



DEPARTMENT OF THE ARMY  
U.S. ARMY ENGINEER DIVISION, GREAT LAKES AND OHIO RIVER  
CORPS OF ENGINEERS  
550 MAIN ST.  
CINCINNATI, OH 45202

CELRD-PDM (200-1c)

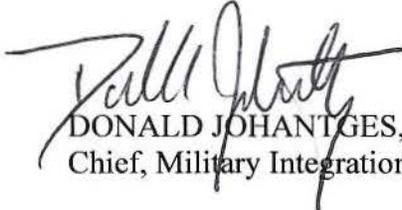
30 September 2013

MEMORANDUM FOR Commander, Louisville District

SUBJECT: Project Misnumbering Correction, Plum Brook Ordnance Works, Sandusky, Erie County, Ohio, Property Number G05OH0018

1. Reference CELRD-PDM memorandum, 22 August 2013, subject: Defense Environmental Restoration Program – Formerly Used Defense Sites (DERP-FUDS) Revised Inventory Project Report (INPR) for Plum Brook Ordnance Works, Sandusky, Erie County, Ohio, Property Number G05OH0018 (Encl).
2. Louisville District (LRL) proposed Acid Area No. 2 as project G05OH001827 and Acid Area No. 3 as G05OH001828. These two projects were approved by LRD as such on 22 August 2013. When Huntington District (LRH) entered the projects into the FUDS Management Information System (FUDMIS), however, FUDSMIS assigned project number G05OH001828 to Acid Area No. 2 and project number G05OH001829 to Acid Area No. 3. Since the project numbers in FUDSMIS cannot be changed for these two projects, Acid Area No. 2 shall henceforth be known as project G05OH001828; similarly Acid Area No. 3 shall henceforth be known as G05OH001829.
3. To prevent this type of misnumbering from happening again, new projects in the future shall be entered into the FUDSMIS as pending prior to preparation of the initial or revised INPR, thus ensuring correct project numbers are used in the INPR.
4. Please ensure that a copy of this memorandum is posted to the FUDS Records Management Database and the FUDSMIS is annotated to explain the inconsistency between the project numbering in the “hard copy” and FUDSMIS. A copy of this memorandum may also need to be provided to the Ohio Environmental Protection Agency.

Encl  
as

  
DONALD JOHANTGES, P.M.P.  
Chief, Military Integration Division

CF:  
CELRL-ED-E  
CELRH-PM-PP-P

200.1e  
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**DEPARTMENT OF THE ARMY**  
**U.S. ARMY ENGINEER DIVISION, GREAT LAKES AND OHIO RIVER**  
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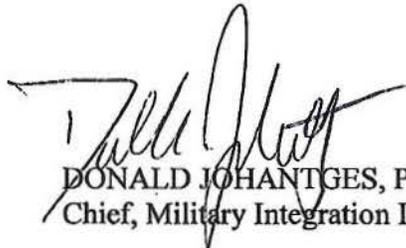
22 August 2013

MEMORANDUM FOR Commander, Louisville District

SUBJECT: Defense Environmental Restoration Program – Formerly Used Defense Sites (DERP-FUDS) Revised Inventory Project Report (INPR) for Plum Brook Ordnance Works, Sandusky, Erie County, Ohio, Property Number G05OH0018

1. Reference CELRL-DE memorandum, 16 August 2013, SAB (encl).
2. Project approvals for the following three HTRW projects are affirmed:
  - G05OH001809 (Site Management)
  - G05OH001811 (Additional Burning Grounds)
  - G05OH001812 (Reservoir No. 2 Burning Ground)
3. This office also concurs with revising existing HTRW project G05OH001823 (Acid Areas No. 1, 2, and 3) into the following three separate projects and approves the two new HTRW projects (G05OH001827 and G05OH001828) resulting from this revision:
  - G05OH001823 (Acid Area No. 1)
  - G05OH001827 (Acid Area No. 2)
  - G05OH001828 (Acid Area No. 3)
4. Please ensure that a copy of this approval and revised INPR are posted to the FUDS Records Management Database, the Formerly Used Defense Sites Management Information System is updated to reflect these approvals, and landowner notification is done in accordance with ER 200-3-1. A copy of this revised INPR should also be provided to the Ohio Environmental Protection Agency.

Encl  
as

  
DONALD JOHANTGES, P.M.P.  
Chief, Military Integration Division

CF:  
CELRL-ED-E

End



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE  
CORPS OF ENGINEERS  
P O BOX 59  
LOUISVILLE, KENTUCKY 40201-0059

AUG 16 2013

CELRL-DE

MEMORANDUM FOR Commander, Great Lakes and Ohio River Division,  
ATTN: CELRD-PDM/Patty Bertsch, 550 Main Street, Room 10524, Cincinnati, Ohio  
45202-3222

SUBJECT: Defense Environmental Restoration Program – Formerly Used Defense Sites (DERP-FUDS) Revised Inventory Project Report (INPR) for Plum Brook Ordnance Works, Sandusky, Erie County, Ohio, Property Number G05OH0018

1. Reference Engineer Regulation (ER) 200-3-1, FUDS Program Policy, Department of the Army, U.S. Army Corps of Engineers (USACE), Washington, D.C., 20314, 10 May 2004.
2. This memorandum transmits the revised INPR for the subject DERP-FUDS property. The Plum Brook Ordnance Works (PBO) property has been determined to be an eligible property that was under the jurisdiction of the Secretary of Defense and owned by, leased to, or otherwise possessed by the United States and transferred from the Department of Defense (DoD) control prior to 17 October 1986. The previous INPR, dated 14 December 1998, has been revised to convert the existing HTRW project G05OH001823 into three separate projects (G05OH001823, G05OH001827, and G05OH001828). This revised INPR also seeks after-the-fact approval for HTRW projects G05OH001809, G05OH001811, and G05OH001812, all of which have had some work performed but for which no written project approval could be found.
3. Office of Counsel and Real Estate have reviewed this revised INPR and concur with the property eligibility determination and all proposed project recommendations. The Environmental and Munitions Center of Expertise (EM CX) has reviewed this INPR and has no outstanding issues or concerns.
4. A revised Property Survey Summary Sheet, including property maps and aerial photographs, is included as Enclosure 1. The Findings and Determination of Eligibility (FDE), dated 20 April 1994, is included as Enclosure 2. The completed INPR Checklist is included as Enclosure 3. An Executive Summary of the Preliminary Assessment (PA), dated June 1991, for the property (completed by the National Aeronautics and Space Administration [NASA]) is included at Enclosure 4.
5. The following is a summary of each project at this property.
  - a. **G05OH001803 RI/FS (Low Scope) (HTRW)** - This project was approved in a CFMP-RF memorandum, dated 13 January 1993, to conduct a site-wide low scope Remedial Investigation/Feasibility Study (RI/FS) as recommended in the 1991 Contamination Evaluation investigation. The RI/FS investigation findings necessitated a revision of the INPR in

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December 1998 to recommend sixteen new HTRW projects (11 through 26). Areas such as trinitrotoluene (TNT) Areas A, B, and C; the Red Water Ponds; the various burning grounds; acids areas; etc., were separated into individual projects for more effective management of the investigations of respective areas of concern. Remedial investigations under HTRW project G05OH001803 effectively ceased on 30 September 1998 and investigations under the new projects commenced after the revised INPR was approved in a CELRD-ET memorandum, dated 20 July 2000. Consequently, this project was declared No DoD Action Indicated (NDAI) in the FUDS Management Information System (FUDSMIS) on 30 September 1998 and closed out on 30 September 2004.

b. **G05OH001806 ASR Complete, NOFA OEW (MMRP)** – This project was approved in a CEMP-RF memorandum, dated 13 January 1993, to conduct an Archives Search Report (ASR). The ASR, completed by the USACE St. Louis District in December 1993, determined that there was no ordnance and explosive waste (OEW, currently called MEC – Munitions and Explosives of Concern) or chemical warfare materiel (CWM) concerns at PBOW and recommended No Further Action with regards to OEW concerns. Consequently, this project was declared NDAI in FUDSMIS on 10 March 1994 and closed out on 26 October 2009.

c. **G05OH001809 Site Management (HTRW)** – The FUDSMIS shows this project was approved on 1 December 1994 but no documentation has been located to support this date. Consequently, this revised INPR seeks “after-the-fact” approval of this project which was created in FUDSMIS to fund the development of a site management plan for the property. This project has been declared NDAI and closed out in FUDSMIS. A Project Survey Summary Sheet is included at Enclosure 5.

d. **G05OH001810 Plum Brook RAB (COMM/REL)** – This is a “pseudo-project,” and as such, does not require a project recommendation or official approval. To date, the Restoration Advisory Board (RAB) continues to meet on a quarterly basis. RAB meetings are typically held on Tuesday nights in the library of the Firelands Community College library, Huron, Ohio. In recent years, the RAB utilized a Technical Assistance for Public Participation (TAPP) contractor for assistance in the review and understanding of the various PBOW project investigations. The RAB, however, has exhausted all funds currently available for TAPP contractor involvement. This project is ongoing.

e. **G05OH001811 Additional Burning Grounds (HTRW)** – Although FUDSMIS shows this project was approved on 1 March 1999, no documentation has been found to support this date. Consequently, this revised INPR seeks “after-the-fact” approval of this project. This project was recommended to investigate the five burning grounds located at the former PBOW property designated as the Fox Road, Taylor Road, Snake Road, G-8, and the Additional Burning Grounds. The Responsibility Reassessment in 2006-2007 indicated that at least three of these areas were also used by NASA for waste disposal: Taylor Road, Fox Road, and Snake Road. Therefore, NASA assumed responsibility for remediating the aforementioned three areas. Initially, the Additional Burning Grounds was believed to be directly adjacent (west) of the Fox

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Road Burning Grounds. However, upon further internal review of historical documents and aerial mapping, the Additional Burning Grounds location has been determined to be the same as the Fox Road Burning Grounds location. Hence, due to NASA's remediation efforts at the Fox Road Burning Grounds, no additional DoD effort will be conducted. A Site Inspection (SI), completed in March 1997, of the G-8 Burning Grounds recommended the installation of one bedrock monitoring well. The SI also recommended no further soil or sediment sampling but indicated the need for statistical evaluation relative to results from other PBOW sites. Due to potentially responsible party concerns, this project was declared NDAI in FUDSMIS on 03 June 2008 and closed out on 19 September 2009. As a result of recent decisions made for site-wide groundwater concerns, the G-8 SI recommendations will be re-evaluated and, if necessary, a new HTRW project will be recommended. A Project Summary Sheet is included at Enclosure 6.

