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RESTORATION ADVISORY BOARD MEETING
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT CALVERTON
CALVERTON COMMUNITY CENTER
CALVERTON, NEW YORK
THURSDAY, NOVEMBER 2, 2006

The twenty-second meeting of the RAB began at approximately 7:00 pm. Meeting attendees included representatives from the Navy (Susan Clarke), New York State Department of Environmental Conservation (Henry Wilkie), Restoration Advisory Board (RAB) community members (Sid Bail, Louis Cork, Bill Gunther, John Hall, Harry Histand, and Vincent Racaniello), Town of Riverhead (Andrea Lohneiss), Peconic River Group (Bob Conklin), and the TAPP Consultant (Frank Anastasi).

WELCOME AND AGENDA REVIEW

The Navy representative, Susan Clarke, Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic, welcomed everyone to the RAB meeting and reviewed the meeting agenda. The agenda for the meeting is included as Attachment 1.

COMMUNITY UPDATE AND REVIEW AND APPROVAL OF MEETING MINUTES

Mr. Gunther, RAB Community Co-chair, asked the other community members present whether they had any input or concerns since the last RAB meeting. There were no concerns at that time.

The August 2006 RAB minutes were distributed on October 4, 2006. Mr. Gunther indicated that he provided a few editorial comments to Ms. Clarke Susan; however, overall he was pleased with level of detail and accuracy of the August minutes. The RAB members indicated they had no further comments on the minutes and the minutes were approved.

SITE 7 FUEL DEPOT AREA REMEDIAL SYSTEM OPERATIONS

Mr. Stavros Patselas from TtEC provided an update on the Site 7 Fuel Depot Groundwater Remediation Project (Attachment 2). Mr. Patselas provided an overview of the project, system monitoring and operational information, groundwater and vapor results, operation and maintenance information, and an update on the status of the project.

The presentation was similar to the April and August 2006 presentations with the following updated items:

- Graphs showing groundwater analytical results [total volatile organic compounds (VOCs)] for each Soil Vapor Extraction Well and Monitoring Well location and recovered vapor concentrations were updated to include data collected in August (for groundwater) and in July through November (for soil vapor). The Navy

performed a sampling event this week (week of October 30, 2006) and the information will be included in the 2006 operations report.

- Overall, system performance is as anticipated based on the pilot study results and design goals.
- TtEC began operation training to other personnel (ECOR Solutions, see below) and they will operate the system in November prior to shut down of the system for the winter.
- TtEC will prepare the 2006 operations report, which will include presentation of the data.
- TtEC will demolish the former fuel depot building. Depending on the schedule for shut down of the system, TtEC is expecting to conduct the demolition the week of December 11.

In answer to Mr. Anastasi's question regarding whether the Navy has estimated how much VOCs have been removed since the start of the system, Mr. Patselas indicated that the amount will be provided in the 2006 operations report. However, the Navy anticipates that the amount removed should be greater than the amount removed during the 3-month pilot study (when an estimated 200 pounds of VOCs were removed). Mr. Patselas noted that the operations report will also provide recommendations for future operation based on the results of the 2006 operation; the report should be available in January 2007.

In answer to Mr. Racaniello's questions whether a monitoring well that shows high concentrations on the monitoring well graph of concentration versus time was in the center of the treatment area and whether the system was being shut down for the winter because of concerns for freezing, Mr. Patselas replied that MW10A was believed in the middle of the treatment area in the vicinity of the former underground storage tanks and that the treatment system was not designed to run during the winter. Without installation of a heat system or heat trace of piping, the system would freeze during the winter.

ECOR Solutions was introduced as the new contractor that is to be primary system operator. ECOR has been doing work for the Navy for the past 10 years. The personnel from ECOR Solutions who are taking over operation of the system were introduced. Al Taormina is the Facility Manager and he works out of the Bethpage office. Bob Ingram is the Site Operator and he lives near Calverton. Patrick Schauble is the Project Manager and Matt Lapp is the Project Engineer and both work out of West Chester, PA.

The Navy is in process of performing a final review of the Operations and Maintenance manual for the full scale system. Upon receipt of any remaining Navy comments, TtEC will proceed to finalize and submit the final version of the O&M manual.

SITES 6A AND 10B AND ONSITE SOUTHERN AREA CMS REPORT

Mr. Dave Brayack of Tetra Tech NUS, Inc (TtNUS) provided a presentation on the Sites 6A and 10B and Onsite Southern Area Corrective Measures Studies (CMS). The presentation is included as Attachment 3. The Offsite Southern Area was discussed

after Mr. Anastasi's presentation regarding his review of the CMS for Sites 6A and 10B and Onsite Southern Area.

Mr. Brayack provided an overview of onsite contamination, the proposed onsite remedy, and the next steps for the onsite area. As discussed during the August 2006 RAB, onsite contamination has been sufficiently defined to proceed with selection of a remedy. The proposed remedy includes excavation of petroleum and PCB-contaminated soil in the source areas and long-term groundwater monitoring until residual contaminants naturally attenuate. Because of concerns that the source area actions may cause some mobilization of contaminants, the remedy also includes the contingency to implement in-situ biological treatment if migration of contaminants becomes a problem after remediation of the source areas. The specific compliance points and groundwater contaminant concentrations that would trigger implementation of the contingency action will be provided in the Statement of Basis for Remedy Selection.

SCA ASSOCIATES SUMMARY CMS REVIEW

Mr. Frank Anastasi of SCA Associates provided a presentation on his review of the Sites 6A and 10B and Onsite Southern Area Corrective Measures Studies (CMS). Mr. Anastasi is the TAPP consultant. The presentation is included as Attachment 4.

Mr. Anastasi was tasked to review the CMS for Sites 6A and 10B and Onsite Southern Area. Mr. Anastasi's presentation summarized the environmental problems, exposure and risk factors, and proposed solution provided in the CMS. The presentation also provided an overview of his comments and recommendations to the Navy.

Mr. Anastasi indicated that the CMS was adequate and that the proposed alternative was appropriate for the onsite contamination. A contingency plan for addressing residual contamination if warranted based on post-remedial site conditions was an appropriate addition to the remedy. He also indicated that the institutional controls as part of the remedy must be enforced/complied with by land owners, government agencies, regulators, and Navy to be effective. Mr. Anastasi recommended that a clear and implementable process for maintaining controls and restrictions be prepared to assure the community that the controls and restrictions are being enforced. The controls and restrictions need to be readily identifiable. He also recommended that the Navy pursue investigation and monitoring for the down gradient (offsite) portion of the groundwater contaminant plume. Mr. Brayack indicated that the Navy collected samples and he will discuss the sample collection as part of his offsite presentation.

The RAB indicated that there were no outstanding comments or questions on the onsite portion of the CMS. Mr. Brayack indicated that the Navy will finalize the CMS and proceed with a Statement of Basis for Remedy Selection. Henry Wilkie indicated that NYSDEC will send a letter that indicates NYSDEC agreement to proceed with the onsite portion of the remedy. The Navy would like to have the public comment period on the Statement of Basis around the next RAB so that the RAB can be used as the public meeting for the selection of the remedy.

There was discussion regarding the groundwater well that is present on the Peconic River Sportsman's Club property. The Sportsman's Club installed an 8-inch well recently. Mr. Hall explained that the Sportsman's Club had a permit from NYSDEC to install the well and the Department of Health, NYSDEC, and Fire Marshall oversaw the installation of the well. The well was designed to pump at a very high rate for use by the fire department for fighting brush fires in the area. Mr. Hall indicated that the well has not been used yet.

A concern was raised that the well may be installed near or within the contaminated groundwater plume. The permitting and installation of the well occurred before the Navy investigation identified contamination in this area and that another NYSDEC program not involved in the NWIRP Calverton remedial work was responsible for the permitting of the well. Because investigation of the area is still being conducted, land use restrictions are not documented for this offsite area. The well has not been sampled as far as Mr. Hall knows and Mr. Hall did not have sufficient information at hand regarding the well construction and pumping rate. The Navy, Town of Riverhead, and NYSDEC will work on obtaining the necessary information on the well and then the Navy can make arrangements for collecting a groundwater sample from the well. The Navy will provide an update on information on the well at the next RAB meeting.

SOUTHERN AREA PECONIC RIVER CMS REPORT

Mr. Dave Brayack of Tetra Tech NUS, Inc (TtNUS) provided a presentation on the Southern Area (Offsite) Peconic River Groundwater Plume. The presentation is included in Attachment 3 (after the onsite presentation). Mr. Brayack provided an overview of the offsite groundwater contamination and discussed the recent sampling conducted to determine the outermost extent of the contaminated plume and potential impacts to the river.

As discussed at the August 2006 RAB, the main concern for the offsite portion of the plume is that VOC concentrations are greater than drinking water standards. Except for the downgradient edge of the plume (between Connecticut Avenue and the Peconic River), the extent of the groundwater plume is adequately defined. Based on figures in the RFI, the plume shape is very consistent with the flow direction of groundwater. The downgradient edge of the Southern Area plume is not defined and it is not known whether groundwater contamination has reached the river yet. Because access to the area between the known groundwater contamination and the river is very difficult (because of the presence of wetlands and trees/brush along the river), until recently, the Navy has not been able to install monitoring wells in this area.

