STATE OF MAINE
Department of Environmental Protection

MAIN OFFICE: RAY BUILDING, HOSPITAL STREET, AUGUSTA
MAIL ADDRESS: State House Station 17, Augusta, 04333
207-289-7688

JOHN R. McKERNAN, JR.
GOVERNOR

DEAN C. MARRIOTT
COMMISSIONER

May 9, 1991

Mr. James Shafer
Department of the Navy, Northern Division
Naval Facilities Engineering Command
Building 77-L
Philadelphia Naval Shipyard
Philadelphia, PA 19112-5094

Re: Naval Air Station Brunswick, Draft Focused Feasibility Study Sites 1 and 3, April, 1991, by E.C. Jordan Co.

Dear Mr. Shafer:

The Maine Department of Environmental Protection (MEDEP) has completed its review of the Draft Focused Feasibility Study Sites 1 and 3, which was submitted to the DEP by E.C. Jordan Co. on April 11, 1991 on behalf of the U.S. Department of the Navy for the Naval Air Station Brunswick (NASB) Site.

The DEP conditionally approves of the alternatives presented in this report provided that the following comments are addressed:

General Comments:

This draft document presents six remedial alternatives for sites 1 and 3 that range from a no action alternative (alternative 1,3-A) to a cap/passive ground water collection/treatment alternative (alternative 1,3-F). Specific remedial objectives may or may not be attainable depending on the specific remedial alternative. The MEDEP will only favor alternatives that meet long-term remedial objectives that result in the permanent reduction of the level of contamination and that attain overall protection of human health and the environment as well as achieve chemical, location, and action specific ARAR's outlined in the RI/FS process.

In correspondence dated September 28, 1990 regarding the draft Phase I Feasibility Study Development and Screening of Alternatives, the MEDEP requested that iron and zinc be considered as contaminants of concern in the Mere Brook surface water. The MEDEP disagrees with the conclusion that since these metals were present at an upgradient location at

concentrations exceeding AWQC's, no target clean-up levels are required. Any incremental increase in a parameter regardless of background levels, violates the spirit and letter of Maine's non-degradation policy. The MEDEP insists that a target clean-up level for these contaminants be established.

The MEDEP believes reconsideration of the vinyl chloride clean-up level is especially important since the MCL for this compound was selected based on a 10^{-4} risk factor and the analytical detection limits available at the time. In the State of Maine, a 10^{-5} risk factor is utilized as the highest acceptable risk factor when calculating the MEG for this compound. Consequently, the MEG has been set considerably lower than the MCL for this compound. Current analytical detection limits of 0.5 to 1.0 ppb are readily available for this compound.

Some of the alternatives presented involve an air stripping or UV/oxidation component. Due to the high levels of iron and manganese identified in ground water and leachate at this site, the MEDEP is assuming that a pre-treatment stage will be necessary to remove these metals in order to prevent clogging of the system.

Although flushing times may be difficult to estimate, adequate information of soil types, groundwater flow rates/direction, contaminant levels, and leachate seepage is available to identify a time range for expected flushing action.

The MEDEP prefers to combine any air stripping operation with an off-gas treatment in order to avoid transferring contamination between media.

Very little discussion regarding reinjection of treated groundwater was provided. Additional information on the location of reinjection wells, volumes, effects on groundwater characteristics, and influence on the adjoining Eastern Plume must be provided where reinjection is under consideration. The high metal content of groundwater could result in clogging and scaling of pipe galleries, thus reducing the effectiveness of the system.

The MEDEP has noted the information provided in the groundwater models for sites 1 & 3 however, the Department did not have the ability to effectively evaluate all of these models during the designated comment period.

Specific Comments:

Page Section Comments

2-6, **section 2.2.1, Human Health Risk Assessment**: The Draft Final RI (August, 1990) cited BTEX compounds (pg. 6-54) in the site 1 & 3 plume. Consequently, BTEX compounds should be listed as contaminants of concern. Also, 1,1 DCA previously identified as a contaminant of concern has been omitted.

