RESTORATION ADVISORY BOARD MEETING
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT CALVERTON
PECONIC RIVER SPORTSMAN'S CLUB
MANORVILLE, NEW YORK
November 4, 2004

The thirteenth meeting of the RAB began at approximately 7:00 pm. Meeting attendees included representatives from the Navy (Jim Colter), New York State Department of Environmental Conservation (NYSDEC) (Larry Rosemann), and Restoration Advisory Board (RAB) community members (Bill Gunther, Ann Miloski, Vincent Racaniello, Harry Histand, Lou Cork, and John Hall). The RAB's technical advisor from SCA Associates (Frank Anastasi) was also in attendance.

WELCOME AND AGENDA REVIEW

The Navy representative, Mr. Colter, Engineering Field Activity, Northeast (EFANE), welcomed everyone to the RAB and announced that he would be sitting in for Joe Kaminski as the DoD Co-Chair. Mr. Kaminski had other obligations that prevented him from attending. The topics on the agenda were then reviewed. The agenda for the meeting is included as (Attachment 1).

REVIEW AND APPROVAL OF MINUTES

Mr. Colter inquired if the RAB members received the minutes from the August 5, 2004 meeting, which were distributed in early September 2004. RAB members acknowledged the receipt of minutes. Mr. Colter explained the change in the format of the RAB meeting minutes. Since a stenographer is no longer being used to prepare the meeting minutes, the minutes will be presented in a summary format. The RAB's Community Co-Chair, Mr. Gunther, recommended approval of the minutes. His motion was seconded by Ms. Miloski and the motion for approval of the minutes was carried.

Mr. John Hall, representing the Peconic River Sportsman's Club, requested that all future RAB correspondence be sent to the Club's attorney, Mr. Tony Muratory. The Navy agreed to the request.

A new representative from the local community, Mr. Robert (Bob) Conklin would like to be on the mailing list. The Navy agreed to the request

In addition, the RAB also requested that their Technical Assistance for Public Participation (TAPP) contractor, Mr. Frank Anastasi (SCA Associates) also be placed on the mailing list to receive minutes and other RAB correspondence. The Navy agreed to the request.

PROGRAM SCHEDULE

Mr. Colter provided an update on the NWIRP Calverton project budget (Attachment 2). Mr. Colter explained that approximately $1.2 million was executed for the site in Fiscal Year 2004 (FY04). The bulk of the budget ($979,709) was spent on the Remedial Investigation/Feasibility Study for Site 6A/Southern Area, Site 1 Groundwater monitoring, and Agricultural Outlease well abandonment projects. In addition, $253,061 was expended to complete the Site 1 Landfill Excavation Project, and $24,992 was spent on the Site 6 – TAPP.

Mr. Colter went on to explain the FY05 planned execution budget. The FY05 budget is estimated to be $1.2 million. Of that budget, $500,000 will be to fund cost overrun items associated with the construction of the pilot AS/SVE System at IR Site 7 and $666,000 will be to support a soil removal action at IR Site 2, including removal of a concrete fire training ring and the underlying soil.

A RAB member inquired on the money spent to date. Mr. Colter stated that he does not have the total cost with him, but estimated that the total remediation cost to date was approximately $20 million. (Upon review of the Navy's expenditures after the RAB meeting, the Navy has spent $18,972,000 on Calverton's IR Program through Fiscal Year 2004.)

SITE 7 FUEL DEPOT AREA – REMEDIATION SYSTEM PROGRESS UPDATE

Mr. Stavros Patselas from Tetra Tech FW (formerly Foster Wheeler Environmental) provided a progress update for the remediation of the Site 7 - Fuel Depot Area. Mr. Patselas discussed the progress for the construction of the air sparging/soil vapor extraction (AS/SVE) system. Specifically, the piping is complete to the well heads and Tetra Tech FW is continuing to work on the system inside the building (Attachment 3). All equipment is onsite.

The AS/SVE is designed to force air into the groundwater. The off gas will have four vapor phase carbon units to treat the air prior to discharge. Only two carbon units will be used at a time. The current construction activities are focused on completing the system inside the building. Once complete, the system will be tested and then shut down until spring 2005. In the spring, ozone will also be injected to treat site contaminants.

Mr. Sy Robbins, representing the Suffolk County Department of Health Services (SCDHS), asked if there was any free product remaining on the water table. Mr. Patselas responded that there was not.

Mr. Robbins then asked about the site contaminants. Mr. Patselas responded that benzene, toluene, ethylbenzene, and xylene (BTEX) were the main contaminants of concern, with some scattered Freon detections as well.

Mr. Robbins asked if any enhanced bioremediation was planned. Mr. Patselas responded that there were no plans for using enhanced bioremediation other than the injection of ozone at 8 points to address the Freon.

Mr. Robbins asked how many wells make up the AS/SVE system. Mr. Patselas responded that 18 soil vapor extraction wells and 8 air sparging wells were installed. The system will be run for three months and after review of that data, additional SVE or AS points may be added.

Mr. Bill Gunther suggested providing pictures of the system for use at future RAB meetings. Mr. Patselas replied that he is working on a video presentation of the Site 7 construction activities and is planning to show it at a future RAB meeting.

One RAB member questioned what was meant by a fabric building. Mr. Stavros replied that the building is made of a polypropylene fabric manufactured by Sprung, Inc. with a heavy duty aluminum frame erected on the inside of the structure.

A RAB member asked what the ozone was to be used for. Mr. Patsleas responded that it will be used to treat the Freon that has been detected but that it will also help to break down the BTEX to some extent. Since the ozone generator will be trailer-mounted, TtFW plans to move the generator to 6 BTEX locations to see how effective it is.

A RAB member asked if there will be an Operations and Maintenance (O&M) Manual developed. Mr. Colter responded that an O&M manual will be developed.

Mr. Gunther asked if the O&M manual would be sent to the regulators for review. Mr. Colter responded that it would.

Mr. Gunther then asked how long the system is expected to operate. Mr. Colter explained that the system is expected to run for approximately four years to treat the main chemicals of concern.

Mr. Robbins (SCDHS) asked if there was a plume of contamination. Mr. Patselas responded that there was a plume and that the AS/SVE treatment system is expected to operate very efficiently early on with regards to contaminant mass removal in the main source area and the system will get the BTEX concentrations in groundwater close to the drinking water standards, but based on experience, the treatment system may not completely achieve these standards. At that time and based upon discussions with NYSDEC, the treatment system would be shut down, and natural attenuation with monitoring of residual contaminants would be used to complete the remediation. Mr. Patselas goes on to say that at this time, the leading edge of the BTEX plume seems to be about 50 feet beyond the eastern edge of the Site 7 fence but is not migrating any further, possibly due to attenuation.

SITE 6 A/SOUTHERN AREA – FIELD INVESTIGATION PROGRESS UPDATE

Mr. Dave Brayack from Tetra Tech NUS, Inc. provided an update on the Site 6B/Southern Area (Fuel Calibration Area), which is included as Attachment 4. Mr. Brayack explained that the Work Plan has been issued and that the field work is under way. He reviewed the results to date, that included confirmation of the groundwater contamination at the Peconic River Sportsman's Club's Pistol Range at depth and the direction of the groundwater flow.

Specifically, contamination near the pistol range is at a depth of approximately 100 feet below ground surface in Boring 114, and 90 feet to 110 feet and possibly 150 feet below ground surface in Boring 115. Based on the findings in Boring 115, Boring 116 was installed to 190 feet below ground surface. Contamination was detected in Boring 116 at depths of 72 to 100 feet below ground surface, and low concentrations of similar chemicals were found at a depth of 150 feet below ground surface. These chemicals were not detected at 170 and 190 feet below ground surface. Piezometers were installed to 150 feet below ground surface in each boring and will be used to confirm the presence or absence of contamination at a depth of 150 feet below ground surface.

As expected, the groundwater in this area flows to the southeast. A primary concern with the offsite investigation is to protect the Peconic River. Field work is continuing in the offsite locations and is expected to continue for one to three months.

One RAB member questioned the drilling method. Mr. Brayack responded that a hollow stem auger with a hydro-punch type sampler is being used. Lithology is being recorded using geophysical logging and split-spoon samples are being used for confirmation.

Mr. Vinny Racaniello questioned the status of the monitoring wells to be installed in front of the plume. Mr. Brayack responded that piezometers will first be installed to determine the direction of groundwater flow and then other piezometers will be installed in the direction of groundwater flow. Installation of the piezometers is currently in progress.

Mr. Lou Cork asked about the rate of groundwater movement and where would the contamination be in 5 or 10 years. Mr. Brayack responded that the monitoring wells will be used to track the flow of contamination and that groundwater is moving roughly 100 feet per year.

Mr. Anastasi asked if there would be any development conducted for those piezometers that are planned to be converted into permanent monitoring wells. Mr. Brayack responded that there would be development of the 2-inch wells by pumping out a significant amount of water.

Mr. Robbins asked about the screen length for the vertical profile borings (VPBs). Mr. Brayack responded that a hydropunch is being driven in front of the auger drilling the VPB and that the hydropunch has a very minimal screen interval (1 to 2 feet). However, the piezometers that are being installed have a 10-foot screen interval.

Mr. Robbins then asked about the depths of the piezometers. Mr. Brayack responded that the piezometers near the river were being installed just a few feet below the water table.

Mr. Anastasi then asked about the geology of the area. Mr. Brayack responded that it mostly consists of sand and silty-sand with some occurrences of clay units. These clay units do not extend very far and are only roughly 1-foot thick. Mr. Anastasi added that he had looked at the boring logs and did not notice the existence of any major confining units.

Mr. Gunther asked whether the contaminated groundwater could flow under the river. Mr. Brayack responded that additional piezometers are being installed to address this question. The piezometers will be completed within the next three to four weeks.

One RAB member questioned whether there are private wells in the area. Mr. Brayack responded that private wells were researched in 1991 and none were found to exist to the north of the Peconic River. Mr. Robbins added that he would further investigate whether or not there are private wells on the north side of the Peconic River.

A local resident (Mr. Conklin) questioned whether there has been an impact to the river. Mr. Brayack indicated that an impact has not been detected. The volatile organic compounds (VOCs) tend to volatilize when exposed to the air and also that dilution will result in the disappearance of low levels of VOCs. Mr. Brayack added that additional surface water testing will be conducted. In addition, Sy Robbins (SCDHS) added that the county has been sampling the surface water near Connecticut Avenue and has not detected site related contaminates using a detection limit of 0.5 ppb.

Mr. Anastasi followed up by asking if the river had been tested in the past. Mr. Brayack indicated that the river has been tested and site contaminants have not been detected.

Mr. Larry Rosenmann (NYSDEC) asked what the Navy's plans were for the piezometers after the various rounds of groundwater sampling are complete. Dave Brayack responded that the piezometers would either be removed or converted into permanent monitoring wells.

Ms. Ann Miloski, community RAB member, asked if the Navy has been talking to Brookhaven National Labs (BNL) about the work that they are doing in the Peconic River. Mr. Robbins (SCDHS) answered that the contamination from BNL is not related to chlorinated solvents and that the contamination found downgradient of BNL is upgradient of the Navy's property. Mr. Anastasi (SCA Associates) added that BNL is doing sediment removal mainly to address a metal contamination issue.

Mr. Robbins (SCDHS) noted a detection of 292 ppb (VOCs) and asked a general question whether this could be "just the tip of the iceberg". He went on to say that the State Health Department will want some type of risk evaluation conducted. Mr. Colter commented that after the groundwater investigation is complete, then a Feasibility Study will be prepared to develop options for addressing the contamination.

One RAB member questioned whether there is sufficient funding for this project. Mr. Colter responded that there is funding for this work for this year. If more field work is needed, then funds from the feasibility study budget could be used.

SITE 1 NORTHERN POND DISPOSAL AREA – GROUDWATER RESULTS

Mr. Brayack explained that contaminated soil and waste have been hauled offsite and the landfill has been closed. Post-excavation groundwater monitoring is being done. Monitoring Well (MW)-1 is by the entrance, MW-2 and MW-3 have been removed, MW-4 was originally used to determine groundwater flow, and MW-5 and MW-6 were installed across the pond.

Samples were analyzed for VOCs, SVOCs, PCBs and pesticides, and organics. Results were discussed (Attachment 4). Metals were the only chemicals detected. It was noted that the metals are naturally

occurring and the detections relatively low. A second round of sampling is planned for December 2004. The Record of Decision (ROD) identified semi-annual sampling for two years (four sampling rounds). However, if results from the second round of sampling (December 2004) are same as the first round (June 2004), the Navy will petition NYSDEC to not conduct the groundwater sampling events for the second year and propose a No Further Action (NFA) ROD for groundwater to complete the site.

One member questioned if there will be a public comment period when the Navy issues the NFA ROD. Mr. Colter responded that there will be one, but during the last public comment period and meeting, there was low turnout.

A local resident (Mr. Conklin) wanted to know if an archeological survey was conducted by Foster Wheeler. Mr. Colter answered that an archeological report was conducted and submitted prior to the commencement of excavation activities. Mr. Colter went on to say that the results of that survey could be found in the Closeout Report for Site 1 that was prepared upon completion of the excavation and confirmation sampling activities and that this report could be found both on the website and also in the Riverhead Library. Mr. Robbins (SCDHS) questioned whether contamination was found in the wells that were removed. Mr. Brayack responded that during the Remedial Investigation, some low levels VOCs were detected in one of the wells. However, he went on to say that groundwater samples were collected in March 2002 by Foster Wheeler prior to the landfill excavation project and this testing did not find evidence of any contamination.

Mr. Robbins also asked whether a couple of shallow wells could be installed on the west side of the pond where the previous wells were removed. Mr. Brayack responded that the locations of the prior wells are currently under water, and that it would not be practical to re-install the wells. Mr. Colter pointed out that a comment like this should have been made during the review of the Sampling and Analysis Plan and prior to the commencement of the semi-annual sampling. Mr. Colter suggested that the SCDHS review the Results Report for Sampling Event No. 1 that is to be submitted in a few weeks and that this topic would be revisited at the next RAB meeting.

ENVIRONMENTAL INDICATOR REPORT

Mr. Rosenmann provided an update on the Environmental Indicators (EI) for the Calverton Facility. This program was implemented by Congress and addresses whether contamination is under control and if there are any potential human health impacts. The report looks at the current conditions (a snapshot) to make sure that contamination has appropriate controls in place to reduce the potential for harm to those who might be in the vicinity. A likely control that is widely used is the placement of fencing around contaminated sites. Mr. Rosenmann notes that the Navy does have fencing around all of the contaminated sites at Calverton. Mr. Rosenmann went on to say that the EI Report will not answer the question regarding the potential for past exposures nor will it predict the potential for any future exposures. Mr. Rosenmann also pointed out that for the potential issue of vapor intrusion, the USEPA actually funded the fieldwork to collect the data that was necessary to make the determination and found that vapor intrusion is not a concern at Calverton. The Environmental Indicator Report is included as Attachment 5.

Mr. Gunther applauded the NYSDEC's efforts to take a step back and look at the "big picture".

Mr. Colter asked if this was a NYSDEC or an Environmental Protection Agency (EPA) report. Mr. Rosenmann responded that the report is prepared by NYSDEC and submitted to EPA to answer a data call. It is actually EPA's mandate to address this issue for all of it's Superfund and RCRA sites.

Mr. Gunther asked if this report was going to be revisited at some point. Mr. Rosenmann responded that the report will only be revisited as new data becomes available or as RODs are submitted.

The approved reports will also be posted on the EPA website (Mr. Rosenmann handed out the address for the EPA's website).

Mr. Anastasi added that the website shows general information regarding a site and that EI is a tab within that webpage.

CLOSING REMARKS

Mr. Colter informed the RAB members that the Calverton website has been updated to include a "Post ROD Documents" tab in addition to the Pre-ROD Administrative Record and that final Post-ROD documents for Site 1 and Site 7 will be added by mid-December.

The next RAB meeting is scheduled for April 7, 2005. Note there is no meeting scheduled for February.

