



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

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BOSTON, MASSACHUSETTS 02114-2023

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NAS BRUNSWICK
5090.3a

May 17, 1999

Mr. Emil Klawitter (eeklawitter@efdnorth.navfac.navy.mil)
Northern Division, Naval Facilities Engineering Command
Code 1823/EK
10 Industrial Highway, Mailstop 82
Lester, PA 19113-2090

RE: Draft 1998 Annual Monitoring Report and Draft Revised Long Term Monitoring Plan for Site 9 at Naval Air Station, Brunswick, Maine

Dear Mr. Klawitter:

Thank you for the opportunity to review the above documents which were prepared for the Navy by EA Engineering, Science and Technology, Inc.

Draft 1998 Annual Monitoring Report.

The 1998 annual report much more clearly shows overall trends. Our comments and several supporting charts in attachment 1.

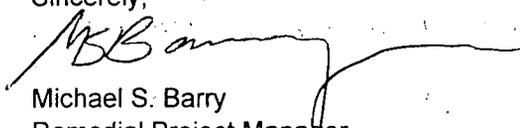
The report indicates to EPA that VOC inflow into the site 9 area cannot be ruled out. However, discharge from the site 9 area is well characterized in the monitoring program and the selected remedy in the Draft Proposed Remedial Action Plan remains appropriate. It's also clear that the VOC's are degrading at site 9, but that this process will take several years.

Draft Revised Long Term Monitoring Plan.

Specific comments are in attachment 2. Changes to the LTMP were also discussed in attachment 1 as comments to recommendations of the 1998 annual report.

We look forward to documenting decisions at site 9 with the ROD later this year. If you have any questions or concerns, please call me at 617-918-1344 email me at barry.michael@epa.gov.

Sincerely,


Michael S. Barry
Remedial Project Manager
Federal Superfund Facilities Section,

Attachments-Comments

cc. Tony Williams/NASB (WilliamsA@nasb.navy.com)
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Attachment 1
EPA Comments to Draft 1998 Annual Report
Monitoring Events 11-13
Site 9, Neptune Drive Disposal Site
Naval Air Station, Brunswick, Maine

General Comments

1. **Overall.** This years' report is much improved. The new color charts and simple tables that commented on trends were a great improvement and significantly enhanced plume understanding. The charts of vinyl chloride/1,2-DCE ratios (figure 3-8), total concentrations with a regression line (figure 3-9) and overall trends of several wells (figure 3-7) were especially useful and the data presentation much more conducive to analysis.
 - a. Our review uncovered one omission error (comment 14) and we disagree with one of the Navy's conclusions (comment 3.a. and 16.c.).
2. **Response to Comments.** We accept Navy responses to EPA comments on the 1997 Annual, Monitoring Event 11 and 12 Reports and look forward to the final 1997 Annual Report.
3. **Plume Evolvement.** Natural dechlorination of the parent VOC's in the site 9 area (effectively all 1,2-DCE) is clearly taking place by the presence of vinyl chloride and rising vinyl chloride ratios in several wells. However we cannot rule out the possibly of inflow of parent VOC's which will later degrad to vinyl chloride. Some other factors to consider are:
 - a. 1,2-DCE was detected at 3 ppb in the new MW-227. This level itself isn't a concern, but it could cause a vinyl chloride exceedance of the MCL and MEG and is fresh inflow of contaminants. Future monitoring may show a trend. Because MW-227 is screened just above the clay this should present the worst case and MW-022 just to the north was non-detect.
 - b. 1,1-DCA was detected at 0.3J ppb in MW-81 on event 12. This is the first detection of a VOC that will also decay to vinyl chloride at this well.
 - c. Vinyl chloride/1,2-DCE ratio trends don't seem to spatially correlate but there are some similarities with screen depth. The two wells with steady ratios, MW-69/74, are bracketed by wells with increasing ratios. It's interesting to note that MW-69/74 are also the deepest wells along the axis of the plume with a history of VOC detections. Both are screened below 30' MSL., with the MW-69 screen down to 14.5' in sand and MW-74 to 25.6', just above the clay layer. The other wells in the plume axis are shallower than are have never add significant detections. Several other factors which could affect concentration at depth are dissolved oxygen content, VOC density and the location of the historical source that wasn't located. The attached charts help display this.
 - d. After never containing vinyl chloride, levels clearly started rising in MW-69 in late 1997, this followed 200 feet downgradient in MW-76, 200' downgradient, six months later in mid 1998 and could indicate a plume moving through the area. Yet the three upgradient wells, MW-79/80/81 were overall steady with low levels of vinyl chloride or non-detect during this period.

