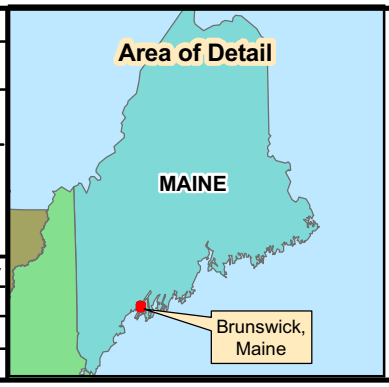
Highlighted concentrations indicate exceedance of an MEG or MCL. The color of the highlight indicated which screening level was exceeded.
Refer to the Data Quality Review section for reporting limits and method detection limits for all analyzed compounds.

FIGURES



Contract No.	N62472-02-D-0810
Description	Building 95 Site Location
Coordinate system	NAD 1983, UTM, Zone 19 N in meter
Sources	Naval Base Boundary provided by Navy. Orrs Island (1978) and Brunswick (1980) 7.5 minute quadrangles provided by USGS.

Date	15-FEB-2007	Rev.	Date	App. By
DB	C. Guido			
CB	G. Calderone			
AB				



Legend

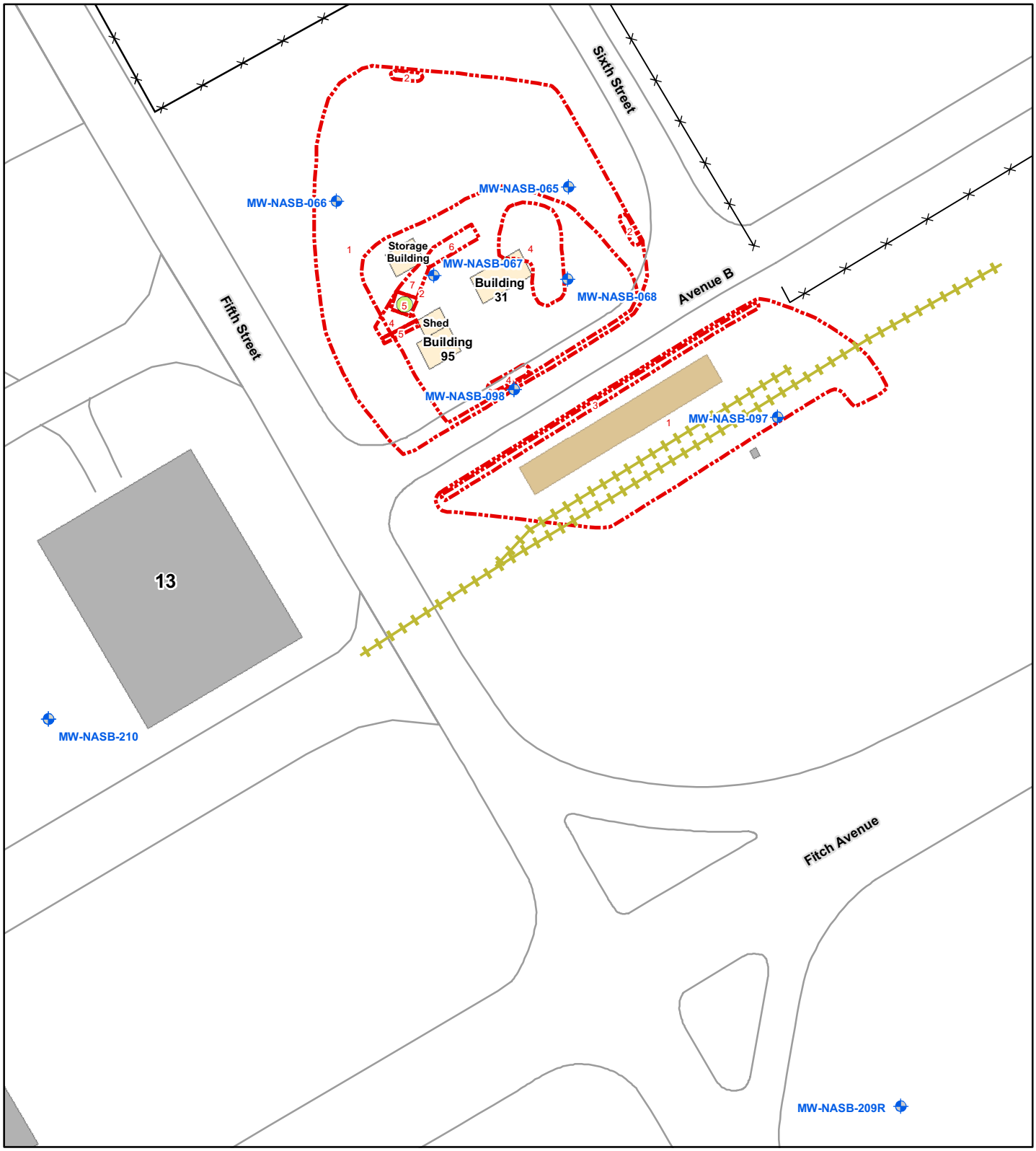
- NASB Brunswick Boundary
- Building 95 Site Location

Figure 1-1

Building 95 Site Location Map Naval Air Station Brunswick, Maine

ECC GIS
C:\NAVY_GIS\TO07_Brunswick\Bldg95\MapDocuments\Fig1-1_Bldg95_SiteLocus.mxd

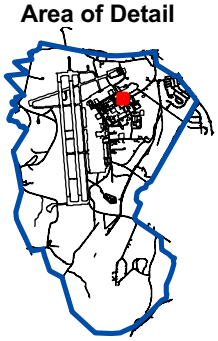
0 800 1,600 3,200 Feet



Contract No.	N62472-02-D-0810
Description	Building 95 Site Map
Coordinate system	NAD 1983, UTM, Zone 19 N in meter
Sources	Naval base boundary provided by Navy.

Date	15-FEB-2007	Rev.	Date	App. By
DB	C. Guido			
CB	G. Calderone			
AB				

Area of Detail



Legend

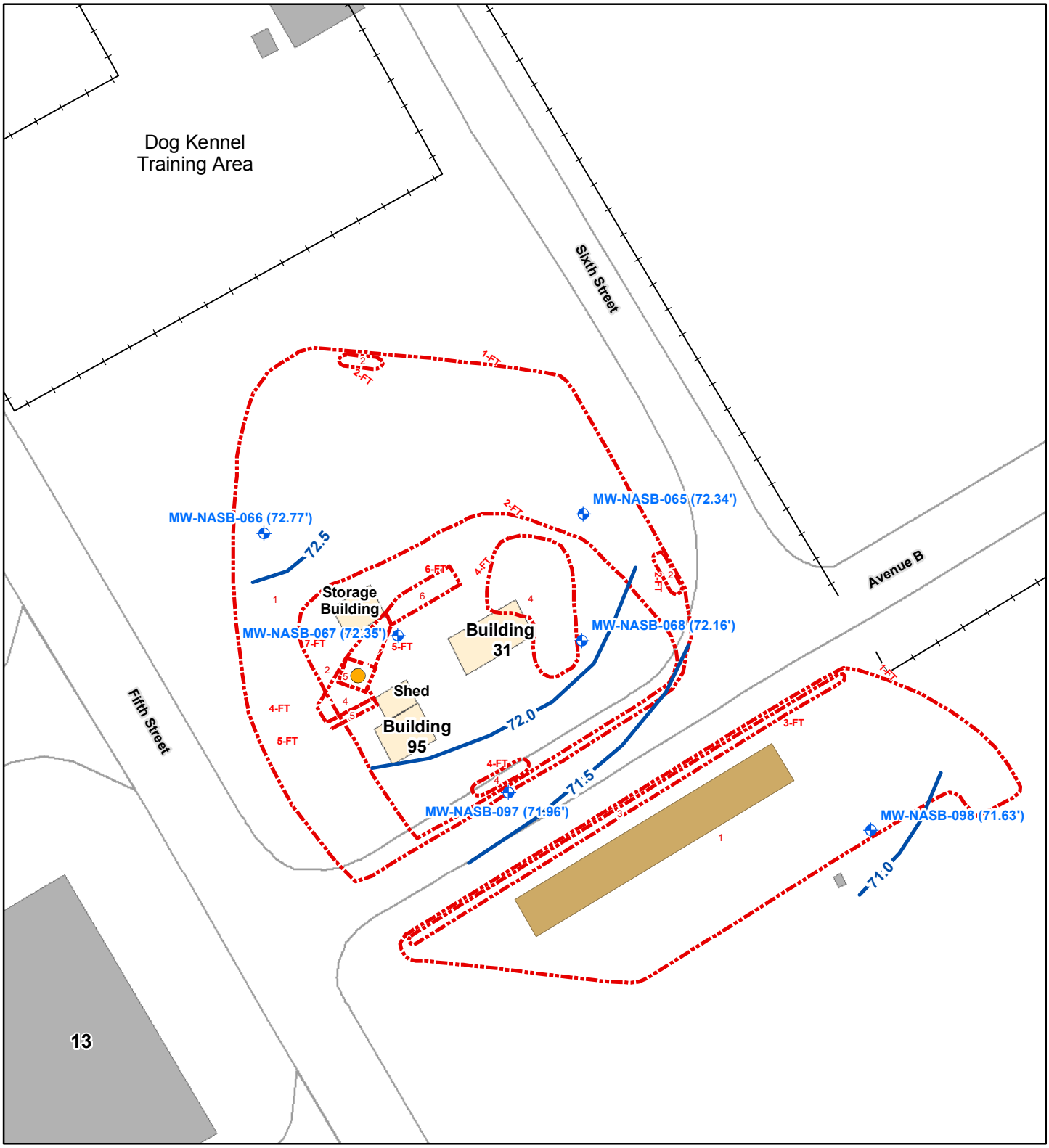
- Former Location of Septic Tank
- Monitoring Well
- Fence
- Rail Road Track (Abandoned)
- Excavation Boundary (Approximate)
- Former Building
- Soil Relocation Area (Approximate)
- Building
- 1 Soil Excavation Depth Limits (ft)

Figure 1-2

Building 95 Site Plan Naval Air Station Brunswick, Maine

ECC Marlborough, MA
GIS C:\NAVY_GIS\TO07_Brunswick\Bldg95\MapDocuments\Fig1-2_Bldg95_SiteMap.mxd

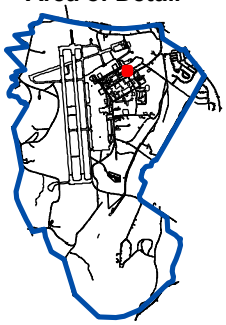
0 3,100 6,200 12,400 Feet



Contract No.	N62472-02-D-0810
Description	Building 95 NAS Brunswick, ME
Coordinate system	NAD 1983, UTM, Zone 19 N in meters
Sources	Naval Base Boundary provided by Navy.

