



**TETRA TECH NUS, INC.**

600 Clark Avenue, Suite 3 ■ King of Prussia, PA 19406-1433  
(610) 491-9688 ■ FAX (610) 491-9645 ■ www.tetrattech.com

C-51-5-9-24

May 13, 1999

Project 5838

Mr. Lonnie Monaco  
Naval Facilities Engineering Command (NAVFACENGCOM)  
Northern Division  
Environmental Contracts Branch, Mailstop #82  
10 Industrial Highway  
Lester, Pennsylvania 19113

Reference: CLEAN Contract No. N642472-90-D-1298  
Contract Task Order (CTO) No. 225

Subject: Responses to Comments for Performance Monitoring Plans  
Former Naval Air Warfare Center (NAWC) Warminster, Pennsylvania

Dear Mr. Monaco:

As requested, Tetra Tech NUS (TiNUS) has responded to comments regarding the first-year performance monitoring plans for Operable Unit 1 (OU-1) and Operable Unit 4 (OU-4). The enclosure to this letter provides these responses.

Based on these comment responses, TiNUS has prepared revised versions of these plans, both dated May 12, 1999. Please contact me if you have any questions or comments.

Sincerely,

Neil Teamerson  
Project Manager

ANT/ejc

Enclosure

c: Thomas Ames (NAVFACENGCOM)  
Timothy McEntee (NAVFACENGCOM)  
Kathryn Davies (EPA Region III)  
Darius Ostrauskas (EPA Region III)  
April Flipse (PADEP)  
Robert Predale (EA Engineering)  
David Fennimore (Earth Data)  
Anthony Sauder (Pennoni)  
Ronald Sloto (USGS)  
Jeffrey Orient (Tetra Tech NUS)  
Garth Glenn (Tetra Tech NUS) (without enclosure)

**RESPONSES TO COMMENTS  
FIRST-YEAR PERFORMANCE MONITORING PLANS FOR OU-1 AND OU-4  
May 13, 1999**

**USGS Comments (dated November 23, 1998)**

USGS submitted three comments regarding the first-year performance monitoring plan for OU-1 (see attachment). **Response:** *Most of these comments were incorporated into the final plan. Well HN-19D was not added to Table 2-1 based on subsequent Technical Evaluation Group (TEG) discussions.*

USGS submitted three comments regarding the first-year performance monitoring plan for OU-4 (see attachment). **Response:** *Most of these comments were incorporated into the final plan, after follow-up discussions between Tetra Tech NUS and USGS.*

**Pennoni Comments (dated March 16, 1999)**

In reviewing the plans and sampling data available, we recommend that another comprehensive round of sampling be conducted 6 to 9 months after start-up to be able to make comparisons to the last comprehensive round of sampling and better evaluate the effectiveness of the remediation efforts. **Response:** *The Navy will review the need for another round of comprehensive monitoring for Area A and Area D at a later date. The sampling proposed for these areas in the final performance monitoring plans is considered to be extensive during the first year. Except for some overburden and deeper monitoring wells, almost all of the shallow and intermediate monitoring wells in the vicinity of the Area A and Area D extraction well networks are being sampled on a quarterly basis.*

It is not clear in the plans how the selection of the monitoring and extraction wells to be analyzed will be made with regards to the evaluation of contaminant trends. **Response:** *The selection process will be similar to what was used for the OU-3 groundwater remedy. The process will consider the location of the well, the type of well, groundwater analytical data for a specific well sample, and pumping rate trends (in the case of the extraction wells).*

For Operable Unit 4 (Area D) monitoring, HN-53S should be included in the sampling program due to its location and previous demonstration of elevated contaminant levels. **Response:** *The Navy disagrees that well HN-53S should be included in the sampling program at this time. The concentration (53 ug/l) of 1,1-dichloroethene (1,1-DCE) contained in the December 1997 sample from well HN-53S is significantly*

## ENCLOSURE

higher than shallow well samples from other nearby Area D wells [e.g., HN-17S (2 ug/l), HN-32S (non-detect), HN-33S (2ug/l), HN-54S (non-detect), and HN-58S (non-detect)]. Also, the December 1997 intermediate well samples from clusters HN-17, HN-33, HN-53, HN-54, and HN-58 contained comparable concentrations of 1,1 -DCE as detected in the shallow well samples from the same cluster. Given the level of 1,1-DCE and the shallow depth of HN-53S, the Navy does not believe that this contaminant is necessarily attributable to the base. The hydrogeologic conditions downgradient of the on-base portion of Area D suggest that the intermediate water-bearing zone at cluster HN-53 is of more interest with regard to the effectiveness of the Area D extraction well network

In Operable Unit 4 (Area D), we recommend an additional monitoring well located somewhere between wells HN-53, HN-54, and HN-33 to be better able to determine water and contaminant levels downgradient of the contaminant plume. As an alternative, well SW-1 or SW-2 could be converted to a monitoring well and screened at the intervals, which demonstrate the highest contaminant concentrations.

