

**Ohio EPA**

**State of Ohio Environmental Protection Agency**

**Northwest District Office**

**347 North Dunbridge Road**

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**PLEASE DELIVER THE FOLLOWING PAGES TO:**

NAME: Linda Ingram *Rec'd 22 Oct 98*

COMPANY/DIVISION: Corps of Engineers

FAX NUMBER: (615) 736-7676

FROM: Ron Nabors

DIVISION: Emergency and Remedial Response

TOTAL NUMBER OF PAGES INCLUDING COVER LETTER: 7

**COMMENTS:**

Sorry about the delay. I'll send the groundwater comments as soon as I receive them from our groundwater section.

*Faxed to M. Spangberg  
on 23 Oct 98  
LSI*

**IF THERE ARE ANY PROBLEMS WITH THIS FAX, CALL OHIO EPA NWDO AT (419) 352-8461.**

# OHIO EPA

State of Ohio Environmental Protection Agency  
Northwest District Office  
347 North Dunbridge Road  
Bowling Green, Ohio 43402  
(419) 352-8461 FAX (419) 352-8468

George V. Voinovich  
Governor

October 24, 1998

RE: U.S. NASA PLUM BROOK  
ERIE COUNTY  
OHIO ID#: 322-0552  
ACID AREAS SITE INVESTIGATION

Department of the Army  
Nashville District, Corps of Engineers  
Ms. Linda S. Ingram  
P.O. Box 1070  
Nashville, TN 37202-1070

Dear Ms. Ingram:

The Ohio Environmental Protection Agency (EPA), Division of Emergency and Remedial Response (DERR), has reviewed the draft "Site Investigation of Acid Areas" report for the former Plum Brook Ordnance Works, Sandusky, Ohio. This document was submitted to the Ohio EPA by the International Technology Corporation (ITC) on behalf of the Corps of Engineers, August 27, 1998 for review and comments. Ohio EPA, DERR is providing the following comments.

1. Of the six background surface soil samples (0.5-1.5 feet bls) collected during the SI, 1 SVOC (benzo(a)pyrene) and 8 metals (aluminum, antimony, arsenic, barium, beryllium, iron, manganese, and thallium) were observed above associated risk-based concentrations (RBCs). Of the six background subsurface soil samples (2-8 feet bls) collected during the SI, 8 metals were observed above associated RBCs (aluminum, antimony, arsenic, beryllium, iron, manganese, and thallium). ITC presents a discussion of the background metals evaluation of soils in Sections 4.0 through 4.7 of the SI report. However, ITC has failed to include the complete background data set for each metal parameter (combined ITC (1998) and Dames & Moore (1997) soil data) as well as calculations used to test normality and to derive the 95% upper tolerance limit and the 95th percentile for the metal parameters as noted on Table 4-5 (attached in this review) of the SI report. This data should be submitted to the Ohio EPA for verification.
2. ITC has compared the maximum detected metal concentration in soils [Table 4-6 of the SI report] from each acid area to USEPA Region III RBCs (1998); Table 4-6 is included in this review. According to Sections 4.5 through 4.7 and Table 4-6 of the SI report, there were no concentrations of metals constituents in soils during the SI which exceeded associated RBCs at AA1, AA2, AA3, MNT, or the PSB which were equal to or greater than calculated 95% UTL or 95th percentile standards. ITC concludes that the elevated metal concentrations (i.e. metals concentrations greater than RBCs) observed in surface/subsurface soils at the above locations are attributable to natural site conditions and not from site-related contamination. The Ohio EPA will reserve comment on this conclusion until ITC submits background data sets and associated calculations for verification by the agency. The 95% UTL values for aluminum, arsenic, iron, and manganese (Table 4-6) appear to be too high when compared to corresponding RBC values.
3. Site Investigation surface/subsurface soil analytical results at AA1, AA2, AA3, MNT, and the PSB exceeded associated RBCs (see attachments). ITC notes that all maximum detected metal concentrations in soils, which exceed RBCs, at each area above, are below associated 95% UTL and 95th percentile values. ITC should revise Table 4-6 of the SI report to reflect the following items; include a value for 8840 mg/kg for aluminum

under Surface, MNT Area; change 547 to 574 mg/kg for manganese under Surface, MNT Area; and move 5.1 mg/kg under Surface, PSB Area, from antimony to arsenic. ITC should also include beryllium in Section 5.3.2 of the SI report as a metal which was detected in subsurface soils above its associated RBC.