f. **G05OH001812 Reservoir No. 2 Burning Ground (HTRW)** – According to FUDSMIS, this project was approved on 1 March 1999; however, no documentation was found to support this date. Consequently, this revised INPR seeks “after-the-fact” approval of this project. During operation of the former PBOW, the Reservoir No. 2 Burning Ground was used for destruction of off-specification TNT, acids, solvents, asbestos, and waste oil. A SI, dated December 1997, indicated semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), nitroaromatics, and metals results were above risk-based concentrations (RBCs). A RI began in 2004 resulting in a Site Characterization Report issued in January 2006. Human health and ecological risk assessments were completed in February 2010 with observed data gaps, resulting in further delineation sampling in October 2010 and the final FS submitted in September 2011. A Proposed Plan was finalized in August 2012. This project is ongoing. A Project Summary Sheet is included at Enclosure 7.

g. **G05OH001813 TNT Area A (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address soils and/or sediments contamination at the TNT Area A. The groundwater component is being investigated under HTRW project G05OH001826. TNT Area A was used for the manufacture of TNT, DNT, and pentolite between 1941 and 1945. A Focused Feasibility Study (FFS) was completed in August 2003. The Proposed Plan and Decision Document were completed in November 2009 and June 2011 respectively. This project is ongoing.

h. **G05OH001814 TNT Area B (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address soils and/or sediments contamination at the TNT Area B. The groundwater component is being investigated under HTRW project G05OH001826. Similar to TNT Area A, TNT Area B was also used for the manufacture of TNT, DNT, and pentolite between 1941 and 1945. A RI of surface and subsurface soil was completed in October-November 1998. An Action Memorandum for a Non-time Critical Interim Removal Action for excavation and disposal of contaminated soils was presented to the RAB and the public in March 2002 and finalized June 2003. The soil removal action began in June 2002 and was completed in December 2006. The Proposed Plan and Decision Document for No Further Action were completed, with an RI/FS phase completion in September 2009.

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Consequently, this project was declared NDAI in FUDSMIS on 23 September 2009 and closed out on 31 March 2010.

i. **G05OH001815 TNT Area C (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address soils and/or sediments contamination at the TNT Area C. The groundwater component is being investigated under HTRW project G05OH001826. Similar to TNT Areas A and B, TNT Area C was used for the manufacture of TNT, DNT, and pentolite. A FFS for soils and sediment was completed in August 2003. The Proposed Plan and Decision Document were completed in November 2009 and June 2011 respectively. Remedial Design was completed in January 2010. This project is ongoing.

j. **G05OH001816 TNT Rail Car Loading (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address potential contamination at the TNT Rail Car Loading Area. It was assumed that TNT was loaded onto rail cars for shipment to on-site storage areas as well as from the site. The exact locations of these areas were unknown; however, remnants of blast-protection walls at TNT Area B suggested the possible location of one area that was referred to as TNT Rail Car Loading Area 1017. A limited SI was completed in July 2000 and determined that there had been no significant environmental damage and recommended that a No Further Action Decision Document be prepared. Consequently, this project was declared NDAI in FUDSMIS on 31 July 2000 and closed out 30 September 2002.

k. **G05OH001817 Wastewater Treatment Plants No. 1 and 3 (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address potential contamination at the Wastewater Treatment Plant (WWTP) No. 1 and No. 3. Process wastewater (“red water”) from the TNT production areas 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, West Area Red Water Ponds A-2, and the Pentolite Road Red Water Pond. A limited SI was completed in July 2000 and recommended further remedial investigation. This project is ongoing.

l. **G05OH001818 Wastewater Treatment Plant No. 2 (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address potential contamination at the WWTP 2 which received TNT wastewater from TNT Area B; operations at WWTP 2 were similar to those at WWTP 3. A SI completed in December 1997 indicated that surface and subsurface soil contained polyaromatic hydrocarbons (PAHs), PCBs, and metals at concentrations that exceeded RBC screening levels. This project is ongoing.

m. **G05OH001819 Pentolite Area Waste lagoons (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address concerns at the Pentolite Area Waste Lagoons. Between 1941 and 1945, wastewater from the production of pentolite was disposed of into two wastewater lagoons or settling basins. These lagoons have since been removed and the pentolite area re-graded by NASA for the construction of the Plum Brook Reactor Facility. A

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limited SI, completed in September 1999, recommended no further action since there was no indication of DoD contamination. Consequently, this project was declared NDAI in FUDSMIS on 31 March 2001 and closed out 30 September 2002.

n. **G05OH001820 Red Water Ponds (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address soils and/or sediments contamination at the Red Water Ponds. The groundwater component is being investigated under HTRW project G05OH001826. TNT process wastewater, referred to as “red water”, was discharged into three settling ponds, the West Area Red Water Ponds (WARWP, two ponds) and the Pentolite Road Red Water Pond (PRRWP, one pond). A 1997 focused RI determined that explosives were present in soils. A FS for soils at the Red Water Ponds Areas was completed in December 2002. Investigations found no action was necessary relative to soils at the WARWP. An Action Memorandum for a Non-time Critical Interim Removal Action for soils was presented to the RAB and the public and then finalized in June 2003. The Removal Action was completed in December 2008. Following the Non-time Critical Action, the project returned to the remedial process. This project is ongoing.

o. **G05OH001821 Ash Pits No. 1 and 3 (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address concerns at the Ash Pits No. 1 and No. 3. Between 1941 and 1945, three coal-burning power plants were constructed and utilized in support of the former PBOW activities. Ash pits served as disposal areas for ash that was generated from the power plants. A limited SI was conducted in July 2000. The SI concluded that based upon metal exceedances in the soil and sediment from Ash Pit 1 and in the sediment from Ash Pit 3, further investigation was warranted at both areas. This project is ongoing.

p. **G05OH001822 Powerhouse No. 2 Ash Pits (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address concerns at the Powerhouse No. 2 Ash Pits. Between 1941 and 1945 the coal-burning Powerhouse No. 2 was constructed and utilized in support of the TNT production activities at PBOW. Ash that was generated from the plant was disposed in an adjacent pit. An SI of this ash pit was completed December 1997 that recommended additional investigation for SVOCs and metals in surface and metals in subsurface soils. This project is ongoing.

q. **G05OH001823 Acid Area No. 1 (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address Acid Areas (AAs) Numbers 1, 2, and 3. These three acid areas were constructed and utilized to manufacture nitric and sulfuric acids for use in TNT and pentolite manufacture. A SI of the acids areas was completed in December 1998 that recommended additional investigation due to the presence of SVOCs and PCBs in the surface soil. PCB and SVOC contamination were sampled for and found in the process systems (TNT Residual Acid Storage areas) as well as the maintenance facility buildings and the power substation that were located at the AA project locations. Also, based on discussions with personnel at the U.S. Army Engineer Research and Development Center (ERDC), it was common to find PCBs in the soil from where the tanks were painted. Due to the non-contiguous

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locations and the difference in schedules for each of the respective acid areas, this INPR revision recommends dividing the existing HTRW project G05OH001823 into three separate HTRW projects (G05OH001823 – Acid Area No. 1, G05OH001827 – Acid Area No. 2, and G05OH001828 – Acid Area No. 3). This project is ongoing. A Project Summary Sheet is enclosed as Enclosure 8.

r. **G05OH001824 Lower Toluene Tanks (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address concerns at the Lower Toluene Tanks. The Lower Toluene Tanks were constructed and utilized to store toluene for use in the production of TNT and DNT. The tanks were decommissioned in 1945 by pumping out their contents, draining transfer lines, and opening top and bottom flanges for ventilation. NASA removed tank 655 from the Lower Toluene Tank area and reinstalled it within the Plum Brook Reactor Facility. The remaining tank, Tank 645, was left in place. A limited SI was completed in July 2000 with the discovery of low levels of xylene but no evidence of toluene contamination. Consequently, this project was declared NDAI in FUDSMIS on 26 June 2006. In accordance with the regulatory coordination provided in a letter, dated 5 July 2006, this project was closed out in FUDSMIS on 5 October 2006.

s. **G05OH001825 Garage Maintenance Area (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address concerns at the Garage Maintenance Area (GMA). During the period between 1941 and 1945, the GMA was constructed and utilized for the general maintenance and washing of equipment, vehicles, and railcars. Areas of concern at the GMA include the Locomotive Building, Rail Car Wash Area, Former Sellite Area, and Rail Car Unloading Area. NASA presently occupies the Locomotive Building, with the Rail Car Wash Area, Sellite Area, and Rail Car Unloading Area being open fields. A limited SI was completed in July 2000 that recommended additional investigation due to the presence of PCBs, metals, and nitroaromatics at the Rail Car Wash Area and Locomotive Building. The Sellite and Rail Car Unloading Areas were identified and added to this project in October 2008. This project is ongoing.

t. **G05OH001826 Groundwater (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to conduct a site-wide groundwater investigation. Groundwater contamination was detected at PBOW, including the TNT Areas A, B, and C and the Red Water Ponds Areas (West Area and Pentolite Road Area). All other groundwater is being investigated under each of the respective projects. The Proposed Plan was completed in March 2012. This project is ongoing.

u. **G05OH001827 Acid Area No. 2 (HTRW)** – This project was part of the original HTRW project G05OH001823, approved on 20 July 2000. It is being proposed to continue investigation of the Acid Area No. 2. Investigations conducted to date indicate contaminants that exceeded the U.S. Environmental Protection Agency (USEPA) Region 9 Preliminary Remediation Goals (PRGs) in soil and sediment. Any necessary and appropriate Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions will be conducted

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in accordance with applicable laws and regulations to achieve Project Closeout. A Project Summary Sheet is included at Enclosure 9.

v. **G05OH001828 Acid Area No. 3 (HTRW)** – This project was part of the original HTRW project G05OH001823, approved on 20 July 2000. It is being proposed to continue investigation of the Acid Area No. 3. Investigations conducted to date indicate contaminants that exceeded the USEPA Region 9 PRGs in soil and sediment. Any necessary and appropriate CERCLA actions will be conducted in accordance with applicable laws and regulations to achieve Project Closeout. A Project Summary Sheet is included at Enclosure 10.

7. A draft INPR has been provided to the Ohio Environmental Protection Agency (Ohio EPA). The Ohio EPA has no outstanding issue(s) with the recommendations made in this INPR.

8. I request that you review and approve this revised INPR under the DERP-FUDS Program. If you have any questions, please contact Ms. Lisa Humphreys at (304) 399-5953.