**Response:** The Navy will review the need for an additional monitoring well in this area after the results of the off-base EPA groundwater investigation are evaluated along with the results from the OU-4 performance monitoring. Given the nearby presence of wells EW-D9 and EW-D10, the need to convert wells SW-1 and SW-2 into monitoring wells does not seem appropriate at this time. Based on preliminary discussions, the Navy is planning to abandon wells SW-1 and SW-2 at a later date.

### TEG Comments (dated April 20, 1999)

The TEG submitted 10 comments regarding the first-year performance monitoring plan for OU-1 (see attachment). **Response:** All of the TEG comments and suggestions were incorporated into the revised plans.

The TEG submitted six comments regarding the first-year performance monitoring plan for OU-4 (see attachment). **Response:** All of the TEG comments and suggestions were incorporated into the revised plans.

ATTACHMENT



## United States Department of the Interior

U.S. GEOLOGICAL SURVEY  
 WATER RESOURCES DIVISION  
 Great Valley Corporate Center  
 111 Great Valley Parkway  
 Malvern, PA 19355  
 Phone 610-647-9008 FAX 610-647-4594

November 23, 1998

Mr. Orlando Monaco  
 Naval Facilities Engineering Command  
 Northern Division  
 Environmental Restoration Branch  
 10 Industrial Highway  
 Lester, Pennsylvania 19113

RE: First-Year Performance Monitoring Plan for Operable Unit 1 Remedial Action and First-Year Performance Monitoring Plan for Operable Unit 4 Remedial Action

Dear Mr. Monaco:

Overall, the plans look complete and reasonable and should meet the stated objectives. My comments on the plans follows.

### First-Year Performance Monitoring Plan for Operable Unit 1 Remedial Action

- (1) Table 2-1 Well 19-S, 19-I, and 19-D should be added for monthly water-level measurements.
- (2) Table 2-1 Well WTMA 26 is listed twice. The schedule for the listing at the end of the table should be followed.
- (3) P. 3-2, para. 3 Water-level data and potentiometric surface maps cannot be used to delineate a capture zone. They can, however, be used to delineate the area of influence of the pumping wells. To define the capture zone, a capture zone analysis must be done. In the case of multiple pumping wells, a semantical model should be run to define the capture zone.

### First-Year Performance Monitoring Plan for Operable Unit 4 Remedial Action

- (1) Table 2-1 Well MP-<sup>3</sup>1 is listed for quarterly sampling during first-year monitoring, but not listed for monthly sampling during start-up monitoring. All other wells listed for quarterly sampling during first-year monitoring are listed for monthly sampling during start-up monitoring.
- (2) Table 2-1 Well HN-54-S should be sampled during pre-start-up monitoring.
- (3) P. 3-2, para. 3 Water-level data and potentiometric surface maps cannot be used to delineate a capture zone. They can, however, be used to delineate the area of influence of the pumping wells. To define the capture zone, a capture zone analysis must be done. In the case of multiple pumping wells, a semantical model should be run to define the capture zone.

If you have any questions, please call me at extension 212.

Sincerely,

Ronald A. Sloto  
 Supervisory Hydrologist

cc: J. Orient



PENNONI ASSOCIATES INC.