Ecological Screening Criteria

Based on the discussion at the August 2006 RAB, NYSDEC provided the Navy with state surface water quality criteria/guidance values. Mr. Brayack explained the presentation slide that shows the criteria with hand-marked maximum groundwater concentrations detected in the offsite plume. The maximum groundwater concentrations were less than the water quality standards/guidance values. The surface water standards/guidance values for VOCs tend to be greater than drinking

water standards for VOCs because VOCs do not bioaccumulate and at low concentrations are generally not toxic to aquatic organisms. Also, the NYSDEC standards/guidance values are levels that are protective of river water quality. Previously the Navy screened the groundwater data against screening levels that were based on the Oakridge National Laboratory (ORNL) values for potential impact to benthic organisms (organisms that live in and on the river bottom). Mr. Brayack noted that the ORNL values are generally less than the NYSDEC standards/guidance values.

Mr. Gunther asked whether NYSDEC talked with US Fish and Wildlife to get their evaluation of the site, potential concerns to the river, and what are appropriate criteria to apply. Mr. Wilkie has talked with people at US Fish and Wildlife and they are still reviewing the site information.

Mr. Anastasi indicated that he would try to find out whether clean up values used as part of a Peconic River Clean Up project may be applicable to the offsite plume. Mr. Brayack requested if anyone knew of alternative screening values to provide them to the Navy as soon as possible.

Additional Data Collection for the Offsite Southern Area Plume

Mr. Brayack indicated that two new wells were installed between the area of know groundwater contamination and the Peconic River. The locations were accessed by canoe. The new wells, surface water, and sediment samples were collected in October 2006 and the Navy was waiting for the laboratory results. The sampling results will provide an initial understanding of the down gradient edge of the plume; however, additional sampling may be needed to define the extent. The Navy will evaluate the results of the October 2006 sampling and determine whether additional sampling is needed to make remedial decisions for the offsite plume.

Mr. Brayack presented pictures of the river and how the sampling areas were accessed by canoe. For the new wells, the Navy hand installed the wells using a pile driver. They tried to make sure that the well screens were below the mucky layer and within the underlying sand layer. The wells had slotted screens; however, pre-packed well screens were not used. The wells were hand developed and purged before sampling. Initially during purging, the water had a typical wetland's mucky smell; however, after about an hour of purging, the water was fairly clear with little smell. Mr. Brayack noted that the groundwater samples were still a little turbid, but he believes that representative samples of water in the sand layer were obtained.

The Navy expects a report of the results of the sampling will be available in one to two months and then the Navy will present the results at the next meeting.

STATUS OF SITES 1, 9, 10A & AGRICULTURAL OUTLEASE RCRA PERMIT MODIFICATION AND PROPERTY TRANSFER

Ms. Clarke provided an update on the Navy's request to NYSDEC for a modification to the Part 373 RCRA Permit for Sites 1, 9, 10A, and Agricultural Outlease. Sites 1 and 9 are part of Parcel D which is approximately 145 acres, Site 10A is about 1 acre, and the

Agricultural Outlease is another 5 acres that runs along Grumman Road on the southeastern boundary of the facility. Site transfer is underway.

As discussed at the August 2006 RAB meeting, the Navy needed to address the erosion problem at Site 1 before completing the property transfer. Since August, TtEC has begun work to address the erosion problem and expects to complete the work shortly. Once the work is complete the Navy will continue with the property transfer. Ms. Clarke indicated that the Agricultural Outlease has already been transferred to NYSDEC. It was noted that for Site 10A, there is a concrete slab in a portion of the site where hydraulic oil is trapped under the slab that would be difficult to remove. The permit modification and property transfer include a deed restriction for this portion of the site.

Ms. Clarke explained that the Finding of Suitability to Transfer (FOST) is ready for signature and after the FOST and RCRA Permit Modification are signed, then the Navy will need one additional letter from NYSDEC to remove these sites from the State CERCLA list. Then the property transfer to the Town of Riverhead will be complete.

At the RAB meeting, Christopher Kent from the Town of Riverhead indicated that the Town of Riverhead has two comments on the FOST and provided these comments to Ms. Clarke. Mr. Kent indicated that there is language in the FOST that the Town of Riverhead is concerned is not in any public laws, and he noted that the language was not in the previous FOST for property at NWIRP Calverton. Ms. Clarke will provide the comments to the Navy lawyers and then will provide a reply to the comments.

BUDGET AND SCHEDULE

Ms. Clarke provided an update on the budget and schedule for NWIRP Calverton. A handout was provided showing FY06 budgets and awards and also planned work for FY07. The handout is included as Attachment 5.

Of the FY06 items, the RCRA Administrative Record Documentation is the only item that has been completed; the other items are being conducted. The electronic Administrative Record is available on a set of compact discs; one set was provided to Mr. Gunther and one set was provided to the Reference Desk in the Riverhead Free Library. It was explained that the costs for the supplemental Southern Area investigation includes other activities not listed under that project; the entire amount was not used only on the investigation.

Planned work for FY07 includes work for Sites 1, 2, 7, and 6A/10B. Ms. Clarke noted that the FY07 O&M for Site 7 is for October 2006 to September 2007 and the Navy expects to award FY08 O&M in March 2007. The remediation work for Sites 6A/10B and onsite plume is budgeted for FY08; however, the Navy will try to have this work as a swing project so that if money is available in FY07 then it can be funded earlier. Mr. Anastasi asked whether the prioritizing that was discussed at an earlier RAB affected funding. It was explained that the site priority did not affect funding. The remedy for Sites 6A/10B will probably not be ready to start until October 2007 at the earliest, which is the start of FY08.

CLOSING REMARKS

Ms. Clarke thanked everyone for coming to the meeting. The Navy would like to have the next RAB meeting at the end of March instead of the first week of April 2007. The Navy would like to have the RAB meeting during the public comment period on Sites 6A/10B and onsite Southern Area. A notification for the next meeting will be provided. No other RAB members had closing remarks and the meeting was adjourned at approximately 9:15 p.m.

ATTACHMENT 1
AGENDA

Agenda

Restoration Advisory Board
Naval Weapons Industrial Reserve Plant Calverton

November 2, 2006
Calverton Community Center, Calverton NY
7:00 p.m.

Welcome and Agenda Review
Susan Clarke, NAVFAC Mid-Atlantic

Distribution of Minutes
All Members

Community Update
Bill Gunther, RAB Co-chair

Technical Progress

General Program - Susan Clarke, NAVFAC Mid-Atlantic

Site 7 Fuel Depot Area Operation - Stavros Patselas, Tetra Tech EC

Site 6A/10B Onsite Southern Area CMS Report - Dave Brayack, Tetra Tech NUS

Southern Area Peconic River - Dave Brayack, Tetra Tech NUS

Status of Sites 1, 9, 10A & Agricultural Outlease RCRA Permit Modification and Property Transfer – Susan Clarke

Closing Remarks
Susan Clarke

Presenters will be available after the program for questions.

ATTACHMENT 2
SITE 7 FUEL DEPOT GROUNDWATER REMEDIATION PROJECT

NAVFAC
Naval Facilities Engineering Command

Groundwater Remediation Project

Naval Weapons Industrial Reserve Plant
Calverton, NY
Site 7: Former Fuel Depot

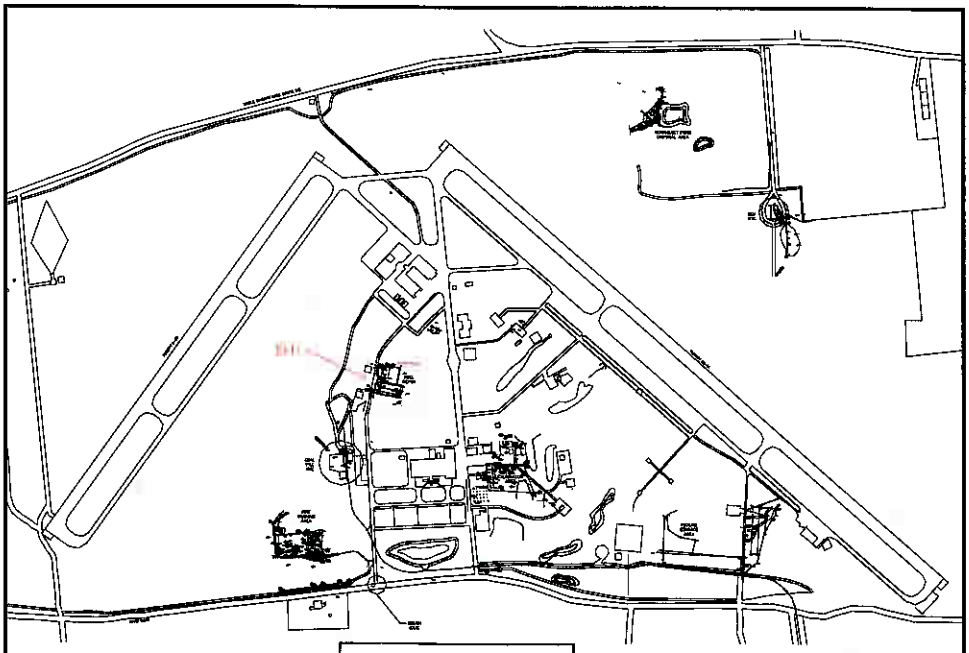
Restoration Advisory Board Meeting

November 2, 2006

SGS

TETRA TECH EC, INC.