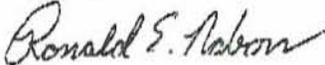
4. Based on the observation of PCB and SVOC concentrations in surface soils above RBCs at the three acid areas, ITC has recommended that site-specific risk assessments be performed to evaluate the risk posed by these contaminants to both human and ecological receptors. If the risk evaluations of the contaminants of concern indicate an unacceptable risk to potential receptors, then ITC will perform additional sampling and/or evaluation.

The Ohio EPA is unclear as to how potentially impacted ground water occurring in both unconsolidated and consolidated zones at the acid areas will be investigated and evaluated. If ground water occurring at the three acid areas is to be addressed under a different investigation, then ITC should state this and provide a brief explanation for this course of action to the Ohio EPA. Also, during preparation of the risk assessment, ITC should consider ground water as a potential pathway unless ground water will be addressed under a separate risk evaluation.

5. ITC should have collected soil samples at the three acid areas for leaching analysis. It is reasonable to assume that if contaminants in soil are identified at or below a zone of significant saturation, the potential exists for these contaminants to leach into ground water. If additional soil sampling is required to be performed at the three acid areas based on results on the subsequent risk evaluation, the Ohio EPA recommends that ITC complete appropriate toxicity characteristic leachate procedure (TCLP) analyses on selected soil samples to determine if identified contaminants exceed leaching standards. TCLP analyses should be performed for at least PCBs, SVOCs, and metals.
6. During the development of background metals concentrations in soil, it is apparent that ITC pooled the analytical results of the surface samples (0-1 foot bls) and the subsurface samples (2-8 feet bls) to create one background concentration for each metal. ITC should have provided a discussion in the SI report as to their reasoning behind compositing the two soil depth intervals to create a single background concentration for each metal.

Please incorporate these comments and resubmit the finalized version of this document. You may proceed with your investigation and feel free to contact me with any additional concerns or questions that may arise. I can be reached at (419) 373-3147.

Sincerely,



Ronald E. Nabors  
Site Coordinator  
Division of Emergency and Remedial Response  
Northwest District Office

Attachments

CC: Archie Lumsey, DERR NWDO  
File Copy

Acid Area No. 1 (AA1)

Surface Soils (Tables 5-1 and 5-2); Subsurface Soils (Tables 5-3 and 5-4).

Soils	Parameter	Concentration*	Risk-Based Concentration	95% UTL/95th percentile
Surface (0.5-1.5 feet bls)	Aroclor 1260	140-9000 ug/kg	83 ug/kg	-
	4-amino-2,6-dinitrotoluene	810 ug/kg	470 ug/kg	-
	aluminum	7930-14300 mg/kg	7800 mg/kg	26879 mg/kg/
	arsenic	1.4-17.3 mg/kg	0.43 mg/kg	70.8 mg/kg/
	beryllium	0.67-0.72 mg/kg	0.15 mg/kg	10.96 mg/kg
	iron	9850-29000 mg/kg	2300 mg/kg	358040 mg/kg/
	manganese	187-910 mg/kg	160 mg/kg	3494 mg/kg/
Subsurface (2-10 feet bls)	aluminum	7890-17400 mg/kg	7800 mg/kg	26879 mg/kg/
	arsenic	3-10.9 mg/kg	0.43 mg/kg	70.8 mg/kg/
	beryllium	0.62-0.94 mg/kg	0.15 mg/kg	10.96 mg/kg
	iron	13600-35100 mg/kg	2300 mg/kg	358040 mg/kg/
	manganese	166-1070 mg/kg	160 mg/kg	3494 mg/kg/

Notes:

\* -Range of concentrations which exceed associated RBC.

ug/kg -micrograms/kilogram.

mg/kg -milligrams/kilogram.

Acid Area No. 2 (AA2)

Surface Soils (Tables 5-5 and 5-6); Subsurface Soils (Tables 5-7 and 5-8).

