DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
441 G STREET, NW
WASHINGTON, DC 20314-1000

REPLY TO ATTENTION OF

CEMP-CE

MEMORANDUM FOR US Army Engineer Division, Great Lakes and Ohio River (CELRD-PDM/Ms. Bertsch) 550 Main Street, Room 10032, Cincinnati, Ohio 45202-3222

SUBJECT: Approval of the Decision Document for the Former Lockbourne Air Force Base Landfill, Columbus, Ohio, Project Number G05OH00703

1. Reference CELRD-PDM memo, 3 May 2012, subject as above, copy enclosed.

2. The subject Decision Document dated April 2012 has been reviewed by CECC-E and CEPA-MP.

3. This document presents the selected response action at the former Lockbourne Air Force Base landfill. The landowner, the Columbus Regional Airport Authority, has expressed concern that the lack of forward action could impact their activities. The expected cost associated with the selected remedy for this project is $9.2M. Due to the relatively high price of the remedial action, plus-up funds were requested and granted to award the remedial action contract during FY12. Green and Sustainable Remediation concepts are included. This Decision Document is approved and forwarded to you, pursuant to DAIM-ZA memo dated September 9, 2003, subject: Policies for Staffing and Approving Decision Documents, and to Engineer Regulation 200-3-1, FUDS Program Policy, dated 10 May 2004.

4. Please ensure that this document is filed in accordance with Records Management procedures, in both the Administrative Record and the Permanent Project File. Also, please ensure that the FUDS Management Information System is updated with this approval in the Property Information, Record of Decision/Decision Document screen.

5. Point of contact for this action is Ms. Kimberly Dailey Bond, CEMP-CED, 202-761-1302.

CHRISTINE T. ALTENDORF, Ph.D., P.E.
Chief, Environmental Division
Directorate of Military Programs

Encl
CF: CEMP-CED/Chu
CECC-E/Wilson
CEPA-MP/Walters
CELRD-PDM/Bertsch

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Final Decision Document

Former Lockbourne Air Force Base Landfill Columbus, Ohio

FUDS Property G05 OH0007

Prepared for:

US Army Corps of Engineers

Contract No. W91236-07-D-0012
Delivery Order No. CY01

April 2012

STATEMENT OF TECHNICAL REVIEW

Former Lockbourne Air Force Base Landfill

Final Decision Document

The CH2M HILL Team has completed the technical review of the submittal of the Former Lockbourne Air Force Base Landfill Final Decision Document. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project. During the independent technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of assumptions; methods, procedures and material used in analyses; the appropriateness of data used and level of data obtained; and reasonableness of the results including whether the product meets the customer's needs consistent with the law and existing USACE policy.

Technical Reviewer	Signature	Date of Review
Colleen Reilly	Colleen Reilly	05 April 12

Project Manager	ITR Leader
Tiffany Swoveland Chapman	Colleen Reilly
Signature	Signature
	Colleen Reilly

Decision Document

Former Lockbourne Air Force Base Landfill

FUDS Property Number G05 OH0007
Project Number G05 OH000703

Prepared for

US Army Corps of Engineers
Louisville District

Contract No. W91236-07-D-0012
Delivery Order No. CY01

April 2012

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3 Comment Letter: Judy Campbell, Resident
4 Statement: Christie Ward, Village of Lockbourne Council Member
5 Comment letter: Christie Ward, Village of Lockbourne Council Member
6 Village of Lockbourne Ordinance Number 19-011 Regarding the Final Proposed Plan as to the Former Lockbourne Air Force Base Landfill/Dump and Declaring an Emergency
7 Letter of Protest Against Proposed Remedies for Former Lockbourne AFB Hazmat Dump Site Clean Up
8 Comment letter: Daniel C. Tufts, Resident

Acronyms and Abbreviations

AFB	Air Force Base
ANG	Air National Guard
AOC	area of concern
ARAR	applicable or relevant and appropriate requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	constituent of concern
DDD	dichlorodiphenyl dichloroethane
DDE	dichlorodiphenyl dichloroethylene
DDT	dichlorodiphenyl trichloroethane
DERA	Defense Environmental Restoration Act
DoD	Department of Defense
EO	Executive Order
FFS	focused feasibility study
FUDS	Formerly Used Defense Site
HI	hazard index
IDA	intermediate depth aquifer
K	hydraulic conductivity
mg/kg	milligram per kilogram
mg/L	milligram per liter
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
O&M	operation and maintenance
OAC	Ohio Administrative Code
Ohio EPA	Ohio Environmental Protection Agency
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
RAO	remedial action objective
RI	remedial investigation
SVOC	semivolatile organic compound
TCDD-TEQ	tetrachlorodibenzo-p-dioxin toxic equivalent
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
UWBZ	upper water-bearing zone

1. Declaration

SECTION 1

Declaration

1.1 Project Name and Location

The former Lockbourne Air Force Base (AFB) landfill, Formerly Used Defense Site (FUDS) Property Number G05 OH0007 (Project Number G05 OH000703), is in Columbus, Franklin County, east of the village of Lockbourne, Ohio (Figure 1-1). The landfill covers roughly 145 acres in an undeveloped area west of the developed portion of the former Lockbourne AFB. The site is bordered by Vause Road to the north, Tank Truck Road to the southeast, and railroad tracks to the southwest. Rickenbacker Air National Guard (ANG) Base and Rickenbacker International Airport are east-southeast of the site. The landfill has been divided into two areas of concern (AOCs), AOC 1 and AOC 2. AOC 1 is on the western side of the site, covers approximately 105 acres, and comprises the area where waste disposal occurred. AOC 2 is on the eastern side of the site and covers approximately 40 acres. Although there is scattered debris at AOC 2 (for example, construction and demolition debris), historical investigations indicate AOC 2 was not used for waste disposal. Collectively, AOC 1 and AOC 2 are referred to as the "site" in this Decision Document. The Columbus Regional Airport Authority currently owns the former Lockbourne AFB landfill.

1.2 Statement of Basis and Purpose

This Decision Document presents the selected final remedial action for AOC 1 and AOC 2. The United States Army Corps of Engineers (USACE), in coordination with the Ohio Environmental Protection Agency (Ohio EPA), chose a remedy for each AOC in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended in 1986 by the Superfund Amendments and Reauthorization Act, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The Decision Document is based on the Administrative Record file. USACE-Louisville District maintains the Administrative Record file and it is available online at http://bit.ly/LockbourneAFB. The Information Repository is located at the Columbus Metropolitan Library, Southeast Branch in Groveport, Ohio. The library has computers available to the public for review of the Information Repository file. Ohio EPA concurs with the selected remedy.

1.3 Assessment of the Project

The remedial action selected in this Decision Document is necessary to protect public health, welfare, and the environment from actual or threatened releases of hazardous substances, pollutants, or contaminants from the site.

1.4 Description of Selected Remedy

This document describes the final response action for AOC 1 and AOC 2.

When considering cleanup alternatives for AOC 1, the USACE included appropriate components of United States Environmental Protection Agency's (USEPA) "presumptive remedy" for municipal landfills. ("Presumptive remedies" are preferred technologies for common categories of sites based on historical patterns of remedy selection, and the USEPA's scientific and engineering evaluation of performance data [USEPA 1996]). The USEPA presumptive remedy for landfills, such as the former Lockbourne AFB landfill, is containment (USEPA 1993, 1996). At AOC 1, the selected remedy is the containment presumptive remedy, which consists of waste consolidation, construction of a soil cover, long-term management, and institutional controls, defined as Alternative 3 in the *Final Focused Feasibility Study* (FFS) Report (CH2M HILL 2011a). The institutional controls will be implemented through the conveyance of an environmental covenant. The landfill cover will prevent direct contact by human and ecological receptors with contaminated materials and reduce the migration of contamination from soil to surface water and groundwater. The landfill contents of AOC 1 are a non-principal threat waste, as defined by USEPA, because they can be reliably contained and present only a low risk in the event of exposure. At AOC 2, the selected remedy is implementation of an institutional control that will be implemented through the conveyance of an environmental covenant, defined as Alternative 2 in the *Final FFS Report* (CH2M HILL 2011a).

Specifically, the remedy for AOC 1 (Alternative 3) consists of:

- *Waste consolidation and construction of a soil cover*. The size of the landfill will be reduced by consolidating the waste under a soil cover. The soil cover will address potential risks to human health and the environment by preventing contact with contaminated soil and waste materials; eliminating the migration of constituents of concern (COCs) in surface soil to surrounding areas via surface water runoff; reducing surface water infiltration; and reducing leaching of COCs from soil and waste to groundwater.

- *Long-term management*. Long-term management includes groundwater monitoring, landfill gas monitoring, inspections, and maintenance (e.g., repairs, mowing). Long-term management activities will assess potential offsite migration of the COCs in groundwater; monitor that landfill gas does not pose an explosion hazard; and ensure that the cover is preventing contact with contaminated soil and waste, reducing surface water infiltration, and eliminating the migration of contaminated surface soil from the landfill to surrounding areas via surface water runoff. The groundwater and landfill gas monitoring program will be defined in a long-term management plan following completion of the cover. While the COCs in groundwater (polynuclear aromatic hydrocarbons [PAHs], metals, semivolatile organic compounds [SVOCs], and dioxins/furans) generally are not mobile in the dissolved phase and migrate typically by colloidal transport or while sorbed to particulates, the groundwater monitoring program will evaluate continued attenuation of the COCs in groundwater and will be used to assess the need for additional corrective actions to ensure protection of public health and welfare.

- *Institutional controls*. Institutional controls will restrict the future use of AOC 1 in a manner to prevent exposure to onsite groundwater, intrusive activities, and contact with waste. The landowner, the Columbus Regional Airport Authority, is agreeable to placing industrial/commercial use restrictions for AOC 1 because the intended future use of the property is as part of the airport. The USACE is responsible to implement

institutional controls that meet the remedial action objectives. Therefore, USACE will coordinate implementation and support enforcement of the institutional control with the Ohio EPA and the landowner, to the extent of its legal authority. The USACE will monitor the institutional controls as part of the CERCLA five-year review process to ensure that they remain effective.

- *Five-year reviews*. Five-year reviews will be completed as long as hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure and institutional controls are required to protect the selected remedy.

Specifically, the remedy for AOC 2 (Alternative 2) consists of:

- *Institutional controls*. Institutional controls will restrict the future use of AOC 2 in a manner to prevent exposure to onsite groundwater. The landowner, the Columbus Regional Airport Authority, is agreeable to placing industrial/commercial use restrictions for AOC 2 because the intended future use of the property is as part of the airport. The USACE is responsible to implement institutional controls that meet the remedial action objectives. Therefore, USACE will coordinate implementation and support enforcement of the institutional control with the Ohio EPA and the landowner, to the extent of its legal authority. The USACE will monitor the institutional controls as part of the CERCLA five-year review process to ensure that they remain effective.
- *Five-year reviews*. Five-year reviews will be completed as long as hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure and institutional controls are required to protect the selected remedy.

1.5 Statutory Determinations

The selected remedies are protective of human health and the environment; comply with applicable or relevant and appropriate requirements (ARARs) or invoke ARAR waivers; are cost-effective; and use permanent solutions. The presumptive remedy does not satisfy the statutory preference for treatment as a principal element because the presumptive remedy for landfills is containment. Statutory reviews will be conducted every 5 years after initiation of the remedial actions to ensure the remedies remain protective of public health, welfare, and the environment. In accordance with Section 121 of CERCLA, as amended in 1986 by the Superfund Amendments and Reauthorization Act, five-year reviews will be completed as long as hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure and institutional controls are required to protect the selected remedy.

1.6 Data Certification Checklist

The following information is included in Section 2 of this Decision Document.

- COCs and their respective concentrations
- Baseline risks

- Cleanup levels were not established because a containment presumptive remedy is being used. The remedial action objectives (RAOs) will be fulfilled upon implementation of the selected remedy.
- How COCs will be addressed
- Current and reasonably anticipated future land use assumptions, and current and hypothetical future beneficial uses of groundwater, assessed in the baseline risk assessment.
- Land and groundwater restrictions that will be recommended as a result of the selected remedies
- Estimated capital costs, annual operation and maintenance (O&M) costs, total present worth (remedial action – construction and remedial action – operation only), discount rate, and the period over which remedy implementation (design and construction) and operation are to occur.
- Key factors that led to remedy selection

Additional information can be found in the Administrative Record file.

DECISION DOCUMENT
FORMER LOCKBOURNE AIR FORCE BASE LANDFILL, OHIO
APPROVAL

This Decision Document presents the selected response action at the former Lockbourne Air Force Base landfill. The United States Army Corps of Engineers is the lead agency under the Defense Environmental Restoration Program at the former Lockbourne AFB landfill Formerly Used Defense Site, and has developed this Decision Document consistent with the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan. This Decision Document will be incorporated into the Administrative Record file for the former Lockbourne AFB landfill. USACE-Louisville District maintains the Administrative Record file and it is available online at http://bit.ly/LockbourneAFB. The Information Repository is located at the Columbus Metropolitan Library, Southeast Branch, at 3980 South Hamilton Road in Groveport, Ohio. The library has free public computer access to view the Administrative Record file. This document, presenting the selected remedies for AOC 1 and AOC 2 with a present worth cost[1] estimate of $9,260,831 for AOC 1 and AOC 2, is approved by the undersigned, pursuant to Memorandum, DAIM-ZA, September 9, 2003, Subject: Policies for Staffing and Approving Decision Documents, and to Engineer Regulation 200-3-1, Formerly Used Defense Sites Program Policy.

