



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DIVISION, GREAT LAKES AND OHIO RIVER
CORPS OF ENGINEERS
P. O. BOX 1159
CINCINNATI, OHIO 45201-1159

CELRD-ET (200- 1c)

20 July 2000

MEMORANDUM FOR Commander, Huntington District, ATTN: CELRH-PM-P

Subject: Defense Environmental Restoration Program for Formerly Used Defense Sites (DERP-FUDS) - Revised Inventory Project Report (INPR) for Site No. G05OH001800, Plum Brook Ordnance Works, Sandusky, Ohio

1. References:

- a. CELRH-ED-CE memorandum, 14 December 1998, SAB (Encl 1).
- b. Findings and Determination of Eligibility for subject project, signed 24 December 1992 (Encl 2).

2. The following recommended projects have been approved:

- a. HTRW project G05OH001813 (TNT Area A)
- b. HTRW project G05OH001814 (TNT Area B)
- c. HTRW project G05OH001815 (TNT Area C)
- d. HTRW project G05OH001816 (TNT Rail Car Loading Area)
- e. HTRW project G05OH001817 (Wastewater Treatment Plants No. 1 and 3)
- f. HTRW project G05OH001818 (Wastewater Treatment Plan No. 2)
- g. HTRW project G05OH001819 (Pentolite Area Waste Lagoons)
- h. HTRW project G05OH001820 (Red Water Ponds)
- i. HTRW project G05OH001821 (Ash Pits No. 1 and 3)
- j. HTRW project G05OH001822 (Powerhouse No. 2 Ash Pits)
- k. HTRW project G05OH001823 (Acid Areas 1, 2 and 3)
- l. HTRW project G05OH001824 (Lower Toluene Tanks)

CELRD-ET (200-1c)

20 July 2000

SUBJECT: Defense Environmental Restoration Program for Formerly Used Defense sites
(DERP-FUDS) - Revised Inventory Project Report (INPR) for Site No. G05OH001800, Plum
Brook Ordnance Works, Sandusky, Ohio

- m. HTRW project G05OH001825 (Garage Maintenance Area)
 - n. HTRW project G05OH001826 (Groundwater)
2. Please ensure that FUDSMUS is updated, that a copy of this INPR is provided state and federal regulators, and that landowner notification is done.



PAUL D. ROBINSON, P.E.

Director of Engineering and Technical Services

2 Encls

CF:
CEMP-RF/Gibson
CEHNC-PM
CELRD-PM-M



DEPARTMENT OF THE ARMY
HUNTINGTON DISTRICT, CORPS OF ENGINEERS
502 EIGHTH STREET
HUNTINGTON, WEST VIRGINIA 25701-2070

REPLY TO
ATTENTION OF:

14 DEC 1994

CELRH-EC-CE (200-1c)

MEMORANDUM FOR Commander, Lakes and Rivers Division, ATTN: CELRD-PM-M

SUBJECT: Defense Environmental Restoration Program for Formerly Used Defense Sites (DERP-FUDS) - Revised Inventory Project Report (INPR) for Site No. G05OH001800, Plum Brook Ordnance Works, Sandusky, Ohio

1. This memorandum transmits the revised INPR for the subject DERP-FUDS site. The site was formerly used by the Army. The revised Findings and Determination of Eligibility was signed on 20 April 1994. A revised Site Survey Summary Sheet is attached at Encl 1.
2. We determined there is hazardous waste at the site eligible for clean-up under DERP-FUDS. The category of hazardous waste is HTRW. The Project Summary Sheets are at Encls 2 through 15.
3. I recommend that you forward a copy of this INPR to CEMP requesting approval for the HTRW projects.

15 Encls
as (4 cys ea)

DANA ROBERTSON
Colonel, Corps of Engineers
Commanding

Encl 1



DEPARTMENT OF THE ARMY

U.S. Army Corps of Engineers
WASHINGTON, D.C. 20314-1000

PLUM BROOK
INPR

REPLY TO
ATTENTION OF:

13 JAN 1993

CEMP-RF (200-1a)

MEMORANDUM FOR

COMMANDER, OHIO RIVER DIVISION, ATTN: CEORD-DL
COMMANDER, HUNTSVILLE DIVISION, ATTN: CEHND-PM-OT

SUBJECT: Defense Environmental Restoration Program for Formerly
Used Defense Sites (DERP-FUDS) - Plum Brook Ordnance Works,
Sandusky, Ohio (Site Number G05OH001800)

1. This memorandum authorizes:

a. A hazardous, toxic, and radioactive waste (HTRW) project (project number G05OH001803) as described in the Inventory Project Report (INPR). Subject to availability of funds, the next phase of the HTRW project shall be a remedial investigation and feasibility study (RI/FS). The RI/FS, however, shall be of lesser scope than that required for a National Priority List site.

b. An ordnance and explosive waste (OEW) project (project number G05OH001806) as described in the INPR. Subject to availability of funds, the next phase of the OEW project shall be an engineering evaluation and cost analysis (EE/CA) to determine removal alternatives at the site. Please note that the approved project number is consistent with the number assigned by CEORD, rather than the one used by CEHND-PM-OT.

2. Execution of the HTRW project is assigned to a designated HTRW design district in accordance with the recent USACE reorganization. Execution of the OEW project through the removal design phase is assigned to the Huntsville Division. The subsequent removal action phase of the OEW project is assigned to CEORD.

3. We request:

a. CEORD, within 60 days of the date of this memorandum, ensure the landowners are notified of the decision and provide copies of the notification letters to CEMP-RF. CEORD also ensure that either CEORH or the HTRW design district updates the DERP-FUDS database within 30 days after the database is functional.

b. CEHND must periodically screen the DERP-FUDS database to ensure that geographic divisions/districts have provided the required update.

CEMP-RF (200-1a)

SUBJECT: Defense Environmental Restoration Program for Formerly
Used Defense Sites (DERP-FUDS) - Plum Brook Ordnance Works,
Sandusky, Ohio (Site Number G05OH001800)

c. Both CEORD and CEHND must ensure that the respective
projects are programed in the appropriate fiscal year workplans.

4. POC: T. Julian Chu, (202) 504-4695.

FOR THE DIRECTOR OF MILITARY PROGRAMS:

for Christopher Bond MS, EN

MICHAEL H. FELLOWS
Colonel, Corps of Engineers
Chief, Environmental Restoration
Division
Directorate of Military Programs

CF:

CEMRD-ED

CEORH-ED

CEORL-ED

CEHND-PM-ED



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DIVISION, OHIO RIVER
CORPS OF ENGINEERS
P. O. BOX 1159
CINCINNATI, OHIO 45201-1159

CEORD-DL-MS (200-1c)

DEC 24 1992

MEMORANDUM FOR CDRUSACE, ATTN: CEMP-RF/Chu, 20 Massachusetts Ave., NW, Washington, DC 20314-1000

SUBJECT: DERP-FUDS Inventory Project Report (INPR) for Site No. G05OH001800, Plum Brook Ordnance Works, Sandusky, Ohio

1. I am forwarding the INPR for Plum Brook Ordnance Works for appropriate action. The site is eligible for DERP-FUDS and the proposed HTRW (G05OH001803) and OEW (G05OH001806) projects are eligible for DERP-FUDS.

2. I recommend that:

a. CEMP-R approve the proposed HTRW project and assign it through this division to Huntington District for inclusion in the FY94 Workplan.

b. CEMP-R approve the proposed OEW project and assign it to CEHND for further investigation.

Encl

ALBERT J. GENETTI, Jr.
Brigadier General, US Army
Commanding

CF:
CEHND-PM-OT
CEHND-PM-EP



DEPARTMENT OF THE ARMY
HUNTINGTON DISTRICT, CORPS OF ENGINEERS
502 EIGHTH STREET
HUNTINGTON, WEST VIRGINIA 25701-2070

REPLY TO
ATTENTION OF:

CEORH-ED-DC (1110)

1 APR 92

MEMORANDUM FOR Commander, Ohio River Division, ATTN: CEORD-DL-MS

SUBJECT: DERP-FUDS Inventory Project Report (INPR) for Site No. G05OH001800, Plum Brook Ordnance Works, Sandusky, Ohio

1. This revised INPR reports on the DERP-FUDS preliminary assessment of the Plum Brook Ordnance Works. A site visit was conducted on 8 May 1985 and a Confirmation Study was conducted in February 1990. The site survey summary sheet, site map and Chemical Contamination Summary are attached as Enclosure 1.
2. We determined that the site was formerly used by the Army. A recommended Findings and Determination of Eligibility is attached as Enclosure 2.
3. We also determined there is hazardous waste at the site eligible for clean-up under DERP-FUDS. The category of hazardous waste at the site is HTW and OEW. The Project Summary Sheets are attached as Enclosures 3 and 4.
4. I recommend that you:
 - a. Approve and sign the Findings and Determination of Eligibility.
 - b. Forward a copy of this INPR to CEMRD for a determination of the need for further study of the HTW project.
 - c. Forward a copy of this INPR to CEHND for the PA file, and for a determination of the need for further study at the site.

Encl
as (6 cys ea)

JR *Wayne R. Reynolds, LTC*
JAMES R. VAN EPPS
Colonel, Corps of Engineers
Commanding

Encl 1

**DEFENSE ENVIRONMENTAL RESTORATION PROGRAM
FOR
FORMERLY USED DEFENSE SITES
FINDINGS AND DETERMINATION OF ELIGIBILITY**

PLUM BROOK ORD WORKS

Sandusky, Erie County, Ohio

Site No. G050H001800

FINDINGS OF FACT

1. The Plum Brook Ordnance Works consisted originally of 9,071.06 acres of land [9020.66 acres fee, 50.40 acres easement] acquired by purchase and condemnation from various owners in 1941. The site, located 4.7 miles south of Sandusky, Ohio, and 59 miles west of Cleveland, lies in the townships of Huron, Milan, Perkins, and Oxford, in Erie County, Ohio.
2. The Plum Brook Ordnance Works was used by the Trojan Powder Company for the manufacture of explosives during World War II. The works was constructed by the U. S. Army in 1940 and operated by the Army until 1945. The works included production lines for TNT, DNT, and pentolites.
3. The Plum Brook Ordnance works ceased operations in 1945, and the area was renamed the Plum Brook Depot. Portions of the depot were operated as an ammunition storage facility for Erie Ordnance Depot. The Plum Brook Depot was placed in inactive status in 1961.

The land disposal occurred in several, fairly complicated, stages. At the end of World War II, continued use of the works by the Department of War was not contemplated, so the entire facility, except for 52.74 acres which was previously quitclaimed to the Baltimore and Ohio Railroad Company on 27 March 1943, was declared excess. Later, the Department of the Army decided that it was best to withdraw the magazine area [2800.46 acres fee] from excess, and on 11 March 1946 this withdrawal was approved. The War Assets Administration accepted custody of the remainder on 6 September 1946.

In 1947, the magazine area, 2800.46 acres fee, was redesignated The Plum Brook Depot Activity [hereinafter PBDA]. It was to become known also as the "retained area" and was not a part of the surplus to WAA. This acreage was also referred to as the Erie Ordnance Depot, and was utilized for powder storage.

On 15 March 1949, the retained magazine area was 2800.46 acres, and the surplus in the custody of WAA/GSA was 6167.86 acres, fee; and 50.40 acres, easement.

By letter of transfer dated 16 June 1954, effective 30 June 1954, the

Department of the Army reacquired from GSA the 3180.33 acres ordnance works and 50.40 acres easements, which thereafter was known as Plum Brook Ordnance Works [hereinafter PBOW]. The rest of the original site, previously declared excess to WAA, was disposed of to either NASA or third party grantees. This area, referred to as the WAA net disposal area, contained 2987.13 acres. No work is proposed in the net disposal area, which is now largely a subdivision of residential properties, so it is unknown if any conditions, etc., are present in those disposal transactions.

By letter dated 24 January 1958, the Department of the Army transmitted a copy of a permit entered into by NACA [predecessor of NASA] and Army, by which NACA accepted Plum Brook Ordnance Works [PBOW] "subject to existing contamination without fencing of such areas by the Department of the Army."

By SF 118 dated 3 October 1958, as amended 3 August 1959, the Department of the Army declared excess 3180.33 acres fee and 50.60 acres easements [PBOW]. The SF 118 states that "detailed information regarding contamination is not being furnished as it is understood that NACA is agreeable to the transfer of the installation subject to contamination." At the time of this excess, PBOW was permitted to NACA, as noted in the preceding paragraph.

By SF 118 dated 22 September 1961, the Department of the Army declared excess the magazine area, [PBDA], 2800.46 acres fee. The SF 118 states that "neutralization of any contamination has been completed." At the time of excessing, this area was subject to 8 revocable at will agricultural leases.

On 23 October 1961, NASA-Lewis Research Center requested transfer of all lands covered by SF118 dated 3 October 1958 as amended [PBOW], and of the PBDA, SF 118 as listed in the preceding paragraph, for a total of 6031.39 acres of land, of which 5980.79 acres were fee, 50.40 acres easement, and 0.2 acres license. [Figures do not add up to acquisition figures exactly due to differences in survey and to rounding] A Statement of Justification attached thereto reads:

A Use Agreement was obtained from the Department of the Army on July 5, 1956, for approximately 500 acres (Pentolite Area, Plum Brook Ordnance Works). The reactor facility was constructed on this site with NACA, C&E appropriation of Fiscal Years 1956, 1958, and 1960. Subsequently, the balance of the land and structures of the Plum Brook Ordnance Works (excluding the Igloo Area) was turned over to NASA under a Use Agreement from the Department of the Army on January 22, 1958. This latter area (approximately 2700 acres) was and is used by the NASA for the construction of many rocket research facilities with NASA C&E and R&D appropriations of Fiscal Years 1958 and 1959.

...The current major research programs being conducted at Plum

Brook include the following:

1. Effect of radiation on materials.
2. Research on components for nuclear propulsion systems.
3. High energy chemical propulsion systems.
4. Nuclear rocket component research.

On 22 July 1962, NACA requested transfer of the entire 5980.79 acre fee and 50.40 acres easements [PBDA and PDOW]. The property was transferred to NACA on 15 March 1963 without reimbursement. NACA assumed accountability for and custody of the property on that date.

By corrected SF 118 dated 18 April 1978, NASA-Lewis Research Center declared excess 2152.15 acres of land and the structures thereon. Within this area lies two sites, both part of the old PBOW, which NASA accepted subject to contamination. The first of these was the Perkins School site. By indenture dated 2 June 1978, the Secretary of HEW quitclaimed unto the Perkins Board of Education, Sandusky, Ohio, 46.023 acres of land, subject to all legal highways. Exceptions included a right for the Government to maintain utilities; the exclusive use of the grantor and its assigns, together with rights of access, to a water reservoir and pumping station. Further, the grantee assumed maintenance of the roadways until they are dedicated. The Government also reserved for ten years the ownership of certain telephone equipment, the exclusive use thereof, and access to repair it. The restricted use of the property to educational purposes for thirty years. There was no recapture clause, nor did the Government promise to clean up the property, nor was any other type of restoration clause included in the deed. Also within the PBOW which NASA accepted subject to contamination was NASA designated Tract No. 59, consisting of 603.98 acres, which at the time of excess was under permit by NASA to EPA. This tract is currently under GSA control, but the SF118 indicates that EPA has a continuing need for all real property and improvements thereon, including buildings, roadways, utilities, and fencing. The Ohio National Guard has made it known to GSA that it has an interest in acquiring this property. Finally, GSA has indicated that should DoD restore or decontaminate this property, it contemplates sale to private parties. GSA has indicated that it is now their policy to not dispose of property which is or may be contaminated, so they are awaiting corrective action on the red water basins in order to process and dispose of this tract.

By SF 118 dated 10 October 1980, NASA-Lewis Research Center declared excess 142.663 acres of land and roadways, identified by NASA as parcels numbers 61 and 62. No work is contemplated by this report for either of these two parcels. Parcel Number 62; acreage unknown, was disposed of by GSA to the Department of the Army for use as an U. S. Army Reserve Center. GSA also has

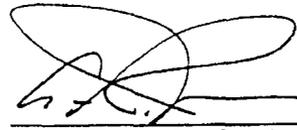
made two other disposals in recent years, to Wensink Seed Farms on 19 December 1989, quitclaiming 5.63 acres, and to Edward Scott Schenk, on 25 October 1989, quitclaiming 10.3 acres. Both of these disposals were subject to certain covenants intended to maintain the archeological integrity of the sites, but to no other significant covenants or restrictions. There were no recapture clauses or reversions in these two disposals, and GSA required the clean-up of these sites prior to its disposal of them. GSA apparently has approximately 2090.2 acres plus parcel number 61 still in its current inventory, as no further disposal information was found.

NASA-Lewis Research Center remains a 3685.977 acre installation owned by the United States.

DETERMINATION

Based on the foregoing findings of fact, the site has been determined to be formerly used by DoD. It is therefore eligible for the Defense Environmental Restoration Program - Formerly Used Defense Sites established under 10 USC 2701 et seq.

9/20/97
Date


ALBERT J. GENETTI, Jr.
Brigadier General, U.S. Army
Commanding

**DEFENSE ENVIRONMENTAL RESTORATION PROGRAM
FOR
FORMERLY USED DEFENSE SITES
FINDINGS AND DETERMINATION OF ELIGIBILITY**

PLUM BROOK ORD WORKS

Sandusky, Erie County, Ohio

Site No. G050H001800

FINDINGS OF FACT

1. The Plum Brook Ordnance Works consisted originally of 9,071.06 acres of land [9020.66 acres fee, 50.40 acres easement] acquired by purchase and condemnation from various owners in 1941. The site, located 4.7 miles south of Sandusky, Ohio, and 59 miles west of Cleveland, lies in the townships of Huron, Milan, Perkins, and Oxford, in Erie County, Ohio.
2. The Plum Brook Ordnance Works was used by the Trojan Powder Company for the manufacture of explosives during World War II. The works was constructed by the U. S. Army in 1940 and operated by the Army until 1945. The works included production lines for TNT, DNT, and pentolites.
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...The current major research programs being conducted at Plum Brook include the following:

1. Effect of radiation on materials.
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3. High energy chemical propulsion systems.
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Department of the Army for use as an U. S. Army Reserve Center. GSA also has made two other disposals in recent years, to Wensink Seed Farms on 19 December 1989, quitclaiming 5.63 acres, and to Edward Scott Schenk, on 25 October 1989, quitclaiming 10.3 acres. Both of these disposals were subject to certain covenants intended to maintain the archeological integrity of the sites, but to no other significant covenants or restrictions. There were no recapture clauses or reversions in these two disposals, and GSA required the clean-up of these sites prior to its disposal of them. GSA apparently has approximately 2090.2 acres plus parcel number 61 still in its current inventory, as no further disposal information was found.

NASA-Lewis Research Center remains a 3685.977 acre installation owned by the United States, and as such, is not eligible for DERP-FUDS under existing program guidelines.

DETERMINATION

Based on the foregoing findings of fact, the site has been determined to be formerly used by DoD. It is therefore eligible [with the exception of the active installation] for the Defense Environmental Restoration Program - Formerly Used Defense Sites established under 10 USC 2701 et seq.

24 Dec 92
Date


ALBERT J. GENETTI, Jr.
Brigadier General, U.S. Army
Commanding

PROPERTY SURVEY SUMMARY SHEET
DERP-FUDS PROPERTY NO. G05OH0018
PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO
6 OCTOBER 1999
(REVISED FROM 20 MAY 1999)

FUDS PROPERTY NAME: Plum Brook Ordnance Works (PBOW)

CURRENT PROPERTY NAME: Approximately 6,400 acres of the original 9,100 acres acquired for the site is now owned by the National Aeronautics Space Administration (NASA) and has been renamed *Plum Brook Station*. Remaining portions are owned by the General Services Administration (used by Ohio National Guard), Perkins Township Board of Education (used as a bus transportation center) or privately owned and used for farmland.

LOCATION: Sandusky, Erie County, Ohio. Latitude: 41° – 23' – 06" N,
Longitude: 82° – 40' – 03" W (approximate site entrance) See attached site map.

SITE HISTORY: The Department of Defense (DoD) acquired the 9,100-acre site in 1938 to manufacture 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. Production began on December 16, 1941 and continued through late 1945. In December 1945, custody of PBOW was transferred to the U.S. Army Ordnance Department, and the U.S. Army Corps of Engineers assumed responsibility for maintenance and custodial duties. In 1956, the National Advisory Committee for Aeronautics (now known as the National Aeronautics Space Administration, NASA) began leasing portions of PBOW from the Army. On March 15, 1963, NASA acquired approximately 6,400 acres of PBOW and presently utilizes the site aerospace research activities.

SITE VISIT: Robert P. Johannsen, CEORH-ED-D, conducted the initial site visit, 8 May 1985.

CATEGORY OF HAZARD: HTRW

PROJECT DESCRIPTION: Investigation of the Plum Brook Ordnance Works for Project No. G05OH001803, HTRW, has been separated into various areas of concern, and the following new HTRW projects are recommended or are currently in progress:

- a. Project No. G05OH001811 Additional Burning Grounds. During operation of the PBOW facility from 1942-1945, burning grounds were used for destruction of off-specification TNT, explosives, acids, solvents, asbestos, and waste oil. The Additional Burning Grounds include the G-8, Taylor Road, Snake Road, Fox Road, and the "Additional" burning grounds. Records indicate that the Taylor Road, Fox Road, and Snake Road burning grounds were used by NASA for waste disposal and a fire training area was located at the Snake Road Burning Ground. A Site Investigation (SI) of the G-8 Burning Grounds has been accomplished and the final report was issued 14 March 1997. The SI discovered impacts from polynuclear aromatic hydrocarbons (PAH) and metals, recommended further evaluation of

PROPERTY SURVEY SUMMARY SHEET
DERP-FUDS Property No. G05OH0018
Plum Brook Ordnance Works

constituents that were above Risk-Based Concentrations (RBCs), and the installation of one-bedrock monitoring well.

A SI of the Additional Burning Ground has been accomplished and the final report was issued 23 December 1997. PAH, PCB, nitroaromatics, and metals exceeded RBCs, and risk assessments were recommended. A Remedial Investigation (RI) is recommended for these five sites to obtain additional information to fill identified data gaps from the previous SI's, and complete the risk assessments. Previous investigations at the Fox Road, Taylor Road, and Snake Road burning grounds should be reviewed to identify data gaps and obtain the data necessary to prepare risk assessments for those sites. The need for and type of remedial actions at the five burning grounds will depend on the risk assessments' results.

- b. Project No. G05OH001812 Reservoir No. 2 Burning Ground. During operation of the PBOW facility from 1942-1945, the Reservoir No. 2 Burning Ground was used for destruction of off-specification TNT, explosives, acids, solvents, asbestos, and waste oil. A SI has been accomplished and the final report was issued 23 December 1997. Semi-volatile organic compounds (SVOCs), PCB, nitroaromatics, and metals were discovered above RBCs. Additional sampling was recommended to determine the extent of contamination. Based upon the SI recommendations, a RI should be conducted, which would involve soil sampling and analysis to define the extent of site contamination, and preparation of human health and ecological risk assessments. The need for and type of remedial action at the Reservoir No. 2 Burning Ground will depend on the RI recommendations and risk assessment results.
- c. Project No. G05OH001813 TNT Area A. The Department of Defense (DoD) utilized the Plum Brook Ordnance Works (PBOW) from 1941 until 1945 for the manufacture of 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. During this period, the PBOW facility housed operations for the manufacture of TNT and DNT in three primary areas, referred to as TNT Area A, TNT Area B, and TNT Area C. The project consists of the preparation of a RI/FS for TNT Area A. Objectives of the RI/FS would be to determine physical site characteristics; the nature and extent of site contamination; if contamination is attributed to former DoD activities; threats to human health and the environment; and potential remedial actions. The four-step RI/FS study for TNT Area B should be reviewed and used as a template for the investigation of TNT Area A. Previous investigations of this site should be reviewed to eliminate duplication of effort and identify any data gaps from those investigations.

PROPERTY SURVEY SUMMARY SHEET
DERP-FUDS Property No. G05OH0018
Plum Brook Ordnance Works

- d. Project No. G05OH001814 TNT Area B. From 1941 until 1945, the DoD utilized TNT Area B at the PBOW for the manufacture of TNT, DNT, and pentolite. A RI of surface and subsurface soil was accomplished in October – November 1998, and the draft report was submitted for regulator review in June 1999. Nitroaromatic contamination was discovered in various locations throughout the site, typically limited to the immediate vicinity of buildings or process areas. VOC, SVOC, and metal contamination were present, but not attributed to DoD activities. PCB contamination was also discovered, however, its use has not been documented at PBOW. Remaining work involves preparation of Human Health and Ecological risk assessments, and a focused Feasibility Study of potential remedial actions.
- e. Project No. G05OH001815 TNT Area C. The DoD constructed and utilized TNT Area C at the Plum Brook Ordnance Works (PBOW) for the manufacture of TNT, DNT, and pentolite from 1941 until 1945. The project consists of the preparation of a RI/FS for TNT Area C. Objectives of the RI/FS would be to determine physical site characteristics; the nature and extent of site contamination; if contamination is attributed to former DoD activities; threats to human health and the environment; and potential remedial actions. The four-step RI/FS study for TNT Area B should be reviewed and used as a template for the investigation of TNT Area C. Previous investigations of this site should be reviewed to eliminate duplication of effort and identify any data gaps from those investigations.
- f. Project No. G05OH001816 TNT Rail Car Loading. It is assumed that when the DoD utilized PBOW, TNT was loaded onto rail cars for shipment from the site and to on-site storage areas. The locations of these areas are unknown; however, remnants of blast-protection walls at TNT Area B suggest the possible location of one area that is referred to as TNT Rail Car Loading Area 1017. A limited SI has been accomplished and the draft report was submitted September 1999 for state regulator review. The investigation determined that there has been no significant environmental damage. Further project work includes SI finalization and coordination with state regulators for the preparation of a No Action Decision Document for this project.
- g. Project No. G05OH001817 Wastewater Treatment Plants No. 1 and 3. When the DoD utilized PBOW, process wastewater (“red water”) from TNT production was transported to WWTP No. 1 – TNT Area A, or WWTP No.3 – TNT Area C. The wastewater was then discharged through wooden flumes and elevated discharge pipes to settling ponds, known as the West Area Red Water Ponds A-1 and A-2, and the Pentolite Road Red Water Pond. A limited SI has been accomplished and the draft report submitted for review in September 1999. Further investigation will depend on the SI results and regulator review comments.

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DERP-FUDS Property No. G05OH0018
Plum Brook Ordnance Works

- h. Project No. G05OH001818 Wastewater Treatment Plant No. 2. When the DoD utilized PBOW, process waste water (“red water”) from TNT production was transported to Wastewater Treatment Plant No. 2 - TNT Area B, and then discharged through wooden flumes and elevated discharge pipes to settling ponds, known as the West Area and Pentolite Road Red Water Ponds. A Site Investigation of WWTP No. 2 has been accomplished, and the final report was issued 23 December 1997. It was determined that surface and subsurface soil contained PAH, PCB, and metals at concentrations that exceeded RBCs. The SI recommended additional soil sampling to establish the extent of site contaminants. A RI of WWTP No. 2 is recommended. Presently, a SI of WWTP Nos. 1 and 3, Project No. G05OH001817 is in progress. Any lessons learned from that SI should be incorporated into this project, as well as the recommendations from the December 1997 SI for WWTP No. 2, to prepare human health and ecological risk assessments. The need for and type of remedial action will depend on the RI recommendations and risk assessment results.
- i. Project No. G05OH001819 Pentolite Area Waste lagoons. The DoD utilized PBOW to manufacture pentolite from March 1943 through August 1945. During this period, wastewater was generated and disposed of into two (2) wastewater lagoons, or settling basins. The lagoons have since been removed and the pentolite area re-graded by NASA for the construction of the Plum Brook Reactor Facility. A limited SI has been accomplished and the report submitted for regulator review in September 1999. At this time, there is no indication of DoD contamination. Further investigation of the Pentolite Area waste lagoons may depend on regulator review comments.
- j. Project No. G05OH001820 Red Water Ponds. The DoD discharged TNT process wastewater, referred to as “red water”, into two (2) settling ponds, the West Area and the Pentolite Road, Red Water Ponds. In 1997, a focused RI determined that explosives were present in soils, and that explosives, metals, and nitrates were present in overburden groundwater, at both red water pond areas. The RI also noted that explosives might be present in the bedrock groundwater. A Direct Push Investigation and Risk Assessment has been conducted and the draft report was submitted March 1999. The human health risk assessment (HHRA) determined that cancer risks or hazard indices did not exceed Ohio EPA limits; however, data was insufficient on metals in surface water. The report noted that the HHRA would be completed when the bedrock groundwater RI is completed. The Ecological RA predicted relatively high hazard quotients for some receptors; however, there were noted data gaps. Further investigation is recommended to eliminate these data gaps.

PROPERTY SURVEY SUMMARY SHEET
DERP-FUDS Property No. G05OH0018
Plum Brook Ordnance Works

- k. Project No. G05OH001821 Ash Pits No. 1 and 3. The DoD constructed and utilized three (3) coal-burning power plants in support of the PBOW activities. Ash pits served as disposal areas for ash that was generated from the power plants. Based on past site activities, heavy metals are the likely contaminants of concern at the ash pits. A limited SI has been accomplished for these ash pits the draft report submitted for regulator review in September 1999. There is indication that these areas may have been negatively impacted by DoD activities. Metals' contamination may be consistent with background metal concentrations; however, the concentrations are high enough to warrant further investigation. The focus of any additional work will also depend on regulator comments to the draft SI.
- l. Project No. G05OH001822 Powerhouse No. 2 Ash Pits. The DoD constructed and utilized coal-burning Powerhouse No. 2 in support of the TNT production activities at PBOW. Ash that was generated from the plant was disposed in an adjacent pit. Heavy metals are the likely contaminants of concern at the ash pit. A SI of this ash pit has been accomplished and the final report issued 23 December 1997. It was determined that surface soil contained SVOCs and metals, and that subsurface soil contained metals, all at concentrations exceeding RBCs. The SI stated that soil sampling was adequate, and that risk assessments should be prepared. It is therefore recommended that human health and ecological risk assessments be prepared to determine the need for and any type of remedial action.
- m. Project No. G05OH001823 Acid Areas No. 1, 2 and 3. The DoD constructed and utilized three (3) acid areas to manufacture nitric and sulfuric acids, for use in TNT and pentolite manufacture. Based on past site activities, the acid areas were likely to be contaminated from nitric and sulfuric acids. A SI has been completed and the final report was submitted 18 December 1998. The SI determined that surface soils at all areas have SVOC and PCB contamination. All areas had metals' contamination that was comparable to background concentrations, and an isolated occurrence of 2,4-DNT was found in Acid Area 3. The SI recommended that human health and ecological risk assessments be prepared. Additional investigation may be required if unacceptable risks are found.
- n. Project No. G05OH001824 Lower Toluene Tanks. The DoD constructed and utilized the Lower Toluene Tanks to store toluene for use in the production of TNT and DNT. The DoD decommissioned the tanks in 1945. NASA removed one tank and uses it for fuel oil storage. A limited SI has been accomplished, with no indication of release from the USTs. The draft report was submitted for regulator review in September 1999. Additional project work involves seeking regulator concurrence on no further action and preparation of a No Further Action Decision Document.

PROPERTY SURVEY SUMMARY SHEET
DERP-FUDS Property No. G05OH0018
Plum Brook Ordnance Works

- o. Project No. G05OH001825. The project is the Garage Maintenance Area (GMA). During the period that DoD occupied PBOW, it constructed and utilized the GMA for the general maintenance and washing of equipment, vehicles, and railcars. Areas of concern at the GMA include the Locomotive Shop and Rail Car Washing Area. NASA presently occupies the Locomotive Shop, and the Rail Car Washing Area is an open field. A limited SI has been accomplished and the draft report submitted for regulator review in September 1999. Elevated levels of PCB and arsenic were discovered in the Locomotive Shop building's maintenance pit, and high levels of 2,4 DNT and arsenic were observed at the Rail Car Washing Area. Further investigation may be required to determine contamination extent and the need for remediation.

- p. Project NO. G05OH001826. The project is site-wide groundwater. DoD utilization of the former PBOW for the manufacture of TNT, DNT, and pentolite may have led to groundwater contamination from leaks and spills, and decommissioning of the PBOW site. A SI is underway, which consists of a site-wide groundwater investigation. Sampling has been conducted, and additional monitoring wells have been installed. Further investigation, RI/FS, is recommended which involves sampling and analysis of existing wells throughout the site to determine the nature and extent of contamination. Additional wells may need to be installed, and supplementary groundwater background data may be required for risk assessment preparation. A hydrologic model should be developed to predict contaminant fate and transport.

AVAILABLE STUDIES AND REPORTS:

An Administrative Record has been established for the Plum Brook Ordnance Works FUDS property. The documents are located at the Huntington District Corps of Engineers and the following library near the PBOW site:

Firelands College Library
901 Rye Beach Road
Huron, Ohio 44839

Some of the available reports include:

- a) War Department Industrial Facilities Inventory, 3/44, US Army Corps of Engineers
- b) Site Management Plan, Plum Brook Ordnance Works, 9/95, ICI, Inc.
- c) TNT Areas Site Investigation-Recommendations, 5/96, Author-Dames & Moore, Inc.
- d) Report for the Site Investigation at the G-8 Burning Ground, 3/97, IT Corporation
- e) Sitewide Groundwater Investigation - Final Report, 4/97, Dames & Moore, Inc.
- f) Red Water Focused Remedial Investigation-Final Report, 4/97, Dames & Moore, Inc.

PROPERTY SURVEY SUMMARY SHEET
DERP-FUDS Property No. G05OH0018
Plum Brook Ordnance Works

- g) TNT Areas Site Investigation-Final Report, 4/97, Dames & Moore, Inc.
- h) Site-Wide Groundwater Investigation, 9/97, IT Corp.
- i) Site Investigations of the Reservoir No. 2 Burning Ground, Additional Burning Ground, Wastewater Disposal Plant No.2, and Powerhouse No.2 Ash Pit, 12/97, IT Corp.
- j) Baseline Human Health Risk Assessment and Ecological Risk Assessment Work Plans – Red Water Ponds, 9/98, IT Corporation
- k) Site Investigation of Acid Areas, 12/98, IT Corporation
- l) Baseline Human Health Risk Assessment and Ecological Risk Assessment Work Plans – TNT Area B, 5/99, IT Corporation
- m) Summary Report Site-Wide Groundwater Monitoring (1997-1998), 6/99, IT Corporation

USEPA REMEDIAL PROJECT MANAGER: A RPM from Region V EPA has not been assigned to the Plum Brook Ordnance Works FUDS property. The Ohio EPA is the lead regulatory agency at this time.

OHIO EPA PROJECT MANAGER:

Ron Nabors, OEPA NW District, (419) 373-3147
Archie Lunsey, OEPA NW District, (419) 373-3035

INSTALLATION POC: Keith M. Peacock, Environmental Coordinator, NASA Plum Brook Station, (419) 621-3234.

DISTRICT POC: Richard L. Meadows, CELRH-DL-M, (304) 529-5388, is the Geographic District Project Manager for the PBOW FUDS property. Linda S. Ingram, CELRN-EP-R-M, (615) 736-7122, and Doug A. Meadors, CELRL-DL-B, (502) 625-7015, are Design District Technical Coordinators for the various Plum Brook projects.

SITE SURVEY SUMMARY SHEET
FOR
DERP-FUDS SITE NO. G05OH001800
PLUM BROOK ORDNANCE WORKS, OHIO
21 NOVEMBER 1998

SITE NAME: Plum Brook Ordnance Works (PBOW)

LOCATION: Sandusky, Ohio

SITE HISTORY: The site was acquired by the Department of Defense (DoD) in 1938 to manufacture 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. Production began on December 16, 1941 and continued through late 1945. In December 1945, custody of PBOW was transferred to the U.S. Army Ordnance Department, and the U.S. Army Corps of Engineers assumed responsibility for maintenance and custodial duties. In 1956, the National Advisory Committee for Aeronautics (now known as the National Aeronautics Space Administration, NASA) began leasing portions of PBOW from the Army. By 1963, approximately 6,400 acres of PBOW had been acquired by NASA for various aerospace research activities. NASA is the current major owner.

SITE VISIT: The initial site visit was conducted on 8 May 1985 by Robert P. Johannsen, CEORH-ED-D.