Date	04-MAY-2007	Rev.	Date	App. By
DB	C. Guido			
CB	G. Calderone			
AB				

Area of Detail



Legend

- Monitroing Well
- Former Location of Septic Tank
- Inferred Groundwater Contour (ft MSL) - June 06
- Soil Relocation Area (Approximate)
- Excavation Boundary (Approximate)
- Former Building
- 1 FT Soil Excavation Depth Limits (Approximate)

Figure 1-3

Building 95
Inferred Groundwater Contour Map
June 2006

Naval Air Station
Brunswick, Maine

ECC Marlborough, MA
GIS C:\NAVY_GIS\T007_Brunswick\Bldg95
MapDocuments\Fig1-3_Bldg95_GWcontour.mxd

0 12.5 25 50 Feet

APPENDIX A
Site History

APPENDIX A

HISTORICAL SUMMARY OF SITE

A.1 INTRODUCTION

Building 95 and surrounding structures were the pesticide/herbicide storage area and distribution center for NAS Brunswick until 1985. These structures were demolished by the Navy, and currently the site is grassed over. The site has level topography and no surface water drainage features. Previous investigations identified the presence of several herbicides and pesticides, including 4,4'-DDT and pyrethrins (an insecticide), in the soil and on structures at the site. Additionally, in 1993, low concentrations of pesticides and inorganics were reported in groundwater samples (ABB-ES 1993[1]).

Site 17 (Building 95) is the designated tracking name for this former pesticide building. The site is not part of the National Priorities List and, therefore, is not subject to Comprehensive Environmental Response, Compensation, and Liability Act Five-Year Reviews. At the Building 95 site, the Navy is currently performing long-term monitoring, maintenance, and corrective measures as part of the long-term remedial actions required by the Action Memorandum dated April 1993 (ABB-ES 1993), and in accordance with the May 2000 Long-Term Monitoring Plan (LTMP) (EA 2000[2]).

In October 2003, under Contract No. N62472-02-D-0810, Contract Task Order No. 009, Environmental Chemical Corporation began to perform long-term monitoring at the Building 95 Site at Naval Air Station (NAS), Brunswick, Maine. Prior to October 2003 the Building 95 Site has been monitored since March 1995. NAS Brunswick is located south of the Androscoggin River between Brunswick and Cooks Corner, Maine.

A.2 SITE BACKGROUND

In 1994, a LTMP was established for Building 95 (ABB-ES 1994[3]). On 23 June 1994, the Navy received approval of the original LTMP from the U.S. Environmental Protection Agency (EPA) and State of Maine Department of Environmental Protection (MEDEP). During November-December 1994, corrective measures were taken at the site by ABB-ES following the completion of a baseline risk assessment. The remedial measures included: excavation of the upper 1-7 ft of soil, placement of permeable geotextile liner at the bottom of the excavation to act as a marker of the limit of excavation, and the addition of clean backfill.

1. ABB Environmental Services (ABB-ES). 1993. Action Memorandum, Building 95. April.
2. EA Engineering, Science, and Technology, Inc. 2000. Final Long-Term Monitoring Plan, Building 95, Naval Air Station, Brunswick, Maine. May.
3. ABB-ES. 1994. Final Long-Term Monitoring Plan Building 95, Sites 1 and 3 and Eastern Plume. August.

In June 1996, due to the low detections of site contaminants, the sampling frequency was reduced from quarterly to tri-annual following approval by MEDEP and EPA (EA 1997[4]). Monitoring Event 9 began the initiation of annual sampling at this site.

In May 2000, the LTMP was revised based upon discussions with MEDEP, EPA, and members of the Restoration Advisory Board. The May 2000 LTMP addressed changes to the sampling locations, frequency of sample collection, collection method, and analytical methods, and the revisions were based on previously collected data; as a result, the sampling frequency was reduced based on results of the monitoring event data collected to date. The sampling frequency was changed to bi-annual sampling to occur in April and September of each year.

In April 2001, groundwater monitoring well MW-NASB-067 was returned to the long-term monitoring sampling program at the request of MEDEP. Beginning with Monitoring Event 13 (April 2001), rotenone was added to the LTMP analyte list.

In July 2001, MEDEP agreed to eliminate the pesticide avitrol as a potential second round analyte from the groundwater sampling program at Building 95 based on historical site information and analytical data (non-detect in groundwater and soil samples since 1992).

Beginning in April 2002, MEDEP and Navy agreed to eliminate Target Compound List volatile organic compounds by EPA Method 8260B, Target Compound List semivolatile compounds by EPA Method 8270C, Target Analyte List Metals by EPA Method 6000/7000 Series, and rotenone by EPA Method 635 from the groundwater monitoring program. The Navy would continue to collect and analyze groundwater samples for Target Compound List pesticides by EPA 8081A and maleic hydrazide by EPA Method 632 Modified.

In August 2002, the Navy made a request to MEDEP and EPA that the pesticide maleic hydrazide be eliminated from the LTMP at Building 95. On 13 September 2002, the EPA agreed to the elimination of maleic hydrazide from the Building 95 LTMP. However, MEDEP requested additional rounds of sampling for maleic hydrazide.

During the Fall 2002 Long-Term Monitoring Program, samples were collected and analyzed for maleic hydrazide from each of the three wells (MW-NASB-067, MW-NASB-097, and MW-NASB-098). No maleic hydrazide was detected in the samples collected from the Building 95 monitoring wells.

In Spring 2003, as a result of discussions between MEDEP and Navy, it was determined well MW-NASB-097 would be sampled for maleic hydrazide, but only after the water level had reached 71.5 ft mean sea level or higher elevation, which represented seasonal high groundwater conditions.

4. EA Engineering, Science, and Technology, Inc. 1997. Final Monitoring Event 9 – August 1997, Building 95, Naval Air Station, Brunswick, Maine. November.

In April 2003, the water level had reached the 71.5 ft mean sea level and was sampled for maleic hydrazide at well MW-NASB-097. No maleic hydrazide was detected in the sample collected from well MW-NASB-097.

On 5 September 2003, the Navy issued a letter to MEDEP requesting that maleic hydrazide be eliminated from the LTMP at Building 95. MEDEP concurred to the Navy's 5 September 2003 request on 16 September 2003.

APPENDIX B

Field Monitoring and Sampling Forms

BRUNSWICK NASB BLD. 95

Monitoring Wells

Well ID	Sample I.D.	Sample Frequency	Pesticides	Dedicated Pump O=in plant X= in well
MW-NASB-067	BN-95-22-MW067	April / Sept	1	X
MW-NASB-097	BN-95-22-MW097	April / Sept	1	O
	BN-95-22-MW-XD1	April / Sept	1	O
MW-NASB-097 (MS/MSD)	BN-95-22-MW097-MS/MSD	April / Sept	2	O
MW-NASB-098	BN-95-22-MW098	April / Sept	1	O

Collected MS/MSD + dupe from 098- 097 compromised

Gauging Forms

FIELD RECORD OF WELL GAUGING

Project Name:	NASB, ME LTM Bld 95	Event 23	Weather:	cloudy/ cool	Gauge Date: 6/5/2006
Project Number:	5700.007.015.510		Sounding Method:	slope indicator	Gauge Time: 1430
ECC Personnel:	MAC				

Well Identification Number	Well Lock Status	Stick Up or F.M.	Well Physical Condition	VOC Concentrations Ambient Air (ppm)	VOC Concentrations Well Mouth (ppm)	Protective Casing Elevation (ft)	PVC Casing Elevation (ft)	Well Diameter (inches)	Total Depth of Well (ft)	Depth to Water (ft)	Depth to to Liquid (ft)	Water Table Elevation (ft)	Dedicated Pump
Bld 95													
MW-NASB-065	Good	Stick Up	Good	ND	ND		74.29	2	15.50	1.95	ND	74.29	Pump
MW-NASB-066	Good	Stick Up	Good	ND	ND		78.79	2	19.79	6.02	ND	78.79	Pump
MW-NASB-067	Good	Stick Up	Good	ND	ND		74.30	2	15.00	1.95	ND	74.30	Pump
MW-NASB-068	Good	Stick Up	Good	ND	ND		74.86	2	15.05	2.70	ND	74.86	Pump
MW-NASB-097	None	F.M.	Good	ND	ND		73.41	2	11.05	1.45	ND	73.41	No
MW-NASB-098	Good	Stick Up	Good	ND	ND		76.53	2	16.00	4.90	ND	76.53	No
ONFF													
MW-NASB-209R	None	F.M.	Good	ND	ND		72.94	2	10.00	3.82 ~~5.14~~	ND	72.94	No
MW-NASB-210	Good	Stick Up	Good	ND	ND		77.55	2	16.69	5.48	ND	77.55	No

Comments:

Sampling Forms

Environmental Chemical Corporation

Low Flow/Low Stress Groundwater Sampling Log

Project: Bldg 95
Location: NASB, Brunswick, ME
Well ID: MW-098

Date: 6/6/06
Sampler: MAC
PID Reading: —

Start Time: _____ **End Time:** _____
Well Construction: 2" PVC
Depth to water: 5.15
Well Depth: 15.75
Water Column: _____
Total Volume Removed (L) _____

Field Testing Equipment

Make	Model	Serial #
YSI	650 MDS	01B0582AC
YSI	600-XL-B-M	02A1047AB
Lamotte	2020	3176-1702

Time	volume removed (liters)	Flow Rate (ml/min)	Depth To Water (ft)	Temp (celsius)	pH (STD)	SPC uS/cm c	DO (mg/L)	ORP (mV)	Turbidity (NTU)	color
0945		200	5.52	15.02	7.06	100	5.35	82.0	120	
0955	2.0	200	5.50	16.79	6.00	100	3.45	83.6	65	
1010	5.0	200	5.50	17.60	5.96	103	2.71	90.2	19	
1020	7.0	200	5.50	17.72	5.94	106	1.91	109.2	9	
1025	8.0	200	5.50	17.91	5.94	107	1.76	110.9	8	
1030	9.0	200	5.50	17.92	5.93	108	1.55	114.9	8	
1032	9.4	200	5.50	18.04	5.93	108	1.49	116.1	6	
Acceptance Criteria:					10%	10%	10%	10%	<10	