Mr. Gunther asked each of the RAB members, in turn, if they had any comments or concerns that they would like to bring to the attention of the group:

- Ms. Ann Miloski – Wants to ensure that there are no adverse impacts to the Gun Club. Larry Rosenmann (NYSDEC) responds that there are no pathways for exposure and there are no indoor air impacts.
- Ms. Sid Bail – Wanted to thank the Gun Club for their hospitality. Mr. John Hall again offered that the Club could host the next RAB meeting. There were no objections.
- Mr. Lou Cork – No Concerns.
- Mr. Frank Anastasi – Stated that the extent of the Navy's fieldwork efforts are addressing all of his comments that he made regarding the work plan and that the final work plan incorporated all of his comments that he made on the Draft. He feels that the Navy is making good progress despite the slow start.
- Mr. Vinny Racaniello – No Concerns.
- Mr. Harry Histand – No Concerns.
- Mr. Bill Gunther – Asked if the Navy could send out an interim data report regarding the Site 6a/Southern Area fieldwork to himself and Frank Anastasi prior to the next meeting. The Navy agreed.

The meeting was adjourned at approximately 9 p.m..

Action Items:

1. Distribute the data results from Site 1 and revisit the Site 1 monitoring well topic at next meeting.
2. Mr. Colter will add Mr. Tony Muratore (Attorney for Sportsman's Club) to the distribution list.
3. Add Mr. Conklin to RAB mailing list.
4. Submit Interim Data Report to Mr. Bill Gunther and Mr. Frank Anastasi.
5. Forward agenda items to Mr. Bill Gunther.

ATTACHMENT 1
NOVEMBER 4, 2004 MEETING AGENDA

Agenda

Restoration Advisory Board
Naval Weapons Industrial Reserve Plant Calverton

November 4, 2004
Peconic River Sportsman's Club, Manorville NY
7:00 p.m.

Welcome and Agenda Review
Joe Kaminski
Naval Air Systems Command

Review and Approval of Minutes
All Members

General Program Status
Jim Colter
Engineering Field Activity, Northeast

Site 7 Fuel Depot Area - Remediation System Progress Update
Stavros Patselas
Tetra Tech FW

Site 6A/Southern Area - Field Investigation Progress Update
Dave Brayack
Tetra Tech NUS

Site 1 Northeast Pond Disposal Area - Groundwater Results
Dave Brayack
Tetra Tech NUS

Environmental Indicator Report
Larry Rosenmann,
New York State Department of Environmental Conservation

Closing Remarks
Joe Kaminski
Naval Air Systems Command

Presenters will be available after the program for questions.

ATTACHMENT 2
BUDGET UPDATE - FY04 ACTUAL COST
AND FY05 EXECUTION PLAN

NAVFAC
Naval Facilities Engineering Command

EFA NORTHEAST

NAVAL WEAPONS INDUSTRIAL RESERVE PLANT (NWIRP) CALVERTON, NEW YORK INSTALLATION RESTORATION PROGRAM

BUDGET UPDATE – FY04 ACTUAL COSTS AND FY05 EXECUTION PLAN

11/04/2004

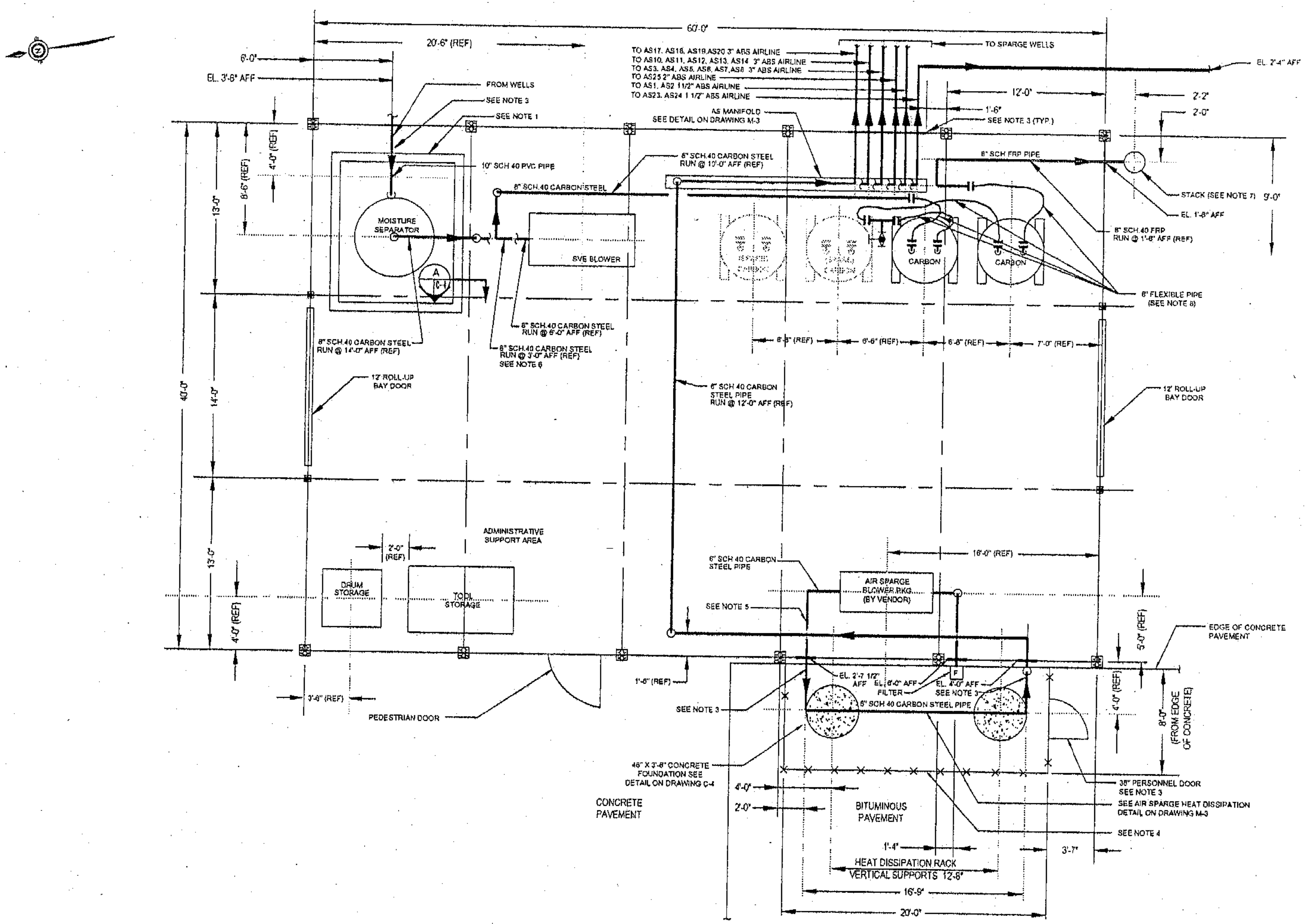
FY04 ACTUAL EXECUTION

PROJECT	COST	REMARKS
Site 1 – Completion of Landfill Excavation Project (Site Restoration)	$253,061	Action Completed
Site 6/Southern Area: - Workplan and Fieldwork to Support Feasibility Studies (FS)	$979,709	All Actions Underway
- Development of Soil/Groundwater FSs Site 1: - Semi-Annual GW Sampling Workplan & Fieldwork - Well Abandonment - Development of FOST (Sites 1 & 9) Ag Outlease: - Development of FOST	($84,695)	
Site 6 – TAPP	$24,992	Ongoing
TOTAL:	*$1,257,762*	

FY05 PLANNED EXECUTION

PROJECT	COST
Site 7 – Complete Construction of AS/SVE System	$500,000 (Estimated)
Site 2 – Removal of Concrete Fire Training Ring and Underlying Soil	$666,938 (Estimated)
TOTAL:	***$1,166,938***

ATTACHMENT 3
PIPING LAYOUT INSIDE BUILDING
SITE 7 AS/SVE SYSTEM



NOTES:

1. SECONDARY CONTAINMENT FOR MOISTURE SEPARATOR TO BE SIZED FOR 1,250 GALLON CAPACITY.
2. ALL PIPING HEIGHTS AND LOCATIONS ARE FOR REFERENCE. EXACT LOCATIONS AND HEIGHT TO BE DETERMINED BASED ON EXACT BUILDING AND EQUIPMENT SPECIFICATIONS.
3. BUILDING PENETRATION PER DETAIL ON DRAWING M-3.
4. AIR SPARGE HEAT DISSIPATION AREA TO HAVE 8 FOOT HIGH CHAIN LINK FENCE W/36" PERSONNEL DOOR SURROUNDING PIPE AREA. A SIGN SHALL BE POSTED INDICATING PIPES ARE HOT AND DANGEROUS. NEW FENCE SHALL BE SIMILIAR TO EXISTING FENCE.
5. CARBON STEEL PIPE FROM AS BLOWER WILL BE INSULATED FOR PERSONNEL PROTECTION UNTIL 2 FEET OUTSIDE BUILDING. ALUMIUM JACKETING TO BE INSTALLED FOR 2 FEET BEFORE WALL PENETRATION.
6. SVE PIPING OUT OF BLOWER TO BE INSULATED FOR PERSONNEL PROTECTION UNTIL ABOVE HEIGHT OF 7 FEET. INSULATED FOR PERSONNEL PROTECTION.
7. STACK TO BE 12 INCH DIAM. FIBERGLASS PIPE AT A MINIMUM HEIGHT OF 35 FEET. STACK TO BE GUY WIRE SUPPORTED.
8. 150 LB. FLANGE CONNECTIONS FOR 8 INCH FLEXIBLE DUCTING TO AND FROM CARBON VESSELS.
9. DRUM STORAGE TO BE POLYETHLENE SKID CAPABLE OF SUPPORTING 4 DRUMS THAT PROVIDES CONTAINMENT CAPACITY OF AT LEAST
10. SVE INLET PIPE EXACT LOCATION TO BE DETERMINED IN FIELD. 55 GALLONS.

0 2' 4' 8' 12'
1/4" = 1'-0"

ISSUED FOR BID ONLY

THIS DRAWING PRODUCED ON AUTOCAD DO NOT REVISE MANUALLY

REV.	DESCRIPTION	PREP BY	DATE	APPRVD

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
EFA NORTHEAST
LESTER, PENNSYLVANIA
CALVERTON — RIVERHEAD, NEW YORK

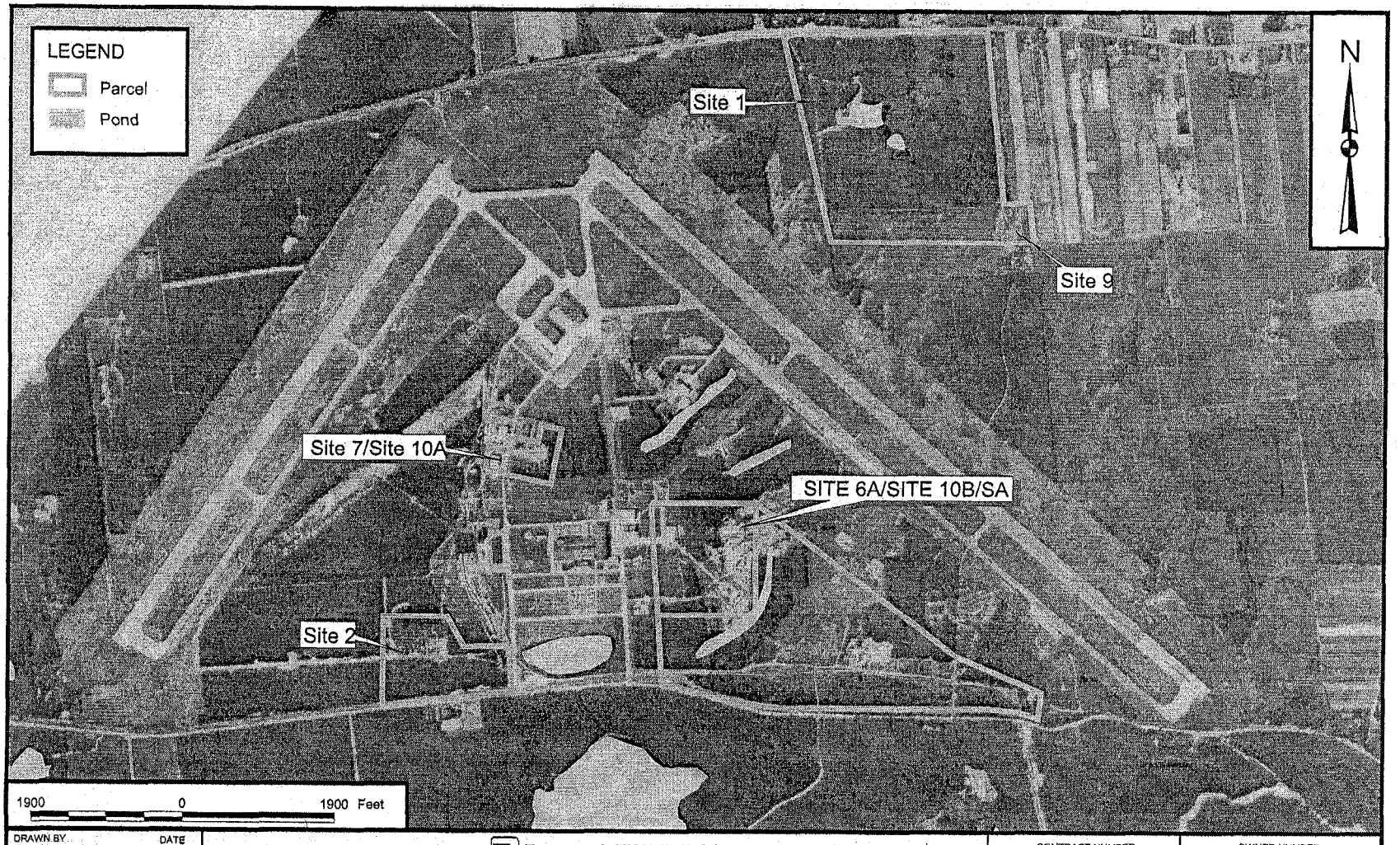
CALVERTON - FORMER FUEL DEPOT
PIPING LAYOUT (INSIDE)
REMEDIATION BUILDING

BY TETRA TECH ENGINEERING CORPORATION P.C.