10 Enclosures

1. Revised Property Survey Summary Sheet
2. Findings and Determination of Eligibility
3. Inventory Project Report Checklist
4. Executive Summary of PA
5. Project Summary Sheet, G05OH001809
6. Project Summary Sheet, G05OH001811
7. Project Summary Sheet, G05OH001812
8. Revised Project Summary Sheet, G05OH001823
9. Project Summary Sheet, G05OH001827
10. Project Summary Sheet, G05OH001828

  
LUKE T. LEONARD  
Colonel, EN  
Commanding

**REVISED PROPERTY SURVEY SUMMARY SHEET  
FOR  
DERP-FUDS PROPERTY NO. G05OH0018  
FEDERAL FACILITY ID NUMBER OH9799F3641**

**Plum Brook Ordnance Works  
Sandusky, Erie County, Ohio  
June 2013**

**PROPERTY NAME:** Plum Brook Ordnance Works (PBOW). The property was also known as the Plum Brook Depot Activity. The property is currently called Plum Brook Station.

**LOCATION:** The former PBOW consisted of a 9,100-acre property and is located at 6100 Columbus Avenue, Sandusky, Erie County, Ohio. The property is geographically located at North 41°23'06" and West 82°40'03" and U.S. Congressional District 9 and U.S. Environmental Protection Agency (USEPA) Region 5.

**PROPERTY 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 in support of World War II (WWII). Production began on 16 December 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 National Aeronautics and Space Administration [NASA]) began leasing portions of PBOW from the Army. On 15 March 1963, NASA acquired approximately 6,400 acres of PBOW and presently utilizes the site for aerospace research activities. The site has since been renamed Plum Brook Station and is a satellite operation of NASA's John H. Glenn Research Center at Lewis Field, located in Cleveland, Ohio. 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), privately owned, or leased for farmland.

**PROPERTY VISIT:** A site visit was not required to prepare this revised Inventory Project Report (INPR). The initial site visit was conducted by Mr. Robert P. Johannsen, CEORH-ED-D (now CELRH-EC-D) in 8 May 1985. Numerous site visits have been completed since the initial site visit.

**CATEGORY OF HAZARDS:** Hazardous, Toxic, and Radioactive Waste (HTRW) and Military Munitions Response Program (MMRP); no potential for a Building Demolition and Debris Removal (BD/DR), Containerized Hazardous, Toxic, and Radioactive Waste (CON/HTRW), or potentially responsible party (PRP)/HTRW project(s) was identified.

**PROJECT DESCRIPTIONS:** The following is a summary of the project inventory for this property:

**G05OH001803 RI/FS (Low Scope) (HTRW)** – This project was approved in a CEMP-RF memorandum, dated 13 January 1993, to conduct a site-wide low scope Remedial

Investigation/Feasibility Study (RI/FS) as recommended in the 1991 Contamination Evaluation investigation. The RI/FS investigation findings necessitated a revision of the INPR in December 1998 to recommend sixteen new HTRW projects (11 through 26). Areas such as TNT Areas A, B, and C; the Red Water Ponds; the various burning grounds; acids areas; etc., were separated into individual projects for more effective management of the investigations of respective areas of concern. Remedial investigations under HTRW project G05OH001803 effectively ceased on 30 September 1998 and investigations under the new projects commenced after the revised INPR was approved in a CELRD-ET memorandum, dated 20 July 2000. Consequently, this project was declared No DoD Action Indicated (NDAI) in the FUDS Management Information System (FUDSMIS) on 30 September 1998 and closed out on 30 September 2004.

**G05OH001806 ASR Complete, NOFA OEW (MMRP)** – This project was approved in a CEMP-RF memorandum, dated 13 January 1993, to conduct an Archives Search Report (ASR). The ASR, completed by the USACE St. Louis District in December 1993, determined that there was no ordnance and explosive waste (OEW, currently called MEC – Munitions and Explosives of Concern) or chemical warfare materiel (CWM) concerns at PBOW and recommended No Further Action with regards to OEW concerns. Consequently, this project was declared NDAI in FUDSMIS on 10 March 1994 and closed out on 26 October 2009.

**G05OH001809 Site Management (HTRW)** – The FUDSMIS shows this project was approved on 1 December 1994 but no documentation has been located to support this date. Consequently, this revised INPR seeks “after-the-fact” approval of this project which was created in FUDSMIS to fund the development of a site management plan for the property. This project has been declared NDAI and closed out in FUDSMIS.

**G05OH001810 Plum Brook RAB (COMM/REL)** – This is a “pseudo-project,” and as such, does not require a project recommendation or official approval. To date, the Restoration Advisory Board (RAB) continues to meet on a quarterly basis. RAB meetings are typically held on Tuesday nights in the library of the Firelands Community College library, Huron, Ohio. In recent years, the RAB utilized a Technical Assistance for Public Participation (TAPP) contractor for assistance in the review and understanding of the various PBOW project investigations. The RAB, however, has exhausted all funds currently available for TAPP contractor involvement. This project is ongoing.

**G05OH001811 Additional Burning Grounds (HTRW)** – Although FUDSMIS shows this project was approved on 1 March 1999, no documentation has been found to support this date. Consequently, this revised INPR seeks “after-the-fact” approval of this project. This project was recommended to investigate the five burning grounds located at the former PBOW property designated as the Fox Road, Taylor Road, Snake Road, G-8, and the Additional Burning Grounds. The Responsibility Reassessment in 2006-2007 indicated that at least three of these areas were also used by NASA for waste disposal: Taylor Road, Fox Road, and Snake Road. Therefore, NASA assumed responsibility for remediating the aforementioned three areas. Initially, the Additional Burning Grounds was believed to be directly adjacent (west) of the Fox Road Burning Grounds. However, upon further internal review of historical documents and aerial mapping, the Additional Burning Grounds location has been determined to be the same as

the Fox Road Burning Grounds location. Hence, due to NASA's remediation efforts at the Fox Road Burning Grounds, no additional DoD effort will be conducted. A Site Inspection (SI), completed in March 1997, of the G-8 Burning Grounds recommended the installation of one bedrock monitoring well. The SI also recommended no further soil or sediment sampling but indicated the need for statistical evaluation relative to results from other PBOW sites. Due to potentially responsible party concerns, this project was declared NDAI in FUDSMIS on 03 June 2008 and closed out on 19 September 2009. As a result of recent decisions made for site-wide groundwater concerns, the G-8 SI recommendations will be re-evaluated and, if necessary, a new HTRW project will be recommended.

**G05OH001812 Reservoir No. 2 Burning Ground (HTRW)** – According to FUDSMIS, this project was approved on 1 March 1999; however, no documentation was found to support this date. Consequently, this revised INPR seeks “after-the-fact” approval of this project. During operation of the former PBOW, the Reservoir No. 2 Burning Ground was used for destruction of off-specification TNT, acids, solvents, asbestos, and waste oil. A SI, dated December 1997, indicated semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), nitroaromatics, and metals results were above risk-based concentrations (RBCs). A RI began in 2004 resulting in a Site Characterization Report issued in January 2006. Human health and ecological risk assessments were completed in February 2010 with observed data gaps, resulting in further delineation sampling in October 2010 and the final FS submitted in September 2011. A Proposed Plan was finalized in August 2012. This project is ongoing.

**G05OH001813 TNT Area A (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address soils and/or sediments contamination at the TNT Area A. The groundwater component is being investigated under HTRW project G05OH001826. TNT Area A was used for the manufacture of TNT, DNT, and pentolite between 1941 and 1945. A Focused Feasibility Study (FFS) was completed in August 2003. The Proposed Plan and Decision Document were completed in November 2009 and June 2011 respectively. This project is ongoing.

**G05OH001814 TNT Area B (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address soils and/or sediments contamination at the TNT Area B. The groundwater component is being investigated under HTRW project G05OH001826. Similar to TNT Area A, TNT Area B was also used for the manufacture of TNT, DNT, and pentolite between 1941 and 1945. A RI of surface and subsurface soil was completed in October-November 1998. An Action Memorandum for a Non-time Critical Interim Removal Action for excavation and disposal of contaminated soils was presented to the RAB and the public in March 2002 and finalized June 2003. The soil removal action began in June 2002 and was completed in December 2006. The Proposed Plan and Decision Document for No Further Action were completed, with an RI/FS phase completion in September 2009. Consequently, this project was declared NDAI in FUDSMIS on 23 September 2009 and closed out on 31 March 2010.

**G05OH001815 TNT Area C (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address soils and/or sediments contamination at the TNT Area C. The groundwater component is being investigated under HTRW project

G05OH001826. Similar to TNT Areas A and B, TNT Area C was used for the manufacture of TNT, DNT, and pentolite. A FFS for soils and sediment was completed in August 2003. The Proposed Plan and Decision Document were completed in November 2009 and June 2011 respectively. Remedial Design was completed in January 2010. This project is ongoing.

**G05OH001816 TNT Rail Car Loading (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address potential contamination at the TNT Rail Car Loading Area. It was assumed that TNT was loaded onto rail cars for shipment to on-site storage areas as well as from the site. The exact locations of these areas were unknown; however, remnants of blast-protection walls at TNT Area B suggested the possible location of one area that was referred to as TNT Rail Car Loading Area 1017. A limited SI was completed in July 2000 and determined that there had been no significant environmental damage and recommended that a No Further Action Decision Document be prepared. Consequently, this project was declared NDAI in FUDSMIS on 31 July 2000 and closed out 30 September 2002.

**G05OH001817 Wastewater Treatment Plants No. 1 and 3 (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address potential contamination at the Wastewater Treatment Plant (WWTP) No. 1 and No. 3. Process wastewater (“red water”) from the TNT production areas 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, West Area Red Water Ponds A-2, and the Pentolite Road Red Water Pond. A limited SI was completed in July 2000 and recommended further remedial investigation. This project is ongoing.

**G05OH001818 Wastewater Treatment Plant No. 2 (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address potential contamination at the WWTP 2 which received TNT wastewater from TNT Area B; operations at WWTP 2 were similar to those at WWTP 3. A SI completed in December 1997 indicated that surface and subsurface soil contained polyaromatic hydrocarbons (PAHs), PCBs, and metals at concentrations that exceeded RBC screening levels. This project is ongoing.

**G05OH001819 Pentolite Area Waste lagoons (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address concerns at the Pentolite Area Waste Lagoons. Between 1941 and 1945, wastewater from the production of pentolite was disposed of into two wastewater lagoons or settling basins. These 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, completed in September 1999, recommended no further action since there was no indication of DoD contamination. Consequently, this project was declared NDAI in FUDSMIS on 31 March 2001 and closed out 30 September 2002.

**G05OH001820 Red Water Ponds (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address soils and/or sediments contamination at the Red Water Ponds. The groundwater component is being investigated under HTRW project G05OH001826. TNT process wastewater, referred to as “red water”, was discharged into three settling ponds, the West Area Red Water Ponds (WARWP, two ponds) and the Pentolite Road Red Water Pond (PRRWP, one pond). A 1997 focused RI determined that explosives were

present in soils. A FS for soils at the Red Water Ponds Areas was completed in December 2002. Investigations found no action was necessary relative to soils at the WARWP. An Action Memorandum for a Non-time Critical Interim Removal Action for soils was presented to the RAB and the public and then finalized in June 2003. The Removal Action was completed in December 2008. Following the Non-time Critical Action, the project returned to the remedial process. This project is ongoing.