2" screen volume = 0.163 gal/ft or 616 ml per foot

Sample Collection

Time	Sample ID	Container	# of Bottles	Preservative	Analyses
1034	BN-95-22-MW 098	1 Liter Amber	6	None	Pesticide (ms/msd)
0.000	BN-95-22-XD1	1 Liter Amber	2	None	Pesticides

Comments Opted to get dupe here because MW-097 had been compromised

Signature

6/6/06
Date

Environmental Chemical Corporation

Low Flow/Low Stress Groundwater Sampling Log

Project: Bldg 95
Location: NASB, Brunswick, ME
Well ID: MW-097

Date: 6/6/06
Sampler: MAC
PID Reading:

Start Time: **End Time:**
Well Construction: 2" PVC- Flush mount
Depth to water: 1.64
Well Depth: 10.22
Water Column:
Total Volume Removed (L)

Field Testing Equipment

Make	Model	Serial #
YSI	650 MDS	01B0582AC
YSI	600-XL-B-M	02A1047AB
Lamotte	2020	3176-1702

Time	volume removed (liters)	Flow Rate (ml/min)	Depth To Water (ft)	Temp (celsius)	pH (STD)	SPC uS/cm c	DO (mg/L)	ORP (mV)	Turbidity (NTU)	color
1105		200	2.62	15.18	6.16	28	1.81	127.6	130	
1115	2.0	200	1.88	18.16	5.69	25	0.50	136.3	55	
1130	5.0	200	1.88	20.34	5.72	29	0.65	111.7	27	
1145	8.0	200	1.88	20.53	5.72	33	0.63	107.4	12	
1155	10.0	200	1.88	19.90	5.71	35	0.57	94.3	10	
1158	10.6	200	1.90	19.79	5.69	39	0.58	97.0	9	
1201	11.2	200	1.91	19.79	5.69	39	0.59	99.0	8	
Acceptance Criteria:					10%	10%	10%	10%	<10	

2" screen volume = 0.163 gal/ft or 616 ml per foot

Sample Collection

Time	Sample ID	Container	# of Bottles	Preservative	Analyses
1204	BN-95-22-MW 097	1 Liter Amber	2	None	Pesticides

Comments Flush mount well has been damaged by winter snowplow ops. Cap off and iron ring smashed. Well has been open and exposed to street runoff from rainfall. Will collect dupe and ms/msd at another well. Will get repaired ASAP.

Signature

6/6/06
Date

Environmental Chemical Corporation

Low Flow/Low Stress Groundwater Sampling Log

Project: Bldg 95
Location: NASB, Brunswick, ME
Well ID: MW-067

Date: 6/6/06
Sampler: MAC
PID Reading:

Start Time: **End Time:**
Well Construction: 2" PVC
Depth to water: 2.03
Well Depth: –
Water Column:
Total Volume Removed (L)

Field Testing Equipment

Make	Model	Serial #
YSI	650 MDS	01B0582AC
YSI	600-XL-B-M	02A1047AB
Lamotte	2020	3176-1702

Time	volume removed (liters)	Flow Rate (ml/min)	Depth To Water (ft)	Temp (celsius)	pH (STD)	SPC uS/cm^c	DO (mg/L)	ORP (mV)	Turbidity (NTU)	color
1220		500	2.34	9.71	5.86	212	0.64	7.2	8	
1230	4.0	400	2.34	10.57	5.72	187	0.40	18.8	1	
1240	8.0	400	2.34	10.61	5.72	182	0.35	17.8	1	
1250	12.0	400	2.34	10.58	5.73	181	0.33	16.9	1	
Acceptance Criteria:					10%	10%	10%	10%	<10	

2" screen volume = 0.163 gal/ft or 616 ml per foot

Sample Collection

Time	Sample ID	Container	# of Bottles	Preservative	Analyses
1254	BN-95-22-MW 067	1 Liter Amber	2	None	Pesticides

Comments

Pump running dead slow - still pumping 400 ml/min
Slight septic (H_2S) odor.

Mark O. Co
Signature

6/6/06
Date

Calibration Forms

INSTRUMENT CALIBRATION LOG

Project/Site Name NASB BLDG 95 **Date** 6/5/06 **Weather** Cloudy

Calibrated By MAC **Instrument** YSI 650 MDS / YSI 600 XL-B-M **Serial Number** 01B0582AC / 02A1047AB

Parameters	Pre-calibration Reading	Post-calibration Reading	Temperature °C	Comments
Conductivity	1418	1413	20.03	
pH (7)	7.07	7.00	20.01	
pH (4)	3.92	4.00	20.12	
pH (10)				
ORP	242.5	240.0	20.22	
Dissolved Oxygen	97.3	99.4	19.91	
Barometric Pressure	755.8 MmHg			

Chain of Custody

CHAIN OF CUSTODY

NEL Job #:

NEL Control #:

Client Information

Name: ECC

Address: 33 Boston Post Rd. West, Suite 340

City: Marlborough, MA State: 01752 Zip:

Send Report to: Jackson Kiker

Phone #: 508-229-2270

Facility Information

Project Name: Building 95

Location: NASB Brunswick, Maine

Project No.: 5700.067.015.510

FAX #:

Analytical Information

Field ID / Point of Collection	Collection: Date	Collection: Time	Collection: Sampled By	Matrix	# of bottles	Preservation: HCL	Preservation: NaOH	Preservation: HNO3	Preservation: H2SO4	Preservation: None	Pesticides										
BN-95-22-MW087	6/6/06	12:54	MAC	GW	2					x	X			AJ05558.1-2							
BN-95-22-MW097	6/6/06	12:04	MAC	GW	2					x	X			AJ05559.1-2							
BN-95-22-MW098	6/6/06	10:34	MAC	GW	6					x	X	ms/msd		AJ05560.1-6							
BN-95-22-XD1	6/6/06	0000	MAC	GW	2					x	X			AJ05561.1-2							
BN-95-22-Rinsate 1	6/6/06	1430	MAC	GW	2					x	X			AJ05562.1-2							

Turnaround Information

- [ ] 21 Day Standard — Approved By:
- [x] 14 Day
- [ ] 7 Days EMERGENCY
- [ ] Other _____ (Days)

RUSH TAT is for FAX data

Data unless previously approved.

Data Deliverable Information

- [ ] NJ Reduced
- [ ] NJ Full
- [ ] FULL CLP
- [ ] Disk Deliverable
- [ ] Other (Specify)
- [ ] Commercial "A"
- [ ] Commercial "B"
- [ ] ASP Category B
- [ ] State Forms

Comments / Remarks

5.9°

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received by:	Relinquished by:	Date Time:	Received by:
1 [signature]	6/9/06 1500	[signature]	2 [signature]	6/9/06 16:15	2 [signature] 6/9 435
Relinquished by Sampler: 3	Date Time:	Received by: 3	Relinquished by: 4	Date Time:	Received by: 4
Relinquished by Sampler:	Date Time:	Received by:	Seal #	Preserved where applicable	On Ice:

JUN-09-2006 17:00 NORTHEAST LABS 12078737022 P.02

APPENDIX C

Analytical Data Quality Review

APPENDIX C

ANALYTICAL DATA QUALITY REVIEW
BUILDING 95
MONITORING EVENT 23

C.1 INTRODUCTION

This project utilized both field and analytical laboratory quality control measures to ensure that the data quality objectives presented in the project-specific Quality Assurance Project Plan (QAPP) (EA 2000)[1] were met.

The sampling program consisted of five water samples collected from the Building 95 site. Samples were sent to Northeast Laboratory Services in Waterville, Maine for SW8081A-Pesticide analysis. Sampling included three monitoring wells, one field duplicate, and one equipment rinsate blank. The field quality control samples (the field duplicate and equipment rinsate blank) were collected at the frequency required by the QAPP.

Analytical quality control was reviewed for compliance against the measurement performance criteria for precision and accuracy for each sample and analysis type, including field sample duplicates, as presented in the LTMP QAPP. Analytical precision was based upon the relative percent difference (RPD) of the matrix spike/matrix spike duplicates (MS/MSD). Accuracy was based upon the reported spike recoveries for the laboratory control standards (LCS), MS/MSD, and surrogate recoveries.

The ability of the laboratory to extract compounds is confirmed by the recoveries of the surrogate spikes. MS/MSD and surrogate spike recoveries measure the effect of the sample matrix on sample preparation and measurement methodology. During the MS/MSD process, known quantities of target compounds are spiked into the sample matrix, and recoveries are used to measure potential bias due to matrix effects. The MS/MSD RPD is used to determine analytical precision, and the field duplicate RPD is used to determine overall precision. The accuracy of the LCS spike recoveries is used in conjunction with MS/MSD when evaluating organic analyses.

Field completeness was quantified by reviewing the scheduled number of samples as compared to the number of samples actually collected. Data completeness was quantified by determining the ratio of the number of non-rejected analyte measurements to the total number of analyte measurements.

1. EA Engineering, Science, and Technology, Inc. 2000. Final Long-Term Monitoring Plan (including Quality Assurance Project Plan), Building 95, Naval Air Station, Brunswick, Maine. May.

For clarity, the following terms are defined for use throughout this appendix:

- ***Method Detection Limit –*** Method detection limit (MDL) refers to the minimum concentration that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero.

- ***Practical Quantitation Limit*** – The practical quantitation limit (PQL) is defined as the lowest concentration that can be reasonably achieved within specified units of precision and accuracy during routine laboratory operating conditions.

- ***Method Reporting Limit*** – The method reporting limit (MRL) is defined as the Project Quantitation Limit adjusted for any necessary sample dilutions, percent moisture, sample volume deviations, and/or extract/digestate volume deviations.

- ***Measurement Performance Criteria*** - Define the acceptable performance for the data quality indicators- accuracy and precision. The LTMP QAPP specifies the project measurement performance criteria (MPC) for LCS, surrogates, MS/MSD, and MS/MSD RPD quality control checks.

- ***Precision*** - Precision is evaluated by comparing the relative percent difference (RPD) of the MS/MSD sample pairs to the QAPP RPD limits. If the RPD is outside the measurement performance criteria, the positive detect or non-detect is qualified for the affected compound in the unspiked sample (U.S. EPA 1996)[2]. The overall precision is determined by comparing the field duplicate RPD to the QAPP RPD limits.

- ***Accuracy*** - Accuracy is evaluated by comparing MS/MSD recoveries, surrogate spike recoveries, and LCS recoveries to QAPP MPC.