RICHARD ARNOLD
N.Y.P.E. NO. 0762

SAT TO
CODE I.D. NO.
SCALE:
SPEC. NO.
CONSTR. CONTR. NO. N62472-99-D-0032
NAVFAC DRAWING NO.
SHEET 1 OF 1
SIZE: D
DWG. SH. NO. M-2

ATTACHMENT 4
SOUTHERN AREA AND SITE 1 RESULTS



DRAWN BY: J. LAMEY — DATE: 11/22/99	Tetra Tech NUS, Inc.	CONTRACT NUMBER: 7398	OWNER NUMBER: 0270
CHECKED BY: — DATE: —	SITE LOCATION MAP NWIRP CALVERTON, NEW YORK	APPROVED BY: — DATE: —	
COST/SCHEDULE-AREA: —		APPROVED BY: — DATE: —	
SCALE: AS NOTED		DRAWING NO.: FIGURE 2	REV: 0

P:\GIS\NWIRP_CALVERTON\SURFACE_WATER_HYDROLOGY.APR SITE LOCATION MAP 01/04/01 JAL

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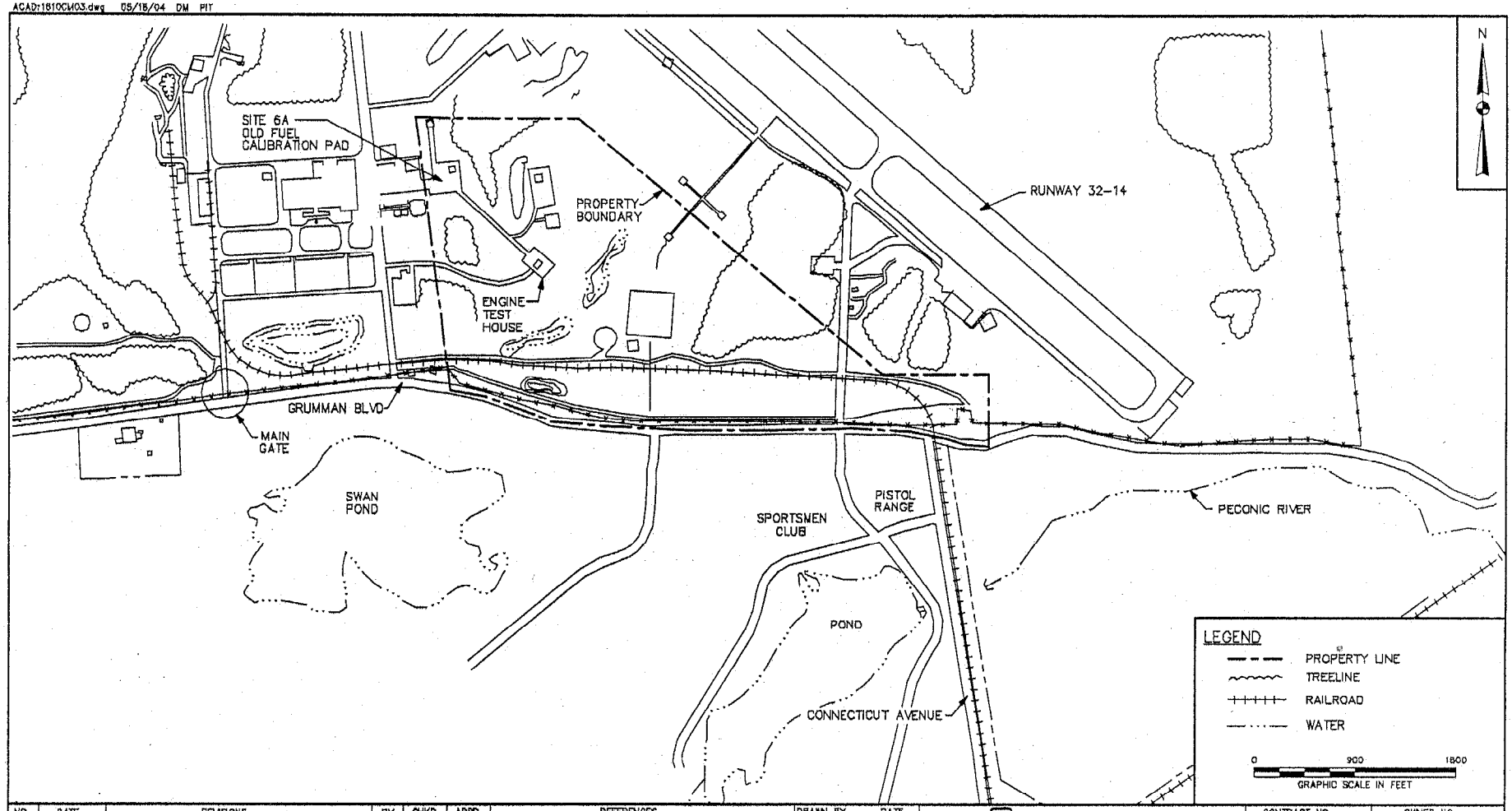

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY DM DATE 5/11/04
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

Tetra Tech NUS, Inc.

STUDY AREA
SITE 6A AND SOUTHERN AREA
NWIRP CALVERTON
CALVERTON, NEW YORK

CONTRACT NO. 1610
OWNER NO. 0004
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3
REV. 0

FORM CADD NO. TtNUS_BHDGN - REV 0 - 1/20/98

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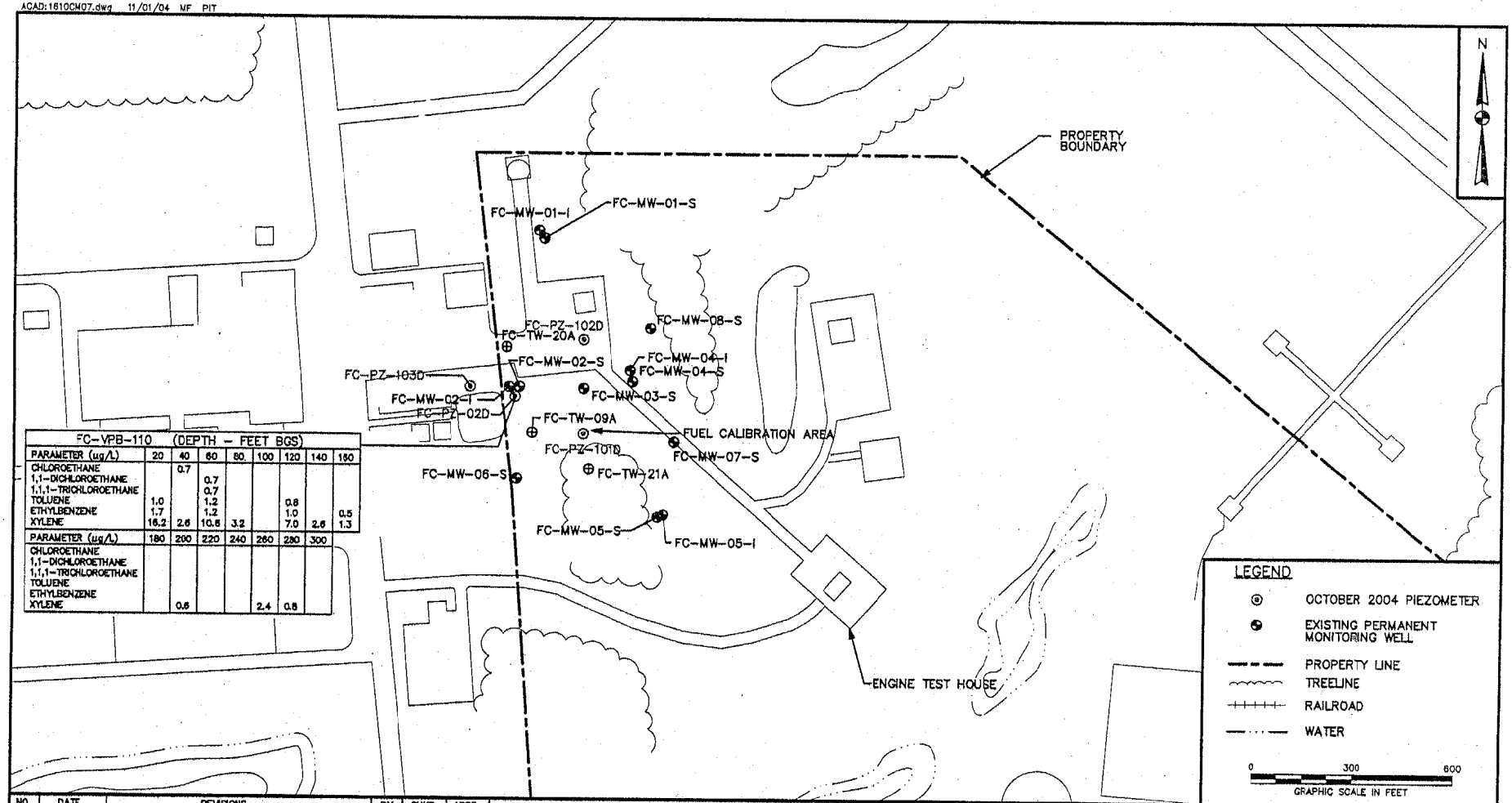


FC-VPB-110 (DEPTH - FEET BGS)

PARAMETER (ug/L)	20	40	60	80	100	120	140	160
CHLOROETHANE		0.7						
1,1-DICHLOROETHANE			0.7					
1,1,1-TRICHLOROETHANE			0.7					
TOLUENE	1.0		1.2			0.8		
ETHYLBENZENE	1.7		1.2			1.0		0.5
XYLENE	16.2	2.6	10.5	3.2		7.0	2.6	1.3

PARAMETER (ug/L)	180	200	220	240	260	280	300
CHLOROETHANE							
1,1-DICHLOROETHANE							
1,1,1-TRICHLOROETHANE							
TOLUENE							
ETHYLBENZENE							
XYLENE		0.6			2.4	0.8	

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY MF DATE 10/28/04
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

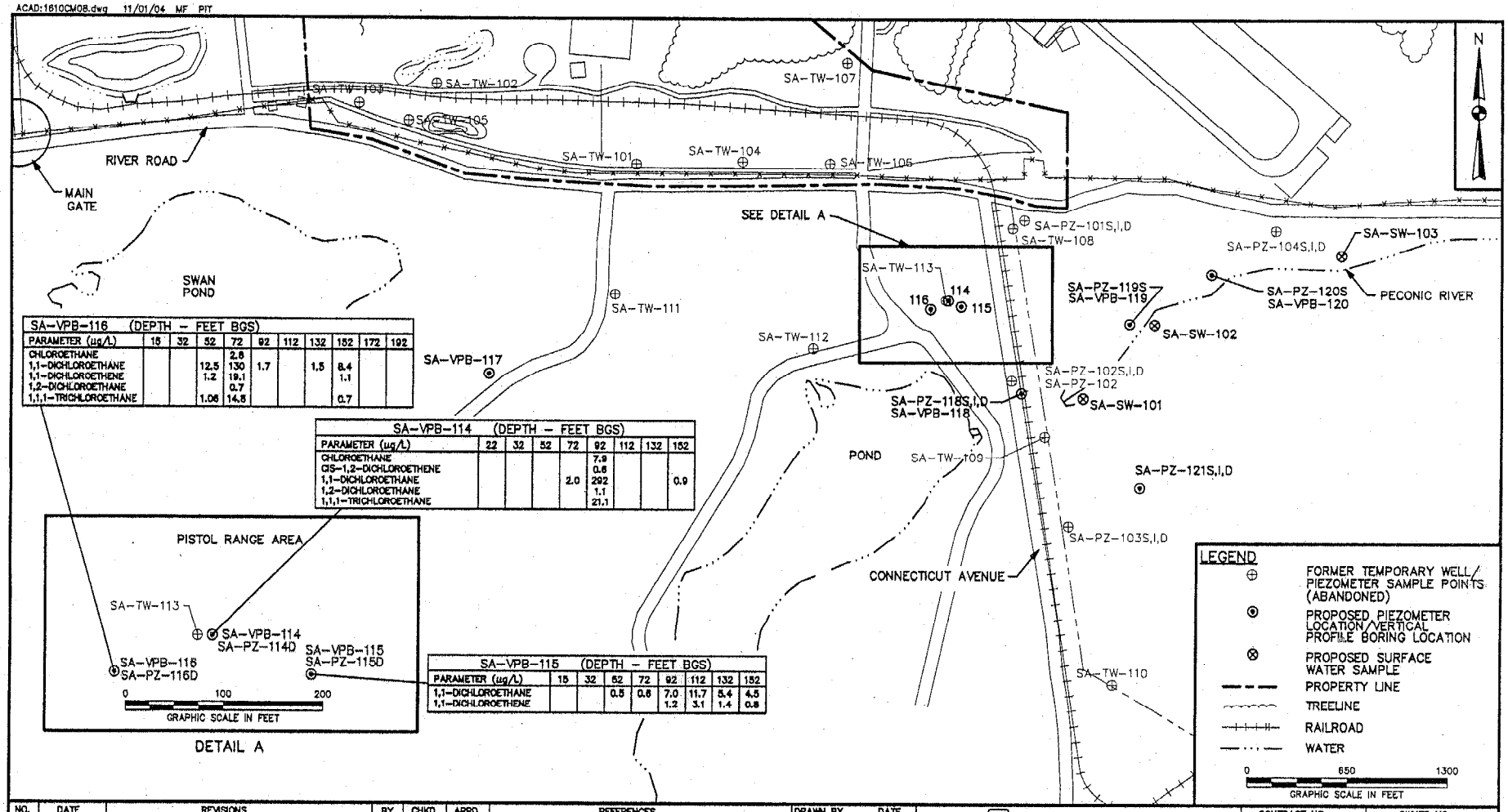
Tetra Tech NUS, Inc.

SAMPLE LOCATION MAP
SITES 6A - FUEL CALIBRATION AREA
NWIRP CALVERTON
CALVERTON, NEW YORK

CONTRACT NO. 1610
OWNER NO. 0004
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 4
REV. 0

FORM CADD NO. T-SHEET_SHEET - REV 2 - 1/25/99

ACAD:1610CM08.dwg 11/01/04 MF PIT



SA-VPB-116 (DEPTH – FEET BGS)										
PARAMETER (µg/L)	15	32	52	72	92	112	132	152	172	192
CHLOROETHANE				2.6						
1,1-DICHLOROETHANE			12.5	130	1.7		1.5	8.4		
1,1-DICHLOROETHENE			1.2	19.1				1.1		
1,2-DICHLOROETHANE				0.7						
1,1,1-TRICHLOROETHANE			1.06	14.8				0.7		

SA-VPB-114 (DEPTH – FEET BGS)								
PARAMETER (µg/L)	22	32	52	72	92	112	132	152
CHLOROETHANE					7.9			
CIS-1,2-DICHLOROETHENE					0.6			
1,1-DICHLOROETHANE				2.0	292			0.9
1,2-DICHLOROETHANE					1.1			
1,1,1-TRICHLOROETHANE					21.1			

SA-VPB-115 (DEPTH – FEET BGS)								
PARAMETER (µg/L)	15	32	52	72	92	112	132	152
1,1-DICHLOROETHANE			0.5	0.6	7.0	11.7	5.4	4.5
1,1-DICHLOROETHENE					1.2	3.1	1.4	0.8

DETAIL A

LEGEND

- FORMER TEMPORARY WELL/ PIEZOMETER SAMPLE POINTS (ABANDONED)
- PROPOSED PIEZOMETER LOCATION/VERTICAL PROFILE BORING LOCATION
- PROPOSED SURFACE WATER SAMPLE
- PROPERTY LINE
- TREELINE
- RAILROAD
- WATER

0 650 1300
GRAPHIC SCALE IN FEET

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY DM DATE 7/27/04
CHECKED BY DATE
COST/SCHED–AREA
SCALE AS NOTED

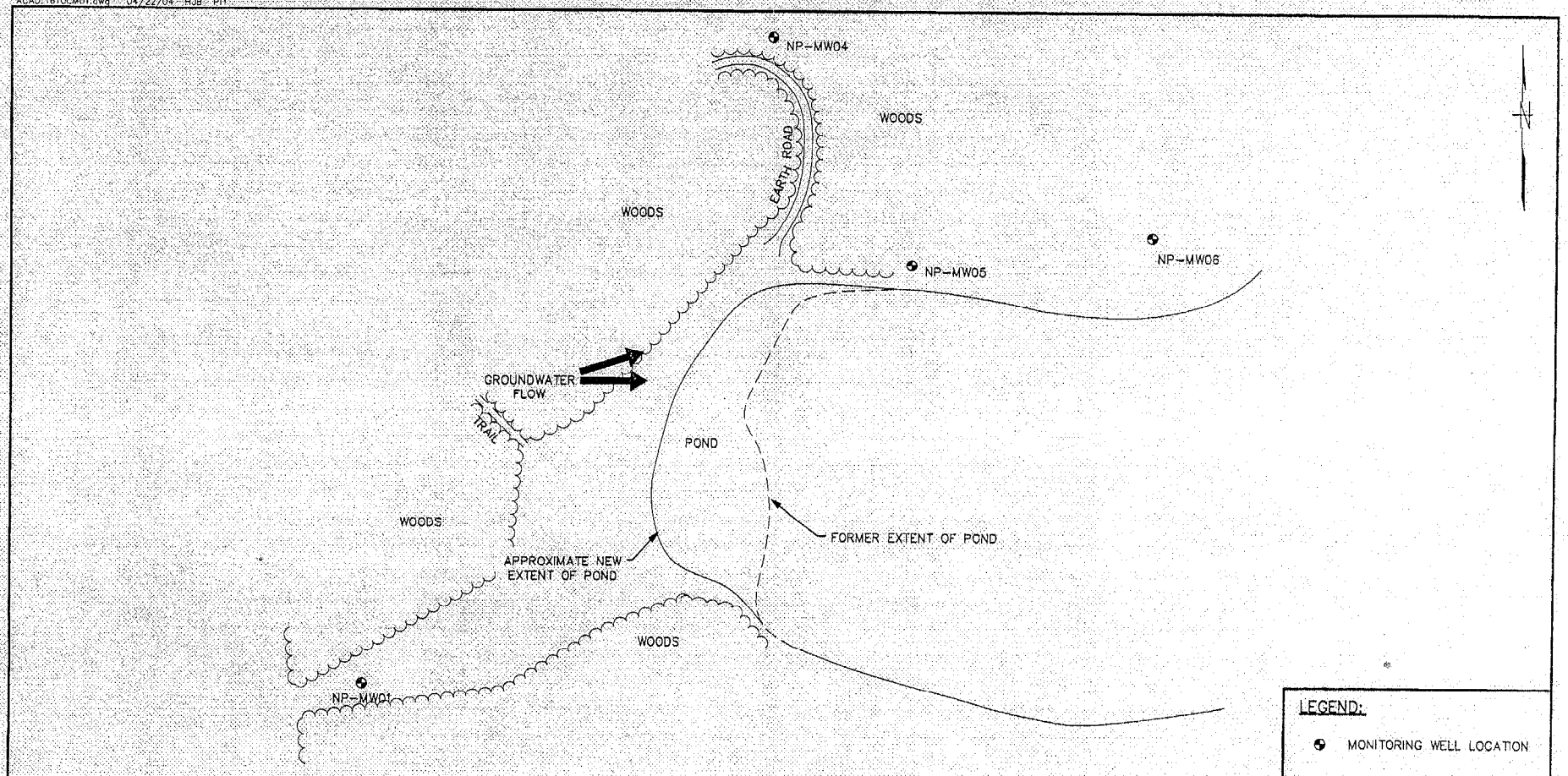
Tetra Tech NUS, Inc.