APPROVED:

CHRISTINE T. ALTENDORF, Ph.D., P.E. Chief, Environmental Division Directorate of Military Programs	Date

[1] FFS present worth cost estimate is $12,916,000 for AOC 1 and $67,900 for AOC 2; however, based on currently available design information, the present worth cost estimate is $9,260,831 for AOC 1 and AOC 2.

2. Decision Summary

SECTION 2

Decision Summary

2.1 Project Name, Location, and Description

The former Lockbourne AFB landfill is located east of Interstate 71 in Columbus, Franklin County, east of the village of Lockbourne, Ohio (Figure 1-1). The landfill is on approximately 145 acres within an undeveloped area west of the developed part of the former Lockbourne AFB. The former AFB covered 4,371 acres, some of which is now occupied by the Columbus Regional Airport Authority, the 121st Air Refueling Wing of the Ohio ANG, the Ohio Army National Guard, general aviation facilities, various retail and service businesses, and a Naval Reserve Center. The site is on a FUDS property (FUDS Property Number G05 OH0007). The response actions are funded by the Environmental Restoration-FUDS account through FUDS Project Number G05 OH000703.

Figure 2-1 shows the site features. The site is bordered by Vause Road to the north, Tank Truck Road to the southeast, and railroad tracks to the southwest. Rickenbacker ANG Base and Rickenbacker International Airport are east-southeast of the site, and the village of Lockbourne is west of the site. A man-made perimeter ditch runs along the eastern and western boundaries of the site. The eastern portion of this ditch is referred to as the East Ditch, while the western portion is referred to as the West Ditch. A high-tension power line crosses the northwest side of the site. A corridor for an inactive power line runs from Tank Truck Road through the site, ending shortly after crossing the main site access road. The landowner, the Columbus Regional Airport Authority, maintains control of entry to the site.

The site was divided into two investigation areas, AOC 1 and AOC 2. AOC 2 was separated from AOC 1 during the remedial investigation (RI) process to facilitate reuse of this portion of the site where no buried waste was encountered. Additionally, baseline risks were calculated separately for AOC 1 and AOC 2 in the *Final Remedial Investigation Report* (CH2M HILL 2010) because of the different reuse potential for each AOC. The boundary between AOC 1 and AOC 2 has shifted based on Columbus Regional Airport Authority's development priorities and on the results of the site investigations. The *Final Remedial Investigation Report* (CH2M HILL 2010) and subsequent reports reflect the final dividing line between the two AOCs for purposes of remedial decision making.

AOC 1 is approximately 105 acres and occupies the western half of the site where waste disposal occurred. Wastes reportedly were dispersed on the ground surface and buried in trenches up to 10 feet deep, with some wastes in the saturated zone. Depth to groundwater at the site ranges from 4 to 16 feet below ground surface. The waste consists of general trash from base housing and other administrative buildings, construction and demolition debris, and lime sludge from the base water treatment plant. Historical documents suggest the landfill may also have received pesticides and herbicides, ammunition, airplane parts, and hazardous materials. The East and West Ditches are considered a part of AOC 1.

AOC 2 is approximately 40 acres and is on the eastern side of the site. Although there is scattered inert debris at this portion of the site, historical investigations indicate AOC 2 was

not used for waste disposal (CH2M HILL 2009). However, because of the shift in boundary between AOC 1 and AOC 2, there is an incidental amount of waste in AOC 2 that will be addressed under AOC 1.

USACE is the lead agency for the site, and Ohio EPA is the lead regulatory agency overseeing cleanup activities.

2.2 Project History

From 1951 until 1979, the Lockbourne AFB landfill was used to dispose of wastes from Lockbourne AFB. The types of waste disposed of included general trash from base housing and other administrative buildings, construction and demolition debris, and lime sludge from the base water treatment plant. Historical documents suggest the landfill may have received pesticides and herbicides, ammunition, airplane parts, and hazardous materials. The wastes reportedly were disposed of in trenches, up to 10 feet below ground and on the ground surface (LAW Engineering and Environmental Services, Inc. 1995; CH2M HILL 2009).

In a letter dated April 13, 1978, submitted to the Rickenbacker AFB, Ohio EPA requested termination of landfill operation and proper closure of the landfill.

Between 1986 and 2011, the following investigations and studies were performed at the former Lockbourne AFB landfill to evaluate potential environmental contamination at the site:

- Site screening investigation, Ecology and Environment on behalf of USEPA (that is, not a USACE FUDS investigation report), 1986
- Phase I site investigation, LAW Engineering and Environmental Services, Inc., on behalf of USACE, 1995
- Environmental baseline survey investigation, IT Corporation and the Final Remedial Investigation Phase I Data Report, Parsons Engineering Science, Inc. on behalf of Air Force Center for Environmental Excellence, 1995
- Phase II site investigation, Program Management Company on behalf of USACE, 2000
- Site investigation, CH2M HILL on behalf of USACE, 2009
- RI, CH2M HILL on behalf of USACE, 2010
- FFS, CH2M HILL on behalf of USACE, 2011

During the investigations, landfill gas, soil, sediment, surface water, seep, and groundwater samples were collected. Test pits, geophysical and soil gas surveys, soil analytical data, and aerial photographs were used to define the extent and characteristics of waste and impacts to the site.

2.3 Community Participation

Public involvement for the former Lockbourne AFB began in the early 1990s, specifically for the environmental cleanup program at the adjacent Rickenbacker ANG Base. In 1995, the

U.S. Air Force prepared a community relations plan for the Base (Air Force Center for Environmental Excellence 1995). The Restoration Advisory Board, established in January 1994, met quarterly until 2002 to update the public on progress at the environmental cleanup sites at the former AFB. The focus of the board was the cleanup of sites adjacent to the landfill, but the landfill was discussed occasionally during public meetings. Since 2002, activities have consisted primarily of meetings with the property owner and Ohio EPA.

USACE prepared a Public Involvement Plan in 2011 as part of its obligations under CERCLA to help ensure the public is informed about and involved in cleanup decisions at the former Lockbourne AFB landfill. Local community, including municipal and county officials and a representative of a regional environmental organization, were interviewed to support preparation of a Public Involvement Plan.

The final proposed plan (CH2M HILL 2011b) was made available to the public on April 21, 2011. The Administrative Record file, which contains this Decision Document, proposed plan, and supporting documentation such as the RI and FFS reports, is maintained by the USACE-Louisville District office and is online at http://bit.ly/LockbourneAFB. The Information Repository is located at the Columbus Metropolitan Library, Southeast Branch, at 3980 South Hamilton Road in Groveport, Ohio. The library has computers available to the public for review of the Administrative Record file.

A factsheet regarding the former landfill was mailed on April 20, 2011, to area residents, business owners, and public officials announcing the availability of the proposed plan and public participation events. The notice of availability of the plan and date of the public meeting was published April 20, 2011, in the *Columbus Dispatch.* A public comment period was held from April 21 to May 23, 2011. The comment period was scheduled to end May 21 but was extended to May 23 because May 21 was a weekend day. A public meeting was held on April 28, 2011, at the Hamilton Township Community Center at 6400 Lockbourne Road in Lockbourne, Ohio, to present the proposed plan. At the meeting, representatives of USACE and Ohio EPA answered questions about the site and the remedial alternatives. A transcript of the meeting is attached to this document (Exhibit 1) and available in the Administrative Record file. The Responsiveness Summary of this Decision Document contains responses to comments received at the meeting and during the public comment period (Exhibits 2 through 8).

2.4 Scope and Role of Response Action

This Decision Document addresses the selected remedial alternatives for AOC 1 and AOC 2 only. This document does not include or directly affect other sites at the former Lockbourne AFB. The selected cleanup at the site represents the final action for AOC 1 and AOC 2, which will address the affected media (soil, groundwater, sediment, and surface water) and mitigate unacceptable risks to human health and the environment.

When considering cleanup alternatives for AOC 1, the USACE included appropriate components of USEPA's "presumptive remedy" for municipal landfills. ("Presumptive remedies" are preferred technologies for common categories of sites based on historical patterns of remedy selection, and the USEPA's scientific and engineering evaluation of performance data [USEPA 1996]). The USEPA presumptive remedy for landfills, such as the

former Lockbourne AFB landfill, is containment (USEPA 1993, 1996). At AOC 1, the selected remedy is the containment presumptive remedy, which consists of waste consolidation, construction of a soil cover, long-term management, and institutional controls, defined as Alternative 3 in the FFS Report (CH2M HILL 2011a). The institutional controls will be implemented through the conveyance of an environmental covenant. The landfill cover will prevent direct contact by human and ecological receptors with contaminated materials and reduce the migration of contamination from soil to surface water and groundwater. The landfill contents of AOC 1 are a non-principal threat waste, as defined by USEPA, because they can be reliably contained and present~~s~~ only a low risk in the event of exposure. At AOC 1, the anticipated sequence of activities to implement the presumptive remedy is:

- Complete work planning documents.
- Obtain utility clearances.
- Mobilize to the site and set up staging areas.
- Clear and grub existing vegetation and abandon select monitoring wells.
- Consolidate waste within the area to be covered.
- Construct a soil cover.
- Install a passive venting system.
- Install drainage swale.
- Complete site restoration by revegetating the site and removing staging areas.
- Install replacement and new monitoring well and sample groundwater monitoring wells.
- Implement institutional controls, which can be completed concurrently or ahead of landfill cover installation.
- Prepare completion report.

At AOC 2, the selected remedy is implementation of an institutional control that will be implemented through the conveyance of an environmental covenant, defined as Alternative 2 in the *Final FFS Report* (CH2M HILL 2011a).

The remedy can be applied after finalizing this Decision Document.

2.5 Project Characteristics

This section briefly summarizes the topography, wetlands, geology, hydrogeology, hydrology, and nature and extent of contamination at the site. There are no known archeological or historical landmarks at the site.

2.5.1 Topography and Wetlands

The vegetation on the site is predominantly deciduous woodland, typically with a very dense understory of amur honeysuckle (*Lonicera maackii*), an invasive species. Maintained

grassland is present around the former radio transmitter building, in the corridor for overhead utility lines that runs through the center of the site, and along roadways. Scrub and old field vegetation occur in the northwestern corner and in small areas in the southern half of the site. The land surface is uneven, with both low areas and mounds. Water sometimes collects in the low areas after rainfall. The land elevation ranges from 700 to 735 feet above mean sea level.

Before the remedial action can be implemented, coordination with USACE and Ohio EPA will be required if the proposed remediation will affect wetlands or water bodies. The coordination will include verification of wetlands in the action area by the USACE's Huntington District Regulatory Branch and a determination of which wetlands are regulated under federal and/or state laws. The USACE-Huntington District Regulatory Branch will conduct another site visit to review the wetland boundaries in accordance with the wetland criteria (vegetation, soils, and hydrology) and the connectivity of the wetlands to relatively permanent water as part of their jurisdictional determination.

2.5.2 Geology

The site is characterized by roughly 200 feet of Pleistocene glacial drift that fills a preglacial bedrock valley. Shales of the Ohio and Olentangy formations and limestones of the Columbus and Delaware formations underlie the area. The shale and limestone bedrock are Devonian Age. The surficial tills are mainly associated with ground moraine. Alluvial deposits are found in association with Walnut Creek and Big Walnut Creek. Soil near the site consists of medium-textured glacial till and glacial outwash, mainly derived from limestone and dolomite. The site is underlain by an upper silty clay from the ground surface to depths ranging from approximately 55 feet to more than 80 feet below ground surface. Sand and gravel deposits occur below the silty clay, followed by a clay unit at a depth of approximately 130 feet below ground surface. Shale and limestone bedrock generally are encountered at 200 feet below ground surface.

The U.S. Department of Agriculture Soil Conservation Service has described the soils near the site as being of the Crosby series and the Kokomo series (National Cooperative Soil Survey 1980). The Crosby series consists of deep, somewhat poorly drained, slowly permeable soils formed in high-lime glacial till on uplands at a slope ranging from 0 to 6 percent. The Kokomo series consists of deep, very poorly drained, moderately slowly permeable soils formed in high-lime Wisconsin Age glacial till on uplands at a slope ranging from 0 to 2 percent.

2.5.3 Hydrogeology

The hydrogeologic setting of the site is characterized by the presence of three water-bearing zones separated by relatively impermeable clay. The *Phase II Site Investigation Report* designates them as the upper water-bearing zone (UWBZ), the intermediate depth aquifer (IDA), and the deep sand aquifer (Program Management Company 2000).

UWBZ groundwater exists at depths ranging between 4 and 16 feet below ground surface in interbedded sand lenses of the upper silty clay unit. Groundwater flow within the UWBZ is generally toward the west-southwest with a horizontal gradient of 0.0075 foot per foot. Figure 2-2 presents the potentiometric contour for the UWBZ with data collected in May

2004. The hydraulic conductivity (*K*) values derived from slug testing of the shallow wells range from 1 to 28 feet per day. Based on review of previous documents and topography, the UWBZ likely discharges to the East and West Ditches and to Big Walnut Creek. A gray clay layer appears to be laterally continuous throughout the site where its thickness is more than 20 feet and is believed to be an effective aquitard (a zone that restricts the flow of groundwater from one aquifer to another) between the shallow water-bearing zone and the lower water-bearing zones.