- e. MW-69, 80 and 81 are all upgradient of a long suspected historical source, the building 201 septic system. This source wasn't found after several investigations but it was located immediately upgradient of MW-76 which has a history of vinyl chloride that had fallen, but are now rising again.
 - f. Future events may reveal longer term trends. To better understand the three dimensional plume dynamics, a new hydrogeological cross-section that goes through most of the wells should be prepared and included in the 1999 annual report. The general location of the new cross section, C-C', is proposed in the attached charts.
 - g. As the report notes, this data and, especially the ratio information can be thrown off by data quality issues because of the low concentrations involved. Depth and ratios should also be analyzed for any correlation.
4. **Recommendations.** We concur with all the recommendations for future sampling and also propose:
- a. Because of the detection of 1,1-DCA of 0.3J in MW-81, we think it should be included in the sampling events for several rounds to address our concerns about inflow of VOC's which will later decay to vinyl chloride even though their concentrations are well below the MCL/MEG.
 - b. Creation of a professional hydrogeological cross section along the axis of the plume that included all wells with an offset should be prepared to aide trends analysis of the plume, please see EPA figures.
 - c. The building 201 septic system is likely past source of VOC's and it's outline should be added to the figures, as are the ash landfill and incinerator.
 - d. General water quality parameters should also be correlated to the monitoring wells to assess natural attenuation effectiveness, especially in light of a suspect dissolved oxygen "shadow" because of BTEX at the upgradient NEX site.
5. **Data Quality-Contaminated Blanks.** False TCE and PCE detections caused by either trip or method blank contaminations in the range of 1-2 ppb were encountered in 1998, as well as acetone and methylene chloride. These aren't an issue at site 9 as the primary COC's are vinyl chloride and 1,2-DCE. However, these could significantly cloud the graphs due to the low concentrations and shouldn't be included, or at least footnoted on the graphs. This has been an ongoing situation at site 9 and we believe that several of the charts at appendix A and figure 3-7 indicate higher than they should. Specific instances are in comments 9, 13 and 15.
6. **Water Level Gauging.** We conclude that after responding to the retention ponds, the historical gradient across site 9 from MW-81 to MW-72 has returned; a least mean squares regression line is nearly level across the whole period. Continued gauging with NEX site data and the new MW-227 will help refine the flow path.
7. **Detection limit for vinyl chloride.** The reporting limit is 2 ppb. Per previous letter the Navy can use several methods to near the MEG of 0.15 ppb. See also comments to the draft LTMP.