Zip



Area Map

OVERVIEW

- Contaminants of Concern:
  BTEX, Napthalene, and Freon in groundwater
- Air Sparge/Soil Vapor Extraction System constructed Summer-Fall '04
- Goal:
  - Mass removal of groundwater contaminants
  - Operate & Maintain in-situ treatment system for up to years
- Three month pilot study conducted in Summer 2005
- Full scale system expansion completed Winter–Spring 2006

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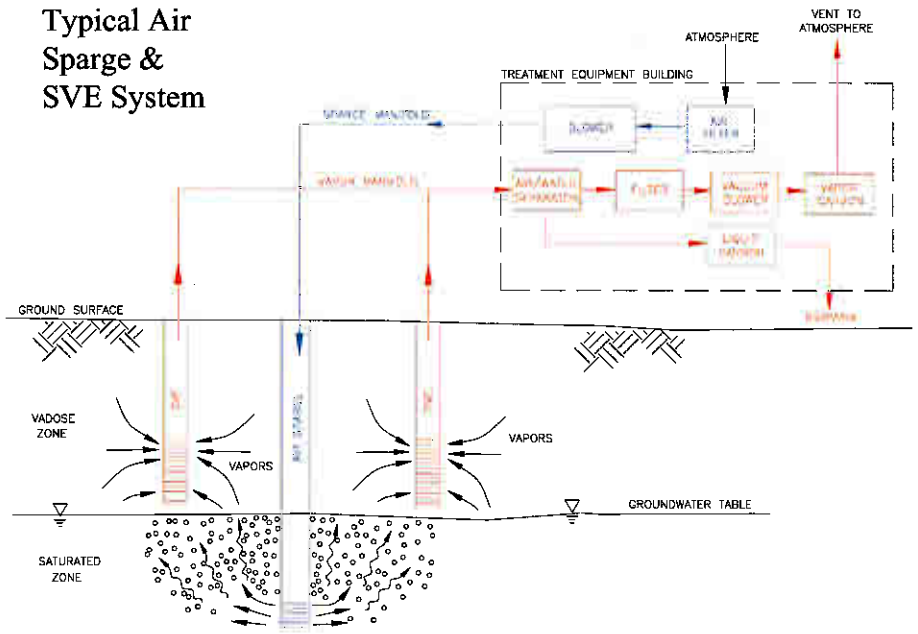
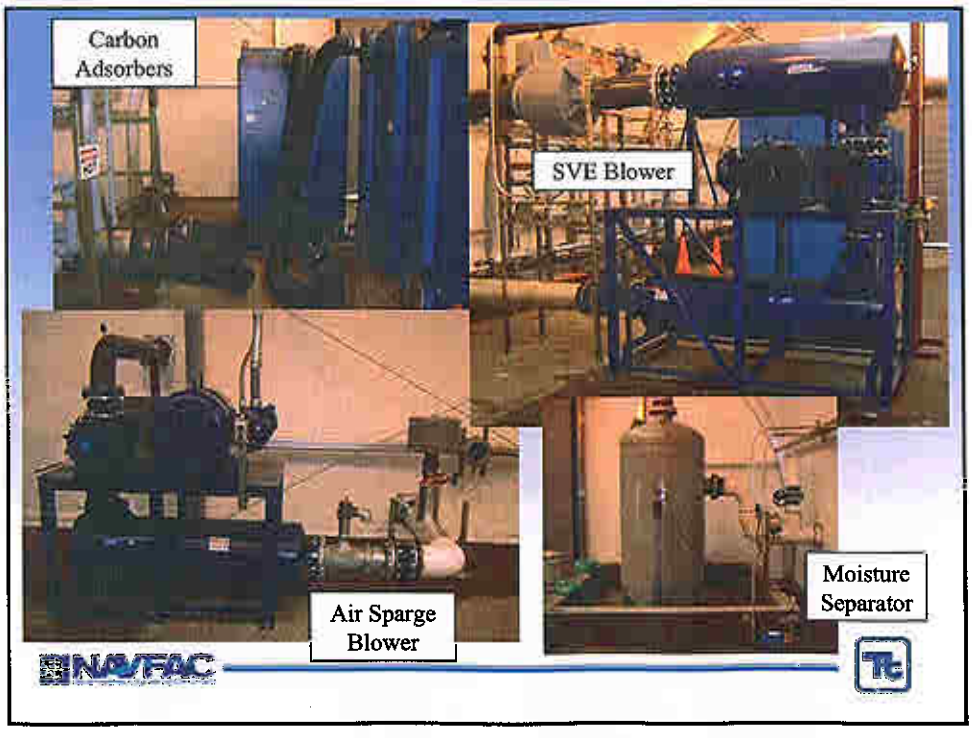
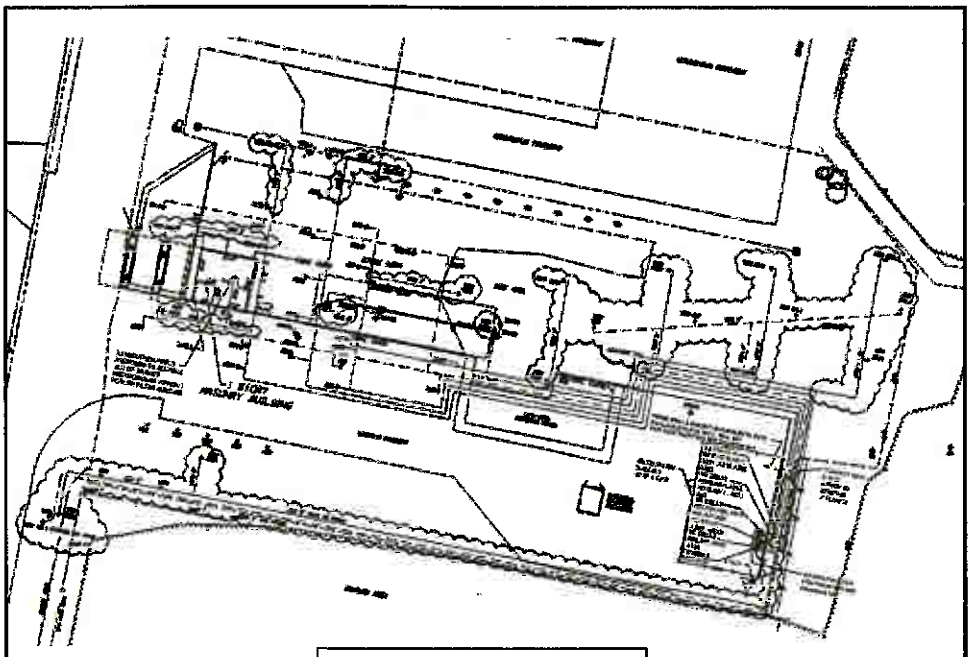
Typical Air Sparge & SVE System



Aboveground Piping Network
Typical SVE Well Head Connection
Piping Enters/Exits Building
NAVFAC


Carbon Adsorbers
SVE Blower
Air Sparge Blower
Moisture Separator
NAVFAC



AS/SVE Piping Layout

Air Sparge System

- Total of thirty-four 2-inch diameter wells
- Sixteen wells added for full scale expansion
- Approx. depth of wells is 35 feet bgs
- 60 Hp AS blower with variable speed drive
- Typical injected air flow rate up to 180 cubic feet per minute (cfm)
- Finned pipe heat exchanger unit for temperature reduction

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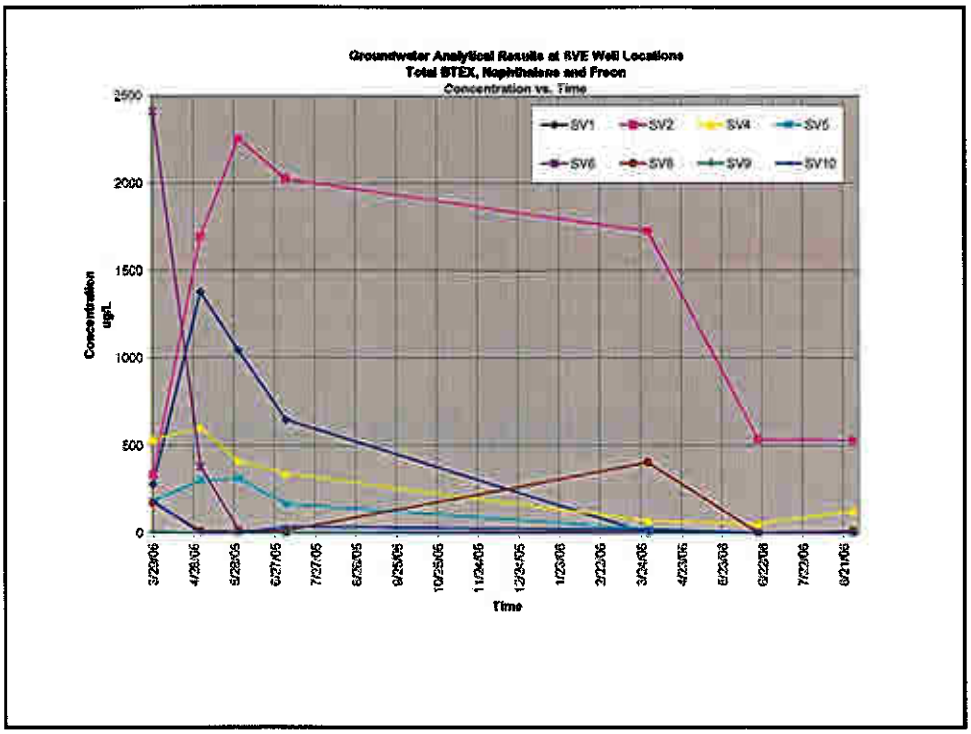
Soil Vapor Extraction