CATEGORY OF HAZARD: HTRW

PROJECT DESCRIPTION: Investigation of the Plum Brook Ordnance Works for Project No. G05OH001803, HTRW, has been separated into various areas of concern, and the following new HTRW projects are recommended:

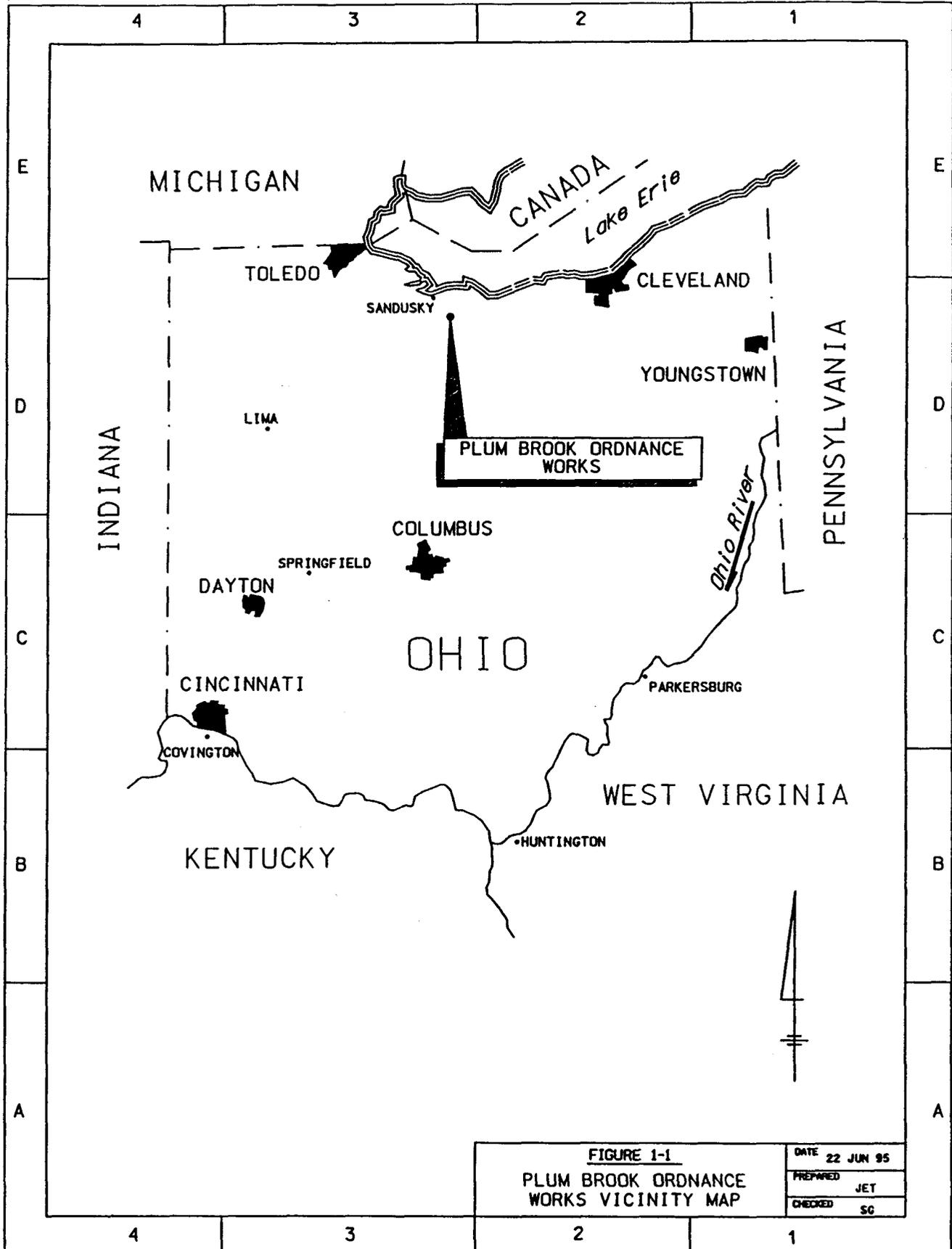
- a. Project No. G05OH001813. The project consists of the preparation of a Remedial Investigation/Feasibility Study (RI/FS) for TNT Area A.
- b. Project No. G05OH001814. The project consists of the preparation of a Remedial Investigation/Feasibility Study (RI/FS) for TNT Area B.
- c. Project No. G05OH001815. The project consists of the preparation of a Remedial Investigation/Feasibility Study (RI/FS) for TNT Area C.
- d. Project No. G05OH001816. The project consists of the preparation of a Limited Site Investigation for the TNT Rail Car Loading Area.
- e. Project No. G05OH001817. The project consists of the preparation of a Limited Site Investigation for Wastewater Treatment Plants No. 1 and 3.
- f. Project No. G05OH001818. The project consists of the preparation of a Remedial Investigation/Feasibility Study (RI/FS) for Wastewater Treatment Plant No. 2.
- g. Project No. G05OH001819. The project consists of the preparation of a Limited Site Investigation for the Pentolite Area Waste Lagoons.
- h. Project No. G05OH001820. The project consists of the preparation of a Remedial Investigation/Feasibility Study (RI/FS) for the Red Water Pond.

- i. Project No. G05OH001821. The project consists of the preparation of a Limited Site Investigation for Ash Pits No. 1 and 3.
- j. Project No. G05OH001822. The project consists of the preparation of a Remedial Investigation/Feasibility Study (RI/FS) for Powerhouse No. 2 Ash Pits.
- k. Project No. G05OH001823. The project consists of the preparation of a Site Investigation for Acid Areas 1, 2 and 3.
- l. Project No. G05OH001824. The project consists of the preparation of a Limited Site Investigation for the Lower Toluene Tanks.
- m. Project No. G05OH001825. The project consists of the preparation of a Limited Site Investigation for the Garage Maintenance Area.
- n. Project NO. G05OH001826. The project consists of a site-wide groundwater investigation (Site Investigation).

AVAILABLE STUDIES AND REPORTS:

- a. Site Investigations of the Reservoir No. 2 Burning Ground, Additional Burning Ground, Wastewater Disposal Plant No.2, and Powerhouse No.2 Ash Pit, 12/97, IT Corp.
- b. TNT Areas Site Investigation-Final Report, 4/97, Dames & Moore, Inc.
- c. TNT Areas Site Investigation-Recommendations, 5/96, Author-Dames & Moore, Inc.
- d. Sitewide Groundwater Investigation-Final Report, 4/97, Dames & Moore, Inc.
- e. Site Investigation at the G-8 Burning Ground, Revision 1, 5/96, IT Corporation
- f. Red Water Focused Remedial Investigation-Final Report, 4/97, Dames & Moore, Inc.
- g. Report for the Site Investigation at the G-8 Burning Ground, Revision 1, 3/97, IT Corporation
- h. Site-Wide Groundwater Investigation, 9/97, IT Corp.

District POC: Nancy O. Stouffer, CELRH-DL-M, (304) 529-5035, is the Geographic District Project Manager. Linda S. Ingram, CELRN-EP-R-M, (615) 736-7122, and Kevin L. Jasper, CELRL-DL-B, (502) 625-7015, are Design District Technical Coordinator, and Design District Project Manager, for the various projects.



SITE SURVEY SUMMARY SHEET
FOR
DERP-FUDS SITE NO. G050H001800
PLUM BROOK ORDNANCE WORKS, OHIO
20 March 1992

SITE NAME: Plum Brook Ordnance Works

LOCATION: Sandusky, Ohio

SITE HISTORY: Property was acquired in 1941 by purchase and condemnation for the construction and operations of an ordnance works. The site was excessed to GSA in various phases. The current major owner is NASA.

SITE VISIT: A site visit was conducted on 8 May 1985 by Robert P. Johannsen, CEORH-ED-D.

CATEGORY OF HAZARD: HTW and OEW

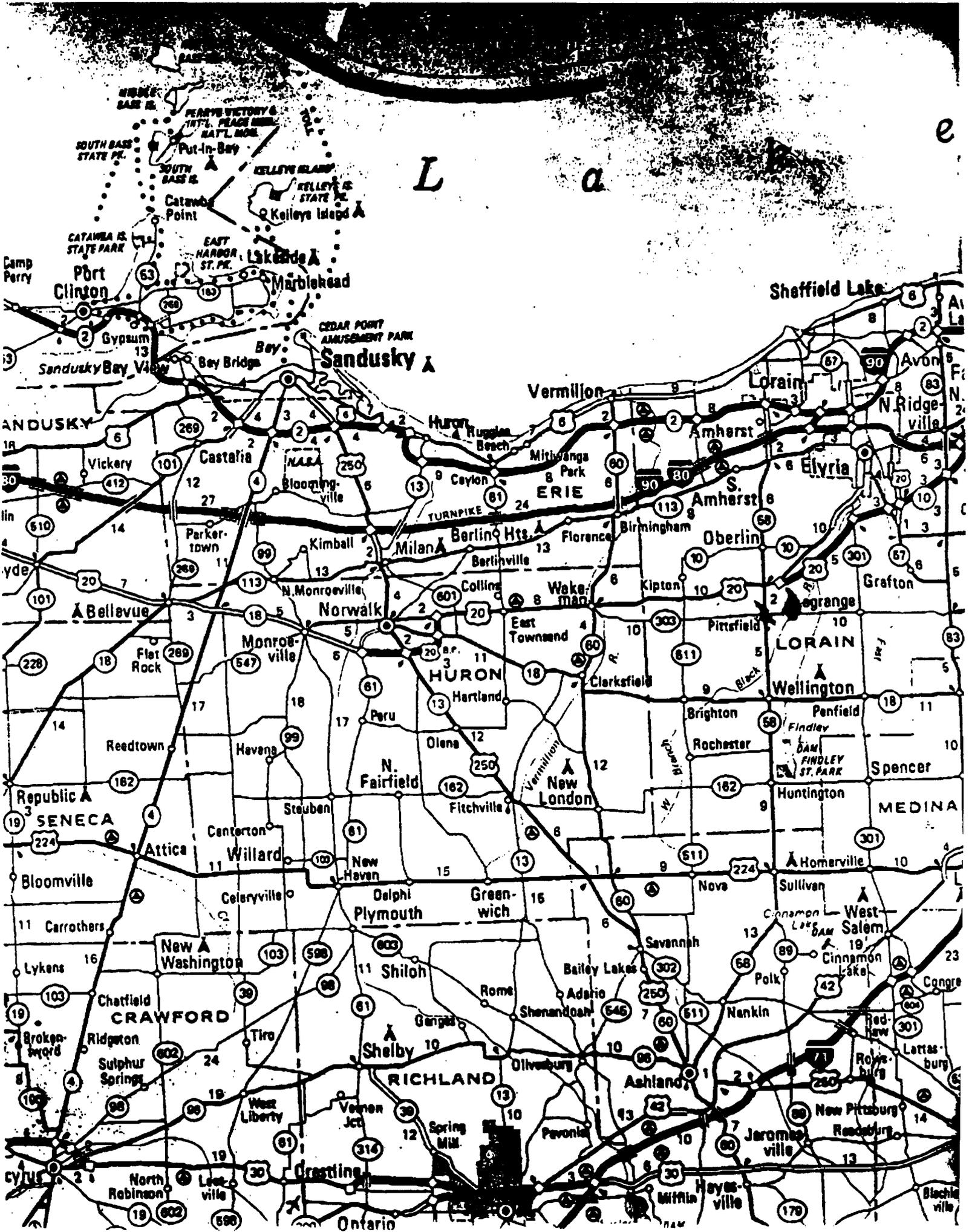
PROJECT DESCRIPTION:

a. HTW. The project consists of the preparation of a Remedial Investigation/Feasibility Study (RI/FS) for contaminated areas such as TNT deposits on the site.

b. OEW. Work involves a site inspection and preparation of a report on potential ordnance and explosive waste hazards that may exist at the site.

AVAILABLE STUDIES AND REPORTS: Confirmation Study by CEORN, February 1990. The Chemical Contamination Summary is attached.

PA POC: Frank R. Albert, Jr., (304) 529-5194, CEORH-ED-DC.



CHEMICAL CONTAMINATION SUMMARY
FOR
THE FORMER PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO

1. A confirmation study was conducted at the former Plum Brook Ordnance Works, Sandusky, Ohio, to determine if chemical contamination from previous DOD-related activities was present and if groundwater degradation was resulting. The scope of the contamination evaluation included a records review and evaluation; visual site inspection; development of a site specific safety plan, sampling/analysis plan, monitoring well installation plan, and QA/QC plan; soils sampling during the monitoring well installation for geotechnical characterization; installation of four monitoring wells for ground-water sampling, chemical characterization, and in-situ permeability testing; collection of 20 composite soil samples from soil borings for chemical characterization; collection of four surface water samples from the streams at the site for chemical characterization; a site survey; and completion of hazardous ranking forms.
2. A summary of significant chemical concentrations found during this study is provided in Table 1. The overall hazard ranking score for chemical contamination is 0 since no users of this aquifer were found in the area. This score may not be accurate, as it was done using the Navy's HRS scoring method instead of the EPA's HRS scoring method. This study was begun before the EPA's HRS scoring method was required for confirmation studies.
3. Analytical results of the nitroaromatic analyses indicates extensive soil contamination at both waste disposal areas and minor soil contamination at the Scheid Road Burning Ground. Nitroaromatic contamination was also found in the groundwater at Waste Disposal Area 2. This contamination is directly attributable to past DOD actions at this facility.
4. Results of the volatile organics analyses indicated acetone in the soil and groundwater samples. This can be attributed to the decontamination procedures used during the contamination survey.
5. Analytical results of the metals analyses indicate significant concentrations of manganese in the soil at Waste Disposal Area 2. Elevated sodium levels were also found in the soil at both waste disposal areas. One soil sample from the Scheid Road burning ground also exhibited elevated levels of lead. Substantial concentrations of chromium were found in the groundwater samples. Elevated concentrations of Barium were also found in one groundwater sample. One soil sample from Waste Disposal Area 2 contained a elevated concentration of chromium. All of this contamination is a result of past DOD activities at the site.
6. Elevated sulfate concentrations were found in the groundwater and the soil at the waste disposal areas. Surface water and soil samples from the waste disposal areas exhibited elevated nitrate concentrations. All of this contamination probably resulted from DOD activities at the site.

7. A discrepancy between the contract laboratory results and the Quality Assurance laboratory results for explosives arose during this study. Analytical results were in question from a previous study conducted by the same laboratory. The contract laboratory did not detect TNT while the QA laboratory did. As a result of this conflict, all nitroaromatic analyses for all studies performed by this contractor were examined in detail. Based on this examination, it was determined that the nitroaromatic results for Plum Brook were low. Therefore, the nitroaromatic contamination found during this phase is probably more extensive than the results of this study show. This decision was based on discussions with CEMRD-ED-GL, CERL, and the contract laboratory.

RECOMMENDATION

It is recommended that an Remedial Investigation/Feasibility Study (RI/FS) be conducted at this site. This study should include:

- Installation and sampling of additional monitoring wells to determine the extent of explosives, metals, sulfate, and nitrate contamination.
- Collection of additional soil samples to determine the extent of the explosives and metals contamination at the waste disposal areas and metals contamination at the Scheid Road burning ground.
- Collection of sediment samples from the pond at Waste Disposal Area 2.
- Evaluation of preliminary hazards and a survey of sensitive receptors to determine if immediate action is required at the site.

TABLE 1

SUMMARY OF SIGNIFICANT CONCENTRATIONS FOUND
IN SAMPLES COLLECTED AT THE FORMER PLUM BROOK ORDNANCE WORKS

| <u>Constituent</u> | <u>Location</u> | <u>Standard</u> | <u>Concentration (ppb)</u> |
|--------------------|-----------------|-----------------|----------------------------|
| Barium | MW02B | 1,000 ppb | 214,000 |
| Chromium | MW02B | | 20,000 |
| | SB-07 | | 17,000 |
| | MW-02 (dup) | 50 ppb | 120 |
| | MW-06 | | 120 |
| 1,3 - DNB | SB-12 | | 590 |
| | SB-13 | | 620 |
| | SB-14 | | 3,700 |
| | SB-16 | | 550 |
| | SB-16 (4-6') | | 6,400 |
| | SB-18 | | 5,000 |
| 2,6 - DNT | SB-14 | | 1,700 |
| | SB-16 | | 1,500 |
| | SB-18 | | 1,000 |
| | MW-02 | | 27 |
| | MW-02 (dup) | | 25 |
| 2,4 - DNT | SB-07 | | 230 |
| | SB-12 | | 910 |
| | SB-13 | | 2,200 |
| | SB-14 | | 20,000 |
| | SB-16 | | 3,200 |
| | SB-16 (4-6') | | 16,300 |
| | SB-17 | | 1,100 |
| | SB-18 | | 19,000 |
| | MW-02 | | 160 |
| ME-02 (dup) | | 140 | |
| Lead | SB-03 | | 50,000 |
| Manganese | SB-01 | | 300,000 |
| | SB-02 | | 180,000 |
| | SB-03 | | 71,300 |
| | SB-05 | | 35,000 |
| | SB-06 | | 129,000 |
| | MW02B | | 2,600,000 |
| | SB-07 | | 530,000 |
| | SB-09 | | 104,000 |
| | SB-10 | | 271,000 |
| | SB-11 | | 211,000 |

TABLE 1 (con't)

SUMMARY OF SIGNIFICANT CONCENTRATIONS FOUND
IN SAMPLES COLLECTED AT THE FORMER PLUM BROOK ORDNANCE WORKS

| <u>Constituent</u> | <u>Location</u> | <u>Standard</u> | <u>Concentration (ppb)</u> |
|--------------------|-----------------|-----------------|----------------------------|
| Manganese | SB-12 | | 262,000 |
| | SB-13 | | 263,000 |
| | SB-14 | | 146,000 |
| | SB-15 | | 181,000 |
| | SB-15 (4-6') | | 244,000 |
| | SB-16 | | 78,200 |
| | SB-16 (4-6') | | 435,000 |
| | SB-17 | | 141,000 |
| | SB-18 | | 97,600 |
| | MW-01 | 50 ppb | 310 |
| | MW-02 | | 2,800 |
| | MW-02 (dup) | | 3,000 |
| | MW-06 | | 93 |
| Nitrate | SB-01 | | 2,000 |
| | SB-05 | | 2,000 |
| | SB-09 | | 12,000 |
| | SB-11 | | 5,000 |
| | SB-12 | | 7,000 |
| | SB-16 (4-6') | | 1,800,000 |
| | SB-18 | | 2,500,000 |
| | SW-01 | | 15,000 |
| Nitrobenzene | SB-16 | | 480 |
| Nitrotoluene | SB-16 | | 480 |
| Sodium | SB-02 | | 110,000 |
| | MW02B | | 578,000 |
| | SB-07 | | 1,360,000 |
| | SB-09 | | 205,000 |
| | SB-10 | | 174,000 |
| | SB-11 | | 539,000 |
| | SB-12 | | 1,660,000 |
| | SB-13 | | 2,590,000 |
| | SB-14 | | 3,420,000 |
| | SB-15 | | 96,900 |
| | SB-15 (4-6') | | 125,000 |
| | SB-16 | | 1,040,000 |
| | SB-16 (4-6') | | 2,820,000 |
| | SB-17 | | 1,240,000 |
| SB-18 | | 1,980,000 | |

TABLE 1 (con't)

SUMMARY OF SIGNIFICANT CONCENTRATIONS FOUND
IN SAMPLES COLLECTED AT THE FORMER PLUM BROOK ORDNANCE WORKS

| <u>Constituent</u> | <u>Location</u> | <u>Standard</u> | <u>Concentration (ppb)</u> |
|--------------------|-----------------|-----------------|----------------------------|
| Sulfate | SB-12 | | 2,000,000 |
| | SB-13 | | 16,000 |
| | SB-14 | | 15,000 |
| | SB-16 | | 9,000 |
| | SB-16 (4-6') | | 120,000 |
| | SB-17 | | 10,000 |
| | SB-18 | | 190,000 |
| | MW-01 | | 130,000 |
| | MW-02 | | 950,000 |
| | MW-02 (dup) | | 950,000 |
| | MW-06 | | 60,000 |
| | SW-01 | | 100,000 |
| | SW-02 | | 110,000 |
| | SW-03 | | 110,000 |
| | SW-04 | | 180,000 |
| | SW-04 (dup) | | 180,000 |
| 1,3,5 - TNB | SB-03 | | 93 |
| | SB-07 | | 410 |
| | SB-12 | | 3,400 |
| | SB-13 | | 730 |
| | SB-14 | | 14,000 |
| | SB-16 | | 1,200 |
| | SB-16 (4-6') | | 15,000 |
| | SB-17 | | 670 |
| SB-18 | | 10,000 | |
| 2,4,6 - TNT | SB-12 | | 680 |
| | SB-16 | | 740 |

PROJECT SUMMARY SHEET
FOR
DERP-FUDS HTW PROJECT NO. G05OH001803
PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO
SITE NO. G05OH001800
20 March 1992

PROJECT DESCRIPTION: Plum Brook Ordnance Works was utilized by the Department of Defense for the production of ordnance. DOD use of the site left red water basins as part of the contamination.

PROJECT ELIGIBILITY: Records indicate that the site was acquired and utilized by DOD for an ordnance works. Residual deposits of TNT and red water basins remain from DOD use of the site. A contamination evaluation found TNT compounds in the soil and groundwater.

POLICY CONSIDERATIONS: Current DOD policy dictates eligibility for remediation of DOD generated hazardous and toxic waste even though there was no evidence of a hazard when the property was transferred from DOD. The contamination present is from direct DOD use of the site.

PROPOSED PROJECT: An HTW project is proposed. The project consists of the preparation of a Remedial Investigation/Feasibility Study of the red water basins, soil and groundwater.

EPA Form 2070-12: Attached.

DD Form 1391: Attached.

District POC: Frank R. Albert, Jr., (304) 529-5194, CEORH-ED-DC.



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION
01 STATE 02 SITE NUMBER

II. SITE NAME AND LOCATION

01 SITE NAME (or EPA Control or descriptive name of site): PLUM BROOK CRDNANCE WORKS

02 STREET, ROUTE NO. OR SPECIFIC LOCATION IDENTIFIER

03 CITY: SANDUSKY 04 STATE: OH 05 ZIP CODE: 44870 06 COUNTY: ERIE 07 COUNTY OR CONGO. DIST. CODE: 5

08 COORDINATES: LATITUDE _____ LONGITUDE _____

10 DIRECTIONS TO SITE (Starting from nearest public road):
I 80, NORTH 0.1 MILE ON RT 4, EAST .2 MILE ON RT 13. SITE NORTH NEAR BURNINGVILLE

III. RESPONSIBLE PARTIES (FORMER USE)

01 OWNER (if known): US Army Corps of Engineers 02 STREET (if known) (agency name): 502 E 11th ST

03 CITY: HUNTINGTON 04 STATE: WV 05 ZIP CODE: 25701 06 TELEPHONE NUMBER: 304 529-5194

07 OPERATOR (if known and different from owner): NONE 08 STREET (if known) (agency name):

09 CITY: _____ 10 STATE: _____ 11 ZIP CODE: _____ 12 TELEPHONE NUMBER: _____

13 TYPE OF OWNERSHIP (check one):
 A PRIVATE B FEDERAL NASA C STATE D COUNTY E MUNICIPAL
 F OTHER Former Road Use G UNKNOWN

4 OWNER OPERATOR NOTIFICATION ON FILE (check all that apply):
 A RCRA 3001 DATE RECEIVED _____ B UNCONTROLLED WASTE SITE (RCRA 103 c) DATE RECEIVED _____ C NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION: YES DATE 2 90 NO
BY (check all that apply): A EPA B EPA CONTRACTOR C STATE D OTHER CONTRACTOR
 E LOCAL HEALTH OFFICIAL F OTHER US Army Corps of Engineers
CONTRACTOR NAME(S): NASHVILLE DIST

02 SITE STATUS (check one): A ACTIVE B INACTIVE C UNKNOWN

03 YEARS OF OPERATION: _____ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT KNOWN OR ALLEGED:
Barium; Chromium; Acetone; Manganese; Sulfate; Nitrate; 1,3-DNB; 2,6-DNT; 2,4-DNT; 1,3,5-TNB; 2,4,6-TNT

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION:
SOIL AND GROUNDWATER CONTAMINATION

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (check one): A HIGH B MEDIUM C LOW D NONE

VI. INFORMATION AVAILABLE FROM

01 CONTACT: FRANK ALBERT 02 OF (agency, organization): US ARMY COE HUNTINGTON DISTRICT 03 TELEPHONE NUMBER: 304 529-5194

04 PERSON RESPONSIBLE FOR ASSESSMENT: SAME 05 AGENCY: _____ 06 ORGANIZATION: _____ 07 TELEPHONE NUMBER: _____ 08 DATE: 3 20 92



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

| I. IDENTIFICATION | |
|-------------------|----------------|
| 01 STATE | 02 SITE NUMBER |

| | | | |
|---|---|------------------------------------|---|
| II. HAZARDOUS CONDITIONS AND INCIDENTS <small>CONTINUE</small> | | | |
| 01 <input type="checkbox"/> J DAMAGE TO FLORA 04 NARRATIVE DESCRIPTION | 02 <input type="checkbox"/> OBSERVED (DATE _____) | <input type="checkbox"/> POTENTIAL | <input type="checkbox"/> ALLEGED |
| 01 <input type="checkbox"/> K DAMAGE TO FAUNA 04 NARRATIVE DESCRIPTION <small>(INCLUDE NUMBER OF SPECIES)</small> | 02 <input type="checkbox"/> OBSERVED (DATE _____) | <input type="checkbox"/> POTENTIAL | <input type="checkbox"/> ALLEGED |
| 01 <input type="checkbox"/> L CONTAMINATION OF FOOD CHAIN 04 NARRATIVE DESCRIPTION | 02 <input type="checkbox"/> OBSERVED (DATE _____) | <input type="checkbox"/> POTENTIAL | <input type="checkbox"/> ALLEGED |
| 01 <input checked="" type="checkbox"/> M UNSTABLE CONTAINMENT OF WASTES <small>(SLOTTED LINED, FIBRE BOARD, BRICK, PLUM)</small> 03 POPULATION POTENTIALLY AFFECTED _____ | 02 <input checked="" type="checkbox"/> OBSERVED (DATE <u>2/90</u>) | <input type="checkbox"/> POTENTIAL | <input checked="" type="checkbox"/> ALLEGED |
| 04 NARRATIVE DESCRIPTION <u>SOIL CONTAMINATION FOUND</u> | | | |
| 01 <input type="checkbox"/> N DAMAGE TO OFFSITE PROPERTY 04 NARRATIVE DESCRIPTION | 02 <input type="checkbox"/> OBSERVED (DATE _____) | <input type="checkbox"/> POTENTIAL | <input type="checkbox"/> ALLEGED |
| 01 <input type="checkbox"/> O CONTAMINATION OF SEWERS STORM DRAINS WWTPs 04 NARRATIVE DESCRIPTION | 02 <input type="checkbox"/> OBSERVED (DATE _____) | <input type="checkbox"/> POTENTIAL | <input type="checkbox"/> ALLEGED |
| 01 <input type="checkbox"/> P ILLEGAL UNAUTHORIZED DUMPING 04 NARRATIVE DESCRIPTION | 02 <input type="checkbox"/> OBSERVED (DATE _____) | <input type="checkbox"/> POTENTIAL | <input type="checkbox"/> ALLEGED |
| 05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS | | | |
| III. TOTAL POPULATION POTENTIALLY AFFECTED: <u>2100</u> | | | |
| IV. COMMENTS | | | |
| V. SOURCES OF INFORMATION <small>SEE ADDITIONAL INFORMATION ON C. 11010-1001 REPORT NUMBER 100001</small> | | | |
| <u>CONFIRMATION STUDY BY NASHVILLE DISTRICT COE FEB 1990</u> | | | |



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

IDENTIFICATION
STATE/ COUNTY/ SITE NUMBER

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 A GROUNDWATER CONTAMINATION
02 OBSERVED DATE 2/90 POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED 700 04 NARRATIVE DESCRIPTION

NASHVILLE DISTRICT CONFIRMATION STUDY
FEB 1990

01 E SURFACE WATER CONTAMINATION
02 OBSERVED DATE _____ POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED 700 04 NARRATIVE DESCRIPTION

01 C CONTAMINATION OF AIR
02 OBSERVED DATE _____ POTENTIAL _____ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

01 F FIRE EXPLOSIVE CONDITIONS
02 OBSERVED DATE _____ POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

01 E DIRECT CONTACT
02 OBSERVED DATE _____ POTENTIAL _____ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

01 S CONTAMINATION OF SOIL
02 OBSERVED DATE 2/90 POTENTIAL ALLEGED
03 AREA POTENTIALLY AFFECTED 1/4 MILE 04 NARRATIVE DESCRIPTION

01 D DRINKING WATER CONTAMINATION
02 OBSERVED DATE 2/90 POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED 700 04 NARRATIVE DESCRIPTION

AQUIFER IN AREA BUT NO LEAKS FOUND

01 W WORKER EXPOSURE/INJURY
02 OBSERVED DATE _____ POTENTIAL _____ ALLEGED
03 WORKERS POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

01 P POPULATION EXPOSURE/INJURY
02 OBSERVED DATE _____ POTENTIAL _____ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

1. IDENTIFICATION
01 STATE 02 SITE NUMBER

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

| | | |
|---|--|---|
| 01 WASTE STATES <input checked="" type="checkbox"/> SOLID <input checked="" type="checkbox"/> POWDER/FINES <input checked="" type="checkbox"/> SLUDGE <input type="checkbox"/> LIQUID <input type="checkbox"/> GAS <input type="checkbox"/> OTHER | 02 WASTE QUANTITY AT SITE MEASURE OF WASTE QUANTITIES TONS CUBIC YARDS NO. OF DRUMS UNKNOWN | 03 WASTE CHARACTERISTICS <input type="checkbox"/> TOXIC <input type="checkbox"/> CORROSIVE <input type="checkbox"/> RADIOACTIVE <input type="checkbox"/> PERSISTENT <input type="checkbox"/> SOLUBLE <input type="checkbox"/> INFECTIOUS <input type="checkbox"/> FLAMMABLE <input checked="" type="checkbox"/> IGNITABLE <input type="checkbox"/> HIGHLY VOLATILE <input checked="" type="checkbox"/> EXPLOSIVE <input type="checkbox"/> REACTIVE <input type="checkbox"/> INCOMPATIBLE <input type="checkbox"/> NOT APPLICABLE |
|---|--|---|

III. WASTE TYPE

| CATEGORY | SUBSTANCE NAME | 01 GROSS AMOUNT | 02 UNIT OF MEASURE | 03 COMMENTS |
|----------|-------------------------|-----------------|--------------------|-------------|
| 01 | SLUDGE | | | |
| 02 | DILUTE WASTE | | | |
| 03 | SOLVENTS | | | |
| 04 | PESTICIDES | | | |
| 05 | OTHER ORGANIC CHEMICALS | | | |
| 06 | INORGANIC CHEMICALS | | | |
| 07 | ACIDS | | | |
| 08 | BASES | | | |
| 09 | HEAVY METALS | | | |

IV. HAZARDOUS SUBSTANCES (See Appendix 10 for most frequently listed CAS Numbers)

| 01 CATEGORY | 02 SUBSTANCE NAME | 03 CAS NUMBER | 04 STORAGE/ DISPOSAL METHOD | 05 CONCENTRATION | 06 MEASURE OF CONCENTRATION |
|-------------|-------------------|---------------|-----------------------------|------------------|-----------------------------|
| | BARIUM | | LAND | 214,000 | PPB |
| | CHROMIUM | | LAND | 20,000 | PPB |
| | 1,3-DNB | | LAND | 6,400 | PPB |
| | 2,4-DNT | | LAND | 1,700 | PPB |
| | 2,4-DNT | | LAND | 20,000 | PPB |
| | LEAD | | LAND | 50,000 | PPB |
| | MANGANESE | | LAND | 2,600,000 | PPB |
| | NITRATE | | LAND | 2,500,000 | PPB |
| | NITROBENZENE | | LAND | 400 | PPB |
| | NITROTOLUENE | | LAND | 400 | PPB |
| | SODIUM | | LAND | 3,400,000 | PPB |
| | SULFATE | | LAND | 2,000,000 | PPB |
| | 1,3,5-TNB | | LAND | 15,000 | PPB |
| | 2,4,6-TNT | | LAND | 700 | PPB |

V. FEEDSTOCKS (See Appendix 10 for CAS Numbers)

| CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER | CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER |
|----------|-------------------|---------------|----------|-------------------|---------------|
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |

VI. SOURCES OF INFORMATION (See Appendix 10 for sources of information)

CONFIRMATION STUDY FEB 1990 BY
NASHVILLE DISTRICT, CORPS OF ENGRS
(NOTE: MAX. CONCENTRATIONS SHOWN)

| | | | | | |
|---|--|--|-----------------------------------|------------------------------------|--|
| 1. COMPONENT ARMY | | FY 1992 MILITARY CONSTRUCTION PROJECT DATA | | 2. DATE March 1992 | |
| 3. INSTALLATION AND LOCATION Plum Brook Ordnance Works Sandusky, Ohio | | | 4. PROJECT TITLE DERP-FUDS HTW | | |
| 5. PROGRAM ELEMENT DERP-FUDS | | 6. CATEGORY CODE HTW | 7. PROJECT NUMBER G05OH018003 | 8. PROJECT COST (\$000) \$972.0 | |

| 9. COST ESTIMATES | | | | |
|--|-----|----------|-----------|--------------|
| ITEM | U/M | QUANTITY | UNIT COST | EST. (\$000) |
| Prepare Remedial Investigation/ Feasibility Study | | | | \$900.0 |
| S & A @ 8% | | | | <u>72.0</u> |
| TOTAL | | | | \$972.0 |
| | | | | |
| | | | | |

10. Description of Proposed Construction

Description of Proposed Work:

Prepare a Remedial Investigation/Feasibility Study on the subject site. Work will include:

1. Installation of monitoring wells.
2. Soil borings.
3. Taking and chemical analysis of soil and water samples.
4. Preparation of Feasibility Study that will identify alternatives for cleanup and costs for the same.

PROJECT SUMMARY SHEET
FOR
DERP-FUDS OEW PROJECT NO. G05OH001804
PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO
SITE NO. G05OH001800
20 March 1992

PROJECT DESCRIPTION: The site is a 9,071 acre ordnance works that was used by the Army for the manufacture of explosives.

PROJECT ELIGIBILITY: Records indicate that the site was acquired and utilized by DOD for an ordnance works. Any ordnance contamination that may exist would be the direct result of DoD activity. This project has been evaluated in accordance with the risk assessment procedures for explosive ordnance.

POLICY CONSIDERATIONS: There is no policy applicable to this project.

PROPOSED PROJECT: An OEW project is proposed that consists of a site inspection to evaluate potential hazards.

DD Form 1391: Attached.

RAC: A Risk Assessment Code (RAC) of 4 was derived for the site; categorized as "Critical" (Category II) for hazard severity and "Remote" (Level D) for hazard probability. A RAC of 4 indicates a site inspection is required to evaluate potential threats to personnel. The RAC evaluation is attached.

Division POC: Robert Nore, CEHND-PM-OT, (205) 955-1512.

| | | | | | | | |
|---|--|-------------------------|--|------------------------------------|----------|------------------------------------|--------------|
| 1. COMPONENT ARMY | | FY 1992 | | MILITARY CONSTRUCTION PROJECT DATA | | 3. DATE March 1992 | |
| 3. INSTALLATION AND LOCATION Plum Brook Ordnance Works Sandusky, OH | | | | 4. PROJECT TITLE DERP-FUDS | | | |
| 5. PROGRAM ELEMENT DERP-FUDS | | 6. CATEGORY CODE OEW | | 7. PROJECT NUMBER G050H001804 | | 8. PROJECT COST (\$000) \$ 17.6 | |
| 9. COST ESTIMATES | | | | | | | |
| ITEM | | | | U/M | QUANTITY | UNIT COST | COST (\$000) |
| 1. Obtain Rights of Entry | | | | | | | \$ 4.0 |
| 2. Site Inspection and Report Prep. | | | | | | | 12.0 |
| Sub-Total | | | | | | | 16.0 |
| Contingencies @ 10% | | | | | | | 1.6 |
| TOTAL | | | | | | | \$ 17.6 |
| 10. Description of Proposed Construction | | | | | | | |
| <p>Work consists of a site inspection to evaluate potential threats to personnel and the preparation of an inspection report.</p> | | | | | | | |

PROJECT SUMMARY SHEET
FOR
DERP-FUDS OEW PROJECT NO. G05OH001806
PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO
SITE NO. G05OH001800
20 March 1992

PROJECT DESCRIPTION: The site is a 9,071 acre ordnance works that was used by the Army for the manufacture of explosives.

PROJECT ELIGIBILITY: Records indicate that the site was acquired and utilized by DOD for an ordnance works. Any ordnance contamination that may exist would be the direct result of DoD activity. This project has been evaluated in accordance with the risk assessment procedures for explosive ordnance.

POLICY CONSIDERATIONS: There is no policy applicable to this project.

PROPOSED PROJECT: An OEW project is proposed that consists of a site inspection to evaluate potential hazards.

DD Form 1391: Attached.

RAC: A Risk Assessment Code (RAC) of 4 was derived for the site; categorized as "Critical" (Category II) for hazard severity and "Remote" (Level D) for hazard probability. A RAC of 4 indicates a site inspection is required to evaluate potential threats to personnel. The RAC evaluation is attached.

Division POC: Robert Nore, CEHND-PM-OT, (205) 955-1512.

PROJECT SUMMARY SHEET
DERP-FUDS HTRW PROJECT NO. G05OH001811
ADDITIONAL BURNING GROUNDS
PLUM BROOK ORDNANCE WORKS
PROPERTY NO. G05OH0018
4 OCTOBER 1999

LATITUDE/LONGITUDE:

Fox Road Burning Ground - Latitude: 41° – 22' – 23" N; Longitude: 82° – 40' – 09" W
G-8 Burning Ground - Latitude: 41° – 21' – 54" N; Longitude: 82° – 42' – 52" W
Taylor Road Burning Ground - Latitude: 41° – 21' – 55" N; Longitude: 82° – 41' – 38" W
Snake Road Burning Ground - Latitude: 41° – 21' – 43" N; Longitude: 82° – 40' – 25" W
Additional Burning Ground - Latitude: 41° – 22' – 22" N; Longitude: 82° – 40' – 19" W

LOCATION: Erie County, Sandusky, Ohio

CONGRESSIONAL DISTRICT: 5

NATIONAL PRIORITIES LIST SITE: The property is not listed on the NPL.

FORMER USE: War Department

ELIGIBLE: Yes

PROJECT DESCRIPTION: The project areas are burning grounds, designated as the Fox Road, Taylor Road, Snake Road, G-8, and the Additional Burning Grounds. The Department of Defense (DoD) utilized the former Plum Brook Ordnance Works (PBOW) from 1941 until 1945 for the manufacture of 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. During operation of the PBOW facility, burning grounds were used for destruction of off-specification TNT, explosives, acids, solvents, asbestos, and waste oil. Records indicate that the Taylor Road, Fox Road, and Snake Road burning grounds were used by NASA for waste disposal and a fire training area was located at the Snake Road Burning Ground. Previous investigations have determined that these areas have elevated levels of nitroaromatic compounds, acetone, SVOC's, and metals present in surface soils. Contamination may also be present in surface water, groundwater, and sediments.

PROJECT ELIGIBILITY: Records indicate that the DoD utilized these burning grounds for disposal of off-specification TNT, explosives, acids, solvents, asbestos, and waste oil.

POLICY CONSIDERATIONS: Current DoD policy dictates eligibility for remediation of DoD generated hazardous and toxic waste even though there was no evidence of a hazard when the property was transferred from DOD. There may be nitroaromatic, SVOC, or metals contamination present at the Additional Burning Grounds that could be attributed to DoD use.