**G05OH001821 Ash Pits No. 1 and 3 (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address concerns at the Ash Pits No. 1 and No. 3. Between 1941 and 1945, three coal-burning power plants were constructed and utilized in support of the former PBOW activities. Ash pits served as disposal areas for ash that was generated from the power plants. A limited SI was conducted in July 2000. The SI concluded that based upon metal exceedances in the soil and sediment from Ash Pit 1 and in the sediment from Ash Pit 3, further investigation was warranted at both areas. This project is ongoing.

**G05OH001822 Powerhouse No. 2 Ash Pits (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address concerns at the Powerhouse No. 2 Ash Pits. Between 1941 and 1945 the coal-burning Powerhouse No. 2 was constructed and utilized in support of the TNT production activities at PBOW. Ash that was generated from the plant was disposed in an adjacent pit. An SI of this ash pit was completed December 1997 that recommended additional investigation for SVOCs and metals in surface and metals in subsurface soils. This project is ongoing.

**G05OH001823 Acid Area (AA) No. 1 (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address Acid Areas (AAs) Numbers 1, 2, and 3. These three acid areas were constructed and utilized to manufacture nitric and sulfuric acids for use in TNT and pentolite manufacture. A SI of the acids areas was completed in December 1998 that recommended additional investigation due to the presence of SVOCs and PCBs in the surface soil. PCB and SVOC contamination were sampled for and found in the process systems (TNT Residual Acid Storage areas) as well as the maintenance facility buildings and the power substation that were located at the AA project locations. Also, based on discussions with personnel at the U.S. Army Engineer Research and Development Center (ERDC), it was common to find PCBs in the soil from where the tanks were painted. Due to the non-contiguous locations and the difference in schedules for each of the respective acid areas, this INPR revision recommends dividing the existing HTRW project G05OH001823 into three separate HTRW projects (G05OH001823 – Acid Area No. 1, G05OH001827 – Acid Area No. 2, and G05OH001828 – Acid Area No. 3). This project is ongoing.

**G05OH001824 Lower Toluene Tanks (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address concerns at the Lower Toluene Tanks. The Lower Toluene Tanks were constructed and utilized to store toluene for use in the production of TNT and DNT. The tanks were decommissioned in 1945 by pumping out their contents, draining transfer lines, and opening top and bottom flanges for ventilation. NASA removed tank 655 from the Lower Toluene Tank area and reinstalled it within the Plum Brook Reactor Facility. The remaining tank, Tank 645, was left in place. A limited SI was completed in July 2000 with the discovery of low levels of xylene but no evidence of toluene contamination. Consequently,

this project was declared NDAI in FUDSMIS on 26 June 2006. In accordance with the regulatory coordination provided in a letter, dated 5 July 2006, this project was closed out in FUDSMIS on 5 October 2006.

**G05OH001825 Garage Maintenance Area (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address concerns at the Garage Maintenance Area (GMA). During the period between 1941 and 1945, the GMA was constructed and utilized for the general maintenance and washing of equipment, vehicles, and railcars. Areas of concern at the GMA include the Locomotive Building, Rail Car Wash Area, Former Sellite Area, and Rail Car Unloading Area. NASA presently occupies the Locomotive Building, with the Rail Car Wash Area, Sellite Area, and Rail Car Unloading Area being open fields. A limited SI was completed in July 2000 that recommended additional investigation due to the presence of PCBs, metals, and nitroaromatics at the Rail Car Wash Area and Locomotive Building. The Sellite and Rail Car Unloading Areas were identified and added to this project in October 2008. This project is ongoing.

**G05OH001826 Groundwater (HTRW)** – This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to conduct a site-wide groundwater investigation. Groundwater contamination was detected at PBOW, including the TNT Areas A, B, and C and the Red Water Ponds Areas (West Area and Pentolite Road Area). All other groundwater is being investigated under each of the respective projects. The Proposed Plan was completed in March 2012. This project is ongoing.

**G05OH001827 Acid Area No. 2 (HTRW)** – This project was part of the original HTRW project G05OH001823, approved on 20 July 2000. It is being proposed to continue investigation of the Acid Area No. 2. Investigations conducted to date indicate contaminants that exceeded the USEPA Region 9 Preliminary Remediation Goals (PRGs) in soil and sediment. Any necessary and appropriate Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions will be conducted in accordance with applicable laws and regulations to achieve Project Closeout.

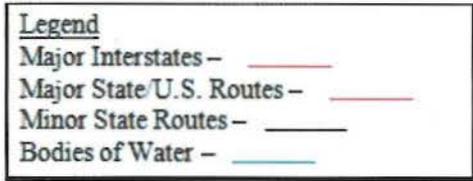
**G05OH001828 Acid Area No. 3 (HTRW)** – This project was part of the original HTRW project G05OH001823, approved on 20 July 2000. It is being proposed to continue investigation of the Acid Area No. 3. Investigations conducted to date indicate contaminants that exceeded the USEPA Region 9 PRGs in soil and sediment. Any necessary and appropriate CERCLA actions will be conducted in accordance with applicable laws and regulations to achieve Project Closeout.

**AVAILABLE STUDIES AND REPORTS:** Numerous studies and reports have been generated to date. These reports are available from the U.S. Army Corps of Engineers, Huntington District.

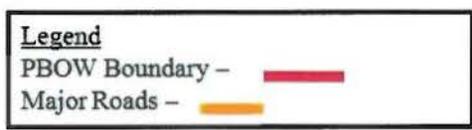
**POINTS OF CONTACT:** Louisville District, Mr. David Dierken, CELRL-PM-M-E, (502) 315-6498; Mr. Quyet La, CELRL-ED-E, (502) 315-6892; and Ms. Janice E. Lengel, CELRL-OC, (502) 315-6641. Huntington District, Mr. Richard L. Meadows, CELRH-PM-PP-P, (304) 399-5388, and INPR Preparer, Ms. Lisa A. Humphreys, CELRH-EC-CE, (304) 399-5953.

**PROPERTY POINT-OF-CONTACT/STAKEHOLDERS:** NASA Plum Brook Station, Mr. Robert F. Lallier, Jr, Environmental Engineer, (419) 621-3234.

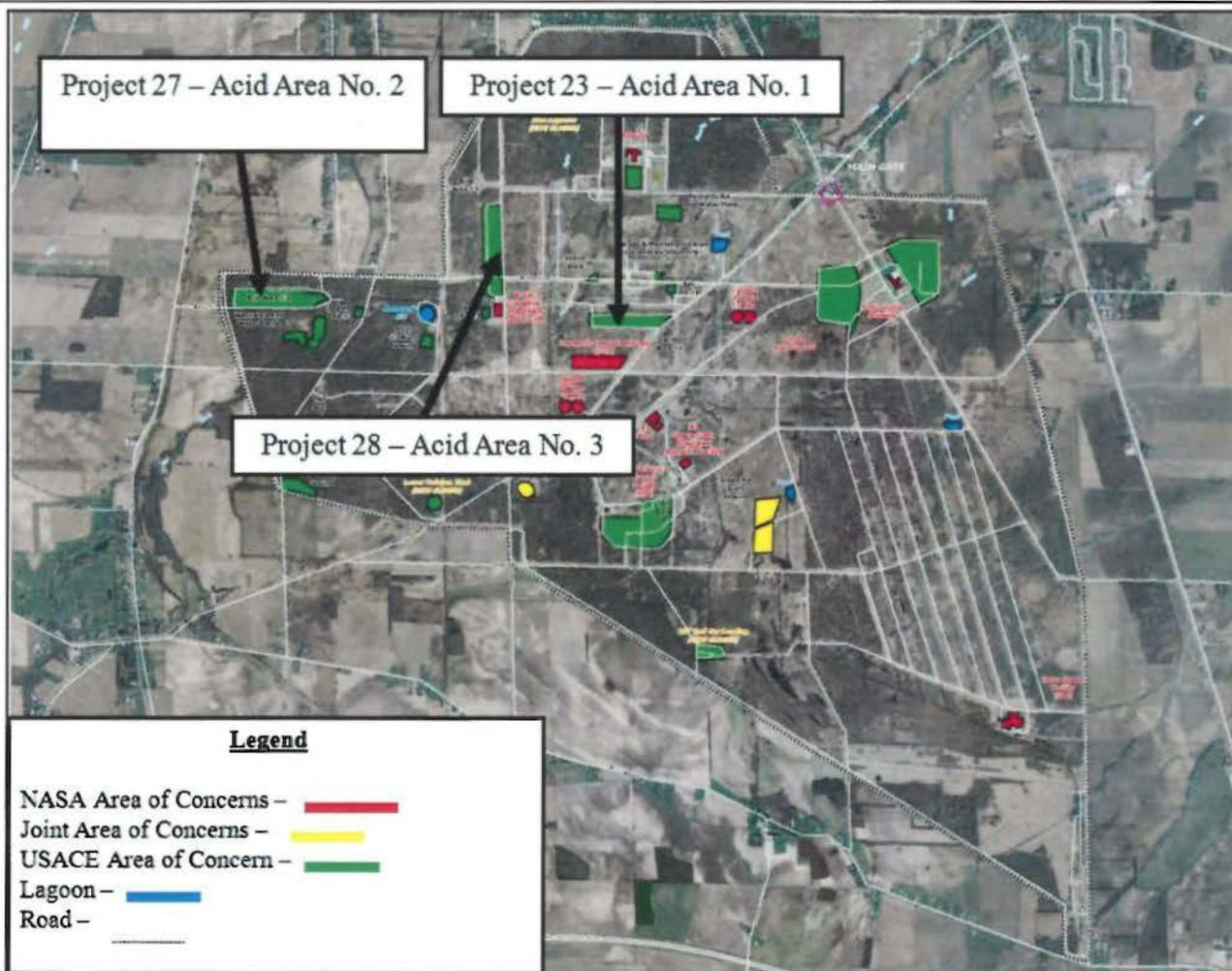
**LEAD REGULATOR:** Mr. Paul Jayko, Division of Emergency and Remedial Response, Ohio Environmental Protection Agency, (419) 373-3038.