Specific Comments

8. **Figure 1.2.** The building 201 septic system should be added, it was just northeast of the NE corner of the building.
9. **Figure 3-7.** This figure did a great job displaying long term trends of wells with VOC detects. However, MW-74 and 75 seem to falsely indicate higher VOC's due to TCE in the blank for MW-74 and acetone, a likely lab artifact, in MW-75. The graphs shouldn't show lab artifacts as actual contamination. Recommend either excluding it or making a footnote. This would make look MW-75 more decreasing and MW-74 less increasing, as is the actual case.
 - a. Table 3-1 for MW-74/75. Same comment as above, neither of these issues seem to be noted in table 3.1 for these wells.
10. **Figure 3.8** is a great display for displaying trends.
11. **Section 3.2.** Using a simple table to summarize the data on the charts was concise and complete.
12. **Section 3.2, Inorganics.** We assume since chromium doesn't appear on MW-80 that it was always non-detect (<4.0 ppb).
13. **Section 3.3, table 3-2 and appendix A, page 26 of 32; SW-010.** Same as in comment 9., but for acetone. The one detection of 120 ppb on event 12 is of no concern, yet throws off the vertical scale off so that the appendix A chart is useless.
14. **Table 3.1, MW-81.** 1,1-DCA was detected on event 12 at 0.3J, yet it doesn't appear on the table; it is accounted for on the graph at appendix A (page 24 of 32).
