

Final

TAMPEEL Proposed Plan

Former Lordstown Ordnance Depot

Formerly Used Defense Site: G05OH0149-23

Lordstown, Ohio

Prepared for:



**US Army Corps
of Engineers**

July 2015

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Prepared by

CH2MHILL®

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1. Introduction

This **Proposed Plan** identifies the preferred remedial response at the Trumbull Area Multi-Purpose Environmental Education Laboratory (TAMPEEL) site located at the former Lordstown Ordnance Depot (FLOD) in Lordstown, Trumbull County, Ohio. The FLOD is located about 4 miles southwest of Warren, Ohio, just west of Ohio State Route 45 in Lordstown Township, Trumbull County (Figure 1). This document is provided by the U.S. Army Corps of Engineers (USACE), the lead agency for site activities, and the Ohio Environmental Protection Agency (Ohio EPA), the lead regulatory agency.

The Department of Defense (DoD) owned the FLOD from 1942 to 1967 and used it to transport, store, repair, and maintain military equipment and supplies. The FLOD is considered a **Formerly Used Defense Site (FUDS)** because it was owned by, leased to, or otherwise possessed by the United States and under the jurisdiction of the Secretary and transferred from DoD control prior to 17 October 1986. The DoD is responsible for identifying and remediating, as necessary, DoD-generated environmental contamination at FUDS properties in accordance with the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)** of 1980, as amended by the **Superfund Amendments and Reauthorization Act of 1986 (SARA)**, and the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP)**. The U.S. Army oversees the FUDS program for DoD, and the USACE manages the investigation and cleanup of these properties. The FUDS program was established under the Defense Environmental Restoration Program and addresses releases or threatened releases attributable to DoD activities on FUDS properties.

The TAMPEEL site encompasses approximately 39 acres on the northwest corner of the FLOD Property and was transferred to the Trumbull County Board of Education in 1967 for use as an outdoor environmental education laboratory. The remainder of the FLOD property to the east was sold to the Lordstown Economic Development Corporation, and subsequently developed as the Ohio Commerce Center (OCC).¹ The entire FLOD property is zoned as industrial (I-1) by the Village of Lordstown.

A FUDS project was approved for the TAMPEEL in 1988 for the purpose of investigating a report that a potential disposal area was located on the TAMPEEL site. This Proposed Plan summarizes the previous remedial response investigations performed at the TAMPEEL site and provides the rationale for the proposed **No Action** remedy at the site. USACE is seeking public input on its proposed alternative and encourages the public to review this Proposed Plan, supporting documents providing greater detail to this summary, and other documents contained in the Administrative Record file for the site.

More detailed information regarding the investigations conducted at the TAMPEEL and evaluations of the findings can be found in the *TAMPEEL Remedial Investigation Report* (RI Report; Shaw Environmental, 2005) and the *TAMPEEL Remedial Investigation Report Addendum* (RI Addendum; CH2M HILL, 2011). These documents are available at

Location of Information Repository

This document and supporting documents are available for public review online at: <http://www.lrl.usace.army.mil/Missions/Environmental/LordstownOrdnanceDepot>

Copies of this document and supporting documents are also available for public review at the following Information Repository:

Warren-Trumbull County Library Lordstown Branch
1471 Salt Springs Road
Warren, Ohio 44481
Phone: 330-824-2094

Monday: 11 a.m. – 7 p.m.
Tuesday: 11 a.m. – 5 p.m.
Wednesday: CLOSED
Thursday, Friday: 11 a.m. – 5 p.m.
Saturday, Sunday: CLOSED

¹ The property owned by the OCC is being addressed as a separate site under CERCLA under a different project number and will have its own proposed plan.

<http://www.lrl.usace.army.mil/Missions/Environmental/LordstownOrdnanceDepot> and at the USACE Louisville District Office, as well as the **Information Repository** at the Warren-Trumbull County Library, Lordstown Branch. USACE and Ohio EPA encourage the public to review the documents to gain a more comprehensive understanding of the TAMPEEL site and activities that have been conducted to date.

The U.S. Army is issuing this Proposed Plan as part of its public participation responsibilities under Section 117(a) of CERCLA, as amended by SARA, and Section 300.430(f)(2) of the NCP. Public comment is being sought on the Proposed Plan and the proposed remedy. Information about where to submit comments is contained in Section 7. The words and phrases that appear in bold in this Proposed Plan are defined in the glossary in Section 9.

2. Site Background

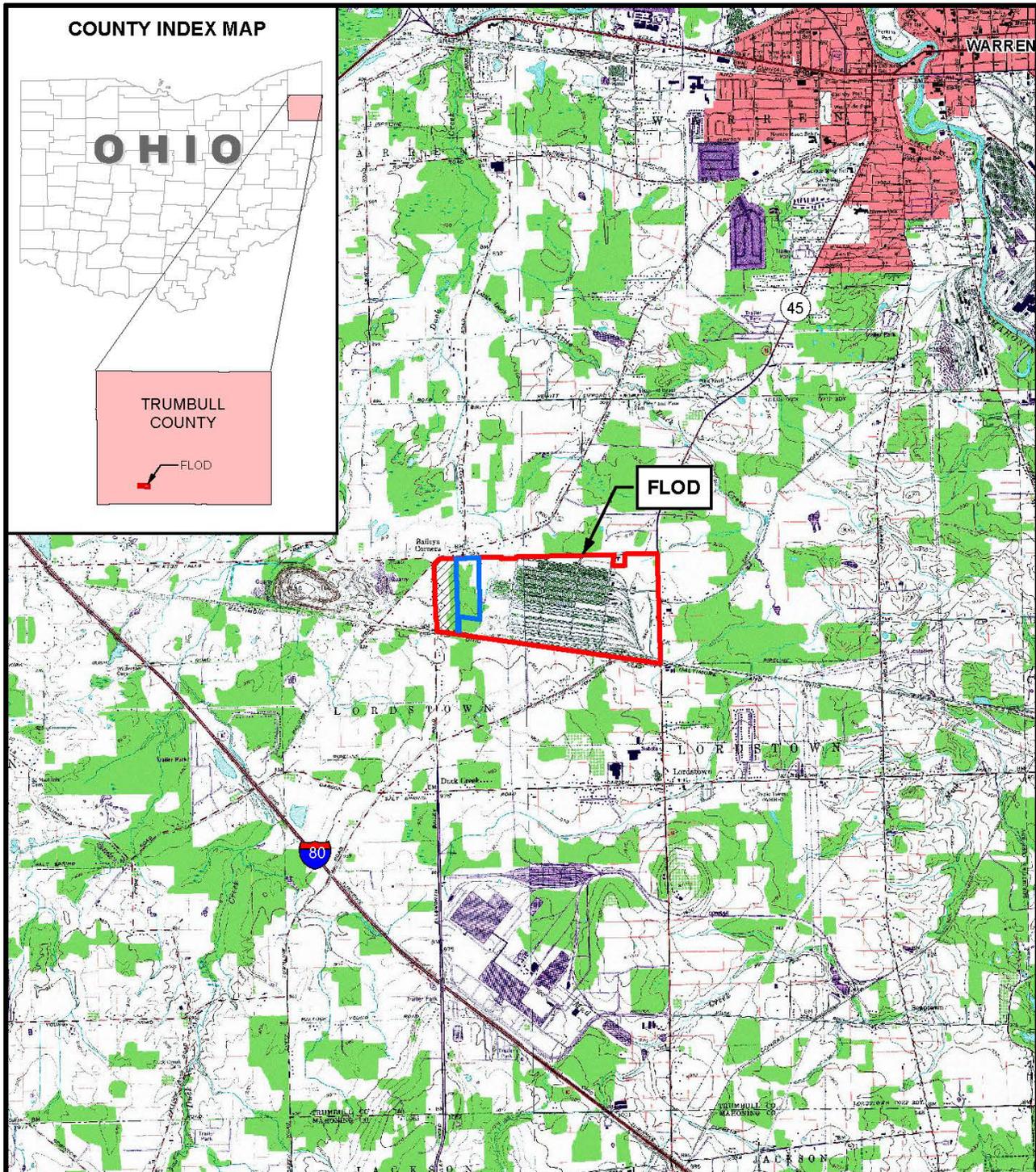
The DoD owned the FLOD property from 1942 to 1967. The original property that comprised the Depot is rectangular in shape and occupied approximately 564 acres (Figure 1). During the period from 1943 to 1945, the FLOD was used to transport, store, and recondition combat-related military equipment and supplies. In 1945, approximately 45 acres at the western end of the facility, along Ellsworth Bailey Road, were sold and are now occupied by residential landowners.

