



TETRA TECH

PITT-09-8-023

September 15, 2008

Project Number 0182

Mr. Curt Frye
BRAC Program Management Office Northeast
4911 South Broad Street
Philadelphia, Pennsylvania 19112-1303

Reference: CLEAN Contract No. N62472-03-D-0057
Contract Task Order 041

Subject: Restoration Advisory Board (RAB) Meeting Minutes of August 13, 2008
Former Naval Air Warfare Center (NAWC) Warminster, Pennsylvania

Dear Mr. Frye:

Enclosed please find the minutes from the RAB meeting held on August 13, 2008. Copies of the minutes are being sent to the individuals identified on the distribution list.

Please contact me if you have any questions or comments.

Sincerely,

Jeffrey P. Orient
Project Manager

JPO/sic

Enclosure

c: Ron Sloto (USGS)
Charles Clark (PADEP)
Tom Buterbaugh (PADEP)
Toby Kessler (Gilmore & Associates)
Dave Fennimore (Earth Data)
Garth Glenn (TINUS)
Pat Schauble (ECOR)
Kathy Davies (U.S. EPA)
Russell Sirabian (Battelle)
Norm Kelly (RAB Co-Chair)
Dennis Orenshaw (U.S. EPA)
Charlene Creamer (U.S. EPA)
Bob Lewandowski (Navy BRAC PMO)
Chris Candela (ATC Associates)
File: 112G00182

Tetra Tech NUS, Inc.

661 Andersen Drive, Pittsburgh, PA 15220-2745
Tel 412.921.7090 Fax 412.921.4040 www.ttnus.com

**FORMER NAVAL AIR WARFARE CENTER (NAWC) WARMINSTER
MEETING MINUTES**

RESTORATION ADVISORY BOARD (RAB) MEETING NO. 111

REFERENCE: CLEAN CTO NO. 041

1. Meeting Date and Time: August 13, 2008, 9:35 AM to 11:00 AM
2. Location: Warminster Municipal Authority Board Room
3. Attendees: See Attachment 1 (attendance list)
4. Summary of Meeting Discussions: See below.

Administrative Update

Mr. Curt Frye, the Navy's Remedial Project Manager (RPM) for the project working out of the Navy's Base Realignment and Closure Program Management Office (BRAC PMO) in Philadelphia, opened the meeting by welcoming the attendees and providing an agenda for the meeting (Attachment 2). Introductions were made for the benefit of new attendees.

Comments were solicited on the May 14, 2008 RAB meeting minutes. No comments were offered by those in attendance and the meeting minutes were approved as-is.

Action items from the May 14, 2008 RAB meeting were reviewed. The action items from the May 2008 meeting are summarized below:

1. EPA and PADEP were to provide updates regarding offsite investigations.

- The current status of the updates will be addressed as a separate agenda item.

2. Mr. Frye was to follow up with Mr. Dennis Orenshaw (U.S. EPA RPM) regarding the need for an Explanation of Significant Difference (ESD) for the Operable Unit 1A (OU-1A) Record of Decision (ROD) for the planned treatment plant modifications.

- Mr. Frye provided a position paper to Mr. Orenshaw the concluded that an ESD is not needed. Mr. Orenshaw agreed with the Navy's position and will send a concurrence letter to that effect.

3. Mr. Jeff Orient (Tetra Tech NUS project manager) was to send out a letter documenting that the current version of the Area C Source Assessment Report is now considered the final document.

- Mr. Orient sent out the letter, also stating in it that the OU-10 sampling report is considered final as-is.

4. Review comments on the Battelle Source Area Treatment Evaluation Report were due by June 14.

- Review comments have been received and the report has been revised accordingly.

5. Mr. Frye was to provide the ESTCP website link to Mr. Dave Fennimore [Warminster Municipal Authority (WMA) consultant].

- The link was provided by Mr. Bob Lewandowski (Navy BRAC PMO), who also sent Mr. Fennimore a Navy technical document regarding thermal treatment.