DERP-FUDS HTRW Project No. G05OH001811
Additional Burning Grounds
Plum Brook Ordnance Works

PROPOSED PROJECT: A Site Investigation of the G-8 Burning Grounds was accomplished between December 1995 – May 1996. The final report was issued 14 March 1997. The objectives of the SI were to define the location/extent of the burning grounds; determine the presence of contamination in sediment and soils; and determine the need for further investigation. The investigation discovered that soil and sediment were impacted by one PAH and seven metals. The report recommended further evaluation of constituents that were above Risk Based Concentrations and the installation of one-bedrock monitoring well.

A Site Investigation of the Additional Burning Ground was accomplished September – October 1996. The final report was issued 23 December 1997. The objectives of the SI were to define the location/extent of the burning grounds; determine the presence of contamination in shallow soils; determine threats to human health; and determine the need for further investigation. The SI determined that surficial soils contained polynuclear aromatic hydrocarbons, PCB, nitroaromatics, and metals that exceeded Risk Based Concentrations, and recommended that a risk assessment be performed.

Based upon the results and recommendations from the two previous SI's, it is recommended that a Remedial Investigation be conducted at the Additional Burning Grounds (5 total sites). Additional information should be obtained to fill identified data gaps from the G-8 and Additional Burning Ground Site Investigations to complete risk assessments for those sites. Previous investigations at the Fox Road, Taylor Road, and Snake Road burning grounds should be reviewed to identify data gaps and obtain the data necessary to prepare risk assessments for those sites. The need for and type of remedial actions at the five burning grounds will depend on the results of the risk assessments.

EPA Form 2070-12: Attached.

DD Form 1391: Attached.

DISTRICT POC: Richard L. Meadows, CELRH-DL-M, (304) 529-5388, is the Geographic District Project Manager for the PBOW FUDS property. Linda S. Ingram, CELRN-EP-R-M, (615) 736-7122, is the Design District Technical Coordinator for this PBOW project.

| | | | | | |
|---|--|----------------------------------|--|--------------|--|
| 1. COMPONENT ARMY | FY 2001 MILITARY CONSTRUCTION PROJECT DATA | | 2. DATE OCT 2000 | | |
| 3. INSTALLATION AND LOCATION Plum Brook Ordnance Works Sandusky, Ohio | | | 4. PROJECT TITLE DERP-FUDS HTRW RI/FS | | |
| 5. PROGRAM ELEMENT DERP-FUDS | 6. CATEGORY CODE HTRW | 7. PROJECT NUMBER G05OH001811 | 8. PROJECT COST (\$000) \$1,973.64 | | |
| 9. COST ESTIMATES | | | | | |
| ITEM | | U/M | QUANTITY | UNIT COST | COST (\$000) |
| Remedial Investigation/Feasibility Study (RI/FS) Contract Administration and Supervision (CELRN) Project Management (CELRH) Sub-Total | | | | | \$ 349.51 \$ 70.00 \$ 42.00 \$ 461.51 |
| Remedial Design (RD) Contract Administration and Supervision (CELRN) Project Management (CELRH) Sub-Total | | | | | \$ 35.98 \$ 10.00 \$ 7.00 \$ 52.98 |
| Remedial Action (RA-C) Contract Supervision/Administration (8%) (CELRH) Sub-Total | | | | | \$1,351.07 \$ 108.08 \$1,459.15 |
| TOTAL PROJECT COST TO COMPLETE (estimates prepared with <i>RACER 2000</i> ; see Note 2) | | | | | \$1,973.64 |
| 10. DESCRIPTION OF PROPOSED CONSTRUCTION | | | | | |
| <ol style="list-style-type: none"> 1. Prepare a RI/FS for the Additional Burning Grounds; work will include: <ul style="list-style-type: none"> ▪ Installation of monitoring wells. ▪ Soil borings. ▪ Sampling and chemical analysis of soil and water samples. ▪ Prepare a Risk Assessment. ▪ Preparation of Feasibility Study that will identify alternatives for cleanup and their costs. 2. In-house labor for RI/FS and RD phases per recommendations of the LRH Project Manager and the LRN Technical Coordinator. 3. Remedial Design is calculated at 3.5% of the RA-C cost. 4. Remedial Action was assumed to be ex-situ removal and off-site treatment or disposal of contaminated soils at the burning grounds; assumed 1/10 of total 4 acres excavated to 2-foot depth and disposed. | | | | | |

PROJECT SUMMARY SHEET
DERP-FUDS HTRW PROJECT NO. G05OH001812
RESERVOIR NO. 2 BURNING GROUND
PLUM BROOK ORDNANCE WORKS
PROPERTY NO. G05OH0018
4 OCTOBER 1999

LATITUDE: 41° – 22' – 37" N

LONGITUDE: 82° – 42' – 21" N

LOCATION: Erie County, Sandusky, Ohio

CONGRESSIONAL DISTRICT: 5

NATIONAL PRIORITIES LIST SITE: The property is not listed on the NPL.

FORMER USE: War Department

ELIGIBLE: Yes

PROJECT DESCRIPTION: The project area is the Reservoir No. 2 Burning Ground. The Department of Defense (DoD) utilized the former Plum Brook Ordnance Works (PBOW) from 1941 until 1945 for the manufacture of 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. During operation of the PBOW facility, the Reservoir No. 2 Burning Ground was used for destruction of off-specification TNT, explosives, acids, solvents, asbestos, and waste oil. Previous investigations have determined that this area has elevated levels of nitroaromatic compounds, acetone, SVOC's, and metals present in surface soils. Contamination may also be present in surface water, groundwater, and sediments.

PROJECT ELIGIBILITY: Records indicate that the DoD utilized burning grounds for disposal of off-specification TNT, explosives, acids, solvents, asbestos, and waste oil during normal operation of the PBOW for TNT production.

POLICY CONSIDERATIONS: Current DoD policy dictates eligibility for remediation of DoD generated hazardous and toxic waste even though there was no evidence of a hazard when the property was transferred from DOD. There may be nitroaromatic, SVOC, or metals contamination present at the Additional Burning Grounds that could be attributed to DoD use.

PROPOSED PROJECT: A Site Investigation of the Reservoir No. 2 Burning Ground was accomplished September – October 1996, and the final report was issued 23 December 1997. The SI's objectives were to define the location/extent of the burning ground; determine the presence of contamination in shallow soil; determine threats to human health; and determine the need for further investigation. Surficial soil was found to contain concentrations of semi-volatile organics, PCB, nitroaromatics, and metals; and subsurface soil was found to have PCB, nitroaromatics, and metals, all at concentrations that exceeded Risk Based Concentrations. Additional sampling and analysis was recommended to determine the extent of contamination.

DERP-FUDS HTRW Project No. G05OH001812
Reservoir No. 2 Burning Ground
Plum Brook Ordnance Works

Based upon the results and recommendations from the previous SI, it is recommended that a Remedial Investigation be conducted at the Reservoir No. 2 Burning Ground. Work would involve soil sampling and analysis to define the extent of site contamination and preparation of human health and ecological risk assessments. The need for and type of remedial action at the Reservoir No. 2 Burning Ground will depend on the RI and risk assessment results.

EPA Form 2070-12: Attached.

DD Form 1391: Attached.

DISTRICT POC: Richard L. Meadows, CELRH-DL-M, (304) 529-5388, is the Geographic District Project Manager for the PBOW FUDS property. Linda S. Ingram, CELRN-EP-R-M, (615) 736-7122, is the Design District Technical Coordinator for this PBOW project.

| | | |
|----------------------|--|---------------------|
| 1. COMPONENT ARMY | FY 2001 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE OCT 2000 |
|----------------------|--|---------------------|

| | |
|---|--|
| 3. INSTALLATION AND LOCATION Plum Brook Ordnance Works Sandusky, Ohio | 4. PROJECT TITLE DERP-FUDS HTRW RI/FS |
|---|--|

| | | | |
|---------------------------------|--------------------------|----------------------------------|---|
| 5. PROGRAM ELEMENT DERP-FUDS | 6. CATEGORY CODE HTRW | 7. PROJECT NUMBER G05OH001812 | 8. PROJECT COST (\$000) \$ 998.67 |
|---------------------------------|--------------------------|----------------------------------|---|

9. COST ESTIMATES

| ITEM | U/M | QUANTITY | UNIT COST | COST (\$000) |
|---|-----|----------|-----------|------------------|
| Remedial Investigation/Feasibility Study (RI/FS) | | | | \$270.46 |
| Contract Administration and Supervision (CELRN) | | | | \$ 70.00 |
| Project Management (CELRH) | | | | \$ 42.00 |
| Sub-Total | | | | \$382.46 |
| Remedial Design (RD) | | | | \$ 11.89 |
| Contract Administration and Supervision (CELRN) | | | | \$ 10.00 |
| Project Management (CELRH) | | | | \$ 7.00 |
| Sub-Total | | | | \$ 28.89 |
| Remedial Action (RA-C) | | | | \$ 543.81 |
| Contract Supervision/Administration (8%) (CELRH) | | | | \$ 43.51 |
| Sub-Total | | | | \$ 587.32 |
| TOTAL PROJECT COST TO COMPLETE (estimates prepared with <i>RACER 2000</i> ; see Note 2) | | | | \$ 998.67 |

10. DESCRIPTION OF PROPOSED CONSTRUCTION

1. Prepare a RI/FS for the Reservoir No. 2 Burning Grounds; work will include:
 - Installation of monitoring wells.
 - Soil borings.
 - Sampling and chemical analysis of soil and water samples.
 - Prepare a Risk Assessment.
 - Preparation of Feasibility Study that will identify alternatives for cleanup and their costs.
2. In-house labor for RI/FS and RD phases per recommendations of the LRH Project Manager and the LRN Technical Coordinator.
3. Remedial Design is calculated at 3.0% of the RA-C cost.
4. Remedial Action was assumed to be ex-situ removal and off-site treatment or disposal of contaminated soils at the burning grounds; assumed 1/10 of area excavated to 2-foot depth and disposed.

PROJECT SUMMARY SHEET
FOR
DERP-FUDS HTRW PROJECT NO. G05OH001813
TNT AREA A
PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO
SITE NO. G05OH001800
21 NOVEMBER 1998

PROJECT DESCRIPTION: The project area is former TNT Area A. Plum Brook Ordnance Works (PBOW) was utilized by the Department of Defense (DoD) from 1941 until 1945 for the manufacture of 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. During this period, the PBOW facility housed operations for the manufacture of TNT and DNT in three primary areas, referred to as TNT Area A, TNT Area B, and TNT Area C.

PROJECT ELIGIBILITY: Records indicate that TNT Area A was utilized by DoD for the manufacture of TNT. Based on past site activities, nitroaromatics and residue from the TNT manufacturing process are likely contaminants of concern at the TNT areas.

POLICY CONSIDERATIONS: Current DoD policy dictates eligibility for remediation of DoD generated hazardous and toxic waste even though there was no evidence of a hazard when the property was transferred from DOD. Any nitroaromatic contamination present at TNT Area A would be from direct DoD use of the site.

PROPOSED PROJECT: An HTRW project is proposed. The project consists of the preparation of a Remedial Investigation/Feasibility Study of TNT Area A.

EPA Form 2070-12: Attached.

DD Form 1391: Attached.

District POC: Nancy O. Stouffer, CELRH-DL-M, (304) 529-5035, is the Geographic District Project Manager, and Linda S. Ingram, CELRN-EP-R-M, (615) 736-7122, is the Design District Technical Coordinator, for the PBOW site.

PH. GOSCH 001813

|  POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT PART 1 - SITE INFORMATION AND ASSESSMENT | | | | I. IDENTIFICATION | |
|--|----------|---|---------------------|---------------------|--|
| | | 01 STATE | 02 SITE NUMBER | | |
| II. SITE NAME AND LOCATION | | | | | |
| 01 SITE NAME (Legal, common, or descriptive name of site) | | 02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER | | | |
| Plum Brook Ordnance Works | | | | | |
| 03 CITY | 04 STATE | 05 ZIP CODE | 06 COUNTY | 07 COUNTY CODE | 08 CONG DIST |
| SANDUSKY | OH | | ERIE | | 5 |
| 09 COORDINATES LATITUDE | | LONGITUDE | | | |
| 41 22 44 | | 82 39 36 | | | |
| 10 DIRECTIONS TO SITE (Starting from nearest public road) | | | | | |
| I 20, NORTH 0.1 MILE ON RT 4, EAST 0.2 MILE ON RT 13. SITE NEAR BLOOMINGVILLE | | | | | |
| III. RESPONSIBLE PARTIES | | | | | |
| 01 OWNER (if known) | | 02 STREET (Business, mailing, residential) | | | |
| US Army Corps of Engineers | | 502 BTH STREET | | | |
| 03 CITY | 04 STATE | 05 ZIP CODE | 06 TELEPHONE NUMBER | | |
| HUNTINGTON | WV | 25701 | 304 529-5760 | | |
| 07 OPERATOR (if known and different from owner) | | 08 STREET (Business, mailing, residential) | | | |
| | | | | | |
| 09 CITY | 10 STATE | 11 ZIP CODE | 12 TELEPHONE NUMBER | | |
| | | | | | |
| 13 TYPE OF OWNERSHIP (Check one) | | | | | |
| <input type="checkbox"/> A. PRIVATE <input checked="" type="checkbox"/> B. FEDERAL: <u>NASA</u> <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <input checked="" type="checkbox"/> F. OTHER: <u>FORMER DOD USE</u> <input type="checkbox"/> G. UNKNOWN <small>(Specify)</small> | | | | | |
| 14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply) | | | | | |
| <input type="checkbox"/> A. RCRA 3001 DATE RECEIVED: _____ <input type="checkbox"/> B. UNCONTROLLED WASTE SITE (CERCLA 103 ci) DATE RECEIVED: _____ <input type="checkbox"/> C. NONE <small>MONTH DAY YEAR</small> | | | | | |
| IV. CHARACTERIZATION OF POTENTIAL HAZARD | | | | | |
| 01 ON SITE INSPECTION | | BY (Check all that apply) | | | |
| <input checked="" type="checkbox"/> YES DATE <u>2, 90</u> <small>MONTH DAY YEAR</small> | | <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input checked="" type="checkbox"/> F. OTHER: <u>NASHVILLE CORPS</u> <small>(Specify)</small> | | | |
| | | CONTRACTOR NAME(S): _____ | | | |
| 02 SITE STATUS (Check one) | | 03 YEARS OF OPERATION | | | |
| <input type="checkbox"/> A. ACTIVE <input checked="" type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN | | <u>1941</u> <u>1945</u> <small>BEGINNING YEAR ENDING YEAR</small> | | | |
| 04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED | | | | | |
| TRINITROTOLUENE AND DERIVATIVES ACETONE, BARIUM, CHROMIUM MANGANESE | | | | | |
| 05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION | | | | | |
| SOIL AND GROUNDWATER CONTAMINATION | | | | | |
| V. PRIORITY ASSESSMENT | | | | | |
| 01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents) | | | | | |
| <input checked="" type="checkbox"/> A. HIGH <small>(inspection required promptly)</small> <input type="checkbox"/> B. MEDIUM <small>(inspection required)</small> <input type="checkbox"/> C. LOW <small>(inspect on time available basis)</small> <input type="checkbox"/> D. NONE <small>(No further action needed, complete current disposition form)</small> | | | | | |
| VI. INFORMATION AVAILABLE FROM | | | | | |
| 01 CONTACT | | 02 OF (Agency/Organization) | | 03 TELEPHONE NUMBER | |
| FRANK ALBERT | | HUNTINGTON DISTRICT CORPS ENGINEERS | | 304 529-5760 | |
| 04 PERSON RESPONSIBLE FOR ASSESSMENT | | 05 AGENCY | 06 ORGANIZATION | 07 TELEPHONE NUMBER | 08 DATE |
| SAME | | | | () | <u>11 21 98</u> <small>MONTH DAY YEAR</small> |



**POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION**

I. IDENTIFICATION

01 STATE: _____ 02 SITE NUMBER: _____

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

| | | |
|---|--|---|
| 01 PHYSICAL STATES (Check all that apply) <input type="checkbox"/> SOLID <input type="checkbox"/> POWDER, FINES <input type="checkbox"/> SLUDGE <input type="checkbox"/> OTHER _____ <small>Specify</small> | 02 WASTE QUANTITY AT SITE <small>Measures of waste quantities must be independent</small> TONS _____ CUBIC YARDS _____ NO. OF DRUMS _____ | 03 WASTE CHARACTERISTICS (Check all that apply) <input checked="" type="checkbox"/> A TOXIC <input type="checkbox"/> B CORROSIVE <input type="checkbox"/> C RADIOACTIVE <input type="checkbox"/> D PERSISTENT <input type="checkbox"/> E SOLUBLE <input type="checkbox"/> F INFECTIOUS <input type="checkbox"/> G FLAMMABLE <input type="checkbox"/> H IGNITABLE <input type="checkbox"/> I HIGHLY VOLATILE <input checked="" type="checkbox"/> J EXPLOSIVE <input type="checkbox"/> K REACTIVE <input type="checkbox"/> L INCOMPATIBLE <input type="checkbox"/> M NOT APPLICABLE |
|---|--|---|

III. WASTE TYPE

| CATEGORY | SUBSTANCE NAME | 01 GROSS AMOUNT | 02 UNIT OF MEASURE | 03 COMMENTS |
|----------|-------------------------|-----------------|--------------------|-------------|
| ELU | SLUDGE | | | |
| OLW | OILY WASTE | | | |
| SOL | SOLVENTS | | | |
| PSD | PESTICIDES | | | |
| OC | OTHER ORGANIC CHEMICALS | | | |
| IC | INORGANIC CHEMICALS | | | |
| ACD | ACIDS | | | |
| BAS | BASES | | | |
| MES | HEAVY METALS | | | |

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

| 01 CATEGORY | 02 SUBSTANCE NAME | 03 CAS NUMBER | 04 STORAGE/DISPOSAL METHOD | 05 CONCENTRATION | 06 MEASURE OF CONCENTRATION |
|-------------|-------------------|---------------|----------------------------|------------------|-----------------------------|
| | BARIUM | 10022-31-8 | LAND | 21,000 | PPB |
| | CHROMIUM | 7440-47-3 | LAND | 20,000 | PPB |
| | 1,3-DNB | 99-65-0 | LAND | 6,400 | PPB |
| | 2,6-DNT | 25321-46 | LAND | 1,200 | PPB |
| | 2,4-DNT | 25321-14-6 | LAND | 20,000 | PPB |
| | LEAD | 7439-92-1 | LAND | 50,000 | PPB |
| | MANGANESE | 7439-96-5 | LAND | 2,600,000 | PPB |
| | NITRATE | | LAND | 2,500,000 | PPB |
| | NITROBENZENE | 98-95-3 | LAND | 480 | PPB |
| | NITROTOLUENE | | LAND | 480 | PPB |
| | SODIUM | 1310-73-2 | LAND | 3,420,000 | PPB |
| | SULFATE | | LAND | 2,000,000 | PPB |
| | 1,3,5-TNB | 118-96-7 | LAND | 15,000 | PPB |
| | 2,4,6-TNT | 118-96-7 | LAND | 740 | PPB |

V. FEEDSTOCKS (See Appendix for CAS Numbers)

| CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER | CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER |
|----------|-------------------|---------------|----------|-------------------|---------------|
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

FEB 1990 CONFIRMATION STUDY
 NASHVILLE DISTRICT CORPS OF ENGINEERS
 (MAX. CONCENTRATION SHOWN)

| | | |
|----------------------|--|---------------------|
| 1. COMPONENT ARMY | FY 1999 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE NOV 1998 |
|----------------------|--|---------------------|

| | |
|---|--|
| 3. INSTALLATION AND LOCATION Plum Brook Ordnance Works Sandusky, Ohio | 4. PROJECT TITLE DERP-FUDS HTRW - RI/FS |
|---|--|

| | | | |
|---------------------------------|--------------------------|----------------------------------|--|
| 5. PROGRAM ELEMENT DERP-FUDS | 6. CATEGORY CODE HTRW | 7. PROJECT NUMBER G05OH001813 | 8. PROJECT COST (\$000) \$ 910.6 |
|---------------------------------|--------------------------|----------------------------------|--|

9. COST ESTIMATES

| ITEM | U/M | QUANTITY | UNIT COST | COST (\$000) |
|--|-----|----------|-----------|--------------|
| Prepare Remedial Investigation/Feasibility Study | | | | \$ 728.5 |
| Contract Administration and Supervision by CELRN | | | | \$ 145.7 |
| Project Management by CELRH | | | | \$ 36.4 |
| TOTAL | | | | \$910.6 |

10. DESCRIPTION OF PROPOSED CONSTRUCTION

Prepare a Remedial Investigation/Feasibility Study on the subject TNT Area A. Work will include:

1. Installation of monitoring wells.
2. Soil borings.
3. Sampling and chemical analysis of soil and water samples
4. Preparation of Feasibility Study that will identify alternatives for cleanup and their costs.

PN GOSOH 001813



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE | 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 A. GROUNDWATER CONTAMINATION 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 B. SURFACE WATER CONTAMINATION 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: >100 04 NARRATIVE DESCRIPTION

01 C. CONTAMINATION OF AIR 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 D. FIRE/EXPLOSIVE CONDITIONS 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 E. DIRECT CONTACT 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 F. CONTAMINATION OF SOIL 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
03 AREA POTENTIALLY AFFECTED: 100 ACRES 04 NARRATIVE DESCRIPTION
(Acres)

01 G. DRINKING WATER CONTAMINATION 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: >100 04 NARRATIVE DESCRIPTION
NO KNOWN USERS OF AFFECTED AQUIFER

01 H. WORKER EXPOSURE/INJURY 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 I. POPULATION EXPOSURE/INJURY 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 J. DAMAGE TO FLORA 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 K. DAMAGE TO FAUNA 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION (include name(s) of species)

01 L. CONTAMINATION OF FOOD CHAIN 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 M. UNSTABLE CONTAINMENT OF WASTES 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
(Spills/runoff/standing liquids/leaking drums)
03 POPULATION POTENTIALLY AFFECTED: 7100 04 NARRATIVE DESCRIPTION

SOIL CONTAMINATION DISCOVERED

01 N. DAMAGE TO OFFSITE PROPERTY 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 P. ILLEGAL/UNAUTHORIZED DUMPING 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

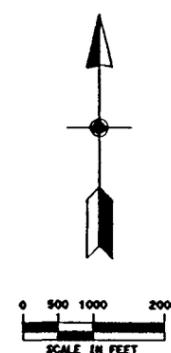
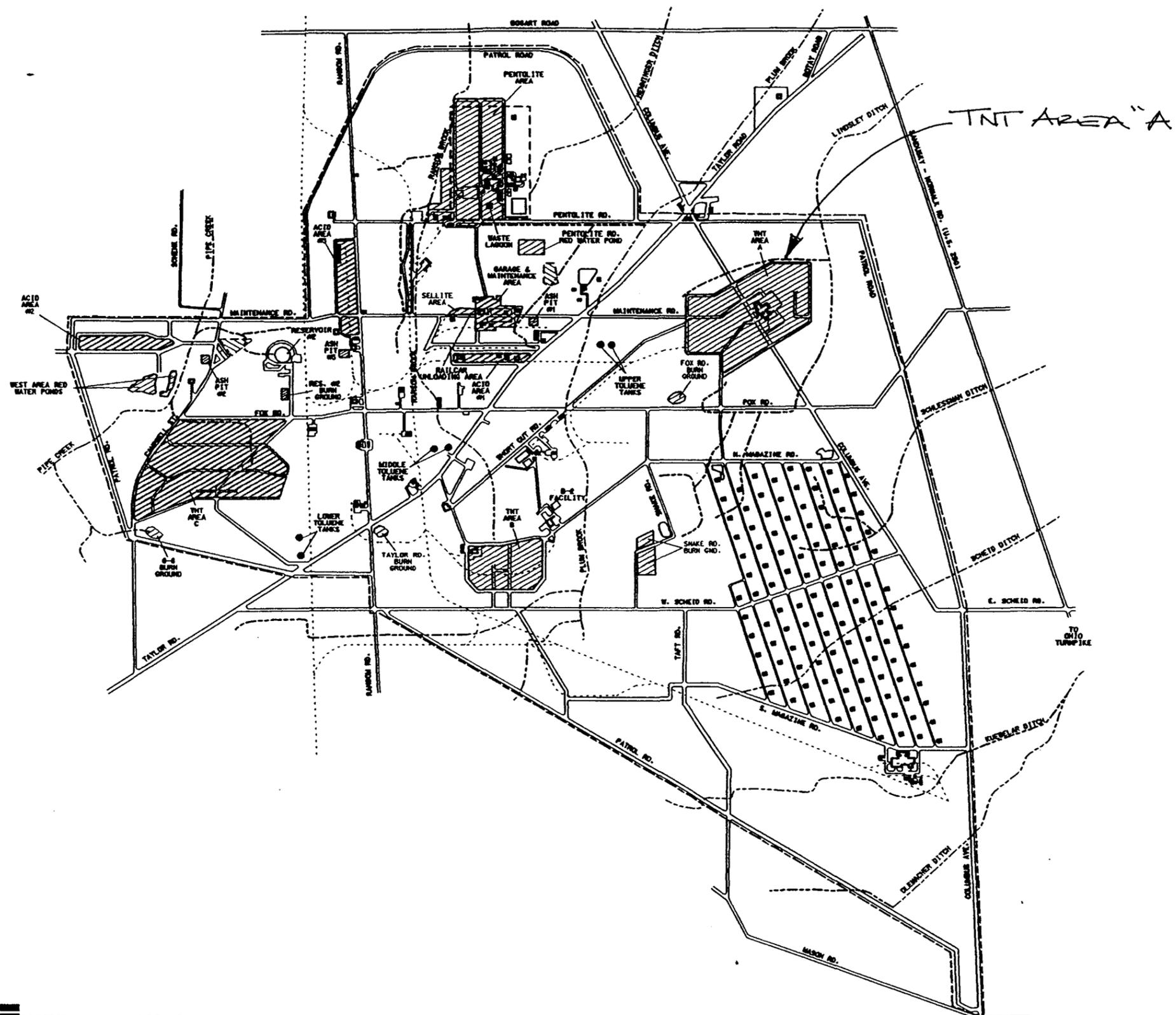
III. TOTAL POPULATION POTENTIALLY AFFECTED: 7100

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e. g., state laws, sample analysis, reports)

CONFIRMATION STUDY FEB 1990
NASHVILLE DISTRICT CORPS OF ENGINEERS

PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO



| LEGEND: | |
|---------|--|
| | STREAM |
| | RAILROAD |
| | PBS BOUNDARY FENCE |
| | AREA OF CONCERN |
| | MIS-LOCATED AOC (Sampled by M-K, 1994a) |

G050400 1813

ICI INTERNATIONAL
CONSULTANTS, INC.

| | | |
|--|--|----------------|
| FIGURE 1-2 | | DATE 12 JUL 95 |
| LOCATIONS of AREAS of CONCERN (AOCs) at PBOW | | PREPARED JET |
| | | CHECKED DBJ |

PROJECT SUMMARY SHEET
FOR
DERP-FUDS HTRW PROJECT NO. G05OH001814
TNT AREA B
PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO
SITE NO. G05OH001800
21 NOVEMBER 1998

PROJECT DESCRIPTION: The project area is former TNT Area B. Plum Brook Ordnance Works (PBOW) was utilized by the Department of Defense (DoD) from 1941 until 1945 for the manufacture of 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. During this period, the PBOW facility housed operations for the manufacture of TNT and DNT in three primary areas, referred to as TNT Area A, TNT Area B, and TNT Area C.

PROJECT ELIGIBILITY: Records indicate that TNT Area B was utilized by DoD for the manufacture of TNT. Based on past site activities, nitroaromatics and residue from the TNT manufacturing process are likely contaminants of concern at the TNT areas.

POLICY CONSIDERATIONS: Current DoD policy dictates eligibility for remediation of DoD generated hazardous and toxic waste even though there was no evidence of a hazard when the property was transferred from DOD. Any nitroaromatic contamination present at TNT Area B would be from direct DoD use of the site.

PROPOSED PROJECT: An HTRW project is underway, which consists of the preparation of a Remedial Investigation/Feasibility Study of TNT Area B.

EPA Form 2070-12: Attached.

DD Form 1391: Attached.

District POC: Nancy O. Stouffer, CELRH-DL-M, (304) 529-5035, is the Geographic District Project Manager, and Linda S. Ingram, CELRN-EP-R-M, (615) 736-7122, is the Design District Technical Coordinator, for the PBOW site.



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

L IDENTIFICATION

01 STATE 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 J. DAMAGE TO FLORA 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 K. DAMAGE TO FAUNA 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION (include names of species)

01 L. CONTAMINATION OF FOOD CHAIN 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 M. UNSTABLE CONTAINMENT OF WASTES 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
(Spills/runoff/standing liquids/leaking drums)
03 POPULATION POTENTIALLY AFFECTED: 7100 04 NARRATIVE DESCRIPTION

SOIL CONTAMINATION DISCOVERED

01 N. DAMAGE TO OFFSITE PROPERTY 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 P. ILLEGAL/UNAUTHORIZED DUMPING 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: 7100

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

CONFIRMATION STUDY FEB 1990
NASHVILLE DISTRICT CORPS OF ENGINEERS

PH GOS04001814

|  POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS | | I. IDENTIFICATION | |
|--|---|---|---|
| | | 01 STATE | 02 SITE NUMBER |
| II. HAZARDOUS CONDITIONS AND INCIDENTS | | | |
| 01 <input checked="" type="checkbox"/> A. GROUNDWATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED: _____ | 02 <input type="checkbox"/> OBSERVED (DATE: <u>2/90</u>) 04 NARRATIVE DESCRIPTION | <input type="checkbox"/> POTENTIAL | <input checked="" type="checkbox"/> ALLEGED |
| 01 <input checked="" type="checkbox"/> B. SURFACE WATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED: <u>>100</u> | 02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION | <input checked="" type="checkbox"/> POTENTIAL | <input type="checkbox"/> ALLEGED |
| 01 <input type="checkbox"/> C. CONTAMINATION OF AIR 03 POPULATION POTENTIALLY AFFECTED: _____ | 02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION | <input type="checkbox"/> POTENTIAL | <input type="checkbox"/> ALLEGED |
| 01 <input checked="" type="checkbox"/> D. FIRE/EXPLOSIVE CONDITIONS 03 POPULATION POTENTIALLY AFFECTED: _____ | 02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION | <input type="checkbox"/> POTENTIAL | <input type="checkbox"/> ALLEGED |
| 01 <input type="checkbox"/> E. DIRECT CONTACT 03 POPULATION POTENTIALLY AFFECTED: _____ | 02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION | <input type="checkbox"/> POTENTIAL | <input type="checkbox"/> ALLEGED |
| 01 <input checked="" type="checkbox"/> F. CONTAMINATION OF SOIL 03 AREA POTENTIALLY AFFECTED: <u>35 ACRES</u> <small>(Acres)</small> | 02 <input type="checkbox"/> OBSERVED (DATE: <u>2/90</u>) 04 NARRATIVE DESCRIPTION | <input type="checkbox"/> POTENTIAL | <input checked="" type="checkbox"/> ALLEGED |
| 01 <input checked="" type="checkbox"/> G. DRINKING WATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED: <u>>100</u> <u>NO KNOWN WAYS OF AFFECTED ADJACENT</u> | 02 <input type="checkbox"/> OBSERVED (DATE: <u>2/90</u>) 04 NARRATIVE DESCRIPTION | <input checked="" type="checkbox"/> POTENTIAL | <input type="checkbox"/> ALLEGED |
| 01 <input type="checkbox"/> H. WORKER EXPOSURE/INJURY 03 WORKERS POTENTIALLY AFFECTED: _____ | 02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION | <input type="checkbox"/> POTENTIAL | <input type="checkbox"/> ALLEGED |
| 01 <input type="checkbox"/> I. POPULATION EXPOSURE/INJURY 03 POPULATION POTENTIALLY AFFECTED: _____ | 02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION | <input type="checkbox"/> POTENTIAL | <input type="checkbox"/> ALLEGED |



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION
01 STATE | 02 SITE NUMBER

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

| | | |
|--|---|--|
| <p>01 PHYSICAL STATES (Check all that apply)</p> <p>A SOLID B POWDER, FINES C SLUDGE D OTHER _____ Specify: _____</p> <p>E SLURRY F LIQUID G GAS</p> | <p>02 WASTE QUANTITY AT SITE</p> <p>Measures of waste quantities must be independent</p> <p>TONS _____ CUBIC YARDS _____ NO. OF DRUMS _____</p> | <p>03 WASTE CHARACTERISTICS (Check all that apply)</p> <p>A TOXIC B CORROSIVE C RADIOACTIVE D PERSISTENT</p> <p>E SOLUBLE F INFECTIOUS G FLAMMABLE H IGNITABLE</p> <p>I HIGHLY VOLATILE J EXPLOSIVE K REACTIVE L INCOMPATIBLE M NOT APPLICABLE</p> |
|--|---|--|

III. WASTE TYPE

| CATEGORY | SUBSTANCE NAME | 01 GROSS AMOUNT | 02 UNIT OF MEASURE | 03 COMMENTS |
|----------|-------------------------|-----------------|--------------------|-------------|
| SLU | SLUDGE | | | |
| OLW | OILY WASTE | | | |
| SOL | SOLVENTS | | | |
| PSD | PESTICIDES | | | |
| OCC | OTHER ORGANIC CHEMICALS | | | |
| IOC | INORGANIC CHEMICALS | | | |
| ACD | ACIDS | | | |
| BAS | BASES | | | |
| MES | HEAVY METALS | | | |

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

| 01 CATEGORY | 02 SUBSTANCE NAME | 03 CAS NUMBER | 04 STORAGE/DISPOSAL METHOD | 05 CONCENTRATION | 06 MEASURE OF CONCENTRATION |
|-------------|-------------------|---------------|----------------------------|------------------|-----------------------------|
| | BARIUM | 7022-31-8 | LAND | 24,000 | ppb |
| | CHROMIUM | 7440-47-3 | LAND | 20,000 | ppb |
| | 1,3-DNB | 99-65-0 | LAND | 6,400 | ppb |
| | 2,6-DNT | 25321-14-6 | LAND | 1,200 | ppb |
| | 2,4-DNT | 25321-14-6 | LAND | 20,000 | ppb |
| | LEAD | 7439-92-1 | LAND | 50,000 | ppb |
| | MANGANESE | 7439-96-5 | LAND | 2,600,000 | ppb |
| | NITRATE | | LAND | 2,500,000 | ppb |
| | NITROBENZENE | 98-95-3 | LAND | 480 | ppb |
| | NITROTOLUENE | | LAND | 480 | ppb |
| | SODIUM | 1310-73-2 | LAND | 3,420,000 | ppb |
| | SULFATE | | LAND | 2,000,000 | ppb |
| | 1,3,5-TNB | 118-96-7 | LAND | 15,000 | ppb |
| | 2,4,6-TNT | 118-96-7 | LAND | 740 | ppb |

V. FEEDSTOCKS (See Appendix for CAS Numbers)

| CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER | CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER |
|----------|-------------------|---------------|----------|-------------------|---------------|
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

FEB 1990 CONFIRMATION STUDY
NASHVILLE DISTRICT CORPS OF ENGINEERS
(MAX. CONCENTRATION SHOWN)

PN. G0504001814

|  POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT PART 1 - SITE INFORMATION AND ASSESSMENT | | I. IDENTIFICATION | |
|---|--------------------------|---|--|
| | | 01 STATE | 02 SITE NUMBER |
| II. SITE NAME AND LOCATION | | | |
| 01 SITE NAME (Legal, common, or descriptive name of site) PLUM BROOK ORNANCE WORKS | | 02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER | |
| 03 CITY SANDUSKI | 04 STATE OH | 05 ZIP CODE | 06 COUNTY ERIE |
| 07 COUNTY CODE | 08 CONG DIST 5 | | |
| 09 COORDINATES LATITUDE 41 21 44 | | LONGITUDE 82 40 59 | |
| 10 DIRECTIONS TO SITE (Starting from nearest public road) I 80, NORTH 0.1 MILE ON RT 4, EAST 0.2 MILE ON RT 13. SITE NEAR BLOOMINGVILLE | | | |
| III. RESPONSIBLE PARTIES | | | |
| 01 OWNER (if known) US ARMY CORPS OF ENGINEERS | | 02 STREET (Business, mailing, residential) 502 BTH STREET | |
| 03 CITY HUNTINGTON | 04 STATE WV | 05 ZIP CODE 25701 | 06 TELEPHONE NUMBER 304 529-5760 |
| 07 OPERATOR (if known and different from owner) | | 08 STREET (Business, mailing, residential) | |
| 09 CITY | | 10 STATE | 11 ZIP CODE |
| | | 12 TELEPHONE NUMBER | |
| 13 TYPE OF OWNERSHIP (Check one) | | | |
| <input type="checkbox"/> A. PRIVATE <input checked="" type="checkbox"/> B. FEDERAL: NASA <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <input checked="" type="checkbox"/> F. OTHER: FORMER DOD USE <input type="checkbox"/> G. UNKNOWN <small>(Specify)</small> | | | |
| 14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply) | | | |
| <input type="checkbox"/> A. RCRA 3001 DATE RECEIVED: _____ MONTH DAY YEAR <input type="checkbox"/> B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: _____ MONTH DAY YEAR <input type="checkbox"/> C. NONE | | | |
| IV. CHARACTERIZATION OF POTENTIAL HAZARD | | | |
| 01 ON SITE INSPECTION | | BY (Check all that apply) | |
| <input checked="" type="checkbox"/> YES DATE 2, 1990 <input type="checkbox"/> NO MONTH DAY YEAR | | <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input checked="" type="checkbox"/> F. OTHER: NASHVILLE CORPS <small>(Specify)</small> | |
| 02 SITE STATUS (Check one) | | 03 YEARS OF OPERATION | |
| <input type="checkbox"/> A. ACTIVE <input checked="" type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN | | 1941 1945 <small>BEGINNING YEAR ENDING YEAR</small> <input type="checkbox"/> UNKNOWN | |
| 04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED TRINITROTOLUENE AND DERIVATIVES ACETONE, BARIUM, CHROMIUM MANGANESE | | | |
| 05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION SOIL AND GROUNDWATER CONTAMINATION | | | |
| V. PRIORITY ASSESSMENT | | | |
| 01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents) | | | |
| <input checked="" type="checkbox"/> A. HIGH (inspection required promptly) <input type="checkbox"/> B. MEDIUM (inspection required) <input type="checkbox"/> C. LOW (inspect on time available basis) <input type="checkbox"/> D. NONE (No further action needed, complete current disposition form) | | | |
| VI. INFORMATION AVAILABLE FROM | | | |
| 01 CONTACT FRANK ALBERT | | 02 OF (Agency/Organization) HUNTINGTON DISTRICT CORPS ENGINEERS | |
| 04 PERSON RESPONSIBLE FOR ASSESSMENT SAME | | 03 TELEPHONE NUMBER 304 529-5760 | |
| 05 AGENCY | | 06 ORGANIZATION | |
| 07 TELEPHONE NUMBER | | 08 DATE 11 21 98 <small>MONTH DAY YEAR</small> | |

| | | |
|----------------------|--|---------------------|
| 1. COMPONENT ARMY | FY 1999 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE NOV 1998 |
|----------------------|--|---------------------|

| | |
|---|---|
| 3. INSTALLATION AND LOCATION Plum Brook Ordnance Works Sandusky, Ohio | 4. PROJECT TITLE DERP-FUDS HTRW - RD |
|---|---|

| | | | |
|---------------------------------|--------------------------|----------------------------------|---------------------------------------|
| 5. PROGRAM ELEMENT DERP-FUDS | 6. CATEGORY CODE HTRW | 7. PROJECT NUMBER G05OH001814 | 8. PROJECT COST (\$000) \$188.5 |
|---------------------------------|--------------------------|----------------------------------|---------------------------------------|