15. **Table 3.1, MW-227 and appendix A page 25 of 32, MW-227.** Same as comment 9. The event 13 data quality review indicated that the PCE in MW-227 was due to blank contamination and should be removed from the chart and footnoted on the table.
16. **Section 4.1.2, Ground Water Sampling Program, VOC's**
 - a. Second Bullet, Second Dash. It appears that VOC's may be flowing into the site. Rising 1,2-DCE will eventually cause rising vinyl chloride. Since the MCL for 1,2-DCE is 70 ppb, levels that wouldn't be a concern could be far above the MCL (2 ppb) or MEG (0.15 ppb) as they decay.
 - b. Third bullet. As stated above, significant VOC's levels aren't required at the NEX station to cause a vinyl chloride problem at site 9. At what level, or to what detection limit if non-detect, have 1,2-DCE, 1,1 DCA and vinyl chloride been detected at the NEX site?
 - c. Fourth Bullet. We do not concur with the conclusion. 3 ppb of 1,2-DCE will eventually decay to vinyl chloride.
 - d. Fifth Bullet. We concur that sporadic results could be expected. However, because it's a natural process with a long half life, we'd expect natural attenuation to occur at a

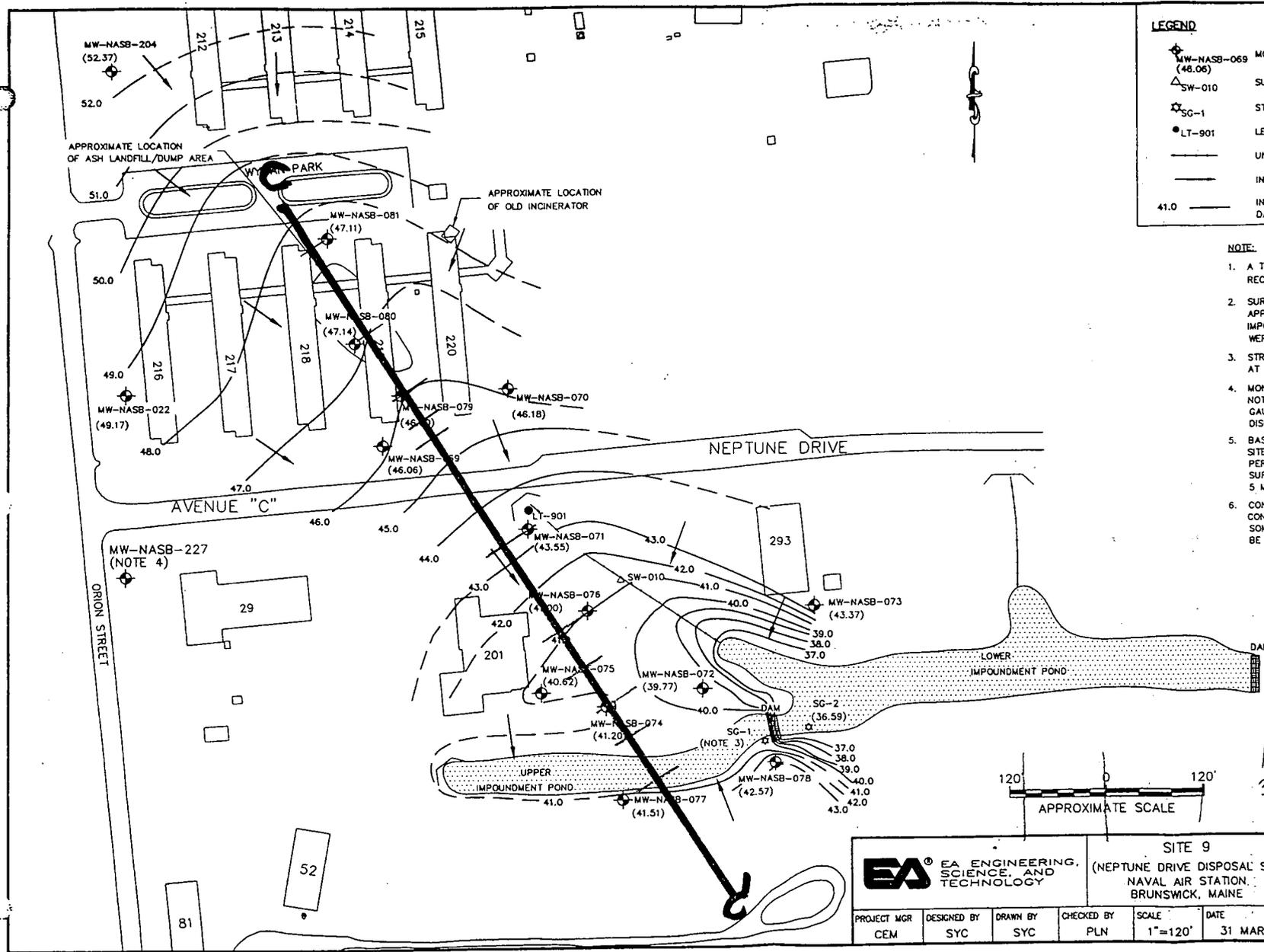
constant, or slowly changing rate. Due to the low concentrations, extreme care must be exercised in sampling and analysis because of the large effect they have on results. A small change in concentration results could make the ratio graph look very different.