**FIGURE 1**  
**GENERAL PROPERTY LOCATION MAP**  
**PLUM BROOK ORDNANCE WORKS**  
**SANDUSKY, ERIE COUNTY, OHIO**  
**41° 23' 06" NORTH, 82° 40' 03" WEST**

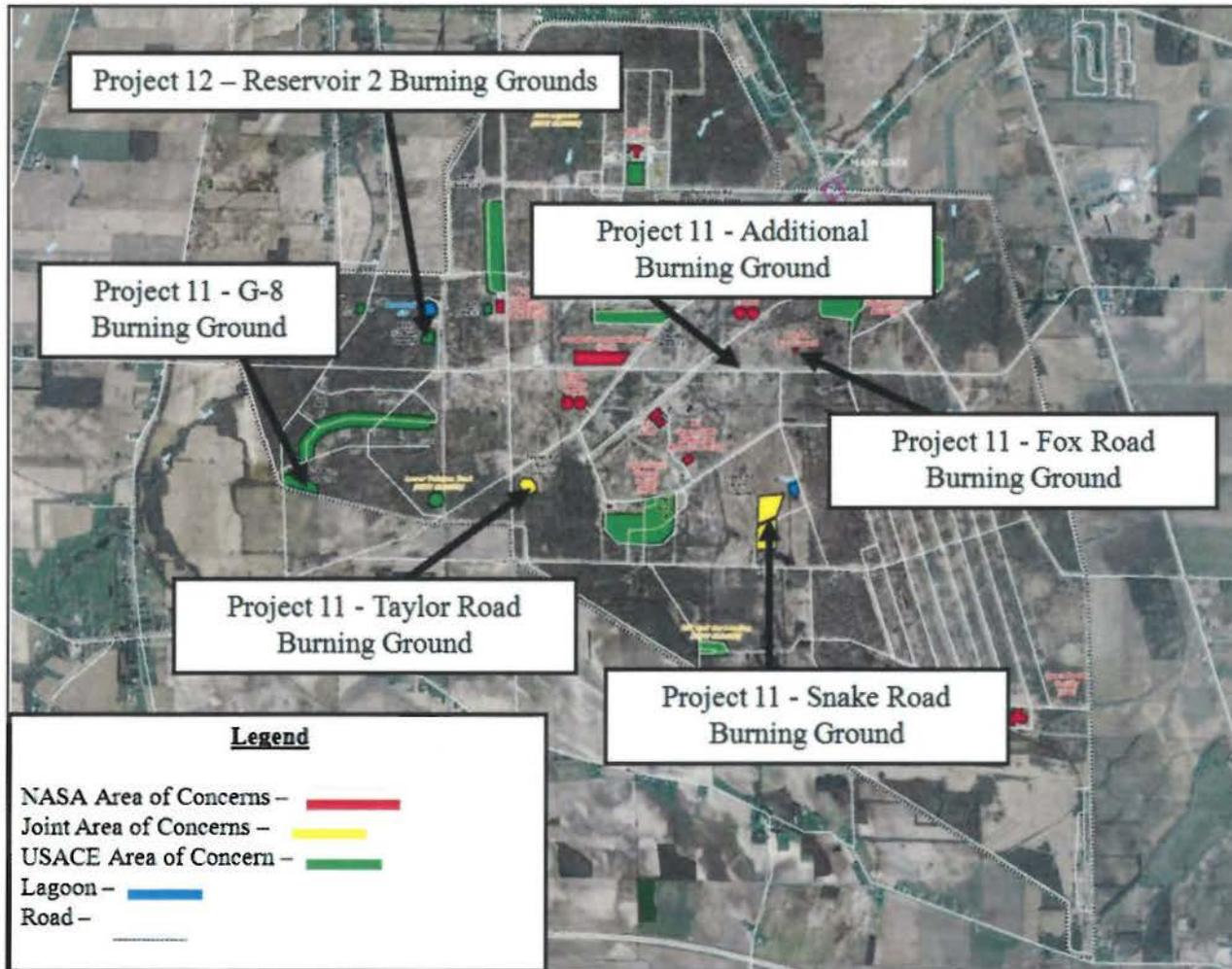


**FIGURE 2**  
 PROPERTY LOCATION MAP  
 PLUM BROOK ORDNANCE WORKS  
 SANDUSKY, ERIE COUNTY, OHIO  
 41° 23' 06" NORTH, 82° 40' 03" WEST

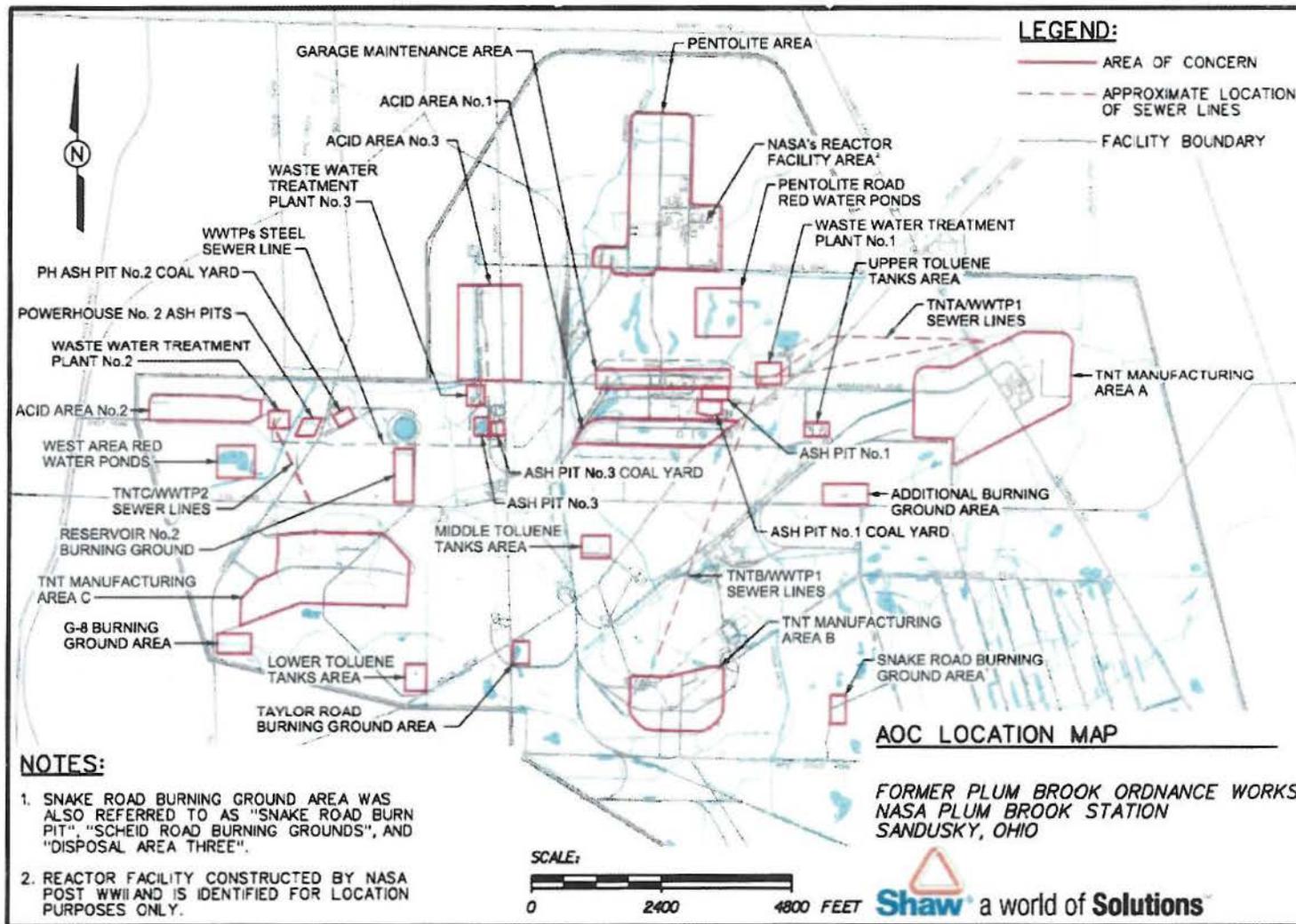


**FIGURE 4**  
 PROPERTY MAP WITH  
 PROPOSED PROJECT LOCATION  
 PLUM BROOK ORDNANCE WORKS  
 SANDUSKY, ERIE COUNTY, OHIO  
 41° 23' 06" NORTH, 82° 40' 03" WEST





**FIGURE 3**  
 PROPERTY MAP WITH  
 PROPOSED PROJECT LOCATION  
 PLUM BROOK ORDNANCE WORKS  
 SANDUSKY, ERIE COUNTY, OHIO  
 41° 23' 06" NORTH, 82° 40' 03" WEST



**FIGURE 5**  
**SITE MAP**  
 PLUM BROOK ORDNANCE WORKS  
 SANDUSKY, ERIE COUNTY, OHIO  
 41° 23' 06" NORTH, 82° 40' 03" WEST

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

**PLUM BROOK ORD WORKS**

Sandusky, Erie County, Ohio

Site No. G05OH001800

**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.

9/20/99  
Date

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

**Worksheet B-3. Inventory Project Report (INPR) Checklist**  
 (Use space at bottom of this worksheet for continuation)

<b>Checklist Preparer:</b>		Date: 28 June 2013	
Name: Richard Meadows		Title: Project Manager	
District: Huntington		Phone Number: 304-399-5388	
Email address: Richard.L.Meadows@usace.army.mil			
<b>Property information:</b>			
Property Name: Plum Brook Ordnance Works (PBOW)		Property Number: G05OH0018	
Previous Names, if any: Plum Brook Depot Activity			
Former Service:			
Property Location (Section, Township, Range): Not Applicable			
Street: 6100 Columbus Ave.			
City: Sandusky		County: Erie	State: Ohio
Latitude (D/M/S): 41° 23' 06" North		Longitude (D/M/S): 82° 40' 03" West	
Current Use (residential, commercial, etc.): National Aeronautics and Space Administration (NASA) Research Facility & Wildlife Research, residential, and farmland.			
<b>Primary Property Owner Information</b> (address multiple owners in Comments):			
Name: NASA (Responsible for operation and maintenance of property for General Service Administration)			
Address (if other than above):			
Street:			
City:			
Phone Number: (419) 621-3234		County: Erie	State: Ohio

Indicate the status of the following checklist items in determining the completeness of the INPR. Provide a narrative in the comments section below to explain, and keyed to, the shades boxes:

		Yes	<del>?</del>	<del>N</del>
<b>Property Document Search:</b>				
<input checked="" type="checkbox"/>	Were the following records available and used in the preparation of the INPR?			
1	Archive records	X		
2	Site maps, including facility as-built drawings	X		
3	Aerial or ground photographs	X		
4	Prior studies, documents, reports, property contamination records, or public/private sampling data	X		
5	Compliance orders issued to current or past owners/operators		X	
6	Real estate records, deeds, or property transfer records	X		
7	Local historical societies and public libraries	X		
8	EPA/State environmental records or reports		X	
9	EOD incident reports		X	
10	Other documentation		X	
<b>Property Visit</b>				
<input checked="" type="checkbox"/>	Indicate whether the following have been contacted and interviewed to obtain information.			
11	Current landowner(s)		X	
12	Neighbors		X	

