

**Response**—The second sentence of the first paragraph of Section 1.1 has been revised as follows:

*The following operable units have ongoing remedial actions ~~implemented as part of the writing of this five-year review.~~ as of the date of the five-year review documented in this report.*

- (b) (F) The statement of when the next five-year review is required is usually its own section, such as Section 1.2, Next Review.

**Response**—The following text has been added as Section 1.2:

### ***1.2 Next Five-Year Review***

*The next five-year review shall be completed by 6 December 2004.*

## **10. Table 1, Specifics to Comment No. 2b**

- (a) (ED) Recommend the “Active” in the title be deleted for brevity and to prevent confusion between CERCLA, RCRA, and BRAC programs.

**Response**—Per an e-mail from EPA dated 13 March 2000, Item 3, “active” will remain on Table 1.

- (b) (F) Sites 7 and 12 should be split of by themselves in a table called “Sites in Progress Pending RODs.”

**Response**—Please see Response to General Comment No. 2b.

- (c) (ED) For Site 7, change the last sentence to “ROD scheduled for ....”

**Response**—The text has been revised as suggested.

- (d) (F) Sites 14, 15, 16, and 18 should be in a table called “Sites Pending Closure Based on a Site Inspection Leading to No Further Action.”

**Response**—Please see Response to General Comment No. 2b.

- (e) (F) Building 95 should be in a separate table called “sites under investigation and to be determined.”.

**Response**—Please see Response to General Comment No. 2b.

11. **Table 2, Specifics to Comment 2c**

- (a) (F) Alter the title to “Closed Sites.....” to be clear that action at these sites is complete.

**Response**—Please see Response to General Comment No. 2b.

- (b) (F) Sites 5, 6, 7 should be in a table called “Sites Closed Based on a ROD with Removal Action Completed”

**Response**—Based on investigations in 1999, it was determined that there may be a need for additional monitoring or source removal at Site 7. Therefore, Site 7 will remain on Table 1 (Sites Not Included in First Five-Year Review.) Text has been added to Table 1, in the “Site Status” column as follows:

*No further action ROD anticipated, pending successful removal action.*

- (c) (F) Sites 5 and 6 should have some reference to a successful removal action as does Site 8.

**Response**—The clarification to the sentence will be made to address the success of the removal action. Sites 5 and 6 descriptions, “successful” will be added prior to “removed” in each of the appropriate columns for the sites.

- (d) (F) Site 10 should have more information such as citing that it isn’t part of the NAS Brunswick NPL site because it was deferred to the Defense Logistics Agency and the State program due to petroleum exclusion to CERCLA (if all true).

**Response**—See Response to MEDEP Comment No. 6b.

**SPECIFIC COMMENTS – SECTION 2, SITES 1 AND 3**

12. **Section 2.1, Significant Events**

- (a) (F) Add the 1995 RA closure report and the 1999 Base IC instruction (NASBINST 5090.1A) as these are key remedy documents.

**Response**—The documents have been added to Section 2.1, Significant Events, as requested.

- (b) (ED) Erosion Repairs Bullet. Add that the corrective measure were completed in 1999.

**Response**—The last sentence of the seventh bullet of Section 2.1, Significant Events, has been revised as follows:

*Corrective measures to correct the landfill cap erosion were completed in 1999.*

13. **Section 2.3, Areas of Non-Compliance**

- (a) (F) **Ground Water**—This paragraph should mention the general VOC trends observed and that arsenic is also still above the MCL in MW-318, but has a clear downward trend and, thus, the objectives of the ROD regards to ground-water concentrations are in the process of being met.

**Response**—The following text has been added to Section 2.3 between the 2nd and 3rd paragraphs:

*Monitoring wells located outside of the Sites 1 and 3 landfill have detected inorganic elements (arsenic, manganese, and chromium) in the ground water exceeding the Maximum Contaminant Level (MCL) and/or the Maximum Exposure Guideline (MEG). However, most of the detected concentrations of these inorganics are exhibiting a general decreasing trend.*

*VOCs have been detected at increasing concentrations in the ground water at monitoring wells within the landfill. No VOCs have been detected at concentrations above MCLs or MEGs downgradient and outside of the landfill, except at SEEP-04.*

- (b) (F) **Seeps**—The trend of iron and zinc should be briefly mentioned and by what basis (maximum sample, average, etc). For example, the maximum zinc at SW-1 is trending downward but was above the ambient water quality criteria of Monitoring Events 1 through 6 and 11, thus, the remedy is effective in returning levels to meet the ambient water quality criteria.

**Response**—The following text has been added as the fifth paragraph on Page 2-3:

*Iron and zinc have been monitored in seep samples as part of the Long-Term Monitoring Program. The ROD reported maximums (maximum detected concentration) of 2,510,000 µg/kg and 2,770 µg/kg for iron and zinc, respectively. Since the monitoring began, iron has only exceeded these maximums in Monitoring Events 8, 10, and 11. Exceedance of the maximum for zinc has not been reported in any monitoring event report to date.*

- (c) (RR) **ICs**—Ground-water ICs are not documented. (See Comment No. 1b.)

**Response**—Please see Response to General Comment Nos. 1a and 1b.

14. (RR) Section 2.4 Recommendations. We believe ground-water ICs should be added to NASBINST 5090.1A. (See Comment No. 1b.)

**Response**—Please see Response to General Comment No. 1b. The following text has been added to Section 2.4, Recommendations:

*An institutional control to restrict ground-water use will be added in the next revision of Operating Instruction NASBINST 5090.1A, "Restriction on Excavation Activities." The*

*next revision of NASBINST 5090.1A is scheduled for September 2000. Ground-water institutional controls are not documented in the ROD, and need to be added to the ROD.*

## **SPECIFIC COMMENTS – SECTION 3, SITE 2**

15. (F) **Section 3.1, Significant Events**—Insert “RA start” after “1999” to the debris removal bullet and add the 1999 Base IC instruction as these are key parts of the RA at Site 2.

**Response**—Text will be revised as requested.

### 16. **Section 3.1**

- (a) (F) In the last paragraph, note that lead was above the MCL in a monitoring well in the landfill prior to the explanation on why this is not an issue.