During the period from 1945 to 1956, the remaining 519 acres of the FLOD were used to store, repair, and maintain military equipment and vehicles. In 1956, this mission was terminated, and the FLOD was used to provide administrative and logistical support for the regional Nike Anti-Aircraft Activities, and logistical support for the Army Reserve. In 1963, the FLOD was placed on inactive status. In 1967, the majority of the property (approximately 480 acres) was transferred to the Community Improvement Corporation of Warren and Trumbull County and used as an industrial/commercial park (Twin City Testing, 1995). In 1967, this property was deeded to OCC and continued to be used as a commercial park.

Also in 1967, the DoD transferred 39 acres on the northwestern corner of the FLOD (east of the 45 acres previously transferred) to the Trumbull County Board of Education (the parcel referred to as TAMPEEL). A year-round environmental laboratory for local school students was established at the TAMPEEL in 1973. The buildings constructed by the Board of Education for the TAMPEEL are located roughly in the center of the TAMPEEL site and consist of one main building, a restroom building, and storage shed (Figure 2). In 2000, the educational laboratory was closed due to the concerns over waste disposal at the site. The TAMPEEL property was later leased from the Trumbull County Board of Education by a third party for horse grazing.

The FLOD property was determined to be eligible for remedial response under the FUDS program in 1994. At that time, a project was approved to investigate three areas of concern (AOCs) on the OCC that is located southeast of the TAMPEEL. The FUDS project at the TAMPEEL was approved in 1998, following the report by the owner of the property of a potential disposal area located in the vicinity of the main building.

The 2011 remedial investigation at TAMPEEL included conducting an interview with a former employee of the Lordstown School District who had knowledge of the site use before and after the transfer of property to the Board of Education. The interview provided additional information concerning the potential disposal area on the TAMPEEL site. Based on the interview, the debris was described as approximately 5 feet high, 75 feet long (running north and south), and 50 feet wide. After the transfer of the 39 acre parcel (TAMPEEL) to the Trumbull County Board of Education, volunteers removed two-thirds to three-fourths of the debris from the site using a front-end loader and several dump trucks on the inaugural Earth Day (April 22, 1970). Near the end of the day, the larger debris remaining in the area was scattered in the woods to the east. Small debris was left in place and slag (a byproduct of smelting ore) was obtained from a local manufacturer and placed along what became an access road and parking area near the main building.

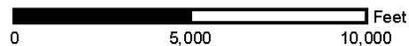


NOTES:

1. FLOD = FORMER LORDSTOWN ORDNANCE DEPOT (565 ACRES)
2. TAMPEEL = TRUMBULL AREA MULTI-PURPOSE ENVIRONMENTAL EDUCATION LABORATORY (APPROXIMATELY 39 ACRES)