6. The Technical Evaluation Group (TEG) was to develop recommendations for well closures.

- A prefinal list has been developed, and the list is in the process of being finalized. ECOR will provide an update during their briefing.

Off-Site Investigations

EPA Update – Mr. Orenshaw indicated that he was not able to provide an update at this time, as Ms. Charlene Creamer (EPA Site Assessment project manager) did not come to the RAB meeting to provide an update.

PADEP Update - Mr. Tom Buterbaugh (PADEP hydrogeologist) updated the RAB on recent work at CRC. The State is currently waiting for CRC to submit a Remedial Investigation Report (ERM is their consultant for the project) that is due this month. Based on the information he currently

has, the source appears to be a non-regulated waste solvent tank. Once the RI Report is submitted, a cleanup plan is due within 45 days. Mr. Fennimore asked if there will be an opportunity to review the report – Mr. Buterbaugh indicated that it would be available for review once PADEP has looked at it. Ms. Davies asked if it was known when the tank leak occurred – Mr. Buterbaugh indicated that the timing was unknown. Mr. Buterbaugh also indicated that the Act 2 report for 905 Louis Drive was approved by Mr. Walter Payne (PADEP Act 2 lead), with an elevated background standard for groundwater.

Mr. Fennimore indicated that WMA is continuing to see increases in PCE levels in municipal well WMA-26, and stated that time is a concern for the municipal authority. He also indicated that the initial activities for the planned treatment system upgrades are underway. Mr. Orient asked if the CRC investigation is still covered under Act 2 – Mr. Buterbaugh indicated that it will continue to move through the Act 2 process but it is considered a mixed site with schedule deadlines as per PADEP's storage tank program. Mr. Fennimore asked whether the site should now be handled under RCRA – Mr. Orenshaw stated that he would look into this issue.

Mr. Frye asked what reports had been provided by PADEP to date. Mr. Orient indicated that the initial work plan and the first site investigation report had been provided, but nothing since then. Mr. Frye asked if PADEP could provide a list of the documents generated to date for the CRC investigation – Mr. Buterbaugh stated that the Navy should have everything that was generated through November 2007.

Mr. Fennimore expressed concern about procedures being used for the site investigation work, suggesting that it should be performed to the same standard as the procedures followed by the Navy for Area A. Ms. Kathy Davies suggested that the Navy work plan used for Area A extraction well drilling be provided to the technical members of the RAB. Mr. Fennimore also questioned whether Warminster Township well drilling permits had been applied for as part of the CRC investigations (a check performed during the meeting did not turn up any permits for this work), and asked Mr. Buterbaugh to request them retroactively. Mr. Orient stated that the OU-1A ROD may include the Warminster Township and Ivyland Borough requirements for well drilling permits as institutional controls for the Navy's site.

At the conclusion of this discussion, several follow-up activities were identified:

- PADEP is to provide copies of the CRC RI Report to the U.S. EPA, Navy, USGS, and WMA.

- Comments on the CRC RI Report will be due to Mr. Buterbaugh within the timeframe he establishes in the transmittal letter for the report.
- TtNUS is to send hard copies of the Navy's well drilling plan for Area A that was developed by Foster Wheeler with TEG input to Ms. Davies, Mr. Fennimore, and Mr. Buterbaugh.
- A conference call or meeting may be scheduled after review of the RI Report to discuss the findings and any concerns regarding site investigation procedures.
- Mr. Orenshaw will evaluate whether the CRC site investigation should include RCRA involvement, and will check to see what the OU-1A ROD includes regarding offsite control of drilling activities.

WMA Update

Mr. Fennimore provided an update on the status of the treatment system upgrades for municipal wells WMA 13 and WMA-26, as follows:

- Bid documents for the treatment system upgrades are being sent out this month.
- PCE was detected at 4 ug/L in the most recent effluent samples collected from WMA 26, so WMA is trying to fast-track the treatment system upgrades.
- Influent PCE concentrations have been steadily rising, with the most recent concentrations 600+ ug/L. Mr. Fennimore offered to provide Ms. Davies with the recent sampling results.
- The WMA 13 upgrade is being bid simultaneously with the upgrade of WMA-26, but will be implemented after the WMA-26 upgrade as it is a lower priority.