C.2 LABORATORY ANALYTICAL QUALITY CONTROL PROGRAM

Aqueous samples collected from the three monitoring wells were analyzed for Target Compound List (TCL) pesticides by EPA SW-846 Method 8081A. The quality control measures specified in the EPA SW-846 methodology (MS/MSD, surrogates, and LCS), as well as those in the QAPP, were performed at the proper frequency by the laboratory and established proper analytical quality control. The range of results for the accuracy and precision data quality objectives are discussed in the subsections below.

2. U.S. Environmental Protection Agency, Region I-New England, "Region 1, EPA-New England Data Validation Functional Guidelines for Evaluating Environmental Analyses," (July, 1996; Revised Dec, 1996).

C.2.1 LABORATORY ACCURACY EVALUATION

C.1.2.1 Evaluating Matrix Spike/Matrix Spike Duplicate Recoveries for Accuracy

Generally, no action is taken based on the MS/MSD data alone to qualify an entire sample delivery group. The qualification is limited to the unspiked sample associated with the MS/MSD. However, professional judgment may be used to qualify samples across a particular sample delivery group (i.e., all associated samples).

- If the spike recovery is greater than the upper control limit, then the positive detects are estimated and the non-detects are not impacted for the affected compounds in the unspiked sample.

- If the spike recovery is greater than or equal to 10 percent, but less than the lower control limit, then the positive detects are estimated and the non-detects are estimated for the affected compounds in the unspiked sample.

- If the spike recovery is less than 10 percent, then the positive detects are estimated and the non-detects are rejected for the affected compounds in the unspiked sample.

C.1.2.2 Evaluating Surrogate Recoveries for Accuracy

- If the surrogate recovery is greater than the upper limit, all positive detects are estimated and the non-detects are not affected (U.S. EPA 1996).

- If the surrogate recovery is greater than or equal to 10 percent, but less than the lower control limit, then all positive detects are estimated and all non-detects are estimated.

- If the surrogate recovery is less than 10 percent, then the positive detects are estimated and all non-detects are rejected.

C.1.2.3 Evaluating Laboratory Control Sample Recoveries for Accuracy

- If the LCS recovery is greater than the upper control limit, the positive detects are estimated and the non-detects are not affected (U.S. EPA 1996).

- If the LCS recovery is greater than or equal to 10 percent, but less than the lower control limit, the positive detects are estimated and the non-detects are estimated.

- If the LCS recovery is less than 10 percent, the positive detects are estimated and the non-detects are rejected.

C.1.2.4 Evaluating Laboratory Method Blanks for Accuracy

- Method blank results should not have any analyte detections greater than the method reporting limit.
- Field samples are evaluated at a five times or ten times (for common lab cross contaminants) the detections in the associated method blank.
- Field samples associated with the method blank, which have detected analyte levels less than five times or ten times (for common lab cross contaminants) the corresponding analyte level detected in the method blank, are qualified as non-detect (U).
- Field sample associated with the method blank, which have detected analyte levels greater than five times or ten times (for common lab cross contaminants) the corresponding analyte level detected in the method blank, are not qualified.

C.1.3. LABORATORY ACCURACY ASSESSMENT

Surrogates: Two surrogates were used to measure the ability of the laboratory to extract the target compounds from the environmental samples. The control limits identified in the QAPP and used by the laboratory were the same for the two surrogates. The monitoring well sample surrogate recoveries were within the QAPP MPC. Sample extraction was acceptable and without bias.

MS/MSD: All compounds were used to assess the MS/MSD recoveries. The MS/MSD recovery limits stated in the QAPP were the same as those reported by the laboratory. The MS recoveries were within the QAPP MPC, and no qualifications were assigned.

LCS: All of the pesticide compounds were used to assess the LCS recoveries. The LCS samples had recoveries within measurement performance criteria. Laboratory accuracy was acceptable.

Method Blank: The method blank had non-detects for the pesticides of concern.

C.1.4 LABORATORY PRECISION EVALUATION

C.1.4.1 Evaluating MS/MSD RPDs for Precision

All QAPP pesticide compounds were used to assess the MS/MSD RPD. The control limits identified in the QAPP were the same as those used by the laboratory.
If the MS/MSD RPD is greater than 30%, detects are qualified.

C.1.4.2 Laboratory Precision Assessment

The MS/MSD was performed on Sample MW-098 and had RPDs within the established control limits.

C.2 FIELD SAMPLING PROGRAM QUALITY CONTROL

A field duplicate and equipment rinsate blank were collected and analyzed for the same parameters as the environmental samples to determine field sampling precision.

C.2.1 FIELD PRECISION EVALUATION

C.2.1.1 Field Duplicate Sample Precision Evaluation

Field duplicate samples are used to evaluate the overall precision of both the field and laboratory. EPA Region 1 criteria for evaluating field duplicates, the following guideline were used to review the field duplicate collected and analyzed during the sampling event.

- Field sample and field duplicate sample results greater than twice the MRL were evaluated and the RPD was calculated.
- A detect greater than the MRL in one but non-detect in another sample of the field duplicate pair were qualified as estimated for detects and non-detect results were qualified as estimated non-detect.
- The overall precision was evaluated as being acceptable if less than 30 percent.

C.2.1.2 Field Precision Assessment

One field duplicate sample was collected from monitoring well MW-NASB-098. The samples were identified as BN-95-22-MW098 (native sample) / BN-95-22-MW-XD1 (field duplicate).

The following table lists the set of field duplicate groundwater sample results that are associated with Sample Delivery Group: BNASDLDG95060906;

Compound	Units	MW-NASB-098 (Lab ID: AI05560)	MW-NASB-098 DUP (Lab ID: AI05561)	RPD%
All TCL-8081A Pesticides	µg/L	ND	ND	**N/A**

Precision requirements were met for all pesticide compounds. Both samples had nondetects for all target compounds. No qualifications were required.

C.2.2 FIELD ACCURACY EVALUATION

The equipment rinsate blank, BN-95-22-Rinsate1, had non-detects for all pesticide compounds. Field accuracy was acceptable and there was no apparent cross-contamination.

C.3 OVERALL EVALUATION OF DATA AND USABILITY RECOMMENDATION

The following is a summary table of the findings for the data quality review performed and discussed in detail in this appendix:

Data Quality Review		Holding Time	Field/Method Blank Contamination	Precision		Accuracy			Completeness	
				Laboratory	Field	Surro gate	MS/MSD	LCS	Analytical	Field
Matrix: Aqueous	TCL Pesticides – 8081A	√	√	√	√	√	√	√	100%	100%
NOTE: √ = The data are usable as reported based on the data quality review of this quality measurement.										

Pesticides data are usable based on the quality review for precision and accuracy and reconciliation with project data quality objectives. No data from this sampling event required qualification.

C.4 COMPLETENESS

Analytes were reviewed for method and QAPP compliance, and the data were determined to be usable because no data were rejected for this sampling event. Therefore, the percent analytical completeness for field samples is 100 percent. The planned number of field samples and the corresponding quality control samples (duplicate & rinsate) were collected, resulting in a percent field completeness of 100 percent.

The MS/MSD and FD were initially set for collection at MW-NASB-097. The field documentation noted the well was compromised, so the control samples were collected from MW-NASB-098. There was no impact upon data quality.

C.5 METHOD DETECTION LIMITS FOR AQUEOUS SAMPLES

The following table provides the MDLs for aqueous samples. The MDL represents the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero.

The validator noted that MRLs for heptachlor epoxide and dieldrin exceeded the PQLs listed in the QAPP; however, the values were compared to the Maximum Exposure Guidelines [3] (MEGs) for the State of Maine and the MDLs for these compounds are less than the MEGs.

Analytical Method	Matrix	Analyte	MDL	Units
SW8468081	Aqueous	4,4'-DDD	0.0059	ug/L
SW8468081	Aqueous	4,4'-DDE	0.0156	ug/L
SW8468081	Aqueous	4,4'-DDT	0.0156	ug/L
SW8468081	Aqueous	Aldrin	0.0053	ug/L
SW8468081	Aqueous	alpha-BHC	0.0142	ug/L
SW8468081	Aqueous	Alpha-chlordane	0.0166	ug/L
SW8468081	Aqueous	beta-BHC	0.0078	ug/L
SW8468081	Aqueous	Chlordane	0.21	ug/L
SW8468081	Aqueous	Delta-BHC	0.0121	ug/L
SW8468081	Aqueous	Dieldrin	0.0149	ug/L
SW8468081	Aqueous	Endosulfan-I	0.0088	ug/L
SW8468081	Aqueous	Endosulfan-II	0.0111	ug/L
SW8468081	Aqueous	Endosulfan sulfate	0.0116	ug/L
SW8468081	Aqueous	Endrin	0.0062	ug/L
SW8468081	Aqueous	Endrin aldehyde	0.0075	ug/L
SW8468081	Aqueous	Endrin ketone	0.0068	ug/L
SW8468081	Aqueous	gamma-BHC (Lindane)	0.0073	ug/L
SW8468081	Aqueous	Heptachlor	0.0089	ug/L
SW8468081	Aqueous	Heptachlor epoxide	0.0083	ug/L
SW8468081	Aqueous	Methoxychlor	0.0079	ug/L
SW8468081	Aqueous	Toxaphene	0.678	ug/L

3 Maine Department of Human Services, Environmental and Occupational Health Program, Center for Disease Control, "Maine CDC Maximum Exposure Guidelines (MEGs) for drinking water," (August 7, 2006).

APPENDIX D

Analytical Report Form I Data Sheets

DATA VALIDATION MEMORANDUM
NAS BRUNSWICK SITE BLDG 95
JUNE 2006 SAMPLING ROUND 22 (SDG BNASBLDG95060906)

TO: ENGINEERING FACILITY COMMAND NORTHEAST

FROM: JACKSON KIKER, ECC SENIOR CHEMIST, MARLBOROUGH, MA

SUBJECT: NAS BRUNSWICK SITE BLDG 95 MONITORING EVENT 22

DATE: 1/5/2007

Project data were validated using the following Validation Functional Guidelines, as modified for non-CLP methods and project-specific QAPP measurement performance criteria (MPC):

1. Region I, EPA-NE Data Validation Functional Guidelines for Evaluation of Environmental Analyses (Dec, 1996),

2. National Functional Guidelines for Evaluation Inorganic Analysis (1988), and

3. National Functional Guidelines for Evaluation Organic Analysis (October 1999).

The data were assessed against the MPC listed in the approved Bldg 95 LTMP QAPP (May 2000). The QAPP MPC and validation guideline exceedences are assessed and documented on the method/QAPP specific data validation worksheets. On these data validation worksheets the data quality acceptance criteria are presented, analytes requiring qualification based on MPC and/or validation guidance criteria exceedences are listed, assigned qualifiers, qualifying rationale is documented, and any potential bias noted. The overall evaluation of the data generated by a method is presented in the data validation worksheet.