**Response**—The following text has been added to Section 3.1:

*Based on the available sample results, environmental contamination at Site 2 was evident in surface waters, stream sediments, ground-water seeps, and surface soils associated with seep locations. During the Remedial Investigation in 1990 (E.C. Jordan 1991), lead was detected in the ground-water samples at concentrations ranging from 80 to 180 µg/L that exceeded the Federal MCL of 5 µg/L. The lead detection in site ground water is consistent with historic use of the site. Ash would have been produced by incineration (open burning) at the landfill, and ash typically contains inorganic constituents that would not be destroyed by burning. The shallow ground water in this area is not used for a potable supply.*

- (b) (ED) In the first paragraph, recommend calling the landfill “closed” vice “inactive” and state that it was closed by capping with soil and pine trees planted.

**Response**—The word “inactive” will be replaced with “closed” in the first sentence of the first paragraph of Section 3.1. The following text has been added at the end of the second paragraph of Section 3.1:

*The Site 2 Landfill was closed by capping the area with soil and planting pine trees on top of the cap.*

17. (F) **Section 3.2**—Though there are no objectives, the RA components documented in the ROD should be mentioned as at the other sites evaluated in the review, i.e., long-term monitoring, debris removal, ICs, and five-year reviews.

**Response**—Remedial action components will be summarized in this section of the Five-Year Review.

18. (RR) **Section 3.3**—Non-compliance may result if monitoring indicates that lead is still above the MCL and ground-water ICs are not documented in the base excavation instruction. (Refer to General Comment No. 1b.)

**Response**—Please see Response to General Comment No. 1b. The following text has been added to Section 3.3:

*Although no remedial objectives were established for Site 2, the ROD indicated a long-term monitoring plan would be implemented to confirm the protectiveness of the selected remedy. Data collected during the monitoring program will be evaluated as part of the five-year review cycle.*

*Long-term monitoring has not commenced since the plan is currently being implemented. Monitoring is expected to start in 2000.*

*The operable unit remains within the restricted area of the base and, as such, the institutional controls remain effective. However, institutional controls for restriction of use and contact with ground water will be included in the next revision of Operating Instruction NASBINST 5090.1A, "Restriction on Excavation Activities." The next revision of NASBINST 5090.1A is scheduled for September 2000.*

19. (F) **Section 3.4, First Line**—Recommend substituting “No additional...” for “No further...”. No further action conflicts with the long-term monitoring planned and ICs established.

**Response**—The text has been revised as suggested.

20. (F) **Section 3.5**—The RA at Site 2 is in the process of being successfully implemented. EPA cannot close the RA until the LTMP is final and the new monitoring well installed. (See General Comment No. 3.)

**Response**—Please see Response to EPA Comment No. 20. The text has been revised to indicate that no monitoring has been undertaken since 1990. Therefore, it cannot be determined if the remedial action has been successful.

#### **SPECIFIC COMMENTS – SECTION 4, SITE 9**

21. (F) **Section 4.1, Significant Events**—Recommend adding the 1999 Base IC instruction as this is a key element of the remedy.

**Response**—The 1999 Base institutional control instruction has been added to the list of significant events for Site 9.

22. (F) **Section 4.2 Remedial Objectives**—Denoting the expected time frame of up to 20 years as stated in the ROD would help put expected results in perspective in the bullet on natural attenuation.

**Response**—The following text has been added to the sentence prior to the bullet regarding natural attenuation:

*To accomplish these objectives “within a 20-year time period,” the...*

23. **Section 4.3 Areas of Non-Compliance**

- (a) (NR) **Natural Attenuation**—Data from the two rounds in 1999 should be included if at all possible. It looks like it will bear out the trends from 1995 to 1998. In any case, this was a concise analysis and we concur that natural attenuation is occurring due to the high level of DCE.
- (b) (RR) **ICs**—Ground-water ICs are not documented. (See Comment No. 1b.) We appreciate the expeditious implementation NASBINST 5090.1A long before required by the ROD and that it was effectively used when EPA and MEDEP were consulted during the recent BEQ project. (See General Comment No. 1b.)

**Response**—Please see Response to General Comment No. 1b. The following text has been added to Section 4.3.3:

*Institutional controls at Site 9 consist of ground-water and land use restrictions that apply to the entire Site 9 area east of Orion Road and Avenue F, east of MW-NASB-073, and south of Building 52. However, institutional controls to prohibit ground-water use and physical contact with ground water must be incorporated into the next revision of Operating Instruction NASBINST 5090.1A, "Restriction on Excavation Activities." The next revision of NASBINST 5090.1A is scheduled for September 2000. This program was shown to be effective by NAS Brunswick's recent request for concurrence with the proposed Bachelor Enlisted Quarters Military Construction Project.*

24. (F) **Section 4.5, Third Line**—Request "to date" be inserted after "has been successfully implemented" (See Comment No. 4a.)

**Response**—The text has been revised as suggested.

**SPECIFIC COMMENTS – SECTION 5, SITES 4, 11, AND 13, AND THE EASTERN PLUME**

25. (ED) **Section 5.1, Ground-Water Operable Unit**—Request insert "Monitoring data to date indicates" in the beginning of the last sentence.

**Response**—The third sentence, first paragraph, of Section 5.1.2 has been revised as follows:

*The presently mapped southern boundary of the Eastern Plume is located near New Gurnet Road (Figure 9).*

26. (F) **Section 5.1, Significant Events**—Request adding RA complete to the Final ROD bullet; remedial action for final ROD was the same as Interim ROD regarding ground water.

**Response**—The remedial action will be added to the Final ROD bullet.

27. **Section 5.2, Discussion of Remedial Objectives**

- (a) (ED) Mention of the expected time frame of 17-72 years to meet remedial objectives noted in the ROD will help put results in context of expectations.

**Response**—The following text was added to the last sentence in Section 5.2 after the 4th bullet:

*To accomplish these objectives within a 17- to 72-year timeframe, the...*

- (b) (ED) **Ground-Water Extraction and Treatment**—Installation of EW-2A was a significant improvement and worthy of mention.

**Response**—The following sentence has been added as the second to last sentence of the Ground-Water Extraction and Treatment paragraph of Section 5.2:

*An additional extraction well (EW-2A) was added to the extraction system in July 1998.*

28. **Section 5.3, Areas of Non-Compliance**

- (a) (ED) **Second Line**—“Are” should be “Area.”