There was a general discussion regarding PCE trends in monitoring well HN-52S, which is located downgradient from CRC. Mr. Orient indicated that concentrations over the 1995-2006 time frame steadily increased from around 200 ug/L to 16,000 ug/L, suggesting a long term source/leak. Mr. Orient asked whether the waste solvent tank had been removed from service – Mr. Buterbaugh indicated that it has been, however CRC still uses two permitted tanks.

There was a consensus that historic sampling data tables should be updated to reflect the most recent data, including WMA sampling results. Mr. Fennimore is to provide ECOR with the WMA sampling results, and ECOR will send out an updated table of sampling data. Mr. Ron Sloto (USGS) suggested that the table be updated regularly and provided as an attachment to future monitoring reports.

Treatment Plant Operation/LTM

Mr. Will Torres (ECOR) provided an update of various treatment plant operation and long term monitoring activities, including routine treatment plant operation and LTM activities, optimization plans/activities for both the treatment system and LTM program, and several new activities assigned to ECOR by the Navy, including:

- Installation of a new extraction well in Area A.
- Preparation of a Land Use Control Implementation Plan (LUCIP).
- Cleaning out catch basins in Area B (OU-10).
- Abandonment of selected monitoring wells.
- Offsite well surveys and preparation of legal descriptions.
- Repairs to Area C extraction well vaults.
- Evaluation of select groundwater treatment plant operations.
- Conversion of monitoring data to suitable electronic formats for uploading into the Navy's NIRIS database, and maintenance of the NIRIS electronic database for the site.

The ECOR update is provided as Attachment 3 to the minutes.

Mr. Orient suggested that the HN-65 well cluster be added to the list of wells designated for closure, and the TEG concurred with the recommendation. Mr. Chris Candela (ATC Associates, representing Erickson Retirement Communities) asked for a schedule for the Area C well closures, as he will need to coordinate access with the Ann's Choice Retirement Community staff and residents. Mr. Torres indicated that the subcontractor for well closures is ready and is waiting for final concurrence on the wells to be closed. Mr. Torres will send out the final list of wells to the RAB for approval.

Mr. David Streetsmith was introduced as the new ECOR hydrogeologist for the site. Mr. Streetsmith will oversee the installation of the new extraction well in Area A, including preparation of the drilling/monitoring plan as well as implementation of the installation activities. It was suggested by several parties present that ECOR follow the procedures used for prior well drilling in Area A. Also, it was suggested that ECOR coordinate with Mr. Sloto to get geophysical logs run on the new well boring prior to final well completion. A tentative schedule for the new well installation was discussed, including:

- Work plan submittal within approximately 2 weeks (around the end of August).
- Review of the work plan, with comments due within 30 days.

- Well installation in October.

The overall prioritization of the upcoming work was agreed to as follows:

1. Extraction well work plan preparation/submission.
2. Well abandonment.
3. Area C well modifications.
4. Land use control implementation plan preparation.
5. Groundwater treatment plant upgrades

Miscellaneous Topics and Issues – Action Items

Action Items identified through the course of the meeting include:

- PADEP is to provide copies of the CRC RI Report to the U.S. EPA, Navy, USGS, and WMA.
- TtNUS is to send hard copies of the Navy's well drilling plan for Area A that was developed by Foster Wheeler with TEG input to Ms. Davies, Mr. Fennimore, and Mr. Buterbaugh.
- Mr. Orenshaw will evaluate whether the CRC site investigation should include RCRA involvement, and will check to see what the OU-1A ROD includes regarding offsite control of drilling activities.
- EPA and PADEP are to provide updates regarding offsite investigations at the next RAB meeting.
- Mr. Fennimore is to provide recent sampling data for WMA-26 to ECOR.
- ECOR is to update the historic sampling data table with up-to-date results and send it out to the RAB.
- ECOR is to prepare/submit the work plan for the new Area A extraction well.