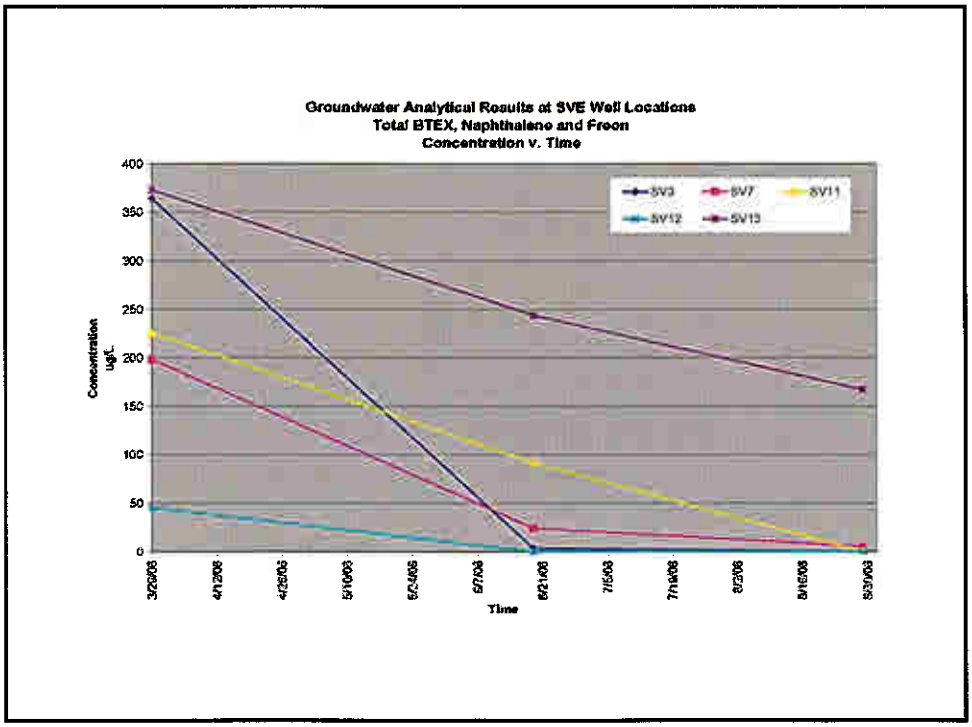
- Total of thirteen 4-inch diameter wells
- Five wells added for full scale expansion
- Approx. depth of wells is 25 feet
- 75 Hp SVE blower with variable speed drive
- Typical vapor extraction flow rate up to 1,600 cfm
- 400 gallon moisture separator

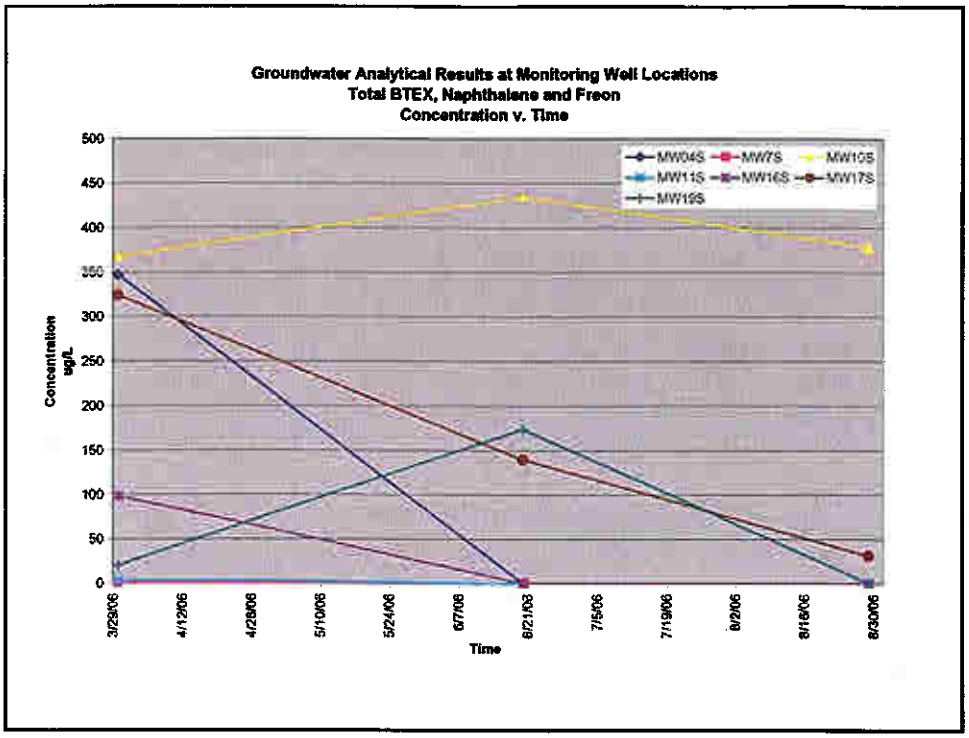
System Monitoring

What is measured

- Changes in extracted organic vapor concentrations
- Changes in soil gas concentrations
- Changes in dissolved oxygen concentrations
- Changes in beneficial microbial activity
- Variations in depths to groundwater
- Changes in dissolved groundwater contaminant concentrations
- Treatment system performance parameters
- Equipment performance parameters


Groundwater Analytical Results at SVE Well Locations
Total BTEX, Naphthalene and Freon
Concentration vs. Time
SV1
SV2
SV4
SV5
SV6
SV8
SV9
SV10
Concentration ug/L
Time


Groundwater Analytical Results at SVE Well Locations
Total BTEX, Naphthalene and Freon
Concentration v. Time
SV3
SV7
SV11
SV12
SV13
Concentration ug/L
Time


Groundwater Analytical Results at Monitoring Well Locations
Total BTEX, Naphthalene and Freon
Concentration v. Time
MW04S
MW7S
MW10S
MW11S
MW16S
MW17S
MW19S
Concentration ug/L
500
450
400
350
300
250
200
150
100
50
0
3/29/06
4/12/06
4/26/06
5/10/06
5/24/06
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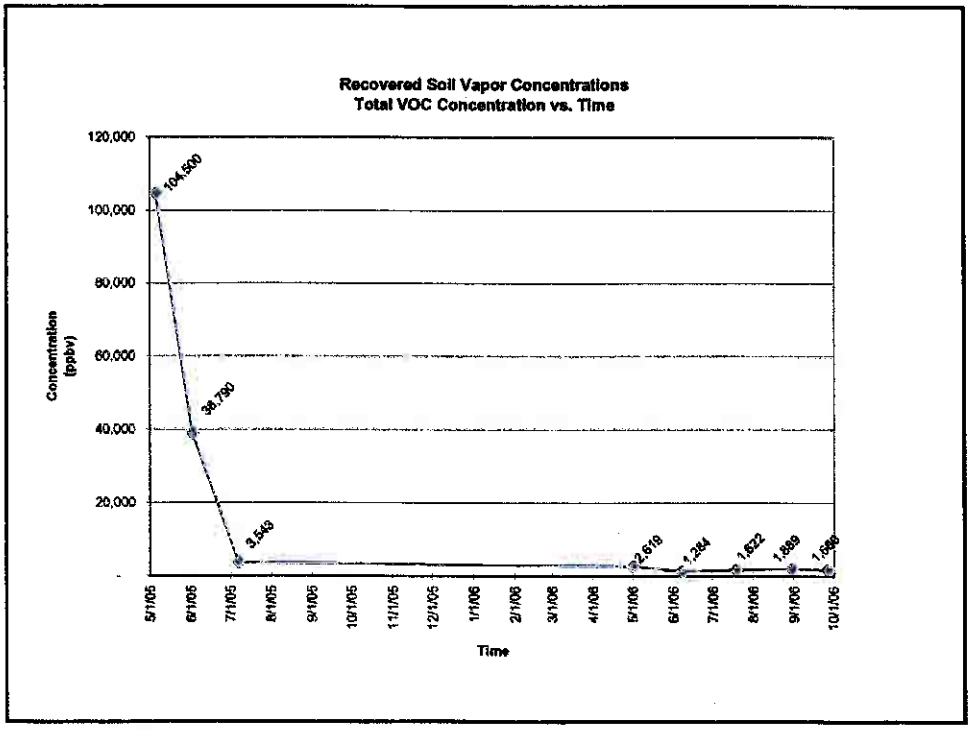
8/2/06
8/16/06
8/30/06
Time


Recovered Soil Vapor Concentrations
Total VOC Concentration vs. Time
Concentration (ppbv)
120,000
100,000
80,000
60,000
40,000
20,000
104,500
38,790
3,549
2,618
1,284
1,622
1,589
1,586
5/1/05
6/1/05
7/1/05
8/1/05
9/1/05
10/1/05
11/1/05
12/1/05
1/1/06
2/1/06
3/1/06
4/1/06
5/1/06
6/1/06
7/1/06
8/1/06
9/1/06
10/1/06
Time

Operational Data

- Overall, system performance is as anticipated from pilot study results and design goals
- System performance exceeds original design assumptions.
- Dissolved oxygen levels increased significantly during the pilot operations.
- Microbial activity was greatly increased as a result of the increased dissolved oxygen levels.
- 48,000 pounds of carbon has been spent.