17. **Section 4.1.2 Ground Water Sampling Program, Inorganics.** The detection of chromium in MW-79 on event 11 seems suspect in light of non-detect/low levels on other events and in the upgradient well MW-80 (actually in the ash landfill footprint).
18. **Section 4.1.3, Surface Water Sampling Program.** We note the discharge of vinyl chloride at a rate such that it's measurable in the stream at SW-010. This is probably due to groundwater discharge because the seep, LT-901, has been non-detect for vinyl chloride. Because of the relatively high MDL for vinyl chloride and the stable low levels that are usually detected at SW-010, the method 8260 SIM could be used here for more accurate measurement.
19. **4.2 Recommendations.** See general comment 4. and EPA comments to the draft revised LTMP in attachment 2.

LEGEND

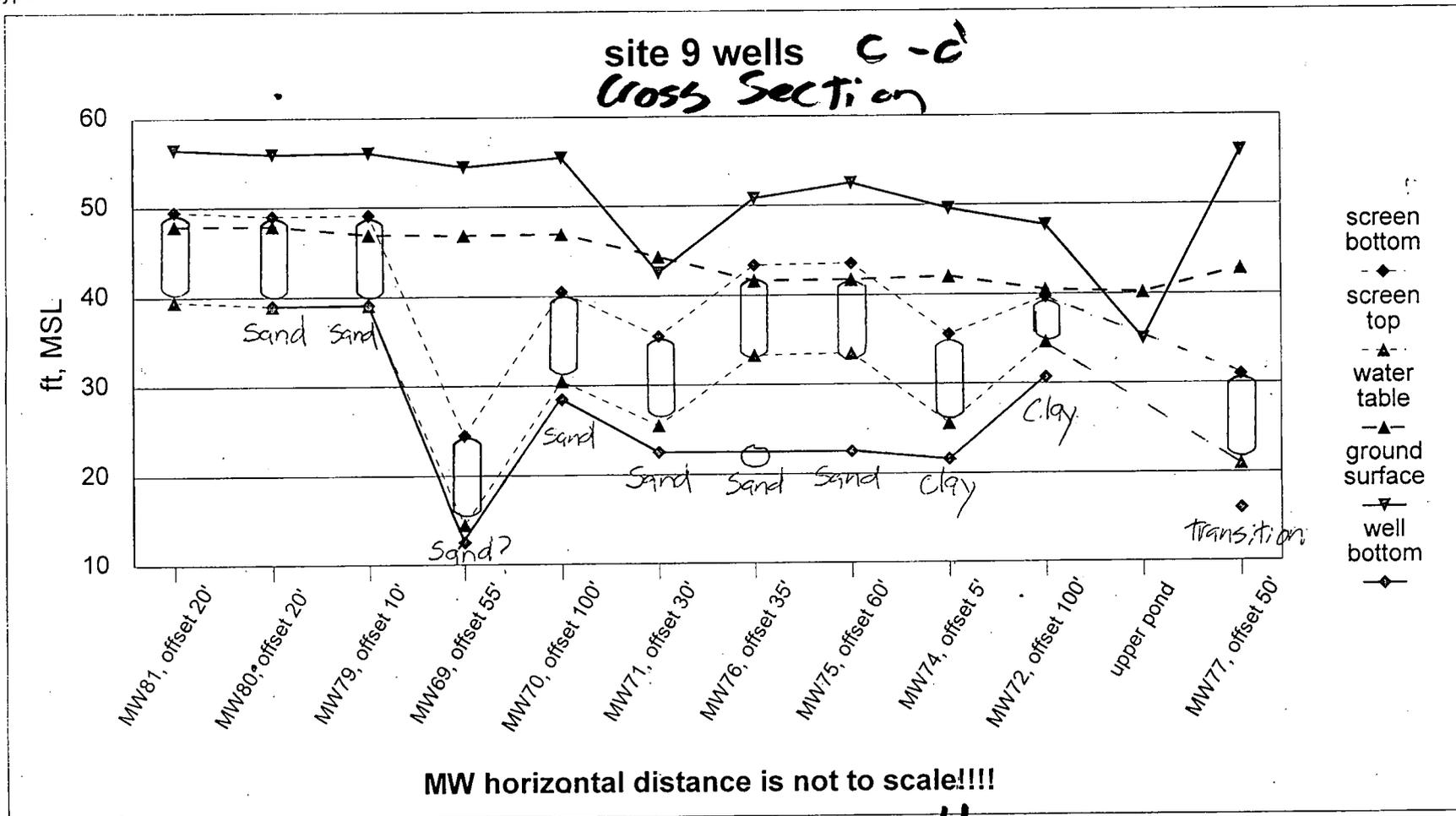
- MW-NASB-069 (46.06) MONITORING WELL (WATER TABLE ELEVATION, FT MSL).
- SW-010 SURFACE WATER SAMPLING LOCATION
- SG-1 STREAM GAUGE STATION LOCATION
- LT-901 LEACHATE SAMPLING STATION
- UNNAMED STREAM PROFILE
- INTERPRETED DIRECTION OF GROUND-WATER FLOW
- INTERPRETED POTENTIOMETRIC SURFACE
DASHED WHERE INFERRED (CONTOUR INTERVAL = 1.0 FT)