Next Meeting Date

The next RAB meeting date was set for November 12, 2008 at 9:30 AM in the WMA Board Room.

The meeting was adjourned at approximately 11:00 AM.

**ATTACHMENT 1
ATTENDANCE LIST**

NAWC WARMINSTER
TECHNICAL SUBCOMMITTEE/RAB MEETING

DATE: 8/13/08

NAME	AFFILIATION	PHONE	EMAIL
Ron Soto	US Geological Survey	610-321-2434 x 212	RASLOTO@USGS.GOV
JEFF ORIENT	TETRA TECH NUS	412-921-8778	jeff.orient@tetrattech.com
Kathy Davies	USEPA Region 3	215-814-3315	davies.kathy@epa.gov
Curt Frye	NAVY BRAC PMO	215-897-4914	curtis.frye@navy.mil
Matt Lapp	ECOR Solutions	484-887-7510 x 207	tlapp@ecor-solutions.com
Will Torres	ECOR Solutions	484-887-7510 x 202	torres@ecor-solutions.com
DENNIS ORENSHAW	U.S. EPA	215-814-3361	ORENSHAW.DENNIS@EPA.GOV
Cardyn Scala	Battelle	215-504-5003	scalac@battelle.org
Bob Lewandowski	US Navy BRAC PMO	215-897-4908	robert.f.lewandowski@navy.mil
Chris Candela	ATC/ERICKSON	610 313 3100 x 495	chris.candela@atcassociates.com
Victoria Bisbing	WMA/Earthdata NE, inc.		vbisbing@earthdatane.com
Dave Fennimore	WMA/Earth Data N.E.	610 524-9466	dfennimore@earthdatane.com
NORM KELET	RAB-CO-CHAIR	215-675-1157	
Jim Krueger	Warminster Twp	215-443-5423	jkrueger@warminstertwp.org
David Streetsmith	ECOR solutions	484-887-7510 ext 206	streetsmith@ecor-solutions.com
Toby Kessler	Gilmore & Associates, Inc.	215-345-4330	tkessler@gilmore-assoc.com
TOM BUTERBAUGH	PA DEP	484-256-5796	tbuterbaugh@state.pa.us

**ATTACHMENT 2
MEETING AGENDA**

**NAWC WARMINSTER
TECHNICAL SUBCOMMITTEE/RAB MEETING**

13 August 2008 9:30 AM

WMA Board Room

415 Gibson Ave

Warminster, PA

MEETING AGENDA

Administrative Update

- Minutes of the Last Meeting
- Review Action Items (see below)

Off-Site Investigations

- EPA update on Louis Drive assessments
- PADEP update on CRC Chemicals

WMA Update

- Status of Wells #13 and #26 treatment upgrades.

Treatment Plant Operation/LTM

- Plant operating status
- LTM update
- Status of Quarterly Monitoring Reports

Upcoming Activities

- ECOR presentation on plans/schedules for upcoming work activities
 - New Air Stripper
 - New Extraction Well
 - LUC Control Plan and Inspections
 - LTMP Update
 - Clean out Catch Basins at OU-10
 - Close wells
 - Replace Area C Extraction Well Vault Piping
 - Evaluate Extraction Well Pumps
 - Evaluate Treatment Plant Resin Filter

Miscellaneous Topics and Issues – Action Items

Time and Location of Next Meeting: - Date to be determined

Action Items

The following action items were identified at the wrap-up of the May 2008 meeting:

- EPA and PADEP are to provide updates regarding offsite investigations at the next RAB meeting.
- Mr. Frye is to follow up with Mr. Orenshaw regarding the carry-over issue about the need for an ESD for the treatment plant modifications.
- Mr. Orient is to send out a letter documenting that the current version of the Area C Source Assessment Report is now considered the final document.
- Review comments on the Battelle Source Area Treatment Evaluation report are due by June 14.
- Mr. Frye is to provide the ESTCP website link to Mr. Fennimore.
- The TEG is to develop well closure recommendations.