2-11, **section 2.3.3, Remedial Action Objectives**: Table 2-1 omitted 1,1 DCA as a ground water contaminant of concern. Also, lead should also be listed as a contaminant of concern in leachate, and zinc and iron in surface water. The State of Maine considers 10^{-5} to be the highest acceptable risk level. Consequently, this level of risk is utilized to determine acceptable levels of contamination in groundwater. In some cases these levels are lower than the MCL's and the proposed clean-up levels.

3-15, **section 3.2.7, Alt. 1,3-B, Minimal Action**: Indirect costs should include the cost of the land survey necessary for deed changes. Alterations to the deed will need to be submitted for federal and state agency review and approval.

3-18, **section 3.2.7, Alt. 1,3-B**: The cap/slurry wall proposed in this alternative serves only to depress the groundwater table. This alternative does not provide for a permanent reduction of contamination at this site. Reduced contamination levels in ground water and surface water will always depend on the future maintenance and integrity of the cap and slurry wall.

3-19, **section 3.3, Alt. 1,3-C, Containment**: No discussion was presented regarding the effects of the build-up and migration of methane beneath the proposed cap nor of a possible venting system for methane. Gradual degradation of contaminants in an anaerobic environment could result in continued dechloriantion of some VOC's and a build-up of vinyl chloride.

3-20, **section 3.3, Alt. 1,3-C**: It has not been shown that the proposed measures will reduce Target Compounds to the required concentrations. It should be demonstrate by way of a fate/transport model that these target clean-up levels can be achieved. Alternatively, this proposal should be implemented only as part of a phased response. If monitoring shows that target levels have not been achieved after an established equilibration period, groundwater treatment will be required.

It has been proposed to exclude the portion of Site 1 within the weapons compound as well as parts of Site 3 on steep

slopes from capping. No test pitting or monitoring wells have established the extent of waste within the weapons compound. Demonstrate that the fully capped site offers no incremental advantage over the limited cap.

A synthetic cap and a composite cap are still under consideration. These caps should be evaluated both by the HELP or another water balance model to demonstrate which cover system is optimal.

The need for a drainage layer beneath the clay or geomembrane must be evaluated.

The need for a geotextile between the fill and drainage layers must be evaluated.

3-22, section 3.3, Alt. 1,3-C: The type and caliper of the proposed geomembrane must be re-examined. PVC is usually not a preferred material when chlorinated compounds are known to be present. The 20-mil thickness may have inadequate tensile strength during construction and due to future landfill subsidence under surcharge.

3-25, section 3.3, Alt. 1,3-C: To reduce the need to repair damage to the cap/cover system from burrowing animals, an animal barrier (mesh) should be considered for incorporation into the design.

Discuss any potential impact on the Eastern Plume as a result of the diverted ground water flow at sites 1 & 3.

The proposed cap will raise the road grade nearly six feet, greatly altering existing drainage patterns. A site grading plan must be developed to outlet runoff without adverse effect upon receiving watercourses.

3-38, section 3.3, Alt. 1,3 C: Identify if the seams along the HDPE liner will be sealed along their entire length.

3-42, section 3.3, Alt. 1,3 C: This alternative identified the installation of four extraction wells and the operation of an air stripping system as a future option to reduce ground water levels beneath the site if the slurry wall and cap are not as effective as presently suggested. Since the MEDEP is interested in reducing the leachate contribution to the Mere Brook system as rapidly as possible, the MEDEP suggests that the extraction wells with an air stripping system be considered in this alternative from the onset of design or that an additional remedial alternative be created that does include this system along with the proposed cap and slurry wall. Inclusion of a pump and treat system will allow for a more rapid reduction of the water table beneath the site and a more rapid decline in contaminating emanating from the site.

3-43, section 3.4, Alt. 1,3-D, Passive Groundwater Collection/Treatment: Environmental impacts to and/or by the proposed system should be discussed. Include discussions regarding setbacks from the wetlands, impacts of the freeze-thaw cycle, siltation, etc.

Show that the proposed action will reduce groundwater contaminant concentrations to target levels. If this is not done, the alternative should be presented as part of a phased response. Further measures may be required if objectives are not achieved within a pre-established period.