Indicate the status of the following checklist items in determining the completeness of the INPR. Provide a narrative in the comments section below to explain, and keyed to, the shades boxes:

		Yes	No	NA
13	Previous landowner(s)		X	
14	Prior employee(s)		X	
15	Federal agencies, including regulatory agencies		X	
16	State agencies, including regulatory agencies		X	
17	Local agencies, including regulatory and law enforcement agencies		X	
18	Other available sources		X	
19	Was access to the property possible (right of entry provided by landowner)?	X		
20	Was the property physically visited?		X	
21	Was access sufficient to allow for a thorough property inspection?		X	
22	Was access sufficient to identify potential hazards?		X	
23	Did regulatory agencies accompany USACE on the property visit?		X	
24	Did the landowner accompany USACE on the property visit?		X	
25	Was there evidence of a release of hazardous material or use/disposal of military munitions during DoD control?		X	
26	Was there evidence of a release of potential DoD hazardous material into a public or private drinking water supply? <sup>1</sup>		X	
27	Is there evidence of a release into a public or private drinking water supply due to deterioration of the system through ordinary use? <sup>1</sup>		X	
28	Is there evidence of a release from products that are part of the structure of, and result in exposure within, residential buildings or businesses or community structures? <sup>2</sup>		X	
29	Is some other program actively involved with the property (i.e., another Federal, state, or tribal program)?		X	
30	Is there evidence that activities by non-DoD parties at the property may be the source of potential contamination?		X	
31	Was information on hazards found at similar types of FUDS properties considered in identifying potential hazards at this property?	X		
32	Were site maps compared to actual conditions during the site visit?		X	
33	Were photographs taken?		X	
34	Were property owners advised to contact USACE if evidence of potential hazards is found later?		X	
35	Was a trip report of the property visit prepared?		X	
<b>Property Eligibility Determination (refer to Chapter 3):</b>				
36	Is the property Categorically Excluded?		X	
37	Are there release, hold harmless, "as-is", or indemnification clauses in deeds or property transfer documents that limit DoD liability?		X	
38	Is there evidence of this property being a Third Party Site?		X	
39	Is the property eligible under FUDS?	X		

<sup>1</sup> This can be determined by reviewing public water supply sampling data. Provide discussion of how it was determined to be release due to DoD activities rather than by current or past owners/operators.

<sup>2</sup> This question is from the EPA Pre-CERCLIS Screening Assessment Checklist/Decision Form, EPA-540-F-98-039 "Improving Site Assessment: Pre-CERCLIS Screening Assessments."

Indicate the status of the following checklist items in determining the completeness of the INPR. Provide a narrative in the comments section below to explain, and keyed to, the shades boxes:

		Yes	No	NA
40	If necessary, has a " <i>Categorical Exclusion or Ineligible Property</i> " worksheet been prepared			X
<b>FUDS Property Screening:</b>				
41	Was a CERCLA Preliminary Assessment completed?	X		
42	Was a RAC Worksheet prepared for the property?	X		
<b>Property Eligibility Determination (refer to Chapter 3):</b>				
43	Have all typical hazards been investigated for possible occurrence at this type of property?	X		
44	Were hazards identified?	X		
45	Are identified hazards of DoD Origin?	X		
46	If identified hazards were of non-DoD origin, has the lead regulatory agency been informed? (Provide name, phone number, date)			X
47	Is the current owner under a RCRA or CERCLA clean-up order?		X	
48	Has the "right of first refusal" been exercised by an adjacent DoD installation?		X	
49	Is there evidence of beneficial use?		X	
50	Are there other policy considerations against recommending a project?		X	
51	Are eligible FUDS projects recommended? (If yes, identify projects below)	X		
<b>INPR Preparation and Review:</b>				
52	Is the INPR prepared consistent with INPR Content Matrix (Table B-1)?	X		
53	Is the INPR Property Survey Summary Sheet consistent with Table B-2?	X		
54	Is the Project Summary Sheet(s) consistent with Table B-3?	X		
55	If appropriate, has a " <i>BD/DR Project Summary Sheet Checklist</i> " been prepared? (See Worksheet B-2)			X
56	If the INPR recommends a PRP/HTRW project, has the PRP District reviewed the INPR? (See Figure B-1)			X
57	If the INPR recommends a PRP/HTRW project, has the HTRW Center of Expertise reviewed the INPR? (See Figure B-1)			X
58	If the INPR recommends a MMRP or PRP/MMRP project, has the MM Center of Expertise reviewed the INPR? (See Figure B-1)			X
59	Was the draft INPR coordinated with Office of Counsel and Real Estate?	X		
60	Was the draft INPR shared with the Lead Regulatory Agency after internal USACE review?	X		

**Narrative comments to explain above notations:** (Key your comments to the checklist item number)

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8. No U.S. Environmental Protection Agency (USEPA)/State Environmental Records are available.

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9. No Explosive Ordnance Disposal (EOD) reports are available.

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12 and 13. None of the original property owners or neighbors were located for interview as part of this INPR revision.

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11-17, 20-24, 32-35. The following were not contacted or interviewed to obtain information for this INPR revision as it is administrative, after-the-fact to add projects accidentally omitted from the December 1998 INPR and to split one project with three distinct areas of concern into three separate projects for project management and execution efficiency.

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25. Numerous occurrences associated with contamination have been identified for this property and are further identified in the Property Survey Summary Sheet. Some areas possess co-mingled contamination where NASA has been identified as a Potential Responsible Party (PRP).

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42. A screening RAC is no longer required. The Munitions Response Site Prioritization Protocol (MRSPP) has replaced the RAC and the MRSPP for MMRP project G05001806 is No Known or Suspected Explosive Hazard.

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44 and 45. Hazards have been identified and projects have been recommended or are being recommended in this INPR. See the Property Survey Summary Sheet for more detail.

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51. **G05OH001809 Site Management (HTRW)** – The FUDS Management Information System (FUDSMIS) shows this project was approved on 1 December 1994 but no documentation has been located to support this date. Consequently, this revised INPR seeks “after-the-fact” approval of this project which was created in FUDSMIS to fund the development of a site management plan for the property. This project has been declared No DoD Action Indicated (NDAI) and closed out in FUDSMIS.

**G05OH001811 Additional Burning Grounds (HTRW)** – Although FUDSMIS shows this project was approved on 1 March 1999, no documentation has been found to support this date. Consequently, this revised INPR seeks “after-the-fact” approval of this project. This project was recommended to investigate the five burning grounds located at the former PBOW property designated as the Fox Road, Taylor Road, Snake Road, G-8, and the Additional Burning Grounds. The Responsibility Reassessment in 2006-2007 indicated that at least three of these areas were also used by NASA for waste disposal: Taylor Road, Fox Road, and Snake Road. Therefore, NASA assumed responsibility for remediating the aforementioned three areas. Initially, the Additional Burning Grounds was believed to be directly adjacent (west) of the Fox Road Burning Grounds. However, upon further internal review of historical documents and aerial mapping, the Additional Burning Grounds location has been determined to be the same as the Fox Road Burning Grounds location. Hence, due to NASA’s remediation efforts at the Fox Road Burning Grounds, no additional DoD effort will be conducted. A Site Inspection (SI), completed in March 1997, of the G-8 Burning Grounds recommended the installation of one bedrock monitoring well. The SI also recommended no further soil or sediment sampling but indicated the need for statistical evaluation relative to results from other PBOW sites. Due to potentially responsible party concerns, this project was declared NDAI in FUDSMIS on 03 June 2008 and closed out on 19 September 2009. As a result of recent decisions made for site-wide groundwater concerns, the G-8 SI recommendations will be re-evaluated and, if necessary, a new HTRW project will be recommended.

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**Narrative comments to explain above notations: (Key your comments to the checklist item number)**

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**51. G05OH001812 Reservoir No. 2 Burning Ground (HTRW)** – According to FUDSMIS, this project was approved on 1 March 1999; however, no documentation was found to support this date. Consequently, this revised INPR seeks “after-the-fact” approval of this project. During operation of the former PBOW, the Reservoir No. 2 Burning Ground was used for destruction of off-specification TNT, acids, solvents, asbestos, and waste oil. A SI, dated December 1997, indicated semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), nitroaromatics, and metals results were above risk-based concentrations (RBCs). A RI began in 2004 resulting in a Site Characterization Report issued in January 2006. Human health and ecological risk assessments were completed in February 2010 with observed data gaps, resulting in further delineation sampling in October 2010 and the final FS submitted in September 2011. A Proposed Plan was finalized in August 2012. This project is ongoing.

**G05OH001827 Acid Area No. 2 (HTRW)** – This project was part of the original HTRW project G05OH001823, approved on 20 July 2000. It is being proposed to continue investigation of the Acid Area No. 2. Investigations conducted to date indicate contaminants that exceeded the USEPA Region 9 Preliminary Remediation Goals (PRGs) in soil and sediment. Any necessary and appropriate Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions will be conducted in accordance with applicable laws and regulations to achieve Project Closeout.

**G05OH001828 Acid Area No. 3 (HTRW)** – This project was part of the original HTRW project G05OH001823, approved on 20 July 2000. It is being proposed to continue investigation of the Acid Area No. 3. Investigations conducted to date indicate contaminants that exceeded the USEPA Region 9 PRGs in soil and sediment. Any necessary and appropriate CERCLA actions will be conducted in accordance with applicable laws and regulations to achieve Project Closeout.

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**EXECUTIVE SUMMARY OF PRELIMINARY ASSESSMENT  
FOR  
DERP-FUDS PROPERTY NO. G05OH0018  
FEDERAL FACILITY ID NUMBER OH9799F3641**

**Plum Brook Ordnance Works  
Sandusky, Erie County, Ohio  
June 1991**

This report documents the findings, conclusions, and recommendations developed during a preliminary assessment of potential sources of environmental contamination at Plum Brook Station. Plum Brook Station is a Federal government facility administered and operated by the National Aeronautics and Space Administration (NASA). Plum Brook Station occupies 6,400 acres in Erie County, Ohio, near the city of Sandusky.

Plum Brook Station was originally developed as the Plum Brook Ordnance Works by the U.S. Army in 1941. Activities conducted on the site during the 1940s were the manufacture of trinitrotoluene, dinitrotoluene, and pentolite for World War II. NASA's predecessor organization, National Advisory Council for Aeronautics (NACA), acquired the site in the 1950s. Since the late 1950s, the site has been used for research and development of space propulsion and power systems.