Standard EPA Region I data qualifiers are used to denote the assessment of data quality. The final and ranking assigned data qualifier for an analyte is presented in the data summary table. Ancillary qualifiers are noted on the data validation worksheets.

The USEPA Region I Organic Regional Data Assessment (ORDA) sheet displays the summarized results of the data validation assessment for all analytical methods reported in the SDG.

ACRONYMS AND ABBREVIATIONS

Following is a list of acronyms and abbreviations that may be used in the data validation reports.

Acronym or Abbreviation	Definition
%D	Percent difference
%R	Percent recovery
Ug/L	Microgram per liter
BD	Breakdown
BEHP	2-bis(ethylhexyl)phthalate
BFB	Bromofluorobenzene
CCB	Continuing calibration Blank
CCC	Continuing Check Compound
CCV	Continuing Calibration Verfication
COC	Chain of custody
CRI	standard at RL for ICP
CVAA	Cold vapor atomic absorption
DFTPP	Decafluorotriphenylphosphine
DQO	Data quality objective
EB	Equipment blank
EPA	Environmental Protection Agency
FD	Field duplicate
GC	Gas Chromatography
GC/MS	Gas chromatography/mass spectrometry
HT	Holding time
ICAL	Initial calibration
ICS-A/AB	Interelement check standard A or AB
ICV	Initial calibration verification
IDL	Instrument detection limit
IS	Internal standards
LCL	Lower control limit
LCS	Laboratory control sample
LTMP	Long term monitoring plan
MeCl	Methylene chloride
MS	Matrix spike
MSD	Matrix spike duplicate
MPC	Measurement performance criteria

Acronym or Abbreviation	Definition
NA	Not applicable
NC	Not calculated.
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated biphenyls
PQL	Practical quantitation limit
QAPP	Quality Assurance Project Plan
QC	Quality control
RF	Response Factor
RPD	Relative percent difference
RRF	Relative response factor
RSD	Relative standard deviation
RT	Retention time
SDG	Sample Delivery Group
SOP	Standard Operation Procedure
SVOC	Semi-volatile organic compound
SPCC	System performance check compound
SQL	Sample Quantitation Limit
TB	Tripblank
TCX	Tetrachloro-m-xylene
TIC	Tentatively identified compound
UCL	Upper control limit
VOC	Volatile organic compound

DATA QUALIFIER REFERENCE TABLE

Data validation reports will summarize the samples reviewed, elements reviewed, any nonconformances with the established criteria, validation actions (including data qualifiers). Data qualifiers will be consistent with EPA Region I – New England guidelines and will consist of the following:

USEPA Region I – Data Qualifier	USEPA Region I – Qualifier Definition
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
UJ	The analyte was not detected above the sample reporting limit; and the reporting limit is approximate
U	The sample was analyzed for, but was not detected above the sample reporting limit.
R	The sample result is rejected due to serious deficiencies. The presence or absence of the analyte cannot be verified

Region I, EPA-NE ORGANIC REGIONAL DATA ASSESSMENT

LAB NAME: NorthEast Laboratory
SDG #:__BNASBLDG95060906
EPA-NE DV TIER LEVEL:___II___
SITE NAME: NAS Brunswick –BLDG 95

# of SAMPLES/MATRIX: BLD 95: 3 groundwater, 1 FD, I RB.
VALIDATION CONTRACTOR:__ECC/ASW
VALIDATOR'S NAME: Sherri Pullar
DV Completion Date:_July 14, 2006
Date Sampled__June 6, 2006

ANALYTICAL DATA QUALITY SUMMARY

	Review Item	Pesticide
1	Preservation and HT	O
2	Instrument Performance Check	O
3	Initial Calibration:	O
4	Continuing Calibration:	O
5	Blanks:	O
6	Surrogate Compounds:	O
7	Internal Standards	-
8	Matrix Spike/Matrix Spike Duplicate:	O
9	Sensitivity Check:	O
10	PE Samples- Accuracy Check	O
11	Target Compound Identification:	O
12	Compound Quantitation and Reported QLs	O
13	Tentatively Identified Compounds:	-
14	Semivolatile/Pesticide/PCB Cleanup:	-
15	Data Completeness	O
16	Overall Evaluation of Data:	O

O = Data had no problems or were qualified due to minor contractual problems; M = Data were qualified due to major/systemic MPC exceedences: Z = Data were rejected as unusable due to major contractual problems.

ACTION ITEMS: (Z items): None

AREAS OF CONCERN: (M items):
Pesticide: None.
COMMENTS: None.

NAS BRUNSWICK- BUILDING 95 – JUNE 2006
DATA SUMMARY TABLE – AQUEOUS SDG BNASBLDG95060906

Sample Name	Lab Id	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	MDL	QL
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	4,4-DDD	0.1	UG/L	U	0.0059	0.1
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	4,4-DDE	0.1	UG/L	U	0.0156	0.1
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	4,4-DDT	0.1	UG/L	U	0.0156	0.1
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	Aldrin	0.05	UG/L	U	0.0053	0.05
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	Alpha-BHC	0.05	UG/L	U	0.0142	0.05
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	alpha-chlordane	0.05	UG/L	U	0.0166	0.05
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	Beta-BHC	0.05	UG/L	U	0.0078	0.05
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	Chlordane	0.5	UG/L	U	0.21	0.5
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	Delta-BHC	0.05	UG/L	U	0.0121	0.05
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	Dieldrin	0.1	UG/L	U	0.0149	0.1
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	Endosulfan I	0.05	UG/L	U	0.0088	0.05
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	Endosulfan II	0.1	UG/L	U	0.0111	0.1
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	Endosulfan Sulfate	0.1	UG/L	U	0.0116	0.1
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	Endrin	0.1	UG/L	U	0.0062	0.1
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	Endrin Aldehyde	0.1	UG/L	U	0.0075	0.1
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	Endrin Ketone	0.1	UG/L	U	0.0068	0.1
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	Gamma-BHC (Lindane)	0.05	UG/L	U	0.0073	0.05
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	gamma-chlordane	0.05	UG/L	U	0.0074	0.05
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	Heptachlor	0.05	UG/L	U	0.0089	0.05
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	Heptachlor Epoxide	0.05	UG/L	U	0.0083	0.05
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	hexachlorobenzene	0.05	UG/L	U		0.05
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	Methoxychlor	0.5	UG/L	U	0.0079	0.5
BN-95-22-MW067	AI05558	SW8081	6/12/2006	1	Toxaphene	1	UG/L	U	0.678	1
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	4,4-DDD	0.1	UG/L	U	0.0059	0.1
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	4,4-DDE	0.1	UG/L	U	0.0156	0.1
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	4,4-DDT	0.21	UG/L		0.0156	0.1
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	Aldrin	0.05	UG/L	U	0.0053	0.05
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	Alpha-BHC	0.05	UG/L	U	0.0142	0.05
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	alpha-chlordane	0.05	UG/L	U	0.0166	0.05
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	Beta-BHC	0.05	UG/L	U	0.0078	0.05

Sample Name	Lab Id	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	MDL	QL
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	Chlordane	0.5	UG/L	U	0.21	0.5
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	Delta-BHC	0.05	UG/L	U	0.0121	0.05
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	Dieldrin	0.1	UG/L	U	0.0149	0.1
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	Endosulfan I	0.05	UG/L	U	0.0088	0.05
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	Endosulfan II	0.1	UG/L	U	0.0111	0.1
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	Endosulfan Sulfate	0.1	UG/L	U	0.0116	0.1
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	Endrin	0.1	UG/L	U	0.0062	0.1
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	Endrin Aldehyde	0.1	UG/L	U	0.0075	0.1
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	Endrin Ketone	0.1	UG/L	U	0.0068	0.1
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	Gamma-BHC (Lindane)	0.05	UG/L	U	0.0073	0.05
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	gamma-chlordane	0.05	UG/L	U	0.0074	0.05
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	Heptachlor	0.05	UG/L	U	0.0089	0.05
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	Heptachlor Epoxide	0.05	UG/L	U	0.0083	0.05
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	hexachlorobenzene	0.05	UG/L	U		0.05
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	Methoxychlor	0.5	UG/L	U	0.0079	0.5
BN-95-22-MW097	AI05559	SW8081	6/12/2006	1	Toxaphene	1	UG/L	U	0.678	1
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	4,4-DDD	0.1	UG/L	U	0.0059	0.1
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	4,4-DDE	0.1	UG/L	U	0.0156	0.1
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	4,4-DDT	0.1	UG/L	U	0.0156	0.1
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	Aldrin	0.05	UG/L	U	0.0053	0.05
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	Alpha-BHC	0.05	UG/L	U	0.0142	0.05
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	alpha-chlordane	0.05	UG/L	U	0.0166	0.05
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	Beta-BHC	0.05	UG/L	U	0.0078	0.05
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	Chlordane	0.5	UG/L	U	0.21	0.5
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	Delta-BHC	0.05	UG/L	U	0.0121	0.05
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	Dieldrin	0.1	UG/L	U	0.0149	0.1
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	Endosulfan I	0.05	UG/L	U	0.0088	0.05
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	Endosulfan II	0.1	UG/L	U	0.0111	0.1
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	Endosulfan Sulfate	0.1	UG/L	U	0.0116	0.1
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	Endrin	0.1	UG/L	U	0.0062	0.1
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	Endrin Aldehyde	0.1	UG/L	U	0.0075	0.1
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	Endrin Ketone	0.1	UG/L	U	0.0068	0.1
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	Gamma-BHC (Lindane)	0.05	UG/L	U	0.0073	0.05