SAMPLE LOCATION MAP
SOUTHERN AREA
NWIRP CALVERTON
CALVERTON, NEW YORK

CONTRACT NO. 1610
OWNER NO. 0004
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 5
REV. 0

FORM CADD NO. FENSE_BLDGN - REV 8 - 1/28/98

ACAD:1610CM01.dwg 04/22/04 HJB PIT



REVISIONS	NO.	DATE	BY	CHKD	APPD	REFERENCES

DRAWN BY HJB DATE 4/22/04
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOCATIONS
SITE 1 - NORTHEAST POND DISPOSAL AREA
NWIRP CALVERTON, NEW YORK

CONTRACT NO. 1610 | OWNER NO. 004
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3 | REV. 0

FORM CADD NO. TtNUS_BH.DGN - REV 0 - 1/20/98

TABLE 1

GROUNDWATER MONITORING RESULTS (UG/L)
SITE 1 - NORTHEAST POND DISPOSAL AREA
NWIRP CALVERTON, NEW YORK

MONITORING WELL NP-MW01

Chemical	NYSDEC Groundwater Criteria/ Federal MCL	Sample Date			
		Jun-97	Nov-97	Mar-02	Jun-04
Volatile Organic Compounds					
CHLOROFORM	NA/NA				
Semivolatile Organic Compounds					
BIS(2-ETHYLHEXYL) PHTHALATE	5/6				
DIETHYL PHTHALATE	NA/NA		1.1		
Pesticides/PCBs					
4,4'-DDT	0.2/NA				
Inorganics					
ALUMINUM	NA/NA	37.7	61.7	57.1	236
ARSENIC	25/10				
BARIUM	1000/NA	16.2	16.2	11	29.1
BERYLLIUM	NA/2	0.24			0.32
CADMIUM	5/5				0.71
CALCIUM	NA/NA	4290	4040	3190	4520
CHROMIUM	50/100			1.3	26.9
COBALT	NA/NA	4.1			11.8
COPPER	200/1300		2.7	5.6	40.7
IRON	300/NA	6.6	82.4	85	261
LEAD	25/15	1.1			1.9
MAGNESIUM	NA/NA	1290	1280	914	1310
MANGANESE	500/NA	56.5	40.7	21.4	99.5
MERCURY	0.7/2				0.05
NICKEL	100/NA				19.5
POTASSIUM	NA/NA	758	652	402	641
SILVER	50/NA				0.62
SODIUM	NA/NA	4720	3810	2680	3350
THALLIUM	NA/2	4			
VANADIUM	NA/NA	1.8			
ZINC	NA/NA	7.1	6.6	28.4	51.1

TABLE 1

GROUNDWATER MONITORING RESULTS
SITE 1 - NORTHEAST POND DISPOSAL AREA
NWIRP CALVERTON, NEW YORK

MONITORING WELL NP-MW04

Chemical	NYSDEC Groundwater Criteria/ Federal MCL	Sample Date					
		Jun-97	June-97 Duplicate	Nov-97	Mar-02	Jun-04	Jun-04 Duplicate
Volatile Organic Compounds					1J		
CHLOROFORM	NA/NA						
Semivolatile Organic Compounds							
BIS(2-ETHYLHEXYL) PHTHALATE	5/6	2.4	1.3				
DIETHYL PHTHALATE	NA/NA						
Pesticides/PCBs							
4,4'-DDT	0.2/NA						
Inorganics							
ALUMINUM	NA/NA	137	145	217	213	222	209
ARSENIC	25/10						
BARIUM	1000/NA	29.8	30.2	27.4	24.7	22.5	22.2
BERYLLIUM	NA/2	0.61	0.68	0.62	0.42	0.64	0.68
CADMIUM	5/5				0.67		
CALCIUM	NA/NA	1260	1370	1110	763	961	948
CHROMIUM	50/100				1.4	2.1	2.0
COBALT	NA/NA					0.34	
COPPER	200/1300			5.1	5.1	3.2	3.0
IRON	300/NA	7.1	11.1	35.8	44.6	30.6	21.3
LEAD	25/15			2.8	2.6		
MAGNESIUM	NA/NA	1820	1870	1250	1080	1230	1210
MANGANESE	500/NA	38.2	38.6	52.8	16.9	34.1	33.7
MERCURY	0.7/2						0.07
NICKEL	100/NA					2.6	1.6
POTASSIUM	NA/NA	567	724	427	39	379	379
SILVER	50/NA					0.37	
SODIUM	NA/NA	6770	6990	5410	4540	4770	4720
THALLIUM	NA/2	**5.8**	**4.2**				**5.5**
VANADIUM	NA/NA		1.8				
ZINC	NA/NA	11.4	17.3	7.5	24.4	7.8	7.0

TABLE 1

GROUNDWATER MONITORING RESULTS (UG/L)
SITE 1 - NORTHEAST POND DISPOSAL AREA
NWIRP CALVERTON, NEW YORK

MONITORING WELL NP-MW05

Chemical	NYSDEC Groundwater Criteria/ Federal MCL	Sample Date			
		Jun-97	Nov-97	Mar-02	Jun-04
Volatile Organic Compounds					
CHLOROFORM	NA/NA				
Semivolatile Organic Compounds					
BIS(2-ETHYLHEXYL) PHTHALATE	5/6				
DIETHYL PHTHALATE	NA/NA				
Pesticides/PCBs					
4,4'-DDT	0.2/NA				
Inorganics					
ALUMINUM	NA/NA	436	336	665	537
ARSENIC	25/10				
BARIUM	1000/NA	15.5	3.8	9.0	15.3
BERYLLIUM	NA/2	0.29		0.26	0.21
CADMIUM	5/5				
CALCIUM	NA/NA	6620	7160	6240	11100
CHROMIUM	50/100			4.5	2.3
COBALT	NA/NA			1.6	1.2
COPPER	200/1300			5.0	1.1
IRON	300/NA	244	**5500**	**3700**	**865**
LEAD	25/15			6.7	
MAGNESIUM	NA/NA	888	605	785	1190
MANGANESE	500/NA	24.2	69.4	30.6	38.2
MERCURY	0.7/2				
NICKEL	100/NA				1.2
POTASSIUM	NA/NA	359		251	290
SILVER	50/NA				
SODIUM	NA/NA	3380	3540	3320	4110
THALLIUM	NA/2	**3.6**			
VANADIUM	NA/NA	2.4	2.7	5.8	4.0
ZINC	NA/NA	3.9	5.8	33.6	4.1

TABLE 1

GROUNDWATER MONITORING RESULTS (UG/L)
SITE 1 - NORTHEAST POND DISPOSAL AREA
NWIRP CALVERTON, NEW YORK

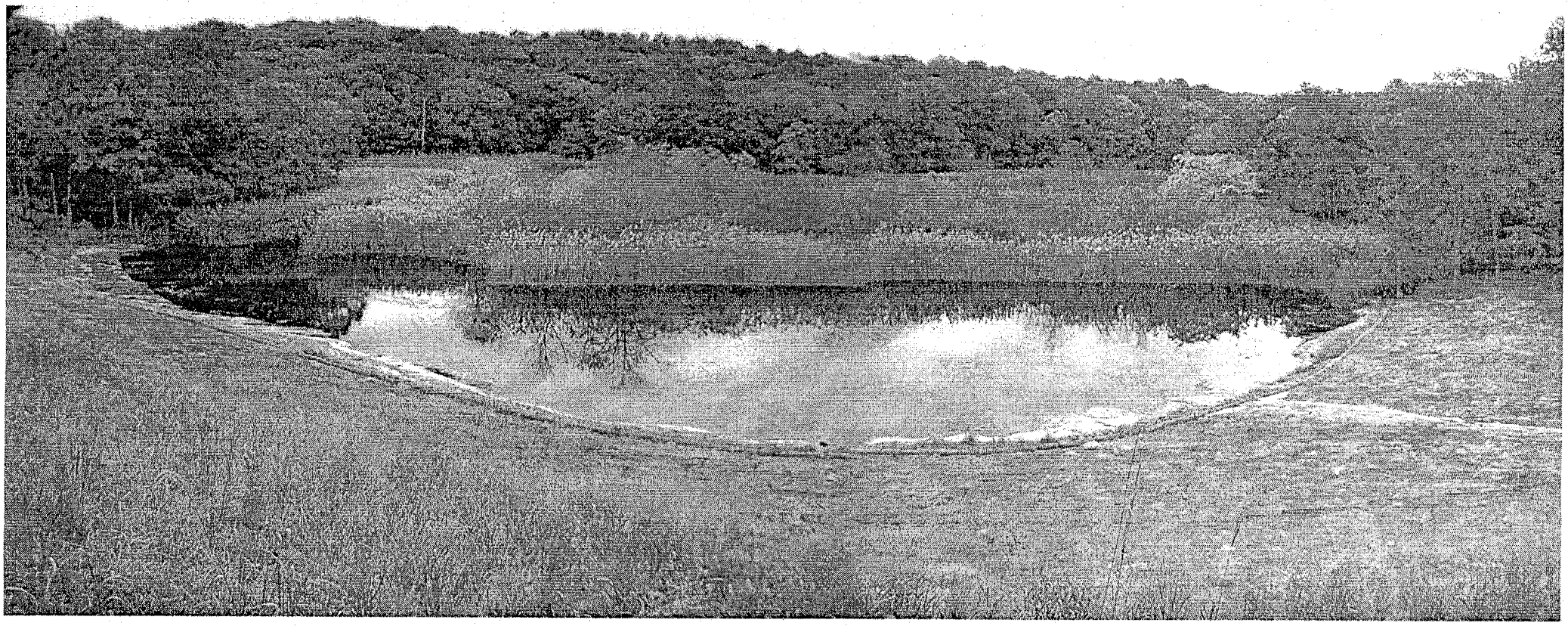
MONITORING WELL NP-MW06

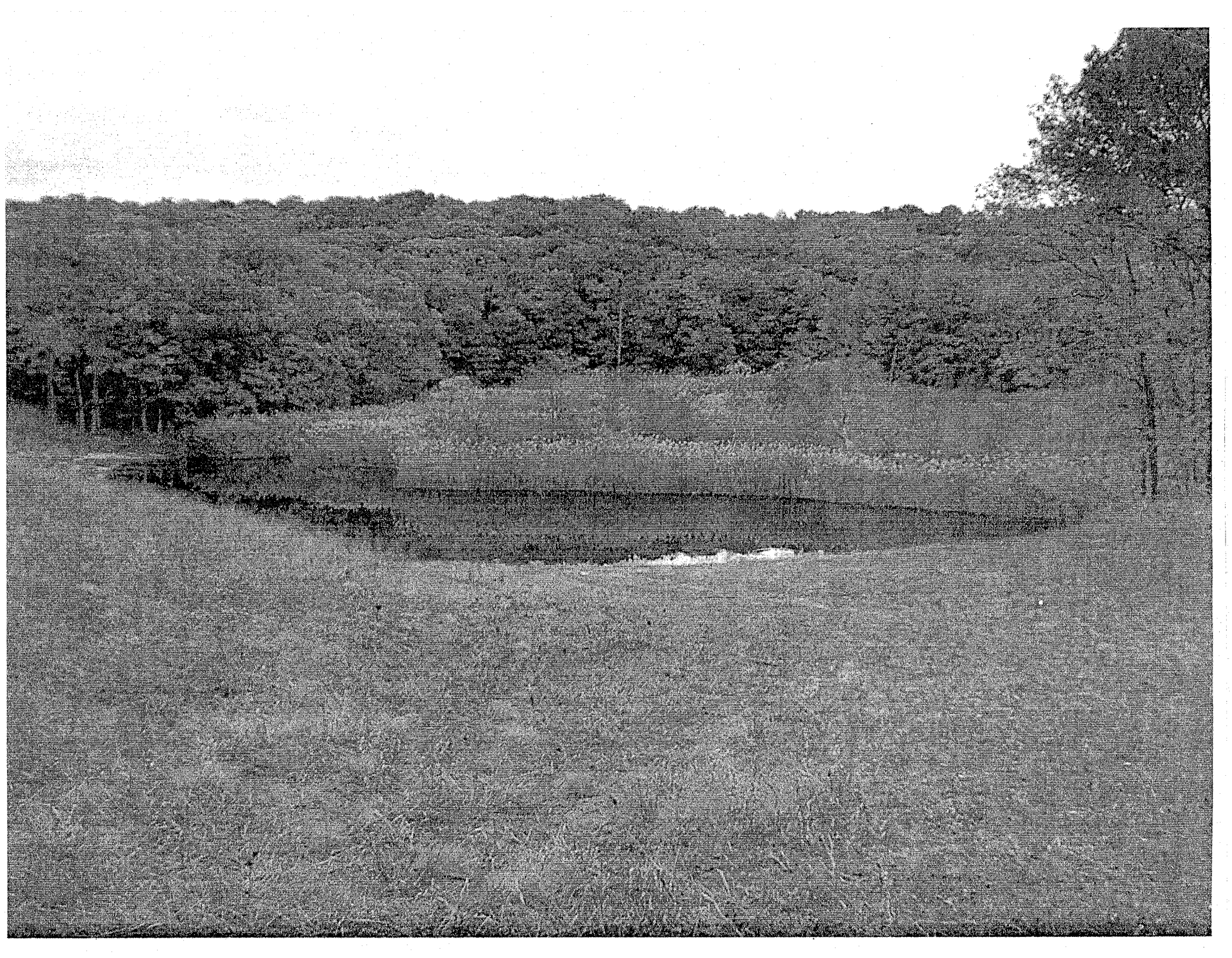
Chemical	NYSDEC Groundwater Criteria/ Federal MCL	Sample Date			
		Jun-97	Nov-97	Mar-02	Jun-04
Volatile Organic Compounds					
CHLOROFORM	NA/NA				
Semivolatile Organic Compounds					
BIS(2-ETHYLHEXYL) PHTHALATE	5/6		3.6		
DIETHYL PHTHALATE	NA/NA				
Pesticides/PCBs					
4,4'-DDT	0.2/NA				
Inorganics					
ALUMINUM	NA/NA	455	433	245	320
ARSENIC	25/10		3		
BARIUM	1000/NA	4	22.4	11.4	2.6
BERYLLIUM	NA/2				
CADMIUM	5/5				0.99
CALCIUM	NA/NA	6220	7400	10400	6060
CHROMIUM	50/100			1.6	1.4
COBALT	NA/NA		4		
COPPER	200/1300	2.2	2.4	4.4	1.4
IRON	300/NA	**3920**	**493**	**10500**	**2420**
LEAD	25/15				
MAGNESIUM	NA/NA	673	573	1020	1220
MANGANESE	500/NA	59.3	30.6	111	55.3
MERCURY	0.7/2				
NICKEL	100/NA				1.1
POTASSIUM	NA/NA	354		168	124
SILVER	50/NA				
SODIUM	NA/NA	3780	3790	3100	3980
THALLIUM	NA/2	**3.4**			**3.4**
VANADIUM	NA/NA	1.8	4.7	2.2	2.1
ZINC	NA/NA	3.9	3.6	28.4	9.5

TABLE 1

GROUNDWATER MONITORING RESULTS (UG/L)
SITE 1 - NORTHEAST POND DISPOSAL AREA
NWIRP CALVERTON, NEW YORK
PAGE 5 OF 5

J = Estimated Result
NA = Not Available
Parameters shown in Table 1 were detected in at least one sample. Parameters not shown were not detected during any of the sampling events. A complete list of parameters can be found in Appendix B.
A blank cell indicates that the parameter was analyzed for, but not detected in that sample.