The IDA is present in the sand and gravel deposits at an estimated depth of 50 to 130 feet below ground surface and is considered a confined water-bearing zone. The groundwater flow in the IDA also is generally toward the west-southwest with a horizontal gradient of 0.004 foot per foot. Figure 2-3 presents the potentiometric contour for the IDA with data collected in May 2004. The *K* values derived from slug testing of the IDA wells range from 0.5 to 18 feet per day. The *K* values derived from vertical and horizontal falling head permeability testing conducted in the laboratory on IDA groundwater samples range from 0.0001 to 0.1 foot per day. The IDA discharge points will be evaluated as part of long-term management. A silt and clay unit roughly 130 feet below ground surface separates the IDA from the deep sand aquifer (Engineering Science 1992).

2.5.4 Hydrology

At its closest point, the site is approximately 0.75 mile from Big Walnut Creek. Surface water drains to a man-made perimeter ditch along the eastern and western boundaries of the site and ultimately drains to Big Walnut Creek. The eastern portion of this ditch is referred to as the East Ditch, while the western portion is referred to as the West Ditch. The ditches are used to manage stormwater for the site and for adjacent properties. The West Ditch contains a reinforced concrete structure that the Lockbourne AFB formerly used as a flow control structure for surface water runoff.

According to the Federal Emergency Management Agency 100-year flood plain mapping, the site is not located in a 100-year floodplain.

2.5.5 Nature and Extent of Site Contaminants

This section summarizes the information obtained from previous investigations regarding the nature and extent of waste disposal at the site and of contamination resulting from waste disposal activities. The nature and extent discussion below focuses on the COCs identified at the site that were detected at concentrations exceeding human health and ecological risk-based screening levels or available background values.

AOC 1

Waste. Based on trenching and geophysical survey activities to characterize the limits of the waste, waste encountered included municipal solid waste, construction and demolition debris, lime sludge, and black material that appeared to be coal ash. During trenching, waste was encountered from ground surface to 10 feet below ground surface. Approximately 146,000 cubic yards of waste are estimated for AOC 1. Figure 2-4 shows the lateral extent of the encountered waste.

Surface Soil. Six SVOCs and one polychlorinated biphenyl (PCB-1248) were identified as human health COCs in surface soil (0 to 1 foot below ground surface). The SVOCs were widespread, and the most prevalent were PAHs. SVOCs include benz(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; dibenzo(a,h)anthracene; and indeno(1,2,3-cd)pyrene. Table 2-1 presents the maximum concentrations of human health COCs.

For ecological receptors, COCs and their maximum detected concentrations include 7 metals (aluminum [26,000 milligrams per kilogram (mg/kg)], chromium [35.5 mg/kg], lead [9,340 mg/kg], mercury [0.79 mg/kg], selenium [3.5 mg/kg], thallium [2.8 mg/kg], and zinc [1,650 mg/kg]), total PAHs (5,015 mg/kg), total PCBs (22 mg/kg), 1 pesticide (dichlorodiphenyl trichloroethane [DDT] [0.42 milligrams per liter (mg/L)]), and dioxins/furans (6.6×10^{-5} mg/kg expressed as tetrachlorodibenzo-p-dioxin toxic equivalent [TCDD-TEQ]) were identified as COCs in surface soil. Ecological risk estimates for total PAHs and total PCBs are a better predictor of a potential toxic response.

While background concentrations of PAHs and dioxins/furans were not established for purposes of developing COCs, PAHs were detected in background surface soil samples. However, concentrations of PAHs detected at the site were assumed to be site-related as described in Section 2.7.1.

Subsurface Soil. Subsurface soil samples were collected from 1 to 10 feet below ground surface. PAHs were the primary SVOCs detected in subsurface soil. SVOC COCs include benz(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; dibenzo(a,h)anthracene; and indeno(1,2,3-cd)pyrene. In addition, PCB-1248 and lead were identified as human health COCs in subsurface soil. Table 2-1 presents the maximum concentrations of human health COCs. There are no subsurface soil COCs for ecological receptors.

Background concentrations were not established for subsurface soil; therefore, detected constituents were screened against only risk-based screening levels.

Surface Water. Surface water samples were collected from both the East and the West Ditches. There are no surface water COCs for human health. No ecological COCs were identified in surface water samples collected from the East Ditch. Dioxins/furans were identified as ecological COCs in West Ditch unfiltered surface water. The maximum detected concentration of dioxins/furans in the West Ditch is 5.44×10^{-9} mg/L (expressed as TCDD-TEQ).

While background concentrations of dioxins/furans were not established for purposes of developing COCs, dioxins/furans were detected in upstream West Ditch surface water samples.

Sediment. Sediment samples were collected from both the East and West Ditches. There are no sediment COCs for human health. PAHs were identified as ecological COCs in sediment in the East Ditch, with a maximum total PAHs detected concentration of 3.53 mg/kg. Ecological COCs in the West Ditch sediment, along with their maximum detected concentrations include the following: arsenic (22 mg/kg); the pesticides dichlorodiphenyl dichloroethane (DDD) (0.077 mg/kg), dichlorodiphenyl dichloroethylene (DDE) (0.0091 mg/kg), and DDT (0.019 mg/kg); PCBs (total: 0.089 mg/kg); PAHs (total low molecular weight: 2.56 mg/kg, total high molecular weight: 4.37 mg/kg, and total: 6.93 mg/kg); and dioxins/furans (4.06×10^{-6} mg/kg expressed as TCDD-TEQ).

While background concentrations of dioxins/furans were not established for purposes of developing COCs, dioxins/furans were detected in upstream West Ditch sediment samples. However, concentrations of PAHs detected in the West Ditch sediment were assumed to be site-related as described in Section 2.7.1.

Groundwater. Human health COCs identified in unfiltered groundwater from the UWBZ consist of PAHs (benzo(a)pyrene; benzo(b)fluoranthene; dibenzo(a,h)anthracene; indeno(1,2,3-cd)pyrene; and benz(a)anthracene), SVOCs (naphthalene and bis(2-ethylhexyl)phthalate), dioxins/furans, and metals (arsenic, cobalt, iron, lead, manganese, and thallium). Human health COCs identified in unfiltered groundwater from the IDA consist of PAHs (benzo(a)pyrene; benzo(b)fluoranthene; dibenzo(a,h)anthracene; and indeno(1,2,3-cd)pyrene), SVOCs (naphthalene and bis(2-ethylhexyl)phthalate), dioxins/furans, and metals (iron and manganese). Iron and manganese are not CERCLA hazardous substances. Evaluation of CERCLA remedial action alternatives therefore did not consider potential risk related to these constituents. However, the selected remedial action would not change based on the exclusion of iron and manganese. Table 2-1 presents the maximum concentrations of human health COCs. There are no groundwater COCs for ecological receptors.

Suspended solids or soil particulates were present in unfiltered groundwater samples as demonstrated by turbidity measurements. Reported metals concentrations for the groundwater may be influenced by particulates that were counted in the metals analysis along with the dissolved metals in the groundwater to produce an unrepresentative high concentration. Therefore, metals identified as COCs in groundwater may be a result of metals attached to the soil particles floating in the groundwater instead of metals dissolved within the groundwater.

While background concentrations of PAHs and dioxins/furans were not established for purposes of developing COCs, PAHs and dioxins/furans were detected in groundwater samples collected upgradient of the site and offsite (not affected by the landfill). However, as discussed in Section 2.7.1, PAHs and dioxins/furans detected in groundwater at AOC 1 were assumed to be site-related.

Seeps. Landfill seeps have been inconsistently observed along the western boundary of the site. Although seeps were located and sampled in earlier investigations, repeated attempts were made to locate previously identified seeps during the 2008–2009 site investigation. No seeps were found. USACE and Ohio EPA agreed that seeps are not persistent features. Therefore, a risk assessment was not conducted for seeps since the data could not be replicated.

AOC 2

Waste. Although scattered construction and demolition debris is present at the ground surface, historical investigations indicate AOC 2 was not used for subsurface waste disposal. However, recent studies indicate incidental waste extends from AOC 1 into the AOC 2 boundaries. The waste in AOC 2 will be addressed as part of the remedial action for AOC 1.

Surface Soil. No COCs were identified in surface soil at AOC 2.

Subsurface Soil. No COCs were identified in subsurface soil at AOC 2.

Surface Water. The East and West Ditches are considered part of AOC 1. Surface water samples were not collected as part of AOC 2.

Sediment. The East and West Ditches are considered part of AOC 1. Sediment samples were not collected as part of AOC 2.

Groundwater. Dioxins/furans and PAHs (dibenzo(a,h)anthracene; benzo(a)pyrene; and indeno(1,2,3-cd)pyrene) and were identified as human health COCs in unfiltered groundwater from the UWBZ at AOC 2. Table 2-1 presents the maximum concentrations of human health COCs. There are no groundwater COCs for ecological receptors.

While background concentrations of PAHs and dioxins/furans were not established for purposes of developing COCs, PAHs and dioxins/furans were detected in groundwater samples collected upgradient of the site and offsite (not affected by AOC 2). However, as discussed in Section 2.7.1, PAHs and dioxins/furans detected in groundwater at AOC 2 were assumed to be site-related.

2.5.6 Contaminant Fate and Transport

Significant factors affecting the fate and transport of COCs include the chemical and physical properties of the COCs and of the surrounding geology/environment. The COCs observed at the site, particularly the high molecular weight PAHs, PCBs, metals, and dioxins/furans, generally are insoluble in water and have a strong tendency to remain bound to soil. They typically are not mobile in the dissolved phase and migrate primarily by colloidal transport or while sorbed to particulates. The permeabilities of shallow soil beneath the landfill are low. Therefore, groundwater transport of COCs is likely a less significant mechanism for contaminant transport than surface water runoff.

The qualitative fate and transport evaluation indicates that migration pathways include surface soil to sediment in surface water runoff and surface soil to subsurface soil by infiltration/leaching. There is some evidence of COC migration from surface soil to surface water in runoff, and from subsurface soil to groundwater by leaching. However, these migration routes are less significant because the COCs are not readily mobile in the dissolved phase and typically rely on transport by colloids or sorption to larger particulates, in groundwater or surface water.

2.6 Current and Potential Future Site and Resource Uses

2.6.1 Current and Potential Future Land Use

The entire site is undeveloped and unused, but the risk assessment assumed that maintenance workers, industrial workers, and trespassers/visitors are current users at AOC 1 and maintenance workers, trespassers/visitors, and industrial workers are current users at AOC 2.

Land use north of the site consists of residential and industrial/commercial development. Land use south/southwest of the site is primarily agricultural. Rickenbacker ANG Base and Rickenbacker International Airport are east/southeast of the site; while the village of Lockbourne, Ohio is west of the site. Future land use at AOC 1 was assumed to be

industrial/commercial. Maintenance worker, construction worker, trespasser/visitor, and offsite resident were identified as future receptors at AOC 1. Onsite facility worker, maintenance worker, and construction worker were identified as future receptors at AOC 2. There are no plans for residential development on the site.

Land use is expected to remain industrial/commercial based on the following:

- The site is adjacent to an active runway, which restricts its potential use as a residential area as long as the runway is active.
- During USACE's discussions with the property owner, the Columbus Regional Airport Authority has indicated plans for the site only include industrial/commercial use.
- Current property use is industrial/commercial.
- Current zoning is listed as manufacturing.

2.6.2 Current Beneficial Groundwater Use

Groundwater and surface water at the former Lockbourne AFB landfill currently are not used for drinking water. Most of the village of Lockbourne residents receive drinking water from the Columbus municipal water system. The City of Columbus uses surface water from the Scioto River, Big Walnut Creek, and Hoover and Alum Creek reservoirs for its supply, along with groundwater from the South Wellfield area in southeast Franklin County.

The South Wellfield area is approximately 2.5 to 4 miles north and northwest or upstream of the site adjacent to Big Walnut Creek and the Scioto River. The South Wellfield wells used by the city, draw water from glacial sands and gravels and indirectly nearby surface water. Being upstream and to the north and northwest of the site, the wells are not nor are they expected to be within groundwater flow paths from the site. The South Wellfield wells reportedly draw water from 68 to 109 feet below ground surface in sands and gravels in the heterogeneous glacial deposits characteristic of the area (House et al. 2008). Although these screened depths may be similar to those of the IDA near the landfill, water-bearing zones within glacial outwash deposits are likely not contiguous throughout this part of Franklin County because of considerable heterogeneity. The shale bedrock beneath the unconsolidated glacial deposits is not considered to be water bearing and does not provide significant recharge to the unconsolidated deposits, as does the limestone bedrock terrain further to the west in Franklin County.

Although most residents are connected to the municipal water system, some residents in the village of Lockbourne reportedly obtain drinking water and irrigation water from private wells. A public health assessment conducted by the Agency for Toxic Substances and Disease Registry (2000) reported that private production wells, at that time, were still used by some homeowners for drinking water. The report also indicates that in 1996, seven residences were identified as having private productions wells, with five drawing from the UWBZ and two from the IDA. The report also indicates that Ohio EPA collected and analyzed groundwater samples from the five wells believed to be screened in the UWBZ and that they met state and federal drinking water standards. Although groundwater and surface water use are expected to remain unchanged from current conditions, current private water well use should be verified as part of long-term management.

2.7 Summary of Project Risks

The human health and ecological risk assessments estimate what potential risks the site poses if no action were taken. The risk assessment provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action. This section summarizes the results of the human health and ecological risk assessment for the site.