Sample Name	Lab Id	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	MDL	QL
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	gamma-chlordane	0.05	UG/L	U	0.0074	0.05
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	Heptachlor	0.05	UG/L	U	0.0089	0.05
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	Heptachlor Epoxide	0.05	UG/L	U	0.0083	0.05
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	hexachlorobenzene	0.05	UG/L	U		0.05
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	Methoxychlor	0.5	UG/L	U	0.0079	0.5
BN-95-22-MW098	AI05560	SW8081	6/12/2006	1	Toxaphene	1	UG/L	U	0.678	1
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	4,4-DDD	0.1	UG/L	U	0.0059	0.1
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	4,4-DDE	0.1	UG/L	U	0.0156	0.1
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	4,4-DDT	0.1	UG/L	U	0.0156	0.1
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	Aldrin	0.05	UG/L	U	0.0053	0.05
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	Alpha-BHC	0.05	UG/L	U	0.0142	0.05
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	alpha-chlordane	0.05	UG/L	U	0.0166	0.05
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	Beta-BHC	0.05	UG/L	U	0.0078	0.05
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	Chlordane	0.5	UG/L	U	0.21	0.5
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	Delta-BHC	0.05	UG/L	U	0.0121	0.05
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	Dieldrin	0.1	UG/L	U	0.0149	0.1
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	Endosulfan I	0.05	UG/L	U	0.0088	0.05
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	Endosulfan II	0.1	UG/L	U	0.0111	0.1
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	Endosulfan Sulfate	0.1	UG/L	U	0.0116	0.1
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	Endrin	0.1	UG/L	U	0.0062	0.1
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	Endrin Aldehyde	0.1	UG/L	U	0.0075	0.1
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	Endrin Ketone	0.1	UG/L	U	0.0068	0.1
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	Gamma-BHC (Lindane)	0.05	UG/L	U	0.0073	0.05
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	gamma-chlordane	0.05	UG/L	U	0.0074	0.05
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	Heptachlor	0.05	UG/L	U	0.0089	0.05
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	Heptachlor Epoxide	0.05	UG/L	U	0.0083	0.05
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	hexachlorobenzene	0.05	UG/L	U		0.05
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	Methoxychlor	0.5	UG/L	U	0.0079	0.5
BN-95-22-XD1	AI05561	SW8081	6/12/2006	1	Toxaphene	1	UG/L	U	0.678	1
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	4,4-DDD	0.1	UG/L	U	0.0059	0.1
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	4,4-DDE	0.1	UG/L	U	0.0156	0.1
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	4,4-DDT	0.1	UG/L	U	0.0156	0.1
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	Aldrin	0.05	UG/L	U	0.0053	0.05

Sample Name	Lab Id	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	MDL	QL
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	Alpha-BHC	0.05	UG/L	U	0.0142	0.05
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	alpha-chlordane	0.05	UG/L	U	0.0166	0.05
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	Beta-BHC	0.05	UG/L	U	0.0078	0.05
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	Chlordane	0.5	UG/L	U	0.21	0.5
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	Delta-BHC	0.05	UG/L	U	0.0121	0.05
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	Dieldrin	0.1	UG/L	U	0.0149	0.1
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	Endosulfan I	0.05	UG/L	U	0.0088	0.05
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	Endosulfan II	0.1	UG/L	U	0.0111	0.1
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	Endosulfan Sulfate	0.1	UG/L	U	0.0116	0.1
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	Endrin	0.1	UG/L	U	0.0062	0.1
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	Endrin Aldehyde	0.1	UG/L	U	0.0075	0.1
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	Endrin Ketone	0.1	UG/L	U	0.0068	0.1
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	Gamma-BHC (Lindane)	0.05	UG/L	U	0.0073	0.05
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	gamma-chlordane	0.05	UG/L	U	0.0074	0.05
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	Heptachlor	0.05	UG/L	U	0.0089	0.05
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	Heptachlor Epoxide	0.05	UG/L	U	0.0083	0.05
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	hexachlorobenzene	0.05	UG/L	U		0.05
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	Methoxychlor	0.5	UG/L	U	0.0079	0.5
BN-95-22-Rinsate 1	AI05562	SW8081	6/12/2006	1	Toxaphene	1	UG/L	U	0.678	1

ECC Region I Data Review Worksheet (rv 3) **Pesticides 3510C/3520C/8081A**
Project: NAS Brunswick ECC Job No. 5700 **Review Criteria: LTMP Bldg 95 (May 2000) & Region I Tier II Guidance/NFG**

Data Validation Level	Matrix	Preservation	Temperature Sample Receipt	Laboratory	SDG Number
Tier II	**Ground water**	**-**	**Cooler Temp (^oC): 5.9**	**NorthEast Laboratory, Waterville, ME**	**BNASDLDG95060906**

Field Identification of Samples Evaluated:

Field ID	Lab Sample Number
BN-95-22-MW067	AI05558
BN-95-22-MW097	AI05559
BN-95-22-MW098	AI05560
BN-95-22-MW-XD1	AI05561 field duplicate for AI05560

Note: Samples are described below in the data worksheets by reference to the last two digits of the Lab Sample Number

REVIEW ITEMS	MEASUREMENT PERFORMANCE CRITERIA (MPC)	SAMPLES AFFECTED	Inven-tory	QUAL	BIAS
COC	1)Unbroken custody (accept or if broken R) 2) Temp≤6° (Soil-J detects, R -nondetects 3) preserved per method (amber bottles, temperature. J, UJ, or R (function of HT and compound)	Cooler temperature < 6 ^oC. Sample preservation adequate. Sample custody transferred from Field Team Leader to lab sample courier. Unbroken Chain of Custody. Sample preservation within limits. No samples qualified.	X	-	
Holding Time	1) 7 Days water, 14 days soil (40 days for extract) 2) J –detects, UJ or R –nondetects (function of time)	Date Sampled: June 6, 2006. Extraction Date: June 12, 2006. Analysis Date: June 12, 2006. All samples extracted and analyzed within holding time. No samples qualified.	X	-	
% Solids Check (SOLIDS)	30%<Solids: if no sample weight adjustment made (no USACE) 1) <10% R entire sample 2) 10%.> and <30%; J-detects, NDs -R	Not applicable	-	-	
Results > Cal Range or <Cal Range	1) >Upper Cal Range J-detects - ensure instrument blank performed 2) <PQL but >MDL – J –detects (estimated)	Attached data summary table. No detected results below the calibration range.	X	-	
Equip Blank	< 5x (<10x common) contaminants for aq samples – for soil indicate EB (X rules don't apply)	One rinsate blank (AI05562) was collected. Rinsate blank was non-detect for pesticides. No sample qualified.	-	-	
Surrogates	Surrogate acceptance limits not specified in the LTMP. Use laboratory statistical limits. TMX 30-122% DCB 30-133% Qualification: >UCL J –detects, %R<10% J –detects, R –NDs, %R >10% but <60% J-detects, UJ NDs	All surrogate %R's within MPC limits No samples qualified.	X	-	
Lab Blanks (method blanks)	1) < 5x (<10x common) contaminants – U 2) analytes <lab PQL (contract lab)	No TCL pesticides detected in the associated MB sample. No samples qualified.	X	-	

REVIEW ITEMS	MEASUREMENT PERFORMANCE CRITERIA (MPC)	SAMPLES AFFECTED	Inven-tory	QUAL	BIAS
LCS Recovery	1) QAPP limits 10% and <LCL% J detects, UJ -NDs >UCL% J detects <10% R NDs, J-detects Attachment A-2 LTMP; Gamma-BHC (Lindane) 55-117% 4,4'-DDT 25-138% LCS/LCSD RPD <30%	All LCS recoveries within MPC limits. No samples qualified.	X	-	
MS/MSD Recovery	1) QAPP limits (if MS > 4X native levels) Qualification of MS sample: <10% J detects, R NDs >10% and <70% J detects, UJ -NDs >130% J detects Attachment A-2 LTMP; Gamma-BHC (Lindane) 55-117% 4,4'-DDT 25-138%	Native sample: sample AI05560. MS/MSD recoveries within MPC for all pesticides spiked – no samples qualified.	X	-	
MS/MSD RPD	RPD ≤ 30% J –detects in MS sample UJ-non detects	Native sample: sample AI05560. MS/MSD RPDs within MPC for all pesticides spiked – no samples qualified.	X	-	
Cleanup Performance Check (if performed)	%R< 10% NDs-R detections J %R>10% <LCL (80%GPC) –detections J, NDs UJ %R>UCL (120%) – detections J Retention Time shift <5%, symmetrical peakshape. GPC check with interferants. Good surrogate recovery, GPC blank check – no carryover.(VOA/SV-IX-I6). Sulfur and High MW compounds removed. SW-846 clean-up not required	NA	-	-	
Retention times	Within 3X standard deviation for each analyte from 72-hour study Exceeds: R qualify data	Within MPC limits. No samples qualified.	X	-	
Field Dup RPD	1) RPD ≤ 50% soil and <30% waters for Results >2X PQL (FD pair only) J-detects (both > X PQL) 2) If one >2X PQL, other ND, J-detections, UJ non-detect Other conditions use judgement	Field sample AI05560/ field duplicate AI05561. All compounds were non-detects in both samples. Similar results – acceptable sampling precision. No samples qualified.	X	-	
Initial Cal (Linearity)	Correct calibration stds %RSD < 20% use average RF for calibration %RSD> 20% use least squares COD (r2) > 0.990 or correlation coefficient r> 0.995 or alternatively mean %RSD <20% for all target analytes, with no analyte %RSD>40%	Instrument ID: HP5890S Date: April 12, 2005. COD > 0.99 for both columns. Acceptable linearity. No samples qualified.	X	-	
DDT Degradation check	Degradation Breakdown (BD) Check every 12 hours and prior to sample analysis. DDT Breakdown: <20% for all checks associated with samples. Endrin Breakdown: <20% for check prior to sample analysis. Combined breakdown <30%. If BD>20% J detects Endrin/DDT. If BD>20% for a column, but DDT/Endrin not detected but breakdown products are detected, MRL not usable.	Instrument: HP5890S All DDT & endrin breakdown % within MPC limits in both columns. Combined breakdown was also within MPC limits for both columns. No samples qualified.	X	-	

ECC Region I Data Review Worksheet (rv 3) **Pesticides 3510C/3520C/8081A**
Project: NAS Brunswick ECC Job No. 5700 **Review Criteria: LTMP Bldg 95 (May 2000) & Region I Tier II Guidance/NFG**