ATTACHMENT 5
ENVIRONMENTAL INDICATOR REPORT

Home
Background
Environmental Indicators
Facility Information
Cleanup Reforms
RCRA Brownfields
RCRA Showcase
RCRA Success Stories
Resources
Public Involvement
Training
Meetings
Contacts

Environmental Indicators - Frequently Asked Questions

General

1. **What are the RCRA Corrective Action Environmental Indicators (EIs)?**

   The RCRA Corrective Action Environmental Indicators (EIs) are:

   - A means of evaluating and reporting on the acceptability of current site conditions (i.e., they are interim milestones and not final remedy or site closure goals).
   - An opportunity for facilities and regulators to show meaningful progress that is achievable in the near future.
   - A high priority within EPA and the #1 priority for the RCRA program.
   - Adopted by ECOS and equivalent to ASTSWMO cleanup measures.

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2. **How many RCRA CA EIs are there?**

   There are two:

   - Current Human Exposures Under Control (a.k.a. "Human Exposure EI")
   - Migration of Contaminated Groundwater Under Control (a.k.a. "Groundwater EI")

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3. **What are the possible results (determinations) for the EIs?**

   "YES" - conditions are "Under Control"
   "NO" - conditions are NOT "Under Control"
   "IN" - Insufficient information is available to determine if conditions are "Under Control"

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4. **What are the RCRA CA EI used for?**

   These EIs are used to summarize and report on the site-wide environmental conditions at the RCRA CA Program's highest priority sites (i.e., those on RCRA Cleanup Baseline). These EIs are being used to track the RCRA program's progress on getting our highest priority contaminated sites under control and report to the Office of Management and Budget (OMB), U.S. Congress, and the public.

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5. **How are sites evaluated to see if they meet the RCRA CA EI?**

   Known and suspected site (-wide) conditions are evaluated using a series of simple questions and flow-chart logic to arrive at a reasonably defensible determination (YES, NO, or IN). These questions (EI forms) were issued on Feb. 5, 1999 as Interim Final Guidance [PDF, 17 pages, 52 KB].

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6. **Who makes the EI determinations and fills out the EI forms?**

   The lead regulators for the site (Authorized State or EPA) make the EI determination. However, facilities or their consultants may assist EPA in the evaluation by providing information on the current environmental conditions and may even assist by filling out the EI forms and making recommendations for the determination.

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7. **How does the Human Exposures EI relate to traditional Risk Assessments?**

   The Human Exposure EI is an assessment of actual current human risks and would typically take the form of a qualitative assessment of the completeness of exposure pathways, but may include a traditional Quantitative Risk Assessment.

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8. **How does the Groundwater EI differ from the Human Exposures EI?**

   The Groundwater EI is strictly a resource protection measure and not a direct measure of human risk, and may include the assessment of the impacts of groundwater discharges to surface waters and surface water ecosystems.

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9. **Will EIs require additional investigations (beyond that typically required for CA)?**

   No, since the EIs are small components of typical site corrective action final remedies, the EI should not require any additional investigations to be conducted. Although, the timing of when investigations, or stabilization actions, occur may be altered in order to demonstrate that site conditions are "Under Control" as soon a possible.

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10. **Is it necessary to complete an entire site investigation to show that human exposures are under control?**

    No, human exposures can be considered "under control" if adequately protective controls are in place to prevent unacceptable exposures (i.e., cut pathways between humans and contamination) for the reasonably-expected worst-case conditions (in the un-investigated areas).

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11. **Are EI determinations a point-in-time determination, or do they have to be maintained to ensure they remain true through time?**

    Yes, they are made in a point in time, and Yes, we are responsible to ensure that the EI determinations accurately report site conditions through time.

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12. **How do the Environmental Indicator determinations for Current Human Exposure under Control and Migration of Contaminated Groundwater relate to final remedy decisions at a RCRA corrective action facility?**

    The environmental indicator determinations are a snapshot reflecting current conditions at a facility. The Human Exposure EI focuses on current exposure scenarios, and the Groundwater EI addresses the question of whether existing plumes of contaminated groundwater are continuing to expand above levels of concern. These determinations do not address whether corrective action is "complete" at the site, whether remedial long-term goals are met, or whether a site will be safe if land uses change in the future.

    As a result, overseeing agencies should not look at EI determinations at a facility as the "final" decision, and facility owner/operators should not interpret positive EI determinations as indicating that all corrective action obligations are met. In some cases, a facility that meets both Environmental Indicators may well need no further corrective action. But in many other cases, substantial work will be needed before a cleanup is complete. At some facilities, for example, current exposures may be cut off through interim measures, and groundwater migration may be under control, but more permanent measures (or more extensive site characterization) are needed to ensure that the site is safe for reasonably anticipated future uses. These measures would be addressed as part of longer term cleanup at the site.

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13. **How do I consider future land use in making an EI determination?**

    An EI determination reflects current land use (and patterns of exposure). Potential future land uses are not relevant to the determination; instead, a positive EI determination is appropriate when current exposures are adequately under control. (Of course, when it's known that patterns of exposure or land use are about to change, the overseeing agency will likely take a more conservative approach, but this would be a special case.)

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Groundwater-to-Surface Water Interaction

1. **For the purpose of making a Groundwater Environmental Indicator determination, how do I address groundwater-to-surface-water interaction?**

    In cases where groundwater is being discharged to surface water, you should, as a general matter, focus your groundwater environmental indicator evaluation on the question of whether or not contaminated groundwater is significantly impairing the quality of the surface water body. A positive environmental indicator determination would generally be appropriate where the groundwater is not significantly affecting the surface water body in a way that leads it to fail basic water-quality criteria.

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2. **What does the Groundwater Environmental Indicator deal with?**

    The "Migration of Contaminated Groundwater Under Control" environmental indicator pertains to the physical migration (i.e., further spread) of contaminated groundwater and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). It also includes the interaction of contaminated groundwater with surface water.

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3. **What do we mean by a stabilized plume?**

A plume is stabilized if it remains within the "existing area of contaminated groundwater." A plume of contaminated groundwater could remain in its existing area if it is no longer expanding above levels of concern in the vertical or horizontal dimensions due to, for example, natural attenuation or engineered controls such as hydraulic containment and/or physical barriers. Alternatively, the plume of groundwater contamination might not be expanding within the geologic formation, but it might be discharging into a hydraulically connected surface water body. In such a situation, the plume of contaminated groundwater is not getting any bigger (i.e., the plume has "stabilized"), but it might or might not be "under control." The environmental indicator determination in such a setting would be based on whether or not the continued discharge of groundwater represented an unacceptable impact to the receiving surface water body.

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4. **Is the discharge of "contaminated" groundwater into surface water likely to be "insignificant?"**

   In some cases, overseeing agencies are likely to be able to conclude that a release from groundwater into surface water will be "insignificant" – and therefore "under control" – based on the levels of contaminants in the groundwater, without consideration of the volume or flow of the surface water body. As a rule of thumb, we have found that, if the groundwater concentrations for all constituents are less than 10 times the appropriate surface water quality criteria for both human health and aquatic life, the current groundwater discharge should be "insignificant" for environmental indicator purposes. In this case, the regulator would conclude that the groundwater environmental indicator had been met (at least with respect to the discharge to surface water).

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5. **How do I deal with issues of historic sediment contamination when assessing the groundwater-to-surface-water pathway?**

   In cases where groundwater is being discharged to surface water, you should, as a general matter, focus your groundwater environmental indicator evaluation on the question of whether or not contaminated groundwater is significantly impairing the quality of the surface water body. A positive environmental indicator determination would generally be appropriate where the groundwater is not affecting the surface water body in a way that leads it to fail basic water-quality criteria.

   In many cases, RCRA facilities are located near rivers or other water bodies characterized by historic sediment contamination. In such situations, the potential contribution of current groundwater discharge to sediment quality (and similarly, to the hyporrheic zone) would be beyond the scope of a groundwater environmental indicator determination. Instead, sediment quality issues would be dealt with as a part of the final remedy (or perhaps more broadly as part of an area-wide investigation).

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Contaminated Sediment

1. **In making a human health EI determination, how do I deal with releases to surface water that may be associated with contamination of fish above safe levels? How about contaminated sediment from runoff, direct discharges, etc., to which people may be exposed?**

   It will generally be possible (for the purposes of a human health EI) to address concerns over possible contaminated fish consumption or direct human exposure to contaminated sediments through some combination of source control and exposure

controls. For example, some RCRA facilities have been found to directly discharge contaminants into relatively small water bodies, leading to potential fish contamination. At some of these facilities, human health EIs were achieved through control of the discharges (e.g., water outflows and runoff), combined with access restrictions and signs warning against fishing. Other facilities may have contributed to broader water quality or sediment problems, which may have led to bioaccumulation of contaminants in fish. Again, we expect that measures to achieve the human health EI would focus on cutting off significant releases from the RCRA facility, perhaps combined with fish advisories or similar methods to reduce exposure where it is a concern.

Again, it should be emphasized that achieving EIs does not necessarily mean that a facility has completed its corrective action obligations. In the situations described here, the final remedy is likely to require substantially more aggressive remedies, perhaps including direct cleanup of the contaminated sediment. In some cases, the remedy will likely take place as part of a broader area-wide cleanup.

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Contamination From off-Site Sources

1. **How do I address plumes of contaminated groundwater that originate from off-site sources in making a Migration of Contaminated Groundwater under Control EI determination at a RCRA facility?**

   As stated in the February 5, 1999 guidance from the Office of Solid Waste on how to determine if a facility has met the RCRA Environmental Indicators, the Migration of Contaminated Groundwater under Control EI determination apples site-wide for all contaminated groundwater "subject to corrective action at or from the identified facility." Therefore, plumes that originate from off-site sources would not be subject to a RCRA groundwater EI determination for the RCRA facility in question. The overseeing agency, however, should ensure that such plumes are addressed as necessary through other regulatory actions.

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Vapor Intrusion

1. **What does USEPA recommend as the best way to address Vapor Intrusion for EI determinations in the time remaining before 2005?**

   EPA recommends that its November 2002 Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils be used to assess this pathway for the purpose of making RCRA EI determinations. Specifically, this would involve the use of the preliminary screening criteria in Tiers 1 and 2, and, if necessary, Tier 3 site-specific modeling for EI determinations. If scientific, site-specific models (such as the Johnson & Ettinger (1991) model spreadsheets found on the Superfund Program's website(www.epa.gov/superfund) or other appropriate models) do not indicate that the site has a potential to cause exposures above the applicable EI criteria (using site-appropriate input parameters), then this pathway should be considered to have been adequately screened for EI exposure assessment purposes. In such cases, we do not believe that confirmatory sampling will be necessary, for the purpose of making an EI determination.

   If Tier 3 models indicate a potential for exposure at levels above the applicable criteria, additional data gathering (e.g., sub-slab sampling or indoor air monitoring) or remediation may be needed to meet the human health environmental indicator.

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2. **What are the applicable criteria to use in determining whether the human health environmental indicator has been met for the vapor intrusion pathway?**

   For the purpose of making Current Human Exposure under Control EI determinations with respect to vapor intrusion, EPA generally recommends the use of 10-5 levels for carcinogens (incremental individual lifetime cancer risk), and a Hazard Quotient (HQ) of 1 for non-cancer risks.) (For occupational settings, see question 3 below.)

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3. **How is vapor intrusion into occupational and other non-residential settings to be evaluated for RCRA EI determinations?**

   Occupational settings where persons are in a working situation: Such settings could include workplaces where workers are handling hazardous chemicals (e.g., manufacturing facilities) similar to or different from those in the subsurface contamination, as well as other workplaces, such as administrative and other office buildings where chemicals are not routinely handled in daily activities. OSHA and EPA have agreed that OSHA generally will take the lead role in addressing occupational exposures. Therefore, EPA does not expect the November 2002 Vapor Intrusion Guidance to be used in such settings (i.e., primarily occupational). Nevertheless, we recommend that such facilities be notified of the potential for this exposure pathway and that they consider any potential exposure that may result.

   Nonresidential settings where persons are in a non-working situation: Nonresidential buildings may need to be evaluated where people (typically non-workers) may be exposed to hazardous constituents entering into the air space from the subsurface. This would include, for example, buildings where the general public may be present, e.g., schools, libraries, hospitals, hotels, and stores. In these situations we believe the November 2002 Vapor Intrusion Guidance may be appropriate, although we recommend appropriate adjustments be made for nonresidential exposure durations, the building specific air volumes and air exchange rates, as well as other relevant factors to be considered.

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4. **How is future land use considered in making a RCRA Current Human Exposure Under Control EI determination for vapor intrusion?**

   Environmental Indicators reflect *current*, not future or potential, conditions. See response 13 in the "General" section above.

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RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name: NWIRP Calverton
Facility Address: Grumman Boulevard, Calverton NY 11933
Facility EPA ID#: NYD003995198

1. Has all available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated unites (RU), and Areas of Concern (AOC), been considered in this EI determination?

   _X_ If yes - check here and continue with #2 below.

   ____ If no - re-evaluate existing data, or

   ____ If data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EIs developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air media known or reasonably suspected to be "contaminated"[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	X			See Rationale and Reference, Below
Air (indoors)[2]		X		No impact from facility releases
Surface Soil (e.g., <2 ft)	X			See Rationale and Reference, Below
Surface Water		X		VOCs are present at low concentrations
Sediment		X		See Rationale and Reference, Below
Subsurf. Soil (e.g., >2 ft)	X			See Rationale and Reference, Below
Air (outdoors)		X		No impact from facility releases.

____ If no (for all media) - skip to #6, and enter "YE", status code after providing or citing appropriate "levels", and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

_X_ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

____ If unknown (for any media) - skip to #6 and enter "IN" status code.

---

1 "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

2 Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

Rationale and Reference(s)

SITE DESCRIPTION

Location

NWIRP-Calverton is located in Suffolk County on Long Island, New York, approximately 70 miles from New York City. The facility covers approximately 6,000 acres, 3,000 of which are enclosed by a fence. The site location is shown as Figure 1. A portion of the facility is located in the Town of Brookhaven, while the majority is within the Town of Riverhead.

The facility is bordered by Middle Country Road (route 25) to the north, agricultural land to the east, River Road to the south and Wading River Road to the west. Two paved runways are located at the facility. Runway 5-23 is located on the western half of the facility and oriented southwest to northwest. Runway 32-14 is located on the eastern half of the property, and is oriented southeast to northwest. The site plan is provided in Figure 2.

Operations History

NWIRP- Calverton was formerly a Government-Owned Contractor-Operated (GOCO) facility that was operated by Northrop Grumman Corporation (aka Grumman Corporation) until February 1996. The facility was constructed by the US Navy in the early 1950s for the use in the development, assembly, testing, refitting and retrofitting of Naval combat aircraft. The facility supported aircraft design and production at the Grumman's Bethpage Facility, located in Nassau County, Long Island New York.