2.7.1 Human Health Risk Assessment

A human health risk assessment was performed to evaluate potential current and future risks associated with detected constituents in soil, groundwater, surface water, and sediment at the site based on the conceptual site model. Receptors evaluated included onsite maintenance workers, future facility workers, future construction workers, industrial workers, trespasser/visitors, and offsite residents. The human health risk assessment did not evaluate risks to potential future residents living on the landfill because land use at the site is expected to remain industrial/commercial.

Under current land use conditions, the exposure pathways evaluated were exposure of maintenance worker to surface soil; industrial worker to particulate emissions from surface soil; and trespasser/visitor to surface soil, sediment, and surface water. Under future land use conditions, the exposure pathways evaluated were exposure of onsite facility worker to surface soil and indoor air; future maintenance worker to surface soil; construction workers to soil, sediment, surface water, and shallow groundwater; and offsite residents to groundwater and indoor air. Exposures of maintenance worker, industrial worker, and trespasser/visitor were assumed the same under both future and current land use conditions. The exposures for these receptors are the same under both land use conditions, because they may be exposed to the same media for the same durations both under current and future land use conditions.

Two types of risks to humans are evaluated in the human health risk assessment: cancer risk and noncancer risk. For cancer risks, the likelihood of any kind of cancer resulting from a site is generally expressed as an upper-bound probability. A “1 in 10,000 chance” would mean that one extra cancer case may occur per 10,000 people, above that which would normally be expected to occur from all other causes, as a result of exposure to site contamination. In the United States, the “normal” chance of contracting cancer is about one in two for men and one in three for women (American Cancer Society 2010). Noncancer health effects are expressed in terms of a “hazard index” (HI). The key concept here is that a “threshold level” (measured usually as an HI of less than 1) exists below which adverse, noncancer health effects are no longer predicted.

Potential risk to human health was calculated independently for carcinogenic and noncarcinogenic constituents because of the different toxicological endpoints, relevant exposure duration, and methods used to characterize risk. Constituents that may produce both noncarcinogenic and carcinogenic effects were evaluated in both groups. Once the human health risks for carcinogenic and noncarcinogenic constituents were calculated, the exposure scenarios were evaluated to determine if they exceeded risk targets. In accordance with CERCLA, when a cumulative carcinogenic risk to an individual receptor under the assumed reasonable maximum exposure conditions at a site exceeds 100 in a million (that is,

10^{-4} excess carcinogenic risk), remedial action to reduce risks at the site is generally required (USEPA 1991). If the cumulative risk is less than 10^{-4}, action generally is not required but may be warranted if a risk-based chemical-specific standard (such as a maximum contaminant level) is exceeded, or if site-specific exposure or technical factors support application of a more conservative risk goal. For the former Lockbourne AFB landfill restoration project, a target risk level of 10^{-5} was selected in consideration of the potential cumulative effects related to multiple COCs, nearby residential population, and technical factors related to sample collection techniques and quantification limits. For noncarcinogenic health effects, risks are considered acceptable if the HI is less than 1, and generally considered unacceptable when the HI is greater than 1. The results of the human health risk assessment for each AOC, including COCs, are discussed below and in Table 2-1.

AOC 1

The human health risk assessment determined that under current land use conditions at AOC 1, surface soil may pose an unacceptable carcinogenic risk (greater than 1×10^{-5}) to maintenance workers and youth trespassers/visitors from PAHs and a PCB. Under future land use conditions, risk from surface soil to maintenance workers, youth trespassers, and visitors from PAHs and the PCB are the same as that under current land use conditions. Total soil (both surface and subsurface) also poses unacceptable carcinogenic risk to construction workers from PAHs and a PCB. Exposure to lead in site soil may result in unacceptable risk to children.

Based on AOC 1 groundwater data, future use of groundwater may pose the following risks:

- Unacceptable carcinogenic risk to future offsite residents from PAHs, dioxins/furans, and to a lesser extent from metals (arsenic) and SVOCs (naphthalene and bis(2-ethylhexyl)phthalate)
- Unacceptable carcinogenic risk for future construction workers from PAHs and dioxins/furans
- Unacceptable noncarcinogenic risk (HI greater than 1) for future construction workers from dioxins/furans and future offsite residents from dioxins/furans, naphthalene, and metals (including arsenic, iron, cobalt, lead, manganese, and thallium)

Iron and manganese are not CERCLA hazardous substances. Evaluation of CERCLA remedial action alternatives therefore did not consider potential risk related to these constituents. However, the selected remedial action would not change based on the exclusion of iron and manganese.

AOC 2

At AOC 2, no unacceptable noncarcinogenic or carcinogenic risks were identified under existing conditions. Under future land use conditions, exposure to groundwater by construction workers may pose an unacceptable noncarcinogenic risk (HI greater than 1) from dioxins/furans and unacceptable carcinogenic risk from dioxins/furans and PAHs.

Uncertainty Associated with the Human Health Risk Assessment

The human health risk assessment process provides conditional estimates of risk given that a set of assumptions about exposure and toxicity are realized, rather than fully probabilistic estimates of risk. Therefore, it is important to specify the assumptions and uncertainties inherent in the risk assessment to place the risk estimates in proper perspective (USEPA 1989). Typically, assumptions are made during each component of the risk assessment process, and whenever possible, these assumptions are made that would result in an overestimation of risk (rather than underestimation of risk).

At this site, the uncertainties with, and assumptions made during, each component of the risk assessment process, along with their estimated impact on the risk assessment conclusions are presented below. As stated above, the risk assessment guidance developed by USEPA acknowledges that uncertainties are inherent to the risk assessment process, and recommends that the uncertainties be identified. Uncertainties are not a reflection of the quality of the risk assessment for this site.

- Uncertainties with data evaluation
  - The analytical data used in the human health risk assessment consist of a compilation of several different sampling events and over several years. Additionally, a limited number of sediment samples were collected, particularly from the East Ditch. The result of these uncertainties may either underestimate or overestimate risk. Including the historical data (data collected greater than 10 years ago) likely overestimates the risk because degradation occurs over time and these data may not represent current site conditions.
  - Organic constituents, including PAHs and dioxins/furans, were not eliminated as COCs based on background concentrations as insufficient data were collected to reliably quantify and evaluate background concentrations (for example, using statistical comparisons). However, it is noted that PAHs and dioxins/furans were detected in soil, sediment, surfaced water and groundwater samples from offsite locations that were not affected by the landfill. PAHs and dioxins/furans frequently are found in urban/industrialized area owing to multiple anthropogenic sources, including incomplete combustion of fossil fuels (for example, wood burning, vehicular exhaust, leaf burning), rubber tire wear, weathering of asphalt, aircraft fuel combustion, and coal burning. The human health risk assessment assumed that PAHs and dioxins/furans detected at the site are entirely site-related, which may overestimate the risk because these constituents also were detected in offsite locations.
  - Groundwater samples from 1995 and 1998 used in the human health risk assessment were highly turbid, which may overestimate the concentrations of metals in groundwater. This would result in an overestimation of risk because of metals in groundwater.
  - The human health risk assessment excluded nondetected constituents whose reporting limits are greater than the risk-based screening levels. While this occurred for only a few constituents, it may result in an underestimation of the risk.

- Uncertainties with the exposure assessment
  - Even though site-related constituents are expected to decrease over time because of naturally occurring attenuation processes, the risk assessment assumed concentrations would remain constant and that these concentrations occur everywhere throughout the site, which would result in an overestimation of risk.
  - Exposure factors reflect the worst-case or upper-bound assumptions, which likely overestimate risk.
  - When at least five samples were available, exposure point concentrations based on the 95 percent upper confidence limits were calculated. USEPA recommends that eight or more samples be used to calculate upper confidence limits. Using five samples to calculate some exposure point concentrations likely overestimates the true mean and, therefore, may overestimate the risk.
- Uncertainties with the toxicity assessment
  - There is uncertainty associated with the noncarcinogenic toxicity factors and with the cancer slope factors because of extrapolation from animal studies to humans, assumed linear dose responses, oral to dermal adjustment factors, and other modification factors. Because of the conservatism built into these extrapolations and modifications, this uncertainty most likely overestimates toxicity.
  - Cancer slope factors developed by USEPA represent upper-bound estimates, therefore, overestimating carcinogenic risk.
  - Surrogate chemicals were used for detected constituents without screening levels and toxicity values (for example, phenanthrene), which may underestimate or overestimate risk.

2.7.2 Ecological Risk Assessment

An ecological risk assessment was conducted to assess potential risk to ecological populations from exposure to site-related contaminants at AOC 1 and AOC 2. The assessment also identified the East and West Ditches located along the eastern and western parts of the site as separate exposure areas. The receptors identified for evaluation at the former Lockbourne AFB landfill include lower-trophic receptors, such as plants, earthworms, and benthic invertebrates (animals without backbones that live in aquatic bottoms or sediment habitats) and upper-trophic terrestrial and aquatic receptors (animals that live on land or in water such as birds, mammals, and fish). Key upper-trophic receptors include the deer mouse, American robin, mourning dove, short-tailed shrew, red-tailed hawk, red fox, mallard, marsh wren, muskrat, belted kingfisher, and mink. The ecological receptors at AOC 1 and AOC 2 include lower-trophic receptors and upper-trophic terrestrial and aquatic receptors.

Potential unacceptable ecological risks at AOC 1 were identified for terrestrial mammals from a metal (thallium), PAHs, PCBs, and dioxins/furans; to birds from lead and PCBs; and to lower-trophic receptors at AOC 1 (aluminum, chromium, lead, mercury, selenium, thallium, zinc, DDT, PCBs, PAHs, and dioxins/furans), the East Ditch (PAHs), and the West Ditch (dioxins/furans, arsenic, DDD, DDE, DDT, PCBs, and PAHs). The East and West

Ditches provide poor to marginal habitat quality for aquatic receptors, based on low habitat quality scores assessed using Ohio EPA's Qualitative Habitat Evaluation Index and USEPA's Rapid Bioassessment Protocol (CH2M HILL 2010). Given the low habitat scores and the presence of a low diverse macroinvertebrate population void of high-quality indicator species, it is unlikely that the East and West Ditches could support a fish population or that they provide a significant source of food for upper-trophic populations.

No unacceptable risk was identified for ecological receptors at AOC 2.

2.7.3 Basis for Response Action

The response actions selected in this Decision Document are necessary to protect human health and the environment from waste material and contaminated soil, groundwater, surface water, and sediment. Waste consolidation, construction of a soil cover, long-term management, and institutional controls will address potential risks as a result of waste material and concentrations of COCs in site media at AOC 1 as described in Section 1.4. Institutional controls will address potential risks to COCs in groundwater at AOC 2 as described in Section 1.4. The landowner, the Columbus Regional Airport Authority, is agreeable to placing industrial/commercial use restrictions for AOCs 1 and 2 because the intended future use of the property is as part of the airport.

2.8 Remedial Action Objectives

This section presents the RAOs developed for the site to address unacceptable risk. The RAOs describe what the remedial action will accomplish and serve as the design basis for the remedial alternative. The following RAOs were selected for the site:

- Eliminate unacceptable human and ecological risk due to potential exposure to COCs in soil at AOC 1
- Eliminate unacceptable risk from exposure to COCs, originating from AOC 1 and AOC 2, in groundwater at the site
- Eliminate unacceptable transfer of contaminants from the landfill to nearby surface water resources

2.9 Green and Sustainable Remedial Objectives

Consistent with Executive Order (EO) 13423—*Strengthening Federal Environmental, Energy, and Transportation Management* (*Federal Register* 2007), the U.S. Department of Defense (DoD) has directed DoD components to "consider and implement green and sustainable remediation opportunities when and where they make sense" (DoD 2009). Green and sustainable environmental remediation practices use natural resources and energy efficiently; reduce negative impacts on the environment; minimize or eliminate pollution at its source; protect and benefit the community at large; and reduce waste to the greatest extent possible. The U.S. Army has outlined its approach to green and sustainable remediation in the *Army Environmental Cleanup Strategic Plan* (U.S. Army 2009). The plan contains an objective that the FUDS program considers "green remediation approaches to

existing and future remedies." To the extent possible, the following objectives also will be incorporated:

- Support beneficial reuse of site materials to complete landfill closure and provide for sustainability
- Allow for beneficial reuse of the site through creative design, construction, and restoration for site closure

These two green remediation objectives are not RAOs, but they do support the Army's approach to considering and incorporating green and sustainable approaches into remedial actions.

2.10 Description of Alternatives

The following remedial alternatives were developed for the site to address unacceptable risks due to potential exposure to COCs in soil and groundwater associated with AOC 1 and groundwater at AOC 2. For this site, the containment presumptive remedy includes a landfill cover to prevent direct contact by humans or ecological receptors with contaminated materials and reduce the migration of contamination from soil to surface water and groundwater.

2.10.1 AOC 1

Three remedial alternatives were developed for AOC 1: Alternative 1—No Action; Alternative 2—Consolidation, Construction of a Compacted Clay Cap, Long-Term Management, and Institutional Controls; and Alternative 3—Consolidation, Construction of a Soil Cover, Long-Term Management, and Institutional Controls. The major components of the remedial alternatives are defined below.

Alternative 1—No Action

The NCP requires Alternative 1 so that a baseline set of conditions can be established against which other remedial actions may be compared. Under Alternative 1, no action would be taken to change the contaminated soil conditions at AOC 1 or to restrict potential exposure to wastes. Groundwater concentrations would not be monitored, and the degree to which contaminant migration is occurring would not be documented. Alternative 1 provides no institutional controls restricting future site use.