**Response**—“Are” has been replaced with “Area.”

- (b) Section on ..risk associated with ingestion of contaminated ground water...Lack of ground-water ICs in the ROD is an area of non-compliance. (See Comment No. 1a.)

**Response**—Please see Response to General Comment No. 1b. The following text has been added to Section 5.3:

***Institutional Controls***

*The operable unit remains within the restricted area of the base and, as such, the institutional controls are effective. However, ground-water institutional controls are not documented in the ROD and need to be added to the ROD. In addition, institutional controls for restriction of use and contact with ground water need to be included in the next revision of Operating Instruction NASBINST 5090.1A, “Restriction on Excavation Activities.” The next revision of NASBINST 5090.1A is scheduled for September 2000.*

29. **Section 5.4, Recommendations**

- (a) Ground-water ICs need to be added as a component of the ROD and documented in NASBINST 5090.1A. (See General Comment Nos. 1a and 1b.)

**Response**—Please see Response to General Comment Nos. 1b and 29b below.

- (b) (ED) Adding ground-water ICs would be an additional action and thus require redrafting this sentence.

**Response**—Please see Response to General Comment No. 1b. The following text has been added to the second bullet on Page 5-6 in Section 5.4:

- *Add ground-water institutional controls to the ROD and amend Operating Instruction NASBINST 5090.1A “Restriction on Excavation Activities,” to add a restriction on use and physical contact with contaminated ground water.*

30. **Section 5.5, Statement of Protectiveness**

- (a) (RR) Addition of ground-water ICs to the ROD will make the remedy fully protective. (See General Comment Nos. 1a and 1b.)

**Response**—Please see Response to General Comment No. 1b. The following text has been added to Section 5.5:

*The purpose of the five-year review is to ensure that the selected remedy remains protective of human health and the environment and is functioning as designed. The ground-water extraction and treatment system and the ground-water monitoring program have been only partially successful as implemented; but given the current data, these remedies appear to be protective of human health and the environment with the existing institutional controls as exercised by the Navy (restricted access area surrounded by fencing). The addition of institutional controls in the ROD to restrict ground-water use will better ensure the protection of the selected remedy in the future and formalize the controls implemented by NASBINST 5090.1A. Long-term operation and maintenance of the extraction and treatment system is ongoing in addition to the long-term monitoring program.*

- (b) (ED) **Third line**—Insert “implemented” after “successfully.”

**Response**—The text has been revised as requested.

**RESPONSE TO COMMENTS FROM  
MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION  
ON THE FIVE-YEAR REVIEW  
NAVAL AIR STATION, BRUNSWICK, MAINE**

**COMMENTOR:** Claudia Sait

**DATED:** 3 February 2000

The Maine Department of Environmental Protection (MEDEP or Department) has reviewed the draft report entitled *Five-Year Review, Naval Air Station, Brunswick, Maine*, dated 5 January 2000, prepared by EA Engineering, Science, and Technology. Based on that review, the Department has the following comments and issues.

Each of our comments is followed with a code that indicates whether a response is required (RR), no response is required (NR), editorial correction needed (ED); or meeting discussion requested (MTG). No response is required for editorial corrections unless the Navy disagrees with the correction.

**GENERAL COMMENTS:**

1. Concerning the assessment of “areas of noncompliance,” the task is to report if the remedial action fails to conform to remedial objectives. This language is found in EPA OSWER Directive 9355.7-02A (our copy is stamped July 1994). In OSWER’s August 1996 “Guidance for Evaluation of Federal Agency Demonstrations that Remedial Actions are Operating Properly and Successfully Under CERCLA Section 120(h)(3),” the phrase “fails to conform to remedial objectives” is apparently replaced by “operating properly and successfully.” The Department would like to have the newer phrase used in this five-year review, as it is a lot more meaningful yardstick. Moreover, although EPA has used the phrase “area of noncompliance,” the word “area” was defined as “any substantial aspect.” If the Navy keeps this older terminology, “area” must be defined as an aspect, so as not to confuse it as a locality. (RR)

**Response**—The newer phrase “operating properly and successfully” will not replace “fails to conform to remedial objectives” for this five-year review. The use of “area” with regards to an aspect and not a locality will be defined where appropriate within the five-year review. These are Base Realignment and Closure terms.

2. According to EPA’s “Structure and Components of Five-Year Reviews,” OSWER Directive 9355.7-02, dated 23 May 1991, there is a public participation component to the five-year review. How is the Navy proposing to handle the public participation portion of the five-year review? (RR)

**Response**—A notice will be published in a local newspaper and a presentation of the Final First Five-Year Review will be made at the April Restoration Advisory Board meeting. A 30-day public comment period will follow the presentation of the First Final Five-Year Review Report. The response to comments have been provided as an appendix to the Final Five-Year Review Report.

3. It has come to the Department's attention during the review process that the Record of Decision for a Remedial Action at Sites 1 and 3 (1992) did not include provision for restricting excavation. Similarly, there is no restriction preventing the contact with and extraction of ground water within the Eastern Plume in the "Sites 4, 11, and 13 No Further Action and a Remedial Action for the Eastern Plume" (1998). Without these restrictions, the question of protectiveness is called into question. These oversights must be corrected. (RR)

**Response**—The restrictions of excavations at these sites will be made during the next revision of Operating Instruction NASBINST 5090.1A, "Restriction on Excavation Activities." The next revision of NASBINST 5090.1A is scheduled for September 2000. The revised excavation text will be forwarded to EPA/MEDEP prior to finalizing NASBINT 5090.1A to receive EPA/MEDEP comments on the revised text. The restriction will be explained in an Explanation of Significant Differences.

4. The Five-Year Review should identify the actual Institutional Control document wherever institutional controls are cited as part of the remedy.

**Response**—Where appropriate, the institutional control document will be cited and referenced in the Five-Year Review Report.