LEGEND

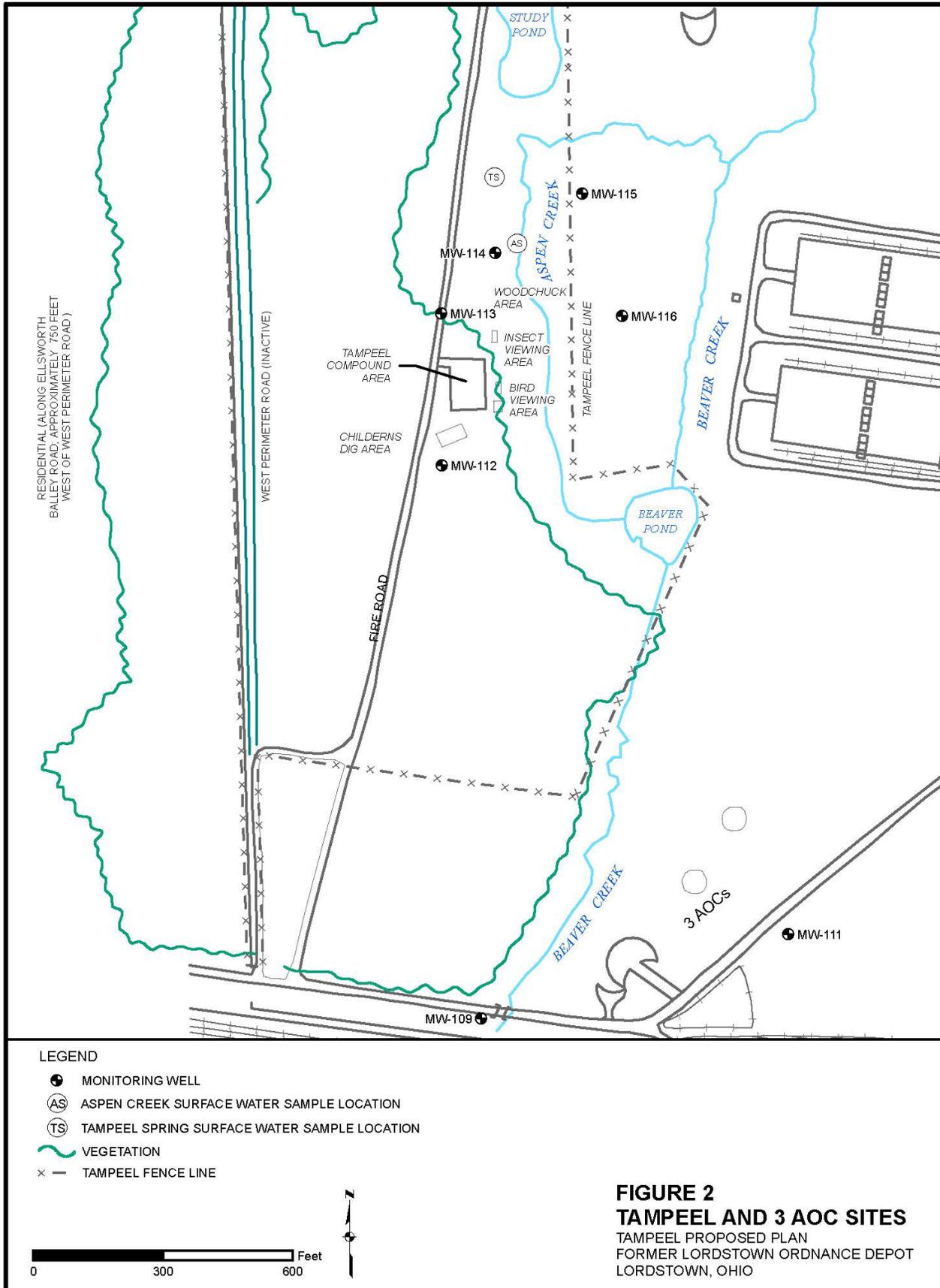
- FLOD
- FLOD PROPERTY SURPLUSED IN 1945
- TAMPEEL



**FIGURE 1
SITE LOCATION MAP**

TAMPEEL PROPOSED PLAN
FORMER LORDSTOWN ORDNANCE DEPOT
LORDSTOWN, OHIO





3. Site Characteristics

USACE conducted the remedial investigation between 1998 and 2011 to evaluate potential environmental contamination at the site. Surface and subsurface soil samples were collected at the children's activity areas, the compound area (facility structures and parking areas), the suspected disposal area, and one area with unusual depressions on the southeast corner of the site. The TAMPEEL site contains several **surface water** bodies, including Study Pond, Beaver Pond, Beaver Creek, Aspen Creek, and TAMPEEL Spring (Figure 2). Beaver Creek and Aspen Creek generally flow to the northeast. Surface water and sediment samples were collected from the ponds, streams, and spring. **Groundwater** monitoring wells were installed and samples were collected to determine groundwater aquifer conditions. Detailed information can be found in the 2005 RI Report and the 2011 RI Addendum.

Geologically, the TAMPEEL site is underlain by 2 to 12 feet of clay-rich soil overlying bedrock. Sandstone bedrock is directly beneath the soils in the southern and western portions of the TAMPEEL, and shale bedrock underlies the soils in the northern and eastern portions. Groundwater occurs under confined conditions in bedrock; the clayey soil overlying bedrock forms the confining layer. The depth to water ranges from about 2 to 7 feet below ground surface and flows to the northeast at the TAMPEEL site. Groundwater also discharges to the ground surface at the TAMPEEL Spring, which is south of the Study Pond in the northern part of the TAMPEEL (Figure 4). Ohio Department of Natural Resources (ODNR) records indicate that approximately 16 wells, installed between 1942 and 1971, were recorded within ½ mile of the site. The depth of the wells varied between 50 feet and 118 feet. Water supplies for Lordstown Township are derived from Meander Lake, which is located approximately 17,000 feet to the southeast of the FLOD. The Lordstown Water Commissioner indicated that residents in the area of FLOD are supplied with city water (Maxim, 1997).

Additional assessment of the suspected disposal area was conducted in 2007. **Geophysical survey** measurements were taken and trenches were excavated to further refine the limits of the debris beneath the slag. Additionally, the former surface disposal was sampled for the presence of methane gas, which is a byproduct of organic waste decomposition and an indicator to the presence of waste.

The 2007 geophysical survey indicated an anomaly approximately 25 feet wide located between the restroom building and the storage shed on the eastern side of the TAMPEEL site. Two trenches were completed within and near the limits of the identified geophysical anomaly to provide a representative sample of the characteristics of the material within the limits of the anomaly and to truth the accuracy of geophysical investigation limits. The trenching revealed debris such as wire, tin cans, glass, nails, metal chains, slag, and minimal scrap wood. The trench excavations provided no evidence of chemical containers (drums, etc.). A methane gas investigation was conducted over the anomaly. No methane gas was found as would be expected from organic waste, which further supported the theory that the material is most likely metals consistent with the trenching observations and interview account.