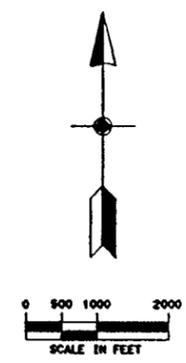
9. COST ESTIMATES

| ITEM | U/M | QUANTITY | UNIT COST | COST (\$000) |
|--|-----|----------|-----------|----------------|
| Remedial Design | | | | \$150.8 |
| Contract Administration and Supervision by CELRN | | | | \$ 30.2 |
| Project Management by CELRH | | | | \$ 7.5 |
| TOTAL | | | | \$188.5 |

10. DESCRIPTION OF PROPOSED CONSTRUCTION

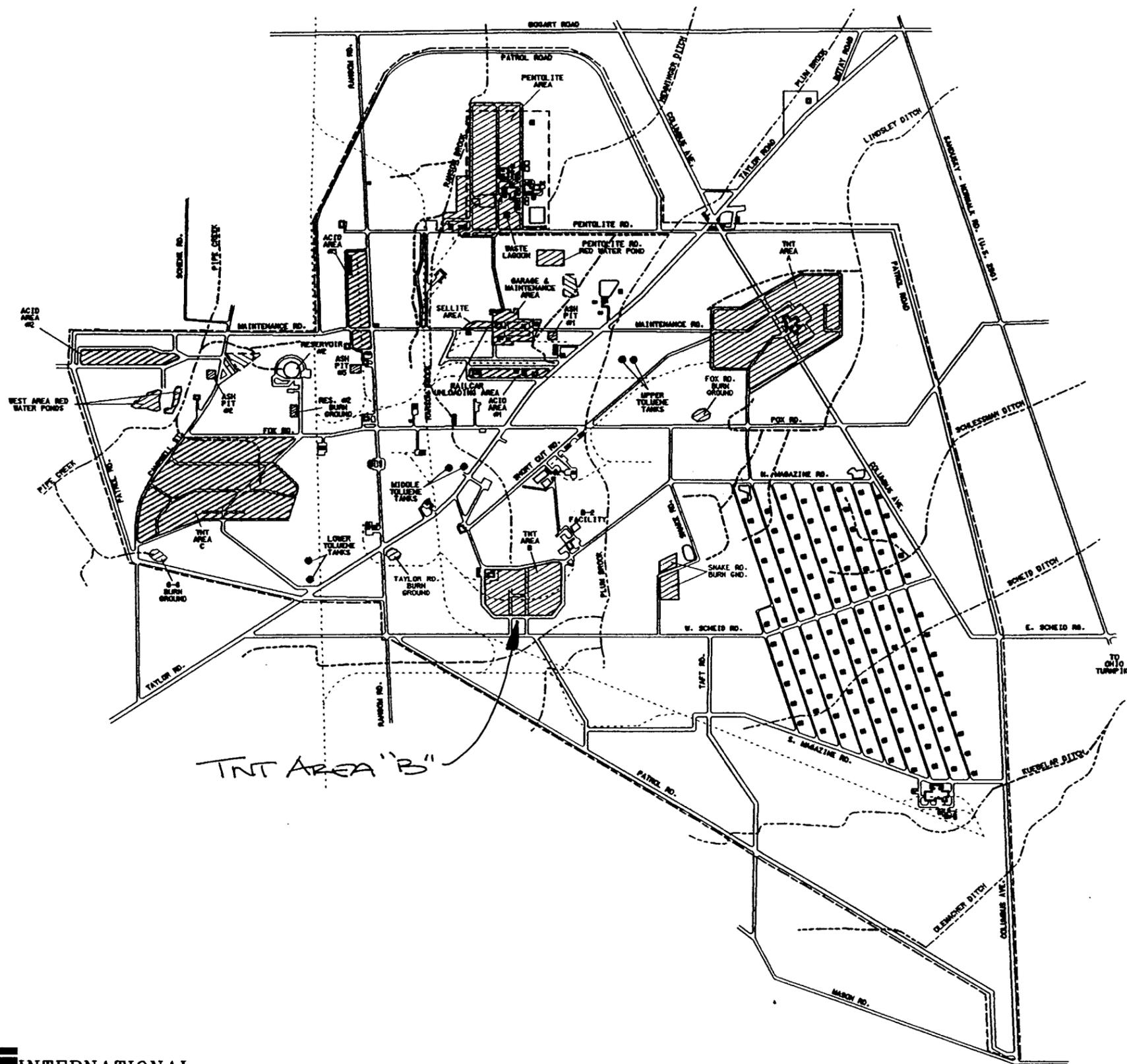
Remedial design of selected alternative for treatment of soil and groundwater contamination at TNT Area B. Work includes contract administration and supervision by Nashville District, CELRN, and Project Management by Huntington District, CELRH.

PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO



LEGEND:

- ! STREAM
- RAILROAD
- - - - - PBS BOUNDARY FENCE
- ▨ AREA OF CONCERN
- ▩ MIS-LOCATED AOC (Sampled by M-K, 1994a)



G050H001814

FIGURE 1-2
LOCATIONS of AREAS of CONCERN (AOCs) at PBOW

| | |
|----------|-----------|
| DATE | 12 JUL 95 |
| PREPARED | JET |
| CHECKED | DBJ |

ICI INTERNATIONAL CONSULTANTS, INC.

PROJECT SUMMARY SHEET
FOR
DERP-FUDS HTRW PROJECT NO. G05OH001815
TNT AREA C
PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO
SITE NO. G05OH001800
21 NOVEMBER 1998

PROJECT DESCRIPTION: The project area is former TNT Area C. Plum Brook Ordnance Works (PBOW) was utilized by the Department of Defense (DoD) from 1941 until 1945 for the manufacture of 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. During this period, the PBOW facility housed operations for the manufacture of TNT and DNT in three primary areas, referred to as TNT Area A, TNT Area B, and TNT Area C.

PROJECT ELIGIBILITY: Records indicate that TNT Area C was utilized by DoD for the manufacture of TNT. Based on past site activities, nitroaromatics and residue from the TNT manufacturing process are likely contaminants of concern at the TNT areas.

POLICY CONSIDERATIONS: Current DoD policy dictates eligibility for remediation of DoD generated hazardous and toxic waste even though there was no evidence of a hazard when the property was transferred from DOD. Any nitroaromatic contamination present at TNT Area C would be from direct DoD use of the site.

PROPOSED PROJECT: An HTRW project is proposed. The project consists of the preparation of a Remedial Investigation/Feasibility Study of TNT Area C.

EPA Form 2070-12: Attached.

DD Form 1391: Attached.

District POC: Nancy O. Stouffer, CELRH-DL-M, (304) 529-5035, is the Geographic District Project Manager, and Linda S. Ingram, CELRN-EP-R-M, (615) 736-7122, is the Design District Technical Coordinator, for the PBOW site.

ENC 4

PH. G0504001815

|  POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT PART 1 - SITE INFORMATION AND ASSESSMENT | | I. IDENTIFICATION | |
|---|-----------------------|---|--|
| | | 01 STATE | 02 SITE NUMBER |
| II. SITE NAME AND LOCATION | | | |
| 01 SITE NAME (Legal, common, or descriptive name of site) PLUM BROOK ORANGE WORKS | | 02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER | |
| 03 CITY SANDUSKY | 04 STATE OH | 05 ZIP CODE | 06 COUNTY ERIE |
| 09 COORDINATES LATITUDE 41 22 04 | | LONGITUDE 82 42 31 | |
| 10 DIRECTIONS TO SITE (Starting from nearest public road) I 80, NORTH 0.1 MILE ON RT 4, EAST 0.2 MILE ON RT 13. SITE NEAR BLOOMINGVILLE | | | |
| III. RESPONSIBLE PARTIES | | | |
| 01 OWNER (if known) US ARMY CORPS OF ENGINEERS | | 02 STREET (Business, mailing, residential) 502 8TH STREET | |
| 03 CITY HUNTINGTON | 04 STATE WV | 05 ZIP CODE 25701 | 06 TELEPHONE NUMBER 304 529-5760 |
| 07 OPERATOR (if known and different from owner) | | 08 STREET (Business, mailing, residential) | |
| 09 CITY | | 10 STATE | 11 ZIP CODE |
| 12 TELEPHONE NUMBER | | | |
| 13 TYPE OF OWNERSHIP (Check one) | | | |
| <input type="checkbox"/> A. PRIVATE <input checked="" type="checkbox"/> B. FEDERAL: NASA <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL (Agency name) <input checked="" type="checkbox"/> F. OTHER: FORMER DOD USE <input type="checkbox"/> G. UNKNOWN (Specify) | | | |
| 14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply) | | | |
| <input type="checkbox"/> A. RCRA 3001 DATE RECEIVED: _____ MONTH DAY YEAR <input type="checkbox"/> B. UNCONTROLLED WASTE SITE (RCRA 103 ci) DATE RECEIVED: _____ MONTH DAY YEAR <input type="checkbox"/> C. NONE | | | |
| IV. CHARACTERIZATION OF POTENTIAL HAZARD | | | |
| 01 ON SITE INSPECTION | | BY (Check all that apply) | |
| <input checked="" type="checkbox"/> YES DATE 2, 90 MONTH DAY YEAR <input type="checkbox"/> NO | | <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input checked="" type="checkbox"/> F. OTHER: NASHVILLE CORPS (Specify) CONTRACTOR NAME(S): _____ | |
| 02 SITE STATUS (Check one) | | 03 YEARS OF OPERATION | |
| <input type="checkbox"/> A. ACTIVE <input checked="" type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN | | 1941 1945 BEGINNING YEAR ENDING YEAR <input type="checkbox"/> UNKNOWN | |
| 04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED TRI-NITROTOLUENE AND DERIVATIVES ACETONE, BARIUM, CHROMIUM MANGANESE | | | |
| 05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION SOIL AND GROUNDWATER CONTAMINATION | | | |
| V. PRIORITY ASSESSMENT | | | |
| 01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents) | | | |
| <input checked="" type="checkbox"/> A. HIGH (inspection required promptly) <input type="checkbox"/> B. MEDIUM (inspection required) <input type="checkbox"/> C. LOW (inspect on time available basis) <input type="checkbox"/> D. NONE (No further action needed, complete current disposition form) | | | |
| VI. INFORMATION AVAILABLE FROM | | | |
| 01 CONTACT FRANK ALBERT | | 02 OF (Agency/Organization) HUNTINGTON DISTRICT CORPS ENGINEERS | |
| 04 PERSON RESPONSIBLE FOR ASSESSMENT SAME | | 05 AGENCY | 06 ORGANIZATION |
| | | 07 TELEPHONE NUMBER | 03 TELEPHONE NUMBER 304 529-5760 |
| | | 08 DATE 11 21 98 MONTH DAY YEAR | |



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION
01 STATE | 02 SITE NUMBER

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

| | | |
|--|--|---|
| 01 PHYSICAL STATES (Check all that apply) <input type="checkbox"/> SOLID <input type="checkbox"/> POWDER, FINES <input type="checkbox"/> SLUDGE <input type="checkbox"/> OTHER _____ <small>Specify</small> | 02 WASTE QUANTITY AT SITE <small>Measures of waste quantities must be independent!</small> TONS _____ CUBIC YARDS _____ NO. OF DRUMS _____ | 03 WASTE CHARACTERISTICS (Check all that apply) <input checked="" type="checkbox"/> A TOXIC <input type="checkbox"/> B CORROSIVE <input type="checkbox"/> C RADIOACTIVE <input type="checkbox"/> D PERSISTENT <input type="checkbox"/> E SOLUBLE <input type="checkbox"/> F INFECTIOUS <input type="checkbox"/> G FLAMMABLE <input type="checkbox"/> H IGNITABLE <input checked="" type="checkbox"/> I HIGHLY VOLATILE <input checked="" type="checkbox"/> J EXPLOSIVE <input type="checkbox"/> K REACTIVE <input type="checkbox"/> L INCOMPATIBLE <input type="checkbox"/> M NOT APPLICABLE |
|--|--|---|

III. WASTE TYPE

| CATEGORY | SUBSTANCE NAME | 01 GROSS AMOUNT | 02 UNIT OF MEASURE | 03 COMMENTS |
|----------|-------------------------|-----------------|--------------------|-------------|
| SLU | SLUDGE | | | |
| OLW | OILY WASTE | | | |
| SOL | SOLVENTS | | | |
| PSD | PESTICIDES | | | |
| OCC | OTHER ORGANIC CHEMICALS | | | |
| IOC | INORGANIC CHEMICALS | | | |
| ACD | ACIDS | | | |
| BAS | BASES | | | |
| MES | HEAVY METALS | | | |

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

| 01 CATEGORY | 02 SUBSTANCE NAME | 03 CAS NUMBER | 04 STORAGE/DISPOSAL METHOD | 05 CONCENTRATION | 06 MEASURE OF CONCENTRATION |
|-------------|-------------------|---------------|----------------------------|------------------|-----------------------------|
| | BARIUM | 1022-31-8 | LAND | 24,000 | ppb |
| | CHROMIUM | 7440-47-3 | LAND | 20,000 | ppb |
| | 1,3-DNB | 99-65-0 | LAND | 6,400 | ppb |
| | 2,6-DNT | 25321-14-6 | LAND | 1,200 | ppb |
| | 2,4-DNT | 25321-14-6 | LAND | 20,000 | ppb |
| | LEAD | 7439-92-1 | LAND | 50,000 | ppb |
| | MANGANESE | 7439-96-5 | LAND | 2,600,000 | ppb |
| | NITRATE | | LAND | 2,500,000 | ppb |
| | NITROBENZENE | 98-95-3 | LAND | 480 | ppb |
| | NITROTOLUENE | | LAND | 480 | ppb |
| | SODIUM | 1310-73-2 | LAND | 3,420,000 | ppb |
| | SULFATE | | LAND | 2,000,000 | ppb |
| | 1,3,5-TNB | 118-96-7 | LAND | 15,000 | ppb |
| | 2,4,6-TNT | 118-96-7 | LAND | 740 | ppb |

V. FEEDSTOCKS (See Appendix for CAS Numbers)

| CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER | CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER |
|----------|-------------------|---------------|----------|-------------------|---------------|
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

FEB 1990 CONFIRMATION STUDY
NASHVILLE DISTRICT CORPS OF ENGINEERS
(MAX. CONCENTRATION SHOWN)

PN G0504001815



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE | 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____ 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: >100 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 C. CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED: _____ 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 D. FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED: _____ 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED: _____ 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: 130 ACRES 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
(Acres) 04 NARRATIVE DESCRIPTION

01 G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: >100 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
NO KNOWN WAYS OF AFFECTED ACQUISITION

01 H. WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED: _____ 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: _____ 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE | 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 J. DAMAGE TO FLORA
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 K. DAMAGE TO FAUNA
04 NARRATIVE DESCRIPTION (Include names of species)
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 L. CONTAMINATION OF FOOD CHAIN
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 M. UNSTABLE CONTAINMENT OF WASTES
(Spills/runoff/standing liquids/leaking drums)
03 POPULATION POTENTIALLY AFFECTED: >100
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED

SOIL CONTAMINATION DISCOVERED

01 N. DAMAGE TO OFFSITE PROPERTY
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 P. ILLEGAL/UNAUTHORIZED DUMPING
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: >100

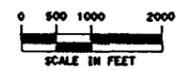
IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e. g., state files, sample analysis, reports)

CONFIRMATION STUDY FEB 1990
NASHVILLE DISTRICT CORPS OF ENGINEERS

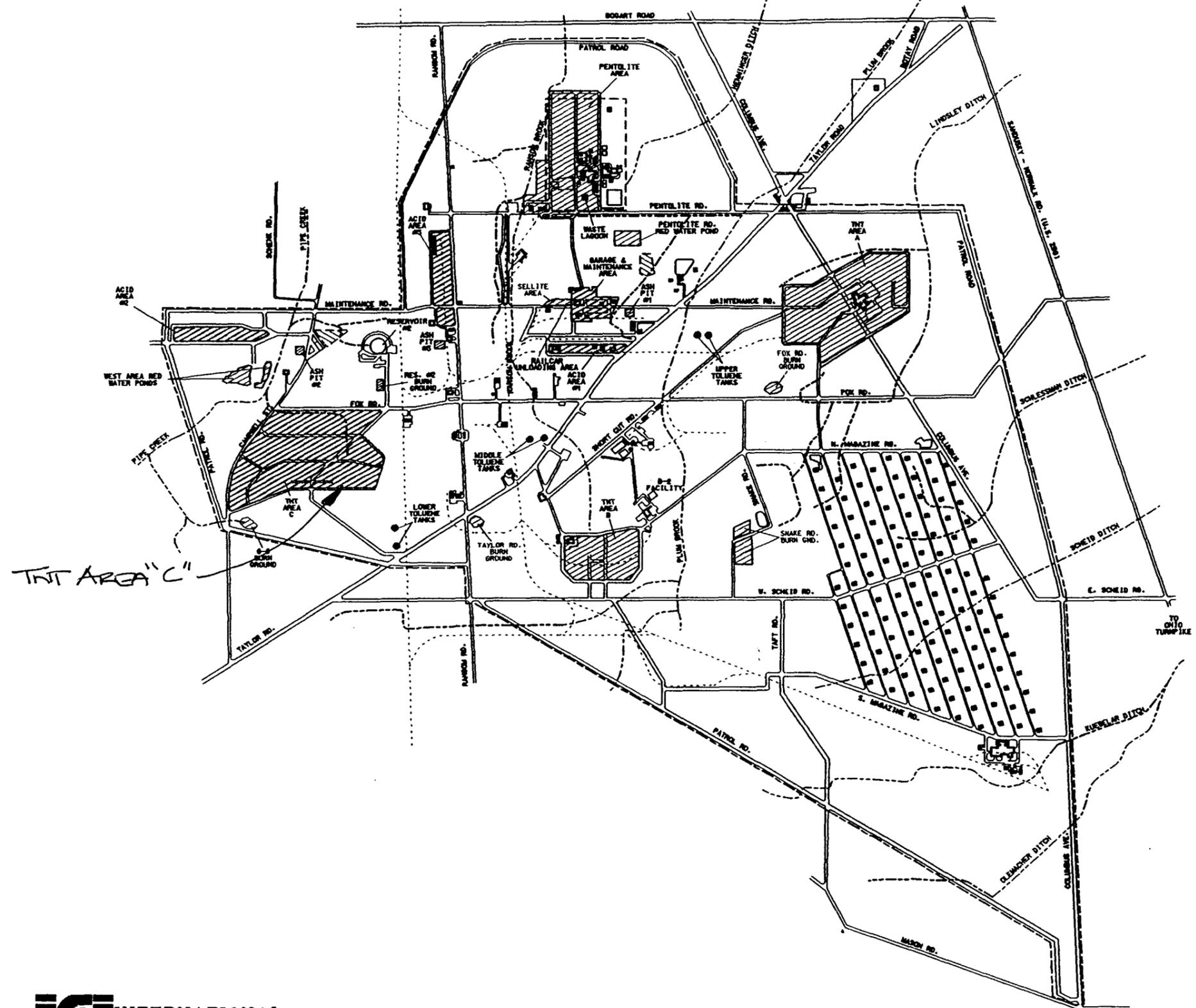
| | | | | |
|---|--|----------------------------------|--|---------------------|
| 1. COMPONENT ARMY | FY 1999 MILITARY CONSTRUCTION PROJECT DATA | | | 2. DATE NOV 1998 |
| 3. INSTALLATION AND LOCATION Plum Brook Ordnance Works Sandusky, Ohio | | | 4. PROJECT TITLE DERP-FUDS HTRW - RI/FS | |
| 5. PROGRAM ELEMENT DERP-FUDS | 6. CATEGORY CODE HTRW | 7. PROJECT NUMBER G05OH001815 | 8. PROJECT COST (\$000) \$1,171.4 | |
| 9. COST ESTIMATES | | | | |
| ITEM | U/M | QUANTITY | UNIT COST | COST (\$000) |
| Prepare Remedial Investigation/Feasibility Study | | | | \$937.1 |
| Contract Administration and Supervision by CELRN | | | | \$187.4 |
| Project Management by CELRH | | | | <u>\$ 46.9</u> |
| TOTAL | | | | \$1,171.4 |
| <p>10. DESCRIPTION OF PROPOSED CONSTRUCTION</p> <p>Prepare a Remedial Investigation/Feasibility Study on the subject TNT Area C. Work will include:</p> <ol style="list-style-type: none"> 1. Installation of monitoring wells. 2. Soil borings. 3. Sampling and chemical analysis of soil and water samples 4. Preparation of Feasibility Study that will identify alternatives for cleanup and their costs. | | | | |

PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO



LEGEND:

- STREAM
- RAILROAD
- PBS BOUNDARY FENCE
- AREA OF CONCERN
- MIS-LOCATED AOC (Sampled by M-K, 1994a)



ICI INTERNATIONAL
CONSULTANTS, INC.

90504001815

FIGURE 1-2
LOCATIONS of AREAS of
CONCERN (AOCs) at PBOW

| | |
|----------|-----------|
| DATE | 12 JUL 95 |
| PREPARED | JET |
| CHECKED | DBJ |

PROJECT SUMMARY SHEET
FOR
DERP-FUDS HTRW PROJECT NO. G05OH001816
TNT RAIL CAR LOADING AREAS
PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO
SITE NO. G05OH001800
21 NOVEMBER 1998

PROJECT DESCRIPTION: The project areas are former TNT rail car loading areas. Plum Brook Ordnance Works (PBO) was utilized by the Department of Defense (DoD) from 1941 until 1945 for the manufacture of 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. During this period, TNT was loaded onto rail cars for shipment from the site and to on-site storage areas. The locations of these areas are unknown, and reference to them has not been found in site documents. Remnants of blast-protection walls adjacent to the abandoned rail tracks at TNT Area B suggest the possible location of a TNT rail car loading facility.

PROJECT ELIGIBILITY: Records indicate that TNT Areas A, B and C were utilized by DoD for the manufacture of TNT. These areas are likely to have had rail car loading facilities for the shipment of TNT within and outside of the former PBO site. Based on past site activities, nitroaromatics are likely contaminants of concern at the TNT rail car loading areas.

POLICY CONSIDERATIONS: Current DoD policy dictates eligibility for remediation of DoD generated hazardous and toxic waste even though there was no evidence of a hazard when the property was transferred from DOD. Any nitroaromatic contamination present at the TNT rail car loading areas would be from direct DoD use of the site.

PROPOSED PROJECT: An HTRW project is proposed. The project consists of the preparation of a Limited Site Investigation of the TNT rail car loading areas.

EPA Form 2070-12: Attached.

DD Form 1391: Attached.

District POC: Nancy O. Stouffer, CELRH-DL-M, (304) 529-5035, is the Geographic District Project Manager, and Kevin L. Jasper, CELRL-DL-B, (502) 625-7015, is the Design District Project Manager, for the PBO site.

ENCLOSURE

PH. GOSCH 001816

|  POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT PART 1 - SITE INFORMATION AND ASSESSMENT | | I. IDENTIFICATION | |
|--|--------------|---|--|
| | | 01 STATE | 02 SITE NUMBER |
| II. SITE NAME AND LOCATION | | | |
| 01 SITE NAME (Legal, common, or descriptive name of site) | | 02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER | |
| Plum Brook Ordnance Works | | | |
| 03 CITY | 04 STATE | 05 ZIP CODE | 06 COUNTY |
| SANDUSKY | OH | | ERIE |
| 07 COUNTY CODE | 08 CONG DIST | | |
| | 5 | | |
| 09 COORDINATES LATITUDE | | LONGITUDE | |
| 41 22 41.1 | | 82 4 15.1 | |
| 10 DIRECTIONS TO SITE (Starting from nearest public road) | | | |
| I 80, NORTH 0.1 MILE ON RT 4, EAST 0.2 MILE ON RT 13. SITE NEAR BLOOMINGVILLE | | | |
| III. RESPONSIBLE PARTIES | | | |
| 01 OWNER (if known) | | 02 STREET (Business, mailing, residential) | |
| US Army Corps of Engineers | | 502 8th STREET | |
| 03 CITY | 04 STATE | 05 ZIP CODE | 06 TELEPHONE NUMBER |
| HUNTINGTON | WV | 25701 | 304 529-5760 |
| 07 OPERATOR (if known and different from owner) | | 08 STREET (Business, mailing, residential) | |
| | | | |
| 09 CITY | 10 STATE | 11 ZIP CODE | 12 TELEPHONE NUMBER |
| | | | () () () () |
| 13 TYPE OF OWNERSHIP (Check one) | | | |
| <input type="checkbox"/> A. PRIVATE <input checked="" type="checkbox"/> B. FEDERAL: <u>NASA</u> <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <small>(Agency name)</small> | | | |
| <input checked="" type="checkbox"/> F. OTHER: <u>FORMER DOD USE</u> <input type="checkbox"/> G. UNKNOWN <small>(Specify)</small> | | | |
| 14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply) | | | |
| <input type="checkbox"/> A. RCRA 3001 DATE RECEIVED: ___/___/___ <input type="checkbox"/> B. UNCONTROLLED WASTE SITE (CERCLA 103 (c)) DATE RECEIVED: ___/___/___ <input type="checkbox"/> C. NONE <small>MONTH DAY YEAR</small> | | | |
| IV. CHARACTERIZATION OF POTENTIAL HAZARD | | | |
| 01 ON SITE INSPECTION | | BY (Check all that apply) | |
| <input checked="" type="checkbox"/> YES DATE <u>2</u> / <u>90</u> <small>MONTH DAY YEAR</small> | | <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input checked="" type="checkbox"/> F. OTHER: <u>NASHVILLE CORPS</u> <small>(Specify)</small> | |
| | | CONTRACTOR NAME(S): _____ | |
| 02 SITE STATUS (Check one) | | 03 YEARS OF OPERATION | |
| <input type="checkbox"/> A. ACTIVE <input checked="" type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN | | <u>1941</u> <u>1945</u> <small>BEGINNING YEAR ENDING YEAR</small> | |
| | | <input type="checkbox"/> UNKNOWN | |
| 04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED | | | |
| TRINITROTOLUENE AND DERIVATIVES ACETONE, BARIUM, CHROMIUM MANGANESE | | | |
| 05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION | | | |
| SOIL AND GROUNDWATER CONTAMINATION | | | |
| V. PRIORITY ASSESSMENT | | | |
| 01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents) | | | |
| <input checked="" type="checkbox"/> A. HIGH (inspection required promptly) <input type="checkbox"/> B. MEDIUM (inspection required) <input type="checkbox"/> C. LOW (inspect on time available basis) <input type="checkbox"/> D. NONE (No further action needed, complete current disposition form) | | | |
| VI. INFORMATION AVAILABLE FROM | | | |
| 01 CONTACT | | 02 OF (Agency/Organization) | 03 TELEPHONE NUMBER |
| FRANK ALBERT | | HUNTINGTON DISTRICT CORPS ENGINEERS | 304 529-5760 |
| 04 PERSON RESPONSIBLE FOR ASSESSMENT | | 05 AGENCY | 06 ORGANIZATION |
| SAME | | | |
| | | 07 TELEPHONE NUMBER | 08 DATE |
| | | () () () () | <u>11</u> / <u>21</u> / <u>98</u> <small>MONTH DAY YEAR</small> |



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

| | | |
|--|---|---|
| <p>01 PHYSICAL STATES (Check all that apply)</p> <p>A SOLID B POWDER, FINES C SLUDGE D OTHER _____ <i>Specify</i></p> <p>E SLURRY F LIQUID G GAS</p> | <p>02 WASTE QUANTITY AT SITE</p> <p>Measures of waste quantities must be independent</p> <p>TONS _____ CUBIC YARDS _____ NO. OF DRUMS _____</p> | <p>03 WASTE CHARACTERISTICS (Check all that apply)</p> <p><input checked="" type="checkbox"/> A TOXIC <input type="checkbox"/> B CORROSIVE <input type="checkbox"/> C RADIOACTIVE <input type="checkbox"/> D PERSISTENT</p> <p>E SOLUBLE F INFECTIOUS G FLAMMABLE H IGNITABLE</p> <p>I HIGHLY VOLATILE <input checked="" type="checkbox"/> J EXPLOSIVE K REACTIVE L INCOMPATIBLE M NOT APPLICABLE</p> |
|--|---|---|

III. WASTE TYPE

| CATEGORY | SUBSTANCE NAME | 01 GROSS AMOUNT | 02 UNIT OF MEASURE | 03 COMMENTS |
|----------|-------------------------|-----------------|--------------------|-------------|
| SLU | SLUDGE | | | |
| OLW | OILY WASTE | | | |
| SOL | SOLVENTS | | | |
| PSD | PESTICIDES | | | |
| OCC | OTHER ORGANIC CHEMICALS | | | |
| IOC | INORGANIC CHEMICALS | | | |
| ACD | ACIDS | | | |
| BAS | BASES | | | |
| MES | HEAVY METALS | | | |

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

| 01 CATEGORY | 02 SUBSTANCE NAME | 03 CAS NUMBER | 04 STORAGE/DISPOSAL METHOD | 05 CONCENTRATION | 06 MEASURE OF CONCENTRATION |
|-------------|-------------------|---------------|----------------------------|------------------|-----------------------------|
| | PARAFFIN | 10022-31-8 | LAND | 214,000 | ppb |
| | CHROMIUM | 7440-47-3 | LAND | 20,000 | ppb |
| | 1,3-DNB | 99-65-0 | LAND | 6,400 | ppb |
| | 2,6-DNT | 25321-14-6 | LAND | 1,200 | ppb |
| | 2,4-DNT | 25321-14-6 | LAND | 20,000 | ppb |
| | LEAD | 7439-92-1 | LAND | 50,000 | ppb |
| | MANGANESE | 7439-96-5 | LAND | 2,600,000 | ppb |
| | NITRATE | | LAND | 2,500,000 | ppb |
| | NITROBENZENE | 98-95-3 | LAND | 480 | ppb |
| | NITROTOLUENE | | LAND | 480 | ppb |
| | SODIUM | 1310-73-2 | LAND | 3,420,000 | ppb |
| | SULFATE | | LAND | 2,000,000 | ppb |
| | 1,3,5-TNB | 118-96-7 | LAND | 15,000 | ppb |
| | 2,4,6-TNT | 118-96-7 | LAND | 740 | ppb |

V. FEEDSTOCKS (See Appendix for CAS Numbers)

| CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER | CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER |
|----------|-------------------|---------------|----------|-------------------|---------------|
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

FEB 1990 CONFIRMATION STUDY
NASHVILLE DISTRICT CORPS OF ENGINEERS
(MAX. CONCENTRATION SHOWN)

PA GOSOH 001816



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE | 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 OBSERVED (DATE: 2/90)
04 NARRATIVE DESCRIPTION _____
 POTENTIAL ALLEGED

01 B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: > 100
02 OBSERVED (DATE: _____)
04 NARRATIVE DESCRIPTION _____
 POTENTIAL ALLEGED

01 C. CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED: _____
02 OBSERVED (DATE: _____)
04 NARRATIVE DESCRIPTION _____
 POTENTIAL ALLEGED

01 D. FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED: _____
02 OBSERVED (DATE: _____)
04 NARRATIVE DESCRIPTION _____
 POTENTIAL ALLEGED

01 E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED: _____
02 OBSERVED (DATE: _____)
04 NARRATIVE DESCRIPTION _____
 POTENTIAL ALLEGED

01 F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: < 5 ACRES
(Acres)
02 OBSERVED (DATE: 2/90)
04 NARRATIVE DESCRIPTION _____
 POTENTIAL ALLEGED

01 G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: > 100
02 OBSERVED (DATE: 2/90)
04 NARRATIVE DESCRIPTION _____
NO KNOWN USERS OF AFFECTED AQUIFER
 POTENTIAL ALLEGED

01 H. WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED: _____
02 OBSERVED (DATE: _____)
04 NARRATIVE DESCRIPTION _____
 POTENTIAL ALLEGED

01 I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: _____
02 OBSERVED (DATE: _____)
04 NARRATIVE DESCRIPTION _____
 POTENTIAL ALLEGED



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

| I. IDENTIFICATION | |
|-------------------|----------------|
| 01 STATE | 02 SITE NUMBER |

II. HAZARDOUS CONDITIONS AND INCIDENTS *(Continued)*

01 J. DAMAGE TO FLORA
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 K. DAMAGE TO FAUNA
04 NARRATIVE DESCRIPTION *(include names of species)*

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 L. CONTAMINATION OF FOOD CHAIN
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 M. UNSTABLE CONTAINMENT OF WASTES
(Spills/runoff/standing liquids/leaking drums)
03 POPULATION POTENTIALLY AFFECTED: > 100

02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED

04 NARRATIVE DESCRIPTION

SOIL CONTAMINATION DISCOVERED

01 N. DAMAGE TO OFFSITE PROPERTY
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 P. ILLEGAL/UNAUTHORIZED DUMPING
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: > 100

IV. COMMENTS

V. SOURCES OF INFORMATION *(Cite specific references, e. g., state files, sample analysis reports)*

CONFIRMATION STUDY FEB 1990
NASHVILLE DISTRICT CORPS OF ENGINEERS

| | | |
|----------------------|--|---------------------|
| 1. COMPONENT ARMY | FY 1999 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE NOV 1998 |
|----------------------|--|---------------------|

| | |
|---|---|
| 3. INSTALLATION AND LOCATION Plum Brook Ordnance Works Sandusky, Ohio | 4. PROJECT TITLE DERP-FUDS HTRW – SI |
|---|---|

| | | | |
|---------------------------------|--------------------------|----------------------------------|---------------------------------------|
| 5. PROGRAM ELEMENT DERP-FUDS | 6. CATEGORY CODE HTRW | 7. PROJECT NUMBER G05OH001816 | 8. PROJECT COST (\$000) \$ 90.0 |
|---------------------------------|--------------------------|----------------------------------|---------------------------------------|

9. COST ESTIMATES

| ITEM | U/M | QUANTITY | UNIT COST | COST (\$000) |
|---|-----|----------|-----------|--------------|
| Prepare Limited Site Investigation by CELRL | | | | \$ 80.0 |
| Project Management by CELRH | | | | \$ 10.0 |
| TOTAL | | | | \$ 90.0 |

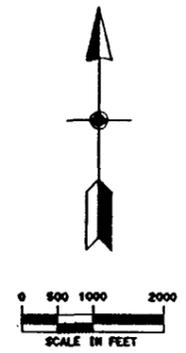
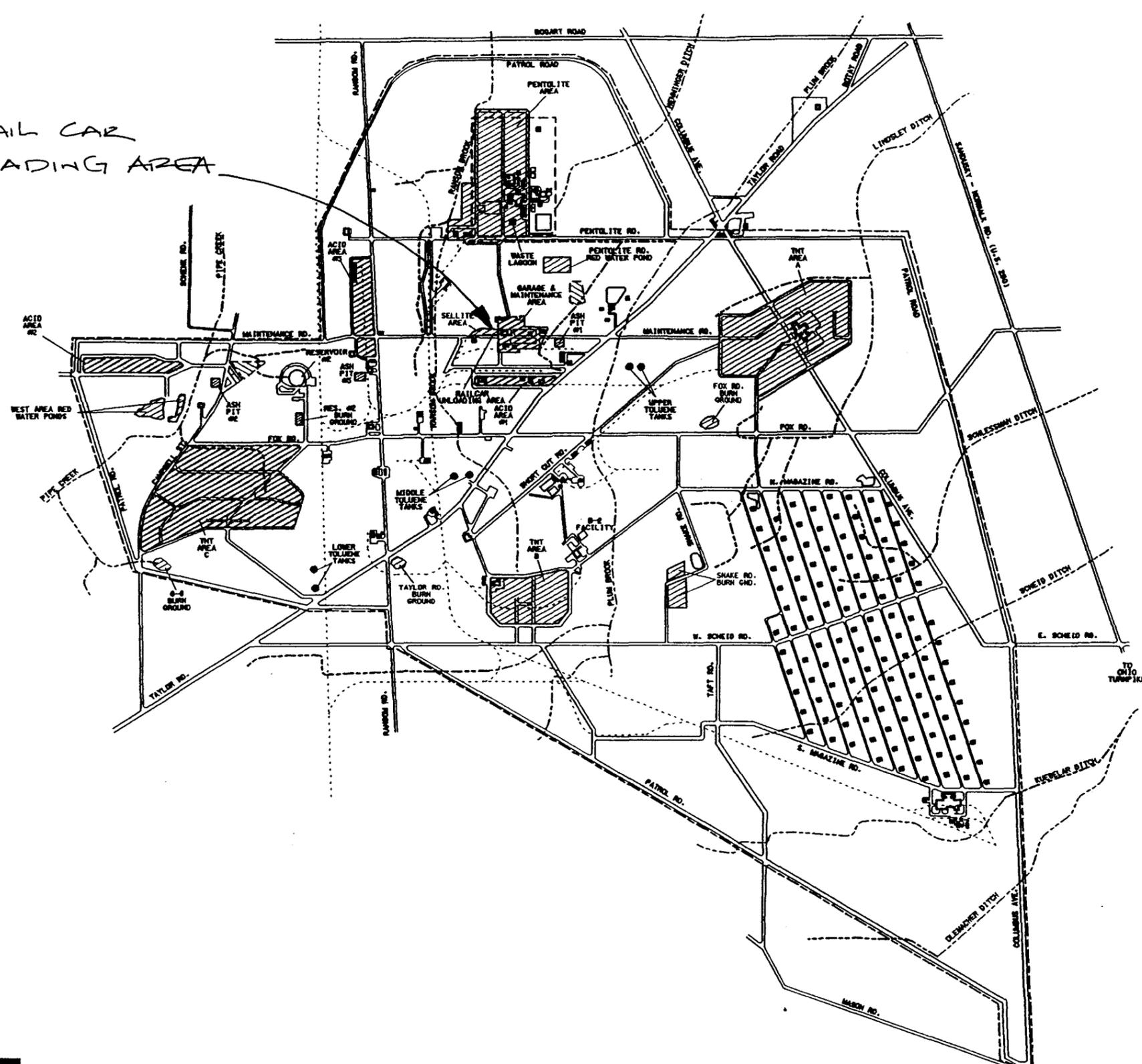
10. DESCRIPTION OF PROPOSED CONSTRUCTION

Prepare a Limited Site Investigation Study on the subject TNT Rail Car Loading Area. Work will include:

1. Sampling and chemical analysis of soil and water samples
2. Preparation of a Limited Site Investigation Report and recommendation for the need for further investigation (RI/FS) of the TNT Rail Car Loading Area.