## SPECIFIC COMMENTS

### Introduction

#### 5. *Table 1, Page 2, Active Sites Not Included in the Five-Year Review*

- (a) While Building 95 was not included in the Federal Facilities Agreement, the Navy committed to including it in the five-year reviews. However it is MEDEP's understanding that it is not included in this five-year review because the agencies have not agreed upon the final remedial action objectives for this site. Since this is a CERCLA removal action, please identify what upcoming document will include the final remedial objectives. (RR)

**Response**—This site was designated Site 17 for tracking purposes only, and is not part of the National Priorities List. There is no final agreed remedial action on this area. Although it is not subject to CERCLA required five-year reviews, the Navy agrees to review it under the same process. A draft final Long-Term Monitoring Plan (LTMP) is being completed for Building 95 and will be issued by the end of March 2000, which will include the remedial objectives for the site. A Consensus Statement and institutional controls are planned for completion by December 2002.

- (b) One of the issues to be resolved for Building 95 is the matter of institutional controls. If the site is not appropriate for unrestricted use, then institutional controls will be required and this site must be included in the five-year reviews to ensure that the institutional controls remain in effect. (NR)

#### 6. *Table 2, Page 3, Inactive Sites Not Included in Five-Year Reviews*

- (a) The Navy should provide more information as to why these inactive sites are not included in the five-year review. More information in the third column would also allay any concern on the part of the public regarding these sites. (RR)

Inclusion of the following information outlining would be helpful:

- Sites 5, 6, and 8 were landfills transported to Landfills 1 and 3. Because contaminated soils and non-hazardous debris were removed from these sites, the Records of Decision stated that no long-term controls were necessary and that the five-year review would not apply.
- Confirmation sampling cited in the Remedial Action Final Report of Sites 1, 3, 5, 6, and 8 (August 1996) indicated that the response objectives of the Records of Decision had been achieved.

**Response**—A fourth column (Site Status) has been added to the tables (Tables 1 and 2) to summarize site activities. The recommended text above will be summarized and added to the 3<sup>rd</sup> column of Table 2 as follows:

*Site 5 - Asbestos was successfully removed and placed at Sites 1 and 3 Landfill. Record of Decision signed August 1993 (U.S. Department of Navy 1993a) indicates five-year reviews would not be required.*

*Site 6 - Rubble and asbestos were successfully removed and placed at Sites 1 and 3 Landfill. Record of Decision signed August 1993 (U.S. Department of the Navy 1993a) indicates five-year reviews would not be required.*

*Site 8 - Soil was removed and placed at Sites 1 and 3 Landfill. The Record of Decision (U.S. Department of the Navy 1993b) indicated monitoring would be required if soil was not satisfactorily removed. No monitoring was required subsequent to soil removal (OHM 1996). Record of Decision signed in 1993.*

- (b) The Harpswell Fuel Depot is identified in the Initial Assessment Study as Site 10; this title follows through into the Federal Facility Agreement, therefore, for consistency, please use the same name for the facility. Also to close this loop, please provide addition information as to the resolution of this site. For example, it is located in Harpswell, Maine and remediation is being handled by the Defense Energy Supply Center. If it was not included on the National Priorities List site, this should also be noted. (RR)

**Response**—The name of Site 10 on Table 2 has been revised as requested. The following text has been added to column 3 of Site 10:

*Not part of Naval Air Station, Brunswick. Site is located in Harpswell, Maine, and remediation was completed by the Defense Energy Supply Center. Site 10 (Harpswell Fuel Depot) was not included on the National Priorities List due to petroleum exclusion.*

### **Sites 1 and 3**

7. **Section 2.1, Page 1, Site Description, 1<sup>st</sup> Sentence**—Sites 1 and 3 would be more aptly identified as hazardous waste landfills. Please correct. (ED)

**Response**—The first sentence of Section 2.1 has been revised as follows:

*Sites 1 and 3 are closed hazardous waste landfills within the same operable...*

8. **Section 2.1, Page 1, Site Description, Last Bullet**—The correct title of the Long-Term Monitoring Plan is Draft Final Long-Term Monitoring Plan. (ED)

**Response**—The Long-Term Monitoring Plan was issued Final in February 2000 and the title has been corrected as suggested.

9. **Section 2.2, Page 2, Discussion of Remedial Objectives, 2<sup>nd</sup> Bullet**—Does the Navy mean “Reduce the concentrations of metals (iron and zinc) discharging ~~the~~ to Mere Brook? Please correct. (ED)

**Response**—The fourth bullet has been revised as suggested.

10. **Section 2.2, Page 2, Discussion of Remedial Objectives, 4<sup>th</sup> Bullet**—“The cap extends over the slurry wall to prevent rainfall within the slurry wall limits.”

MEDEP recommends the following language: “The cap extends over the slurry wall to prevent *the infiltration of* rainfall within the slurry wall limits.” (ED)

**Response**—The second bullet of the second set of bullets has been revised as follow:

- *A low permeability cap was placed over the landfill area and slurry wall to reduce the amount of rainfall infiltration, thereby reducing leachate production.*

11. **Section 2.2, Page 2, Discussion of Remedial Objectives, 5<sup>th</sup> Bullet**—This bullet is poorly written. Please consider: Capturing this contaminated water ~~will~~ prevented it from discharging to Mere Brook. These extraction wells facilitated the collection of the ground water remaining ~~beneath the landfill cap following installation of the slurry wall within the limits of the slurry wall after the construction of the landfill cap~~ and reduced the time required to lower ground-water levels below the waste. (ED)

**Response**—The third bullet of the second set of bullets has been revised as suggested.

12. **Section 2.2, Page 2, Discussion of Remedial Objectives, 6<sup>th</sup> Bullet**—The way this bullet is written indicates that the institutional controls and land use restrictions have not been implemented. Institutional controls do not appear to have been a component of this Record of Decision. Please clarify. While the Naval Air Station includes Sites 1 and 3 on its base instructions 5090.1A, excavation within the landfills is not prohibited by the Record of Decision. This oversight must be corrected. (RR)

**Response**—The institutional controls will be added to the ROD.

13. **Section 2.3, Page 3, Areas of Noncompliance, Paragraph 2**—“Since the monitoring begin ...” This should read “Since the monitoring *began*... (ED)

**Response**—The sentence in Paragraph 5 on Page 3 has been revised as suggested.

14. **Section 2.3, Page 3, Areas of Noncompliance, Page 3, Top of Page**—“The presence of these remedial structures has resulted in an area of lower head downgradient of Sites 1 and 3 (EA 1999b).”