Alternative 2—Consolidation, Construction of a Compacted Clay Cap, Long-Term Management, and Institutional Controls

Alternative 2 combines consolidation of waste present at the site and construction of a compacted clay cap over the waste materials, long-term management, and institutional controls to restrict the future use of AOC 1, restrict exposure to groundwater beneath AOC 1, and prevent intrusive activities on the landfill cap. The area would be regraded to help prevent the ponding of water and improve overall drainage. Alternative 2 is expected to inhibit vertical infiltration of precipitation into waste and reduce the potential for site personnel and the community from coming into direct contact with landfill material.

For cost estimating purposes, Alternative 2 includes the following components:

- The section of the site where wastes have been disposed would be cleared and grubbed. At this stage, it has been estimated that 47 acres of AOC 1 contains wastes. Keeping a conservative margin of 50 percent to account for workspace required during construction and staging piles, the total area identified for clearing and grubbing is 71 acres.
- Sustainable use options would be developed for the cleared vegetation.
- Waste would be consolidated within the area to be capped. The FFS assumed the area of the proposed cap is 40 acres (CH2M HILL 2011a). The area of the cap is an estimate, and the actual area would be determined during the landfill cover design. The cover would not extend into the former transmitter station property, which is not eligible for restoration by the FUDS program. The reinforced concrete structure in the West Ditch would be removed and disposed of, as appropriate. Removing the structure will help restore the ditch to a more natural condition and improve surface water drainage at the landfill while maintaining structural integrity of the landfill slope and future cap.
- The assumed average depth of excavation during consolidation of wastes is 6 feet. The assumed average depth is based on observations made during test pitting activities conducted by CH2M HILL in 2008. The depth of waste in the consolidation areas were between the ground surface and 4 feet. In some areas, the waste was greater than 8 feet. Only the area outside the proposed cap would be excavated. The excavated material would be brought within the landfill cap area.
- The site would be roughly graded as appropriate for surface drainage.
- A compacted clay cap would be constructed consisting of at least a 24-inch-thick impervious layer (clay), overlain by 6 inches of cover material, suitable for establishing and supporting the vegetation selected for the cover. Seeding, mulching (1 inch thick), and watering (as needed) of the cap area also would be conducted.
- Installing vents in the landfill cover to prevent accumulation of landfill gases.
- Long-term management measures also would be implemented to ensure continued integrity of the cap. In accordance with CERCLA, a standard 30-year period is assumed.
- Surface water drainage would be addressed by constructing drainage swales along the perimeter of the landfill. As part of the effort, the East and West Ditches may be regraded. If needed, materials removed from the ditches during construction may be relocated underneath the proposed cap. Surface water design and regrading of the East and West Ditches would be coordinated with Ohio EPA to prevent downstream impacts to Big Walnut Creek.
- Abandon monitoring wells MW-3, MW-5, MW-6, MW-12, and MW-13 and replace in accordance with the long-term monitoring plan developed as part of the remedial action.
- Install new monitoring wells downgradient of the site in accordance with the long-term management plan developed as part of the remedial action.
- Groundwater monitoring would evaluate the continued attenuation of COCs in groundwater and determine if offsite migration of COCs is occurring at levels that may pose a risk to human health. Monitoring is assumed to be conducted quarterly for 2

years and then semiannually for another 3 years. It also is assumed that groundwater will be monitored annually after that for the next 25 years. These assumptions are for cost estimation purposes only. The frequency and length of groundwater monitoring will be based on the information that is necessary to establish baseline conditions over a period sufficient to observe seasonal trends, responses to recharge, and estimate attenuation rates for key contaminants.

- An institutional control would be implemented.
- Five-year reviews would be completed as long as hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure and institutional controls are required to protect the selected remedy.

2010 Capital Cost	$12,983,800
Lifetime O&M Cost (for a period of 30 years)	$2,498,400
Lifetime Present Worth Capital and O&M Cost (for a period of 30 years)	$15,482,200

In accordance with USEPA guidance, cost estimates are developed for a 30-year period. The 30-year period is used primarily to help ensure consistency when comparing different remedial alternatives. Remedial alternatives, however, including five-year reviews, may continue beyond the 30-year period. At a minimum (as indicated above), five-year reviews will continue at the landfill as long as hazardous substances, pollutants, or contaminants remain on site above levels that allow for unlimited use and unrestricted exposure.

Alternative 3—Consolidation, Construction of a Soil Cover, Long-Term Management, and Institutional Controls

Alternative 3 combines consolidation of waste present at the site and construction of a soil cover over the waste materials, long-term management, and institutional controls to restrict the future use of AOC 1, restrict exposure to groundwater beneath AOC 1, and prevent intrusive activities on the landfill cover. The area would be regraded to help prevent the ponding of water and improve overall drainage. Alternative 3 is expected to inhibit vertical infiltration of precipitation into waste and reduce the potential for site personnel and the community from coming into direct contact with landfill material.

For cost estimating purposes, Alternative 3 consists of the following components:

- The section of the site where wastes have been disposed would be cleared and grubbed. At this stage, it has been estimated that 47 acres of AOC 1 contains wastes. Keeping a conservative margin of 50 percent to account for workspace required during construction, and staging piles, the total area identified for clearing and grubbing is 71 acres.
- Sustainable use options would be developed for the cleared vegetation.
- Waste would be consolidated within the area to be covered. The FFS assumed the area of the proposed cap is 40 acres (CH2M HILL 2011a). The area of the cover is an estimate, and actual area would be determined during the landfill cover design. The cover would not extend into the former transmitter station property, which is not eligible for restoration by the FUDS program. The existing reinforced concrete structure in the West Ditch would be removed and disposed of, as appropriate. Removing the structure will help to restore the

ditch to a more natural condition and improve surface water drainage at the landfill while maintaining structural integrity of the landfill slope and future cover.

- The assumed average depth of excavation during consolidation of wastes would be 6 feet. The assumed average depth is based on observations made during the test pitting activities conducted by CH2M HILL in 2008. The extent of waste in the consolidation areas is from ground surface to 4 feet. In some areas, the waste is greater than 8 feet. Only the area outside the proposed cover would be excavated. The excavated material would be brought within the landfill cover area.
- The site would be roughly graded, as appropriate for surface drainage.
- A soil cover would be constructed, consisting of at least a 24-inch-thick soil cover, overlain by 6 inches of cover material, suitable for establishing and supporting the vegetation selected for the cover. Seeding, mulching (1 inch thick), and watering (as needed) of the cover area also would be completed.
- Installing vents in the landfill cover to prevent accumulation of landfill gases.
- Long-term management measures would be implemented to ensure continued integrity of the soil cover. In accordance with CERCLA, a standard 30-year period is assumed.
- Surface water drainage would be addressed by constructing drainage swales along the perimeter of the landfill. As part of this effort, the East and West Ditches may be regraded. If needed, materials removed from the ditches during construction may be relocated underneath the proposed cover. Surface water design and regrading of the ditches would be coordinated with Ohio EPA to prevent downstream impacts to Big Walnut Creek.
- Abandon monitoring wells MW-3, MW-5, MW-6, MW-12, and MW-13 and replace in accordance with the long-term monitoring plan developed as part of the remedial action.
- Install new monitoring wells downgradient of the site in accordance with the long-term management plan developed as part of the remedial action.
- Groundwater monitoring would evaluate the continued attenuation of COCs in groundwater and determine if offsite migration of the COCs is occurring at levels that may pose a risk to human health. Monitoring is assumed to be conducted quarterly for 2 years, then semiannually for another 3 years. It also is assumed that groundwater would be monitored annually after that for the next 25 years. These assumptions are for cost estimation purposes only. The analytes for which samples are collected, as well as the frequency and length of groundwater monitoring, would be based on the information that is necessary to establish baseline conditions over a period sufficient to observe seasonal trends, responses to recharge, and estimate attenuation rates for key contaminants.
- An institutional control would be implemented.

- Five-year reviews would be completed as long as hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure and institutional controls are required to protect the selected remedy.

2010 Capital Cost	$10,437,800
Lifetime O&M Cost (for a period of 30 years)	$2,478,200
Lifetime Present Worth Capital and O&M Cost (for a period of 30 years)	$12,916,000

In accordance with USEPA guidance, cost estimates are developed for a 30-year period. The 30-year period is used primarily to help ensure consistency when comparing different remedial alternatives. Remedial alternatives, however, including five-year reviews, may continue beyond the 30-year period. At a minimum (as indicated above), five-year reviews will continue at the landfill as long as hazardous substances, pollutants, or contaminants remain on site above levels that allow for unlimited use and unrestricted exposure.

2.10.2 AOC 2

Two remedial alternatives were developed for AOC 2: Alternative 1—No Action, and Alternative 2—Implementation of Institutional Controls.[2] The major components of the remedial alternatives are defined below.

Alternative 1—No Action

The NCP process requires that Alternative 1 be evaluated as a baseline for other alternatives. The no action alternative does not include institutional controls, monitoring, or active remedial activities.

Alternative 2—Implementation of Institutional Controls[2]

Under Alternative 2, institutional controls would be implemented to restrict exposure to groundwater beneath AOC 2, and five-year reviews would be completed as long as contamination left in place is still above levels that allow for unlimited use and unrestricted exposure.

2010 Capital Cost	$6,000
Lifetime O&M Cost (for a period of 30 years)	$61,900
Lifetime Present Worth Capital and O&M Cost (for a period of 30 years)	$67,900

Cost estimates were based on a 30-year period as allowed by USEPA guidance. Analysis has not been done to estimate the duration of the five-year review period, given the difficulty in reliably estimating the time required for waste to attenuate such that unrestricted use/unrestricted exposure could be attained. However, it is expected that five-year reviews will continue far past the 30-year cost estimate period.

[2] The *Final Focused Feasibility Study* (CH2M HILL 2011a) and *Final Proposed Plan* (CH2M HILL 2011b) refer to AOC 2 Alternative 2 as "Implementation of Environmental Covenants." Institutional controls at AOC 2 will be implemented through the conveyance of an environmental covenant.

2.11 Comparative Analysis of Alternatives

CERCLA uses nine criteria to evaluate remedial alternatives individually and comparatively to help select a preferred alternative. They are classified as threshold, balancing, and modifying criteria.

Threshold criteria are standards that an alternative must meet for it to be eligible for selection as a remedial action. The alternative generally must meet them or it is unacceptable. Threshold criteria are:

- Overall protection of human health and the environment
- Compliance with ARARs

Balancing criteria weigh the tradeoffs among alternatives. They represent the standards upon which the detailed evaluation and comparative analysis of alternatives are based. In general, a high rating on one balancing criterion can offset a low rating on another. Five of the nine criteria are balancing criteria:

- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, or volume through treatment
- Short-term effectiveness
- Implementability
- Cost

Modifying criteria consider the concerns of state regulator and the local community's acceptance of a proposed remedial action. Modifying criteria are:

- State/support agency acceptance
- Community acceptance

This section summarizes how well each alternative satisfies each evaluation criterion and indicates how it compares to the other alternatives under consideration. Tables 2-2 and 2-3 evaluate each alternative with respect to the criteria listed above for AOC 1 and AOC 2.

2.12 Principal Threat Waste

The NCP expects treatment to be used to address principal threat wastes to the extent practicable to reduce their toxicity, mobility, or volume. The landfill contents are a non-principal threat waste, as defined by USEPA, because they can be reliably contained and present only a low risk in the event of exposure. Therefore, no principal threat waste is present at the site.

2.13 Selected Remedy

The selected remedy for AOC 1 is Alternative 3—Consolidation, Construction of a Soil Cover, Long-Term Management, and Institutional Controls. Figure 2-4 depicts the extent of the preliminary soil cover at AOC 1. The selected remedy for AOC 2 is Alternative 2—Implementation of Institutional Controls.

2.13.1 Summary of the Rationale for the Selected Remedy

AOC 1

Alternative 1 would not meet ARARs (Table 2-4) or the RAOs, and would not protect human health and the environment because no action would be taken to mitigate potential unacceptable risks. Alternatives 2 and 3 are equally protective of human health and the environment and comply with ARARs, except for Ohio Administrative Code (OAC) 3745-27-08, OAC 3745-27-10 (effective 2003), and OAC 3745-27-11(H) for which waivers are required under either alternative (Table 2-5). Compliance with ARARs under Alternatives 2 and 3 depends on continued implementation and enforcement of institutional controls and long-term management, including monitoring and maintenance. Alternative 3 is easier to implement than Alternative 2 and costs less. Therefore, Alternative 3 is selected as the remedial alternative for AOC 1 since it will meet the RAOs, is most cost-effective, and best fulfills the CERCLA nine criteria for selecting the remedial action.

AOC 2

Alternative 1 would not protect human health and the environment because no action would be taken to mitigate unacceptable risk. Alternative 2 would be protective of human health and the environment. ARARs do not apply, because Alternative 1 consists of taking no action and Alternative 2 involves only the administrative implementation of institutional controls. Alternative 2 would be easily implemented, since it involves only administrative actions. The cost to implement Alternative 2 is greater than the cost of Alternative 1 because no action would be taken with Alternative 1; however, Alternative 2 was chosen for AOC 2 because institutional controls protect human health from the limited risk posed by AOC 2, as well as has long-term effectiveness, as long the controls remain in effect and are enforced.

