

**RESPONSE TO COMMENTS FROM THE  
 STATE OF MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION –  
 BUREAU OF REMEDIATION AND WASTE MANAGEMENT  
 ON THE DRAFT SUMMARY REPORT - SITE 9 ASH DELINEATION AND  
 INVESTIGATIONS AT BUILDING 201 AOC & IRRIGATED PLAYING FIELD,  
 NAVAL AIR STATION BRUNSWICK, MAINE**

<b>Commentor: Claudia Sait, MEDEP - Project Manager-Federal Facilities    Bureau of Remediation &amp; Waste Management</b>	
<b>Comment Issue Date: 25 November 2008</b>	<b>Navy Response Date: 11 February 2009</b>

Pursuant to Section VI of the Naval Air Station, Brunswick, Maine Federal Facility Agreement (Oct 1990), as amended, the Maine Department of Environmental Protection (MEDEP) has reviewed the draft “Summary Report - Site 9 Ash Delineation and Investigations at Building 201 AOC and Irrigated Play Field” , dated October 2008, prepared by Environmental Chemical Corporation. Based on that review MEDEP has the following comments and issues.

**GENERAL COMMENTS:**

**1.** The investigations generally achieved their objectives and collected the majority of the data as planned. The data indicate that the ball field adjacent Building 50 has not been impacted by 1,4-dioxane present in irrigation water from the Treatment Plant. The data for the ash delineation show that there is ash extending under the road and to an unknown extent to the east and south. The groundwater data do not suggest that Building 201 is a source for Diesel Range Organics (DRO) or Volatile Organic Compounds (VOCs), despite frequent detections in nearby wells and at the pond. The source or sources were not defined by this investigation. (No response necessary.)

*Response: Comment noted.*

**2.** At DP-13 trace ash was found at approximately 1 foot below ground surface (bgs) and extended 10 feet bgs and was underlain with a 5 inch lay of ash. DP 13 also had a number of Polycyclic Aromatic Hydrocarbons (PAHs) above the Environmental Protection Agency (EPA) criteria. The eastern edge of the ash landfill along Neptune Drive appears to have been determined but there is still a data gap of how far the ash extends to the south.

*Response: Due to site topography (a steep drop off to the stream bed), further investigation south of DP-13 could not be undertaken (with the on-site drill rig) for health and safety reasons.*

**3.** The thin ash layers at DP-6 also appear to further west so the extent of the ash in this area has not been determined.

*Response: Agreed. During the recent (December 2008) Area North of Site 9 direct-push investigation, an additional boring (DP-21) was advanced approximately 50 ft west of DP-6. The boring was advanced to 12 ft bgs, no ash was observed in any interval. The results of this*

boring, plus results from two additional borings requested by the MEDEP which were also advanced during the December investigation, will be included in this report. Therefore, the western extent of ash has been delineated.

#### **SPECIFIC COMMENTS:**

4. Page 4, Section 2.1.2: Please note if the VOC samples were placed in a cooler with ice.

**Response: Agreed.** The following text will be revised to read; “The liner was cut lengthwise and the VOC sample fraction was immediately collected from the sample interval, ~~and~~ placed in the appropriate sample container, *and placed in a cooler with ice.*”

5. Page 5, Section 2.2.2, 2.2.3, and 2.2.4, and Figure 3: “... *no evidence of contamination was observed or recorded in any of the samples collected.*”

The lack of any apparent contamination in shallow soils and groundwater at the water table near Building 201 indicate that this area is not a significant source for DRO or VOCs. The multiple VOC detections in porewater may be related to migration along deeper flow paths from an undefined source(s) to the northwest. DRO detections in porewater are likely related to the observed sheens on the impoundment pond, but it seems unlikely that they are linked to the detections at Site 9 wells such as MW-NASB-075.

**Response: Comment noted.**

6. Page 5, Section 2.2.3, Appendix B Boring Logs: Please add a notation to the logs indicating at what depth the groundwater samples were collected. Listing the target sample depth will make comparison to monitoring well screen depths possible.

**Response: Agreed.** A note will be added to each boring log stating at what depth the groundwater sample was collected from.

7. Page 9, Section 3: Please describe in the text the difference between use of the terms “ash” and “trace ash”.

**Response:** To avoid confusion over the amounts of ash in any given sample interval, and to coincide with the descriptions in the boring logs and the in the cross sections, all visible ash will be described as either “traces (or trace amounts) of ash” or “prominent layers of ash”. Traces or trace amounts will be used to describe intervals with very little visible ash (approximately 1% to 10 % of the total recovered sample), while “prominent layers of ash” will be used to describe ash layers of 0.5 inches or greater. The following text will be inserted as the last sentence in the second paragraph of Section 3.1.1.3; “*In describing the apparent amount of visible ash in the various direct-push boring locations, the terms “traces of ash”, and “prominent layers of ash”, are used. For reporting purposes, “traces of ash (or trace amounts)” were used to describe intervals with very little visible ash (approximately 1% to 10 % of the total recovered*”

*sample), “prominent layers of ash” will be used to describe ash layers of 0.5 inches or greater”.*

**8. Page 13, Section 3.2.1.2, Site Hydrogeology:** *“Historically, groundwater flow direction has been to the south-southwest across Site 9...”*

The statement is true for the northern/central portion of the site, however to the south of Neptune Drive near the impoundment ponds the flow appears to be south-southeast based on previous Long-Term Monitoring (LTM) gauging data. Please revise the text.