Most of the industrial activity was confined to the developed area in the center and south of the center of the site. Operations that generated hazardous waste include metal finishing processes such as metal cleaning and electroplating, other maintenance operations, temporary storage of hazardous waste, fueling operations and various training operations.

In September 1998, the majority of the land within the developed section of the facility was transferred to the Town of Riverhead for redevelopment. Because of the need for additional environmental investigation and the potential need for remediation, the Navy retained several parcels of land, approximately 358 acres, within the developed section. The parcels and associated Navy Installation Restoration sites are listed below and shown on figure 2.

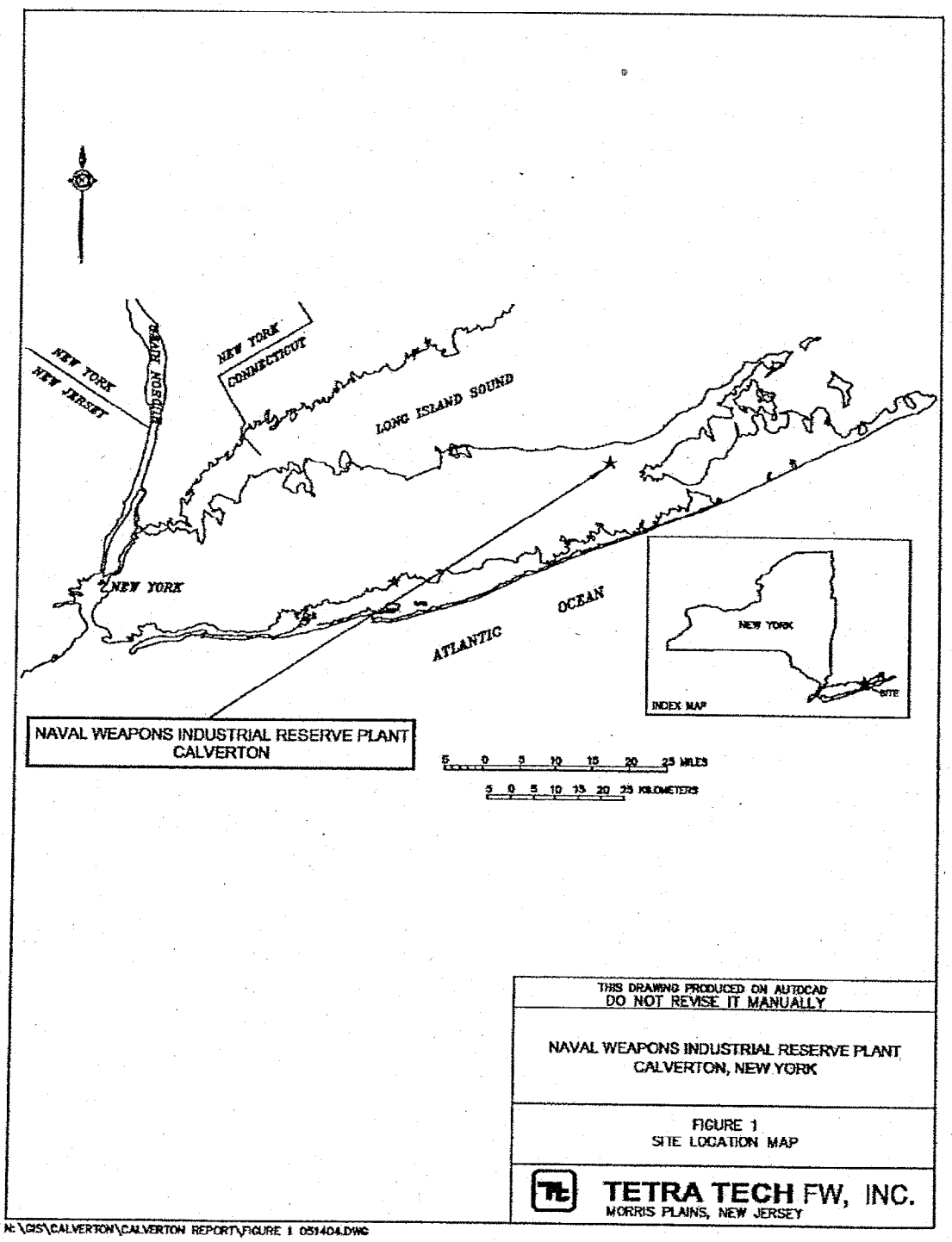

Figure 1 Site Location Map

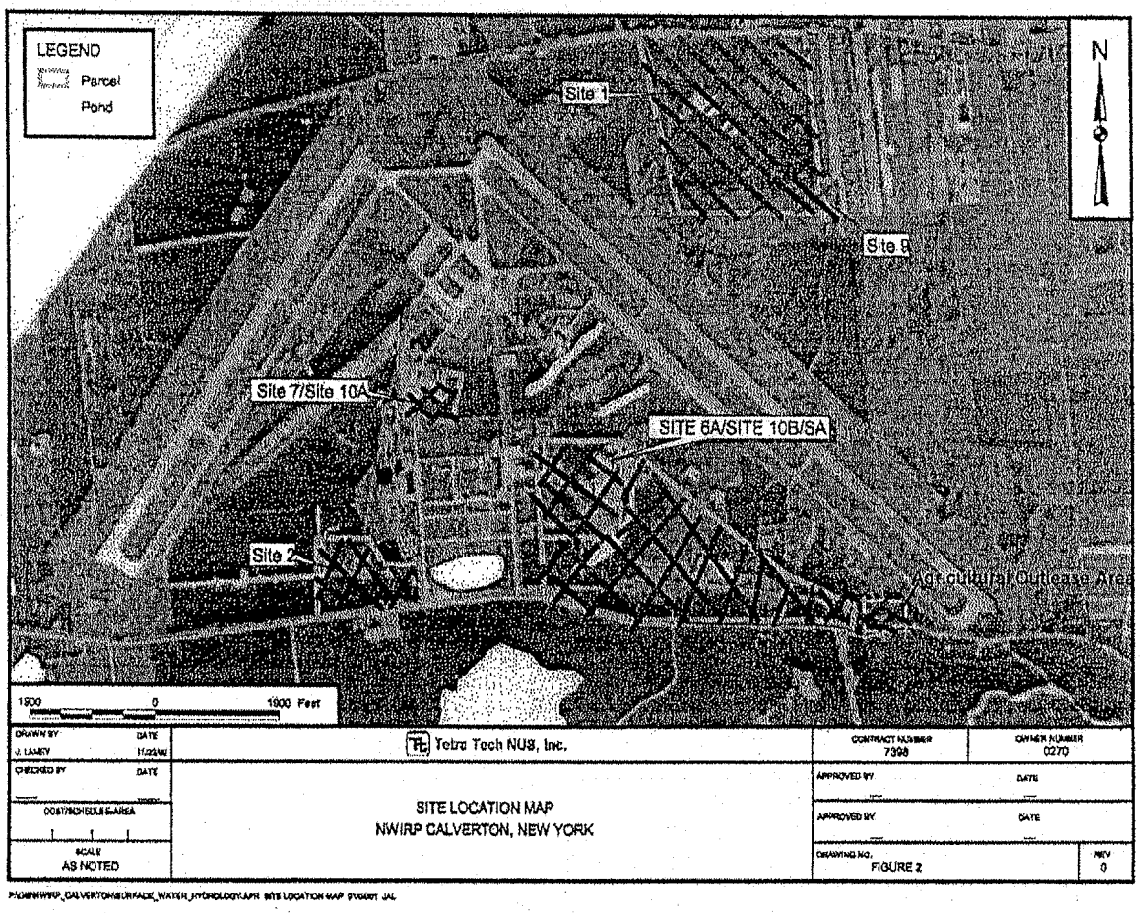

Figure 2 - Site Plan

The Navy Installation Restoration sites include:

- **Parcel A** (32 acres)
  - Site 2 - Fire Training Area
- **Parcel B1** (40 acres)
  - Site 6A - Fuel Calibration Area
  - Site 10B - Engine Test House
- **Parcel B2** (131 acres)
  - Southern Area
- **Parcel C** (10 acres)
  - Site 7 - Fuel Depot
  - Site 10A - Jet Fuel Systems Laboratory
- **Parcel D** (145 acres)
  - Site 1 - Northeast Pond Disposal Area
  - Site 9 Electronic Countermeasures (ECM) Area
- **Agricultural Outlease Area**

In 1999 approximately 3,000 acres of undeveloped land outside of the fenced area was transferred to the Veterans Administration and the New York State Department of Environmental Conservation (DEC).

All of the permitted units in the NWIRP 6NYCRR Part 373 Hazardous Waste Permit for storage have been clean closed. The permit was reissued in April 2000 to contain only Corrective Action requirements.

The regulatory status of the individual sites in each area are summarized in Table 1 on the following page and in the discussion of Contamination and Corrective Action.

NWIRP Calverton Environmental Indicator Form - CA 725 Site Status Summary				
Area Name	Remedial Investigation	Interim Remedial Measure	Remedial Feasibility	Record of Decision
Parcel A				
Site 2 - Fire Training Area	2/1/2001	12/1987 - 12/1993 Active/Passive Recovery 1995 - 2000 Air Sparging Soil Removal Spring 2006		
Parcel B-1				
Site 6A - Fuel Calibration Area	7/1/2001	1987 1993 Active Recovery 1993 1996, 2000 - present Passive Recovery 9/8/93 All Underground Tanks Removed 1984 Swale Clean-Up Supplemental investigation will begin October 2004		
Site 10B - Engine Test House	7/1/2001	1993 all tanks removed Supplemental investigation will begin October 2004		
Parcel B-2				
Southern Area	7/1/2001	Supplemental investigation will begin October 2004		
Parcel C				
Site 7 - Fuel Depot	1/1/2000	05/1988 - All Tanks Removed 1/28/03 - present AS/SVE	4/1/2002	1/28/03
Site 10A - Jet Fuel Systems Laboratory	1/1/1998	12/1/1993 - 1996 Passive Recovery		
Parcel D				
Site 1 - Northeast Pond Disposal Area	2/1/2002	8/5/2003 All waste/contaminated sediments removed	2/1/2002	1/28/03
Site 9 - Electronic Counter Measures	12/1/2002	No Action Needed – final report early 2005		No Action Needed
Agricultural Outlease Area		1993 Contaminated Soil Removed		

Table 1- Site Status Summary

Soils and Geology

NWIRP Calverton lies within the Atlantic Coast Plain and is underlain by a thick sequence of unconsolidated deposits. The surface topography was created or modified by Pleistocene glaciation. Ground surface elevations on Long Island range from sea level to approximately 400 feet above mean sea level (msl.) The two most prominent topographical features in the Long Island area are the Ronkonkoma terminal moraine and the Harbor Hill end moraine. NWIRP Calverton occupies a relatively flat, area between these two features.

NWIRP Calverton is underlain by approximately 1,300 feet of unconsolidated sediments that make up four distinct geological units: the Upper Glacial Formation; the Magothy Formation; the Raritan Clay Member of the Raritan Formation; and the Lloyd Sand Member of the Raritan Formation. The 250 foot thick, Upper Glacial Formation directly underlies the facility and contains glacial till and outwash deposits.

Surface Water Hydrology

The majority of the site lies within the Peconic River drainage basin. The eastward-flowing Peconic River is located approximately 1,300 feet south of the facility at its closest point. The Peconic River discharges to the Peconic Bay located 8.5 stream miles from the facility.

Major surface water features on the site include McKay Lake and the Northeast Pond. McKay Lake is a man-made groundwater recharge basin located north of River Road, midway along the southern site border. Several small drainage basins (Runway Ponds) exist near the Fuel Calibration Area. The location of these on-site surface water bodies is shown on Figure 3. These surface water features are generally land locked except that McKay Lake has an intermittent discharge to Swan Pond, and overland flow can periodically occur between the drainage basins and the Peconic River.

Groundwater Hydrogeology

The unconsolidated sediments that underlie NWIRP Calverton are generally medium to coarse-grained sand that make up an important, high-yield aquifer beneath the site.

NWIRP Calverton straddles a regional groundwater divide. Groundwater beneath the northern half of the facility flows to the northeast, with the Long Island Sound as the probable discharge point for shallow groundwater. (See figure 3) Groundwater beneath the southern half of the facility flows to the southeast with the Peconic River basin as the likely discharge point. Groundwater on the divide, flows to the east. The precise location of the divide fluctuates seasonally as the water table elevation changes.

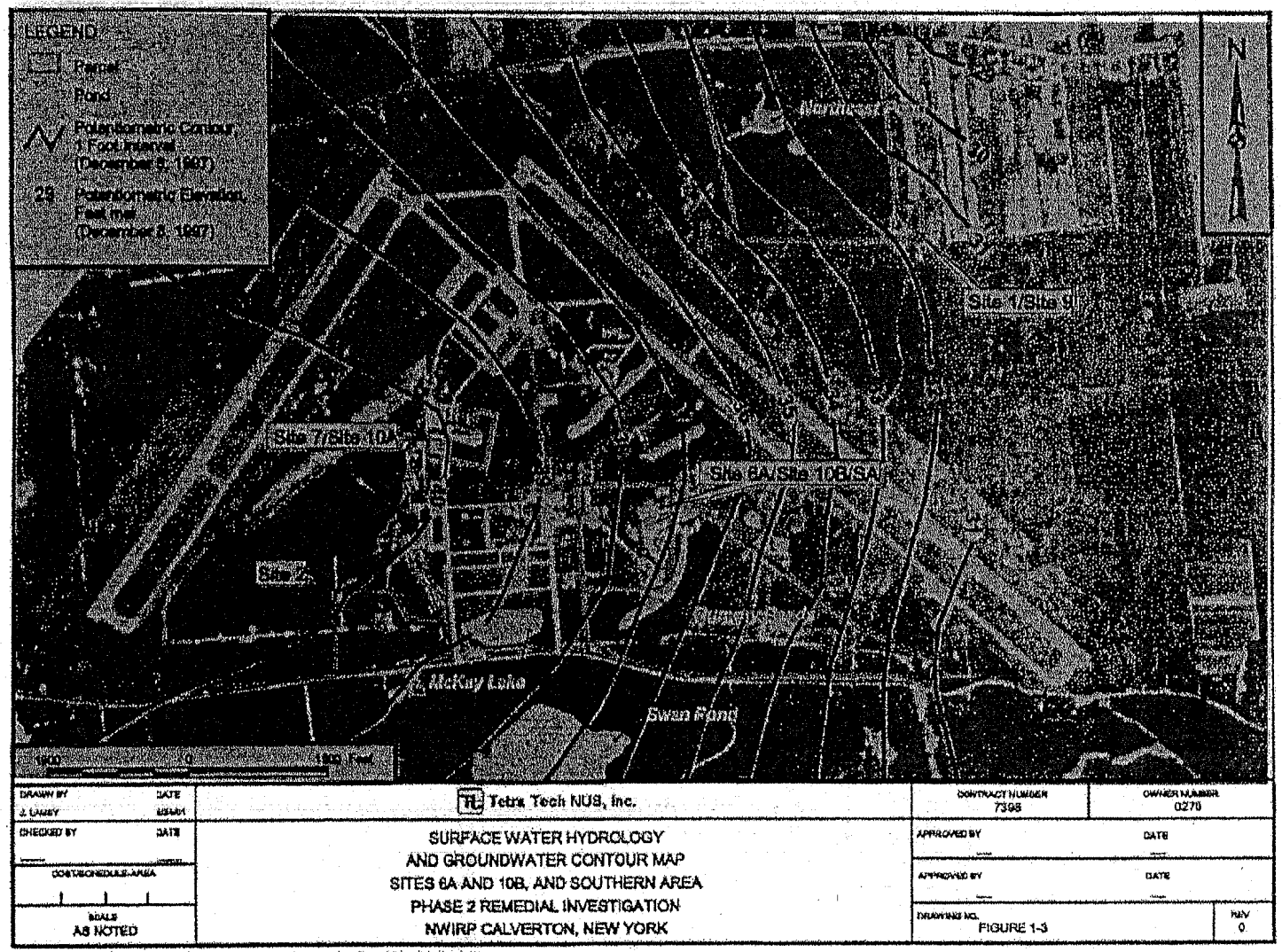

Figure 3 - Groundwater and Surface Water Hydrogeology

CONTAMINATION AND CORRECTIVE ACTION

Parcel A:

The only Area of Concern in Parcel A is Site 2 - the Fire Training Area. This area is discussed below:

Site 2 - Fire Training Area

IMPACTS TO:

- GROUNDWATER
- SURFACE SOIL
- SOIL AT DEPTH

The Fire Training Area had been used to train Northrop Grumman crash rescue teams. This activity started in 1955 and possibly as early as 1952. Before 1982, Grumman would clear areas up to 100 feet or more in diameter and create an earthen berm that was filled with water. Waste fuels, oils, and solvents were floated on water and ignited. Aircraft sections were sometimes placed in the cleared area to simulate actual crash conditions. Rescue crews trained by extinguishing these fires.