What is actually needed is just the opposite: higher head that surrounds the site creating inward gradients preventing the escape of contaminated ground water. The area of lower head has always been naturally present because it is downgradient. The shallow and deep

potentiometric contours downgradient of the landfill do not show that the landfill ground water is captured. The Department has commented a number of times in monitoring event reviews that contouring in this area is not properly drawn. When properly drawn, landfill ground water is not captured, as indicated by the elevated arsenic concentrations that persist in monitoring well MW-218.

Record of Decision objectives (Bullets 3 and 4 in the five-year review) are not being met, because leachate seeps and ground-water concentrations of metals and vinyl chloride have not been reduced or minimized. Arsenic (seeps and MW-218) and vinyl chloride (SEEP-04 and MW-217B) concentrations are well above Maximum Exposure Guidelines (MEGs)/Maximum Contaminant Levels (MCLs), and would present a potential human health problem if the area were to become unrestricted to the public. The arsenic and zinc in SEEP-05 water rose to 1 and 7 ppm, respectively (see 1998 Annual Report). Therefore, it must be noted in the five-year review that downgradient seeps still have arsenic, zinc, and vinyl chloride which have not been reduced and are not meeting the objectives of the remedy. (ED)

**Response**—The following text has been added as the second paragraph on Page 2-3:

*VOCs have been detected at increasing concentrations in the ground water at monitoring wells within the landfill. No VOCs have been detected at concentrations above MCLs or MEGs downgradient and outside the landfill, except at SEEP-04.*

15. **Section 2.4, Page 3, Recommendations, Paragraph 3**—“The Draft Final Long-Term Monitoring Plan should be finalized.”

The Navy must commit to finalizing the Long-Term Monitoring Plan. The Navy has received a number on concessions, such as the cessation of pump if the criteria for resumption of pumping was provided. This criteria has never been finalized although the pumping ceased in November 1998. The Navy must commit to a date to finalize the Long-Term Monitoring Plan. (RR)

**Response**—The Long-Term Monitoring Plan was finalized and distributed on 29 February 2000. The last bullet of Section 2.1 Significant Events has been revised as follows:

- *2000 Final Long-Term Monitoring Plan (EA 2000a).*

The third paragraph of Section 2.4 has been removed.

16. **Section 2.5, Page 3, Statement of Protectiveness**—The remedy is protective of human health solely because of the restricted access. The remedy is only partially successful, because landfill-contaminated ground water above MEGs/MCLs is seeping into Mere Brook, and would pose a human health threat if the area were accessible. This paragraph must be revised. (RR)

**Response**—Section 2.5 has been revised as follows:

*The purpose of the five-year review is to ensure that the selected remedy remains protective of human health and the environment and is functioning as designed. The source control remedy selected for Sites 1 and 3 Operable Unit has been successfully implemented, and remains protective of human health and the environment as long as the area maintains restricted access. If the area were to become freely accessible, institutional controls would have to be imposed on the site. Long-term operation and maintenance activities are ongoing. Operational activities also include ground-water, surface water, sediment, and landfill gas sampling.*

#### **Site 2 (Orion Street Landfill-South)**

17. **Section 3.1, Page 2, Site Description, 1<sup>st</sup> Sentence**—Please identify Site 2 Orion Street Landfill as an inactive hazardous waste landfill. (ED)

**Response**—The text has been revised to indicate that Site 2 Orion Street Landfill is a closed hazardous waste landfill.

*Site 2 Orion Street Landfill is a closed hazardous waste landfill located south...*

18. **Section 3.4, Page 2, Areas of Non-Compliance, 2<sup>nd</sup> Paragraph**—Please indicate when the Long-Term Monitoring Plan will be finalized. (ED)

**Response**—The last bullet of Section 3.1, Significant Events, has been revised to indicate the Long-Term Monitoring Plan has been finalized as follows:

- *2000 Final Long-Term Monitoring Plan (EA 2000c).*

The fourth paragraph of Section 3.4 has been removed.

19. **Section 3.4, Page 2, Recommendations**—Another action item that the Navy has agreed to do is install an additional monitoring well as part of the Long-Term Monitoring Program. Please add this to the second sentence. Also, state that metallic surface debris was removed from the site in 1999. (ED)

**Response**—The installation of an additional monitoring well was previously agreed to by all interested parties and removal of surface debris has already occurred. Therefore, it is not necessary to add these as action items for recommendations, as they are already discussed in the Final Long-Term Monitoring Plan (EA 2000c), which has been referenced.

20. **Section 3.5, Page 2, Statement of Protectiveness**—This statement is premature because environmental monitoring has not been undertaken since 1990. It is not currently determinable that the Minimal Action remedy is successful, and any statement to that effect must be deleted. (ED)

**Response**—The second and third sentences of Section 3.5, Statement of Protectiveness, have been revised as follows:

*Environmental monitoring has not been performed since 1990. A determination for success of Minimal Actions cannot be made at this time because the activities necessary for implementation of the Minimal Action Alternative have not been completed.*

#### Site 9 (Neptune Drive Disposal Area)

21. **Section 4.1, Page 1, Significant Events**—Please add the year that long-term monitoring was initiated. (ED)

**Response**—The following text has been added as the second bullet of Section 4.1.1: Significant Events:

- *1995 Long-Term Monitoring initiated.*

22. **Section 4.2, Page 2, Discussion of Remedial Objectives, 1<sup>st</sup> Bullet**—The remedial objectives in the Record of Decision, Bullet 1 (Page 2-24) does not specify vinyl chloride, therefore, please remove the reference to vinyl chloride from this sentence. (ED)

**Response**—The reference to vinyl chloride in the first bullet of Section 4.1 has been removed as suggested and replaced with contaminant.

23. **Section 4.2, Page 2, Discussion of Remedial Objectives, Bullet 4**—Under long-term monitoring, a stated objective component is to “assess whether contamination is migrating offsite.”

This task is only partially addressed by the Long-Term Monitoring Program. Only one current monitoring well (MW-NASB-77) is located at or beyond the site boundary. This well may be retained for a limited time in order to demonstrate, through re-instituting a very low level sensitivity analytical method, that the August 1996 detection of vinyl chloride at the MEG concentration ( $0.15\mu\text{g/L}$ ) is not re-occurring.