RAIL CAR
LOADING AREA

PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO



| LEGEND: | |
|---------|--|
| | STREAM |
| | RAILROAD |
| | PBS BOUNDARY FENCE |
| | AREA OF CONCERN |
| | MIS-LOCATED AOC (Sampled by M-K, 1994a) |

ICI INTERNATIONAL
CONSULTANTS, INC.

GOSOH001816

| | |
|---|----------------|
| FIGURE 1-2 LOCATIONS of AREAS of CONCERN (AOCs) at PBOW | DATE 12 JUL 95 |
| | PREPARED JET |
| | CHECKED DBJ |

PROJECT SUMMARY SHEET
FOR
DERP-FUDS HTRW PROJECT NO. G05OH001817
WASTEWATER TREATMENT PLANTS NO. 1 AND 3
PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO
SITE NO. G05OH001800
21 NOVEMBER 1998

PROJECT DESCRIPTION: The project areas are Wastewater Treatment Plants No. 1 and 3. The former Plum Brook Ordnance Works (PBOW) was utilized by the Department of Defense (DoD) from 1941 until 1945 for the manufacture of 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. Process waste water ("red water") from the Wash House was transported to Wastewater Treatment Plant No. 1 Area A, or WWTP No.3 Area C, and then discharged through wooden flumes and elevated discharge pipes to settling ponds, known as the West Area and Pentolite Road Red Water Ponds.

PROJECT ELIGIBILITY: Records indicate that Wastewater Treatment Plants No. 1 and 3 were utilized by DoD for operation of the former PBOW.

POLICY CONSIDERATIONS: Current DoD policy dictates eligibility for remediation of DoD generated hazardous and toxic waste even though there was no evidence of a hazard when the property was transferred from DOD. There may be nitroaromatic contamination present at the wastewater treatment plants that could be attributed to direct DoD use of the site.

PROPOSED PROJECT: An HTRW project is proposed which consists of a Limited Site Investigation. Surface and subsurface soil should be sampled and analyzed to determine the presence of contamination at the sites. Further investigations at Wastewater Treatment Plants No. 1 and 3 will depend on the SI results.

EPA Form 2070-12: Attached.

DD Form 1391: Attached.

District POC: Nancy O. Stouffer, CELRH-DL-M, (304) 529-5035, is the Geographic District Project Manager, and Kevin L. Jasper, CELRL-DL-B, (502) 625-7015, is the Design District Project Manager, for the PBOW site.

PH. G0504001817



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

| I. IDENTIFICATION | |
|-------------------|----------------|
| 01 STATE | 02 SITE NUMBER |
| | |

| | | | | | | | |
|--|--|---|-----------------------------|---|----------------|--|--|
| II. SITE NAME AND LOCATION | | | | | | | |
| 01 SITE NAME (Legal, common, or descriptive name of site) PLUM BROOK ORDNANCE WORKS | | | | 02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER | | | |
| 03 CITY SANDUSKY | | 04 STATE OH | 05 ZIP CODE | 06 COUNTY ERIE | 07 COUNTY CODE | 08 CONG DIST 5 | |
| 09 COORDINATES LATITUDE 41 22 44 41 22 04 | | LONGITUDE 82 39 36 82 42 37 | | | | | |
| 10 DIRECTIONS TO SITE (Starting from nearest public road) I 20, NORTH 0.1 MILE ON RT 4, EAST 0.2 MILE ON RT 13. SITE NEAR BLOOMINGVILLE | | | | | | | |
| III. RESPONSIBLE PARTIES | | | | | | | |
| 01 OWNER (if known) US ARMY CORPS OF ENGINEERS | | | | 02 STREET (Business, mailing, residential) 502 8TH STREET | | | |
| 03 CITY HUNTINGTON | | 04 STATE WV | 05 ZIP CODE 25701 | 06 TELEPHONE NUMBER 304 529-5760 | | | |
| 07 OPERATOR (if known and different from owner) | | | | 08 STREET (Business, mailing, residential) | | | |
| 09 CITY | | 10 STATE | 11 ZIP CODE | 12 TELEPHONE NUMBER | | | |
| 13 TYPE OF OWNERSHIP (Check one) <input type="checkbox"/> A. PRIVATE <input checked="" type="checkbox"/> B. FEDERAL: NASA (Agency name) <input checked="" type="checkbox"/> F. OTHER: FORMER DOD USE (Specify) <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <input type="checkbox"/> G. UNKNOWN | | | | | | | |
| 14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply) <input type="checkbox"/> A. RCRA 3001 DATE RECEIVED: / / <input type="checkbox"/> B. UNCONTROLLED WASTE SITE (CERCLA 103 ci) DATE RECEIVED: / / <input type="checkbox"/> C. NONE | | | | | | | |
| IV. CHARACTERIZATION OF POTENTIAL HAZARD | | | | | | | |
| 01 ON SITE INSPECTION <input checked="" type="checkbox"/> YES DATE 2 / 90 <input type="checkbox"/> NO MONTH DAY YEAR | | BY (Check all that apply) <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input checked="" type="checkbox"/> F. OTHER: NASHVILLE CORPS (Specify) CONTRACTOR NAME(S): | | | | | |
| 02 SITE STATUS (Check one) <input type="checkbox"/> A. ACTIVE <input checked="" type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN | | 03 YEARS OF OPERATION 1941 1945 BEGINNING YEAR ENDING YEAR | | <input type="checkbox"/> UNKNOWN | | | |
| 04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED TRINITROTOLUENE AND DERIVATIVES ACETONE, BARIUM, CHROMIUM MANGANESE | | | | | | | |
| 05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION SOIL AND GROUNDWATER CONTAMINATION | | | | | | | |
| V. PRIORITY ASSESSMENT | | | | | | | |
| 01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents) <input checked="" type="checkbox"/> A. HIGH (inspection required promptly) <input type="checkbox"/> B. MEDIUM (inspection required) <input type="checkbox"/> C. LOW (inspect on time available basis) <input type="checkbox"/> D. NONE (No further action needed, complete current disposition form) | | | | | | | |
| VI. INFORMATION AVAILABLE FROM | | | | | | | |
| 01 CONTACT FRANK ALBERT | | 02 OF (Agency/Organization) HUNTINGTON DISTRICT CORPS ENGINEERS | | 03 TELEPHONE NUMBER 304 529-5760 | | | |
| 04 PERSON RESPONSIBLE FOR ASSESSMENT SAME | | 05 AGENCY | 06 ORGANIZATION | 07 TELEPHONE NUMBER | | 08 DATE 11 21 98 MONTH DAY YEAR | |



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

| I. IDENTIFICATION | |
|-------------------|----------------|
| 01 STATE | 02 SITE NUMBER |

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

| | | |
|--|---|--|
| <p>01 PHYSICAL STATES (Check all that apply)</p> <p><input type="checkbox"/> SOLID <input type="checkbox"/> POWDER, FINES <input type="checkbox"/> SLUDGE</p> <p><input type="checkbox"/> OTHER _____ <small>Specify</small></p> | <p>02 WASTE QUANTITY AT SITE</p> <p><small>Measures of waste quantities must be independent</small></p> <p>TONS UNKNOWN</p> <p>CUBIC YARDS _____</p> <p>NO. OF DRUMS _____</p> | <p>03 WASTE CHARACTERISTICS (Check all that apply)</p> <p><input checked="" type="checkbox"/> A TOXIC <input type="checkbox"/> B CORROSIVE <input type="checkbox"/> C RADIOACTIVE <input type="checkbox"/> D PERSISTENT</p> <p><input type="checkbox"/> E SOLUBLE <input type="checkbox"/> F INFECTIOUS <input type="checkbox"/> G FLAMMABLE <input type="checkbox"/> H IGNITABLE</p> <p><input checked="" type="checkbox"/> I HIGHLY VOLATILE <input checked="" type="checkbox"/> J EXPLOSIVE <input type="checkbox"/> K REACTIVE <input type="checkbox"/> L INCOMPATIBLE <input type="checkbox"/> M NOT APPLICABLE</p> |
|--|---|--|

III. WASTE TYPE

| CATEGORY | SUBSTANCE NAME | 01 GROSS AMOUNT | 02 UNIT OF MEASURE | 03 COMMENTS |
|----------|-------------------------|-----------------|--------------------|-------------|
| SLU | SLUDGE | | | |
| OLW | OILY WASTE | | | |
| SOL | SOLVENTS | | | |
| PSD | PESTICIDES | | | |
| OCC | OTHER ORGANIC CHEMICALS | | | |
| IOC | INORGANIC CHEMICALS | | | |
| ACD | ACIDS | | | |
| BAS | BASES | | | |
| MES | HEAVY METALS | | | |

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

| 01 CATEGORY | 02 SUBSTANCE NAME | 03 CAS NUMBER | 04 STORAGE/DISPOSAL METHOD | 05 CONCENTRATION | 06 MEASURE OF CONCENTRATION |
|-------------|-------------------|---------------|----------------------------|------------------|-----------------------------|
| | BARIUM | 10022-31-8 | LAND | 24,000 | ppb |
| | CHROMIUM | 7440-47-3 | LAND | 20,000 | ppb |
| | 1,3-DNB | 99-65-0 | LAND | 6,400 | ppb |
| | 2,6-DNT | 25321-14-6 | LAND | 1,200 | ppb |
| | 2,4-DNT | 25321-14-6 | LAND | 20,000 | ppb |
| | LEAD | 7439-92-1 | LAND | 50,000 | ppb |
| | MANGANESE | 7439-96-5 | LAND | 2,600,000 | ppb |
| | NITRATE | | LAND | 2,500,000 | ppb |
| | NITROBENZENE | 98-95-3 | LAND | 480 | ppb |
| | NITROTOLUENE | | LAND | 480 | ppb |
| | SODIUM | 1310-73-2 | LAND | 3,420,000 | ppb |
| | SULFATE | | LAND | 2,000,000 | ppb |
| | 1,3,5-TNB | 118-96-7 | LAND | 15,000 | ppb |
| | 2,4,6-TNT | 118-96-7 | LAND | 740 | ppb |

V. FEEDSTOCKS (See Appendix for CAS Numbers)

| CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER | CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER |
|----------|-------------------|---------------|----------|-------------------|---------------|
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

FEB 1990 CONFIRMATION STUDY
NASHVILLE DISTRICT CORPS OF ENGINEERS
(MAX. CONCENTRATION SHOWN)

PH GOS04001817



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 A. GROUNDWATER CONTAMINATION 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 B. SURFACE WATER CONTAMINATION 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: >100 04 NARRATIVE DESCRIPTION

01 C. CONTAMINATION OF AIR 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 D. FIRE/EXPLOSIVE CONDITIONS 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 E. DIRECT CONTACT 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 F. CONTAMINATION OF SOIL 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
03 AREA POTENTIALLY AFFECTED: LESS THAN 1 ACRE 04 NARRATIVE DESCRIPTION

01 G. DRINKING WATER CONTAMINATION 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: >100 04 NARRATIVE DESCRIPTION

NO KNOWN USERS OF AFFECTED AQUIFER

01 H. WORKER EXPOSURE/INJURY 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 I. POPULATION EXPOSURE/INJURY 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 J. DAMAGE TO FLORA
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 K. DAMAGE TO FAUNA
04 NARRATIVE DESCRIPTION (include name(s) of species)
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 L. CONTAMINATION OF FOOD CHAIN
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 M. UNSTABLE CONTAINMENT OF WASTES
(Spills/runoff/standing liquids/leaking drums)
03 POPULATION POTENTIALLY AFFECTED: >100
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED

SOIL CONTAMINATION DISCOVERED

01 N. DAMAGE TO OFFSITE PROPERTY
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 P. ILLEGAL/UNAUTHORIZED DUMPING
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: >100

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

CONFIRMATION STUDY FEB 1990
NASHVILLE DISTRICT CORPS OF ENGINEERS

| | | |
|----------------------|---|---------------------|
| 1. COMPONENT ARMY | FY 1999MILITARY CONSTRUCTION PROJECT DATA | 2. DATE NOV 1998 |
|----------------------|---|---------------------|

| | |
|---|---|
| 3. INSTALLATION AND LOCATION Plum Brook Ordnance Works Sandusky, Ohio | 4. PROJECT TITLE DERP-FUDS HTRW – SI |
|---|---|

| | | | |
|---------------------------------|--------------------------|----------------------------------|---------------------------------------|
| 5. PROGRAM ELEMENT DERP-FUDS | 6. CATEGORY CODE HTRW | 7. PROJECT NUMBER G05OH001817 | 8. PROJECT COST (\$000) \$ 90.0 |
|---------------------------------|--------------------------|----------------------------------|---------------------------------------|

9. COST ESTIMATES

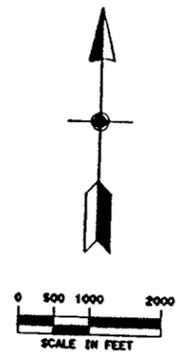
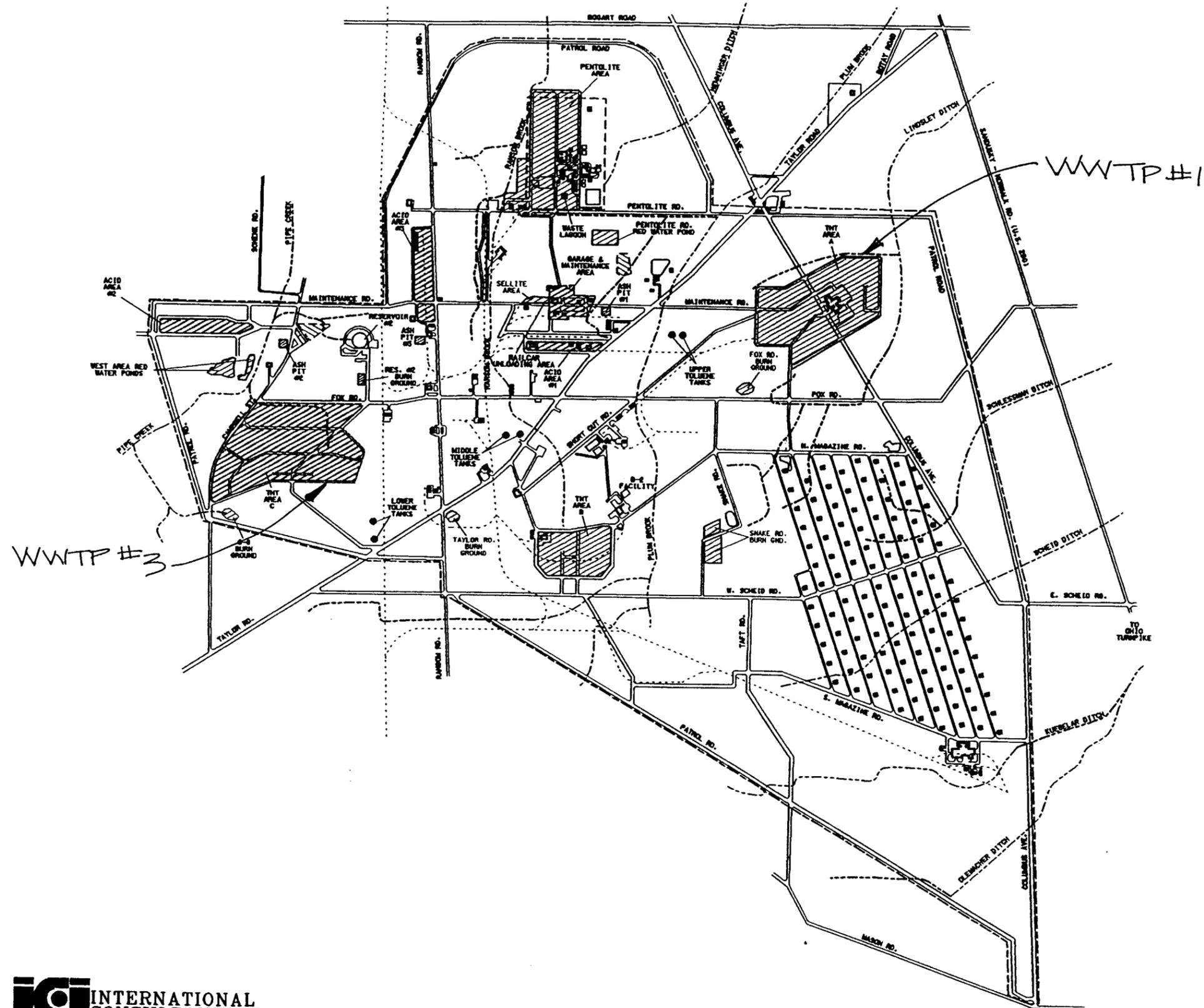
| ITEM | U/M | QUANTITY | UNIT COST | COST (\$000) |
|---|-----|----------|-----------|--------------|
| Prepare Limited Site Investigation by CELRL | | | | \$ 80.0 |
| Project Management by CELRH | | | | \$ 10.0 |
| TOTAL | | | | \$ 90.0 |

10. DESCRIPTION OF PROPOSED CONSTRUCTION

Prepare a Limited Site Investigation Study on the subject Wastewater Treatment Plants No. 1 and 3. Work will include:

1. Sampling and chemical analysis of soil and water samples
2. Preparation of a Limited Site Investigation Report and recommendation for the need for further investigation (RI/FS) of Wastewater Treatment Plants No. 1 and 3.

PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO



LEGEND:

| | |
|--|--|
| | STREAM |
| | RAILROAD |
| | PBS BOUNDARY FENCE |
| | AREA OF CONCERN |
| | MIS-LOCATED AOC (Sampled by M-K, 1994a) |

ICI INTERNATIONAL
CONSULTANTS, INC.

GOS OH 001817

| | | |
|--|--|----------------|
| FIGURE 1-2 | | DATE 12 JUL 95 |
| LOCATIONS of AREAS of CONCERN (AOCs) at PBOW | | PREPARED JET |
| | | CHECKED DBJ |

PROJECT SUMMARY SHEET
FOR
DERP-FUDS HTRW PROJECT NO. G05OH001818
WASTEWATER TREATMENT PLANT NO. 2
PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO
SITE NO. G05OH001800
21 NOVEMBER 1998

PROJECT DESCRIPTION: The project area is Wastewater Treatment Plant No. 2. The former Plum Brook Ordnance Works (PBOW) was utilized by the Department of Defense (DoD) from 1941 until 1945 for the manufacture of 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. Process waste water ("red water") from the Wash House was transported to Wastewater Treatment Plant No. 2 Area B, and then discharged through wooden flumes and elevated discharge pipes to settling ponds, known as the West Area and Pentolite Road Red Water Ponds.

PROJECT ELIGIBILITY: Records indicate that Wastewater Treatment Plant No. 2 was utilized by DoD for operation of the former PBOW.

POLICY CONSIDERATIONS: Current DoD policy dictates eligibility for remediation of DoD generated hazardous and toxic waste even though there was no evidence of a hazard when the property was transferred from DOD. There may be nitroaromatic contamination present at the wastewater treatment plant that could be attributed to direct DoD use of the site.

PROPOSED PROJECT: An HTRW project is proposed which consists of a Remedial Investigation/Feasibility Study of Wastewater Treatment Plant No. 2.

EPA Form 2070-12: Attached.

DD Form 1391: Attached.

District POC: Nancy O. Stouffer, CELRH-DL-M, (304) 529-5035, is the Geographic District Project Manager, and Kevin L. Jasper, CELRL-DL-B, (502) 625-7015, is the Design District Project Manager, for the PBOW site.

PH. G0504001818

|  POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT PART 1 - SITE INFORMATION AND ASSESSMENT | | I. IDENTIFICATION | |
|---|-----------------------|---|--|
| | | 01 STATE | 02 SITE NUMBER |
| II. SITE NAME AND LOCATION | | | |
| 01 SITE NAME (Legal, common, or descriptive name of site) PLUM BROOK ORNANCE WORKS | | 02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER | |
| 03 CITY SANDUSKY | 04 STATE OH | 05 ZIP CODE | 06 COUNTY ERIE |
| 07 COORDINATES LATITUDE 41 21 44. | | 08 LONGITUDE 82 40 59. | |
| 10 DIRECTIONS TO SITE (Starting from nearest public road) I 80, NORTH 0.1 MILE ON RT 4, EAST 0.2 MILE ON RT 13. SITE NEAR BLOOMINGVILLE | | | |
| III. RESPONSIBLE PARTIES | | | |
| 01 OWNER (if known) US ARMY CORPS OF ENGINEERS | | 02 STREET (Business, mailing, residential) 502 8TH STREET | |
| 03 CITY HUNTINGTON | 04 STATE WV | 05 ZIP CODE 25701 | 06 TELEPHONE NUMBER 304 529-5760 |
| 07 OPERATOR (if known and different from owner) | | 08 STREET (Business, mailing, residential) | |
| 09 CITY | | 10 STATE | 11 ZIP CODE |
| 12 TELEPHONE NUMBER | | | |
| 13 TYPE OF OWNERSHIP (Check one) | | | |
| <input type="checkbox"/> A. PRIVATE <input checked="" type="checkbox"/> B. FEDERAL: NASA <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <input checked="" type="checkbox"/> F. OTHER: FORMER DOD USE <input type="checkbox"/> G. UNKNOWN | | | |
| 14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply) | | | |
| <input type="checkbox"/> A. RCRA 3001 DATE RECEIVED: _____ <input type="checkbox"/> B. UNCONTROLLED WASTE SITE (CERCLA 103 ci) DATE RECEIVED: _____ <input type="checkbox"/> C. NONE | | | |
| IV. CHARACTERIZATION OF POTENTIAL HAZARD | | | |
| 01 ON SITE INSPECTION | | BY (Check all that apply) | |
| <input checked="" type="checkbox"/> YES DATE 2 90 <input type="checkbox"/> NO MONTH DAY YEAR | | <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input checked="" type="checkbox"/> F. OTHER: NASHVILLE CORPS | |
| CONTRACTOR NAME(S): _____ | | | |
| 02 SITE STATUS (Check one) | | 03 YEARS OF OPERATION | |
| <input type="checkbox"/> A. ACTIVE <input checked="" type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN | | 1941 1945 BEGINNING YEAR ENDING YEAR <input type="checkbox"/> UNKNOWN | |
| 04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED TRI-NITROTOLUENE AND DERIVATIVES ACETONE, BARIUM, CHROMIUM MANGANESE | | | |
| 05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION SOIL AND GROUNDWATER CONTAMINATION | | | |
| V. PRIORITY ASSESSMENT | | | |
| 01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents) | | | |
| <input checked="" type="checkbox"/> A. HIGH (inspection required promptly) <input type="checkbox"/> B. MEDIUM (inspection required) <input type="checkbox"/> C. LOW (inspect on time available basis) <input type="checkbox"/> D. NONE (No further action needed, complete current disposition form) | | | |
| VI. INFORMATION AVAILABLE FROM | | | |
| 01 CONTACT FRANK ALBERT | | 02 OF (Agency/Organization) HUNTINGTON DISTRICT CORPS ENGINEERS | |
| 03 TELEPHONE NUMBER 304 529-5760 | | 04 PERSON RESPONSIBLE FOR ASSESSMENT SAME | |
| 05 AGENCY | | 06 ORGANIZATION | |
| 07 TELEPHONE NUMBER | | 08 DATE 11 21 98 MONTH DAY YEAR | |



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

| | | |
|--|--|--|
| <p>01 PHYSICAL STATES (Check all that apply)</p> <p>A SOLID B POWDER, FINES C SLUDGE D OTHER</p> <p>E SLURRY F LIQUID G GAS</p> <p>Specify</p> | <p>02 WASTE QUANTITY AT SITE</p> <p>Measures of waste quantities must be independent</p> <p>TONS CUBIC YARDS NO. OF DRUMS</p> <p>UNKNOWN</p> | <p>03 WASTE CHARACTERISTICS (Check all that apply)</p> <p>A TOXIC B CORROSIVE C RADIOACTIVE D PERSISTENT</p> <p>E SOLUBLE F INFECTIOUS G FLAMMABLE H IGNITABLE</p> <p>I HIGHLY VOLATILE J EXPLOSIVE K REACTIVE L INCOMPATIBLE M NOT APPLICABLE</p> |
|--|--|--|

III. WASTE TYPE

| CATEGORY | SUBSTANCE NAME | 01 GROSS AMOUNT | 02 UNIT OF MEASURE | 03 COMMENTS |
|----------|-------------------------|-----------------|--------------------|-------------|
| SLU | SLUDGE | | | |
| OLW | OILY WASTE | | | |
| SOL | SOLVENTS | | | |
| PSD | PESTICIDES | | | |
| OC | OTHER ORGANIC CHEMICALS | | | |
| IC | INORGANIC CHEMICALS | | | |
| ACD | ACIDS | | | |
| BAS | BASES | | | |
| MES | HEAVY METALS | | | |

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

| 01 CATEGORY | 02 SUBSTANCE NAME | 03 CAS NUMBER | 04 STORAGE/DISPOSAL METHOD | 05 CONCENTRATION | 06 MEASURE OF CONCENTRATION |
|-------------|-------------------|---------------|----------------------------|------------------|-----------------------------|
| | BARIUM | 1022-31-8 | LAND | 215,000 | ppb |
| | CHROMIUM | 7440-47-3 | LAND | 20,000 | ppb |
| | 1,3-DNB | 99-65-0 | LAND | 6,400 | ppb |
| | 2,6-DNT | 25321-14-6 | LAND | 1,200 | ppb |
| | 2,4-DNT | 25321-14-6 | LAND | 20,000 | ppb |
| | LEAD | 7439-92-1 | LAND | 50,000 | ppb |
| | MANGANESE | 7439-96-5 | LAND | 2,600,000 | ppb |
| | NITRATE | | LAND | 2,500,000 | ppb |
| | NITROBENZENE | 98-95-3 | LAND | 480 | ppb |
| | NITROTOLUENE | | LAND | 480 | ppb |
| | SODIUM | 1310-73-2 | LAND | 3,420,000 | ppb |
| | SULFATE | | LAND | 2,000,000 | ppb |
| | 1,3,5-TNB | 118-96-7 | LAND | 15,000 | ppb |
| | 2,4,6-TNT | 118-96-7 | LAND | 740 | ppb |

V. FEEDSTOCKS (See Appendix for CAS Numbers)

| CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER | CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER |
|----------|-------------------|---------------|----------|-------------------|---------------|
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

FEB 1990 CONFIRMATION STUDY
NASHVILLE DISTRICT CORPS OF ENGINEERS
(MAX. CONCENTRATION SHOWN)

PA G0504001818



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE | 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____ 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: >100 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 C. CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED: _____ 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 D. FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED: _____ 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED: _____ 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: <1 ACRE (Acres) 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: >100 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
NO KNOWN USERS OF AFFECTED AQUIFER

01 H. WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED: _____ 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: _____ 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 J. DAMAGE TO FLORA
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 K. DAMAGE TO FAUNA
04 NARRATIVE DESCRIPTION (include name(s) of species)
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 L. CONTAMINATION OF FOOD CHAIN
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 M. UNSTABLE CONTAINMENT OF WASTES
(Soils/runoff/standing liquids/leaking drums)
03 POPULATION POTENTIALLY AFFECTED: > 100
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED

SOIL CONTAMINATION DISCOVERED

01 N. DAMAGE TO OFFSITE PROPERTY
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 P. ILLEGAL/UNAUTHORIZED DUMPING
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

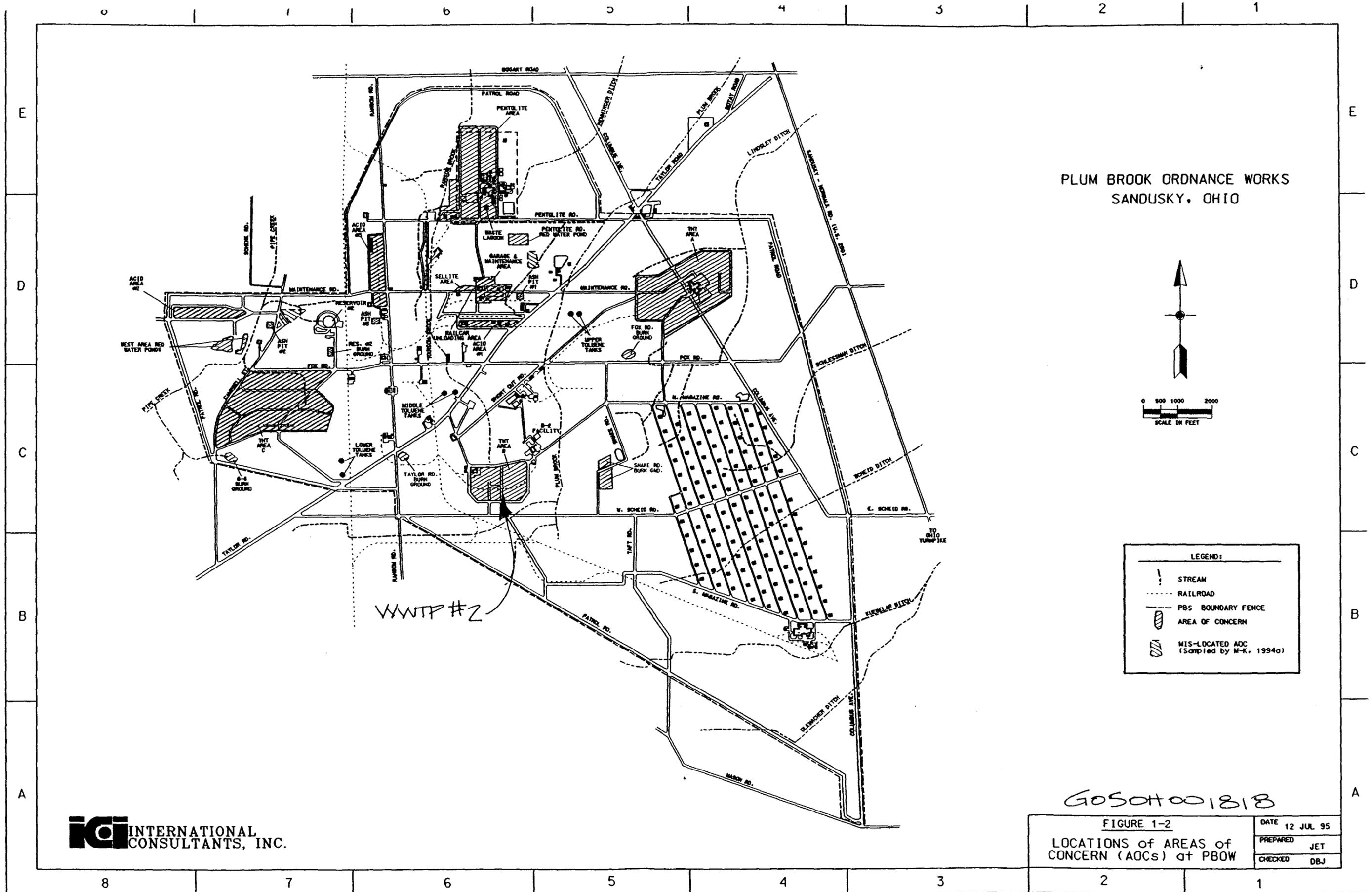
III. TOTAL POPULATION POTENTIALLY AFFECTED: > 100

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

CONFIRMATION STUDY FEB 1990
NASHVILLE DISTRICT CORPS OF ENGINEERS

| | | | | |
|---|--|----------------------------------|--|---------------------|
| 1. COMPONENT ARMY | FY 1999 MILITARY CONSTRUCTION PROJECT DATA | | | 2. DATE NOV 1998 |
| 3. INSTALLATION AND LOCATION Plum Brook Ordnance Works Sandusky, Ohio | | | 4. PROJECT TITLE DERP-FUDS HTRW – RI/FS | |
| 5. PROGRAM ELEMENT DERP-FUDS | 6. CATEGORY CODE HTRW | 7. PROJECT NUMBER G05OH001818 | 8. PROJECT COST (\$000) \$787.2 | |
| 9. COST ESTIMATES | | | | |
| ITEM | U/M | QUANTITY | UNIT COST | COST (\$000) |
| Prepare Remedial Investigation/Feasibility Study | | | | \$677.0 |
| Contract Administration and Supervision by CELRN | | | | \$ 75.2 |
| Project Management by CELRH | | | | <u>\$ 35.0</u> |
| TOTAL | | | | \$787.2 |
| 10. DESCRIPTION OF PROPOSED CONSTRUCTION | | | | |
| <p>Prepare a Remedial Investigation/Feasibility Study on the subject Wastewater Treatment Plant No. 2. Work will include:</p> <ol style="list-style-type: none"> 1. Installation of monitoring wells. 2. Soil borings. 3. Sampling and chemical analysis of soil and water samples 4. Preparation of Feasibility Study that will identify alternatives for cleanup and their costs. | | | | |



ici INTERNATIONAL CONSULTANTS, INC.

PROJECT SUMMARY SHEET
FOR
DERP-FUDS HTRW PROJECT NO. G05OH001819
PENTOLITE AREA WASTE LAGOONS
PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO
SITE NO. G05OH001800
21 NOVEMBER 1998

PROJECT DESCRIPTION: The project area is the former Pentolite Area waste lagoons. Pentolite was manufactured at the former Plum Brook Ordnance Works (PBOW) by the Department of Defense (DoD) from March 1943 through August 1945. During this period, wastewater that was generated from this process was disposed of into two (2) waste water lagoons, or settling basins, located in the former pentolite dry storage area. The lagoons have since been removed and the pentolite area re-graded for the construction of the Plum Brook Reactor Facility. Potentially contaminated soil was either disposed of at an unknown location or spread over the area during construction. The lagoons do not appear on current PBOW maps.

PROJECT ELIGIBILITY: Records indicate that the Pentolite Area waste lagoons were utilized by DoD for the manufacture of pentolite. Based on past site activities, pentaerythrinol (PE), pentaerythrinol tetranitrate (PETN), trinitrotoluene (TNT), and acetone are likely contaminants of concern at the Pentolite Area waste lagoons.

POLICY CONSIDERATIONS: Current DoD policy dictates eligibility for remediation of DoD generated hazardous and toxic waste even though there was no evidence of a hazard when the property was transferred from DOD. Any pentolite, nitroaromatic, and acetone contamination present at the waste lagoons would be from direct DoD use of the site.

PROPOSED PROJECT: An HTRW project is proposed, which consists of the preparation of a Limited Site Investigation of the Pentolite Area waste lagoons to determine the nature and extent of residual contamination. Surface soils and sediment should be sampled for contaminants of concern (COCs), and monitoring wells should be installed to sample groundwater for COCs.

EPA Form 2070-12: Attached.

DD Form 1391: Attached.

District POC: Nancy O. Stouffer, CELRH-DL-M, (304) 529-5035, is the Geographic District Project Manager, and Kevin L. Jasper, CELRL-DL-B, (502) 625-7015, is the Design District Project Manager, for the PBOW site.