The preliminary assessment was conducted according to United States Environmental Protection Agency (USEPA) regulations and guidance promulgated under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)/Superfund Amendments and Reauthorization Act (SARA) authority, to determine if there had been any releases of hazardous substances from the facility that posed a potential threat to human health and the environment. To perform the assessment, documentation from NASA and a variety of local, State, and Federal government agencies was compiled and reviewed to obtain all available information pertaining to hazardous substance management at the facility, local and regional environmental conditions, demographics, and indications of hazardous substance contamination in and around the facility. Long-time facility employees were also interviewed regarding their personal recollections of hazardous substance management practices and historical releases.

In conducting the preliminary assessment, thirty-two potential sources of environmental contamination were identified and organized into fourteen operable units. Ten potential sources, comprising four operable units, were found to be the sites of documented/verifiable releases to the environment.

The fourteen operable units were evaluated using an abbreviated version of the Hazard Ranking System (HRS) provided by the U.S. Environmental Protection Agency Region V. None of the operable units received scores above 28.5, using this system.

The fourteen operable units were assigned low, medium, and high priorities for further investigation. Only Operable Unit 2, Red Water Ponds, was assigned a high priority.

**PROJECT SUMMARY SHEET**  
for  
**DERP-FUDS HTRW PROJECT NUMBER G05OH001809**  
**FEDERAL FACILITY ID NUMBER OH9799F3641**  
**SITE MANAGEMENT**

**Plum Brook Ordnance Works**  
**Sandusky, Erie County, Ohio**  
**June 2013**

**PROJECT DESCRIPTION:** The Formerly Used Defense Sites Management Information System (FUDSMIS) shows this project was approved on 1 December 1994 but no documentation has been located supporting this approval. Consequently, this revised Inventory Project Report (INPR) seeks “after-the-fact” approval of this project which was created in FUDSMIS to fund the development of a site management plan for the property.

**PROJECT ELIGIBILITY:** The former Plum Brook Ordnance Works (PBOW) was activated in 1938 to manufacture 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite in support of World War II. Production began on 16 December 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 National Aeronautics and Space Administration [NASA]) began leasing portions of PBOW from the Army. On 15 March 1963, NASA acquired approximately 6,400 acres of PBOW and presently utilizes the site for aerospace research activities.

A site management plan was developed in 1995 to facilitate the execution of the restoration activities on the Plum Brook Ordnance Works. Once completed, it was determined that funding was no longer needed and this project was declared No Department of Defense Action Indicated (NDAI) and closed out in FUDSMIS.

**POLICY CONSIDERATIONS:** There are no Department of Defense (DoD) policies which prohibit this project.

**PROPOSED PROJECT:** HTRW

**PROPOSED ACTIVITIES:** None.

**POINTS OF CONTACT:** Louisville District, Mr. David Dierken, CELRL-PM-M-E, (502) 315-6498; Mr. Quyet La, CELRL-ED-E, (502) 315-6892; and Ms. Janice E. Lengel, CELRL-OC, (502) 315-6641. Huntington District, Mr. Richard L. Meadows, CELRH-PM-PP-P, (304) 399-5388, and INPR Preparer, Ms. Lisa A. Humphreys, CELRH-EC-CE, (304) 399-5953.

**PROPERTY POINT-OF-CONTACT/STAKEHOLDERS:** NASA Plum Brook Station, Mr. Robert F. Lallier, Jr, Environmental Engineer, (419) 621-3234.

**LEAD REGULATOR:** Mr. Paul Jayko, Division of Emergency and Remedial Response, Ohio Environmental Protection Agency, (419) 373-3038.

**PROJECT SUMMARY SHEET  
FOR  
DERP-FUDS HTRW PROJECT NO. G05OH001811  
FEDERAL FACILITY ID NUMBER OH9799F3641  
ADDITIONAL BURNING GROUNDS**

**Plum Brook Ordnance Works  
Sandusky, Erie County, Ohio  
June 2013**

**PROJECT DESCRIPTION:** According to the Formerly Used Defense Sites Management Information System (FUDSMIS), this project was approved on 1 March 1999; however, no documentation was found to support this date. Consequently, this revised Inventory Project Report (INPR) seeks “after-the-fact” approval of this project. This project was recommended to investigate the five burning grounds located at the former Plum Brook Ordnance Works (PBOW) property designated as the Fox Road, Taylor Road, Snake Road, G-8, and the Additional Burning Grounds.

A Site Inspection (SI), completed in March 1997, of the G-8 Burning Grounds recommended the installation of one bedrock monitoring well. The SI also recommended no further soil or sediment sampling but indicated the need for statistical evaluation relative to results from other PBOW sites.

**PROJECT ELIGIBILITY:** The former Plum Brook Ordnance Works (PBOW) was activated in 1938 to manufacture 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite in support of World War II. Production began on 16 December 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 National Aeronautics and Space Administration [NASA]) began leasing portions of PBOW from the Army. On 15 March 1963, NASA acquired approximately 6,400 acres of PBOW and presently utilizes the site for aerospace research activities.

During operation of the PBOW facility, five burning grounds (designated as Fox Road, Taylor Road, Snake Road, G-8, and the Additional Burning Grounds) were used for destruction of off-specification TNT, acids, solvents, asbestos, and waste oil.

**POLICY CONSIDERATIONS:** There is no Department of Defense (DoD) policy that prohibits this project’s proposal.

**PROPOSED PROJECT:** Hazardous, Toxic and Radioactive Waste (HTRW)

**PROPOSED ACTIVITIES:** None.

The Responsibility Reassessment in 2006-2007 indicated that at least three of these areas were also used by NASA for waste disposal: Taylor Road, Fox Road, and Snake Road. Therefore, NASA assumed responsibility for remediating the aforementioned three areas.

Initially, the Additional Burning Grounds was believed to be directly adjacent (west) of the Fox Road Burning Grounds. However, upon further internal review of historical documents and aerial mapping, the Additional Burning Grounds location has been determined to be the same as the Fox Road Burning Grounds location. Hence, due to NASA's remediation efforts at the Fox Road Burning Grounds, no additional DoD effort will be conducted at the Additional Burning Grounds Area.

As a result of recent decisions made for site-wide groundwater concerns, the G-8 SI recommendations will be re-evaluated and, if necessary, a new HTRW or Potentially Responsible Party (PRP)/HTRW project will be recommended as appropriate.

**POINTS OF CONTACT:** Louisville District, Mr. David Dierken, CELRL-PM-M-E, (502) 315-6498; Mr. Quyet La, CELRL-ED-E, (502) 315-6892; and Ms. Janice E. Lengel, CELRL-OC, (502) 315-6641. Huntington District, Mr. Richard L. Meadows, CELRH-PM-PP-P, (304) 399-5388, and INPR, Preparer Ms. Lisa A. Humphreys, CELRH-EC-CE, (304) 399-5953.

**PROPERTY POINT-OF-CONTACT/STAKEHOLDERS:** NASA Plum Brook Station, Mr. Robert F. Lallier, Jr, Environmental Engineer, (419) 621-3234.

**LEAD REGULATOR:** Mr. Paul Jayko, Division of Emergency and Remedial Response, Ohio Environmental Protection Agency, (419) 373-3038.

**PROJECT SUMMARY SHEET  
FOR  
DERP-FUDS HTRW PROJECT NO. G05OH001812  
FEDERAL FACILITY ID NUMBER OH9799F3641  
RESERVOIR 2 BURNING GROUND**

**Plum Brook Ordnance Works  
Sandusky, Erie County, Ohio  
June 2013**

**PROJECT DESCRIPTION:** According to the Formerly Used Defense Sites Management Information System (FUDSMIS), this project was approved on 1 March 1999; however, no documentation was found to support this date. Consequently, this revised Inventory Project Report (INPR) seeks “after-the-fact” approval of this project. This project was recommended to address concerns of contamination associated with the usage of the Reservoir No. 2 Burning Ground during its operation for destruction of off-specification 2,4,6-trinitrotoluene (TNT), acids, solvents, asbestos, and waste oil.

**PROJECT ELIGIBILITY:** The former Plum Brook Ordnance Works (PBOW) was activated in 1938 to manufacture TNT, dinitrotoluene (DNT), and pentolite in support of World War II. Production began on 16 December 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 National Aeronautics and Space Administration [NASA]) began leasing portions of PBOW from the Army. On 15 March 1963, NASA acquired approximately 6,400 acres of PBOW and presently utilizes the site for aerospace research activities. During operation of the PBOW facility, historical evidence shows that burning grounds were used for destruction of off-specification TNT, explosives, acids, solvents, asbestos, and waste oil.

**POLICY CONSIDERATIONS:** There is no Department of Defense (DoD) policy that prohibits this project’s proposal.

**PROPOSED PROJECT:** Hazardous, Toxic and Radioactive Waste (HTRW)

**PROPOSED ACTIVITIES:** A Site Inspection (SI) was completed in December 1997 indicating that semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), nitroaromatics, and metals were above risk-based concentrations (RBCs). A Remedial Investigation (RI) began in 2004 with the Site Characterization Report issued in January 2006. An Engineering Evaluation and Cost Analysis (EE/CA) was performed and recommended an interim soil removal action. During review by Environmental and Munitions Center of Expertise (EM CX), comments were raised concerning the correct action path. After team discussion, it was determined that the EE/CA would not be completed but rather the project would return to the remedial process to the risk assessment and feasibility study phase of the RI/ Feasibility Study (FS). Human health and ecological risk assessments were completed in February 2010 with observed data gaps, resulting in further delineation sampling in October 2010 and the final FS submitted in September 2011. Contaminants of concerns (COCs) are PCBs, nitroaromatics,

lead and polychlorinated dibenzodioxins/furans (TCDD TEQ). The Proposed Plan was finalized in August 2012. This project is ongoing.

Any necessary and appropriate Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions will be conducted in accordance with applicable laws and regulations to achieve Project Closeout.

**POINTS OF CONTACT:** Louisville District, Mr. David Dierken, CELRL-PM-M-E, (502) 315-6498; Mr. Quyet La, CELRL-ED-E, (502) 315-6892; and Ms. Janice E. Lengel, CELRL-OC, (502) 315-6641. Huntington District, Mr. Richard L. Meadows, CELRH-PM-PP-P, (304) 399-5388, and INPR Preparer, Ms. Lisa A. Humphreys, CELRH-EC-CE, (304) 399-5953.

**PROPERTY POINT-OF-CONTACT/STAKEHOLDERS:** NASA Plum Brook Station, Mr. Robert F. Lallier, Jr, Environmental Engineer, (419) 621-3234.

**LEAD REGULATOR:** Mr. Paul Jayko, Division of Emergency and Remedial Response, Ohio Environmental Protection Agency, (419) 373-3038.