**Response: Agreed.** The second sentence in Section 3.2.1.2 will be revised to read; *“Historically, groundwater flow direction has been generally to the south southwest in the northern and central portion of the site, and to the south southeast in the southern portion (which includes Building 201 AOC) of the site, with an increase in hydraulic gradient from north to south”.*

**9. Page 13, Section 3.2.1.4 Summary of Porewater Sampling:** The interim MEG for cis-1,2-dichloroethylene (DCE), the most common isomer of 1,2 DCE, is 70 µg/L; please list this value in the text.

**Response: Agreed.** The value will be changed from 5 ug/L to 70 ug/L.

**10. Page 15, Section 4.1.1 and Figures 6,7,8:**

a.) **Bullet 1** – *“The average depth of ash encountered ...”*

Although the average depth was around 8 feet, it is worth noting that in the interpreted central portion of the former drainage channel the ash extends to twice that depth, which matches with the reported depth of ash in the final sidewalls of the excavation north of Neptune Drive. Please add the depth range of observed ash to the text.

**Response: Agreed.** The first bullet in Section 4.1.1 will be revised to read; *“Ash was identified in a total of 16 of the 20 borings advanced in this area. Most of the ash was encountered at or above the groundwater table interface. The average depth of the ash encountered was between 1 ft to 2 ft bgs to a depth of approximately 8 ft bgs. However, at boring locations DP-1, DP-4, DP-12, and DP-19, ash was observed at depths ranging from 15 ft to 16 ft bgs. These boring locations correspond to the approximate interpreted location of the former stream bed. Thickness of the ash layer ranged from trace amounts interbedded within the overburden to a 12 inch thick layer in DP-19 at 7 ft bgs.*

b.) **Bullet 4:** - MEDEP calculated the carcinogenic PAH Toxicity Equivalence Factor (TEQ), which correlates 7 of the PAHs to benzo(a)pyrene per EPA Region 4 guidance. Based on those calculations, 2 locations exceeded the 2 mg/kg MEDEP Remedial Action Guideline. At one location (DP4), the TEQ was 1.85 versus 0.675 mg/kg for benzo(a)pyrene alone. Please add a section discussing the exceedances of the PAH TEQ.

**Response: Agreed.** A new section (3.1.1.5 Summary of PAH Toxic Equivalent Quotients) will be added with the following text; *“At the request of the MEDEP, Toxicity Equivalence Quotients (TEQs) were calculated for 7 carcinogenic PAHs per EPA Region 4 guidance. Approximate concentrations of the PAHs were calculated using Region 4 Toxicity Equivalence Factors (TEFs). These TEFs are based on the relative potency of each of the 7 PAH compounds relative to that of benzo(a)pyrene. Sample results are provided for informational purposes only as applicable standards do not exist for EPA Region 1 or the State of Maine.*

*Sample results indicate that the TEQ values calculated for samples DP-1 (10-12 ft bgs), DP-XD1 (duplicate sample of DP-1), DP-4 (5-6 ft bgs), DP-8 (3-4 ft bgs), DP-13 (3-4 ft bgs), and DP-19 (8-10 ft bgs and 18-19 ft bgs), exceed the respective MEDEP RAG (2 mg/kg) and EPA PRG (0.062 mg/kg). Concentrations ranged from a low of 0.447 mg/kg detected in DP-8 to a high of 56.76 mg/kg in DP-19 (8-10 ft interval). A summary of the TEQ value results are presented in Table 2.”*

A table will also be generated presenting the results.

**11. Page 15, Section 4.1.2, Building 201...:** *“Groundwater sampling results indicated the presence of DRO in only one sample at a concentration below applicable regulatory standards.”*

It is unclear to MEDEP exactly what is meant by this statement. Does it mean that the only one sample result less than the regulatory 50 ppm? If so, it is not correct. The data on Table 2 indicates that DP1 had a detection of 46 µg/L (J) and DP 6 had a detection of 47 µg/L (J). Please revise the text appropriately.

**Response: Agreed.** The third sentence in Section 4.1.2 will be revised to read; *“Groundwater sampling results indicated the presence of DRO in ~~only one sample at a concentration below applicable regulatory standards~~ two of the samples collected (DP-1 and DP-6) at concentrations below regulatory standards. DRO was also detected in sample DP-XD-1 (a duplicate sample of DP-1) at a concentration below regulatory standards.”*

**12. Page 16, Section 4.1.2, Upper Impoundment Pond, Table 3:**

a.) Trichloroethylene (TCE) was detected at PW8 at 172 µg/L; this needs to be included in the text along with the other low level VOC detections found in the porewater samples. Also the TCE detection needs to be shaded on Table 3.