PH. GOSCH 001819

|  POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT PART 1 - SITE INFORMATION AND ASSESSMENT | | I. IDENTIFICATION 01 STATE 02 SITE NUMBER | |
|---|-----------------------|---|--|
| II. SITE NAME AND LOCATION | | | |
| 01 SITE NAME (Legal, common, or descriptive name of site) PLUM BROOK ORNANCE WORKS | | 02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER | |
| 03 CITY SANDUSKY | 04 STATE OH | 05 ZIP CODE | 06 COUNTY ERIE |
| 09 COORDINATES LATITUDE: 41 23 05 LONGITUDE: 83 41 05 | | 07 COUNTY CODE | 08 CONG DIST 5 |
| 10 DIRECTIONS TO SITE (Starting from nearest public road) I 80, NORTH 0.1 MILE ON RT 4, EAST 0.2 MILE ON RT 13. SITE NEAR BLOOMINGVILLE | | | |
| III. RESPONSIBLE PARTIES | | | |
| 01 OWNER (if known) US ARMY CORPS OF ENGINEERS | | 02 STREET (Business, mailing, residential) 502 8TH STREET | |
| 03 CITY HUNTINGTON | 04 STATE WV | 05 ZIP CODE 25701 | 06 TELEPHONE NUMBER 304 529-5760 |
| 07 OPERATOR (if known and different from owner) | | 08 STREET (Business, mailing, residential) | |
| 09 CITY | 10 STATE | 11 ZIP CODE | 12 TELEPHONE NUMBER |
| 13 TYPE OF OWNERSHIP (Check one) <input type="checkbox"/> A. PRIVATE <input checked="" type="checkbox"/> B. FEDERAL: NASA (Agency name) <input checked="" type="checkbox"/> F. OTHER: FORMER DOD USE (Specify) <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <input type="checkbox"/> G. UNKNOWN | | | |
| 14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply) <input type="checkbox"/> A. RCRA 3001 DATE RECEIVED: / / <input type="checkbox"/> B. UNCONTROLLED WASTE SITE (RCRA 103 ci) DATE RECEIVED: / / <input type="checkbox"/> C. NONE | | | |
| IV. CHARACTERIZATION OF POTENTIAL HAZARD | | | |
| 01 ON SITE INSPECTION <input checked="" type="checkbox"/> YES DATE 2 90 (MONTH DAY YEAR) <input type="checkbox"/> NO | | BY (Check all that apply) <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input checked="" type="checkbox"/> F. OTHER: NASHVILLE CORPS (Specify) CONTRACTOR NAME(S): | |
| 02 SITE STATUS (Check one) <input type="checkbox"/> A. ACTIVE <input checked="" type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN | | 03 YEARS OF OPERATION 1941 1945 BEGINNING YEAR ENDING YEAR <input type="checkbox"/> UNKNOWN | |
| 04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED TRINITROTOLUENE AND DERIVATIVES ACETONE, BARIUM, CHROMIUM MANGANESE | | | |
| 05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION SOIL AND GROUNDWATER CONTAMINATION | | | |
| V. PRIORITY ASSESSMENT | | | |
| 01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents) <input checked="" type="checkbox"/> A. HIGH (inspection required promptly) <input type="checkbox"/> B. MEDIUM (inspection required) <input type="checkbox"/> C. LOW (inspect on time available basis) <input type="checkbox"/> D. NONE (No further action needed, complete current disposition form) | | | |
| VI. INFORMATION AVAILABLE FROM | | | |
| 01 CONTACT FRANK ALBERT | | 02 OF (Agency/Organization) HUNTINGTON DISTRICT CORPS ENGINEERS | |
| 04 PERSON RESPONSIBLE FOR ASSESSMENT SAME | | 05 AGENCY | 06 ORGANIZATION |
| | | 07 TELEPHONE NUMBER | 08 DATE 11 21 98 MONTH DAY YEAR |



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE | 02 SITE NUMBER

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

| | | |
|--|--|---|
| <p>01 PHYSICAL STATES (Check all that apply)</p> <p><input type="checkbox"/> SOLID <input type="checkbox"/> POWDER, FINES <input type="checkbox"/> SLUDGE <input type="checkbox"/> OTHER _____ <small>Specify</small></p> | <p>02 WASTE QUANTITY AT SITE <small>Measures of waste quantities must be independent</small></p> <p>TONS UNKNOWN CUBIC YARDS NO. OF DRUMS _____</p> | <p>03 WASTE CHARACTERISTICS (Check all that apply)</p> <p><input checked="" type="checkbox"/> A TOXIC <input type="checkbox"/> B CORROSIVE <input type="checkbox"/> C RADIOACTIVE <input type="checkbox"/> D PERSISTENT</p> <p><input type="checkbox"/> E SOLUBLE <input type="checkbox"/> F INFECTIOUS <input type="checkbox"/> G FLAMMABLE <input type="checkbox"/> H IGNITABLE</p> <p><input checked="" type="checkbox"/> I HIGHLY VOLATILE <input type="checkbox"/> J EXPLOSIVE <input type="checkbox"/> K REACTIVE <input type="checkbox"/> L INCOMPATIBLE <input type="checkbox"/> M NOT APPLICABLE</p> |
|--|--|---|

III. WASTE TYPE

| CATEGORY | SUBSTANCE NAME | 01 GROSS AMOUNT | 02 UNIT OF MEASURE | 03 COMMENTS |
|----------|-------------------------|-----------------|--------------------|-------------|
| ELU | SLUDGE | | | |
| OLW | OILY WASTE | | | |
| SOL | SOLVENTS | | | |
| PSD | PESTICIDES | | | |
| OCC | OTHER ORGANIC CHEMICALS | | | |
| IOC | INORGANIC CHEMICALS | | | |
| ACD | ACIDS | | | |
| BAS | BASES | | | |
| MES | HEAVY METALS | | | |

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

| 01 CATEGORY | 02 SUBSTANCE NAME | 03 CAS NUMBER | 04 STORAGE/DISPOSAL METHOD | 05 CONCENTRATION | 06 MEASURE OF CONCENTRATION |
|-------------|-------------------|---------------|----------------------------|------------------|-----------------------------|
| | BARIUM | 1022-31-8 | LAND | 219,000 | ppb |
| | CHROMIUM | 7440-47-3 | LAND | 20,000 | ppb |
| | 1,3-DNB | 99-65-0 | LAND | 6,400 | ppb |
| | 2,6-DNT | 25321-14-6 | LAND | 1,200 | ppb |
| | 2,4-DNT | 25321-14-6 | LAND | 20,000 | ppb |
| | LEAD | 7439-92-1 | LAND | 50,000 | ppb |
| | MANGANESE | 7439-96-5 | LAND | 2,600,000 | ppb |
| | NITRATE | | LAND | 2,500,000 | ppb |
| | NITROBENZENE | 98-95-3 | LAND | 480 | ppb |
| | NITROTOLUENE | | LAND | 480 | ppb |
| | SODIUM | 1310-73-2 | LAND | 3,420,000 | ppb |
| | SULFATE | | LAND | 2,000,000 | ppb |
| | 1,3,5-TNB | 118-96-7 | LAND | 15,000 | ppb |
| | 2,4,6-TNT | 118-96-7 | LAND | 740 | ppb |

V. FEEDSTOCKS (See Appendix for CAS Numbers)

| CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER | CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER |
|----------|-------------------|---------------|----------|-------------------|---------------|
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

FEB 1990 CONFIRMATION STUDY
NASHVILLE DISTRICT CORPS OF ENGINEERS
(MAX. CONCENTRATION SHOWN)

RI G0504001819



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE | 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: >100
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 C. CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED: _____
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 D. FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED: _____
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED: _____
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: 50 ACRES
(Acres)
02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: >100
02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION
NO KNOWN USERS OF AFFECTED AQUIFER

01 H. WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED: _____
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: _____
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

| I. IDENTIFICATION | |
|-------------------|----------------|
| 01 STATE | 02 SITE NUMBER |

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 J. DAMAGE TO FLORA
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 K. DAMAGE TO FAUNA
04 NARRATIVE DESCRIPTION (include names of species)

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 L. CONTAMINATION OF FOOD CHAIN
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 M. UNSTABLE CONTAINMENT OF WASTES
(Soils/runoff/standing liquids/leaking drums)
03 POPULATION POTENTIALLY AFFECTED: >100

02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED

04 NARRATIVE DESCRIPTION

SOIL CONTAMINATION DISCOVERED

01 N. DAMAGE TO OFFSITE PROPERTY
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 P. ILLEGAL/UNAUTHORIZED DUMPING
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: >100

IV. COMMENTS

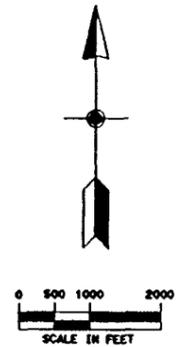
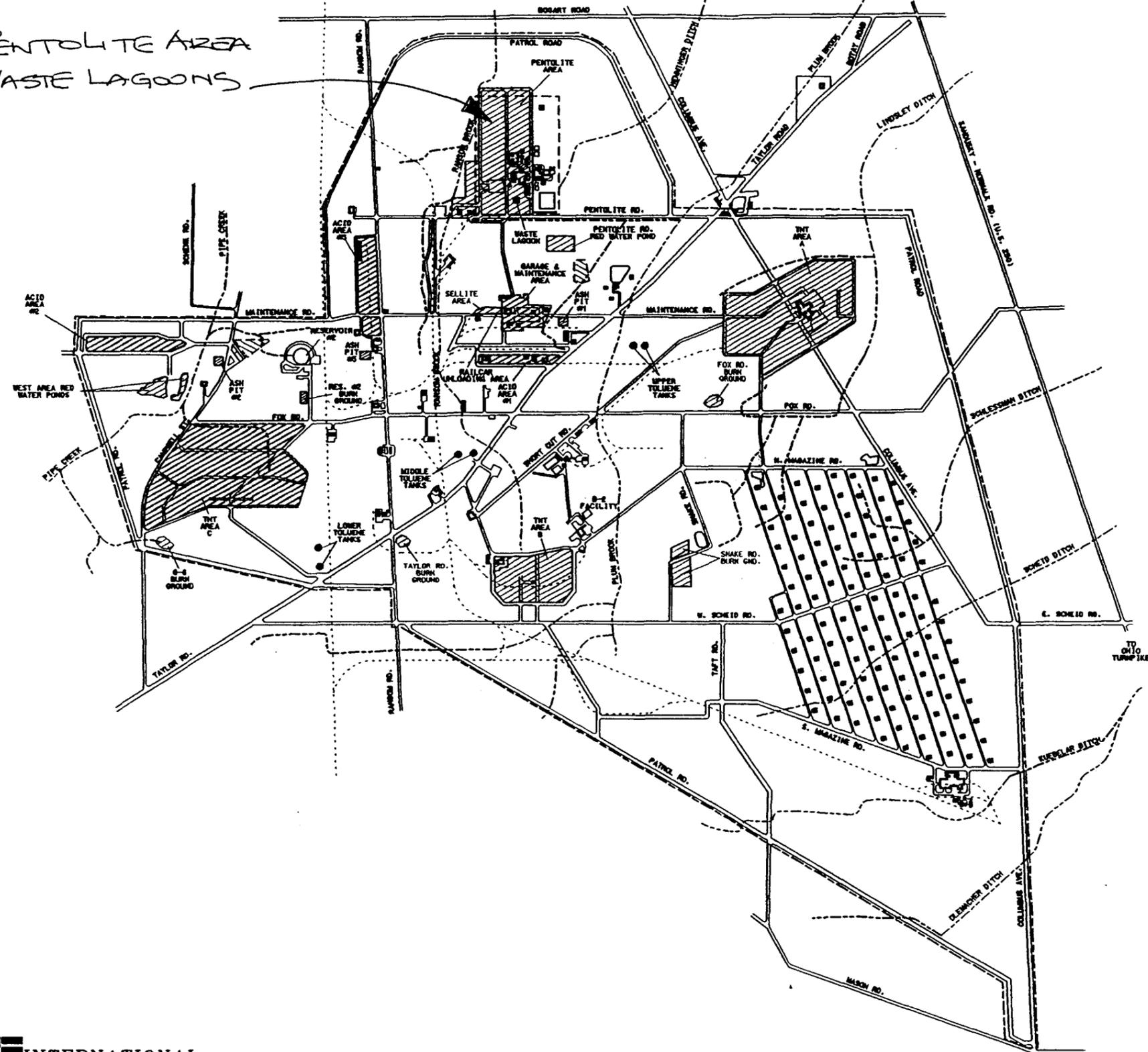
V. SOURCES OF INFORMATION (Cite specific references, e. g., state files, sample analysis, reports)

CONFIRMATION STUDY FEB 1990
NASHVILLE DISTRICT CORPS OF ENGINEERS

| | | | | | |
|--|--|----------------------------------|---|---------------------|-----------------|
| 1. COMPONENT ARMY | FY 1999 MILITARY CONSTRUCTION PROJECT DATA | | | 2. DATE NOV 1998 | |
| 3. INSTALLATION AND LOCATION Plum Brook Ordnance Works Sandusky, Ohio | | | 4. PROJECT TITLE DERP-FUDS HTRW – SI | | |
| 5. PROGRAM ELEMENT DERP-FUDS | 6. CATEGORY CODE HTRW | 7. PROJECT NUMBER G05OH001819 | 8. PROJECT COST (\$000) \$ 90.0 | | |
| 9. COST ESTIMATES | | | | | |
| ITEM | | U/M | QUANTITY | UNIT COST | COST (\$000) |
| Prepare Limited Site Investigation by CELRL | | | | | \$ 80.0 |
| Project Management by CELRH | | | | | \$ 10.0 |
| TOTAL | | | | | \$ 90.0 |
| 10. DESCRIPTION OF PROPOSED CONSTRUCTION Prepare a Limited Site Investigation Study on the subject Pentolite Area Waste Lagoons. Work will include: <ol style="list-style-type: none"> 1. Sampling and chemical analysis of soil and water samples 2. Preparation of a Limited Site Investigation Report and recommendation for the need for further investigation (RI/FS) of the Pentolite Area Waste Lagoons. | | | | | |

PENTOLITE AREA
WASTE LAGOONS

PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO



LEGEND:

- STREAM
- RAILROAD
- PBS BOUNDARY FENCE
- AREA OF CONCERN
- MIS-LOCATED AOC (Sampled by M-K, 1994a)

ICI INTERNATIONAL CONSULTANTS, INC.

G0504001819

| | | |
|--|--|----------------|
| FIGURE 1-2 | | DATE 12 JUL 95 |
| LOCATIONS of AREAS of CONCERN (AOCs) at PBOW | | PREPARED JET |
| | | CHECKED DBJ |

PROJECT SUMMARY SHEET
FOR
DERP-FUDS HTRW PROJECT NO. G05OH001820
RED WATER PONDS
PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO
SITE NO. G05OH001800
21 NOVEMBER 1998

PROJECT DESCRIPTION: The project areas are the former Red Water ponds. The former Plum Brook Ordnance Works (PBOW) was utilized by the Department of Defense (DoD) from 1941 until 1945 for the manufacture of 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. During this period, process waste water, from the final purification step in the production of TNT, was discharged at PBOW. This water, referred to as "red water" due to its color, was discharged into two (2) settling ponds (complexes), the West Area and the Pentolite Road Red Water Ponds. The Pentolite Road ponds have since been backfilled following a breach in 1977.

PROJECT ELIGIBILITY: Records indicate that the Red Water Ponds were utilized by DoD for the manufacture of TNT. Based on past site activities, nitroaromatics and residue from the TNT manufacturing process are likely contaminants of concern at the Red Water Ponds.

POLICY CONSIDERATIONS: Current DoD policy dictates eligibility for remediation of DoD generated hazardous and toxic waste even though there was no evidence of a hazard when the property was transferred from DOD. Any nitroaromatic contamination present at the Red Water Ponds would be from direct DoD use of the site.

PROPOSED PROJECT: An HTRW project is underway, which consists of the preparation of a Remedial Investigation/Feasibility Study of the Red Water Ponds to determine the nature and extent of soil and groundwater contamination.

EPA Form 2070-12: Attached.

DD Form 1391: Attached.

District POC: Nancy O. Stouffer, CELRH-DL-M, (304) 529-5035, is the Geographic District Project Manager, and Linda S. Ingram, CELRN-EP-R-M, (615) 736-7122, is the Design District Technical Coordinator, for the PBOW site.

PH. G0504001820

|  POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT PART 1 - SITE INFORMATION AND ASSESSMENT | | I. IDENTIFICATION | |
|--|--------------------------|--|--|
| | | 01 STATE | 02 SITE NUMBER |
| II. SITE NAME AND LOCATION | | | |
| 01 SITE NAME (Legal, common, or descriptive name of site) PLUM BROOK ORNANCE WORKS | | 02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER | |
| 03 CITY SANDUSKY | 04 STATE OH | 05 ZIP CODE | 06 COUNTY ERIE |
| 07 COUNTY CODE | 08 CONG DIST 5 | | |
| 09 COORDINATES LATITUDE 41 22 55 41 22 28 | | LONGITUDE 82 42 43 82 42 48 | |
| LAT | | LONG | |
| 41 22 28 | | 82 42 48 | |
| 10 DIRECTIONS TO SITE (Starting from nearest public road) I 80, NORTH 0.1 MILE ON RT 4, EAST 0.2 MILE ON RT 13. SITE NEAR BLOOMINGVILLE | | | |
| III. RESPONSIBLE PARTIES | | | |
| 01 OWNER (if known) US ARMY CORPS OF ENGINEERS | | 02 STREET (Business, mailing, residential) 502 8TH STREET | |
| 03 CITY HUNTINGTON | 04 STATE WV | 05 ZIP CODE 25701 | 06 TELEPHONE NUMBER 304 529-5760 |
| 07 OPERATOR (if known and different from owner) | | 08 STREET (Business, mailing, residential) | |
| 09 CITY | | 10 STATE | 11 ZIP CODE |
| | | 12 TELEPHONE NUMBER | |
| 13 TYPE OF OWNERSHIP (Check one) | | | |
| <input type="checkbox"/> A. PRIVATE <input checked="" type="checkbox"/> B. FEDERAL: NASA <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL (Agency name) | | | |
| <input checked="" type="checkbox"/> F. OTHER: FORMER DOD USE <input type="checkbox"/> G. UNKNOWN (Specify) | | | |
| 14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply) | | | |
| <input type="checkbox"/> A. RCRA 3001 DATE RECEIVED: _____ MONTH DAY YEAR <input type="checkbox"/> B. UNCONTROLLED WASTE SITE (CERCLA 103 ci) DATE RECEIVED: _____ MONTH DAY YEAR <input type="checkbox"/> C. NONE | | | |
| IV. CHARACTERIZATION OF POTENTIAL HAZARD | | | |
| 01 ON SITE INSPECTION | | BY (Check all that apply) | |
| <input checked="" type="checkbox"/> YES DATE 2 90 MONTH DAY YEAR <input type="checkbox"/> NO | | <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input checked="" type="checkbox"/> F. OTHER: NASHVILLE CORPS (Specify) | |
| CONTRACTOR NAME(S): | | | |
| 02 SITE STATUS (Check one) | | 03 YEARS OF OPERATION | |
| <input type="checkbox"/> A. ACTIVE <input checked="" type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN | | 1941 1945 BEGINNING YEAR ENDING YEAR <input type="checkbox"/> UNKNOWN | |
| 04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED TRI-NITRO TOLUENE AND DERIVATIVES ACETONE, BARIUM, CHROMIUM MANGANESE | | | |
| 05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION SOIL AND GROUNDWATER CONTAMINATION | | | |
| V. PRIORITY ASSESSMENT | | | |
| 01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents) | | | |
| <input checked="" type="checkbox"/> A. HIGH (inspection required promptly) <input type="checkbox"/> B. MEDIUM (inspection required) <input type="checkbox"/> C. LOW (inspect on time available basis) <input type="checkbox"/> D. NONE (No further action needed, complete current disposition form) | | | |
| VI. INFORMATION AVAILABLE FROM | | | |
| 01 CONTACT FRANK ALBERT | | 02 OF (Agency/Organization) HUNTINGTON DISTRICT CORPS ENGINEERS | |
| 03 TELEPHONE NUMBER 304 529-5760 | | | |
| 04 PERSON RESPONSIBLE FOR ASSESSMENT SAME | | 05 AGENCY | 06 ORGANIZATION |
| | | 07 TELEPHONE NUMBER | 08 DATE 11 21 98 MONTH DAY YEAR |



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

| | | |
|--|---|---|
| <p>01 PHYSICAL STATES (Check all that apply)</p> <p>A SOLID B POWDER, FINES C SLUDGE D OTHER _____ Specify</p> | <p>02 WASTE QUANTITY AT SITE</p> <p>Measures of waste quantities (must be independent)</p> <p>TONS CUBIC YARDS UNKNOWN</p> <p>NO OF DRUMS _____</p> | <p>03 WASTE CHARACTERISTICS (Check all that apply)</p> <p><input checked="" type="checkbox"/> A TOXIC <input type="checkbox"/> B CORROSIVE <input type="checkbox"/> C RADIOACTIVE <input type="checkbox"/> D PERSISTENT</p> <p>E SOLUBLE F INFECTIOUS G FLAMMABLE H IGNITABLE</p> <p>I HIGHLY VOLATILE <input checked="" type="checkbox"/> J EXPLOSIVE K REACTIVE L INCOMPATIBLE M NOT APPLICABLE</p> |
|--|---|---|

III. WASTE TYPE

| CATEGORY | SUBSTANCE NAME | 01 GROSS AMOUNT | 02 UNIT OF MEASURE | 03 COMMENTS |
|----------|-------------------------|-----------------|--------------------|-------------|
| SLU | SLUDGE | | | |
| OLW | OILY WASTE | | | |
| SOL | SOLVENTS | | | |
| PSD | PESTICIDES | | | |
| OCC | OTHER ORGANIC CHEMICALS | | | |
| IOC | INORGANIC CHEMICALS | | | |
| ACD | ACIDS | | | |
| BAS | BASES | | | |
| MES | HEAVY METALS | | | |

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

| 01 CATEGORY | 02 SUBSTANCE NAME | 03 CAS NUMBER | 04 STORAGE/DISPOSAL METHOD | 05 CONCENTRATION | 06 MEASURE OF CONCENTRATION |
|-------------|-------------------|---------------|----------------------------|------------------|-----------------------------|
| | BARIUM | 10022-31-8 | LAND | 214,000 | ppb |
| | CHROMIUM | 7440-47-3 | LAND | 20,000 | ppb |
| | 1,3-DNB | 99-65-0 | LAND | 6,400 | ppb |
| | 2,6-DNT | 25321-44-6 | LAND | 1,200 | ppb |
| | 2,4-DNT | 25321-44-6 | LAND | 20,000 | ppb |
| | LEAD | 7439-92-1 | LAND | 50,000 | ppb |
| | MANGANESE | 7439-96-5 | LAND | 2,600,000 | ppb |
| | NITRATE | | LAND | 2,500,000 | ppb |
| | NITROBENZENE | 98-95-3 | LAND | 480 | ppb |
| | NITROTOLUENE | | LAND | 480 | ppb |
| | SODIUM | 1310-73-2 | LAND | 3,420,000 | ppb |
| | SULFATE | | LAND | 2,000,000 | ppb |
| | 1,3,5-TNB | 118-96-7 | LAND | 15,000 | ppb |
| | 2,4,6-TNT | 118-96-7 | LAND | 740 | ppb |

V. FEEDSTOCKS (See Appendix for CAS Numbers)

| CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER | CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER |
|----------|-------------------|---------------|----------|-------------------|---------------|
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

FEB 1990 CONFIRMATION STUDY
NASHVILLE DISTRICT CORPS OF ENGINEERS
(MAX. CONCENTRATION SHOWN)

PN GOSOH 001820



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

| | | | |
|--|---|---|---|
| 01 <input checked="" type="checkbox"/> A. GROUNDWATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED: _____ | 02 <input type="checkbox"/> OBSERVED (DATE: <u>2/90</u>) 04 NARRATIVE DESCRIPTION | <input type="checkbox"/> POTENTIAL | <input checked="" type="checkbox"/> ALLEGED |
| 01 <input checked="" type="checkbox"/> B. SURFACE WATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED: <u>> 100</u> | 02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION | <input checked="" type="checkbox"/> POTENTIAL | <input type="checkbox"/> ALLEGED |
| 01 <input type="checkbox"/> C. CONTAMINATION OF AIR 03 POPULATION POTENTIALLY AFFECTED: _____ | 02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION | <input type="checkbox"/> POTENTIAL | <input type="checkbox"/> ALLEGED |
| 01 <input checked="" type="checkbox"/> D. FIRE/EXPLOSIVE CONDITIONS 03 POPULATION POTENTIALLY AFFECTED: _____ | 02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION | <input type="checkbox"/> POTENTIAL | <input type="checkbox"/> ALLEGED |
| 01 <input type="checkbox"/> E. DIRECT CONTACT 03 POPULATION POTENTIALLY AFFECTED: _____ | 02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION | <input type="checkbox"/> POTENTIAL | <input type="checkbox"/> ALLEGED |
| 01 <input checked="" type="checkbox"/> F. CONTAMINATION OF SOIL 03 AREA POTENTIALLY AFFECTED: <u>< 10 ACRES</u> <small>(Acres)</small> | 02 <input type="checkbox"/> OBSERVED (DATE: <u>2/90</u>) 04 NARRATIVE DESCRIPTION | <input type="checkbox"/> POTENTIAL | <input checked="" type="checkbox"/> ALLEGED |
| 01 <input checked="" type="checkbox"/> G. DRINKING WATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED: <u>> 100</u> <u>NO KNOWN USERS OF AFFECTED AQUIFER</u> | 02 <input type="checkbox"/> OBSERVED (DATE: <u>2/90</u>) 04 NARRATIVE DESCRIPTION | <input checked="" type="checkbox"/> POTENTIAL | <input type="checkbox"/> ALLEGED |
| 01 <input type="checkbox"/> H. WORKER EXPOSURE/INJURY 03 WORKERS POTENTIALLY AFFECTED: _____ | 02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION | <input type="checkbox"/> POTENTIAL | <input type="checkbox"/> ALLEGED |
| 01 <input type="checkbox"/> I. POPULATION EXPOSURE/INJURY 03 POPULATION POTENTIALLY AFFECTED: _____ | 02 <input type="checkbox"/> OBSERVED (DATE: _____) 04 NARRATIVE DESCRIPTION | <input type="checkbox"/> POTENTIAL | <input type="checkbox"/> ALLEGED |



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 J. DAMAGE TO FLORA
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 K. DAMAGE TO FAUNA
04 NARRATIVE DESCRIPTION (include name(s) of species)
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 L. CONTAMINATION OF FOOD CHAIN
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 M. UNSTABLE CONTAINMENT OF WASTES
(Spills/runoff/standing liquids/leaking drums)
03 POPULATION POTENTIALLY AFFECTED: > 100
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED

SOIL CONTAMINATION DISCOVERED

01 N. DAMAGE TO OFFSITE PROPERTY
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 P. ILLEGAL/UNAUTHORIZED DUMPING
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: > 100

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e. g., state files, sample analysis, reports)

CONFIRMATION STUDY FEB 1990
NASHVILLE DISTRICT CORPS OF ENGINEERS

| | | |
|----------------------|--|---------------------|
| 1. COMPONENT ARMY | FY 1999 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE NOV 1998 |
|----------------------|--|---------------------|

| | |
|---|--|
| 3. INSTALLATION AND LOCATION Plum Brook Ordnance Works Sandusky, Ohio | 4. PROJECT TITLE DERP-FUDS HTRW – RI/FS |
|---|--|

| | | | |
|---------------------------------|--------------------------|----------------------------------|---------------------------------------|
| 5. PROGRAM ELEMENT DERP-FUDS | 6. CATEGORY CODE HTRW | 7. PROJECT NUMBER G05OH001820 | 8. PROJECT COST (\$000) \$883.6 |
|---------------------------------|--------------------------|----------------------------------|---------------------------------------|

9. COST ESTIMATES

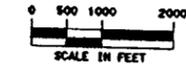
| ITEM | U/M | QUANTITY | UNIT COST | COST (\$000) |
|--|-----|----------|-----------|----------------|
| Prepare Remedial Investigation/Feasibility Study | | | | \$706.9 |
| Contract Administration and Supervision by CELRN | | | | \$141.4 |
| Project Management by CELRH | | | | <u>\$ 35.3</u> |
| TOTAL | | | | \$883.6 |

10. DESCRIPTION OF PROPOSED CONSTRUCTION

Prepare a Remedial Investigation/Feasibility Study on the subject Red Water Ponds. Work will include:

1. Installation of monitoring wells.
2. Soil borings.
3. Sampling and chemical analysis of soil and water samples
4. Preparation of Feasibility Study that will identify alternatives for cleanup and their costs.

PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO



LEGEND:

- ! STREAM
- - - RAILROAD
- ▬ PB'S BOUNDARY FENCE
- ▨ AREA OF CONCERN
- ▩ MIS-LOCATED AOC (Sampled by M-K, 1994a)

ICI INTERNATIONAL CONSULTANTS, INC.

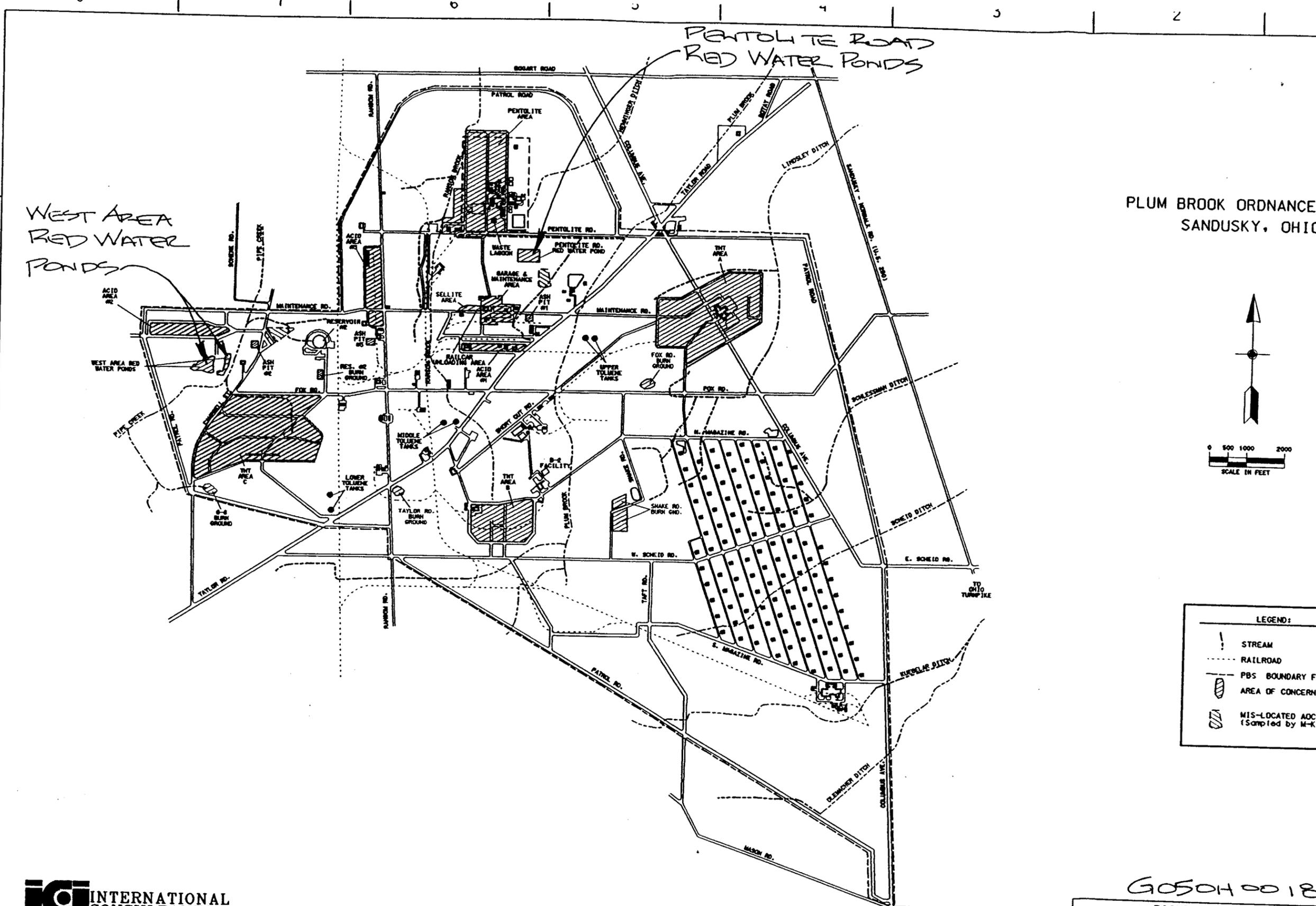
G0504001820

FIGURE 1-2
LOCATIONS OF AREAS OF CONCERN (AOCs) at PBOW

| | |
|----------|-----------|
| DATE | 12 JUL 95 |
| PREPARED | JET |
| CHECKED | DBJ |

WEST AREA
RED WATER
PONDS

PENTOLITE ROAD
RED WATER PONDS



PROJECT SUMMARY SHEET
FOR
DERP-FUDS HTRW PROJECT NO. G05OH001821
ASH PITS NOS. 1 AND 3
PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO
SITE NO. G05OH001800
21 NOVEMBER 1998

PROJECT DESCRIPTION: The project areas are the former Ash Pits 1 and 3 from Power Houses Nos. 1 and 3. The former Plum Brook Ordnance Works (PBOW) was utilized by the Department of Defense (DoD) from 1941 until 1945 for the manufacture of 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. During this period, DoD constructed and utilized three (3) coal burning power plants in support of the PBOW activities. The ash pit from Power House No. 2 is the focus of Project No. G05OH001822. The ash pits served as disposal areas for ash that was generated from the power plants. The ash from each boiler collected in pits at the power plants. Water was added to the ash and the slurry flowed to ash sumps at each building. The slurry then traveled through pipelines to nearby surface impoundments (ash pits).

PROJECT ELIGIBILITY: Records indicate that the power plants and ash pits were utilized by DoD for operation of the former PBOW. Based on past site activities, heavy metals are the likely contaminants of concern at the ash pits.

POLICY CONSIDERATIONS: Current DoD policy dictates eligibility for remediation of DoD generated hazardous and toxic waste even though there was no evidence of a hazard when the property was transferred from DOD. Any metals contamination, above background levels, present at the ash pits would be from direct DoD use of the site.

PROPOSED PROJECT: An HTRW project is proposed which consists of the preparation of a Limited Site Investigation to determine the nature and extent of surface and subsurface soil contamination at the ash pits. The site-wide groundwater study should be sufficient to determine if the ash pits have contributed to groundwater contamination, if that study analyzes for heavy metals.

EPA Form 2070-12: Attached.

DD Form 1391: Attached.

District POC: Nancy O. Stouffer, CELRH-DL-M, (304) 529-5035, is the Geographic District Project Manager, and Kevin L. Jasper, CELRL-DL-B, (502) 625-7015, is the Design District Project Manager, for the PBOW site.

PN GOSOH 001821



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION
01 STATE 02 SITE NUMBER

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)
PLUM BROOK ORNANCE WORKS

02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER

03 CITY SANDUSKY 04 STATE OH 05 ZIP CODE 06 COUNTY ERIE 07 COUNTY CODE 08 CONG DIST 5

09 COORDINATES LATITUDE 41 22 51 LONGITUDE 82 40 41
41 22 38 82 41 51

10 DIRECTIONS TO SITE (Starting from nearest public road)
I-80; NORTH 0.1 MILE ON RT 4, EAST 0.2 MILE ON RT 13. SITE NEAR BLOOMINGVILLE

III. RESPONSIBLE PARTIES

01 OWNER (if known) US ARMY CORPS OF ENGINEERS 02 STREET (Business, mailing, residential) 502 8TH STREET

03 CITY HUNTINGTON 04 STATE WV 05 ZIP CODE 25701 06 TELEPHONE NUMBER (304) 529-5760

07 OPERATOR (if known and different from owner) 08 STREET (Business, mailing, residential)

09 CITY 10 STATE 11 ZIP CODE 12 TELEPHONE NUMBER

13 TYPE OF OWNERSHIP (Check one)
 A. PRIVATE B. FEDERAL: NASA C. STATE D. COUNTY E. MUNICIPAL
 F. OTHER: FORMER POD G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)
 A. RCRA 3001 DATE RECEIVED: / / B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: / / C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION BY (Check all that apply)
 YES DATE 2 / 90 A. EPA B. EPA CONTRACTOR C. STATE D. OTHER CONTRACTOR
 NO E. LOCAL HEALTH OFFICIAL F. OTHER: NASHVILLE CORP
CONTRACTOR NAME(S):

02 SITE STATUS (Check one) A. ACTIVE B. INACTIVE C. UNKNOWN 03 YEARS OF OPERATION 1941 | 1945 UNKNOWN
BEGINNING YEAR ENDING YEAR

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
FLY ASH (HEAVY METALS, ORGANICS)

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

SOIL AND GROUNDWATER CONTAMINATION

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)
 A. HIGH (inspection required promptly) B. MEDIUM (inspection required) C. LOW (inspect on time available basis) D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT FRANK ALBERT 02 OF (Agency/Organization) HUNTINGTON DISTRICT CORPS ENGINEERS 03 TELEPHONE NUMBER 304 529-5760

04 PERSON RESPONSIBLE FOR ASSESSMENT SAME 05 AGENCY 06 ORGANIZATION 07 TELEPHONE NUMBER 08 DATE 11 / 21 / 98
MONTH DAY YEAR

PHI G0504 001821



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

| I. IDENTIFICATION | |
|-------------------|----------------|
| 01 STATE | 02 SITE NUMBER |

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 A. GROUNDWATER CONTAMINATION 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
 03 POPULATION POTENTIALLY AFFECTED: >100 04 NARRATIVE DESCRIPTION

01 B. SURFACE WATER CONTAMINATION 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
 03 POPULATION POTENTIALLY AFFECTED: >100 04 NARRATIVE DESCRIPTION

01 C. CONTAMINATION OF AIR 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
 03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 D. FIRE/EXPLOSIVE CONDITIONS 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
 03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 E. DIRECT CONTACT 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
 03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 F. CONTAMINATION OF SOIL 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
 03 AREA POTENTIALLY AFFECTED: <1 Acre 04 NARRATIVE DESCRIPTION
(Acres)

01 G. DRINKING WATER CONTAMINATION 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
 03 POPULATION POTENTIALLY AFFECTED: >100 04 NARRATIVE DESCRIPTION
NO KNOWN ISSUES OF AQUIFER

01 H. WORKER EXPOSURE/INJURY 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
 03 WORKERS POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 I. POPULATION EXPOSURE/INJURY 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
 03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 J. DAMAGE TO FLORA 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 K. DAMAGE TO FAUNA 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION (include name(s) of species)

01 L. CONTAMINATION OF FOOD CHAIN 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 M. UNSTABLE CONTAINMENT OF WASTES 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
(Spills/runoff/standing liquids/leaking drums)
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 N. DAMAGE TO OFFSITE PROPERTY 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 P. ILLEGAL/UNAUTHORIZED DUMPING 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: 2100

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

PLUM BROOK ORDINANCE WORKS
SITE MANAGEMENT PLAN
SEP 1995 ICT, INC.

| | | | | |
|--|--|----------------------------------|---|---------------------|
| 1. COMPONENT ARMY | FY 1999 MILITARY CONSTRUCTION PROJECT DATA | | | 2. DATE NOV 1998 |
| 3. INSTALLATION AND LOCATION Plum Brook Ordnance Works Sandusky, Ohio | | | 4. PROJECT TITLE DERP-FUDS HTRW - SI | |
| 5. PROGRAM ELEMENT DERP-FUDS | 6. CATEGORY CODE HTRW | 7. PROJECT NUMBER G05OH001821 | 8. PROJECT COST (\$000) \$115.0 | |
| 9. COST ESTIMATES | | | | |
| ITEM | U/M | QUANTITY | UNIT COST | COST (\$000) |
| Prepare Limited Site Investigation by CELRL | | | | \$105.0 |
| Project Management by CELRH | | | | <u>\$ 10.0</u> |
| TOTAL | | | | \$115.0 |
| 10. DESCRIPTION OF PROPOSED CONSTRUCTION Prepare a Limited Site Investigation Study on the subject Ash Pits No. 1 and 3. Work will include: <ol style="list-style-type: none"> 1. Sampling and chemical analysis of soil and water samples 2. Preparation of a Limited Site Investigation Report and recommendation for the need for further investigation (RI/FS) of Ash Pits No. 1 and 3. | | | | |

PROJECT SUMMARY SHEET
FOR
DERP-FUDS HTRW PROJECT NO. G05OH001822
POWER HOUSE NO. 2 ASH PITS
PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO
SITE NO. G05OH001800
21 NOVEMBER 1998

PROJECT DESCRIPTION: The project area is former Power House No. 2 ash pits. The former Plum Brook Ordnance Works (PBOW) was utilized by the Department of Defense (DoD) from 1941 until 1945 for the manufacture of 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. During this period, DoD constructed and utilized three (3) coal burning power plants in support of the PBOW activities. The ash pits from Power Houses Nos. 1 and 3 are the focus of Project No. G05OH001821. The ash pits served as disposal areas for ash that was generated from the power plants. The ash from each boiler collected in pits at the power plant. Water was added to the ash and the slurry flowed to an ash sump in the building. The slurry then traveled through pipelines to nearby surface impoundments (ash pits).