Soils	Parameter	Concentration*	Risk-Based Concentration	95% UTL/95th percentile
Surface (0.5-1.5 feet bis)	benzo(a)anthracene	8500 ug/kg	880 ug/kg	-
	benzo(a)pyrene	120-7300 ug/kg	88 ug/kg	-
	benzo(b)fluoranthene	9700 ug/kg	880 ug/kg	-
	dibenz(a,h)anthracene	1100 ug/kg	88 ug/kg	-
	indeno(1,2,3-cd)pyrene	2200 ug/kg	880 ug/kg	-
	Aroclor 1260	240-20000 ug/kg	83 ug/kg	-
	aluminum	7880-18400 mg/kg	7800 mg/kg	26879 mg/kg/
	arsenic	3.6-19.3 mg/kg	0.43 mg/kg	70.8 mg/kg/
	beryllium	0.61-0.86 mg/kg	0.15 mg/kg	10.96 mg/kg
	iron	12200-36100 mg/kg	2300 mg/kg	358040 mg/kg/
	manganese	170-1010 mg/kg	160 mg/kg	3494 mg/kg/
Subsurface (2-10 feet bis)	benzo(a)pyrene	110 ug/kg	88 ug/kg	-
	aluminum	8590-14200 mg/kg	7800 mg/kg	26879 mg/kg/
	arsenic	4.2-16.5 mg/kg	0.43 mg/kg	70.8 mg/kg/
	beryllium	0.62-0.80 mg/kg	0.15 mg/kg	10.96 mg/kg
	iron	19100-27300 mg/kg	2300 mg/kg	358040 mg/kg/
	manganese	253-889 mg/kg	160 mg/kg	3494 mg/kg/

Notes:

\* -Range of concentrations which exceed associated RBC.

Acid Area No. 3 (AA3)

Surface Soils (Tables 5-9 and 5-10); Subsurface Soils (Tables 5-11 and 5-12).

Soils	Parameter	Concentration*	Risk-Based Concentration	95% UTL/95th percentile
Surface (0.5-1.5 feet bla)	benzo(a)anthracene	2100-3500 ug/kg	880 ug/kg	-
	benzo(a)pyrene	100-3300 ug/kg	88 ug/kg	-
	benzo(b)fluoranthene	2400-3400 ug/kg	880 ug/kg	-
	dibenzofuran	61 ug/kg	88 ug/kg	-
	indeno(1,2,3-cd)pyrene	1200-1400 ug/kg	880 ug/kg	-
	Aroclor 1260	84-3200 ug/kg	83 ug/kg	-
	aluminum	7940-11800 mg/kg	7800 mg/kg	26879 mg/kg/
	arsenic	2.5-9.6 mg/kg	0.43 mg/kg	70.8 mg/kg/
	iron	6810-26600 mg/kg	2300 mg/kg	358040 mg/kg/
	manganese	205-922 mg/kg	160 mg/kg	3494 mg/kg/
Subsurface (2-10 feet bla)	benzo(a)pyrene	340 ug/kg	88 ug/kg	-
	aluminum	9550-11100 mg/kg	7800 mg/kg	26879 mg/kg/
	antimony	7.4-8.0 mg/kg	3.1 mg/kg	77.88 mg/kg
	arsenic	2.5-32.2 mg/kg	0.43 mg/kg	70.8 mg/kg/
	beryllium	0.67 mg/kg	0.15 mg/kg	10.96 mg/kg
	iron	5720-34300 mg/kg	2300 mg/kg	358040 mg/kg/
	manganese	173-1180 mg/kg	160 mg/kg	3494 mg/kg/

Notes:

\* -Range of concentrations which exceed associated RBC.

Maintenance Shop Area (MNT)

Soils	Parameter	Concentration*	Risk-Based Concentration	95% UTL/95th percentile
Surface (0.5-1.5 feet bls)	aluminum	8440 mg/kg	7800 mg/kg	26879 mg/kg/
	arsenic	5.8-9.6 mg/kg	0.43 mg/kg	70.8 mg/kg/
	iron	13400-16600 mg/kg	2300 mg/kg	358040 mg/kg/
	manganese	298-574 mg/kg	160 mg/kg	3494 mg/kg/
Subsurface (2-10 feet bls)	aluminum	8350-11900 mg/kg	7800 mg/kg	26879 mg/kg/
	arsenic	5.1-11.6 mg/kg	0.43 mg/kg	70.8 mg/kg/
	beryllium	0.65-0.75 mg/kg	0.15 mg/kg	10.96 mg/kg
	iron	18600-22700 mg/kg	2300 mg/kg	358040 mg/kg/
	manganese	298-609 mg/kg	160 mg/kg	3494 mg/kg/

Notes:

\* -Range of concentrations which exceed associated RBC.

Power Substation (PSB)

Soils	Parameter	Concentration*	Risk-Based Concentration	95% UTL/95th percentile
Surface (0.5-1.5 feet bls)	aluminum	8210 mg/kg	7800 mg/kg	26879 mg/kg/
	arsenic	3.8-5.1 mg/kg	0.43 mg/kg	70.8 mg/kg/
	iron	11000-14400 mg/kg	2300 mg/kg	358040 mg/kg/
	manganese	226-312 mg/kg	160 mg/kg	3494 mg/kg/

Notes:

\* -Range of concentrations which exceed associated RBC.