**Response:** This was a typographical error. Upon review of the validated analytical data, it was found that TCE was not detected above the method reporting limit (1 µg/L for TCE) in sample PW-8. Trichlorofluoromethane was detected in sample PW-8 at a concentration of 172 µg/L, which is below the MEG of 2,100 µg/L. The value of 172 µg/L was inadvertently placed in the TCE result location. The second paragraph under Section 3.2.1.4 will be deleted. The beginning of the third paragraph will be revised to read;

~~“The remaining 11 pore water samples had several VOCs were detected at concentrations below regulatory standards. “Of the 13 pore water samples collected, several contained VOCs; however, all concentrations were below regulatory standards. All concentrations were qualified as estimated (J) with the exception of TCE detected in PW1 at a concentration of 1.2 ug/L. TCE was also detected in 3 other samples at concentrations below regulatory standards. TCE concentrations ranged from 0.38 (PW2), to 1.2 ug/L in PW1, below the respective MEDEP MEG (7 ug/L) and EPA MCL (5 ug/L). 1,2-Dichloroethene (total) was detected in 6 of the...”~~

PW-8 sample results from the laboratory data package will be attached to these RTCs. Table 3 will also be revised to reflect this correction.

b.) *“As groundwater flow is generally to the south-southeast across Site 9...”*

For consistency with MEDEP comments above for Section 3.2.1.2, MEDEP suggests revising the text to *“...to the south-southeast across the southern portion of Site 9...”*.

**Response: Agreed.** Text in the fourth sentence in Section 4.1.2, Upper Impoundment Pond, will be revised to read; *“As groundwater flow is generally to the south-southeast across in the southern portion of Site 9, a possible source of the DRO contamination may be located to the north-northwest of Building 201 and the Upper Impoundment Pond. However, this has not been verified.*

**13. Page 16, Section 4.2.1, Site 9 Ash Delineation, Bullets:**

MEDEP agrees with EPA’s comment that it is premature to make recommendations of this nature at this time. These types of discussion are more appropriate in a Feasibility Study and/or the Record of Decision. Please delete these recommendations and replace with recommendations to determine the extent of the ash landfill in the areas in the vicinity of DP-6, DP-13, DP-2 and DP-17.

**Response: Agreed.** Bulleted recommendations, as presented in Section 4.2.1 – Site 9 Ash Delineations in the draft summary report, will be deleted and the following text will be inserted; *“With concurrence from the MEDEP and EPA, recommendations for further actions at Site 9 will be addressed following the completion of the investigation in the area north of Site 9 (conducted in December 2008). These recommendations will be presented in the Summary Report for the Area North of Site 9”.*

With regards to recommending additional borings in the vicinity of DP-6, DP-13, DP-2, and DP-17, these borings (with the exception of DP-13, see response to comment No. 2) were advanced during the investigation in the area north of Site 9 (December 2008). For the purpose of continuity, results from these additional borings will be presented in this report.

**14. Page 16-17, Section 4.2.2, text and Bullet 4:**

a.) MEDEP agrees the soil borings did not indicate a source area around Building 201, however the detections in the porewater of DRO and VOCs merit further consideration or explanation. An undetermined source is not justification for no further action. The discharging of petroleum to waters of the State of Maine is a violation of 38 MRSA §543, which states: "The discharge of oil into or upon any coastal waters, estuaries, tidal flats, beaches and lands adjoining the seacoast of the State, or into or upon any lake, pond, river, stream, sewer, surface water drainage, ground water or other waters of the State or any public or private water supply or onto lands adjacent to, on, or over such waters of the State is prohibited." While it is certainly plausible that the porewater DRO is from stormwater discharge to the pond and bank recharge when water elevations in the pond are significantly higher than adjacent groundwater, it still must be proven. Also, the VOCs are unlikely to be flowing into the pond via surface water. The porewater TCE detection was one of the highest chlorinated VOC detections in the Site 9 database, and in conjunction with the other detections at monitoring wells to the west, indicates there is at least a potential for a dissolved VOC plume migrating to the Upper Impoundment Pond. This requires further investigation. At this time MEDEP recommends that another round of porewater sampling be performed in the Spring 2009. Please revise the recommendation accordingly.

*Response:* As stated in the last sentence of Section 4.2.2; "Any further evaluation of this area will be discussed with project stakeholders, if determined necessary". Based on the State's comment, it seems evident that further discussions among the stakeholders will be needed to address any issues regarding future investigations in this area. Therefore, the recommendations under Section 4.2.2 will remain unchanged.

b.) The range of DRO porewater detections ranged from 58 to 220 ppm not to 140 as stated. Please correct.

*Response: Agreed.* The last sentence under the third bullet in Section 4.2.2 will be revised to read; "Concentrations ranged from a low of 58 ug/L to a high of ~~140~~ 220 ug/L."