PROJECT ELIGIBILITY: Records indicate that Power House No. 2 and its ash pits were utilized by DoD for operation of the former PBOW. Based on past site activities, heavy metals are the likely contaminants of concern at the ash pits.

POLICY CONSIDERATIONS: Current DoD policy dictates eligibility for remediation of DoD generated hazardous and toxic waste even though there was no evidence of a hazard when the property was transferred from DOD. Any metals contamination, above background levels, present at the ash pits would be from direct DoD use of the site.

PROPOSED PROJECT: An HTRW project is proposed which consists of the preparation of a Remedial Investigation/Feasibility Study to determine the nature and extent of surface and subsurface soil contamination at the ash pits. The site-wide groundwater study should be sufficient to determine if the ash pits have contributed to groundwater contamination, if that study analyzes for heavy metals.

EPA Form 2070-12: Attached.

DD Form 1391: Attached.

District POC: Nancy O. Stouffer, (304) 529-5035, CELRH-DL-M, is the Geographic District Project Manager, and Linda S. Ingram, (615) 736-7122, CELRN-EP-R-M, is the Design District Technical Coordinator, for the PBOW site.

ENC 11

PN GOSCH001822

|  POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT PART 1 - SITE INFORMATION AND ASSESSMENT | | | | I. IDENTIFICATION 01 STATE 02 SITE NUMBER | |
|--|--|--|--|---|---|
| II. SITE NAME AND LOCATION | | | | | |
| 01 SITE NAME (Legal, common, or descriptive name of site) <u>Rum Brook Ordnance Works</u> | | | 02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER | | |
| 03 CITY <u>SAN JESSEY</u> | | 04 STATE <u>OH</u> | 05 ZIP CODE | 06 COUNTY <u>ERIE</u> | 07 COUNTY CODE |
| 08 COORDINATES LATITUDE <u>41 22 37</u> | | LONGITUDE <u>82 42 21</u> | | 08 CONG DIST <u>5</u> | |
| 10 DIRECTIONS TO SITE (Starting from nearest public road) <u>I 80, NORTH 0.1 MILE ON RT 4, EAST 0.2 MILE ON RT 13. SITE NEAR BLOOMINGVILLE</u> | | | | | |
| III. RESPONSIBLE PARTIES | | | | | |
| 01 OWNER (If known) <u>US ARMY CORPS OF ENGRS</u> | | | 02 STREET (Business, making, residential) <u>502 8TH STREET</u> | | |
| 03 CITY <u>HUNTINGTON</u> | | 04 STATE <u>WV</u> | 05 ZIP CODE <u>25701</u> | 06 TELEPHONE NUMBER <u>(304) 529-5160</u> | |
| 07 OPERATOR (If known and different from owner) | | | 08 STREET (Business, making, residential) | | |
| 09 CITY | | 10 STATE | 11 ZIP CODE | 12 TELEPHONE NUMBER | |
| 13 TYPE OF OWNERSHIP (Check one) <input type="checkbox"/> A. PRIVATE <input checked="" type="checkbox"/> B. FEDERAL: <u>NASA</u> <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <input checked="" type="checkbox"/> F. OTHER: <u>FORMER DOD</u> <input type="checkbox"/> G. UNKNOWN <small>(Specify)</small> | | | | | |
| 14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply) <input type="checkbox"/> A. RCRA 3001 DATE RECEIVED: _____ <input type="checkbox"/> B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: _____ <input type="checkbox"/> C. NONE <small>MONTH DAY YEAR</small> | | | | | |
| IV. CHARACTERIZATION OF POTENTIAL HAZARD | | | | | |
| 01 ON SITE INSPECTION <input checked="" type="checkbox"/> YES DATE <u>2-1-90</u> <input type="checkbox"/> NO <small>MONTH DAY YEAR</small> | | BY (Check all that apply) <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input checked="" type="checkbox"/> F. OTHER: <u>NASHVILLE CORPS</u> <small>(Specify)</small> | | | |
| 02 SITE STATUS (Check one) <input type="checkbox"/> A. ACTIVE <input checked="" type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN | | 03 YEARS OF OPERATION <u>1941</u> <u>1945</u> <small>BEGINNING YEAR ENDING YEAR</small> <input type="checkbox"/> UNKNOWN | | | |
| 04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED <u>FLY ASH (HEAVY METALS, ORGANICS)</u> | | | | | |
| 05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION <u>SOIL AND GROUND WATER CONTAMINATION</u> | | | | | |
| V. PRIORITY ASSESSMENT | | | | | |
| 01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents) <input checked="" type="checkbox"/> A. HIGH <small>(Inspection required promptly)</small> <input type="checkbox"/> B. MEDIUM <small>(Inspection required)</small> <input type="checkbox"/> C. LOW <small>(Inspect on time available basis)</small> <input type="checkbox"/> D. NONE <small>(No further action needed, complete current disposition form)</small> | | | | | |
| VI. INFORMATION AVAILABLE FROM | | | | | |
| 01 CONTACT <u>FRANK ALBERT</u> | | 02 OF (Agency/Organization) <u>HUNTINGTON DISTRICT CORPS ENGRS</u> | | 03 TELEPHONE NUMBER <u>(304) 529-5160</u> | |
| 04 PERSON RESPONSIBLE FOR ASSESSMENT <u>SAME</u> | | 05 AGENCY | 06 ORGANIZATION | 07 TELEPHONE NUMBER | 08 DATE <u>11 21 98</u> <small>MONTH DAY YEAR</small> |

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POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE | 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 A. GROUNDWATER CONTAMINATION 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 7100 04 NARRATIVE DESCRIPTION

01 B. SURFACE WATER CONTAMINATION 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 C. CONTAMINATION OF AIR 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 D. FIRE/EXPLOSIVE CONDITIONS 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 E. DIRECT CONTACT 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 F. CONTAMINATION OF SOIL < 1 ACRE 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
03 AREA POTENTIALLY AFFECTED: < 1 ACRE 04 NARRATIVE DESCRIPTION

01 G. DRINKING WATER CONTAMINATION 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: > 100 04 NARRATIVE DESCRIPTION

NO KNOWN USERS OF AQUIFER

01 H. WORKER EXPOSURE/INJURY 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 I. POPULATION EXPOSURE/INJURY 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

| | | |
|----------------------|--|---------------------|
| 1. COMPONENT ARMY | FY 1999 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE NOV 1998 |
|----------------------|--|---------------------|

| | |
|---|--|
| 3. INSTALLATION AND LOCATION Plum Brook Ordnance Works Sandusky, Ohio | 4. PROJECT TITLE DERP-FUDS HTRW – RI/FS |
|---|--|

| | | | |
|---------------------------------|--------------------------|----------------------------------|---------------------------------------|
| 5. PROGRAM ELEMENT DERP-FUDS | 6. CATEGORY CODE HTRW | 7. PROJECT NUMBER G05OH001822 | 8. PROJECT COST (\$000) \$325.3 |
|---------------------------------|--------------------------|----------------------------------|---------------------------------------|

9. COST ESTIMATES

| ITEM | U/M | QUANTITY | UNIT COST | COST (\$000) |
|--|-----|----------|-----------|----------------|
| Prepare Remedial Investigation/Feasibility Study | | | | \$292.8 |
| Contract Administration and Supervision by CELRN | | | | \$ 32.5 |
| Project Management by CELRH | | | | <u>\$ 25.0</u> |
| TOTAL | | | | \$325.3 |

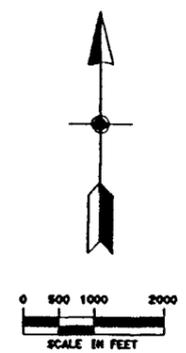
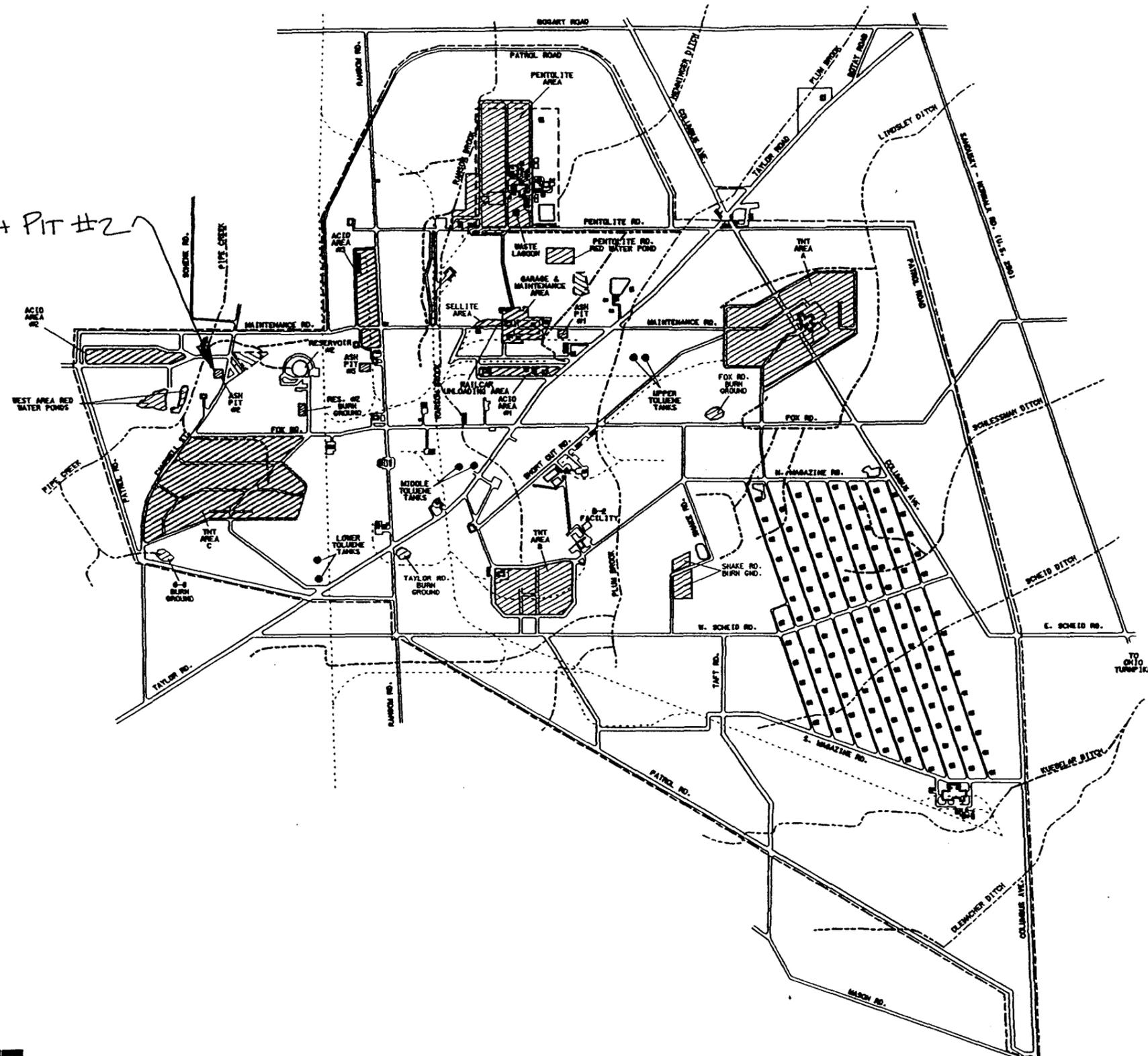
10. DESCRIPTION OF PROPOSED CONSTRUCTION

Prepare a Remedial Investigation/Feasibility Study on the subject Powerhouse No. 2 Ash Pits. Work will include:

1. Installation of monitoring wells.
2. Soil borings.
3. Sampling and chemical analysis of soil and water samples
4. Preparation of Feasibility Study that will identify alternatives for cleanup and their costs.

PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO

Ash Pit #2



| LEGEND: | |
|---------|--|
| | STREAM |
| | RAILROAD |
| | PBS BOUNDARY FENCE |
| | AREA OF CONCERN |
| | MIS-LOCATED AOC (Sampled by M-K, 1994a) |

ICI INTERNATIONAL
CONSULTANTS, INC.

GOS OH 001822

| | | |
|--|--|----------------|
| FIGURE 1-2 | | DATE 12 JUL 95 |
| LOCATIONS of AREAS of CONCERN (AOCs) at PBOW | | PREPARED JET |
| | | CHECKED DBJ |

PROJECT SUMMARY SHEET
FOR
DERP-FUDS HTRW PROJECT NO. G05OH001823
ACID AREAS NO. 1, 2 AND 3
PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO
SITE NO. G05OH001800
21 NOVEMBER 1998

PROJECT DESCRIPTION: The project areas are former Acid Areas No. 1, 2 and 3. The former Plum Brook Ordnance Works (PBOW) was utilized by the Department of Defense (DoD) from 1941 until 1945 for the manufacture of 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. During this period, DoD constructed and utilized three (3) acid areas to manufacture nitric and sulfuric acids, for use in the various stages of manufacturing TNT and pentolite.

PROJECT ELIGIBILITY: Records indicate that Acid Areas No. 1, 2, and 3 were utilized by DoD for operation of the former PBOW. Based on past site activities, the acids areas are likely to be contaminated from nitric and sulfuric acids.

POLICY CONSIDERATIONS: Current DoD policy dictates eligibility for remediation of DoD generated hazardous and toxic waste even though there was no evidence of a hazard when the property was transferred from DOD. Any acids contamination present at the acids areas would be from direct DoD use of the site.

PROPOSED PROJECT: An HTRW project is underway, which consists of the preparation of a Site Investigation to determine if contamination exists, and the nature of the contaminants. Sediment and surface soil sampling and analysis have been completed. Additional studies of the acids areas will depend on the SI results.

EPA Form 2070-12: Attached.

DD Form 1391: Attached.

District POC: Nancy O. Stouffer, CELRH-DL-M, (304) 529-5035, is the Geographic District Project Manager, and Linda S. Ingram, CELRN-EP-R-M, (615) 736-7122, is the Design District Technical Coordinator, for the PBOW site.

P.N. G 0504001823

|  POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT PART 1 - SITE INFORMATION AND ASSESSMENT | | | | I. IDENTIFICATION 01 STATE 02 SITE NUMBER | |
|--|--|---|---|---|---|
| II. SITE NAME AND LOCATION | | | | | |
| 01 SITE NAME (Legal, common, or descriptive name of site) <u>RUN BROOK ORANGE WOODS</u> | | | 02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER | | |
| 03 CITY <u>SANDUSKY</u> | | 04 STATE <u>OH</u> | 05 ZIP CODE | 06 COUNTY <u>ERIE</u> | 07 COUNTY CODE |
| 09 COORDINATES LATITUDE <u>41 22 35</u> | | LONGITUDE <u>82 41 51</u> | | 08 CONG DIST <u>S</u> | |
| 10 DIRECTIONS TO SITE (Starting from nearest public road) <u>I 80, NORTH 0.1 MILE ON RT 4, EAST 0.2 MILE ON RT 13. SITE NEAR BLOOMINGVILLE</u> | | | | | |
| III. RESPONSIBLE PARTIES | | | | | |
| 01 OWNER (if known) <u>US ARMY CORPS ENGRS</u> | | | 02 STREET (Business, mailing, residential) <u>502 8TH STREET</u> | | |
| 03 CITY <u>HUNTINGTON</u> | | 04 STATE <u>WV</u> | 05 ZIP CODE <u>25701</u> | 06 TELEPHONE NUMBER <u>304 529-5760</u> | |
| 07 OPERATOR (if known and different from owner) | | | 08 STREET (Business, mailing, residential) | | |
| 09 CITY | | 10 STATE | 11 ZIP CODE | 12 TELEPHONE NUMBER | |
| 13 TYPE OF OWNERSHIP (Check one) <input type="checkbox"/> A. PRIVATE <input checked="" type="checkbox"/> B. FEDERAL: <u>NASA</u> <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <input type="checkbox"/> F. OTHER: <u>FORMER DOD</u> <input type="checkbox"/> G. UNKNOWN <small>(Specify)</small> | | | | | |
| 14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply) <input type="checkbox"/> A. RCRA 3001 DATE RECEIVED: / / <input type="checkbox"/> B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: / / <input type="checkbox"/> C. NONE | | | | | |
| IV. CHARACTERIZATION OF POTENTIAL HAZARD | | | | | |
| 01 ON SITE INSPECTION <input checked="" type="checkbox"/> YES DATE <u>2/1/90</u> <input type="checkbox"/> NO MONTH DAY YEAR | | BY (Check all that apply) <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input checked="" type="checkbox"/> F. OTHER: <u>NASHVILLE CORP</u> <small>(Specify)</small> | | | |
| 02 SITE STATUS (Check one) <input type="checkbox"/> A. ACTIVE <input checked="" type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN | | 03 YEARS OF OPERATION <u>1941</u> <u>1945</u> <small>BEGINNING YEAR ENDING YEAR</small> <input type="checkbox"/> UNKNOWN | | | |
| 04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED <u>NITRIC AND SULFURIC ACID</u> | | | | | |
| 05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION <u>SOIL AND GROUNDWATER CONTAMINATION</u> | | | | | |
| V. PRIORITY ASSESSMENT | | | | | |
| 01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents) <input checked="" type="checkbox"/> A. HIGH (inspection required promptly) <input type="checkbox"/> B. MEDIUM (inspection required) <input type="checkbox"/> C. LOW (inspect on time available basis) <input type="checkbox"/> D. NONE (No further action needed, complete current disposition form) | | | | | |
| VI. INFORMATION AVAILABLE FROM | | | | | |
| 01 CONTACT <u>FRANK AUBERT</u> | | 02 OF (Agency/Organization) <u>HUNTINGTON DISTRICT CORP</u> | | 03 TELEPHONE NUMBER <u>304 529-5760</u> | |
| 04 PERSON RESPONSIBLE FOR ASSESSMENT <u>SOME</u> | | 05 AGENCY | 06 ORGANIZATION | 07 TELEPHONE NUMBER | 08 DATE / / <small>MONTH DAY YEAR</small> |

PH G0504001823



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE | 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 A. GROUNDWATER CONTAMINATION 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 7100 04 NARRATIVE DESCRIPTION

01 B. SURFACE WATER CONTAMINATION 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 C. CONTAMINATION OF AIR 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 D. FIRE/EXPLOSIVE CONDITIONS 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 E. DIRECT CONTACT 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 F. CONTAMINATION OF SOIL 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
03 AREA POTENTIALLY AFFECTED: 35 Acres 04 NARRATIVE DESCRIPTION
Acres

01 G. DRINKING WATER CONTAMINATION 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 7100 04 NARRATIVE DESCRIPTION

No known users

01 H. WORKER EXPOSURE/INJURY 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 I. POPULATION EXPOSURE/INJURY 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 J. DAMAGE TO FLORA 02 OBSERVED (DATE: 2/9/02) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 K. DAMAGE TO FAUNA 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION (include names) of species

01 L. CONTAMINATION OF FOOD CHAIN 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 M. UNSTABLE CONTAINMENT OF WASTES 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
(Spills/runoff/standing liquids/leaking drums)
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 N. DAMAGE TO OFFSITE PROPERTY 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

01 P. ILLEGAL/UNAUTHORIZED DUMPING 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: 7100

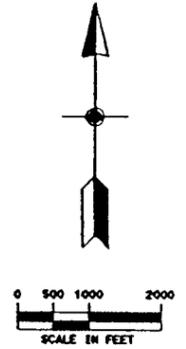
IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e. g., state files, sample analysis, reports)

PLUM BROOK ORDNANCE WORKS
SITE MANAGEMENT PLAN
SEP 1995 ICF, INC

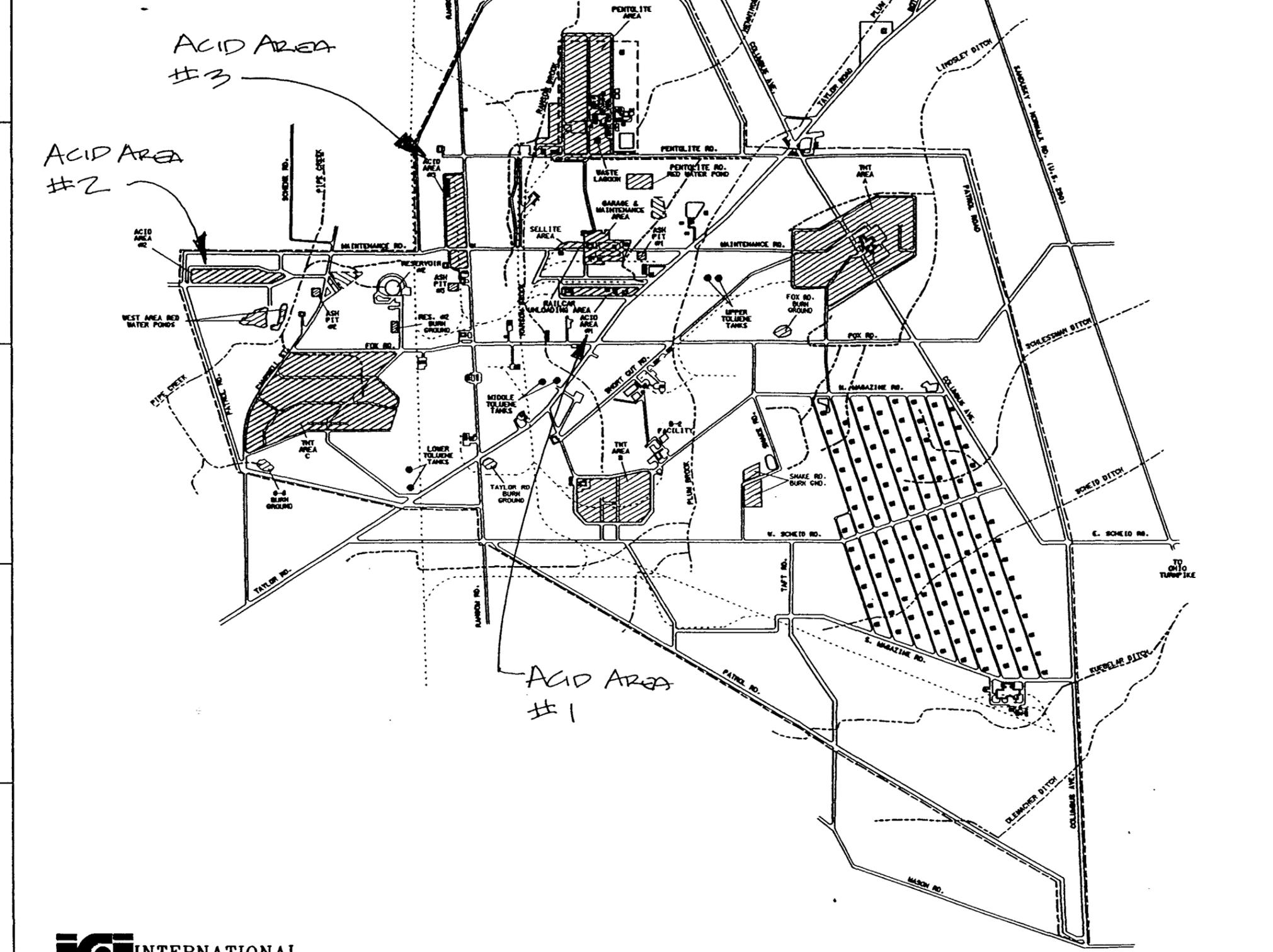
| | | | | | |
|--|--------------------------|--|--|---------------------------------------|-----------------|
| 1. COMPONENT ARMY | | FY 1999 MILITARY CONSTRUCTION PROJECT DATA | | 2. DATE NOV 1998 | |
| 3. INSTALLATION AND LOCATION Plum Brook Ordnance Works Sandusky, Ohio | | | 4. PROJECT TITLE DERP-FUDS HTRW - RI/FS | | |
| 5. PROGRAM ELEMENT DERP-FUDS | 6. CATEGORY CODE HTRW | 7. PROJECT NUMBER G05OH001823 | | 8. PROJECT COST (\$000) \$984.2 | |
| 9. COST ESTIMATES | | | | | |
| ITEM | | U/M | QUANTITY | UNIT COST | COST (\$000) |
| Prepare Remedial Investigation/Feasibility Study | | | | | \$820.2 |
| Contract Administration and Supervision by CELRN | | | | | \$164.0 |
| Project Management by CELRH | | | | | \$ 41.0 |
| TOTAL | | | | | \$984.2 |
| 10. DESCRIPTION OF PROPOSED CONSTRUCTION | | | | | |
| <p>Prepare a Remedial Investigation/Feasibility Study on the subject Acid Areas No. 1, 2 and 3. Work will include:</p> <ol style="list-style-type: none"> 1. Installation of monitoring wells. 2. Soil borings. 3. Sampling and chemical analysis of soil and water samples 4. Preparation of Feasibility Study that will identify alternatives for cleanup and their costs. | | | | | |

PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO



LEGEND:

- ! STREAM
- RAILROAD
- - - PBS BOUNDARY FENCE
- ▨ AREA OF CONCERN
- ▩ MIS-LOCATED AOC (Sampled by M-K, 1994a)



ICI INTERNATIONAL CONSULTANTS, INC.

90504 001823

| | | |
|--|--|----------------|
| FIGURE 1-2 | | DATE 12 JUL 95 |
| LOCATIONS of AREAS of CONCERN (AOCs) at PBOW | | PREPARED JET |
| | | CHECKED DBJ |

PROJECT SUMMARY SHEET
FOR
DERP-FUDS HTRW PROJECT NO. G05OH001824
LOWER TOLUENE TANKS
PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO
SITE NO. G05OH001800
21 NOVEMBER 1998

PROJECT DESCRIPTION: The project area is the Lower Toluene Tanks. The former Plum Brook Ordnance Works (PBOW) was utilized by the Department of Defense (DoD) from 1941 until 1945 for the manufacture of 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. During this period, DoD constructed and utilized six (6) toluene storage tanks for bulk storage of toluene that was used in the production of TNT. Each TNT production area (Areas A, B and C) had two (2) 200,000-gallon aboveground toluene storage tanks, referred to as the Upper, Middle and Lower Toluene Tank Areas, respectively.

PROJECT ELIGIBILITY: Records indicate that the toluene storage tanks were utilized by DoD for operation of the former PBOW. The current property owner, NASA, reused the two toluene storage tanks at the Upper Toluene Tank Area (west of TNT Area A) for storage of heating oil. One of those tanks leaked approximately 185,000 gallons of fuel in 1989. Six to eight inches of contaminated soil and vegetation were removed and incinerated at a burning ground. The Middle Toluene Tanks are located northwest of TNT Area B and are currently empty. The Lower Toluene Tanks are located southeast of TNT Area C. NASA removed one tank and uses it for fuel oil storage at the Reactor Area. Based on past site activities, the toluene storage tank areas could contain toluene contamination.

POLICY CONSIDERATIONS: Current DoD policy dictates eligibility for remediation of DoD generated hazardous and toxic waste even though there was no evidence of a hazard when the property was transferred from DOD. Any toluene contamination present at the toluene storage tank areas would be from direct DoD use of the site.

PROPOSED PROJECT: An HTRW project is proposed which consists of the preparation of a Limited Site Investigation to determine if contamination exists. It is recommended that surface water and sediment be sampled and analyzed at the Lower Toluene Tank Area, and that soil be sampled and analyzed at all former toluene tank areas. The on-going site-wide groundwater investigation should be sufficient to determine if the toluene tanks have contaminated the groundwater. Further studies of the toluene storage tank areas will depend on the SI results.

EPA Form 2070-12: Attached.

DD Form 1391: Attached.

District POC: Nancy O. Stouffer, CELRH-DL-M, (304) 529-5035, is the Geographic District Project Manager, and Kevin L. Jasper, CELRL-DL-B, (502) 625-7015, is the Design District Project Manager, for the PBOW site.

PN GOS04001824

|  POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT PART 1 - SITE INFORMATION AND ASSESSMENT | | I. IDENTIFICATION | |
|---|--------------------------|--|---|
| | | 01 STATE | 02 SITE NUMBER |
| II. SITE NAME AND LOCATION | | | |
| 01 SITE NAME (Legal, common, or descriptive name of site) <u>Rum Brook Orange Works</u> | | 02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER | |
| 03 CITY <u>SANDISKY</u> | 04 STATE <u>OH</u> | 05 ZIP CODE | 06 COUNTY <u>ERIE</u> |
| 07 COUNTY CODE | 08 CONG DIST <u>5</u> | | |
| 09 COORDINATES LATITUDE <u>41 21 49</u> | | LONGITUDE <u>82 41 06</u> | |
| 10 DIRECTIONS TO SITE (Starting from nearest public road) <u>I 80, NORTH 0.1 MILE ON RT 4, EAST 0.2 MILE ON RT 13. SITE NEAR BLOOMINGVILLE</u> | | | |
| III. RESPONSIBLE PARTIES | | | |
| 01 OWNER (if known) <u>US Army Corps of Engineers</u> | | 02 STREET (Business, mailing, residential) <u>502 8TH STREET</u> | |
| 03 CITY <u>HUNTINGTON</u> | 04 STATE <u>WV</u> | 05 ZIP CODE <u>25701</u> | 06 TELEPHONE NUMBER <u>304 529-5160</u> |
| 07 OPERATOR (if known and different from owner) | | 08 STREET (Business, mailing, residential) | |
| 09 CITY | | 10 STATE | 11 ZIP CODE |
| | | 12 TELEPHONE NUMBER | |
| 13 TYPE OF OWNERSHIP (Check one) | | | |
| <input type="checkbox"/> A. PRIVATE <input checked="" type="checkbox"/> B. FEDERAL: <u>NASA</u> <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <input checked="" type="checkbox"/> F. OTHER: <u>FORMER DOD</u> <input type="checkbox"/> G. UNKNOWN <small>(Specify)</small> | | | |
| 14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply) | | | |
| <input type="checkbox"/> A. RCRA 3001 DATE RECEIVED: _____ MONTH DAY YEAR <input type="checkbox"/> B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: _____ MONTH DAY YEAR <input type="checkbox"/> C. NONE | | | |
| IV. CHARACTERIZATION OF POTENTIAL HAZARD | | | |
| 01 ON SITE INSPECTION | | BY (Check all that apply) | |
| <input checked="" type="checkbox"/> YES DATE <u>2, 90</u> MONTH DAY YEAR <input type="checkbox"/> NO | | <input type="checkbox"/> A. EPA <input checked="" type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input checked="" type="checkbox"/> F. OTHER: <u>NASHVILLE CORPS</u> <small>(Specify)</small> | |
| | | CONTRACTOR NAME(S): _____ | |
| 02 SITE STATUS (Check one) | | 03 YEARS OF OPERATION | |
| <input type="checkbox"/> A. ACTIVE <input checked="" type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN | | <u>1941</u> <u>1945</u> <small>BEGINNING YEAR ENDING YEAR</small> | |
| | | <input type="checkbox"/> UNKNOWN | |
| 04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED | | | |
| <u>TO LUENE</u> | | | |
| 05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION | | | |
| <u>SOIL AND GROUNDWATER CONTAMINATION</u> | | | |
| V. PRIORITY ASSESSMENT | | | |
| 01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents) | | | |
| <input checked="" type="checkbox"/> A. HIGH (inspection required promptly) <input type="checkbox"/> B. MEDIUM (inspection required) <input type="checkbox"/> C. LOW (inspect on time available basis) <input type="checkbox"/> D. NONE (No further action needed, complete current disposition form) | | | |
| VI. INFORMATION AVAILABLE FROM | | | |
| 01 CONTACT <u>FRANK ALBERT</u> | | 02 OF (Agency/Organization) <u>HUNTINGTON DISTRICT CORPS</u> | |
| 04 PERSON RESPONSIBLE FOR ASSESSMENT <u>SAME</u> | | 05 AGENCY | 06 ORGANIZATION |
| | | 07 TELEPHONE NUMBER | 08 DATE <u>11, 21, 98</u> <small>MONTH DAY YEAR</small> |

PW 905011001824



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 A. GROUNDWATER CONTAMINATION 02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 B. SURFACE WATER CONTAMINATION 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 C. CONTAMINATION OF AIR 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 D. FIRE/EXPLOSIVE CONDITIONS 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 E. DIRECT CONTACT 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 F. CONTAMINATION OF SOIL 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 AREA POTENTIALLY AFFECTED: 5 ACRES (Acres) 04 NARRATIVE DESCRIPTION

01 G. DRINKING WATER CONTAMINATION 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

NO KNOWN USERS

01 H. WORKER EXPOSURE/INJURY 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 I. POPULATION EXPOSURE/INJURY 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE | 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 J. DAMAGE TO FLORA
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 K. DAMAGE TO FAUNA
04 NARRATIVE DESCRIPTION (include names) of species
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 L. CONTAMINATION OF FOOD CHAIN
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 M. UNSTABLE CONTAINMENT OF WASTES
(Soils/runoff/standing liquids/leaking drums)
03 POPULATION POTENTIALLY AFFECTED: _____
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 N. DAMAGE TO OFFSITE PROPERTY
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 P. ILLEGAL/UNAUTHORIZED DUMPING
04 NARRATIVE DESCRIPTION
02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis reports)

ALUM BROOK ORDINANCE WORKS
SITE MANAGEMENT PLAN
SEP 1995 ICF, INC.

| | | |
|----------------------|--|---------------------|
| 1. COMPONENT ARMY | FY 1999 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE NOV 1998 |
|----------------------|--|---------------------|

| | |
|---|---|
| 3. INSTALLATION AND LOCATION Plum Brook Ordnance Works Sandusky, Ohio | 4. PROJECT TITLE DERP-FUDS HTRW - SI |
|---|---|

| | | | |
|---------------------------------|--------------------------|----------------------------------|---------------------------------------|
| 5. PROGRAM ELEMENT DERP-FUDS | 6. CATEGORY CODE HTRW | 7. PROJECT NUMBER G05OH001824 | 8. PROJECT COST (\$000) \$ 90.0 |
|---------------------------------|--------------------------|----------------------------------|---------------------------------------|

9. COST ESTIMATES

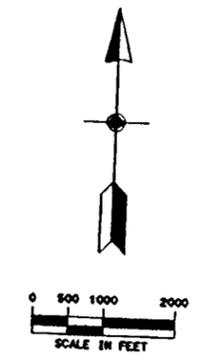
| ITEM | U/M | QUANTITY | UNIT COST | COST (\$000) |
|---|-----|----------|-----------|----------------|
| Prepare Limited Site Investigation by CELRL | | | | \$ 80.0 |
| Project Management by CELRH | | | | <u>\$ 10.0</u> |
| TOTAL | | | | \$ 90.0 |

10. DESCRIPTION OF PROPOSED CONSTRUCTION

Prepare a Limited Site Investigation Study on the subject Lower Toluene Tanks. Work will include:

1. Sampling and chemical analysis of soil and water samples
2. Preparation of a Limited Site Investigation Report and recommendation for the need for further investigation (RI/FS) of the Lower Toluene Tanks.

PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO



LEGEND:

- STREAM
- RAILROAD
- PBS BOUNDARY FENCE
- AREA OF CONCERN
- MIS-LOCATED AOC (Sampled by M-K, 1994a)

Lower Toluene
TANKS

ICI INTERNATIONAL
CONSULTANTS, INC.

G0504001824

FIGURE 1-2
LOCATIONS of AREAS of
CONCERN (AOCs) at PBOW

| | |
|----------|-----------|
| DATE | 12 JUL 95 |
| PREPARED | JET |
| CHECKED | DBJ |

PROJECT SUMMARY SHEET
FOR
DERP-FUDS HTRW PROJECT NO. G05OH001825
GARAGE MAINTENANCE AREA
PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO
SITE NO. G05OH001800
21 NOVEMBER 1998

PROJECT DESCRIPTION: The project area is the Garage Maintenance Area. The former Plum Brook Ordnance Works (PBO) was utilized by the Department of Defense (DoD) from 1941 until 1945 for the manufacture of 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. During this period, DoD constructed and utilized a garage and maintenance area for the general maintenance of equipment and vehicles. Underground storage tanks were installed for the storage of gasoline, solvents, and waste oil. These tanks have since been removed. The Garage and Maintenance Area operated from 1941 until 1945.