Directions to the WMA Board Room:

From County Line Rd - instead of turning north (right) onto Jacksonville, continue west on County Line to York Rd. Turn north (right) onto York Rd. Continue to Henry Ave. Turn west (left) onto Henry Ave. Continue to Gibson Ave. Turn right into the parking lot shared by the Warminster Township and WMA. The WMA building is located towards the rear.

From the former NAWC - proceed to the intersection of Street and Jacksonville Rd. Turn west (right) onto Street Rd. Continue west to York Rd. Turn south (left) onto York Rd. Continue to Henry Ave. Turn west (right) onto Henry Ave. Follow directions as above to the WMA building.

**ATTACHMENT 3
ECOR PRESENTATION**



ECOR Solutions, Inc.
Restoration Advisory Board
Meeting for
NAWC Warminster

13 August 2008

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Presentation Agenda

- GWTP Operating Status
- LTM Status
- Optimization Report Recommendations for the GWTP
- Optimization Report Recommendations for LTM
- Tasks as awarded by Task Order 156 Mod 2
- Discussion

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Groundwater Treatment Plant Operating Status

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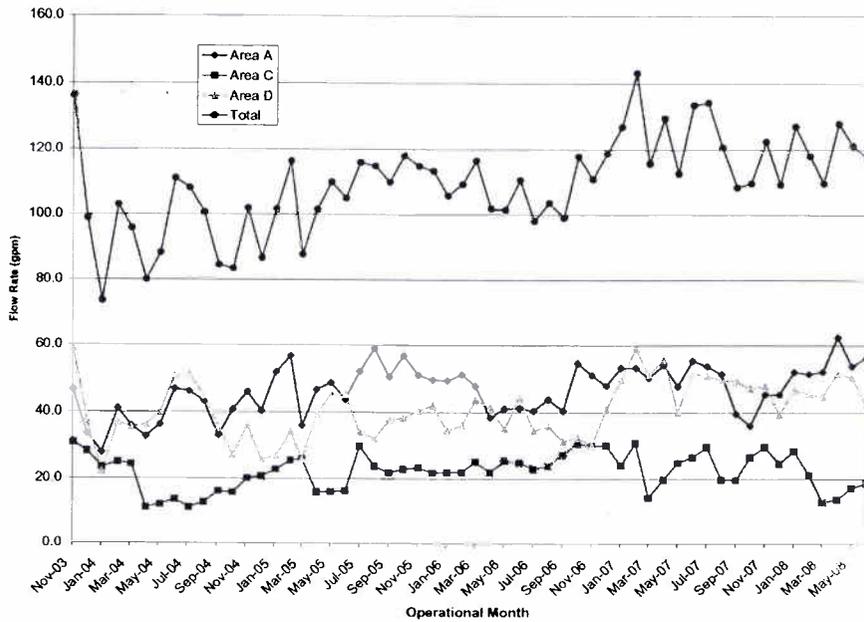
- Average Flowrates:
 - 50 gpm from Area A
 - 22 gpm from Area C
 - 48 gpm from Area D
 - 120 gpm overall
- 560,635,141 gallons recovered and treated (1999 start up through June 2007 reporting period)
- System up-time >95%