In 1982 there was a waste fuel spill from a 6,000-gallon underground storage tank located north of the fire training pit. No spills were recorded prior to 1982. Contaminated soils from the spill were excavated and disposed off-site. That year, Grumman replaced the underground tank with a concrete-lined basin and a 1,000-gallon above-ground storage tank. Spills from the above storage tank in 1983 were contained within the concrete-lined basin.

Table 2
Contaminants of concern found at the fire training area during the 1995 RCRA Facility Investigation

Contaminant	Maximum Concentration Detected	
	Soil ug/kg	Groundwater ug/l
2-butanone	5,900	
chloroethane	330	1,100
1,1-dichloroethane		1,200
dichlorobenzene	900	
tetrachloroethene	470	
1,1,1-trichloroethane	9,900	140
ethyl benzene	3,700	
toluene	6,100	320
xylenes	85,000	230
Total PCBs	3,640	18
Total PAHs	31,000	3
Lead	390,00	30.80

A groundwater recovery system was installed in December1987. This system consisted both of an active and a passive recovery system. The active system included a groundwater pumping well, an oil recovery well, and an oil water separator tank. The passive recovery system consisted of hydrophobic filters located in shallow wells. As of December 1993, 270 gallons of petroleum product had been removed from the site. The active system was shut down in 1993 but free product recovery using bailers, continued until 1996.

A pilot-scale air sparging/soil vapor extraction (AS/SVE) was installed at the fire training area in 1995. As of 2000, approximately 80 pounds of target VOCs have been removed. In addition, an estimated 30,000 pounds of organics have been destroyed through biodegradation.

The extent of soil contamination was estimated to be 80,000 square feet with an average depth of 8.2 feet. The estimated volume of contaminated soil was 25,000 cubic yards. This volume has been reduced significantly by operation of the AS/SVE system. To complete the cleanup, the Navy plans to remove the concrete fire training ring and any contaminated soil that may exist above or below the ring.

Currently, the area is enclosed by a fence and no human exposure pathways are believed to exist from Parcel A.

References:

- HNUS, 1992. SITE INVESTIGATION REPORT, Naval Weapons Industrial Reserve Plant, Calverton, New York.
- HNUS, 1995. RCRA Facility Investigation, Naval Weapons Industrial Reserve Plant, Calverton, New York.
- C.F. Braun, January 1997. Final Basewide Phase I Environmental Baseline Survey for Naval Weapons Industrial Reserve Plant, Calverton, New York.
- C.F. Braun, December 1997. Phase 2 RCRA Facility Investigation Filed Sampling for Naval Weapons Industrial Reserve Plant, Calverton, New York.
- Tetra Tech Nus, February 2001. Draft Phase 2 Remedial Investigation and for Site 2 - Fire Training Area, Naval Weapons Industrial Reserve Plant, Calverton, New York.
- Foster Wheeler Environmental Corporation, January 14, 2000. Field Report Vacuum Assisted Oil Skimming Pilot Test, Fire Training Area Naval Weapons Industrial Reserve Plant, Calverton, New York.
- Department of Navy, January 2002. Technical Memorandum for Site 2 Fire Training Area and Site 6A- Fuel Calibration Area Test Pitting Activities.

Parcels B1 and B2:

Parcels B1 and B2 contain three areas of concern. Site 6A - The Fuel Calibration Area (contains both the old and new fuel calibration areas), Site 10B - The Engine Test House, and the Southern Area. These areas are discussed below.

Site 6A - Fuel Calibration Area

IMPACTS TO:
- GROUNDWATER
- SURFACE SOIL
- SOIL AT DEPTH

Starting in 1956, the old fuel calibration area was used for testing aircraft engine and fuel systems. The area contained a 320 square foot, cinder block, fuel distribution building and associated fuel tanks. In this area, aircraft fuel delivery systems were pressurized with fuel to test for leaks or potential system malfunctions. In 1980, the entire complex was replaced with new fuel calibration area located nearby.

Table 3
Contaminants of concern found at the Fuel Calibration Area During the 1995 RCRA Facility Investigation

Contaminant	Maximum Concentration Detected	
	Soil ug/kg	Groundwater ug/l
2-butanone	3	
chloroethane		430
1,1-dichloroethane		5,800
Freon 113	4	
1,1,1-trichloroethane	7,400	15,000
ethyl benzene	1,800	
toluene	4,300	330
xylenes	17,000	780
1,2-dichlorobenzene		9
2-methylnaphthalene		74
naphthalene		120
Total PAHs	31,000	3

Table 4
Contaminants of Concern found in all of Parcel B During the 1997 Phase 2 Remedial Investigation and the 2000 Supplemental Groundwater Investigation

	Fuel Calibration Area	Engine Test House	Southern Area
Contaminant	Maximum Concentration Detected		
	Groundwater ug/l	Groundwater ug/l	Groundwater ug/l
chloroethane	720	152	7
1,1-dichloroethane	3600		220
1,1-dichloroethene	37	188	21
1,1,1-trichloroethane	2200	166	19
TCE	6		
ethyl benzene	27	1084	
toluene	180	337	
xylenes	570	196	

Old Fuel Calibration Area

The fuel tanks at the old Fuel Calibration Area included:

- 4000-gallon JP-5 underground storage tank
- 1000-gallon 1010 oil underground storage tank
- 275-gallon miscellaneous content underground storage tank
- 3000-gallon 1010 oil above ground storage tank

These tanks were removed on September 3, 1993.

The primary environmental concern at the old and new fuel calibration areas was as many as 230 gallons of fuel that were recorded to have been spilled while these areas were in use. The majority of the spills are believed to be concentrated in the areas surrounding the main fuel calibration pad.

Eighteen monitoring wells were placed south and southeast of the old fuel calibration area between March 1984 and November 1987. Contamination in this area included a free product layer and contaminated groundwater containing fuel-type and chlorinated VOCs. The chlorinated VOCs are believed to be from unreported spills of solvents that were used to clean the aircraft engines and fuel systems after they were tested.

A groundwater recovery unit was installed in 1987. This unit included a pumping well, an oil recovery well and an oil/water separator tank. The tank discharged into the drainage ditch paralleling the southern edge of the calibration pad. This discharge is believed to have contained chlorinated VOCs that caused secondary groundwater contamination at the site. Active Groundwater and free product extraction continued until 1993. Passive product recovery continued until 1996.

A pilot study was conducted for a Vacuum Oil Skimming Unit in September 1999. The pilot operation did not succeed because the volume of product available for recovery is too small and inconsistent for this type of system.

Passive free product recovery was restarted in 2000 and continues today.

New Fuel Calibration Area

Fuel tanks at the new Fuel Calibration area include

- 10,000- gallon JP-5 tank
- 10,000-gallon 1010 oil tank
- 5,000-gallon waste 1010 oil tank
- 500-gallon waste oil tank.

All of these are above ground tanks with secondary containment and a complex network of piping. The tanks have all been emptied and cleaned, but they remain on-site. Free product removed from the containment area was pumped to an adjacent oil-water separator (OWS) and then to a 500-gallon waste oil tank that discharged to the Sewage Treatment Plant. Overflow events and incorrect operation of the OWS resulted in uncontrolled discharge to a swale to the east of the new calibration area. The swale was cleaned up in 1984 when soil and sediments were excavated and properly disposed. Discharges into this swale are believed to be a secondary source of groundwater contamination from the Fuel Calibration Area.

Site 10B - Engine Test House

IMPACTS TO:

- GROUNDWATER
- SURFACE SOIL
- SOIL AT DEPTH

The Engine Test House is a two story metal frame and cinder block building constructed in 1954. The building consisted of two engine test bays, a control room and utility rooms. The Engine Test house contained a fuel filtering system and pumps. Four underground storage tanks were associated with the Engine Test house. These included a 1000-gallon No. 2 oil tank, a 15,000-gallon JP-4/5 tank, and two 275-gallon miscellaneous content tanks. All of these tanks were removed in 1993.

The 1995 RFA investigation found evidence of soil and groundwater contamination in this area. The groundwater contamination included free product petroleum and groundwater contamination including fuel-type and chlorinated VOCs. The majority of the chlorinated VOCs are believed to have originated at the Fuel Calibration Area and have been transported to this site by the remedial discharges into the drainage swale and culvert during the 1980s and 1990s.

Southern Area

IMPACTS TO:

- GROUNDWATER

The Southern Area is located to the southeast of the Engine Test House and extends off-site. There are no known or suspected contaminated sources within this area however, this area is hydraulically downgradient of the Engine Test House (Site 10B), the Fuel Calibration Area (Site 6A). Contaminated groundwater from these areas flows through the Southern Area towards the Peconic River and Flander's Bay.

While contamination is believed to migrate under this area, there are no known drinking water wells in the area overlying the contaminated groundwater. Further, contaminated groundwater is overlain by a layer of uncontaminated groundwater which serves as a barrier to vapor migration. Thus, there is no potential pathway for vapor intrusion into occupied structures.

References:

- HNUS, 1992. SITE INVESTIGATION REPORT, Naval Weapons Industrial Reserve Plant, Calverton, New York.
- HNUS, 1995. RCRA Investigation, Naval Weapons Industrial Reserve Plant, Calverton, New York.
- C.F. Braun, January 1997. Final Basewide Phase I Environmental Baseline Survey for Naval Weapons Industrial Reserve Plant, Calverton, New York.
- C.F. Braun, December 1997. Phase 2 RCRA Facility Investigation Filed Sampling for Naval Weapons Industrial Reserve Plant, Calverton, New York.
- Tetra Tech Nus, July 2001. Phase 2 Remedial Investigation for Site 6A - Fuel Calibration Area, Site 10B - Engine Test House, Southern Area, Naval Weapons Industrial Reserve Plant, Calverton, New York.
- Foster Wheeler Environmental Corporation, January 14, 2000. Field Report Vacuum Assisted Oil Skimming Pilot Test, Fire Training Area Naval Weapons Industrial Reserve Plant, Calverton, New York.
- Department of Navy, January 2002. Technical Memorandum for Site 2 Fire Training Area and Site 6A- Fuel Calibration Area Test Pitting Activities.

Parcel C:

Parcel C consists of Site 7 - the Fuel Depot, and Site 10A the Jet Fuel Systems Laboratory. These are discussed below:

Site 7 - Fuel Depot

IMPACTS TO:

- GROUNDWATER
- SURFACE SOIL
- SOIL AT DEPTH

The Fuel Depot was constructed in 1953 to supply aircraft fuel, gasoline and diesel fuel for NWIRP operations. The depot is comprised of a 700 square foot operations building, six USTs, one AST, fuel truck parking area, and associated pumping and dispensing equipment. Activities at the Fuel Depot have resulted in groundwater contamination by fuels, which may be the result of tank and pipe leakage, overfill, and spills.

Table 5
Contaminants of concern found at the Fuel Depot Area
During the 1995 RCRA Facility Investigation

Contaminant	Maximum Concentration Detected	
	Soil ug/kg	Groundwater ug/l
Benzene		17
Freon		100
Ethyl benzene	590	480
Toluene	4	710
Xylenes	2600	2400
Naphthalene		150
2-Methylnaphathalene	2600	78
Lead		25

The Underground Storage Tank area contained the following:

- 20,000-gallon aviation fuel tank
- 10,000-gallon diesel tank
- 10,000-gallon gasoline tank
- 50,000-gallon JP-5 tank
- 50,000-gallon JP-4 tank
- 50,000- gallon Jet A tank
- an emergency overflow tank.

As of May 1998, all the underground storage tanks have been removed from the Fuel Depot. During the tank removal, excavated soils that exhibited evidence of petroleum contamination were disposed off-site. In addition, in 1989 Northrop Grumman installed thirty-four monitoring wells to identify the extent of free product and to accumulate free product for passive recovery.

In 1999 the Navy conducted a soil gas survey, as part of phase 2 RCRA Facility Investigation, to identify potential soil and groundwater volatile organic contamination. A pilot scale Air Sparging/ Soil Vapor Extraction system was successfully implemented in 2003 to remove the fuel-VOC contamination. The Navy is currently replacing the pilot system with a full scale system for the site.

On January 28, 2003, a Record of Decision (ROD) was issued and approved by the United States Navy, with concurrence by the DEC and New York State Department of Health (DOH).

References:

- HNUS, 1992. SITE INVESTIGATION REPORT, Naval Weapons Industrial Reserve Plant, Calverton, New York.
- HNUS, 1995. RCRA Investigation, Naval Weapons Industrial Reserve Plant, Calverton, New York.
- C.F. Braun, January 1997. Final Basewide Phase I Environmental Baseline Survey for Naval Weapons Industrial Reserve Plant, Calverton, New York.
- C.F. Braun, December 1997. Phase 2 RCRA Facility Investigation Filed Sampling for Naval Weapons Industrial Reserve Plant, Calverton, New York.
- Tetra Tech Nus, February 2002. Phase 2 Remedial Investigation/Focused Feasibility Study for Site 7 - Fuel Depot, Naval Weapons Industrial Reserve Plant, Calverton, New York.
- Tetra Tech Nus, February 2002 Pre-design Air sparging/ Soil Vapor Extraction at Site 7 - Fuel Depot. Naval Weapons Industrial Reserve Plant, Calverton, New York
- Record of Decision for Site 7 - Fuel Depot. Naval Weapons Industrial Reserve Plant, Calverton, New York January, 28, 2003.

Site 10A - Jet Fuel Systems Laboratory

IMPACTS TO:

- GROUNDWATER
- SURFACE SOIL
- SOIL AT DEPTH

The Jet Fuel Systems Laboratory is situated to the west, across the access road and just south of the Fuel Depot. The Laboratory was used for the testing fuels and fuel systems. In addition to the Laboratory building, there was an area behind the northwestern corner of the building where several underground storage tanks were found and removed by the Navy. There is no information regarding what was stored in these tanks. Contamination at this site includes VOCs and petroleum products.

Table 6
Contaminants of Concern in the Jet Fuel Systems Laboratory
During the 1995 RCRA Facility Investigation

Contaminant	Maximum Concentration Detected
	Groundwater ug/l
Benzene	17
Freon 113	1100
1,2,4-trichlorobenzene	38
1,1,1-trichloroethane	140
Ethyl benzene	8
Toluene	710
Xylenes	99

The Jet Fuel Systems Laboratory was investigated as part of a two-stage RFA investigation of potential industrial wastewater overflow releases into the cesspool-leach fields associated with the laboratory. The Navy has complete remedial efforts in this area and is currently completing reports to support their Finding of Suitability to Transfer (FOST). The agencies will review these reports to ensure that remedial efforts are adequate to support this transfer.

In addition, groundwater from production wells, located adjacent to the jet fuel systems laboratory, were found to contain concentrations of VOCs (including freon) at concentrations greater than drinking water standards. This contamination was investigated in the RFA for the Fuel Depot and will be included in the coverage area of the Fuel Depot's Air Sparging System.

Starting in 1993 Northrop Grumman conducted floating free product (jet fuel) recovery from the groundwater at this site. This continued until early 1996. Currently, the area is retained as Navy property and enclosed by a fence. No human exposure pathways are believed to exist.