2.13.2 Description of the Selected Remedy

AOC 1

At AOC 1, the selected remedy is the presumptive remedy, consisting of waste consolidation, construction of a soil cover, long-term management, and institutional controls, defined as Alternative 3 in the *Final FFS Report* (CH2M HILL 2011a). Specifically, the remedy for AOC 1 consists of:

- *Waste consolidation and construction of a soil cover*. The size of the landfill will be reduced by consolidating the waste under a soil cover. The soil cover will address potential risks to human health and the environment by preventing contact with contaminated soil and waste materials; eliminating the migration of COCs in surface soil to surrounding areas via surface water runoff; reducing surface water infiltration; and reducing leaching of COCs from soil and waste to groundwater.
- *Long-term management*. Long-term management includes groundwater monitoring, landfill gas monitoring, inspections, and maintenance (e.g., repairs, mowing). Long-term management activities will assess potential offsite migration of the COCs in groundwater; monitor that landfill gas does not pose an explosion hazard; and ensure the cover is preventing contact with contaminated soil and waste, reducing surface water infiltration, and eliminating the migration of contaminated surface soil from the landfill to

surrounding areas via surface water runoff. The groundwater and landfill gas monitoring program will be defined in a long-term management plan following completion of the cover. While the COCs in groundwater (PAHs, metals, SVOCs, and dioxins/furans) generally are not mobile in the dissolved phase and migrate typically by colloidal transport or while sorbed to particulates, the groundwater monitoring program will evaluate continued attenuation of the COCs in groundwater and will be used to assess the need for additional corrective actions to ensure protection of public health and welfare.

- *Institutional controls*. Institutional controls will restrict the future use of AOC 1 in a manner to prevent exposure to groundwater, intrusive activities, and contact with waste. The landowner, the Columbus Regional Airport Authority, is agreeable to placing industrial/commercial use restrictions for AOC 1 because the intended future use of the property is as part of the airport. The USACE is responsible to implement institutional controls that meet the remedial action objectives. Therefore, USACE will coordinate implementation and support enforcement of the institutional control with the Ohio EPA and the landowner, to the extent of its legal authority. The USACE will monitor the institutional controls as part of the CERCLA five-year review process to ensure that they remain effective.
- *Five-year reviews*. Five-year reviews will be completed as long as hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure and institutional controls are required to protect the selected remedy.

AOC 2

At AOC 2, the selected remedy is implementation of institutional controls, defined as Alternative 2 in the *Final FFS Report* (CH2M HILL 2011a). Specifically, the remedy for AOC 2 consists of:

- *Institutional Controls*. Institutional controls will restrict the future use of AOC 2 in a manner to prevent exposure to onsite groundwater. The landowner, the Columbus Regional Airport Authority, is agreeable to placing industrial/commercial use restrictions for AOC 2 because the intended future use of the property is as part of the airport. The USACE is responsible to implement institutional controls that meet the remedial action objectives. Therefore, USACE will coordinate implementation and support enforcement of the institutional control with the Ohio EPA and the landowner, to the extent of its legal authority. The USACE will monitor the institutional controls as part of the CERCLA five-year review process to ensure that they remain effective.
- *Five-year reviews*. Five-year reviews will be completed as long as hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure and institutional controls are required to protect the selected remedy.

2.13.3 Performance Monitoring Strategy of the Selected Remedy

Based on the nature and extent of contamination and waste at the site, the following performance goals are identified for AOC 1 and AOC 2:

- Reduce migration of and contact with COCs in soil at AOC 1 by installing and maintaining a soil cover
- Reduce exposure to COCs in groundwater at AOC 1 and AOC 2 by implementing institutional controls that restrict the use of groundwater and monitoring the institutional controls to ensure that they remain effective.
- Monitor to ensure COCs in groundwater from AOC 1 and AOC 2 are not migrating offsite at concentrations above unacceptable risk thresholds by conducting groundwater monitoring and performing inspections of groundwater use
- Minimize accumulation of landfill gas at AOC 1 by installing a passive venting system and conducting landfill gas monitoring

2.13.4 Summary of the Estimated Remedy Costs

The cost of the selected remedy was estimated as part of the *Final FFS Report* (CH2M HILL 2011a). It is based on the best available information regarding the anticipated scope of the selected remedy and a CERCLA standard 30-year period was assumed. For AOC 1, the estimated capital cost is $10,437,800 and estimated O&M cost is $2,478,200. For AOC 2, the estimated capital cost is $6,000 and estimated O&M cost is $61,900. Tables 2-6 and 2-7 present the estimated costs for the selected remedy. They are order-of-magnitude engineering costs and thus expected to be within +50 and -30 percent of the actual project cost.

2.13.5 Expected Outcome of Selected Remedy

The expected outcome of the selected remedy for AOC 1 is:

- Restricted land use to industrial/commercial uses (beyond existing zoning laws) following cover installation
- Control of contact with contaminated media and waste material following cover installation and application of groundwater use restrictions
- Reduced erosion and minimized deposition of sediment into the East and West Ditches
- Reduced leaching to groundwater

The expected outcome of the selected remedy at AOC 2 is the control of contact with contaminated groundwater.

2.14 Statutory Determinations

Under CERCLA §121 and NCP, the lead agency must select remedies that are protective of human health and the environment, comply with ARARs (unless a statutory waiver is justified), are cost-effective, and use permanent solutions and alternative treatment

technologies or resource recovery technologies to the maximum extent practicable. The landowner, the Columbus Regional Airport Authority, is agreeable to placing industrial/commercial use restrictions for AOCs 1 and 2, because the intended future use of the property is as part of the airport. This section discusses how the selected remedy meets the statutory requirements of CERCLA and the five-year review requirements.

2.14.1 Protection Human Health and Environment

When a cumulative carcinogenic risk to an individual receptor under the assumed reasonable maximum exposure conditions at the site exceeds 100 in a million (that is, 10^{-4} excess carcinogenic risk), CERCLA generally requires remedial action to reduce risks at the site (USEPA 1991). If the cumulative risk is less than 10^{-4}, action generally is not required, but may be warranted if a risk-based chemical-specific standard (such as a federal maximum contaminant level) is exceeded, or if site-specific exposure or technical factors support application of a more conservative risk goal. The selected remedy protects human health to within USEPA's acceptable risk range of 10^{-4} to 10^{-6} for carcinogenic risk. For this project, a target risk level of 10^{-5} for carcinogens and below the HI of 1 for noncarcinogens was selected in consideration of the potential cumulative effects related to multiple COCs, nearby residential population, and technical factors related to sample collection techniques and quantification limits.

At AOC 1, the soil cover will address risks to human health and the environment by preventing contact with contaminated media and waste and eliminating the migration of contaminated surface soil from the landfill to surrounding areas by surface water runoff. The cover will reduce surface water infiltration and, therefore, reduce the generation of leachate. With the reduction in leachate, the contamination levels in groundwater will attenuate. The institutional controls for AOC 1 will restrict the future use in a manner to prevent exposure to onsite groundwater, intrusive activities, and contact with waste. Groundwater monitoring will be effective in documenting that COCs are not migrating offsite at concentrations that may cause risk above the risk threshold.

At AOC 2, implementation of institutional controls protects human health by restricting exposure to groundwater.

2.14.2 Compliance with ARARs

No chemical or location-specific ARARs were identified for the site. For AOC 1, the selected remedy will comply with action-specific ARARs presented in Table 2-4 with the exception of OAC 3745-27-08, OAC 3745-27-10 (effective 2003), and OAC 3745-27-11 (H) for which USACE is invoking waivers. Justification for the waivers is presented in Table 2-5. Compliance with ARARs for AOC 1 will depend on continued implementation and enforcement of institutional controls and long-term management, including groundwater monitoring and landfill gas monitoring, inspections, and cover maintenance (e.g., repairs, mowing).

For AOC 2, action-specific ARARs do not apply, because the remedy involves only the administrative implementation of institutional controls.

2.14.3 Cost-Effectiveness

The selected remedy for AOC 1 is considered cost-effective because it provides long-term effectiveness and permanence at a more reasonable cost as compared to the other action alternatives. The selected remedy for AOC 2 is considered cost-effective although, other "action" alternatives were not developed.

2.14.4 Use of Permanent Solutions and Alternative Treatment Technology

The selected remedy provides long-term permanence because the soil cover with institutional controls will prevent exposure to soil and groundwater contamination at AOC 1. At AOC 2, institutional controls will prevent exposure to groundwater beneath the site. The selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be used in a practicable manner.

2.14.5 Preference for Treatment as a Principal Element

The selected remedy at AOC 1 and AOC 2 does not satisfy the statutory preference for treatment as principal element because the presumptive remedy for landfills is containment.

2.14.6 Five-Year Review Requirements

As required by NCP, five-year site reviews will be conducted because hazardous substances remain at the site at concentrations that do not allow unlimited use and unrestricted exposure.

2.15 Documentation of Significant Changes

The selected remedy is equivalent to the preferred alternative presented in the proposed plan for public review and comment.

3. Responsiveness Summary

SECTION 3

Responsiveness Summary

The USACE presented its proposed plan to the community during a public meeting held on April 28, 2011. The meeting was announced in the *Columbus Dispatch* on April 20, 2011. The Ohio EPA was represented at the public meeting, as was the present landowner, the Columbus Regional Airport Authority. During the meeting, concerns were expressed by local community members and public officials, and verbal responses were provided by USACE and Ohio EPA representatives. Exhibit 1 is a transcript of the meeting. Exhibits 2 through 8 present statements and letters received during the public comment period.

The public was also provided the opportunity to comment from April 21 through May 23, 2011. In the public notice of the meeting, the comment period was scheduled to end on May 21. Because May 21 fell on a weekend day, the comment period was extended to Monday, May 23. Additional comments were not received by the USACE during the intervening 2-day extension period.

This section presents responses to comments received by the USACE during the public meeting and in writing during the public comment period. Any responses herein are in addition to those made during the public meeting and recorded in the transcript.

The selected remedy was not revised based on consideration of the comments received.

3.1 Public Comments and Lead Agency Responses

Commenter/Affiliation
Aristotle R. Matsa
Village of Lockbourne
Solicitor/Attorney & Prosecutor

Mr. Matsa read a prepared statement at the April 28, 2011, public meeting and then provided the statement as well (Exhibit 2). We have quoted the comments from the meeting as they are slightly expanded from the statement.

3.1.1 Comment:

My name is Rick Matsa. I, as is Ms. Ward, and many of the other people here, are here on behalf of the Village of Lockbourne. I think there are a number of things that I'd like to comment on. First of all, you're indicating that the groundwater is the same in different parts and that's equally bad. And that may be indicative of the fact that it's been polluted by the dump for so many years, that there's been a lot of seepage and migration of those toxins and all of those things that you've identified in your report as being harmful to the people that live in Lockbourne and to the environment. The fact that the problem is spreading or widespread, even beyond the area of the dump, I think commonsense would suggest that it's because it's been a dump spewing toxins into the groundwater for so many years and that may be indeed why it's so widespread.

Response: Our hydrogeologists have reviewed the extensive sampling and analysis of the groundwater. Groundwater, like surface water, often flows from one area to another and in

the case of the groundwater below this landfill it flows in one direction. Any contaminants in that groundwater will flow with it. Based on the sampling we have done, we know that contamination is in the water below the landfill and that it is moving. We also know that upgradient of the landfill the contamination in the groundwater is similar to the levels downgradient of the landfill. However, the preferred remedy is expected to decrease contamination in the landfill from leaching further into the groundwater and our monitoring will be able to track where and at what levels the contamination is flowing. It is beyond our studies and authority to characterize where all contamination found in the groundwater is coming from.

3.1.2 Comment:

The second comment I'd like to make at this point is that your board says most Village residents drink city water. The assumption there is that it gives – I think it gives an incorrect impression. It ought to be clear to you that there are Village residents that are still drinking well water and are still being affected by the toxins from the dump in that well water.

Response: It was recognized in our studies that there are still some village residents who are using and drinking well water, even though tested municipal water is available to them. The fact that residents are still using well water was an important fact in our analysis of the risk that the community faces from this landfill if no remediation is done. Future use of groundwater may pose an unacceptable carcinogenic risk to offsite residents, primarily because of PAHs, dioxins/furans, and to a lesser extent from metals and bis(2-ethylhexyl)phthalate. Future use of groundwater may also pose an unacceptable noncarcinogenic risk to offsite residents from, dioxins/furans, PAHs, and metals (including arsenic, iron, cobalt, lead, manganese, and thallium). No present unacceptable risk to village residents was found for use of the groundwater from landfill contamination. Because of the future unacceptable risk to village residents, the preferred alternative includes monitoring of groundwater contamination levels and recurring health protectiveness reviews. The landfill consolidation and cover will be beneficial in reducing contaminant loading in the groundwater, as well.

3.1.3. Comment:

I think more importantly there are residents who are using well water to water their gardens, to water their lawns, which is bringing all of those things back to the surface and making them part of the surface in the Village of Lockbourne, in addition to what's below the surface. So even if many of the residents are not drinking the water, are not affected by, you know, directly by drinking it, they're still being, they and their property and their health is still being affected by all of those toxins being brought up from belowground and essentially being placed on the surface.