3-46, section 3.4, Alt. 1,3-D,: The proposed infiltration trench extends to 25' below ground surface. The depth to the restrictive clay layer varies between 28' and 62'. Show that the trench at this depth will intercept all contaminated groundwater. Mere Brook should not be regarded as a "second line of defense."

3-49, section 3.4, Alt. 1,3-D: Grain-size analysis of the native soil shows 48% is finer than 200 sieve. The permeability is probably in the 10^{-5} to 10^{-6} range. Show that all infiltrating precipitation and laterally-moving groundwater can pass to the trench through a formation this tight.

Excavation of a trench using a slurry wall technique, but with a biodegradable polymer in place of bentonite is proposed. Show that the trench walls will not be irreversibly "blinded" by the polymer, and that the trench will return to an acceptable permeability when placed in service. Cite instances where this technique has been used successfully in similar geological settings and for similar applications.

The environmental limitations of the suggested biopolymer slurry that could be utilized to support the excavation should be described.

3-60, section 3.4, Alt. 1,3-D: Show how upgradient re-infiltration of treated groundwater will affect the rate of flow through the site to the trench or extraction wells. A water balance which includes precipitation, lateral flow onto the site, and re-infiltration flow would be helpful. The same balance should be provided for rapid infiltration or irrigation, should either of these be actively pursued.

3-62, section 3.4, Alt. 1,3-D: Additional details regarding upgradient discharge through reinjection are needed. Potential impacts of mid winter conditions on any infiltration basin should be considered and discussed.

3-80, section 3.5, Alt. 1,3-E, Cap/Groundwater Extraction/Treatment: MEDEP comments for components of this alternative are similar to those for previous alternatives. Discuss in greater detail the following points: the cap does not completely cover the source area; extraction wells do not penetrate to the clay layer; the extraction system may not completely capture infiltration plus lateral groundwater moving on site plus re-infiltrated and treated groundwater, and potential impact on the Eastern Plume. Show that target concentrations are achieved, or consider this the first of phased measures.

3-83, section 3.5, Alt. 1,3-E: If the objective of this alternative is to draw more water through the waste, and thereby flush contaminants from the source in a more timely and cost-effective manner. Identify the purpose of the low-permeability cap which would exclude infiltration useful to the flushing process. Explain how this alternative might be superior to 1,3-D. Appendix B, Figures B-7 and B-8, suggest that the water table for Alt 1,3-E is appreciably lower at the southern end of the site.

3-88, section 3.5, Alt. 1,3-E: Document the following statements outlined on page 3-88 that 1) minimize the usefulness of the cap, 2) minimize the effect of upgradient discharge, and 3) state that time-to-cleanup would be greater than Alt 1,3-D. If these are true, justify the purpose of the cap in this alternative.

3-89, section 3.5, Alt. 1,3-E: In order to meet groundwater clean-up standards, ground water pumps may have to be cycled (or another method employed) to deal effectively with contamination in the zone dewatered by pumping.

3-99, section 3.6, Alt. 1,3-F, Cap/Passive Groundwater Collection/Treatment: All comments from previous discussions of the cap, trench, and discharge options apply here.

MODFLOW contours (Figures B-8 and B-9) suggest that groundwater is not lowered as much as with the active pumping of Alt 1,3-E. It also appears that the cap has minimal effect upon the water table (comparison of Figures B-7 and B-9).

4-2, table 4-1: The implementability section of Alternative 1,3-D inappropriately identified UV/oxidation as "not developed". UV oxidation has been through treatability testing for the Winthrop Landfill Superfund Site and has been specified for use at the Union Chemical Corp. Superfund Site.

If you have any concerns or questions regarding these comments, please contact me at (207) 289-2651.

Sincerely,

Ted Wolfe

Ted Wolfe
Division of Site Investigation and Remediation
Bureau of Hazardous Materials and Solid Waste Control

cc: Michael Barden, MEDEP
Meghan Cassidy, EPA
Eileen Curry, NASB
Mel Dickenson, E.C. Jordan/ABB Environmental
Donald Gerrish, Town of Brunswick
Fred Lavalle, MEDEP
Loukie Lofchie, BACSE
Denise Messier, ME DEP
Susan Weddle, Community Representative

A:NASBFFS1