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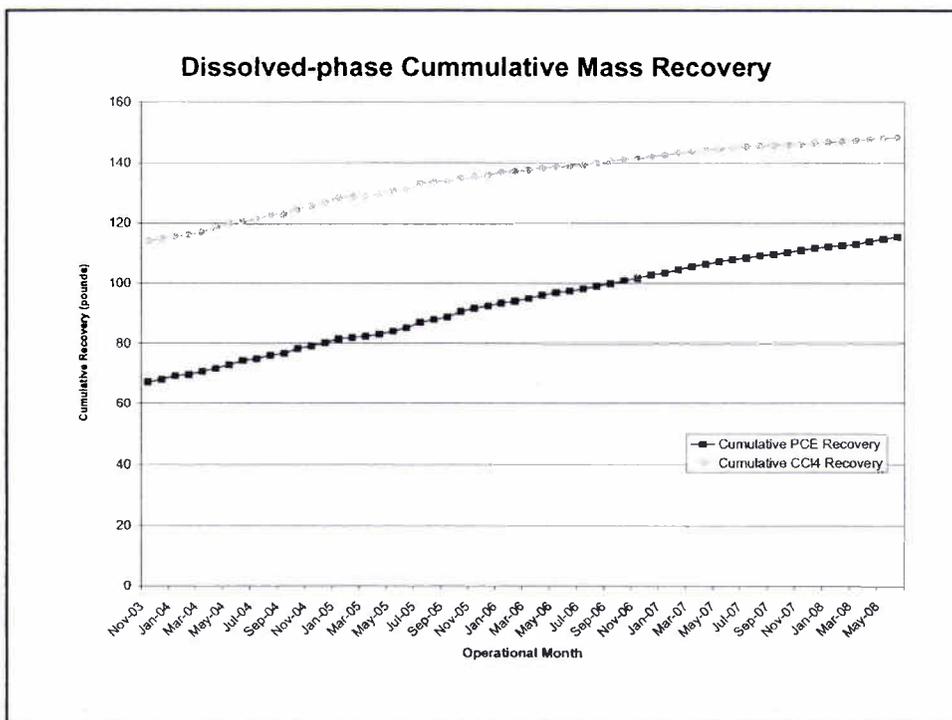
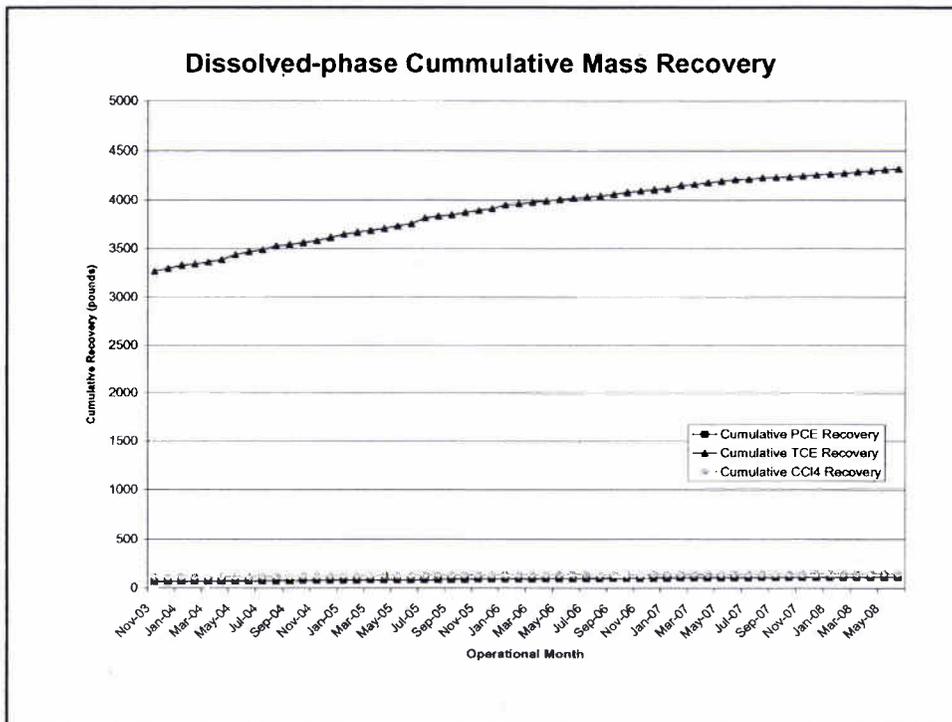
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Groundwater Treatment Plant Recovery Flow Rates



- Cumulative dissolved-phase hydrocarbon recovery through June 2008 reporting period:
 - › Tetrachloroethene (PCE) – 115 pounds
 - › Trichloroethene (TCE) – 4,316 pounds
 - › Carbon Tetrachloride (CCl₄) – 148 pounds
- Currently, 98.5% of TCE recovered is from Area A with the remainder from Area D