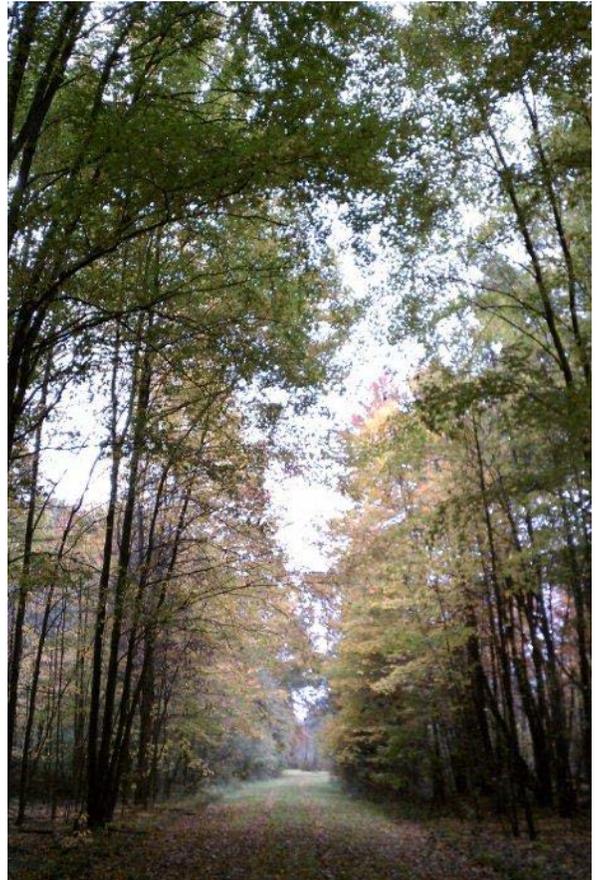


FIGURE 3
Gravel Access Road

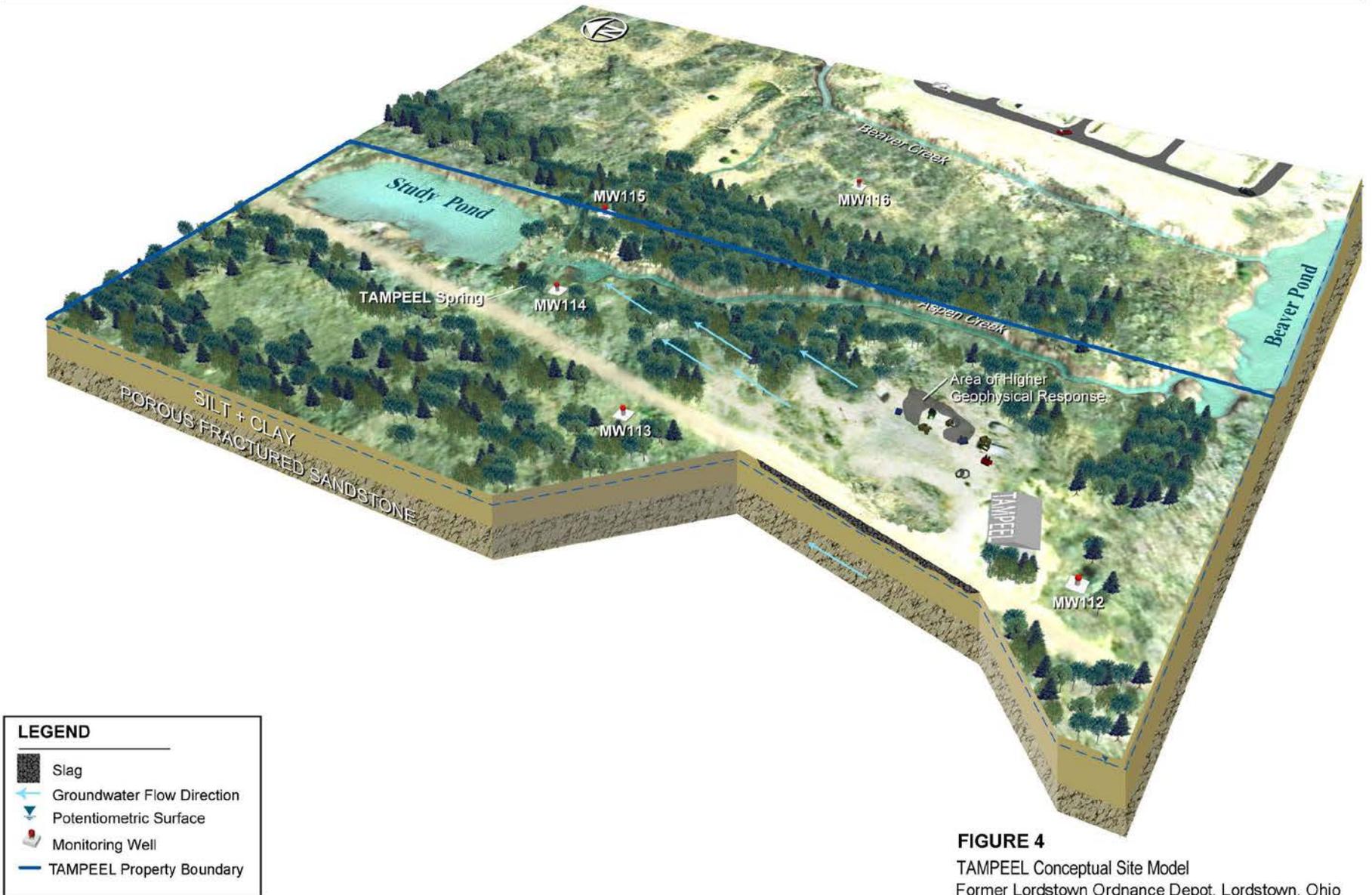


FIGURE 4
 TAMPEEL Conceptual Site Model
 Former Lordstown Ordnance Depot, Lordstown, Ohio

Surface soil, subsurface soil, surface water, sediment, and groundwater samples were collected at the TAMPEEL were submitted to the laboratory for analysis for **volatile and semivolatile organic compounds** (VOCs and SVOCs), pesticides, **polychlorinated biphenyls** (PCBs), and metals. Soil samples obtained from the low-lying areas were also analyzed for **dioxins/furans** and explosives. (The sampling locations and analytical results are presented in the 2005 RI Report and 2011 RI Addendum.)

Laboratory analytical results for the environmental samples were compared to human health screening levels established by the **U.S. Environmental Protection Agency (USEPA)**, called **Preliminary Remediation Goals (PRGs)**; soil and sediment samples were compared to residential soil PRGs and groundwater and surface water samples were compared to **Maximum Contaminant Levels (MCLs)** and USEPA Region 9 Tap Water PRGs. The surface water sample analytical results were compared to human health screening levels (MCLs and Tap Water PRGs) and ecological screening levels (ESLs; the National Ambient Water Quality Criteria for Aquatic Life).

The comparison to PRGs and MCLs showed that in one or more soil samples, there were exceedances of the screening levels for some metals, SVOCs, pesticides, and dioxins/furans. The slag placed to create the access road and parking area in 1970 is expected to contain various metals and may be at least partially responsible for the concentrations of metals detected in soil samples collected in the area where the slag was placed. Sediment samples results showed PRG exceedances of some metals, SVOCs, and pesticides. There were no exceedances in groundwater samples except for thallium (one time in one well) and iron, which exceeded the **Secondary MCLs**, a non-mandatory level, established for aesthetic reasons).

Surface water results showed screening level exceedances of some metals. There were no screening level exceedances noted for VOCs with the exception of vinyl chloride in two of the four quarterly samples collected from Aspen Spring, which were slightly higher than the screening level.

Chemicals of potential concern (COPC) identified at the TAMPEEL and further evaluated in the risk assessments included aluminum, arsenic, barium, chromium, iron, lead, manganese, nickel, thallium, vanadium, zinc, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, ideno(1,2,3-CD)pyrene, dibenz(a,h)anthracene, pesticides, dioxins/furans, methylene chloride, and vinyl chloride.

4. Scope and Role

This Proposed Plan addresses the TAMPEEL only. It does not include or directly affect any other AOCs at the FLOD. The environmental investigations, findings evaluations, and risk assessments were conducted with the intention, by USACE, of ensuring that the site could return to its former use for educational purposes. Based on the results of human health and ecological health risk analysis, as described in Section 5, USACE has determined that no actions are necessary at TAMPEEL to protect human health and welfare and the environment.