- NOTE:**
- A TOTAL OF 0.02 INCHES OF PRECIPITATION WAS RECORDED 1 WEEK BEFORE AND DURING GAUGING EVENT.
 - SURFACE OF UPPER IMPOUNDMENT POND IS APPROXIMATELY 2-4 FT ABOVE LOWER IMPOUNDMENT POND. STREAM GAUGES SG-1 AND SG-2 WERE ADDED DURING SEPTEMBER 1998.
 - STREAM GAUGE STATION SG-1 WAS DRY AT TIME OF GAUGING.
 - MONITORING WELLS AT THE NEX SERVICE STATION WERE NOT GAUGED DURING SEPTEMBER 1998, BUT WERE GAUGED DURING NOVEMBER 1998 BASED ON REVISIONS DISCUSSIONS REGARDING LIMP.
 - BASE MAP DEVELOPED FROM ERM - NEW ENGLAND, INC. SITE PLAN DATED 24 JUNE 1992 AND SURVEYS PERFORMED BY CORNERSTONE PROFESSIONAL LAND SURVEYING, INC., 20 MAY 1994, 19 JULY 1995, AND 5 MAY 1997.
 - CONTOURS REPRESENT EVALUATION OF PROBABLE CONDITIONS BASED ON PRESENTLY AVAILABLE DATA. SOME VARIATION FROM THESE CONDITIONS MUST BE EXPECTED.



MS Barry
 US EPA Region One
 Proposed Cross Section for Analysis.
 All wells within 100' offset except MW-NASB-022/227/73

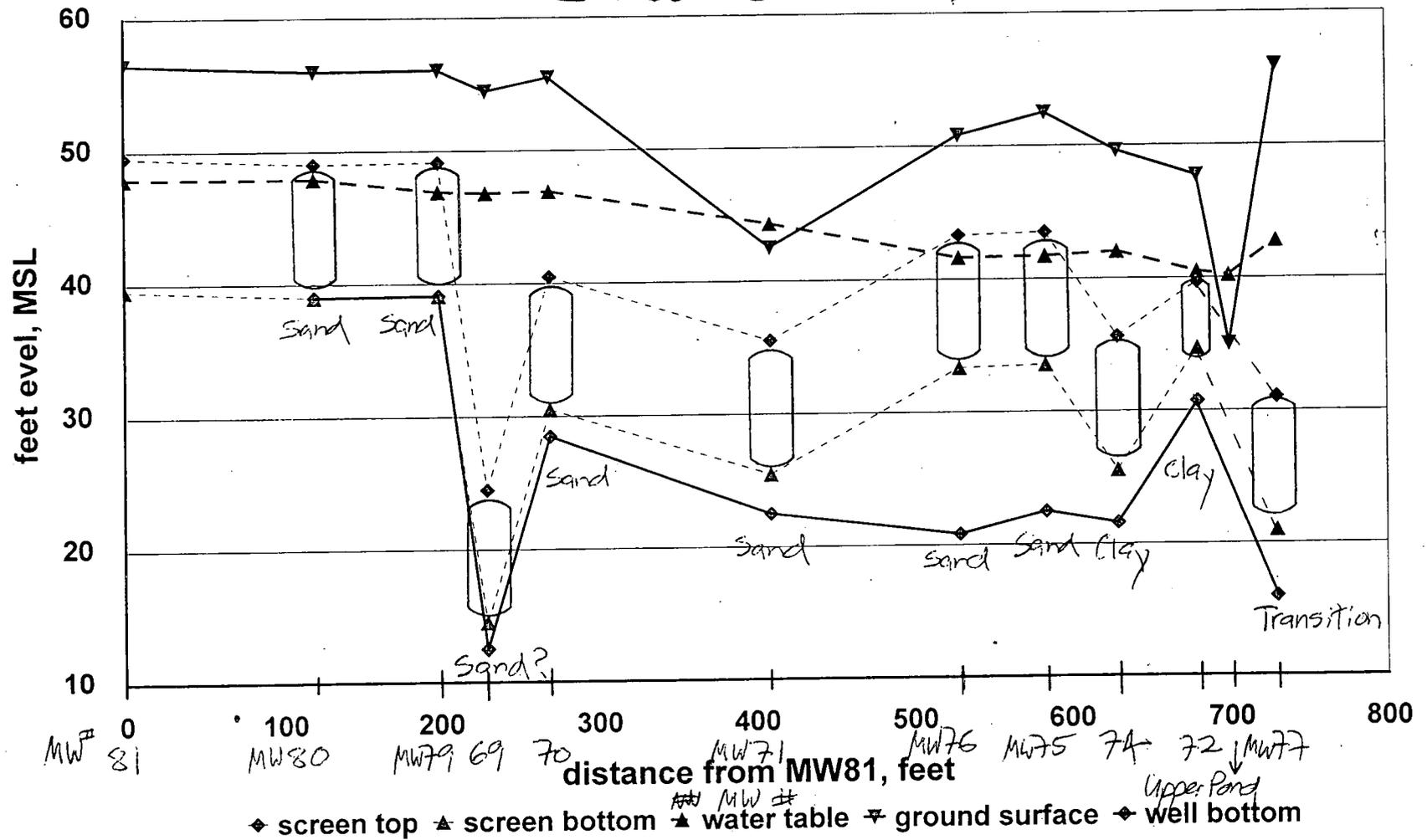
site 9 wells	MW81,	MW80,	MW79,	MW69,	MW70,	MW71,	MW76,	MW75,	MW74,	MW72,	upper p	MW77, offset 50'
distance	0.0	120.0	200.0	230.0	270.0	410.0	530.0	585.0	630.0	680.0	700.0	730.0
screen bottom	49.5	49.0	49.1	24.5	40.5	35.5	43.3	43.5	35.6	39.7		31.0
screen top	39.5	39.0	39.1	14.5	30.5	25.5	33.3	33.5	25.6	34.7		21.0
water table	47.9	47.9	46.9	46.8	46.9	44.3	41.6	41.7	42.0	40.5	40.2	42.8
ground surface	56.5	56.0	56.1	54.5	55.5	42.5	50.8	52.5	49.6	47.7	35.0	56.0
well bottom		39.0	39.1	12.5	28.5	22.5	20.8	22.5	21.6	30.7		16
type		sand	clay	clay		transition						