Long Term Monitoring Status

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- **Sampling events completed by ECOR:**

- 3rd Quarter FY 2008 (Annual) – April 2008
- 4th Quarter FY 2008 (Quarterly) – July 2008

- **Recent reports submitted:**

- 2nd Quarter FY 2008 (Semi-Annual) – Final in May 2008
- 3rd Quarter FY 2008 (Annual) – Internal Draft in July 2008

- **Reports in progress:**

- 4th Quarter FY 2008 (Quarterly)

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“Optimization Report, Battelle, August 2007” Recommendations for the Groundwater Treatment Plant

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Recommendations Already Implemented

- Discontinued pumping from well EW-D4 (May 2007)
- Upgraded computer system with programming modifications (Mar 2007)
- Reprogrammed EQ tank VFD controls to minimize pump cycling. (Mar 2007)
- Began collecting Cr⁺⁶ samples monthly from the ion exchange influent and effluent streams
- Took TSS/Metals treatment equipment offline (Dec 2006)

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Recommendations Already Implemented (con't)

- Installed an additional VGAC unit operating in series with the two existing units (Jan 2007)
- Completed RFD for air emissions. No permit was required
- NPDES Permit with new discharge limitations went into effect on May 1, 2008
- Sized and ordered larger air stripper with higher VOC removal efficiency to eliminate the need for liquid-phase GAC (Jun 2008)

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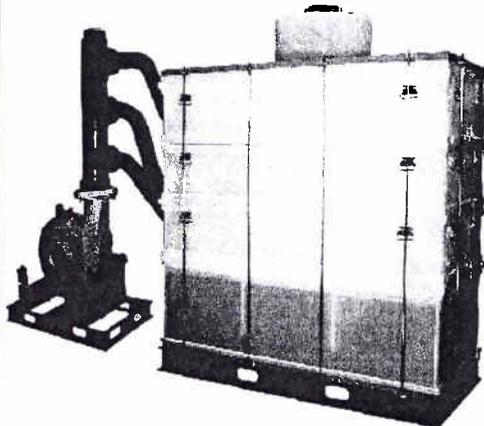
PowerClamp™ compression system creates a more reliable, water-proof seal

Easily collapsible and expandable — stackable trays are quickly disassembled for cleaning or maintenance