NAVFAC

Status

Where we are right now

- Full scale expansion of AS / SVE system was complete in April 2006
- Six month full scale operations began April 24, 2006
- Ozone system fully operation since May 28, 2006
- Bi-weekly operation and maintenance of both systems
- Monitoring includes groundwater and vapor sampling
- Provide operations training to other personnel
- System operations transferred to others for November 2006 operations
- Demolish former fuel depot building in December 2006

NAVFAC

Wrap-up

Questions?

NAVFAC

ATTACHMENT 3
SITES 6A AND 10B, AND ONSITE SOUTHERN AREA CORRECTIVE MEASURES STUDY AND OFFSITE SOUTHERN AREA GROUNDWATER UPDATE

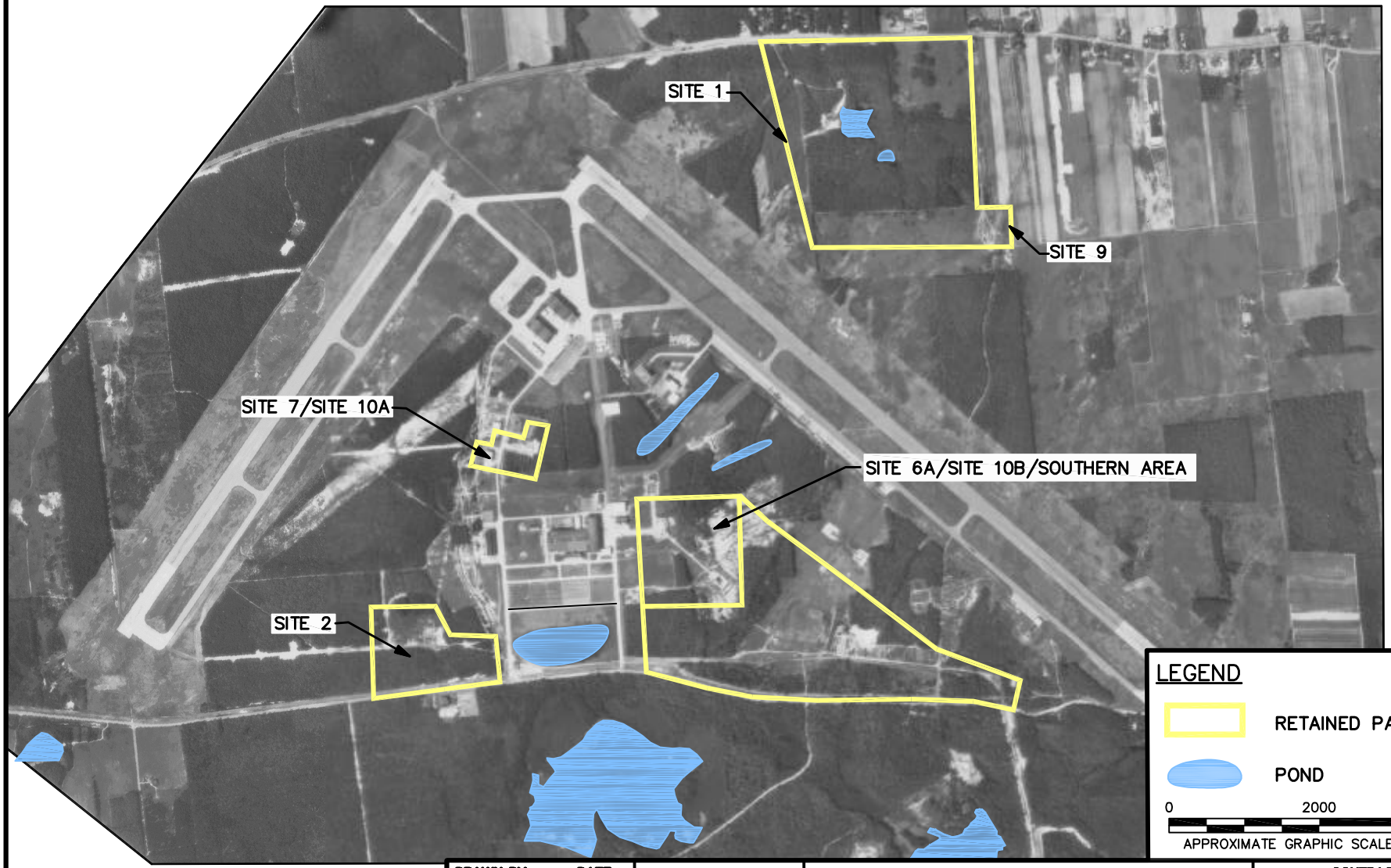
Sites 6A and 10B and Onsite Southern Area Corrective Measures Studies

NWIRP Calverton

November 2, 2006

Restoration Advisory Board (RAB) Meeting

ACAD: 1610CM13.dwg 10/18/05 DM PIT



DRAWN BY DM DATE 6/24/05	Tetra Tech NUS, Inc.	SITE LOCATION MAP NWIRP CALVERTON CALVERTON, NEW YORK	CONTRACT NO. 1610
CHECKED BY DATE			OWNER NO. 0004
REVISED BY DATE			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1-2 REV. 0

FORM CADD NO. TTNUS-AH.DWG - REV 1 -9/10/98

Sites 6A and 10B

- Site 6A – Fuel Calibration Area.
- Site 10B – Engine Test House.
- Onsite Southern Area Groundwater is associated with Sites 6A and 10B.
- Both sites have petroleum-contaminated soils.
- Free product is possible.
- Site 6A has PCB-contaminated soils in one area.
- Groundwater contamination is currently very limited, mainly fuels.
- Site 6A groundwater historically had chlorinated solvents.
- Groundwater contamination is non-continuous.

ACAD:1610GT08.dwg 03/09/06 MF PIT

FC-VPB-112
FC-PZ-106D2
FC-MW-01-I
FC-MW-01-S
FC-TW-20A
FC-PZ-102D
FC-PZ-02D
FC-PZ-02D2
FC-SB-05
FC-MW-03-S
FC-MW-08-S
FC-MW-04-I
FC-MW-04-S
FC-MW-02
FC-PZ-103D
FC-MW-02-S
FC-SB-04
FC-MW-07-S
FC-PZ-104D2
FC-PZ-104D1
FC-PZ-02D1
FC-PZ-101D
FC-PZ-104D (FC-VPB-111)
FC-SB-03
FC-TW-09A
FUEL CALIBRATION AREA
FC-TW-21A
ET-TW-09A
FC-MW-06-S
FC-PZ-105D1
FC-PZ-105D2
FC-MW-05-S
FC-MW-05-I
ET-TW-11A
ET-TW-8A
ET-TW-05A
ET-TW-7A
ET-TW-15A
FORMER UNDERGROUND STORAGE TANK
SITE
ET-TW-02A
ENGINE TEST HOUSE

CHEMICAL	FC-SB-05 0204	FC-SB-05 0406
ETHYLBENZENE	1,300 J	1,500 J
TOTAL XYLENES	11,000 J	13,000 J
NITROBENZENE	2,400 J	
ISOPHORONE	5,000 J	
DIBENZOFURAN	880 J	22 J
TOTAL PAHS	21,870 J	143 J
TOTAL PHTHALATES	2,000 J	37 J
LEAD	59.7 R	3.0 R

CHEMICAL	FC-SB-04 0204	FC-SB-04 0406	FC-SB-04 0406 DU
ETHYLBENZENE		1,800 J	1,400 J
TOTAL XYLENES		17,000 J	13,000 J
ISOPHORONE		4,600 J	
2-NITROPHENOL		5,800 J	3,700 J
DIBENZOFURAN		1,100 J	820
TOTAL PAHS		53,860 J	39,390 J
TOTAL PHTHALATES	60 J		
LEAD	2.0 R	0.68 R	0.44 R

CHEMICAL	ET-TW/SB-03A 0406
TPH-DRO	8,500,000

CHEMICAL	ET-TW/SB-01A 0406
TPH-DRO	7,700,000

N

LEGEND:

- SOIL BORING LOCATION
- PIEZOMETER LOCATION
- EXISTING PERMANENT MONITORING WELL
- PID READING, SHEEN ON WATER TABLE, OR FUEL ODOR IN PURGE WATER DURING 2005 SAMPLING
- FORMER TEMPORARY WELLS
- 10 µg/L (MICROGRAMS PER LITER) CHLORINATED VOC SOIL GAS CONTOUR FROM RFI (HNUS, 1995)
- 10 µg/L (MICROGRAMS PER LITER) BTEX SOIL GAS CONTOUR FROM (HNUS, 1995)
- LIMIT OF SOIL CONTAMINATION (SOURCE AREA)
- PROPERTY LINE
- TREELINE
- WATER

NOTE: SITE 6A AND SITE 10B SOIL DATA PRESENTED IN TAGS WERE TAKEN FROM RFI (HNUS, 1995) AND PHASE 2 RFI (CF BRAUN, 1998), RESPECTIVELY, AND UNITS ARE µg/kg (MICROGRAMS PER KILOGRAM).