**REVISED PROJECT SUMMARY SHEET  
FOR  
DERP-FUDS HTRW PROJECT NO. G05OH001823  
FEDERAL FACILITY ID NUMBER OH9799F3641  
ACID AREA NO. 1**

**Plum Brook Ordnance Works  
Sandusky, Erie County, Ohio  
June 2013**

**PROJECT DESCRIPTION:** This project was approved in a CELRD-ET memorandum, dated 20 July 2000, to address Acid Areas (AAs) Numbers 1, 2, and 3. These three acid areas were constructed and utilized to manufacture nitric and sulfuric acids for use in 2,4,6-trinitrotoluene (TNT) and pentolite manufacture. Due to the non-contiguous locations and the difference in schedules for each of the respective acid areas, this Inventory Project Report (INPR) revision recommends dividing the existing HTRW project G05OH001823 into three separate HTRW projects (G05OH001823 – Acid Area No. 1, G05OH001827 – Acid Area No. 2, and G05OH001828 – Acid Area No. 3). This project is ongoing.

A Site Inspection (SI) of the AAs was completed in December 1998 that recommended additional investigation due to the presence of semi-volatile organic compounds (SVOCs) and polychlorinated biphenyls (PCBs) in the surface soil. PCB and SVOC contamination were sampled for and found in the process systems (TNT Residual Acid Storage areas) as well as the maintenance facility buildings and the power substation that were located in the AA areas. Also, based on discussions with personnel at the U.S. Army Engineer Research and Development Center (ERDC), it was common to find PCBs in the soil from where the tanks were painted. A Remedial Investigation contract was awarded in September 2006 concerning Acid Area I. Field work began in 2007 with soil sampling, piezometers installation and surface water reconnaissance, and surface water and sediment sampling. The final Site Characterization Report was submitted 20 July 2009. The findings of this report indicated that there were several contaminants that exceeded U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals (PRGs) in soil, sediment, and surface water in the northern drainage ditch of AA No. 1. A contract was awarded in late January 2008 to complete a Risk Assessment for AA No. 1, with the final plan being submitted in April 2009.

**PROJECT ELIGIBILITY:** The former Plum Brook Ordnance Works (PBOW) was activated in 1938 to manufacture TNT, dinitrotoluene (DNT), and pentolite in support of World War II. Production began on 16 December 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 NASA) began leasing portions of PBOW from the Army. On 15 March 1963, NASA acquired approximately 6,400 acres of PBOW and presently utilizes the site for aerospace research activities.

During operation of the PBOW facility, historical evidence shows that acid areas were used for the manufacturing of nitric and sulfuric acids used in the manufacturing of TNT and pentolite. During operation of the PBOW facility, three AAs were constructed: Acid Areas 1, 2, and 3.

**POLICY CONSIDERATIONS:** There is no Department of Defense (DoD) policy that prohibits this project's proposal.

**PROPOSED PROJECT:** Hazardous, Toxic and Radioactive Waste (HTRW)

**PROPOSED ACTIVITIES:** Any necessary and appropriate Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions will be conducted in accordance with applicable laws and regulations to achieve Project Closeout.

**POINTS OF CONTACT:** Louisville District, Mr. David Dierken, CELRL-PM-M-E, (502) 315-6498; Mr. Quyet La, CELRL-ED-E, (502) 315-6892; and Ms. Janice E. Lengel, CELRL-OC, (502) 315-6641. Huntington District, Mr. Richard L. Meadows, CELRH-PM-PP-P, (304) 399-5388, and INPR Preparer, Ms. Lisa A. Humphreys, CELRH-EC-CE, (304) 399-5953.

**PROPERTY POINT-OF-CONTACT/STAKEHOLDERS:** NASA Plum Brook Station, Mr. Robert F. Lallier, Jr, Environmental Engineer, (419) 621-3234.

**LEAD REGULATOR:** Mr. Paul Jayko, Division of Emergency and Remedial Response, Ohio Environmental Protection Agency, (419) 373-3038.

**PROJECT SUMMARY SHEET  
FOR  
DERP-FUDS HTRW PROJECT NO. G05OH001827  
FEDERAL FACILITY ID NUMBER OH9799F3641  
ACID AREA NO. 2**

**Plum Brook Ordnance Works  
Sandusky, Erie County, Ohio  
June 2013**

**PROJECT DESCRIPTION:** This Hazardous, Toxic, and Radioactive Waste (HTRW) project was previously part of HTRW project G05OH001823, approved on 20 July 2000. It is now being proposed as a separate project to continue investigation of Acid Area (AA) No. 2.

A Site Inspection (SI) for all three acids areas combined was completed in December 1998 (under HTRW project G05OH001823) that recommended additional investigation due to the presence of semi-volatile organic compounds (SVOCs) and polychlorinated biphenyls (PCBs) in the surface soils. The Remedial Investigation (RI) for AAs No. 2 and 3 was conducted from 2005-07 with the Final Site Characterization Report submitted in March 2007 (AA No. 1 was already on a separate schedule). The report concluded that further actions should be considered to address the contaminants that exceeded the U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals (PRGs) in soil and sediment at Acid Areas 2 and 3. The report also recommended a human health and ecological risk assessment using the data collected for the Site Characterization Report. The Screening Level Ecological and Baseline Human Health Risk Assessments were completed in February 2008. A contract was awarded in late January 2008 to complete delineation sampling, the Feasibility Study, Proposed Plan, and Decision Document. Delineation sampling began in November 2008 and was completed May 2009.

**PROJECT ELIGIBILITY:** The former Plum Brook Ordnance Works (PBOW) was activated in 1938 to manufacture TNT, dinitrotoluene (DNT), and pentolite in support of World War II. Production began on 16 December 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 National Aeronautics and Space Administration [NASA]) began leasing portions of PBOW from the Army. On 15 March 1963, NASA acquired approximately 6,400 acres of PBOW and presently utilizes the site for aerospace research activities.

During operation of the PBOW facility, historical evidence shows that acid areas were used for the manufacturing of nitric and sulfuric acids used in the manufacturing of TNT and pentolite. During operation of the PBOW facility, three AAs were constructed: known as Acid Areas No. 1, 2, and 3.

**POLICY CONSIDERATIONS:** There is no Department of Defense (DoD) policy that prohibits this project's proposal.

**PROPOSED PROJECT:** Hazardous, Toxic and Radioactive Waste (HTRW)

**PROPOSED ACTIVITIES:** Any necessary and appropriate Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions will be conducted in accordance with applicable laws and regulations to achieve Project Closeout.

**POINTS OF CONTACT:** Louisville District, Mr. David Dierken, CELRL-PM-M-E, (502) 315-6498; Mr. Quyet La, CELRL-ED-E, (502) 315-6892; and Ms. Janice E. Lengel, CELRL-OC, (502) 315-6641. Huntington District, Mr. Richard L. Meadows, CELRH-PM-PP-P, (304) 399-5388, and INPR Preparer, Ms. Lisa A. Humphreys, CELRH-EC-CE, (304) 399-5953.

**PROPERTY POINT-OF-CONTACT/STAKEHOLDERS:** NASA Plum Brook Station, Mr. Robert F. Lallier, Jr, Environmental Engineer, (419) 621-3234.

**LEAD REGULATOR:** Mr. Paul Jayko, Division of Emergency and Remedial Response, Ohio Environmental Protection Agency, (419) 373-3038.

**PROJECT SUMMARY SHEET  
FOR  
DERP-FUDS HTRW PROJECT NO. G05OH001828  
FEDERAL FACILITY ID NUMBER OH9799F3641  
ACID AREA NO. 3**

**Plum Brook Ordnance Works  
Sandusky, Erie County, Ohio  
June 2013**

**PROJECT DESCRIPTION:** This Hazardous, Toxic, and Radioactive Waste (HTRW) project was previously part of HTRW project G05OH001823, approved on 20 July 2000. It is now being proposed as a separate project to continue investigation of Acid Area (AA) No. 3.

A Site Inspection (SI) for all three acids areas combined was completed in December 1998 (under HTRW project G05OH001823) that recommended additional investigation due to the presence of semi-volatile organic compounds (SVOCs) and polychlorinated biphenyls (PCBs) in the surface soils. The Remedial Investigation (RI) for AAs No. 2 and 3 was conducted from 2005-07 with the Final Site Characterization Report submitted in March 2007 (AA No. 1 was already on a separate schedule). The report concluded that further actions should be considered to address the contaminants that exceeded the U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals (PRGs) in soil and sediment at Acid Areas 2 and 3. The report also recommended a human health and ecological risk assessment using the data collected for the Site Characterization Report. The Screening Level Ecological and Baseline Human Health Risk Assessments were completed in February 2008. A contract was awarded in late January 2008 to complete delineation sampling, the Feasibility Study, Proposed Plan, and Decision Document. Delineation sampling began in November 2008 and was completed May 2009.

**PROJECT ELIGIBILITY:** The former Plum Brook Ordnance Works (PBOW) was activated in 1938 to manufacture TNT, dinitrotoluene (DNT), and pentolite in support of World War II. Production began on 16 December 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 National Aeronautics and Space Administration [NASA]) began leasing portions of PBOW from the Army. On 15 March 1963, NASA acquired approximately 6,400 acres of PBOW and presently utilizes the site for aerospace research activities.

During operation of the PBOW facility, historical evidence shows that acid areas were used for the manufacturing of nitric and sulfuric acids used in the manufacturing of TNT and pentolite. During operation of the PBOW facility, three AAs were constructed: Acid Areas No. 1, 2, and 3.

**POLICY CONSIDERATIONS:** There is no Department of Defense (DoD) policy that prohibits this project's proposal.

**PROPOSED PROJECT:** Hazardous, Toxic and Radioactive Waste (HTRW).

**PROPOSED ACTIVITIES:** Any necessary and appropriate Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions will be conducted in accordance with applicable laws and regulations to achieve Project Closeout.

**POINTS OF CONTACT:** Louisville District, Mr. David Dierken, CELRL-PM-M-E, (502) 315-6498; Mr. Quyet La, CELRL-ED-E, (502) 315-6892; and Ms. Janice E. Lengel, CELRL-OC, (502) 315-6641. Huntington District, Mr. Richard L. Meadows, CELRH-PM-PP-P, (304) 399-5388, and INPR Preparer, Ms. Lisa A. Humphreys, CELRH-EC-CE, (304) 399-5953.

**PROPERTY POINT-OF-CONTACT/STAKEHOLDERS:** NASA Plum Brook Station, Mr. Robert F. Lallier, Jr, Environmental Engineer, (419) 621-3234.

**LEAD REGULATOR:** Mr. Paul Jayko, Division of Emergency and Remedial Response, Ohio Environmental Protection Agency, (419) 373-3038.