PROJECT ELIGIBILITY: Records indicate that the garage and maintenance area was utilized by DoD for operation of the former PBO. The area is occupied used by the current property owner, NASA, and used in support of their activities. NASA installed UST's in 1964 and 1982 and subsequently removed them. Two additional UST's were installed by NASA in 1990 and are currently used for the storage of gasoline and diesel fuel.

POLICY CONSIDERATIONS: Current DoD policy dictates eligibility for remediation of DoD generated hazardous and toxic waste even though there was no evidence of a hazard when the property was transferred from DOD. There may be solvent and fuel contamination present at the garage and maintenance area that could be attributed to direct DoD use of the site.

PROPOSED PROJECT: An HTRW project is proposed which consists of a Limited Site Investigation. It is recommended that the results from previous UST investigations be thoroughly reviewed to determine the potential for contamination at the site. If additional investigations are required, a SI should be conducted to determine the nature of the contamination. Surface and subsurface soil should be sampled and analyzed, and samples should be analyzed from existing monitoring wells near the facility. Further studies of the garage and maintenance area will depend on the SI results.

EPA Form 2070-12: Attached.

DD Form 1391: Attached.

District POC: Nancy O. Stouffer, CELRH-DL-M, (304) 529-5035, is the Geographic District Project Manager, and Kevin L. Jasper, CELRL-DL-B, (502) 625-7015, is the Design District Project Manager, for the PBO site.

G0504001825

|  POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT PART 1 - SITE INFORMATION AND ASSESSMENT | | I. IDENTIFICATION | |
|---|----------|---|---|
| | | 01 STATE | 02 SITE NUMBER |
| II. SITE NAME AND LOCATION | | | |
| 01 SITE NAME (Legal, common, or descriptive name of site) | | 02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER | |
| Plum Brook Orange Works | | | |
| 03 CITY | 04 STATE | 05 ZIP CODE | 06 COUNTY |
| SAN ANTONIO | TX | | BEXAR |
| 09 COORDINATES | LATITUDE | LONGITUDE | |
| | 41 22 41 | 82 41 15 | |
| 10 DIRECTIONS TO SITE (Starting from nearest public road) | | | |
| I-35, NORTH 0.1 MILE ON RT 4, EAST 0.2 MILE ON RT 13. SITE NEAR BLOOMINGVILLE | | | |
| III. RESPONSIBLE PARTIES | | | |
| 01 OWNER (If known) | | 02 STREET (Business, mailing, residential) | |
| US Army Corps ENGRS | | 502 BTH ST 35 | |
| 03 CITY | 04 STATE | 05 ZIP CODE | 06 TELEPHONE NUMBER |
| HUNTINGTON | WV | 25701 | 304-529-5760 |
| 07 OPERATOR (If known and different from owner) | | 08 STREET (Business, mailing, residential) | |
| | | | |
| 09 CITY | 10 STATE | 11 ZIP CODE | 12 TELEPHONE NUMBER |
| | | | () |
| 13 TYPE OF OWNERSHIP (Check one) | | | |
| <input type="checkbox"/> A. PRIVATE <input checked="" type="checkbox"/> B. FEDERAL: <u>NASA</u> <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <input checked="" type="checkbox"/> F. OTHER: <u>FORMER DOD</u> <input type="checkbox"/> G. UNKNOWN <small>(Specify)</small> | | | |
| 14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply) | | | |
| <input type="checkbox"/> A. RCRA 3001 DATE RECEIVED: ___/___/___ <input type="checkbox"/> B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: ___/___/___ <input type="checkbox"/> C. NONE <small>MONTH DAY YEAR</small> | | | |
| IV. CHARACTERIZATION OF POTENTIAL HAZARD | | | |
| 01 ON SITE INSPECTION | | BY (Check all that apply) | |
| <input checked="" type="checkbox"/> YES DATE <u>2/90</u> <small>MONTH DAY YEAR</small> | | <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input checked="" type="checkbox"/> F. OTHER: <u>NASHVILLE CORPS</u> <small>(Specify)</small> | |
| CONTRACTOR NAME(S): _____ | | | |
| 02 SITE STATUS (Check one) | | 03 YEARS OF OPERATION | |
| <input type="checkbox"/> A. ACTIVE <input checked="" type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN | | <u>1941</u> <u>1945</u> <small>BEGINNING YEAR ENDING YEAR</small> | |
| 04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED | | | |
| SO LVENTS, WASTE OILS | | | |
| 05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION | | | |
| SOIL AND GROUND WATER CONTAMINATION | | | |
| V. PRIORITY ASSESSMENT | | | |
| 01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents) | | | |
| <input checked="" type="checkbox"/> A. HIGH <input type="checkbox"/> B. MEDIUM <input type="checkbox"/> C. LOW <input type="checkbox"/> D. NONE <small>(Inspection required promptly) (Inspection required) (Inspect on time available basis) (No further action needed, complete current disposition form)</small> | | | |
| VI. INFORMATION AVAILABLE FROM | | | |
| 01 CONTACT | | 02 OF (Agency/Organization) | 03 TELEPHONE NUMBER |
| FRANK ALBERT | | HUNTINGTON CORPS | 304-529-5760 |
| 04 PERSON RESPONSIBLE FOR ASSESSMENT | | 05 AGENCY | 06 ORGANIZATION |
| SAME | | | |
| | | 07 TELEPHONE NUMBER | 08 DATE |
| | | () | 11/21/98 <small>MONTH DAY YEAR</small> |

9050H001825



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

| I. IDENTIFICATION | |
|-------------------|----------------|
| 01 STATE | 02 SITE NUMBER |

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 A. GROUNDWATER CONTAMINATION 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
 03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 B. SURFACE WATER CONTAMINATION 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
 03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 C. CONTAMINATION OF AIR 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
 03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 D. FIRE/EXPLOSIVE CONDITIONS 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
 03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 E. DIRECT CONTACT 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
 03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 F. CONTAMINATION OF SOIL 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
 03 AREA POTENTIALLY AFFECTED: 15 ACRES 04 NARRATIVE DESCRIPTION
(Acres)

01 G. DRINKING WATER CONTAMINATION 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
 03 POPULATION POTENTIALLY AFFECTED: >100 04 NARRATIVE DESCRIPTION
 USERS NOT KNOWN

01 H. WORKER EXPOSURE/INJURY 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
 03 WORKERS POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 I. POPULATION EXPOSURE/INJURY 02 OBSERVED (DATE: _____) POTENTIAL ALLEGED
 03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

| I. IDENTIFICATION | |
|-------------------|----------------|
| 01 STATE | 02 SITE NUMBER |

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 J. DAMAGE TO FLORA
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 K. DAMAGE TO FAUNA
04 NARRATIVE DESCRIPTION (include name(s) of species)

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 L. CONTAMINATION OF FOOD CHAIN
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 M. UNSTABLE CONTAINMENT OF WASTES
(Spills/runoff/standing liquids/leaking drums)
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 N. DAMAGE TO OFFSITE PROPERTY
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 P. ILLEGAL/UNAUTHORIZED DUMPING
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: 7100

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e. g., state files, sample analysis, reports)

PLUM BROOK ORDINANCE WORKS
SITE MANAGEMENT PLAN
SEP 1995 ICD, INC.

| | | |
|----------------------|---|---------------------|
| 1. COMPONENT ARMY | FY 1999MILITARY CONSTRUCTION PROJECT DATA | 2. DATE NOV 1998 |
|----------------------|---|---------------------|

| | |
|---|---|
| 3. INSTALLATION AND LOCATION Plum Brook Ordnance Works Sandusky, Ohio | 4. PROJECT TITLE DERP-FUDS HTRW – SI |
|---|---|

| | | | |
|---------------------------------|--------------------------|----------------------------------|---------------------------------------|
| 5. PROGRAM ELEMENT DERP-FUDS | 6. CATEGORY CODE HTRW | 7. PROJECT NUMBER G05OH001825 | 8. PROJECT COST (\$000) \$691.9 |
|---------------------------------|--------------------------|----------------------------------|---------------------------------------|

9. COST ESTIMATES

| ITEM | U/M | QUANTITY | UNIT COST | COST (\$000) |
|--|-----|----------|-----------|--------------|
| Prepare Limited Site Investigation | | | | \$622.7 |
| Contract Administration and Supervision by CELRL | | | | \$ 69.2 |
| TOTAL | | | | \$691.9 |

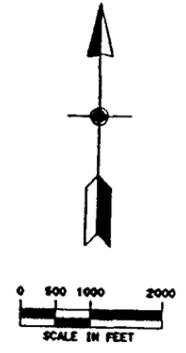
10. DESCRIPTION OF PROPOSED CONSTRUCTION

Prepare a Limited Site Investigation Study on the subject Garage Maintenance Area. Work will include:

1. Sampling and chemical analysis of soil and water samples
2. Preparation of a Limited Site Investigation Report and recommendation for the need for further investigation (RI/FS) of the Garage Maintenance Area.

Garage Maintenance Area

PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO



LEGEND:

- ! STREAM
- RAILROAD
- PBS BOUNDARY FENCE
- ▨ AREA OF CONCERN
- ▩ MIS-LOCATED AOC (Sampled by M-K, 1994d)

ICI INTERNATIONAL CONSULTANTS, INC.

G0504001825

FIGURE 1-2
LOCATIONS of AREAS of CONCERN (AOCs) at PBOW

| | |
|----------|-----------|
| DATE | 12 JUL 95 |
| PREPARED | JET |
| CHECKED | OBJ |

PROJECT SUMMARY SHEET
FOR
DERP-FUDS HTRW PROJECT NO. G05OH001826
GROUNDWATER
PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO
SITE NO. G05OH001800
21 NOVEMBER 1998

PROJECT DESCRIPTION: The project area is site-wide groundwater. The former Plum Brook Ordnance Works (PBOW) was utilized by the Department of Defense (DoD) from 1941 until 1945 for the manufacture of 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. Site activities included the manufacturing and storage of acid and the storage and transport of process chemicals, including toluene and acetone. Waste water ("red water") from the TNT manufacturing process was transported throughout the site through buried pipelines and flumes to treatment facilities, and then to waste (red water) ponds for storage. Other support activities included equipment and vehicle maintenance. There is the possibility that leaks and spills from the above activities may have contributed to groundwater contamination. Additionally, decommissioning of the PBOW site may have contributed to groundwater contamination.

PROJECT ELIGIBILITY: Records indicate that the DoD utilized the former PBOW from 1941 until 1945 for the manufacture of TNT, DNT, and pentolite. These site activities could have contributed to groundwater contamination.

POLICY CONSIDERATIONS: Current DoD policy dictates eligibility for remediation of DoD generated hazardous and toxic waste even though there was no evidence of a hazard when the property was transferred from DOD. There may be groundwater contamination present throughout the site that could be attributed to direct DoD use of the site.

PROPOSED PROJECT: An HTRW project is underway, which consists of a site-wide groundwater investigation (Site Investigation). Sampling has been conducted, and additional wells have been installed. It is recommended that existing wells throughout the site be sampled and analyzed to determine the nature and extent of contamination. If significant DoD contamination is found, additional wells may need to be installed to monitor contaminant migration and determine its source. Additional groundwater background data may be required to prepare a risk assessment. Further work may involve hydrologic modeling to predict the fate and transport of site contaminants.

EPA Form 2070-12: Attached.

DD Form 1391: Attached.

District POC: Nancy O. Stouffer, CELRH-DL-M, (304) 529-5035, is the Geographic District Project Manager, and Linda S. Ingram, CELRN-EP-R-M, (615) 736-7122, is the Design District Technical Coordinator, for the PBOW site.

ERIC L 15

PN. G0504001826

|  POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT PART 1 - SITE INFORMATION AND ASSESSMENT | | I. IDENTIFICATION | |
|--|--------------------------|--|--|
| | | 01 STATE | 02 SITE NUMBER |
| II. SITE NAME AND LOCATION | | | |
| 01 SITE NAME (Legal, common, or descriptive name of site) <u>PLUM BROOK ORDNANCE WORKS</u> | | 02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER | |
| 03 CITY <u>SANDUSKY</u> | 04 STATE <u>OH</u> | 05 ZIP CODE | 06 COUNTY <u>ERIE</u> |
| 07 COUNTY CODE | 08 CONG DIST <u>5</u> | | |
| 09 COORDINATES LATITUDE <u>41 22 12</u> | | LONGITUDE <u>82 41 22</u> | |
| 10 DIRECTIONS TO SITE (Starting from nearest public road) <u>I 20, NORTH 0.1 MILE ON RT 4, EAST 0.2 MILE ON RT 13. SITE NEAR BLOOMINGVILLE</u> | | | |
| III. RESPONSIBLE PARTIES | | | |
| 01 OWNER (If known) <u>US Army Corps of Engineers</u> | | 02 STREET (Business, mailing, residential) <u>602 8TH STREET</u> | |
| 03 CITY <u>HUNTINGTON</u> | 04 STATE <u>WV</u> | 05 ZIP CODE <u>25701</u> | 06 TELEPHONE NUMBER <u>304 529-5760</u> |
| 07 OPERATOR (If known and different from owner) | | 08 STREET (Business, mailing, residential) | |
| 09 CITY | | 10 STATE | 11 ZIP CODE |
| | | 12 TELEPHONE NUMBER | |
| 13 TYPE OF OWNERSHIP (Check one) <input type="checkbox"/> A. PRIVATE <input checked="" type="checkbox"/> B. FEDERAL: <u>NASA</u> <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL (Specify) <input checked="" type="checkbox"/> F. OTHER: <u>FORMER DOD USE</u> <input type="checkbox"/> G. UNKNOWN (Specify) | | | |
| 14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply) <input type="checkbox"/> A. RCRA 3001 DATE RECEIVED: _____ MONTH DAY YEAR <input type="checkbox"/> B. UNCONTROLLED WASTE SITE (CERCLA 103(c)) DATE RECEIVED: _____ MONTH DAY YEAR <input type="checkbox"/> C. NONE | | | |
| IV. CHARACTERIZATION OF POTENTIAL HAZARD | | | |
| 01 ON SITE INSPECTION <input checked="" type="checkbox"/> YES DATE <u>2 90</u> MONTH DAY YEAR <input type="checkbox"/> NO | | BY (Check all that apply) <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input checked="" type="checkbox"/> F. OTHER: <u>NASHVILLE CORPS</u> (Specify) CONTRACTOR NAME(S): _____ | |
| 02 SITE STATUS (Check one) <input type="checkbox"/> A. ACTIVE <input checked="" type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN | | 03 YEARS OF OPERATION <u>1941</u> <u>1945</u> <input type="checkbox"/> UNKNOWN BEGINNING YEAR ENDING YEAR | |
| 04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED <u>TRINITROTOLUENE AND DERIVATIVES ACETONE, BARIUM, CHROMIUM MANGANESE</u> | | | |
| 05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION <u>SOIL AND GROUNDWATER CONTAMINATION</u> | | | |
| V. PRIORITY ASSESSMENT | | | |
| 01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents) <input checked="" type="checkbox"/> A. HIGH (inspection required promptly) <input type="checkbox"/> B. MEDIUM (inspection required) <input type="checkbox"/> C. LOW (inspect on time available basis) <input type="checkbox"/> D. NONE (No further action needed, complete current disposition form) | | | |
| VI. INFORMATION AVAILABLE FROM | | | |
| 01 CONTACT <u>FRANK ALBERT</u> | | 02 OF (Agency/Organization) <u>HUNTINGTON DISTRICT CORPS ENGINEERS</u> | |
| 03 TELEPHONE NUMBER <u>304 529-5760</u> | | | |
| 04 PERSON RESPONSIBLE FOR ASSESSMENT <u>SAME</u> | | 05 AGENCY | 06 ORGANIZATION |
| | | 07 TELEPHONE NUMBER | 08 DATE <u>11 21 98</u> MONTH DAY YEAR |



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

| | | |
|---|---|--|
| <p>01 PHYSICAL STATES (Check all that apply)</p> <p>A SOLID B POWDER, FINES C SLUDGE D OTHER (Specify)</p> <p>E SLURRY F LIQUID G GAS</p> | <p>02 WASTE QUANTITY AT SITE</p> <p>Measures of waste quantities must be independent!</p> <p>TONS _____ CUBIC YARDS <u>UNKNOWN</u> NO. OF DRUMS _____</p> | <p>03 WASTE CHARACTERISTICS (Check all that apply)</p> <p><input checked="" type="checkbox"/> A TOXIC <input type="checkbox"/> B CORROSIVE <input type="checkbox"/> C RADIOACTIVE <input type="checkbox"/> D PERSISTENT</p> <p>E SOLUBLE F INFECTIOUS G FLAMMABLE H IGNITABLE</p> <p><input checked="" type="checkbox"/> I HIGHLY VOLATILE <input checked="" type="checkbox"/> J EXPLOSIVE <input type="checkbox"/> K REACTIVE <input type="checkbox"/> L INCOMPATIBLE <input type="checkbox"/> M NOT APPLICABLE</p> |
|---|---|--|

III. WASTE TYPE

| CATEGORY | SUBSTANCE NAME | 01 GROSS AMOUNT | 02 UNIT OF MEASURE | 03 COMMENTS |
|----------|-------------------------|-----------------|--------------------|-------------|
| ELU | SLUDGE | | | |
| OLW | OILY WASTE | | | |
| SOL | SOLVENTS | | | |
| PSD | PESTICIDES | | | |
| OCC | OTHER ORGANIC CHEMICALS | | | |
| IOC | INORGANIC CHEMICALS | | | |
| ACD | ACIDS | | | |
| BAS | BASES | | | |
| MES | HEAVY METALS | | | |

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

| 01 CATEGORY | 02 SUBSTANCE NAME | 03 CAS NUMBER | 04 STORAGE/DISPOSAL METHOD | 05 CONCENTRATION | 06 MEASURE OF CONCENTRATION |
|-------------|-------------------|---------------|----------------------------|------------------|-----------------------------|
| | BARIUM | 10022-31-8 | LAND | 219,000 | ppb |
| | CHROMIUM | 7440-47-3 | LAND | 20,000 | ppb |
| | 1,3-DNB | 99-65-0 | LAND | 6,400 | ppb |
| | 2,6-DNT | 25321-14-6 | LAND | 1,700 | ppb |
| | 2,4-DNT | 25321-14-4 | LAND | 20,000 | ppb |
| | LEAD | 7439-92-1 | LAND | 50,000 | ppb |
| | MANGANESE | 7439-96-5 | LAND | 2,600,000 | ppb |
| | NITRATE | | LAND | 2,500,000 | ppb |
| | NITROBENZENE | 98-95-3 | LAND | 480 | ppb |
| | NITROTOLUENE | | LAND | 480 | ppb |
| | SODIUM | 1310-73-2 | LAND | 3,420,000 | ppb |
| | SULFATE | | LAND | 2,000,000 | ppb |
| | 1,3,5-TNB | 118-96-7 | LAND | 15,000 | ppb |
| | 2,4,6-TNT | 118-96-7 | LAND | 740 | ppb |

V. FEEDSTOCKS (See Appendix for CAS Numbers)

| CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER | CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER |
|----------|-------------------|---------------|----------|-------------------|---------------|
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

FEB 1990 CONFIRMATION STUDY
NASHVILLE DISTRICT CORPS OF ENGINEERS
(MAX. CONCENTRATION SHOWN)

PN G0504001826



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE | 02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 OBSERVED (DATE: 2/90)
04 NARRATIVE DESCRIPTION _____
 POTENTIAL ALLEGED

01 B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: >100
02 OBSERVED (DATE: _____)
04 NARRATIVE DESCRIPTION _____
 POTENTIAL ALLEGED

01 C. CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED: _____
02 OBSERVED (DATE: _____)
04 NARRATIVE DESCRIPTION _____
 POTENTIAL ALLEGED

01 D. FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED: _____
02 OBSERVED (DATE: _____)
04 NARRATIVE DESCRIPTION _____
 POTENTIAL ALLEGED

01 E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED: _____
02 OBSERVED (DATE: _____)
04 NARRATIVE DESCRIPTION _____
 POTENTIAL ALLEGED

01 F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: _____ (Acres)
02 OBSERVED (DATE: 2/90)
04 NARRATIVE DESCRIPTION _____
 POTENTIAL ALLEGED

01 G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: >100
02 OBSERVED (DATE: 2/90)
04 NARRATIVE DESCRIPTION _____
NO KNOWN USERS OF AFFECTED AQUIFER
 POTENTIAL ALLEGED

01 H. WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED: _____
02 OBSERVED (DATE: _____)
04 NARRATIVE DESCRIPTION _____
 POTENTIAL ALLEGED

01 I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: _____
02 OBSERVED (DATE: _____)
04 NARRATIVE DESCRIPTION _____
 POTENTIAL ALLEGED



**POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS**

| I. IDENTIFICATION | |
|-------------------|----------------|
| 01 STATE | 02 SITE NUMBER |

II. HAZARDOUS CONDITIONS AND INCIDENTS *(Continued)*

01 J. DAMAGE TO FLORA
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 K. DAMAGE TO FAUNA
04 NARRATIVE DESCRIPTION *(include names of species)*

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 L. CONTAMINATION OF FOOD CHAIN
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 M. UNSTABLE CONTAINMENT OF WASTES
(Spills/runoff/standing liquids/leaking drums)
03 POPULATION POTENTIALLY AFFECTED: 7100

02 OBSERVED (DATE: 2/90) POTENTIAL ALLEGED

04 NARRATIVE DESCRIPTION

SOIL CONTAMINATION DISCOVERED

01 N. DAMAGE TO OFFSITE PROPERTY
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

01 P. ILLEGAL/UNAUTHORIZED DUMPING
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE: _____) POTENTIAL ALLEGED

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

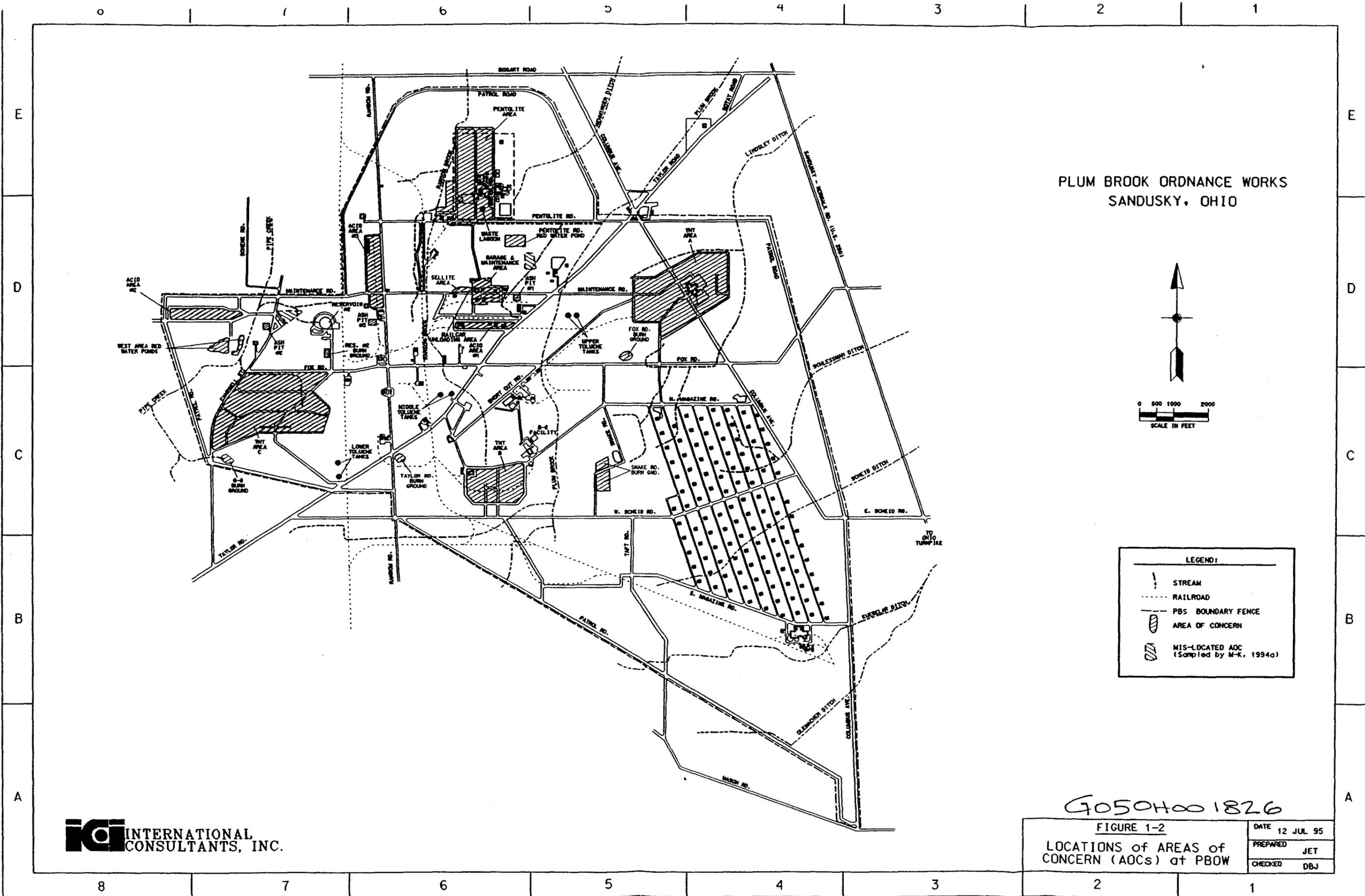
III. TOTAL POPULATION POTENTIALLY AFFECTED: 7100

IV. COMMENTS

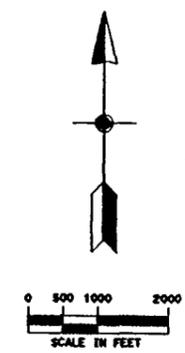
V. SOURCES OF INFORMATION *(Cite specific references, e. g., state files, sample analysis, reports)*

CONFIRMATION STUDY FEB 1990
NASHVILLE DISTRICT CORPS OF ENGINEERS

| | | | | | |
|--|--------------------------|--|--|---------------------|--------------|
| 1. COMPONENT ARMY | | FY 1999 MILITARY CONSTRUCTION PROJECT DATA | | 2. DATE NOV 1998 | |
| 3. INSTALLATION AND LOCATION Plum Brook Ordnance Works Sandusky, Ohio | | | 4. PROJECT TITLE DERP-FUDS HTRW – RI/FS | | |
| 5. PROGRAM ELEMENT DERP-FUDS | 6. CATEGORY CODE HTRW | 7. PROJECT NUMBER G05OH001826 | 8. PROJECT COST (\$000) \$1,245.0 | | |
| 9. COST ESTIMATES | | | | | |
| ITEM | | U/M | QUANTITY | UNIT COST | COST (\$000) |
| Prepare Remedial Investigation/Feasibility Study | | | | | \$1,098.0 |
| Contract Administration and Supervision by CELRN | | | | | \$ 122.0 |
| Project Management by CELRH | | | | | \$ 25.0 |
| TOTAL | | | | | \$1,245.0 |
| | | | | | \$ 36.4 |
| | | | | | \$910.6 |
| 10. DESCRIPTION OF PROPOSED CONSTRUCTION | | | | | |
| <p>Prepare a Remedial Investigation/Feasibility Study for the on-going Site-wide Groundwater Investigation. Work will include:</p> <ol style="list-style-type: none"> 1. Installation of additional monitoring wells, as required. 2. Soil borings. 3. Sampling and chemical analysis of soil and water samples. 4. Hydrologic modeling. 5. Preparation of Feasibility Study that will identify alternatives for cleanup and their costs. | | | | | |



PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO



LEGEND:

- STREAM
- RAILROAD
- PBS BOUNDARY FENCE
- AREA OF CONCERN
- MIS-LOCATED AOC (Sampled by M-K, 1994a)

G0504001826

| | | |
|--|--|----------------|
| FIGURE 1-2 | | DATE 12 JUL 95 |
| LOCATIONS of AREAS of CONCERN (AOCs) at PBOW | | PREPARED JET |
| | | CHECKED DBJ |

ICI INTERNATIONAL CONSULTANTS, INC.

APPENDIX A
RISK ASSESSMENT PROCEDURES FOR
EXPLOSIVE ORDNANCE (EXO)

Site Name Plum Brook Ordnance Work Rater's Name FRANK ALBERT
 Site Location SANDUSKY OH Organization GEORGE EOD DC
 DERP Project # 6054001306 RAC _____

EXO RISK ASSESSMENT:

This risk assessment procedure was developed in accordance with MIL-STD 882B and AR 385-10.

The EXO risk assessment is based upon documented evidence consisting of records searches, reports of Explosive Ordnance Disposal (EOD) detachment actions, and field observations, interviews, and measurements. These data are used to assess the risk involved based upon the hazards identified at the site. The risk assessment is composed of two factors, hazard severity and hazard probability.

Any field activities should be made with the assistance of qualified EOD personnel.

Part I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible mishap resulting from personnel exposure to various types and quantities of unexploded ordnance items.

TYPE OF ORDNANCE

A. Conventional Ordnance and Ammunition

| | YES VALUE | NO VALUE | VALUE |
|---|--------------|-------------|-----------|
| Small Arms (.22 cal - .50 cal) | 2 | 0 | — |
| Medium/Large Caliber (20 mm and larger) | 10 | 0 | — |
| Bombs, Explosive | 10 | 0 | <u>10</u> |
| Bombs, Practice (w/spotting charges) | 6 | 0 | — |
| Grenades, Hand and Rifle, Explosive | 10 | 0 | — |
| Grenades, Practice (w/spotting charges) | 6 | 0 | — |

| | <u>YES</u> VALUE | <u>NO</u> VALUE | VALUE |
|---|---------------------|--------------------|-------|
| Landmines, Explosive | 10 | 0 | — |
| Landmines, Practice (w/spotting charges) | 6 | 0 | — |
| Rockets, Guided Missiles, Explosive | 10 | 0 | — |
| Detonators, Blasting Caps | 10 | 0 | — |
| Demolition Charges | 10 | 0 | — |
| Conventional Ordnance and Ammunition Value (Maximum of 10). <u>10</u> | | | |

B. Pyrotechnics

| | <u>YES</u> VALUE | <u>NO</u> VALUE | VALUE |
|--|---------------------|--------------------|-------|
| Any Munition Containing White Phosphorus or other Pyrophoric Material (i.e., Spontaneously Flammable) | 10 | 0 | — |
| Any Munition Containing a Flame or Incendiary Material (i.e., Napalm, Triethylaluminum Metal Incendiaries) | 6 | 0 | — |
| Military Flares | 4 | 0 | — |
| Pyrotechnics Value (Maximum of 10). — | | | |

C. Bulk High Explosives (Bulk explosives not an integral part of conventional ordnance).

| | <u>YES</u> VALUE | <u>NO</u> VALUE | VALUE |
|--|---------------------|--------------------|-----------|
| Primary or Initiating Explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, etc.) | 10 | 0 | — |
| Booster, Bursting or Fuse Explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.) | 10 | 0 | <u>10</u> |

| | <u>YES</u> VALUE | <u>NO</u> VALUE | VALUE |
|---|---------------------|--------------------|-----------|
| Military Dynamite | 10 | 0 | — |
| Less Sensitive Explosives (Ammonium Nitrate, Favier Explosives, etc.) | 3 | 0 | — |
| High Explosives Value (Maximum value of 10). | | | <u>10</u> |

D. Propellants

| | <u>YES</u> VALUE | <u>NO</u> VALUE | VALUE |
|-----------------------------|---------------------|--------------------|------------|
| Solid or Liquid Propellants | 6 | 0 | — <u>0</u> |

E. Chemical Agents/Radiological Materials/Munitions

| | <u>YES</u> VALUE | <u>NO</u> VALUE | VALUE |
|---|---------------------|--------------------|-------|
| Radiological | 25 | 0 | — |
| Toxic Chemical Agents (Choking, Nerve, Blood, Blister) | 25 | 0 | — |
| Incapacitating Agent (BZ) | 10 | 0 | — |
| Riot Control and Miscellaneous (Vomiting, Tear, Chlorine, Mustard Simulant) | 5 | 0 | — |
| Any Munition Containing Smoke, Illumination, Signal Charge | 4 | 0 | — |

Chemical Agents/Radiological Materials/Munitions Value (Maximum 25). 0

Total Ordnance and Explosive Waste Characteristics Value (Total =
A + B + C + D + E with a Maximum value of 61). 20

TABLE 1

HAZARD SEVERITY

| Description | Category | Value |
|--------------|----------|----------------|
| CATASTROPHIC | I | ≥ 21 |
| CRITICAL | II | $\geq 13 < 21$ |
| MARGINAL | III | $\geq 5 < 13$ |
| NEGLIGIBLE | IV | < 5 |

* Apply Hazard Severity to Table 3.

Part II. Hazard Probability. The probability that a hazard has been or will be created due to the presence and other rated factors of explosive ordnance (EXO) on a formerly used DOD site.

AREA, EXTENT, ACCESSIBILITY OF CONTAMINATION

A. Locations of Contamination

| | <u>YES</u> VALUE | <u>NO</u> VALUE | VALUE |
|---|---------------------|--------------------|----------|
| Within Tanks, Pipes, Vessels or Other confined locations. | 5 | 0 | — |
| On the surface or within 3 feet. | 5 | 0 | — |
| Inside walls, ceilings, or other parts of Buildings or Structures. | 4 | 0 | — |
| Subsurface, greater than 3 feet in depth. | 3 | 0 | <u>3</u> |

Value for location of EXO (Maximum Value of 5).

3

B. Distance to nearest inhabited locations or structures likely to be at risk from EXO site (roads, parks, playgrounds, and buildings).

| <u>Distance to Nearest Target</u> | VALUE |
|-----------------------------------|-------|
| Less than 1250 feet | 5 |
| 1250 feet to 0.5 miles | 4 |
| 0.5 miles to 1.0 mile | 3 |
| 1.0 mile to 2.0 miles | 2 |
| 2.0 miles to 5.0 miles | 1 |
| Over 5.0 miles | 0 |

Distance to Persons Value (Maximum Value of 5).

4

C. Numbers and types of Buildings within a 2 mile radius measured from the hazardous area, not the installation boundary.

| Number of Buildings | VALUE |
|---------------------|-------|
| 0 | 0 |
| 1 to 10 | 1 |
| 11 to 50 | 2 |
| 51 to 100 | 3 |
| 101 to 250 | 4 |
| 251 or Over | 5 |

Number of Buildings Value (Maximum Value of 5). 1

D. Types of Buildings

| | VALUE |
|--------------------------------------|-------|
| Educational, Child Care, etc. | 5 |
| Residential, Hospitals, Hotels, etc. | 5 |
| Commercial, Shopping Centers, etc. | 5 |
| Industrial Warehouse, etc. | 4 |
| Agricultural, Forestry, etc. | 3 |
| Detention, Correctional | 2 |
| Military | 1 |
| No Buildings | 0 |

Types of Buildings Value (Maximum Value of 5). 4

E. Accessibility to site refers to the measures taken to limit access by humans or animals to ordnance and explosive wastes. Use the following guidance:

| Barrier | Assigned Value |
|---|----------------|
| A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry onto the facility; | 0 |

OR
Barrier

Assigned Value

| | |
|--|---|
| An artificial or natural barrier (e.g., a fence combined with a cliff), which completely surrounds the facility; and a means to control entry, at all times, through the gates or other entrances to the facility (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the facility). | 0 |
| Security guard, but no barrier | 1 |
| A barrier, (any kind of fence) but no separate means to control entry | 2 |
| Barriers do not completely surround the facility | 3 |
| No barrier or security system | 5 |

Accessibility Value (Maximum Value of 5).

2

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion by beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.

VALUE

| | |
|------------------|---|
| None Anticipated | 0 |
| Expected | 5 |

(Maximum Value of 5)

0

Total value for hazard probability.
Sum of Values A through F.
(Not to exceed 30). Apply this value
to Hazard Probability Table 2 to determine
Hazard Level.

14

TABLE 2

HAZARD PROBABILITY

| Description | Level | Value |
|-------------|-------|---------|
| FREQUENT | A | ≥27 |
| PROBABLE | B | ≥21 <27 |
| OCCASIONAL | C | ≥15 <21 |
| REMOTE | D | ≥ 8 <15 |
| IMPROBABLE | E | <8 |

* Apply Hazard Probability to Table 3.

Part III. Risk Assessment. The risk assessment value for this site is determined using the following Table 3. Enter with the results of the hazard probability and hazard severity values.

TABLES 1 AND 2

HAZARD SEVERITY - II
(from Table 1)

HAZARD PROBABILITY - D
(from Table 2)

TABLE 3

| Probability Level | | FREQUENT A | PROBABLE B | OCCASIONAL C | REMOTE D | IMPROBABLE E |
|--------------------|-----|---------------|---------------|-----------------|-------------|-----------------|
| Severity Category: | | | | | | |
| CATASTROPHIC | I | 1 | 1 | 2 | 3 | 4 |
| CRITICAL | II | 1 | 2 | 3 | 4 | 5 |
| MARGINAL | III | 2 | 3 | 4 | 4 | 5 |
| NEGLIGIBLE | IV | 3 | 4 | 4 | 5 | 5 |

Note: The risk assessment code for EXO is not equivalent to the risk assessment code prescribed in AR 385-10:

RISK ASSESSMENT CODE (RAC)

- RAC 1 Imminent Hazard - Emergency action required to mitigate the hazard or protect personnel (i.e., Fencing, physical barrier, guards, etc.).
- RAC 2 Action required to mitigate hazard or protect personnel. Feasibility study is appropriate.
- RAC 3 Action required to evaluate potential threat to personnel. High priority Site Inspection is appropriate.
- RAC 4 Action required to evaluate potential threat to personnel. Site Inspection is appropriate.
- RAC 5 No action required.

Justification. In narrative form, summarize the documented evidence that supports this risk assessment.