Prior to flooding of the small drainage demarcating the site boundary, wells MW-NASB-077 and MW-NASB-078 located across the drainage from Site 9 were considered downgradient of the site. It appears now that detention ponds have deflected the downgradient pathway near the ponds eastward. Restoration Advisory Board members generally agree that the detention ponds should behave as a hydraulic barrier and are the major receptors of the shallow contaminated ground water. Therefore, the current thinking is that contamination can not migrate offsite, unless it does so in a very diluted surface water environment. As a consequence, the importance of offsite wells in the Long-Term Monitoring Program has been minimized. The single surface water monitoring station (SW-010) is upstream on the north branch from where the bulk of volatile organic compound-contaminated ground water would enter the ponds and, therefore, mostly monitors for contaminants from the ash landfill.

It should clearly state in this five-year review document that monitoring to detect offsite migration of vinyl chloride is very limited, and a new interpretation that virtually all shallow ground water discharges into the ponds has alleviated this concern. However, monitoring does address any offsite contaminant migration from the ash landfill. (RR)

**Response**—There are two wells located offsite (MW-NASB-077 and MW-NASB-078). Currently, only MW-NASB-077 is being sampled during monitoring events. However, both monitoring wells have had no detection of VOCs and that was why MW-NASB-078 was dropped from the monitoring program. Current monitoring wells in the LTMP are sufficient to evaluate if offsite migration is occurring.

24. **Section 4.2, Page 2, Discussion of Remedial Objectives, 6<sup>th</sup> Bullet**—Please recheck the first sentence. MEDEP recommends: Institutional controls will be used to *prevent use of and* contact... (ED)

**Response**—The sentence has been revised as suggested.

25. **Section 4.3, Page 3, Areas of Non-Compliance**—It is the Department's view that the first objective on Page 2 (a reduction in vinyl chloride concentrations) is not being met. The summary table on Page 3-2 (1998 Draft Annual Report) indicates an increasing trend at 3 of 7 wells in 1998. The table also indicates that during the period 1995-1998, only 2 of 7 wells showed decreasing trend in vinyl chloride. What this discussion on natural attenuation does not present is that one well (MW-NASB-069) is responsible for the bulk of measured vinyl chloride, and the trend is distinctly increasing. The September 1999 concentration doubled the previous highest concentration, reaching approximately 45  $\mu\text{g/L}$  (well above the MCL of 2  $\mu\text{g/L}$ ).

Therefore, the statement that "all areas currently comply with the ROD's remedial objectives" appears to be in jeopardy if the data from 1999 is included. The rate of dechlorination of the parent compound may be accelerating or perhaps vinyl chloride is accumulating in the clay depression that MW-NASB-069 draws water samples from. Possibly, natural attenuation is working too rapidly at the site. Because vinyl chloride is an extremely toxic compound in ground water and its source has not been discovered, the Department has growing concerns and would like to discuss when alternative remedies should be considered. This statement must be qualified to acknowledge recent trends. (RR)

**Response**—The text of the first bullet in Section 4.2, Discussion of Remedial Objectives, will be revised to state the remedial objective stated in the Final ROD (Section VIII Remediation Objectives). The text has been revised in Section 4.2, first bullet as follows:

- *To reduce contaminant concentrations...*

The increasing vinyl chloride concentrations are an indicator that the natural attenuation is occurring at the site. Monitored natural attenuation is the selected remedy for this site and the amount to time required to complete the goal of the remedial objective is estimated to be up to 20 years. Currently, the short term vinyl chloride concentration trend is increasing,

which is evidence that continued natural degradation of the COCs is occurring. The topic of alternative remedies for this site will be discussed at the April 2000 Technical Meeting.

26. **Section 4.3, Page 4, Areas of Non-Compliance**—The second sentence refers to DCE as the parent compound of vinyl chloride. It is very unlikely that DCE was released to the environment, either on Site 9 or upgradient. It is much more likely that PCE or TCE was released, which degraded to DCE, and subsequently to vinyl chloride. Levels of TCE up to 3 µg/L have been consistently detected at some Site 9 wells. The Department recommends that DCE not be called the parent compound of vinyl chloride. Please correct this statement. (ED)

**Response**—The second sentence of the third paragraph on Page 4-3 has been changed to the following:

*...of total dichloroethene and an increasing concentration of vinyl chloride (a breakdown product of dichloroethene) indicates...*

27. **Section 4.3, Page 4, Areas of Non-Compliance, Long-Term Monitoring**—State the nature of changes in the pre-existing long term monitoring plan that were implemented and why the new plan better addresses the goals of the ROD. (RR)

**Response**—The text has been revised as follows:

*In 1994, a Long-Term Monitoring Plan was established for Site 9 (ABB-ES 1994). The LTMP was finalized for Site 9 on 16 August 1999 (EA 1999b). The goals of the final 1999 LTMP are as follows:*

- *Monitor changes in the plume boundaries and potential migration pathways.*
- *Monitor effectiveness of the remedial action for the protection of human health and the environment.*
- *Evaluate whether the inactive landfill contents are impacting ground water.*
- *Monitor the VOC concentration to evaluate the effectiveness of natural attenuation and determine trends with time.*
- *Monitor impacts to the environment due to Site 9.*

28. **Section 4.3, Page 4, Institutional Controls**—The copy of the operation instructions (NASB 1999) must be modified to incorporate MEDEP comments as required by the Record of Decision, therefore, the institutional controls (base operations instructions) cannot be considered final. Please rewrite. (ED)

**Response**—The text has been revised as stated below:

*Institutional controls at Site 9 consist of ground-water and land use restrictions that apply to the entire Site 9 area east of Orion Road and Avenue F, east of MW-NASB-073, and south of Building 52. However, institutional controls to prohibit ground-water use and physical contact with ground water must be incorporated into the next revision of Operating Instruction NASBINST 5090.1A, "Restriction on Excavation Activities." The*

*next revision of NASBINST 5090.1A is scheduled for September 2000. This program was shown to be effective by NAS Brunswick's recent request for concurrence with the proposed Bachelor Enlisted Quarters Military Construction Project.*

29. **Section 4.4, Page 5, Recommendations, Paragraphs 2 and 3**—The use of the verb “should” expresses probability or an expectation, not an absolute. Therefore, please replace “should” with shall or will. (ED)

**Response**—The verb “should” has been replaced with “will” in paragraphs two and three of Section 4.4, Recommendations.