*Note: Screen Top & Bottom are reversed!!
(Legends only)*

site 9 wells C-C'

Cross Section



All MW are offset 5'-100', see other chart.

Attachment 2
EPA Comments to Draft Revised Long Term monitoring Plan
Site 9, Neptune Drive Disposal Site
Naval Air Station, Brunswick, Maine

The draft revised Long Term Monitoring Plan (LTMP) is concise and comprehensive. The EPA concurs in general with the Navy's proposed revision; we have the following specific comments and concerns.

1. VOC sampling Monitoring well MW-081 should be retained in the LTMP because 1,1-DCE was detected in it the last time it was sampled, on event 12 in July 1998. All VOC's which will later decay to vinyl chloride at levels greater than the MEG should be monitored to assess natural attenuation performance as accurately as possible. This would affect the LTMP in section 3.1.1 and on tables 1-1 and 3-1.
2. We recommend adding the approximate location of the building 201 septic system to figure 1-2, just as are the ash landfill and incinerator locations. The septic system location adds information to the understanding of VOC's at site 9 as it was a probable source of VOC's in the past and appears to have been directly upgradient of MW-76.
3. Analytical Methods. Several modified methods to reach near the MEG of 0.15 ppb were discussed by the RAB and were identified as acceptable to EPA in our letter of May 6, 1999. These methods and the reason for including them should be identified in the LTMP in section 1.4.5 and 3.3 and in the QAPP on tables 5-1 and 5-2.
4. Low flow purging rate; Appendix A, page A-3. Because of the low VOC concentrations at site 9 the purge rate range of 0.2-0.5 liters/minute should be strictly observed.
5. Reporting Limits and MDL for Vinyl Chloride; QAPP Section 5.5, page 5-3 and table 5-2. VOC detections, especially those for vinyl chloride, 1,2-DCE and 1,1-DCA between the MDL and reporting limit should be reported with a J designator. Is it also possible to report non-detects of vinyl chloride at less than the MDL with a J designator rather than less than the reporting limit. This would minimize the amount of modified 8260 SIM analyses required.