0 200 400
GRAPHIC SCALE IN FEET

DRAWN BY DM	DATE 6/17/05
CHECKED BY	DATE
REVISED BY	DATE
SCALE AS NOTED	

Tetra Tech NUS, Inc.

SOIL SOURCE AREA
BASED ON HISTORIC DATA
SITE 6A - FUEL CALIBRATION AREA
AND SITE 10B - ENGINE TEST HOUSE
NWIRP CALVERTON
CALVERTON, NEW YORK

CONTRACT NO. 1610	
OWNER NO. 0004	
APPROVED BY	DATE
DRAWING NO. FIGURE 2-8	REV. 0

FORM CADD NO. TTNUS-BH.DWG - REV 1 - 9/10/98

Onsite Southern Area Groundwater

- Chlorinated solvents and fuels in groundwater.
- Concentrations are low and sporadic.
- Most recent data found only very low detections.
- Existing monitoring well network not sufficient to eliminate groundwater as a media of concern.
- Source area actions may cause some mobilization of contaminants.

DRAWING NO. FIGURE 2-12 REV. 0

N

PROPERTY BOUNDARY

RUNWAY 32-14

FC-MW-01-I
FC-MW-01-S
FC-MW-08-S
FC-MW-04-I
FC-MW-04-S
FUEL CALIBRATION AREA
FC-MW-02-I
FC-MW-02-S
FC-MW-03-S
FC-MW-07-S
FC-MW-06-S
FC-MW-05-I
FC-MW-05-S

ET-TW-8A
SA-TW-11A
SA-TW-7A
ET-TW-05A
ET-TW-03A
ET-TW-02A
ET-TW-15A
ET-TW-01A
ENGINE TEST HOUSE

SA-TW-102
SA-TW-103
SA-TW-105
SA-TW-107
SA-TW-101
SA-TW-104
SA-TW-106

RIVER ROAD
MAIN GATE

PECONIC RIVER SPORTSMEN CLUB ACCESS ROAD

SA-PZ-101S,I,D
SA-TW-108
SA-PZ-120S
SA-VPB-120
SA-PZ-104S,I,D
SA-VPB-122
SA-PZ-122D
SA-SW-103
PECONIC RIVER

SWAN POND
SA-TW-111
SA-TW-112
SA-PZ-123I
SA-VPB-123
SA-VPB-114
SA-PZ-114D
SA-PZ-115D
SA-VPB-115
SA-PZ-116D
SA-VPB-116
SA-PZ-102S,I,D
SA-PZ-102
SA-VPB-117
SA-PZ-118S
SA-PZ-118I
SA-SW-101
SA-PZ-118D/SA-VPB-118
POND
SA-TW-109
SA-PZ-121S
SA-PZ-121I
SA-PZ-121D
SA-PZ-103S,I,D
CONNECTICUT AVENUE
SA-TW-110

RESTRICTED DIRT ROAD

LEGEND:
- FORMER TEMPORARY WELL/ PIEZOMETER SAMPLE POINTS (ABANDONED)
- PIEZOMETER LOCATION/ VERTICAL PROFILE BORING LOCATION 2004/2005
- SURFACE WATER SAMPLE (2005)
- WELL/PIEZOMETER WITHIN PLUME WITH (MAXIMUM VOC CONCENTRATION > 5.0 ug/L)
- ONSITE SOUTHERN AREA PLUME (MAXIMUM VOC CONCENTRATION > 5.0 ug/L)
- OFFSITE SOUTHERN AREA PLUME (MAXIMUM VOC CONCENTRATION > 5.0 ug/L)
- PROPERTY LINE
- FENCE LINE
- TREELINE
- RAILROAD
- WATER
- CROSS SECTION LOCATION

0 400 800
GRAPHIC SCALE IN FEET

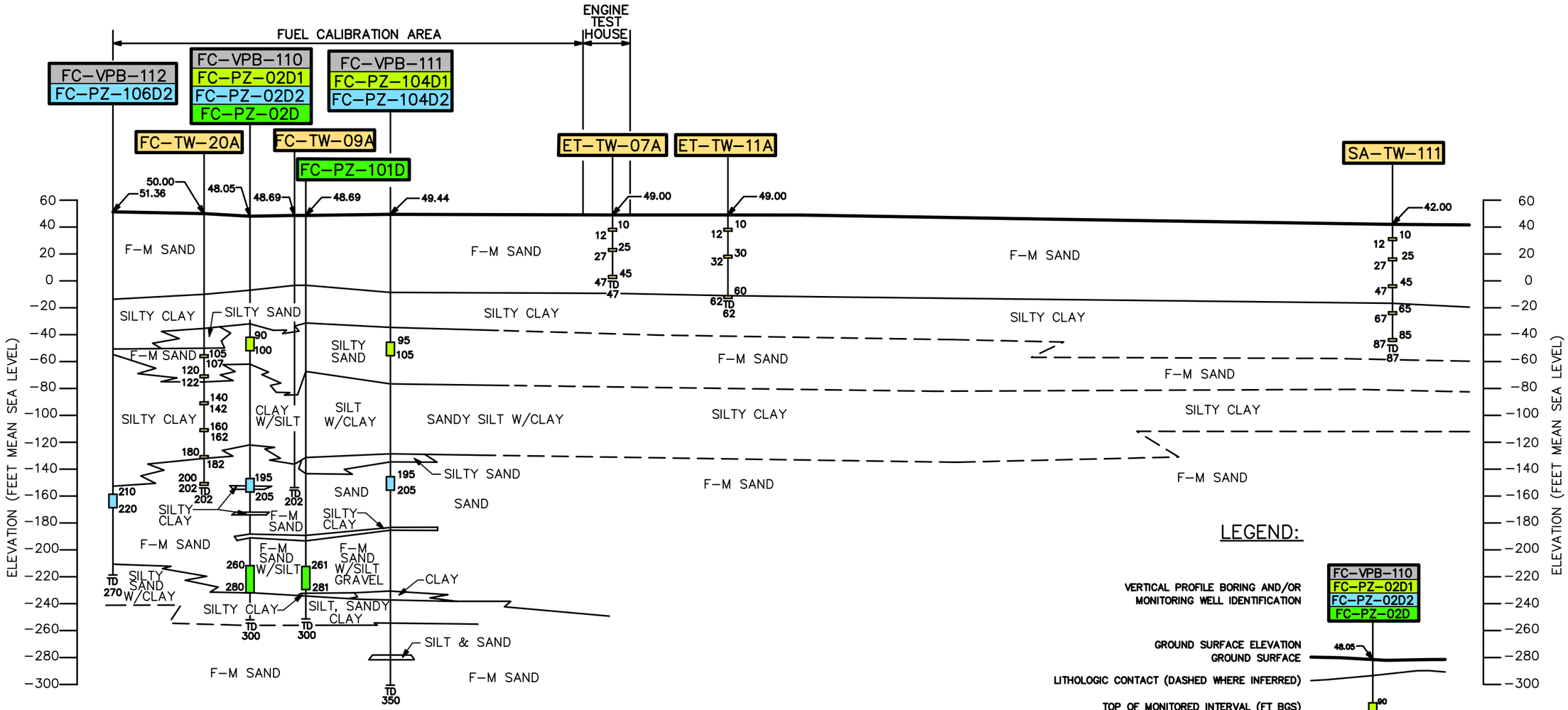
DRAWN BY DM	DATE 10/17/05
CHECKED BY	DATE
REVISED BY	DATE
SCALE AS NOTED	

Tetra Tech NUS, Inc.

ONSITE AND OFFSITE SOUTHERN AREA GROUNDWATER CONTAMINANT PLUMES NWIRP, CALVERTON CALVERTON, NEW YORK

CONTRACT NO. 1610	
OWNER NO. 0004	
APPROVED BY	DATE
DRAWING NO. FIGURE 2-12	REV. 0

ACAD:1610CX11.dwg 10/17/05 DM PIT



NOTES:

1.) WELL CLUSTERS ARE PROJECTED AND REPRESENTED AS A SINGLE VERTICAL BORING/MONITORING WELL.

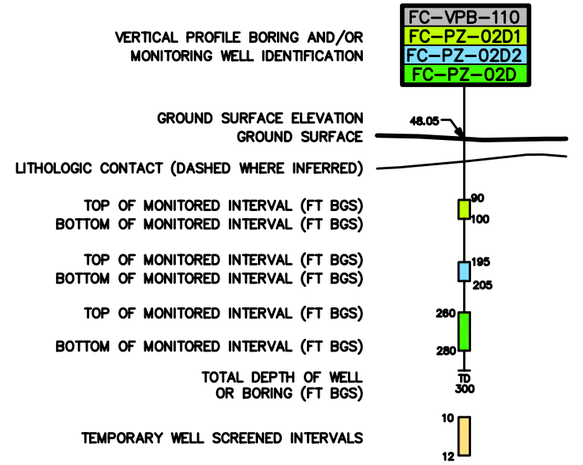
2.) VERTICAL PROFILE BORINGS (VPB) WERE COMPLETED AFTER WELL/BORING INSTALLATION.