Response: This fact also was also considered. However, the drinking of water with the contamination in the water is much unhealthier than the contamination being breathed, touched, or taken in with vegetables. Wind, rain, sun, and dispersion would all reduce the concentrations of any contamination brought to the surface. However, those are all legitimate pathways we considered in the RI and the risk assessment, for the future. We have no scientific corroboration, however, that the present use of the water is creating unacceptable risks for offsite residents.

3.1.4. Comment:

And if you eat fruits and vegetables that are watered with, what appears to be from your report, toxic materials, certainly the health risks that you would get from eating those fruits and vegetables would be affected by what's being brought up from below the surface.

Response: This also is a pathway that contaminants in the groundwater can affect human health, although the drinking of water with the contamination in the water is much unhealthier than the contamination being breathed, touched or taken in with vegetables. See Comment 3.1.3 above.

3.1.5. Comment:

For decades the residents of the Village of Lockbourne have complained to the federal government and the state authorities about what we've called the "dump" and the "ditch." And I think your report correctly pointed out that there had been some public input, years ago, back in the '90s. But then, from all of that time forward, there really wasn't any opportunity for public input. So I commend you on, you know, this opportunity for us to actually, you know, communicate to you. And for all of those years, the residents of the Village of Lockbourne have been trying to convey clearly and with enthusiasm the message that they were being poisoned and that their families were being killed by the toxins that were in the dump, that were being transferred from the dump and the ditch into the Village. For decades the government and its representatives assured the residents of the Village of Lockbourne that there was no danger, that there were no health concerns, and that their friends and relatives were not suffering or slowly dying because of what had been buried at the dump at the base.

Response: Though we are aware of some public input and complaints made in the past to the state of Ohio, the U.S. Air Force, and the various USACE Districts, and to a limited extent their reply, this forum and process is not here to address those past discussions and the topics made at that time. This forum is here to discuss the proposed remediation.

3.1.6. Comment:

The government's latest revelations, which I think is through your good efforts and your report, have proven that those complaints of the dead and dying of the Village were accurate and were, in fact, well founded. And I'm really humbled at the task of attempting to be one of the voices of those who passed and those who continue to be harmed by the government's actions and inactions.

Response: Our analysis and reports are not a health study and should not be used as such. USACE is here, pursuant to the Defense Environmental Restoration Act (DERA), to remediate this site according to CERCLA. We are not the proper agency and this is not the proper forum to raise complaints local residents may have unless they relate directly to this remediation.

3.1.7. Comment:

I have basically four points in terms of a summary of the facts. The first is, for decades, the government buried substances, that are deadly to humans, next to and upstream from the Village. Those buried poisons have been and continue to harm and kill the men, women, and children of the Village.

Response: Though we agree that the contamination found at the former Lockbourne AFB landfill was put there by the government, specifically, the U.S. Air Force, that disposal was

made before many of the environmental laws that we are following today were enacted. As such, all U.S. Air Force actions were in accordance with the laws at the time they took those actions. In this case, we have no evidence that the U.S. Air Force knew the substances they buried would migrate from the soil and be harmful to the public. We have no scientific information that any substances from this site have affected anyone negatively yet, though we agree that such contamination could cause health issues in the future if not remediated.

3.1.8. Comment:

The second thing is the Village cancer rates have been staggeringly higher than they would have been but for the dump and the ditch. Switching to municipal water obviously has helped that, but the fact that those toxins are still in the ground and are still leaching through the ground throughout the Village, I think is of great concern to the residents of the Village of Lockbourne and all their friends and family.

Response: We have no scientific information that the former Lockbourne AFB landfill has caused any cancer or hurt the health of anyone to date. However, this is not the proper forum to address those concerns. We are aware of and appreciate the concern that the village of Lockbourne has regarding the remediation of this site.

3.1.9 Comment:

The Village residents have a right to use and drink the water beneath their homes. It's essential to their survival that they use it to water and grow food in their gardens. The government acknowledges that Village residents still use the water from their wells, thus has to know that Village residents are continuously being exposed to harmful toxins in their food and their water.

Response: The USACE only has authority to investigate and remediate the former Lockbourne AFB landfill and takes no position regarding the residents' rights to groundwater or their financial needs. Please see the response to Comment 3.1.2. above.

3.1.10 Comment:

The government must now acknowledge that there is an ongoing continuous taking of the Village residents' property rights, their health and their lives without compensation, due process, or equal protection.

Response: The USACE only has authority under federal law, CERCLA and DERA, to investigate and remediate the former Lockbourne AFB landfill and, thus, USACE takes no position regarding the residents' rights or these claims.

3.1.11 Comment:

I think the proof – and, again, I understand you're a private contractor that did the report for the government – the proof, I think, is in your own report and there's just a few things that screamed out. Your report says that as a result of these investigations, contaminants including, but not limited to, and you've defined them, polynuclear aromatic hydrocarbons, polychlorinated biphenyls, dioxins/furans, and metals, were detected in soil, surface water, sediment, and groundwater at or near the landfill.

Response: This recitation from a summary page of the proposed plan is, of course, not as specific as the language in the body of the document. However, detection of chemicals in the ground may have little to do with their impact on human health and the environment. Our

sensitive sampling tests routinely detect many contaminants; however, this does not mean that the contaminants exist at dangerous levels. A human health risk assessment was performed to evaluate potential current and future risks associated with detected constituents in soil, groundwater, surface water, and sediment at the site, if no remediation were to take place. Based on this assessment, PAHs and PCBs were found to present an unacceptable risk for workers and visitors who handle the soil at AOC 1. Further, exposure to lead in site soil may result in unacceptable risk to children. Future exposure to groundwater may pose an unacceptable noncarcinogenic risk (HI greater than 1) for future construction workers from dioxins/furans. Future use of groundwater may pose an unacceptable carcinogenic risk to offsite residents, primarily because of PAHs, dioxins/furans, and to a lesser extent from metals and bis(2-ethylhexyl)phthalate. Future use of groundwater may also pose an unacceptable noncarcinogenic risk to offsite residents from, dioxins/furans, PAHs, and metals (including arsenic, cobalt, iron, lead, manganese, and thallium). No present risk to village residents was found for use of the groundwater from landfill contamination. Neither was there established any unacceptable risk from surface water or sediment.

3.1.12 Comment:

Well, Lockbourne is right next to the dump. So when we say "near," what we're really talking about, I think, is, at least in part, the Village of Lockbourne.

Response: This is not true. Sampling by the USACE took place at the site for soil, surface water, and sediment. Groundwater was sampled onsite, and to a limited degree, offsite and in the village. However, what contamination was found was located onsite (except for, maybe, the groundwater concentrations found upgradient of the landfill away from the village). No contamination (at levels that are an unacceptable risk) was found in the village.

3.1.13 Comment:

You mentioned about the shallowness of wells. Shallow zones generally do not produce much water. Therefore, it is the deep aquifer that is the zone typically used as a groundwater source in the county. That's where Columbus and most of Franklin County get its water. I think in your report you indicated that City of Columbus uses surface water from the Big Walnut Creek along with groundwater from the south wellfield area and southeast Franklin County. The south wellfield area is approximately 4 miles from the site.

Response: There are three aquifers at the former Lockbourne AFB landfill: the UWBZ, the IDA, and the Deep Sand Aquifer. The deepest aquifer, the Deep Sand Aquifer, is not affected by any known contamination. The village of Lockbourne receives drinking water from the Columbus municipal water system. The City of Columbus uses surface water from the Scioto River, Big Walnut Creek, and Hoover and Alum Creek reservoirs for its supply, along with groundwater from the south wellfield area in southeast Franklin County. The south wellfield area is approximately 4 miles from the site.

3.1.14 Comment:

Several residents in Lockbourne obtain drinking water from their private wells even to this day.

Response: See the response to Comment 3.1.2.

3.1.15 Comment:

You indicated that seeps have been inconsistently observed along the western boundary of the site during your investigations.

Response: In early investigations, seeps were noted by some contractors; however, CH2M HILL made four attempts to locate the previously identified seeps: during the two September 2008 events, the October 2008 event, and the February 2009 event. USACE representatives noted a short-lived seep after a large rain event, but no seeps persisted. Representatives of CH2M HILL, Ohio EPA, and USACE agreed at an onsite meeting that persistent seeps do not exist.

3.1.16 Comment:

At Area of Concern 1, you noted there were PAHs and PCBs, dioxins/furans, and metals including lead, silver and thallium, which were detected in surface soil samples above human health screening levels established by the USEPA.

Response: The commenter accurately repeats the language from page 8 of the proposed plan, however the USACE did not stop its analysis with this preliminary screening of contamination. As explained further in the proposed plan, the USACE did a site-specific analysis of these contaminants and came up with final COCs at this site that present an unacceptable risk to human health at this site. See response to Comment 3.1.11. for the final site specific list.

3.1.17 Comment:

You indicated in your report that PAHs, PCBs, dioxins/furans, and metals including aluminum, mercury and thallium, were detected in subsurface soil samples, again above human health screening levels. And I assume that means at dangerous levels; levels that need to be of concern. PAHs and PCBs, dioxins/furans, and metals including aluminum, mercury and thallium, were detected in subsurface soil samples, again above human health screening levels. Surface soil samples were collected from 0 to 1 foot below ground surface, and subsurface soils were collected from 1 to 10 feet below ground surface.

Response: See response to Comment 3.1.16.

3.1.18. Comment:

PAHs, dioxins/furans, metals including aluminum, arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, thallium and vanadium, were detected above their respective screening levels in the groundwater.

Response: See response to Comment 3.1.16.

3.1.19 Comment:

Dioxins/furans, arsenic, all of those were also detected above their respective screening levels in surface water collected from the East and West Ditches, along with phthalate.

Response: See response to Comment 3.1.16.

3.1.20 Comment:

In sediment, PAHs, and metals including aluminum, arsenic, cobalt, iron, manganese and thallium, were again detected above their respective screening levels.

Response: See response to Comment 3.1.16.

3.1.21 Comment:

You mentioned that there was no dumping at AOC 2, which the report does point out that there were dioxins/furans, and metals including cobalt, magnesium and thallium, again above their respective screening levels in surface soil. [Note: In Mr. Matsa's letter that made this same comment, he mentions "manganese" in lieu of "magnesium." Manganese is the metal detected at this site, not magnesium.]

Response: No COCs were identified in surface soil or subsurface soil at AOC 2. See Comment 3.1.16.

3.1.22 Comment:

PAHs, dioxins/furans, and metals including aluminum, arsenic, cobalt, iron, magnesium, were detected above their respective screening levels in the groundwater there as well.

Response: Again, the commenter is quoting from page 8 of the proposed plan (with the exception that vanadium and manganese also were detected and magnesium was not found). See Comment 3.1.16. Only dioxins/furans and PAHs in the groundwater were found to pose unacceptable risk to construction workers onsite at AOC 2 in the future. (The proposed plan mentioned only dioxins/furans as a contaminant causing unacceptable risk in the groundwater at AOC 2. However, this was an error. Both dioxins/furans and PAHs are groundwater contaminants at AOC 2, as documented in the feasibility study and now in this Decision Document. The exclusion of PAHs in this context from the proposed plan was not prejudicial to the public reviewing the documents, as the fact was stated clearly in the feasibility study and its inclusion does not change the possible remedies in any way: land use controls to stop drinking the groundwater onsite.)

3.1.23 Comment:

There were two volatile organic compounds, methylene chlorine and trans-1,3-dichloropropene and naphthalene that were detected in soil above their respective screening levels, and also in the indoor air.

Response: See Comment 3.1.16. No COCs were identified in surface soil or subsurface soil at AOC 2, and none was identified in indoor air.

3.1.24 Comment:

Your report says that at Area of Concern 1, the HHRA determined that, under current land use conditions, surface soil may pose an unacceptable cancer risk from PAHs and PCBs.

Response: This is true if no remediation takes place, but the cancer risk only extends to onsite maintenance workers, youth trespassers of the site, and visitors onsite.

3.1.25 Comment:

You indicated the total soil, that is both surface and subsurface soil, also poses an unacceptable cancer risk; a risk greater than 10 I think you get to the minus four, from PAHs and PCBs.

Response: This is true if no remediation takes place, but the cancer risk only extends to onsite construction workers at AOC 1. The 10^{-4} is scientific notation for 1 in 10,000. Under CERCLA, any contamination that raises the cancer risk to more than 1 person in 10,000 is unacceptable.

3.1.26 Comment:

Exposure to lead in the site soil may result in unacceptable risks to children.

Response: This is true if no remediation takes place, but the risk only extends to children who were exposed in utero while their mother was working on the site as a construction worker—an unlikely circumstance. The commenter accurately states how this risk was presented in the proposed plan. A more complete explanation was included in this Decision Document.

3.1.27 Comment:

Future use of groundwater may also pose an unacceptable cancer risk to off-site residents.

Response: This is true for those offsite residents drinking the groundwater, if no remediation takes place.

3.1.28 Comment:

And, again, I think it's the Village residents, the people in the Village of Lockbourne, their friends, their visitors, everyone that goes there, that is exposed to what you're describing as an unacceptable cancer risk. They're the off-site residents.

Response: This is incorrect. If no remediation were to take place, the only offsite residents facing an unacceptable increased cancer risk would be those who drink groundwater from their own wells over a lifetime. Other village residents, their friends, and visitors would not have been at risk. Of course, since the site is being remediated, no unacceptable risk will remain for anyone.

3.1.29 Comment:

But I think the problem potentially is much more widespread because that same, all of those things that you listed in your report, are also only 4 miles away from where you indicated that Columbus is getting its water. So Columbus is getting its water and Franklin County is getting its groundwater, Arlington, Bexley, Worthington, then that arguably is water that everyone that uses Columbus municipal water is getting, in which case it's all being affected.