30. **Section 4.4, Page 5, Recommendations Paragraph 1**—The first sentence needs to be expanded to address the non-compliance noted by MEDEP above. A suggested modification is:

*No additional remedial actions are required at this time, however, if the monitoring events in 2000 result in further increases in vinyl chloride in ground water, additional field work may be required to better delineate a potential plume of deep-seated vinyl chloride. EPA and MEDEP will be consulted to establish a specific trigger level for this action.* (ED)

**Response**—The first bullet of Section 4.4, Recommendations, has been revised as follows:

31. **Section 4.4, Page 5, Recommendations, Paragraph 4**—It is unclear if this is a proposal or not. Please clarify. (RR)

**Response**—Paragraph 4 will be removed from the document.

32. **Section 4.5, Page 5, Statement of Protectiveness**—The natural attenuation remedy appears to be generating anaerobic biodegradation as it should, but is producing a larger mass of the toxic daughter compound, vinyl chloride, than expected. The Department believes that the remedial air sparging activities at the former NEX Service Station, located upgradient of Site 9, may have enhanced this situation. The Department also believes that it is possible that residual TCE may reside in fine-grained soils within or immediately underlying the shallow saturated sand at Site 9, and that the mass of vinyl chloride in site ground water may increase further. To date, no evidence has been collected that indicates surface water at Site 9 has been adversely impacted. Therefore, to date, the natural attenuation/institutional control remedy appears to be protective of human health and the environment. However, Restoration Advisory Board members must continue to reassess the vinyl chloride situation in each forthcoming annual report. (NRR).

### **Eastern Plume Operable Unit**

33. **Section 5.0, Page 1, Site Description**—Additional information on the resolution of the soils at Site 13 must be included. (RR)

**Response**—Additional text will be added to Site 13 in Section 5.1.1 to provide a description of the resolution of the soils at Site 13, as follows:

*In 1998, a ROD was signed for No Further Action for soils at Sites 4, 11, and 13. The decision was based on the Feasibility Study (E.C. Jordan 1992) that concluded the only risk remaining at these sites is from the continuing impacts to ground water from soils at Site 11. Removal actions for metallic debris, drums, and contaminated soils were completed at Site 11 following the Feasibility Study. The metallic debris and drums were disposed off-base, and contaminated soils were used for subgrade fill beneath the Sites 1 and 3 Landfill cover (U.S. Department of the Navy 1998b).*

*Subsurface soils at Building 584 at Site 4 did not contain detectable quantities of VOCs; however, subsurface soil samples were not collected directly from the suspected pit location due to the presence of Building 584 at that location. Therefore, no soils were removed from this location. If the building is ever removed, further investigations and remedial actions may be required.*

*During the Remedial Investigation, fuel oil contamination was detected in the soil and was believed to have been related to the diesel fuel oil underground storage tanks at Site 13. The underground storage tanks were removed from the site, but no soils were removed. Ground-water wells were installed and sampled for VOCs. The ground-water VOC data indicate a decrease in VOC concentrations as the result of the underground storage tank removals.*

34. **Section 5.0, Page 1, Site Description, Paragraph 5**—“Removal actions completed as Site 11...” Please change “as” to “at.” (ED)

**Response**—The text has been revised as suggested.

35. **Section 5.1, Page 1, Ground-Water Operable Unit (Eastern Plume)**—“The southern boundary of the Eastern plume is located near New Gurnet Road.”

Recent technical discussions with the Navy and EPA have illuminated the likelihood that this boundary could be a function of the existing well network. Because additional work is probable, please insert “*presently mapped*” before “southern boundary.”

**Response**—The text has been revised as recommended.

36. **Section 5.1, Page 2, Significant Events**—Please add the following event: 1999 Two-Day Technical Workshop on Outstanding Regulator Concerns. (ED)

**Response**—The text has been added as requested.

37. **Section 5.2, Page 3, Discussion of Remedial Objectives, Ground Water Monitoring**—“The goals of the plan is as follows: provide a tiered approach to attain the requirements of MEDEP water quality standards.”

- (a) While this statement is included under Ground-Water Monitoring in the Record of Decision, the tiered approach is actually for surface water quality not ground water. This could be clarified in the five-year review by changing this heading to Monitoring. (RR)

**Response**—The heading “Ground Water Monitoring” has been revised to “Monitoring” as suggested.

- (b) The verb should be “are.” (ED)

**Response**—The text has been revised as suggested.

38. **Section 5.2, Page 3, Discussion of Remedial Objectives, Five-Year Reviews**—Under “Five-Year Reviews,” identify the hazardous substances that will remain in place. How will conditions at Sites 4, 11, and 13 be evaluated at the three source areas when the Long-Term Monitoring Program includes very few monitoring wells near these sources? The Department endorses a concept that pockets of residual soil contamination may continue to keep the dissolved plume from shrinking, and if so, such pockets would require special attention. These pockets may, or may not, be located at former source areas. Please be more specific.

**Response**—The text in Section 5.2, “Five-Year Reviews” has been revised.

*...in hazardous substances (contaminants of concern listed in the Final 1998 ROD) remaining in place..*

The conditions will be evaluated and monitored in accordance with the objectives and goals of the 1998 ROD and 2000 Final LTMP for the Eastern Plume.

As per EPA Comment No. 27(a), the following text has been added as the second paragraph in Section 5.2:

- *To accomplish these objectives within a 17- to 72-year timeframe, the following....*

39. **Section 5.3, Pages 3 and 4, Areas of Non-Compliance**—

- (a) Please reread the first sentence and check for typographical errors and clarity. (ED)

**Response**—The first sentence of Section 5.3 has been revised as follows:

*Any substantial aspect of the remedial action that fails to conform to remedial objectives would be considered an area of non-compliance.*

- (b) The Department does not agree that “all areas currently comply with the ROD’s remedial objectives,” and has elaborated our reasons in the bullets that follow.