3.) TEMPORARY WELLS ARE VARIABLY SCREENED THROUGHOUT VERTICAL SECTIONS.

0 400 800
HORIZONTAL SCALE IN FEET

0 80 160
VERTICAL SCALE IN FEET

LEGEND:



DRAWN BY DM	DATE 10/17/05	Tetra Tech NUS, Inc.	GEOLOGICAL CROSS SECTION SITE 6A - FUEL CALIBRATION AREA AND SITE 10B - ENGINE TEST HOUSE NWIRP CALVERTON CALVERTON, NEW YORK	CONTRACT NO. 1610
CHECKED BY SRA	DATE 7/15/05			OWNER NO. 0004
REVISED BY	DATE			APPROVED BY / DATE
SCALE AS NOTED				DRAWING NO. FIGURE 2-4 / REV. 0

FORM CADD NO. TTNUS-BH.DWG - REV 1 - 9/10/98

Sites 6A/10B and Onsite Southern Area Proposed Remedy

- Excavate petroleum- and PCB-contaminated soils.
- Monitor groundwater – long term (10 plus years). Allow residual contaminants to naturally attenuate.
- Implement in-situ biological treatment if migration becomes a problem.

Site 6A/10B and Onsite Groundwater - Next Steps

- Outstanding Questions/Comments?
- Finalize CMS.
- Proceed with a Statement of Basis for Remedy Selection.

Off site Southern Area Groundwater

- Chlorinated solvents in groundwater.
- Primary contaminants and maximum concentrations are:
  - 1,1,1-trichloroethane (24 ug/l),
  - 1,1-dichloroethane (292 ug/l),
  - 1,1-dichloroethene (21.7 ug/l).
- Plume is not continuous, maximum depth is approximately 80 to 100 feet.
- Primary concern would be if groundwater was used as a potable water source for extended periods of time.
- Flow is into the Peconic River.

DRAWING NO. FIGURE 2-12 REV. 0

N

PROPERTY BOUNDARY

RUNWAY 32-14

FC-MW-01-I
FC-MW-01-S
FC-MW-08-S
FC-MW-04-I
FC-MW-04-S
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FC-MW-02-S
FC-MW-03-S
FC-MW-07-S
FC-MW-06-S
FC-MW-05-I
FC-MW-05-S

ET-TW-8A
SA-TW-11A
SA-TW-7A
ET-TW-05A
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RIVER ROAD
MAIN GATE

PECONIC RIVER SPORTSMEN CLUB ACCESS ROAD

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PECONIC RIVER

SWAN POND
SA-TW-111
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SA-VPB-123
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SA-PZ-114D
SA-PZ-115D
SA-VPB-115
SA-PZ-116D
SA-VPB-116
SA-PZ-102S,I,D
SA-PZ-102
SA-VPB-117
SA-PZ-118S
SA-PZ-118I
SA-SW-101
SA-PZ-118D/SA-VPB-118
POND
SA-TW-109
SA-PZ-121S
SA-PZ-121I
SA-PZ-121D
SA-PZ-103S,I,D
CONNECTICUT AVENUE
SA-TW-110

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LEGEND:
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- ONSITE SOUTHERN AREA PLUME (MAXIMUM VOC CONCENTRATION > 5.0 ug/L)
- OFFSITE SOUTHERN AREA PLUME (MAXIMUM VOC CONCENTRATION > 5.0 ug/L)
- PROPERTY LINE
- FENCE LINE
- TREELINE
- RAILROAD
- WATER
- CROSS SECTION LOCATION

0 400 800
GRAPHIC SCALE IN FEET

DRAWN BY DM	DATE 10/17/05
CHECKED BY	DATE
REVISED BY	DATE
SCALE AS NOTED	

Tetra Tech NUS, Inc.

ONSITE AND OFFSITE SOUTHERN AREA GROUNDWATER CONTAMINANT PLUMES NWIRP, CALVERTON CALVERTON, NEW YORK

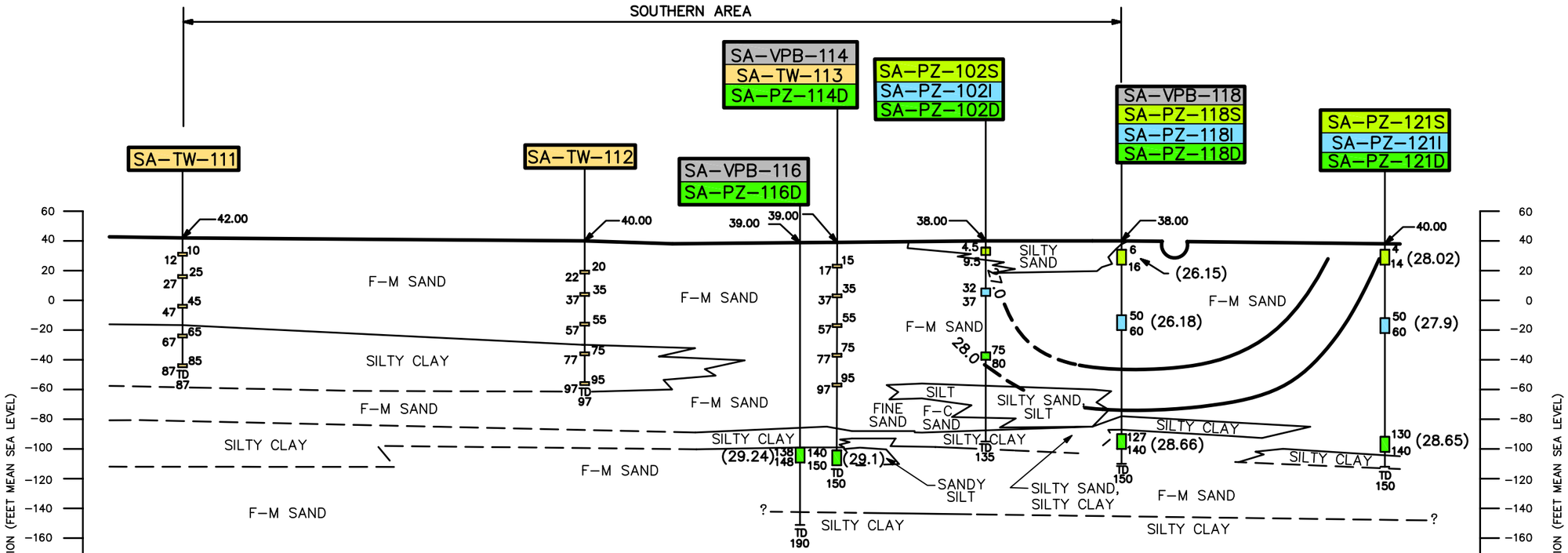
CONTRACT NO. 1610	
OWNER NO. 0004	
APPROVED BY	DATE
DRAWING NO. FIGURE 2-12	REV. 0

ACAD:1610CX13.dwg 10/17/05 DM PIT

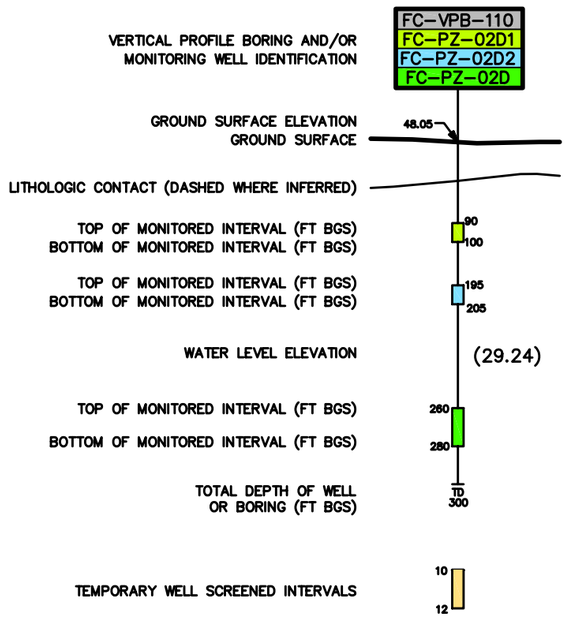
SOUTHERN AREA

SA-TW-111 | SA-TW-112 | SA-VPB-116 / SA-PZ-116D | SA-VPB-114 / SA-TW-113 / SA-PZ-114D | SA-PZ-102S / SA-PZ-102I / SA-PZ-102D | SA-VPB-118 / SA-PZ-118S / SA-PZ-118I / SA-PZ-118D | SA-PZ-121S / SA-PZ-121I / SA-PZ-121D

ELEVATION (FEET MEAN SEA LEVEL)



LEGEND:



0 400 800
HORIZONTAL SCALE IN FEET

0 80 160
VERTICAL SCALE IN FEET

NOTES:

1.) FOR CLARIFICATION, WELL CLUSTERS ARE PROJECTED AND REPRESENTED AS A SINGLE VERTICAL BORING/ MONITORING WELL.

2.) VERTICAL PROFILE BORINGS (VPB) WERE COMPLETED AFTER WELL/BORING INSTALLATION.