Polypropylene construction combats fouling

Delivered fully assembled; piped & wired

Factory wet-tested for reliable system operation

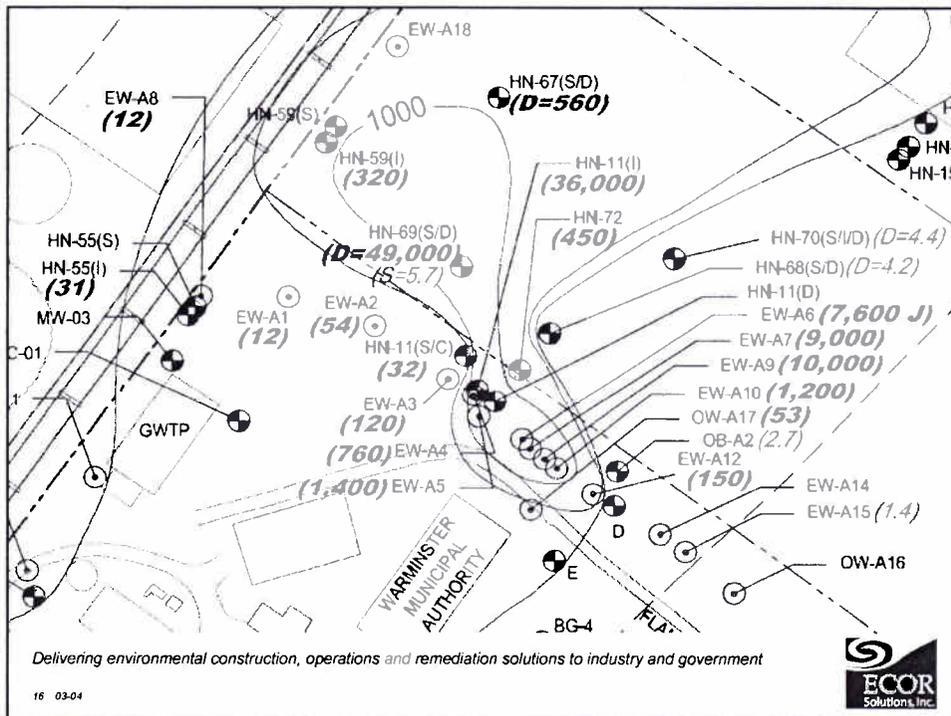


Recommendations In Progress

- Install a new extraction well near monitoring well HN-69D
 - Adjust water level set points and extraction flow rates in Area A
 - Modify Long Term Monitoring Program after new well is connected to the GWTP
- Install new air stripper (Sep 2008)
- Eliminate liquid-phase GAC and dispose of carbon

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“Optimization Report, Battelle, August 2007” Recommendations for Long Term Monitoring

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Recommendations Already Implemented

- In accordance with the TEG recommendation, streamline the quarterly monitoring reports to include only pumping rates, sampling results, groundwater-level measurements, and any notable issues
- Create/maintain a database with current and historical monitoring data and submit as a deliverable with the quarterly monitoring reports

↳ Put into NIRIS

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Recommendations In Progress

- Remove monitoring well HN-69S and HN-69D from the monitoring program in Area A
- Reduce the sampling frequency in upgradient Area C monitoring wells BG-05A, HN-23A, HN-27S, and HN-28S from quarterly to semi-annually

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Tasks Awarded

Task Order 156 Mod 2

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List of Tasks:

- Install Extraction Well
- Land Use Controls - *Will prepare a LUCIP*
- Cleaning out of Catch Basins
- Abandonment of Wells
- Well Surveys and Legal Descriptions
- Repair Area C Extraction Well Vaults
- GWTP Evaluations

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Install Extraction Well EW-XX (A19)

- Prepare Work Plan
- Install new extraction well in Area A near monitoring well HN-69D
- Make use of existing piping at EW-A18
- Provide report

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Land Use Controls (LUC)

- Develop LUC Implementation Plan (LUCIP)
- Perform LUCIP Inspections of Sites 1-4 and Sites 6-9
- Perform LUC repairs as identified during inspections
- Prepare LUC Report for 2008

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Catch Basins at OU-10

- Clean out of sediment from 2 areas described in OU-10 Sediment Sampling Report
 - › Catch basin for Sampling Station B32
 - › Open Outfall for Sampling Station B31
- Characterize/Remove sediment via government regulations
- Include documentation on LUCIP report

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Well Surveys and Legal Descriptions

- Provide Surveys
- Provide Legal Descriptions
- 13 wells on non-Navy property
- HN-52, HN-19, OB-13, R9, HN5, R4, HN-54, HN-53, HN-100, R6, R7, HN-66

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Well Abandonments

- Permanently close up to 58 wells in accordance with PADEP guidelines
 - Area A – 7 wells
 - Area D – 7 wells
 - Area C – 7 wells
 - Area B – 37 wells
- Provide letter report

+ HN 65 cluster

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Repair Area C Extraction Wells

- Replace piping (valves, sample ports, pitless adapters) and electrical boxes
- Replace with PVC
- Replace heat tracing
- Document work in monthly O&M reports

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GWTP Evaluations

- Evaluate resin filter to increase effectiveness at removing Cr^{+6}
- Evaluate extraction well pumps to locate any possible electrical/voltage problems or flowrate/drawdown issues
- Prepare a letter report

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NIRIS Monitoring Data

- Convert and migrate Warminster groundwater data in electronic format to NIRIS Electronic Data Deliverables (NEDD)
- Convert geospatial data to the ESRI format
- Coordinate data will be in State Plane Coordinate System NAD 83
- Maintain NIRIS through March 2010 (Includes uploading new data on a quarterly basis)

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