References:

- HNUS, 1992. SITE INVESTIGATION REPORT, Naval Weapons Industrial Reserve Plant, Calverton, New York.
- HNUS, 1995. RCRA Investigation, Naval Weapons Industrial Reserve Plant, Calverton, New York.
- C.F. Braun, January 1997. Final Basewide Phase I Environmental Baseline Survey for Naval Weapons Industrial Reserve Plant, Calverton, New York.
- C.F. Braun, December 1997. Phase 2 RCRA Facility Investigation Filed Sampling for Naval Weapons Industrial Reserve Plant, Calverton, New York.

Parcel D:

Parcel D consists of Site 1 - the Northeast Pond Disposal Area and Site 9 the Electronic Countermeasures (ECM) Area. These are discussed below:

Site 1 - Northeast Pond Disposal Area

IMPACTS TO:
- GROUNDWATER
- SURFACE SOIL
- SOIL AT DEPTH
- SEDIMENT

The Northeast Pond area was used primarily for disposal of construction and demolition materials including concrete, brick and wood. Some aircraft sections, tooling materials, office materials and paint cans are also believed to have been disposed there. It is possible that even more limited amounts of petroleum, oils and lubricants, halogenated and non-halogenated solvents and paint sludge may also have been disposed. A buried drum was encountered during the 1995 RCRA Facility Investigation (RFI) Program. Testing of the drum contents and adjacent soils detected a relatively high concentration of 1,1,1-trichloroethane (390,000 ug/kg at one location). Disposal at the Northeast Pond area ended in 1984.

In general, volatile organic compounds (VOCs) were detected sporadically and at relatively low concentration in the soil and fill material. Semivolatile organic compounds (SVOCs) including polynuclear aromatic hydrocarbons (PAHs), pesticides, and polychlorinated biphenyls (PCBs) were detected throughout the fill material. Compounds detected at levels of significance are listed in the table below.

Table 7
Contaminants of Concern found at the Northeast Pond Landfill During the 1995 RCRA Facility Investigation

Contaminant	Maximum Concentration Detected			
	Soil / Waste ug/kg	Groundwater ug/l	Surface Water ug/l	Sediments ug/kg
VOCs				
1,1,1-trichloroethane	390,000	5.7		7
1,1-dichloroethane		5.9		18
toluene				610
Pesticides				
Aldrin		0.048		
4,4'-DDD			0.02	2,000
Total PCBs	8,400	5.2		980
SVOCs				
Naphthalene	1,700			
Total PAHs	182,500			
Total phtalates	1,000			
Metals				
Chromium	70,600,000		63.3	70,500
Hexavalent Chromium	191,000	76.0		
Copper	15,500,000		14.9	15,100
Iron		14,500	3,870.0	
Lead	3,940,000	45.3	8.1	136,000
Manganese		1,720		
Mercury		4.1		
Nickel	1,930,000			
Silver	320,000			
Thallium		6.7		
Zinc	989,000	1,260	221.0	58,900

On January 28, 2003, a Record of Decision (ROD) was issued and approved by the United States Navy, with concurrence by the DEC and DOH. The selected remedy in this ROD was to excavate all landfilled waste materials, contaminated soil and contaminated sediment with subsequent off-site disposal. This removal action is now completed. An estimated 50,000 cubic yards of soil and debris were removed from the former disposal area. In addition, an estimated 1,500 cubic yards of sediment were removed from the pond.

Short-term groundwater monitoring will be conducted for a period of 2 years on a semi-annual basis to determine what impacts, if any, the excavation of landfilled materials has had on groundwater quality. Long-term groundwater will not be necessary unless significant levels of contaminants are found in the groundwater. This is not expected to happen because the source of contamination has been removed.

References:

- HNUS, 1992. SITE INVESTIGATION REPORT, Naval Weapons Industrial Reserve Plant, Calverton, New York.
- HNUS , 1995. RCRA Investigation, Naval Weapons Industrial Reserve Plant, Calverton, New York.
- C.F. Braun, January 1997. Final Basewide Phase I Environmental Baseline Survey for Naval Weapons Industrial Reserve Plant, Calverton, New York.
- C.F. Braun, December 1997. Phase 2 RCRA Facility Investigation Filed Sampling for Naval Weapons Industrial Reserve Plant, Calverton, New York.
- Tetra Tech Nus, February 2002. Phase 2 Remedial Investigation and Focused Feasibility Study for Site 1 - Northeast Pond Disposal Area. Naval Weapons Industrial Reserve Plant, Calverton, New York.
- Foster Wheeler Environmental Corporation, March 27, 2002. Excavation and Off-site disposal of Landfill at Site 1 - Northeast Pond Disposal Area. Naval Weapons Industrial Reserve Plant, Calverton, New York.
- Record of Decision for Site 1 - Northeast Pond Disposal Area. Naval Weapons Industrial Reserve Plant, Calverton, New York January, 28, 2003.

Site 9 Electronic Countermeasures (ECM) Area

NO SITE RELATED IMPACTS

The Electronic Countermeasures (ECM) Area is located in the southeast corner of Parcel D. This area was constructed in the early 1970's and was used into the early 1990's for testing and evaluating electronic equipment. 1,1,1-Trichloroethane (TCA) was used as solvent/cleaning agent in the ECM laboratory. In 1996, the ECM building was demolished and equipment in the surrounding area was removed.

Just east of the ECM Area fence line, an experimental sod farming program was conducted in the late 1980's to early 1990's. As part of this experimental program, a series of monitoring wells were installed by Suffolk County Department of Health Services (SCDHS) and TCA was detected at a concentration of 190 ug/l in one well.

As part of the Phase 2, Extended Site Investigation, two onsite monitoring wells were installed in 1997 and 11 off-site monitoring wells were installed in 2000. The maximum concentration of TCA detected in these wells was 2 ug/l, which is less than the New York State drinking water standard. Natural attenuation processes are believed to have reduced any contamination that was present to even lower concentrations that do not pose a threat to human health and the environment.

Based on these findings, no further investigation is warranted at this site.

References:

- HNUS, 1992. SITE INVESTIGATION REPORT, Naval Weapons Industrial Reserve Plant, Calverton, New York.
- HNUS, 1995. RCRA Investigation, Naval Weapons Industrial Reserve Plant, Calverton, New York.
- C.F. Braun, December 1997. Phase 2 RCRA Facility Investigation Filed Sampling for Naval Weapons Industrial Reserve Plant, Calverton, New York.
- Tetra Tech Nus, February 2002, Phase 2 Extended Site Investigation for Site 9 - Electronic Countermeasures (ECM) Area. Naval Weapons Industrial Reserve Plant, Calverton, New York.

Agricultural Outlease Area:

The Agricultural Outlease area, located the Southeast Buffer Zone II, consists of a complex of former agricultural buildings that were operated as a family farm under a lease agreement with a local farmer. The lease was in effect until December 1996.

Potentially hazardous materials stored in the buildings included pesticides, fertilizer, lead acid batteries and miscellaneous flammable or toxic liquids. Three underground storage tanks and one above ground storage tank were located on the site.

Although pesticides and metals were detected in individual soil samples at concentrations above DEC clean-up objectives or background (for metals), the risk assessment indicated no unacceptable risks to human health from exposure to surface soil under a recreational user exposure scenario. There is no adverse impact to groundwater from site activities.

Based upon the recommendations of an August, 1998 Site Investigation, all on-site structures, farm implements, etc. have been demolished, excavated and/or removed from the site for recycling and/or disposal, as appropriate. In addition a limited soil removal was conducted at three areas where elevated concentrations of pesticides were found.

References:

- Tetra Tech, NUS Corporation. SITE INVESTIGATION AT THE AGRICULTURAL OUTLEASE IN ZONE II Southeast Buffer zone for Naval Weapons Industrial Reserve Plant, Calverton, New York.

Air (Indoor / Outdoor):

In general, all of the known groundwater contamination at the site is moving away from the occupied building so indoor air impacts are expected to be limited. However, due to the presence of groundwater contaminated with volatile organic compounds and large expanses of pavement adjacent to the areas of concern, the United States Environmental Protection Agency (EPA), in conjunction with DEC, DOH and SCDHS, conducted an independent study of soil gas and indoor air. Our goal was to determine if residual contamination in the soil could potentially impact indoor air. The study does show that some low levels of contaminants are present in soil gas, indoor air and occasionally, in ambient air at the site. However, staff at all four agencies have reviewed the data and have concluded that the detected contaminants are either: at insignificant levels; are at levels considered to be representative of background concentrations for the area; or are believed to be present largely due to building operations. Accordingly, the Agencies have determined that, under current contaminant conditions and building use, soil gas is not currently having a significant impact on the indoor air quality of buildings and no complete exposure pathway exists at this time.

References:

- Techlaw EPA Contract No. 68-W-02-038; EPA Work Assignment No R02808; Environmental Indicator Evaluation; NWRP Calverton Field Sampling Activity Report; Task 03 May 4, 2004
- Suffolk County Department of Health, NWIRP Calverton, April 2, 2004 Sampling Results - William Boehler, May 7, 2004.
- Suffolk County Department of Health, NWIRP Calverton, June 17, 2004 Sampling Results - William Boehler, June 28, 2004.
- NYS Department of Health, Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from Fuel Oil Heated Homes in NYS, 1997-2003.

Table 8

Compound	Site 6A (Former Fuel Calibration Area) Maximum Concentration Detected (ug/m3)				NYSDOH Statewide Average Data base Upper/ Lower Quartile	
	Soil/Gas 4/01/04	Outdoor 4/01/04	Indoor 6/17/04	Indoor 7/23/04	Indoor	Outdoor
Acetone	42 / 100	ND	ND	ND	12-46	4.3-14
Benzene	1.8 / 5.8	ND	2.51	1.13	1.2-5.7	0.86-2.6
1,3-Butadiene	5.6 / 12	ND	14.61	ND	NA	NA
2-Butanone (MEK)	8.0 / 24	ND	2.34	1.69	1.2-5.4	0.29-2.3
Carbon Disulfide	3.1 / 9.9	ND	0.12	0.11	NA	NA
Cyclohexane	1.2 / 4.1	ND	0.95	0.47	0.21-2.9	0.1-0.62
1,4-Dioxane	4.3 / 16	ND	ND	ND	NA	NA
Ethanol	10 / 19	5.4 / 10	ND	ND	40-610	3.8-17
Ethyl Benzene	0.99 / 4.4	ND	1.76	2.17	0.43-2.8	0.14-0.61
Freon 11	1.1 / 6.2	ND	1.65	2.36	1.3-5.5	0.19-2.6
Freon 12	ND	ND	0.53	1.9	0.14-5.6	0.12-5.1
Hexane	1.3 / 4.7	ND	5.41	0.54	0.63-6.5	0.2-1.1
Methylene Chloride	ND	ND	ND	0.1	0.38-6.3	0.14-0.87
Tetrachloroethene	ND	ND	0.31	0.29	0.13-1.2	.087-0.34
Toluene	2.6 / 9.9	1.6 / 6.3	10.76	13.95	4.2-25	0.68-3.3
1,1,1-Trichloroethane	48 / 260	ND	0.23	0.13	0.18-1.4	0.13-0.38
1,2,4-Trimethylbenzene	1.7 / 8.3	1.0 / 5.0	2.31	4.08	0.78-4.4	0.15-1.0
m,p-Xylene	3.5 / 16	1.8 / 8.2	6.09	6.03	0.52-4.7	0.13-0.69
o-Xylene	1.2 / 5.3	ND	2.23	2.46	0.39-3.1	0.11-0.74

Notes:
MEK – Methyl Ethyl Ketone
ND – Not Detected
ug/m3 – Micrograms per cubic meter

Table 9

	Area 7 (Former Fuel Depot) Former Facilities Maintenance Building (Building 282) & Former Transportation Storage Area (Building 285)				
	Maximum Concentration Detected (ppbv / ug/m3)			NYSDOH Statewide Average Data base Upper/ Lower Quartile	
Compound	S/G 4/01/04	Ambient-2	Indoor 6/17/04	Indoor	Outdoor
Acetone	40 / 96	ND	ND	12-46	4.3-14
Benzene	2.3 / 7.6	ND	2.51	1.2-5.7	0.86-2.6
1,3-Butadiene	2.4 / 5.4	ND	14.61	NA	NA
2-Butanone (MEK)	3.5 / 10	ND	2.34	1.2-5.4	0.29-2.3
Carbon Disulfide	3.4 / 11	ND	0.12	NA	NA
Cyclohexane	ND	ND	0.95	0.21-2.9	0.1-0.62
1,4-Dioxane	ND	ND	ND	NA	NA
Ethanol	4.5 / 8.7	ND	ND	40-610	3.8-17
Ethyl Benzene	1.6 / 7.0	0.95 / 4.2	1.76	0.43-2.8	0.14-0.61
Freon 11	0.78 / 4.5	ND	1.65	1.3-5.5	0.19-2.6
Freon 12	1.4 / 6.9	ND	0.53	0.14-5.6	0.12-5.1
Hexane	0.86 / 3.0	ND	5.41	0.63-6.5	0.2-1.1
Methylene Chloride	ND	ND	ND	0.38-6.3	0.14-0.87
Tetrachloroethene	1.4 / 10	ND	0.31	0.13-1.2	.087-0.34
Toluene	5.0 / 19	1.9 / 7.2	10.76	4.2-25	0.68-3.3
1,1,1-Trichloroethane	3.2 / 18	ND	0.23	0.18-1.4	0.13-0.38
1,2,4-Trimethylbenzene	2.2 / 11	ND	2.31	0.78-4.4	0.15-1.0
m,p-Xylene	2.4 / 11	3.9 / 17	6.09	0.52-4.7	0.13-0.69
o-Xylene	1.2 / 5.5	1.0 / 4.4	2.23	0.39-3.1	0.11-0.74

Notes:

MEK – Methyl Ethyl Ketone
ND – Not Detected
ppbv – Parts per billion by volume
ug/m3 – Micrograms per cubic meter

3 Are there complete pathways between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

"Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater	NO	NO	NO	NO	NO	NO	NO
~~Air (indoors)~~							
Soil (surface, e.g., <2 ft)	NO	NO	NO	NO	NO	NO	NO
~~Surface Water~~							
Sediment	NO	NO	NO	NO	NO	NO	NO
Soil (subsurface e.g., >2 ft)	NO	NO	NO	NO	NO	NO	NO
~~Air (outdoors)~~							

Instructions
Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces (for Media which are not "contaminated") as identified in #2 above.
2. Enter "yes" or "no" for potential "completeness" under each "Contaminated" Media - Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations, some potential "Contaminated: Media - Human Receptor combinations (Pathways) do not have check spaces ("____"). While these combinations may not be probable in most situations, they may be possible in some settings and should be added as necessary.

_X_ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

____ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code.

4. Can the exposure from any of the complete pathways identified in #3 be reasonably expected to be "significant"[2] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

____ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant".

____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant".

____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code.

5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

____ If no (there are current exposures that can be reasonably expected to be "unacceptable") - continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code.

Rationale and Reference(s):

Not applicable, see responses to questions 3 and 4.

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA 725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

__X__ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the NWIRP Calvrton , EPA ID# NYD003995198, located at Grumman Blvd. under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

____ NO - "Current Human Exposures" are NOT "under Control".
____ IN - More information is needed to make a determination.

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2 If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

Approved by: Date: 9/24/04

Henry Wilkie
Environmental Engineer I
New York State Department of Environmental Conservation

And

Date: 9/24/04

Larry A. Rosenmann
Engineering Geologist II
New York State Department of Environmental Conservation

Date: 9/24/04

for Daniel J. Evans
Chief, Hazardous Waste Engineering Eastern Section
New York State Department of Environmental Conservation

Supervisor: Date: 9/24/04

Ed Dassatti
Director, Bureau of Hazardous Waste and Radiation Management
New York State Department of Environmental Conservation

Locations where References may be found:

New York State Department of Environmental Conservation
Division of Solid and Hazardous Materials
625 Broadway
Albany, NY 12233-7258

Contact telephone and e-mail numbers

Henry Wilkie (518) 402-8594 E-Mail: hjwilkie@gw.dec.state.ny.us

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G,, SITE-SPECIFIC) ASSESSMENTS OF RISK.