3.) TEMPORARY WELLS ARE VARIABLY SCREENED THROUGHOUT VERTICAL SECTIONS.

DRAWN BY DM	DATE 10/17/05
CHECKED BY SRA	DATE 7/20/05
REVISED BY	DATE
SCALE AS NOTED	

Tetra Tech NUS, Inc.

VERTICAL FLOW NET FOR SOUTHERN AREA WELLS ON MARCH 28, 2005
NWIRP CALVERTON
CALVERTON, NEW YORK

CONTRACT NO. 1610	
OWNER NO.	
APPROVED BY	DATE
DRAWING NO. FIGURE 2-7	REV. 0

FORM CADD NO. TTNUS-BH.DWG - REV 1 - 9/10/98

Off site Southern Area Groundwater

- From groundwater to surface water, contaminants will attenuate through biological degradation, stream dilution, and volatilization.
- Wetlands, like those present at the River, are good for biological degradation of contaminants.
- Chlorinated solvents do not bioaccumulate and at low concentrations are generally not toxic to aquatic organisms
- Maximum groundwater concentrations are less than NYS surface water quality criteria/guidance value.

Water Column and Sediment Quality Values for Various Contaminants for the Protection of Aquatic or Benthic Organisms

Water quality standards and guidance values are derived in accordance with the procedures described in 6NYCRR Part 706.1. Sediment Quality Values are derived from water quality values following the procedures described in Section IV(C) of "Technical Guidance for Screening Contaminated Sediments (Jan 1999)." Column C is the water quality standard or guidance value that provides the basis for the sediment quality value. Column D contains codes regarding the source and status of the water column value. Column E is the sediment quality value expressed in terms of micrograms (µg) contaminant per gram of total organic carbon (TOC) in the sediment. Column F assumes that the sediment contains 1.5% TOC, and provides the sediment quality value in milligrams (mg) per kg bulk sediment.

A. Compound	B. log K_{ow}	C. WQ Std/GV µg/L	D. Source/Status	E. Sediment value, µg/gOC	F. Bulk sediment value in mg/kg assuming 1.5% TOC
1,1,1-trichloroethane	2.48	280 24	3	84.6	1.3
1,1,2-trichlorotrifluoroethane	(AKA FREON) No Toxicity Data Available				
1,1,-dichloroethane	1.47	2100 212	4	63	0.95
1,1-dichloroethene	2.13	210 21 7	2	28.3	0.43
1,2-dichlorobenzene	3.46	5	1	14.4	0.22
2-butanone	0.29	17,000	4	NA	17 mg/L porewater *
acetone	-0.24	50,000	3	N/A	50 mg/L porewater *
chloroethane	No Toxicity Data Available				
benzene	2.138	210 14	1	29.0	0.43
ethylbenzene	3.14	17	1	23.5	0.35
toluene	2.713	100 10, 1	1	51.7	0.78
xylene (sum of isomers)	3.17	65 16, 1	1	96.2	1.4
tetrachloroethene	2.67	43	3	20.1	0.3

Source/Status codes

1 - water quality standard or guidance value published in DoW TOGS 1.1.1
2 - water quality guidance value proposed for publication in DoW TOGS 1.1.1
3 - Guidance value derived in accordance with 6NYCRR Part 706.1 but not yet proposed for publication in DoW TOGS 1.1.1.
4 - Risk threshold only - insufficient data available to derive a standard of guidance value in accordance with 6NYCRR Part 706.1
* Compounds with very low K_{ow}s do not bind to sediments. Toxicity risks must be assessed by comparing sediment pore water concentrations to water column values.

Off site Southern Area Groundwater

- If there is no attenuation, alternative screening values (ORNL) indicate potential for some localized impact to some ecological receptors in sediments.

Off site Southern Area Groundwater – Next Steps

- Conducted groundwater, surface water, and sediment sampling near river in October 2006.
- Results are expected soon.

CONNECTICUT AVENUE
CANOE LAUNCH SITE
State of New York
DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

ATTACHMENT 4
REVIEW OF SITE 6A AND 10B, AND ONSITE SOUTHERN AREA CORRECTIVE MEASURES STUDY

Calverton NWIRP RAB

Review of
Feasibility Study/Corrective Measures Study
Sites 6A, 10B, and On-Site Southern Area Plume

November 2, 2006

The Problem

- Petroleum in Soil On-site at Sites 6A & 10B
  - Estimated 8,600 gallons of petroleum
  - Estimated 3,870 cubic yards of contaminated soil
  - PCBs co-located with petroleum in small area
  - Limited liquid petroleum
  - Most of petroleum concentrated in 'smear zone' atop ground water surface coating soil particles

The Problem - continued

- VOCs Dissolved in Ground Water On-site at Sites 6A & 10B
  - Petroleum VOCs at/near source areas
  - Solvent VOCs at/near source areas
  - Limited to upper 60 feet of aquifer
  - Highest contamination in top 10 feet of aquifer
  - Estimated about 6 pounds of VOCs in 6.5 million gallons of ground water

The Problem - continued

- VOCs Dissolved in Ground Water On-Site in Southern Area
  - Primarily solvent VOCs; some petroleum VOCs
  - Plume about 86 acres extends from source areas to southeastern site boundary (and beyond)
  - VOCs highest in upper 40 feet of aquifer
  - Estimated 165 pounds of VOCs in 209 million gallons of ground water

Exposure/Risk Factors

- Silty-clay deposit across region at about 60 feet below ground at source areas and about 130 feet below ground near Peconic River keeps VOCs out of deeper ground water
- Shallow ground water flows southeast towards and discharges into Peconic River
- No current known on-site (or off-site) exposures to VOCs in ground water

Proposed Solution

- Sites 6A and 10B Source Areas Soil
  - Excavation, Off-site Treatment & Disposal
  - 14,000 cubic yards soil excavated
  - 3,900 cubic yards treated/disposed off-site
  - Evaluate remainder of soil for backfill
  - 1 to 2 years; 90% of VOCs removed; $3.7 million

Proposed Solution - continued

- Sites 6A & 10B Source Area Ground Water
  - Land Use Controls, Deed Notifications prevent use of ground water in the areas
  - Ground water monitoring program to observe expected natural degradation of contamination in the future
  - Review of site conditions every 5 years
  - Remediation goals for VOCs may be reached in 14 years
  - Remediation goals for all contaminants may not be reached in 30 years
  - Estimated $1,038,000 (over 30 years)

Proposed Solution - continued

- On-Site Southern Area Plume
  - Land Use Controls, Deed Notifications prevent use of ground water in the area
  - Ground water monitoring program to observe expected natural degradation of contamination in the future
  - Review of site conditions every 5 years
  - Remediation goals for all contaminants may not be reached in 30 years
  - Estimated $988,400 (over 30 years)

Reviewer's Comments

- CMS adequate; considered appropriate remedial techniques and approaches
- Excavation and off-site treatment/disposal is logical choice for Soil
  - Fast, easy, reliable
  - Removes 90% of contamination
  - Eliminates the source of dissolved VOCs in ground water (on-site and off-site plumes)

Reviewer's Comments

- Institutional Controls and Monitored Natural Attenuation for on-site ground water also logical choice
  - Prevents unacceptable risks currently and in the future
  - Allows observations to confirm predictions of natural degradation over time, or if not, indicate further action
  - Must be enforced/complied with by land owners, governments, regulators and Navy
  - Alternatives costing 6x to 35x more not more protective

Recommendations to Consider

- Install well between estimated downgradient tip of plume (off-site) and Peconic River, and establish corresponding surface water monitoring station, to observe potential VOCs discharge to river
- Establish transparent process for maintaining controls and restrictions so community can be assured they are being enforced

ATTACHMENT 5
NWIRP CALVERTON BUDGET UPDATE

NAVFAC
Naval Facilities Engineering Command

NAVFAC MIDLANT, NORFOLK, VA

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

BUDGET UPDATE – FY-06 ACTUAL COSTS AND FY-07 EXECUTION PLAN

Restoration Advisory Board (RAB) Meeting

11/02/2006

NWIRP Calverton FY-06 ACTUAL EXECUTION

PROJECT	COST	REMARKS
RCRA Administrative Record Documentation	$50,782	Action Complete
Community Relations and Consultation Support	$156,997	Ongoing support by TtNUS
Site 7 – AS/SVE (Air Sparging/Soil Vapor Extraction System Construction	$203,890	System constructed and operating
Site 6/Southern Area - Supplemental Investigation of the Southern Area Plume	$90,000	In progress
Site 1 – TAPP (Technical Assistance for Public Participation)	$24,993	Ongoing
TOTAL for FY-06 =	***$526,662***	

NWIRP Calverton FY-07 PLANNED EXECUTION

PROJECT	COST
Site 7– O&M for AS/SVE System from October 2006 through September 2007	$250,000 (Estimated)
Site 2 – Fire Training Area GW Sampling and MNA Investigation	$112,091 (Estimated)
Site 6A, Fuel Calibration Area & Site 10B, Engine Test House, Prepare Statement of Basis	$260,923 (Estimated)
Site 1 – Repair Erosion at NE Pond	$59,987 (Actual award made this week)
TOTAL for FY-07 =	***$683,001***