REVIEW ITEMS	MEASUREMENT PERFORMANCE CRITERIA (MPC)	SAMPLES AFFECTED	Inven-tory	QUAL	BIAS
2nd Source ICV	%R (between ICV and Ical) analytes %D ≤ 15%, (+ or -) once per 5 pt cal Qualification: J detects, R or UJ NDs	Instrument: HP5890S Same as CCV. All %D's for both columns were within MPC limits. No sample qualifications.	X	-	
CCV	1) QAPP: 15% of initial calib. Curve (85%-115%) . J qualify data. 2) Qualification-J detects, R or UJ NDs	Instrument: HP5890S Same as ICV. All %D's for both columns were within MPC limits. No sample qualifications.	X	-	
Compound Quantitation	1) Check sensitivy (MDL< 1/3 PQL or per QAPP 2) %D <25% primary and secondary column identification and quantitation 3) Target compounds by 8081 Lindane PQL 0.05 ug/L MCL/MEG 0.2 4,4' DDT PQL 0.02 ug/L MEG/0.83	One detected result in sample 559 (4,4-DDT). Acceptable precision between the two columns. Acceptable sensitivity as all MDL are the same as PQLs listed in the QAPP (2006) excluding the following compounds: RL for heptachlor Epoxide exceeded PQL and MEG but was well below the MCL for the compound. RL for dieldrin exceeded both the PQL and MEG for the compound.	X	-	
Overall Evaluation of Data	1) Appropriate method 2) Evaluate any analytical problems 3) Evaluate sampling errors – field contamination, sample hold times	The laboratory results, as qualified, are usable for making project decisions. All surrogate, LCS, and MS?MSD recoveries within MPC limits. Method blank was non-detect for all pesticides of concern. ICAL had acceptable fit for all reported pesticides. ICV: Acceptable %D for all compounds. CCV: Same as ICV - acceptable. Sampling error – Field duplicate sample AI05561 was collected for native sample AI05560. All results non-detects in both samples. Acceptable sampling precision.	X	-	

*(Tier III check items) Completeness Check: Inventory Check Sheet_____X__ Sample Quantitation Calculations (TIER III ONLY):

APPENDIX E

Engineering Inspection Report

Engineering Inspection Form

Site: Bld 95 Date: 6/5/2006 Personel: Weather: cloudy, cool

Well ID	Condition	Locked	Labeled	Depth to Water	Total Depth of Well	Comments
MW-NASB-065	Good	Yes	Yes	1.95	15.50	
MW-NASB-066	Good	Yes	Yes	6.02	19.79	
MW-NASB-067	Good	Yes	Yes	1.95	15.00	
MW-NASB-068	Good	Yes	Yes	2.70	15.05	
MW-NASB-097	Good	Not Possible	No	1.45	11.05	Flush Mount…
MW-NASB-098	Good	Yes	Yes	4.90	16.00	

Additional Comments:

1. Stressed Vegetation - All vegetation appears healthy and very well watered!

2. Condition of Geo Textile - Buried, not visible.

3. Other - MW-NASB-097 suffered damage by snowplow activities during the winter. Temporary repairs have been installed until permanent repairs can be effected.