5. Summary of Site Risks

This section presents an overview of the risks associated with the current and future use of the site; the reasonably anticipated future use is an environmental educational laboratory. Risks were evaluated separately for human health and ecological populations (plants and animals) at the site. A detailed discussion of potential risks at the site and the risk evaluation process is in the 2005 RI Report and the 2011 RI Addendum. More detailed information concerning risk calculations can be found in the RI Report and RI Addendum located in the Information Repository.

5.1 Human Health Risk

A **human health risk assessment (HHRA)** was performed to evaluate potential risks and hazards to humans at the TAMPEEL site. The HHRA was prepared following USEPA guidance (including *Risk Assessment Guidance for Superfund Parts A and B* [USEPA, 1989; 1991]), as well as Ohio EPA guidance. The HHRA evaluated the detected concentrations found during the investigations in site soil, groundwater, surface water (in the Aspen Creek/TAMPEEL Spring, Beaver Pond, and Study Pond), and sediment (in the Aspen Creek/TAMPEEL Spring, Beaver Pond, and Study Pond). The detected concentrations in soil and sediment samples were compared to

residential soil PRGs, and detected concentrations in groundwater and surface water were compared to MCLs and Tap Water PRGs to identify COPCs (the detected contaminants most likely to pose the greatest threat to humans).

The HHRA also considered the people who could come in contact with the detected chemicals found at the TAMPEEL. It evaluates potential risk to people currently using the site and to those who might use it in the future. The TAMPEEL site is zoned industrial and has been developed for use as an environmental educational laboratory but has also been used for occasional horse grazing. Therefore, the types of people evaluated included TAMPEEL caretakers, students, trespassers, industrial workers, construction workers, and hypothetical future residents. The reasonably foreseeable future site use is for educational purposes. The possible future site use could also be recreational or industrial. Therefore, future site **receptors** are expected to be caretakers, students, and construction workers (if buildings are constructed onsite).

The HHRA then considered the different ways that people might come in contact with the detected chemicals, known as **exposure pathways**. Under current land use conditions, the exposure pathways evaluated were industrial worker exposures to surface soil; trespasser, TAMPEEL caretaker, and TAMPEEL student exposures to surface soil, sediment, and surface water; and construction worker exposures to surface soil and subsurface soil combined, sediment, surface water, and groundwater. Under future land use conditions, industrial worker, trespasser, TAMPEEL caretaker, TAMPEEL student, and construction worker exposures were evaluated as a conservative approach, although it is more realistic to assume that future exposures are related to environmental educational laboratory use. The future land use condition also included evaluation of hypothetical adult resident and child resident exposures to surface soil, total soil, sediment, surface water, and groundwater.

Based on the review of data and exposure pathways, the HHRA evaluated two types of risk: cancer risk and noncancer risk. For cancer risk, the likelihood of cancer resulting from a 30-year exposure to site contaminants generally is expressed as an upper-bound probability; for example, a 1-in-10,000 chance. In the United States, the “background” risk of developing cancer is about a 1 in 2 for men (American Cancer Society, 2014). An incremental increase of cancer expressed at 1 in 10,000 (1×10^{-4}) would equate to the same man having a cancer risk of 1 in 2,000. Noncancer health effects are expressed in terms of a **hazard index (HI)**. The key concept is that a threshold level (measured as an HI of 1) exists, at or below which adverse, noncancer health effects are not likely to occur.

At the time the 2005 RI Report was prepared, the Ohio EPA target **excess lifetime cancer risk (ELCR)** was 1 in 1,000,000, or 1×10^{-6} (Shaw, 2005). However, Ohio EPA’s target ELCR level has since been revised to 1 in 100,000 (or 1×10^{-5}) (Ohio EPA, 2009). USACE uses the USEPA’s acceptable risk range (1×10^{-4} to 1×10^{-6}) for CERCLA sites when making risk-based decisions. For noncancer health effects, risk is considered acceptable by Ohio EPA and USEPA if the HI is 1 or less, and the risk warrants further evaluation if the HI is greater than 1. The HHRA results are discussed in the subsections below.

5.1.1 Soil

The HHRA from the 2005 RI Report identified metals, SVOCs, pesticides, and dioxins/furans as COPCs for surface soil and total soil. The HHRA concluded that the potential ELCR for exposure to surface soil and total soil was within the USEPA’s acceptable risk range for all current and future receptors. The risk level was equal to or below the Ohio EPA target level of 10^{-5} for all receptors except the hypothetical adult resident and child resident. The greatest contributor of ELCR exceedances for the hypothetical adult resident and child resident is arsenic. However, the representative concentration calculated in the risk assessment was actually below the calculated background (naturally occurring) concentration.

The estimated noncancer HI for exposure to surface soil and total soil (surface and subsurface combined) did not exceed USEPA’s and Ohio EPA’s threshold (HI=1) for all receptors, with the exception of the hypothetical future child resident exposure scenario. The greatest contributions to the HI were from iron and manganese. However, the exposure point concentrations were below the U.S. Department of Agriculture **recommended daily allowance (RDA)** for manganese and iron.

5.1.2 Surface Water

The HHRA evaluated potential exposures to surface water in Aspen Creek and TAMPEEL Spring, Beaver Pond, and Study Pond. The HHRA from the 2005 RI Report identified metals and VOCs as COPCs for surface water. The ELCR and noncancer HI estimates for exposure to surface water in these water bodies were less than the Ohio EPA target level of 10^{-5} and threshold (HI=1), and within the USEPA acceptable risk range ELCR (10^{-6} to 10^{-4}) and threshold (HI=1) for all receptors evaluated (trespassers, caretakers, students, construction workers, and hypothetical residents).

In 2007 and 2008, additional samples were collected from Aspen Creek and TAMPEEL Spring. Iron and several VOCs were detected in the surface water. Based on screening of the 2007 and 2008 data and supplemental risk calculations, the 2005 RI Report conclusions regarding potential human health risks associated with the surface water of Aspen Creek and TAMPEEL Spring were still valid (that is, ELCR and noncancer hazard estimates were within the USEPA's acceptable risk range ELCR, below the Ohio EPA's target level of 10^{-5} , and did not exceed the USEPA and Ohio EPA thresholds for HI).

5.1.3 Sediment

Potential sediment exposures were evaluated for Aspen Creek, TAMPEEL Spring, Beaver Pond, and Study Pond. The HHRA from the 2005 RI Report identified metals and SVOCs as COPCs for sediment. The ELCR and noncancer HI estimates for sediment in these water bodies were within USEPA's acceptable risk range, below Ohio EPA's target level of 10^{-5} , and did not exceed the USEPA and Ohio EPA thresholds for HI for the receptors evaluated (trespassers, caretakers, students, construction workers, and hypothetical residents).