- Concerning further migration of the southern edge of the Eastern Plume, four deep sentinel wells (MW-230A, MW-231A, MW-333, and MW-334) and three shallow sentinel wells (MW-231B, MW-313, and MW-318) are being monitored in the long-term program. Two deep sentinel wells (MW-230A and MW-333) have consistently had detections of DCA and/or DCE. One shallow sentinel well (MW-313) showed 1  $\mu\text{g/L}$  of TCE in November 1998 and up to 2  $\mu\text{g/L}$  of 1,1-DCA (September 1999).

As MEDEP and EPA discussed at the November 1999 Technical Meeting, the cross-gradient distances between MW-231A, MW-230, and MW-334 (600 ft and 450 ft, respectively) are too large to confidently say where the leading edge of the Eastern Plume really is located. The above-noted detections of chlorinated hydrocarbons, although below the MCLs/MEGs, suggest that contaminants have migrated beyond the 1995 mapped edge of the plume. Therefore, it is unknown at this time if the plume advanced during the last 5 years, or that the edge may have been further advanced than mapped in 1995. Furthermore, an accurate assessment cannot be made whether the remedial pumping system has minimized further migration of the Eastern Plume, however, existing data would indicate that groundwater flow gradients have not been reversed inward along much of the southern fringe of the known plume extent. More monitoring wells are needed to answer these questions.

- With respect to negative impacts to surface water, the reversal of pre-pumping upward gradients by EW-2A beginning in late 1998 has likely mitigated what the Department believes was slow seepage of contaminants upward through the shallow confining sandy silt bed along Mere Brook in the vicinity of its confluence with Merriconeag Stream. Natural attenuation in wetland soils and dilution by stream flow may be adequate for downgradient reaches of Mere Brook to protect the environment, however, this potential needs to be field tested if the plume is found to have migrated further southward than currently mapped.
- Even though an approximate 500 lb of volatile organic compounds have been removed to date, the extent of contamination has not changed significantly, and high concentrations of 1,1,1-TCA and TCE remain within the plume. As the Navy realizes, the existing extraction well system has been slow in achieving any degree of restoration of the aquifer. Tentative plans to reconfigure the extraction wells should help this situation greatly, provided that chlorinated hydrocarbons are not yet being dissolved into aquifer water from the original contaminant source areas or possibly from a dense, non-aqueous phase liquid source downgradient of the original source areas.

These areas of non-compliance must be noted. (RR)

**Response**—The remedial objectives are in progress to reach remedial objectives of the ROD within a 17- to 72-year timeframe. The text for Section 5.3 (Areas of Non-Compliance) has been modified to address this comment.

40. *Section 5.4, Page 5, Recommendations*

- (a) While the Department does not know of any additional response actions needed at this time to be protective of human health and the environment, the rate of aquifer restoration has to be improved if the Record of Decision objective of aquifer cleanup is to occur in a reasonable timeframe. Questions raised by MEDEP and EPA concerning the leading edge of the Eastern Plume and the potential for dense, non-aqueous phase liquid should be addressed by additional field work. The results of such work may require additional response actions well before the next five-year review. (NR)
- (b) “However it is strongly recommended optimization of the treatment system and Long-Term Monitoring Plan continue.”

First the draft final Long-Term Monitoring Plan must be finalized. MEDEP recommends the following language: “However it is strongly recommended *that optimization of the treatment system continue and that the draft final Long-Term Monitoring Plan be finalized and implemented.*” (ED)

**Response**—The Long-Term Monitoring Plan has been finalized. The sentence will be revised as follows:

*However, optimization of the treatment system should continue and the final Long-Term Monitoring Plan should be implemented.*

- (c) Please modify Recommendation 3 to read:

*Determine if the southern terminus sentinel wells are adequately placed, and initiate work to correct the situation if they are not adequately placed.* (ED)

**Response**—Recommendation 4 has been modified as follows:

*Determine if the southern terminus sentinel wells are adequately placed, and initiate work to correct the situation if necessary.*

- (d) The Department supports the initiation of a formal evaluation for monitored natural attenuation, but cautions the Navy that until concentrations in the Eastern Plume are substantially lowered by remedial pumping, heavy reliance on monitored natural attenuation will not be acceptable. Any consideration of monitored natural attenuation will include assessing the timeframe for restoration of the aquifer and the potential for ground water to degrade surface water. As the Navy is aware, all of Maine’s ground water is designated as GW-A. Also, MEDEP requests that the last sentence of Recommendation 4 be deleted, or highly qualified per our concerns expressed in Comment 39b. (RR)

**Response**—The text has been revised as follows:

*...the plume apparently has not changed since at least 1995; however, additional remedial actions may be warranted in the area of the southern terminus of the Eastern Plume prior to formal initiation of monitored natural attenuation.*

(e) “Pursue negotiations with the regulatory agencies to establish risk-based cleanup...”

The Navy should be aware before undertaking this recommendation that all ground water in Maine is classified as GW-A under the Water Classification Program (Title 38 section 465-C), whether or not it is used for drinking water, and the Maine Exposure Guidelines are risk based.

**Response**—The Navy is aware of this.

41. **Section 5.5, Page 6, Statement of Protectiveness**—

The Department disagrees with the statement that includes the ground-water extraction part of the system as being successful. The Eastern Plume wells have moved huge volumes of clean shallow ground water through the treatment plant due to flawed screen placements. The extraction wells have not been effective in attaining an EPA Core Criteria of “operating properly and successfully” which specifies that “*ground-water elevation data show inward gradients throughout plume for all affected aquifers*” (OSWER guidance of August 1996). The wells appear to be functioning as designed with ground water being captured from both shallow and deep sand aquifers, but continuous areal drawdown in the deep sand has not occurred as modeled by the Navy’s consultant. Maintenance problems with the extraction wells has often caused reductions in total extraction rates, further reducing plume capture.

The Department recommends that the second sentence be replaced with the following:

*The ground-water extraction and treatment system and monitoring have been only partially successful, but given the current data, appears to be protective of human health and the environment under the existing institutional controls (military secured area within fencing). (ED)*

**Response**—The text has been revised as follows:

*The ground-water extraction and treatment system and the ground-water monitoring program have been only partially successful as implemented; but given the current data, these remedies appear to be protective of human health and the environment with the existing institutional controls as exercised by the Navy (restricted access area surrounded by fencing).*