APPENDIX F

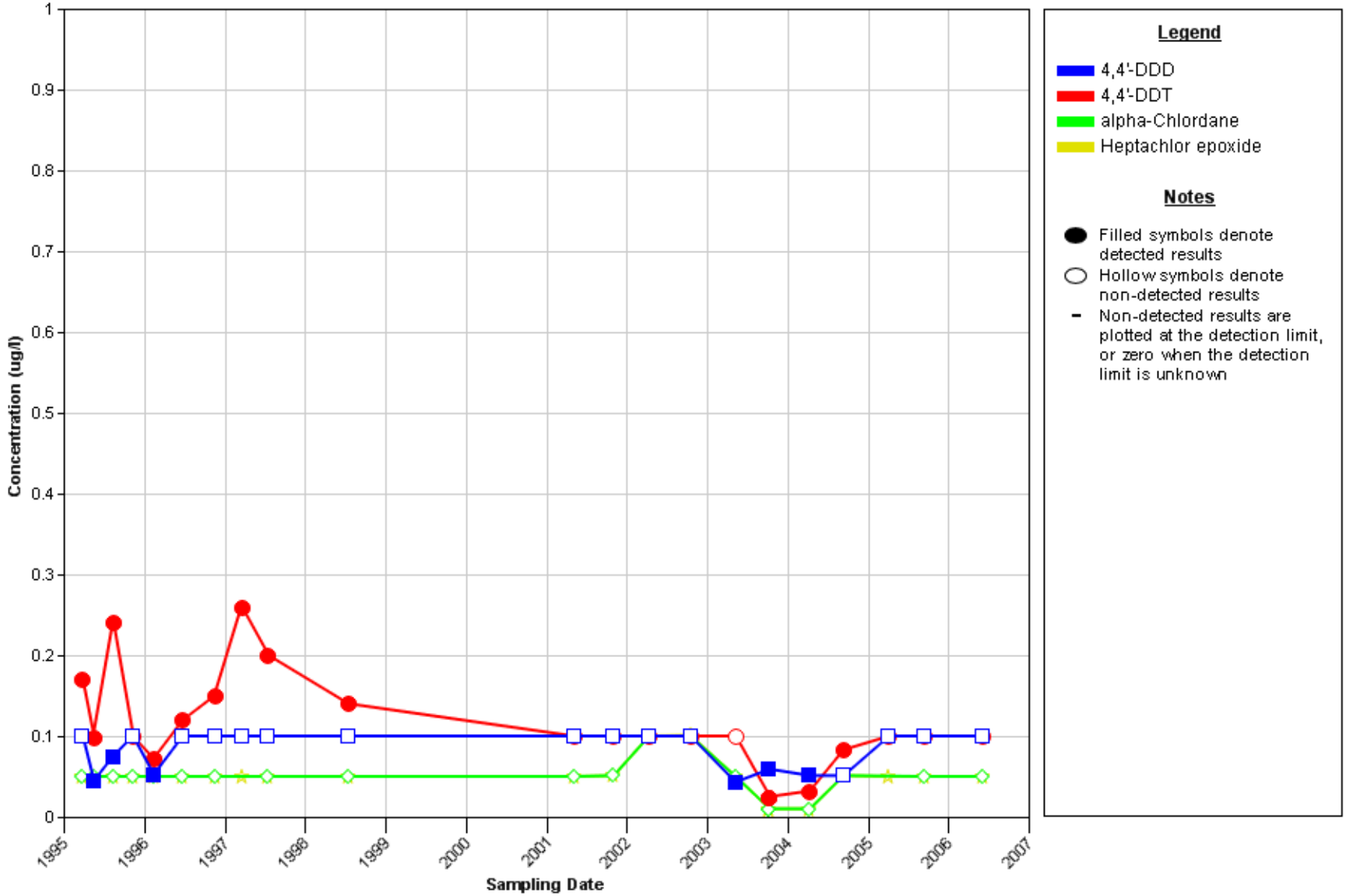
Temporal Trend Graphs

MW-NASB-067

Pesticides

Low-flow Sample

Building 95 Ground Water

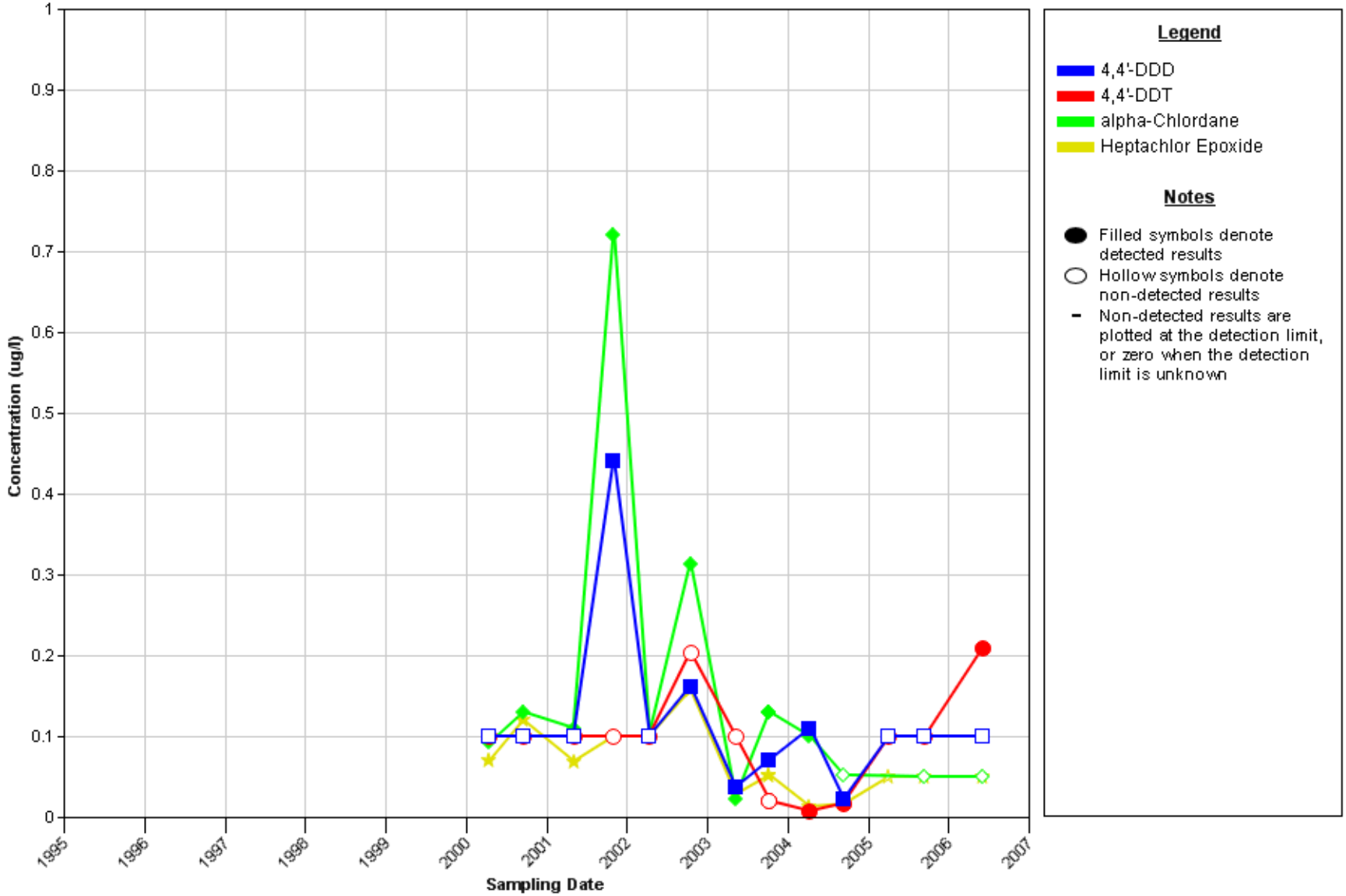


MW-NASB-097

Pesticides

Low-flow Sample

Building 95 Ground Water

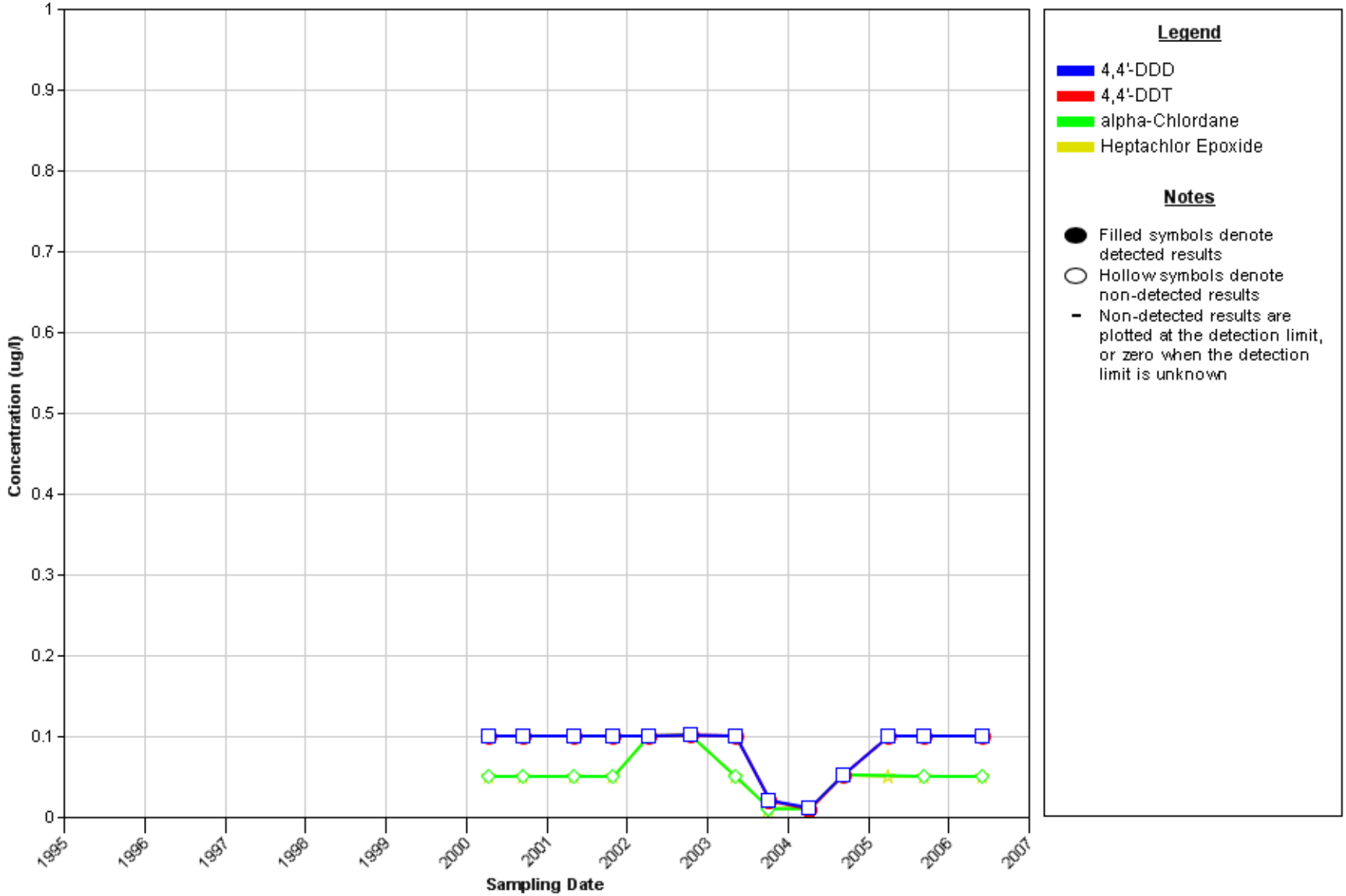


MW-NASB-098

Pesticides

Low-flow Sample

Building 95 Ground Water



APPENDIX G

Response to Comments from the Regulators on the Draft Report

Responses to MEDEP Comments
Site 17 (Building 95)
Monitoring Event 23 (June 2006) Report, April 2007
Naval Air Station, Brunswick, Maine

Reviewer: Claudia Sait
Date: May 13, 2007
Respondent: ECC
Date: June 25, 2007

Comment #	Location	Comment	Response
1	General	The overall organization and presentation of the data, trend charts and other appendices was logical and consistent with suggested corrections from past reviews. The addition of text in Section 1.3 describing the process for evaluating data to the MDL, and reporting non-detects to the MRL is an excellent and needed addition to the report. A summary of the data validation review was also included as an appendix, and is a useful addition. MEDEP supports inclusion of a summary of this nature in all ME reports so reviewers do not have to review the entire data validation package.	**Noted.**
2	General	Based on a review of the tables and appendices the data evaluation was appropriate. The only detection this round was a low (0.21 ug/l) detection of 4,4 DDT.	**Noted.**
3	General	There are two Appendix D listed in the Appendices on the CD Rom, please adjust the titles and text as needed for clarity. Appendix F should be re-titled as "Trend Graphs" or something similar. The presentation of the trends with different symbols for detects/non-detects is a helpful addition to the figures.	**Noted.** The CD-ROM will be updated when the report goes Final and Appendix F will be titled "Trend Graphs"
4	General	A brief notation such as "Non-detects are reported to the MRL, detects are reported to the MDL" should be added to the table and figures for clarification.	**Noted.** The figures and tables will have the following addition, "Non-Detects are reported to the MRL, detects are reported to the MDL."
5	General	Please change the title of this report and future reports to Site 17 or Site 17 (Bldg 95) to differentiate between the building and the site and to conform to the Federal Facility Agreement. In future reports Site 17 should be used instead of Building 95 in the text.	**Noted.** The change in reporting from Building 95 to Site 17 will occur in all future reports.
6	Section 1.2 Figure 1-3	The figure should be expanded to show the location of MW-NASB-209R, and the labels for MW-NASB-067 (well designation and water level elevation) need to be added to the figure.	**Concur.** The figure will be expanded to show MW-NASB-209R and the MW-NASB-067 will be properly labeled.
7		MEDEP notes that the flow direction is approximately Southeast at 146 degrees, which is typical for the last several years and that the spring monitoring round of water elevations are also near the high levels of 2005, although the sampling occurred in June rather than May.	**Noted.**

Comment #	Location	Comment	Response
8	Section 2.3 Appendix F Table 1-4	*"All groundwater sampling data results…"* The statement is incorrect as 4,4 DDT was detected at MW-NASB-097 this round. Please correct. MEDEP will also be interested to see if the detections noted in 2000-2004 return if water elevations drop to those levels in 2007. It is also possible that the soluble fraction of the residual pesticides at the site has largely been flushed out of the soils at the site.	**Concur.** Statement has been updated to include that detection of 4,4-DDT at MW-NASB-097.
9	Table 1-4	The Maximum Exposure Guideline (MEG) 2006 version for Lindane (0.2 ppb), Endosulfan (42 ppb for the sum of the I and II mixtures) should be added to the table. There is a revised MEG for Methoxychlor of 42 ppb, please update the table to reflect the 2006 risk based numbers.	**Concur.** The correct guidelines will be provided in Table 1-4.
10	Section 3.1	• Bullet 1 – Please revise the first sentence to reflect the 4,4 DDT detection at MW-NASB-097. MEDEP concurs that overall concentrations in groundwater have declined since the detections 2000 – 2001. • Bullet 3 – Please confirm the repairs at MW-NASB-097 have been completed.	**Concur.** First sentence has been updated to reflect the 4,4-DDT detection at MW-NASB-097. A snow plow had damaged the cast iron well box on the flush mount well. A monitoring well driller was contracted to repair the well on 22 June 2007. The repair was completed by cutting the PVC casing down and complete as a flush mount and reseal the well apron with concrete. The two photographs (photos 1 and 2) below are provided of completed monitoring well repair.
11	Section 3.2 Page 3-2	At this time, MEDEP supports continuing with the long-term monitoring until the soil investigation/remediation is completed, unless the initial work determines that no further soil removal is needed. The low frequencies of detections however, make discussion of optimization reasonable. The Consensus Statement seems a valid topic for a Technical Meeting when the next step of work for Site 17 is determined.	**Noted.**
END OF COMMENTS			

Photo 1 : Completed repair of MW-NASB-097 on 22 June 2007.

Photo 2: Second photo of MW-NASB-097 on 22 June showing the repair.

Responses to EPA Comments
Site 17 (Building 95)
Monitoring Event 23 (June 2006) Report, April 2007
Naval Air Station, Brunswick, Maine

Reviewer: Christine Williams
Date: June 18, 2007
Respondent: ECC
Date: June 25, 2007

Comment #	Location	Comment	Response
1	General	Water-level gauging was conducted at six wells, as per the monitoring plan. The inferred equipotential surface (Fig. 1-3) indicates flow from NW to SE. Groundwater sampling was carried out at three wells, as per the plan. All pesticides were non-detect (ND), demonstrating that contamination is no longer detectable at these wells. Historical detections were found principally at MW-NASB-097; heptachlor epoxide and alpha chlordane were previously above their respective Maine MEGs.	**Noted.**
2	General	It is agreed that the LTMP should be reviewed following planned additional characterization and soil removal (e.g., p. 3-2, sec. 3.2). Monitoring coverage and frequency should not be reduced until any soil removal is completed, and several rounds under the current plan are completed, in order to verify that the removal has not (at least temporarily) mobilized groundwater contamination due to disturbed ground, open excavations, etc.	**Noted.**
3	Page 2-1, Section 2.1	The text states that the hydraulic gradient from NW-NASB-066 to MW-NASB-098 is approximately 0.0054. This calculation appears to have used the change in head between the two wells and the distance between them. Because the wells are not on a streamline, as suggested by the contoured equipotential surface (Fig. 1-3), the distance between these two water levels is somewhat shorter. Measured perpendicular to the equipotentials, the distance is about 175 ft, giving a slightly higher gradient of about 0.0065.	**Noted.** The distance measured between the two well is roughly 175 feet if measured perpendicular to the equilpotential contours, providing a slightly higher gradient of 0.0065 which will be used as the gradient in the text in Section 2.1.
END OF COMMENTS			