5.1.4 Groundwater

The HHRAs from the 2005 RI Report and 2011 RI Addendum identified two VOCs (methylene chloride and vinyl chloride) and metals as COPCs in groundwater. The HHRAs (2005 and 2011) concluded that the ELCR for groundwater was within the USEPA's acceptable risk range and below the Ohio EPA's target level of 10^{-5} for the receptors.

The estimated noncancer HI for exposure to groundwater exceeded the USEPA and Ohio EPA threshold HI of 1 for the adult resident and the child resident exposure scenarios. The primary drivers were iron and thallium. However, the exposure point concentration for iron was below the RDA level, and thallium was detected only once (in 2000) in one well. Thallium was not detected in any well during the quarterly monitoring between December 2007 and September 2008.

5.1.5 Debris

Miscellaneous debris was reportedly disposed of on the surface in a low-lying area on the TAMPEEL (CH2M HILL, 2011). Based on first-hand account, the debris was approximately 5 feet high, 75 feet long (running north and south), and 50 feet wide. After the transfer of the TAMPEEL site to the Trumbull County Board of Education, volunteers removed two-thirds to three-fourths of the debris from the site using a front-end loader and several dump trucks on the inaugural Earth Day (April 22, 1970). Near the end of the day, the larger debris remaining in the area was scattered in the woods to the east. Slag (a byproduct of smelting ore) was obtained from a local manufacturer and placed along what became an access road and parking area in the center of the nature center. The remaining debris, identified and observed by representatives of the Ohio EPA and USACE during trenching in 2007, consisted of primarily wire, tin cans, glass, nails, metal chains, slag and scrap wood with no indications of chemical containers or other sources of VOCs and SVOCs. The slag is expected to contain various metals and may be at least partially responsible for the concentrations of metals detected in soil samples collected in the area where the slag was placed. The results from the methane gas survey over the anomaly indicated that methane gas was not present. The absence of methane gas demonstrates that the entire anomaly is most likely consistent with the representative characterization of the material being inorganic metals. Based on the limited quantity of waste observed, waste reported as household generated wastes (consistent with test pit material identification), surface deposit only, representative test pit characterization of waste to be metallic objects, no methane gas present, no risk to receptors exposed to the debris was identified. Therefore, potential exposures to debris were not evaluated quantitatively in the HHRA.

5.2 Ecological Risk

During the RI, a review of the Natural Heritage maps and files found no records of rare or endangered species in the FLOD including a 1-mile radius of the property. An **ecological risk assessment** (ERA) was conducted during the RI and supplemental remedial investigation to evaluate the potential for risks to terrestrial and aquatic receptors (plants and animals) at the site. The ERA was conducted in accordance with guidelines set forth in the *Tri-Service Procedural Guidelines for Ecological Risk Assessments* (Wentsel et al., 1996). Additional guidance sources included: *Framework for Ecological Risk Assessment* (USEPA, 1992), *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments* (USEPA, 1997), and *Risk Assessment Handbook, Volume II: Environmental Evaluation* (USACE, 1996).

Ecological exposure pathways may be direct or indirect. Direct exposure pathways include dermal (skin) contact, absorption, inhalation, and ingestion (eating or drinking). Examples of direct exposure include animals incidentally ingesting contaminated soil or sediment (such as during burrowing or dust-bathing activities); animals ingesting surface water; plants absorbing contaminants by uptake from contaminated sediment or soil; and the dermal contact of aquatic organisms with contaminated surface water or sediment. Indirect exposure pathways involve the ingestion of chemicals by a predator that have accumulated in prey.

Both terrestrial and aquatic receptors were identified for evaluation at the TAMPEEL site. These receptors were selected as indicators of the overall potential for adverse effects to the ecosystem. The six terrestrial receptors evaluated include the deer mouse, short-tailed shrew, eastern cottontail rabbit, red fox, American robin, and red-tailed hawk. The aquatic receptors include water dwelling aquatic life (such as fish), **benthic invertebrates**, and aquatic-foraging wildlife, such as great blue heron and beaver. Risks to aquatic life and benthic invertebrates were evaluated based on direct exposure to surface water and sediment, while risks to terrestrial and aquatic-foraging wildlife were evaluated based on the ingestion of contaminants accumulated in prey and via the direct ingestions of abiotic media (for example, water or soil).

5.2.1 Soil

Contaminants in surface soils are estimated to represent the greatest ecological concern, especially for sensitive insectivorous receptors such as the shrew and to a lesser extent to the deer mouse, cottontail, robin, and red fox. These potential risks are due to elevated levels of metals, including aluminum, barium, arsenic, zinc, and chromium in soils. Also at risk is the American robin, due to dichlorodiphenyltrichloroethane (DDT) in soil. However, the levels of DDT detected on the site have been found to be consistent with historic agricultural application. The RI concluded these ecological risks were acceptable.

5.2.2 Surface Water

There are no significant risks to aquatic life from exposure to contaminants in TAMPEEL site surface water. In 2007 and 2008, additional samples were collected from Aspen Creek and TAMPEEL Spring. The samples were analyzed for iron, thallium, and VOCs. Results of the additional screening in 2007 and 2008 are consistent with the 2005 RI Report conclusions and indicate no potential ecological risks for most receptors associated with Aspen Creek/TAMPEEL Spring surface water. Potential risks were initially identified for the Great Blue Heron due to elevated levels of zinc in Aspen Creek surface water and aluminum in Beaver Pond surface water. However, the 2005 RI Report also noted that it was unknown if significant populations actually reside in Aspen Creek, as it is relatively isolated from other surface water bodies. In addition, zinc was only detected infrequently in surface water. Zinc was not detected in surface water in Study Pond or Beaver Pond and only detected in two of six surface water samples from Aspen Creek; only one of the two detections was above the ecological screening level. Heron are mobile predators and are only likely to obtain a limited portion of their diet from a small drainage like Aspen Creek. Based on the mobility of heron, the limited food resources likely to be available to heron in Aspen Creek, and the isolated nature of zinc in surface water, it is considered reasonable that the risks are generally acceptable for fish and wildlife potentially exposed to site surface water. As indicated in the 2005 RI Report, aluminum is not bioavailable at pH above 5.5, which is the condition expected to be present on this site, and that onsite concentrations in soils are similar to those detected in non-site-impacted soils. Assessment of additional

surface water samples and analysis conducted in 2007 and 2008 concluded that there are no unacceptable risks to ecological receptors associated with the former disposal activities on the TAMPEEL site.