CONSULTING ENGINEERS March 16, 1999

One Drexel Plaza

3001 Market Street

Philadelphia, PA 19104-2897

Tel: 215-222-3000

Fax: 215-222-3588

WARM 9608.002.01

Mr. Lonnie Monaco

Naval Facilities Engineering Command (NAVFACENGCOM)

Northern Division

Environmental Contracts Branch, Mail Stop No. 82

10 Industrial Highway

Lester, PA 19113

**RE: Review Comments****First-Year Performance Monitoring Plans for Operable Units 1 and 4  
Remedial Action (Draft Reports)****Former NAWC Warminster**

Dear Mr. Monaco:

Pennoni Associates Inc. ("Pennoni") on behalf of Warminster Township has reviewed the draft reports entitled "First-Year Performance Monitoring Plan for Operable Unit 1 Remedial Action" dated November 1998 and "First-Year Performance Monitoring Plan for Operable Unit 4 Remedial Action" dated November 1998 which were prepared by Tetra Tech NUS, Inc. Based on our review we offer the following comments:

1. In reviewing the plans and sampling data available, we recommend that another comprehensive round of sampling be conducted 6 to 9 months after start-up to be able to make comparisons to the last comprehensive round of sampling and better evaluate the effectiveness of the remediation efforts.
2. It is not clear in the plans how the selection of the monitoring and extraction wells to be analyzed will be made with regards to the evaluation of contaminant trends.
3. For Operable Unit 4 (Area D) monitoring, HN-53S should be included in the sampling program due to its location and previous demonstration of elevated contaminant levels.
4. In Operable Unit 4 (Area D), we recommend an additional monitoring well located somewhere between wells HN-53, HN-54, and HN-33 to be better able to determine water and contaminant levels downgradient of the contaminant plume. As an alternative, well SW-1 or SW-2 could be converted to a monitoring well and screened at the intervals which demonstrate the highest contaminant concentrations.

Mr. Lonnie Monaco  
WARM 9608.002.01

March 16, 1999

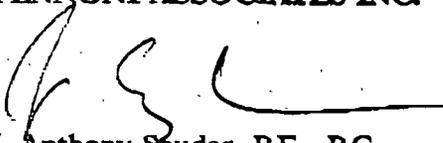
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Should you have any questions concerning the above comments, please do not hesitate to contact us.

Very truly yours,

**PENNONI ASSOCIATES INC.**



J. Anthony Sauder, P.E., P.G.  
Senior Hydrogeologist



Kevin J. Davis, P.E.  
Manager, Environmental Services

cc. Robert Camarata, Warminster Township

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**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
1650 Arch Street  
Philadelphia, Pennsylvania 19103-2029**

**SUBJECT:** First Year Performance Monitoring Plans for OU-1 and  
OU-4 NAWC

**FROM:** Technical Evaluation Group (Ron Sloto, Jeff Orient and Kathy Davies)

**TO:** Lonnie Monaco, NAVFACENGCOM April 20, 1999

We have reviewed the subject documents and have the following recommendations:

General Recommendation. Due to the proximity of the two areas and the anticipated combined capture zone, it is highly recommended that the monitoring for Areas A and D is conducted simultaneously.

OU-1. Table 2-1.

1. Omit OB-A1.
2. Add HN-19S and HN-19I to the first three columns under pre-start-up monitoring and to the quarterly water level and quarterly sampling columns under first year monitoring. Add HN-19I2 to the first and third columns in pre-start-up monitoring and to the first and third columns in first year monitoring.
3. Omit monitoring for the HN-50 cluster.
4. Add monthly sampling for HN-59I to the start-up monitoring.
5. Omit quarterly sampling for HN-65I1 and HN-66S in the first year monitoring.
6. Add well clusters HN-17 and HN-82 to the first, third and sixth columns.
7. Omit monitoring for DG-13.
8. Add monthly sampling under start-up monitoring for SMC-1.
9. Omit weekly sampling for WTMA 26 in the start-up monitoring.
10. Add A10, A11, A12, A13, A14, A16 and A17 to the same monitoring events as those listed in the table for wells A1 through A9.

OU4. Table 2-1.

1. Add weekly sampling under start-up monitoring and quarterly sampling under first-year monitoring for wells MP-1 and MP-3. Water elevations should be taken monthly for these wells in the first-year monitoring phase. (The table will need to be changed to accommodate

this combination).

2. Add quarterly sampling under first-year monitoring for well HN-19I1.
3. Add HN-18I to the first column (water- levels) under each of the phases of monitoring.
4. Add quarterly sampling under the first-year monitoring for HN-33S and HN-33I.
5. Add D-7, D-8 and D-9 to the same monitoring events as those listed in the table for wells D1 through D6.
6. Add D-10 to both columns of pre-start-up monitoring and to the first and third column of start-up monitoring. For this well under first-year monitoring, monthly water elevations are suggested, while monthly sampling is not really needed; quarterly sampling will suffice. This combination of monitoring necessitates changing the table matrix, as for MP-1 and MP-3.