5.2.3 Sediment

No significant risk is associated with benthic invertebrates or aquatic wildlife from exposure to contaminants in sediment at Aspen Creek, Beaver Pond, or Study Pond. Sediments are predicted to be a significant ecological concern for the great blue heron and the beaver, due to the estimated intake of DDT, its metabolites, aluminum, and to a lesser extent, arsenic. No sediment background data were available; therefore, soil background data were used to evaluate sediment concentrations. Although there are some uncertainties associated with this comparison, soil represents a reasonable proxy for inorganic chemical concentrations in the absence of sediment reference samples give the similarity of these media. The aluminum in sediment at the Beaver Pond, Aspen Creek, and Study Pond is within or similar to soil background concentrations. It is also noted that the DDT detections are reflective of historical site application and not reflective of a release associated with DoD activities; therefore, not subject to further evaluation under CERCLA.

5.2.4 Debris

As noted earlier, there is no evidence to suggest that the disposed debris is a source of contamination based on observations of the materials, soil sampling results from the area, and photoionization detector readings. Therefore, potential exposure to debris was not evaluated quantitatively in the RI.

6. Basis for No Action

USACE has determined that No Action is warranted to protect human health and the environment at the TAMPEEL site; therefore, no **remedial action** objectives and no alternative remedial actions were developed or considered. The basis for the recommendation includes the following information concerning the TAMPEEL that was gathered and evaluated in the remedial investigation:

- The remedial investigation encompasses sampling the following areas on the TAMPEEL site: children's activity areas, Beaver Creek, Study Pond and Beaver Pond, Aspen Creek, TAMPEEL Spring, and suspected disposal areas (landfill, and suspect area containing unusual depressions). Media evaluated included surface and subsurface soil, surface water, sediment, groundwater, and debris.
- Current receptors evaluated in the HHRA included caretakers, students, trespassers, and construction workers. Future receptors evaluated in the HHRA included caretakers, students, trespassers, industrial workers, and construction workers. The risk assessment indicated that there were no unacceptable cancer risks to any of these potential receptors for any media based on both the USEPA acceptable risk range and the Ohio EPA's target level of 10^{-5} .
- Although the TAMPEEL site is zoned industrial, the risk assessment also included the hypothetical adult resident and child resident. The risk assessment concluded the cancer risk from exposure to soil by a hypothetical adult resident and child resident was within the USEPA's acceptable risk range. The cancer risk to hypothetical adult resident and child resident exceeded the Ohio EPA's target level of 10^{-5} due to arsenic. However, the representative exposure concentration was actually below the calculated background level. Therefore, no remedial action is warranted for soil based on this information.
- The risk assessment concluded that the estimated noncancer risk (HI) for exposure to soil (surface and subsurface) exceeded the USEPA and Ohio EPA thresholds for the adult resident and child resident due to iron and manganese. However, the exposure concentrations were below the RDA for these constituents. Therefore, no remedial action is warranted for soil.
- The risk assessment concluded that the risk of all receptors from exposure to surface water and sediment were within or below the USEPA's acceptable risk range, the Ohio EPA's target level of 10^{-5} , and did not exceed the USEPA or Ohio EPA thresholds for HI for all receptors, including the hypothetical adult resident and child resident. Therefore, no remedial action is warranted for surface water and sediment.

- The risk assessment concluded that the cancer risk from exposure to groundwater was below the USEPA acceptable risk range and below the Ohio EPA’s target level of 10⁻⁵ for all receptors. Therefore, no remedial action is warranted for groundwater based on this information.
- The estimated noncancer risk for exposure to groundwater was below USEPA’s and Ohio EPA’s threshold for all receptors except the child resident and adult resident. The greatest contributors were iron and thallium. The exposure concentration of iron was below the RDA. Thallium was detected one time, in one well in 2000. Thallium was not detected in any well, for any of the quarterly sampling events between December 2007 and September 2008. Therefore, no remedial action is warranted for groundwater based on this information.
- The ERA concluded that risks were generally acceptable for fish and wildlife exposed to site surface water bodies. No remedial action is warranted to protect natural resources.
- A suspected landfill was investigated as part of the RI. The investigation confirmed that there was formerly a disposal area located in the vicinity of the nature center buildings. However, the debris was reported to be household type waste disposed in a low lying area, not buried, and was limited in volume (approximately 5 feet high, 75 feet long, and 50 feet wide). In 1970, this volume was reduced by two-thirds to three-fourths during a clean-up by volunteers for the school system. Subsequent to the 1970 cleanup efforts, slag was placed over the debris to create a parking lot for the nature center. The remaining debris was observed during test pitting/trenching to consist of scrap metal (nails, metal chains, and wire), glass, tin cans, and scrap wood. Based on historical information and observations made during test pitting/trenching, there were no reports or evidence that hazardous materials were disposed in this area, either by the DoD or local residents. Therefore, no remedial action is recommended by DoD for any waste remaining under the parking lot.
- No other sources or releases of hazardous substance were identified on the TAMPEEL as a result of DoD activities.

Based on the remedial investigation, no remedial action is necessary to protect human health and the environment at the TAMPEEL site. Therefore, USACE recommends No Action. This Proposed Plan has been reviewed by the Ohio EPA, who has concurred with the recommendation. This recommendation is not a final decision. USACE, in coordination with Ohio EPA, will make its final decision after reviewing and considering all comments submitted during the **public comment period**. A No Action decision does not prevent re-examination of the property in the future if new or additional information concerning potential DoD contamination provides credible evidence of likely FUDS-eligible projects, or reactivation of the property if future conditions or new information suggests this is necessary.

7. Community Participation

USACE and the Ohio EPA will provide information to the public regarding this Proposed Plan for the FLOD TAMPEEL site through a public meeting, the **Administrative Record file** and Information Repository (Warren-Trumbull County Library, Lordstown Branch; address provided on page 1), and an announcement published in *The Vindicator* newspaper.

Public Comment Period

During the comment period, interested parties may submit written comments to the following address:

Joan Cullen, P.G.
 CELRL-ED-E-E
 600 Martin Luther King Jr. Pl.
 PO BOX 59
 Louisville, Kentucky 40201-0059

Joan.T.Cullen@usace.army.mil

Mark Your Calendar for the Public Meeting

Date: August 18, 2015
 Time: 6:00 pm
 Location: WARREN-TRUMBULL
 County Main Public Library
 Address: 444 Mahoning Ave. NW
 Warren, OH 44483

Additionally more information is available on the project website:

<http://www.lrl.usace.army.mil/Missions/Environmental/LordstownOrdnanceDepot>.

USACE and the Ohio EPA encourage the public to gain a more comprehensive understanding of the site through community participation activities.

The public comment period from August 1, 2015 until September 4, 2015 provides time to review and comment on the information provided in this Proposed Plan. Comments on the Proposed Plan or other relevant issues can be submitted in writing by e-mail or mail (postmarked no later than September 4, 2015) to Joan Cullen, USACE Louisville District, at the address on page 12.

During the public comment period, USACE will hold a public meeting to give the public opportunity to learn about and to comment on this Proposed Plan. The public meeting will be held on August 18, 2015 at the Warren-Trumbull County Main Public Library.

USACE will develop a transcript of the public meeting, and a copy will be placed in the Administrative Record file. Comments on the Proposed Plan received during the public meeting and the comment period will be summarized, and responses will be provided in the **responsiveness summary** section of the **decision document**. The decision document will be included in the Administrative Record file. USACE will review and consider the public's input as part of the process before reaching a final decision.

8. References

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U.S. Environmental Protection Agency (USEPA). 1996. *Risk Assessment Handbook, Volume II: Environmental Evaluation*.

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9. Glossary of Terms

Administrative Record file: A file containing information that is used to make decisions about an environmental site, including work plans, verified sampling data, final reports and studies, maps, and public health assessments. This file is available for public review.

Benthic invertebrates: Animals that live on the bottom of a water body (or in the sediment) and have no backbone.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA): Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, and is commonly known as Superfund. CERCLA is the environmental program established by USEPA to address abandoned hazardous waste sites and releases of hazardous substances to the environment.

Decision Document: A legal document issued following the proposed plan that sets forth the selected remedy for cleanup of a site as decided by the lead federal agency.

Dioxins/furans: Manmade chemicals that are byproducts of the manufacture of other chemicals, during waste incineration and burning fuels such as wood and coal.

Ecological risk assessment (ERA): Uses analytical sampling data to evaluate the potential risks posed to wildlife by specific contaminants, following a multistep process similar to human health risk assessment (see below).

Excess lifetime cancer risk (ELCR): Probability that an individual will contract cancer over a lifetime.

Exposure pathways: The way chemicals come into contact with the body. The most common routes of exposure are through the skin, by mouth, or by inhalation.

Formerly Used Defense Site (FUDS): The Department of Defense program that cleans up environmental contamination still remaining at properties formerly owned by, leased to, or otherwise possessed by the United States and under the jurisdiction of the Secretary of Defense. A property is eligible for cleanup under the FUDS program if the DoD transferred the property before October 17, 1986. The Army is the executive agent for the program, and the USACE is responsible for carrying it out. FUDS policy is defined in USACE Engineer Regulation 200-3-1, *Formerly Used Defense Sites (FUDS) Program Policy*.

Geophysical survey: Study of the earth's structure, including objects buried under the ground, often conducted without disturbing the surface of the ground, using ground-penetrating radar or instruments that measure disturbances in the earth's electromagnetic field.

Groundwater: Water in the ground surface that fills spaces between sand, soil and rock. In aquifers, groundwater occurs in sufficient quantities that can be used as a source of water for drinking, irrigation and other purposes.

Hazard index (HI): The term for the measurement of adverse health effects to humans associated with exposure to noncancer causing contaminants. Noncancer hazards are expressed as a ratio of the average daily intake of a chemical to its reference dose (a threshold level of exposure below which no adverse health effects are likely to occur). When this number is equal to or less than the USEPA acceptable hazard threshold of 1, no adverse health effects are anticipated. However, if it exceeds 1, the potential for noncancer effects exists.

Human health risk assessment (HHRA): Uses analytical sampling data to evaluate the potential risks posed to human health by specific contaminants, based on site-specific exposure scenarios. Exposure scenarios ask these questions: Who could be exposed to chemicals at a site (potential receptors)? How could people be exposed (for example, by skin contact or ingestion)? How often and for how long? Using these scenarios and toxicity values for the chemicals present at a site, provided by USEPA and based on independent scientific studies, the risks are calculated and added up for all chemicals across all exposure pathways. Finally, the overall risk for each potential receptor is compared to acceptable levels defined by USEPA.

Information Repository: Under CERCLA, an information repository is a collection of all the information related to a cleanup action that has been made available to the public (40 *Code of Federal Regulations* 300.430), including public notices and background information. This contrasts with the administrative record, which contains only those documents that form the basis for selecting a response action.

Maximum Contaminant Level (MCL): The maximum permissible level of a contaminant in water that is delivered to any user of a public water system.

National Oil and Hazardous Substances Pollution Contingency (NCP): The set of regulations that implement CERCLA and address responses to hazardous substances and pollutants or contaminants.

No Action: No remedial action necessary per the CERCLA process.

Polychlorinated biphenyls (PCBs): A group of contaminants used in the manufacture of plastics, as lubricants, and dielectric fluids in transformers, in protective coating for wood, metal and concrete, and in adhesives, wire coating and so forth. They are toxic to aquatic life and persist in the environment for long periods of time. They can accumulate in food chains and may produce harmful side-effects at high concentrations.

Preliminary Remediation Goals (PRGs): Draft cleanup concentrations or levels based upon federal and state environmental laws and regulations or the health risk on a given site.

Proposed Plan: A plan for a site cleanup or other action that is available to the public for comment.

Public comment period: A reasonable time period, of at least 30 days, for the public to review and comment on various documents and actions.

Receptor: Human being or nonhuman organism that might be exposed to a contaminant, by coming in contact with air, water, soil, or other material containing the contaminant.

Recommended daily allowance (RDA): The average daily dietary nutrient intake level sufficient to meet the nutrient requirement of nearly all (97 to 98 percent) healthy individuals in a particular life stage and gender group.

Remedial action: The cleanup of environmental contamination; the actual construction or implementation of the selected cleanup alternative at a site.

Responsiveness summary: A summary of oral and written public comments received during a public comment period. The responsiveness summary is a key part of the decision document, highlighting community concerns.

Secondary Maximum Contaminant Level (Secondary MCL): Nonmandatory water quality standards established only as guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color and odor. These contaminants are not considered to present a risk to human health at the Secondary MCL.

Surface water: Bodies of water that are above the ground, such as rivers, lakes, and streams.

Superfund Amendments and Reauthorization Act (SARA): Superfund Amendments and Reauthorization Act of 1986 (SARA) amended CERCLA by making numerous changes and expanding the scope of the Superfund program.

U.S. Environmental Protection Agency (USEPA): The independent federal agency, established in 1970, that regulates federal environmental matters and oversees the implementation of environmental laws.

Volatile and semivolatile organic compounds (VOCs and SVOCs): Contaminants that evaporate into the air easily, such as paint thinners or industrial solvents. SVOCs evaporate less readily than VOCs.