Response: This, too, is incorrect. Even if no remediation were to take place, none of the sources for Columbus municipal water system would be threatened by contamination from the former Lockbourne AFB landfill. Of course, since the site is being remediated, there no unacceptable risk will remain for anyone.

3.1.30 Comment:

Primarily because of PAHs, dioxins/furans and, to a lesser extent the metals and polyethyl polyphosphate, you indicated that future exposure to groundwater may pose an unacceptable noncancer risk in some areas and that the groundwater may pose an unacceptable risk to off-site residents from all those things that you listed.

Response: That is essentially a correct recitation of the risks prior to remediation, though the reference to polyethyl polyphosphate is not accurate. Here is the actual language referred to: "Future use of groundwater may pose an unacceptable carcinogenic risk to offsite residents, primarily because of PAHs, dioxins/furans, and to a lesser extent from metals and bis(2-ethylhexyl)phthalate. Future exposure to groundwater may pose an unacceptable noncarcinogenic risk (hazard index greater than 1) for future construction workers from dioxins/furans. Future use of groundwater may also pose an unacceptable noncarcinogenic risk to offsite residents from, dioxins/furans, PAHs, and metals (including arsenic, iron, lead, manganese, and thallium)." Of course, since the site is being remediated, there will be no unacceptable risk expected for anyone.

3.1.31 Comment:

I'd like to congratulate the government for finally disclosing the risks to the public, albeit, about 60 years after the Village started voicing its concerns and complaints that the dump and the ditch was and is continuously killing them.

Response: Thank you. However, the focus of this Decision Document is not upon the historical health risks but how to remediate the contamination thereby eliminating unacceptable risks. Also, see response to Comment 3.1.5.

3.1.32 Comment:

Unfortunately, the government solution – which is covering the problem area with soil at a cost of about $13 million, or with clay at a cost of approximately $50 million – we don't believe will solve the problem of the poisoning of the Village and its residents.

Response: Note: The transcript says "$50 million," but it is more likely that Mr. Matsa said "$15 million," which is the approximate amount for the second alternate plan using clay as a cap. $15 million was the amount given in the letter he provided.

USACE has no scientific evidence that the landfill is presently "poisoning the Village and its residents." However, USACE is authorized, pursuant to the DERA, to remediate the landfill and to mitigate any unacceptable risks to human health and the environment that the landfill is causing or may cause. All work must be done in accordance with CERCLA. The selected remedy includes appropriate components of USEPA's containment "presumptive remedy" for municipal landfills, which is in accordance with CERCLA. ("Presumptive remedies" are preferred technologies for common categories of sites based on historical patterns of remedy selection, and USEPA's scientific and engineering evaluation of performance data [USEPA 1996]). Investigation findings support the assumption that buried wastes are "municipal-like." The selected remedy includes installation of a soil cover over buried wastes; implementation of institutional controls to restrict use of the site, and exposure to COCs in groundwater at the site; and implementation of a long-term

management program that will include periodic groundwater monitoring and assessment. All of our evidence shows that this remedy will mitigate any unacceptable risks.

3.1.33 Comment:

Logic dictates that pollution of groundwater next to the Village and only 4 miles from where it's used by the City of Columbus and all of Franklin County residents, including the Village's municipal water, is continuously affecting and polluting all the drinking water as well.

Response: See response to Comment 3.1.29.

3.1.34 Comment:

The Village is better poised, with a transfer of economic support from the Federal Government, the polluter of this Dump site, to fully solve the problem. The Village estimates that it can, over time, fully implement its proposed solution, as to items 1 and 2 below, with the same amount of money that the Government proposes to spend on a solution which will not solve the problem. The difference being that the Village, at the local level, will avoid the waste associated with big government contractual spending. The Government is urged to consider economically addressing items 3 and 4 below. The Village has a vested goal to effectuate a real and complete solution and a proven track record of efficiently administering its projects properly and within budget.

Response: The Secretary of the Army has delegated day-to-day program management and execution responsibilities for FUDS to the USACE. It is USACE's responsibility, as the DoD Executive Agent for the FUDS program, to identify required DoD response actions and execute the program (Office of the Deputy Under Secretary of Defense [Installations and Environment] 2001). The USACE must comply with the Defense Environmental Restoration Program statute, CERCLA, the NCP, and applicable policies and guidance (USACE 2004). Federal law does not provide an avenue for funding to be provided to local municipalities to remediate contamination on private property near the municipality. Although the USACE fully complies with all the federal contracting laws and regulations, it has an admirable record of eliminating waste and getting good value for the government. Further, see response to Comment 3.1.32.

3.1.35 Comment:

these are the people whose lives are being affected; these are the people who've lost family members due to the toxins from the dump;

Response: See response to Comment 3.1.8.

3.1.36 Comment:

these are the people who are very concerned that there be a real solution, so that in 60 years, after more monitoring, it's not the same situation that it is now in terms of what's being affected by the things that were placed in the ground, by the government, at the dump site.

Response: USACE understands the community's concerns. This remediation fully complies with all federal laws and regulations and is considered a permanent solution. A landfill cover constructed of clean soil will prevent people and animals from coming into contact with COCs in soil and prevent transfer of those chemicals to nearby surface water in storm water runoff. Wastes from the outer lying, lesser-used areas of the landfill will be excavated

and placed over the more heavily used area in order to minimize the area that requires a cover. The cover area will be regraded to improve drainage (that is, reduce standing water) and thus will reduce surface water infiltration, which in turn will reduce the generation of leachate and support attenuation. Groundwater sampling that will be conducted as part of the USACE's long-term management program will allow for periodic assessment of groundwater quality and flow direction. CERCLA requires periodic reviews of the protectiveness of the remedy every 5 years. If offsite migration of COCs originating from the landfill is detected at levels that may cause unacceptable risk to human health, the USACE will take appropriate action. The selected remedy meets the CERCLA criteria to be protective of human health and the environment.

3.1.37 Comment:

Number one, it should be obvious, that the toxic dump materials which are in the trenches, and they're only 10 feet deep below the surface, should be removed and relocated to a location where they will no longer pollute the Village's ground and subsurface water; and, thus, cease the slow death to the Village residents;

Response: Removing the contents of the landfill and relocating it to another community would not be compliant with the CERCLA considerations for deciding on a remedy for the landfill, especially when the entire country and safety of all parties is taken into account. As such, that option is not open to USACE and is not being considered. See responses to Comments 3.1.5. and 3.1.32.

3.1.38 Comment:

The Village residents should receive free water and sewer service for so long as they are precluded from safely using their ground and subsurface water;

Response: The ongoing cost of providing free water and sewer service is not an authorized cost under the DERA. USACE has no authority to grant such relief under current law.

3.1.39 Comment:

The Village residents should be compensated for their costs to date including but not limited to the costs associated with the installation and maintenance of their water and sewer system; and, their purchases from this system;

Response: Most residential costs related to municipal water and sewer service is not an authorized cost under the DERA. Since all the residents have access to the municipal water system, rather than to continue to use their water wells, there are no costs related to that system that would be authorized by DERA. All residential purchases of municipal water are between the resident and the municipality and the USACE has no authority to provide reimbursement to the resident under current law.

3.1.40 Comment:

and, The Village residents should be compensated for the effect on their health, deaths of their loved ones, and their lost quality of life.

Response: USACE has no authority to grant such relief under current law. This is not the forum, nor are we the agency that would adjudicate such claims. This forum was open to discuss the alternatives for remediation of the former Lockbourne AFB landfill.

3.1.41 Comment:

You mentioned other forums that you think we might also benefit from addressing. I think you're extremely experienced in these areas; could you make any suggestion of other, when you said there are others –

Response: USACE has no unique experience in seeking relief from environmental claims. However, it is clear that this forum was open to discuss the alternatives for remediation of the former Lockbourne AFB landfill.

3.1.42 Comment:

Why not truck it off the site instead of moving it around and putting it back in a place where it can still continue leaching into the groundwater?

Response: See response to Comment 3.1.37.

3.1.43 Comment:

And I think with all due respect to Ms. Bynum and the study that she cited from back in the 1980s, the former mayor of Lockbourne, and the council, actually met with people from your agency and the health department. They went through specific lists of residents and what diseases and illnesses they had. And the conclusion that was voiced at those meetings, which perhaps you probably weren't present at, is that the 1986 study was flawed. You can have a study and that study can be wrong and not be conclusive of what the actual problem is.

Response: The 1986 Ohio Department of Health cancer incidence study was not referenced by the USACE to guide its investigation and/or decision-making process. The USACE identified the selected remedy in accordance with the CERCLA process and, accordingly, considered the findings of its investigations as well as relevant USEPA guidance. Any issue Mr. Matsa has with the State of Ohio findings and studies should be addressed to them.

3.1.44 Comment:

What's very difficult for all of us in Lockbourne is if you have a, as Ms. Ward said, a 31-percent cancer rate, and if the average in Franklin County is 3 percent – and if I'm mistaken, correct me in terms of what the average rate is in the area – versus what the rate is in Lockbourne; 31 percent versus 3 percent can't be explained away easily, especially by what could very well have been a flawed study back in 1986. So I think that it's better what you folks have been doing in terms of trying to look at the situation, and not citing back to something from 1986, but rather looking in terms of what we do now and what do we do in the future.

Response: See response to Comment 3.1.8.

3.1.45 Comment:

And part of the problem that we have is that, and I think your soils analysis, though I'm not a soils expert, is that this is – the water is not very deep and that this is very wet and spongy soil. Clearly not the best place to put a dump in the first place in terms of trying to encapsulate the dump.

Response: There are wetlands in AOCs 1 and 2; however, USACE wetlands experts have delineated them and the consolidated landfill will not be in those areas. USACE will be removing contaminated soil and trash from those wetland areas and consolidating them upon the main landfill area. That main landfill area has been reviewed by our soils experts and it has been cleared as stable ground upon which to consolidate the landfill. Appropriate drainage systems will be incorporated into the final remedial design.

3.1.46 Comment:

It's really in a place where it all just kind of spreads. So if you're spreading all these toxins from 1951 to 2011, now, how much they've spread and how that happens, I think is more a look at the past, instead of what's the best way to not have the problem continue. And I think that's our real concern is that . . .

Response: See response to Comments 3.1.36 and 3.1.44.

3.1.47 Comment:

And I think what we're saying is, given the high rate of illness that can only be explained by the dump, that the, you know, whatever more can be done to prevent this from continuing as a problem for the residents of Lockbourne, I think is very important to us.

Response: See response to Comment 3.1.8.

3.1.48 Comment:

The commenter asked if analytical data for samples that were collected from the USACE monitoring wells are available for review in the USACE's online information repository.

Response: Yes. The analytical data for the samples that were collected from the USACE groundwater monitoring wells are contained in the Administrative Record file, which can be viewed at the Southeast Branch of the Columbus Metropolitan Library, 3980 S. Hamilton Road, Groveport, Ohio. The Administrative Record file can also be accessed online at http://bit.ly/LockbourneAFB. The report that will contain the data is the *Former Lockbourne Air Force Base Landfill Remedial Investigation Report, FUDS Site: G05 OH0007 (*May 2010).

3.2 Public Comments and Lead Agency Responses—Ms. Campbell

Commenter/Affiliation
M. Judy Campbell
Resident

3.2.1 Comment:

The commenter wrote a letter and also made comments at the public meeting. This comment is from the letter (Exhibit 3).

Much of the soil in our area has been contamino [sic] *with old chemicals used by farmers, etc. with the flood of 1959 and subsiquent* [sic] *excessive rainfalls, causing stream creeks and river water to spill out of their banks.*

Response: Thank you for the additional history of this area.

3.2.2 Comment:

This comment is from the letter (Exhibit 3).

When a gasoline stations tanks are found to be leaking or a gasoline station is torn down so land can be used for another purpose All [sic] *the surronding* [sic] *soil is totally removed to prevent any contamination. Why is this dumping any different from that situation.*[sic] *When asbestos is found to be present in a building demolition, everything stops, specialist are called in and all the asbestos must be removed before the demolition can continue. Why is this contamination being so casually being done? Please do consideraterable* [sic] *more testing before you make the desion [sic] on how best to contain any contamination known or unknow* [sic] *that may be in the L.A.F.B. Dump.*

Response: Many different environmental laws and practices may affect the gas station cleanup example offered and the asbestos example offered. We will not guess at why, or under what authority, those cleanups happened the way the commenter says. The cleanup of former Lockbourne AFB landfill was investigated and will be done in accordance with CERCLA. It has not been done casually or haphazardly. This site was subjected to rigorous sampling and characterization in accordance with USEPA and DoD proscribed testing procedures. Our analysis was thorough and also in full accord with applicable laws and guidance. There has not been offered any reason to do more sampling and it is our opinion that further sampling will not lead to a better remediation.

3.2.3 Comment:

The rest of her comments are from the public meeting (Exhibit 1).

Do they have a history or a report of how these caps have worked in the past and how safe they've been for groundwater in the past? Is there some place that they can get a report or we can get a report?

Response: Though every landfill is somewhat unique and has different contaminants and different geological features, USEPA has a long history in studying caps and landfills. More information on landfill caps can be found at http://www.epa.gov/osw/nonhaz/municipal/landfill/financial/mswclose.htm.

3.2.4 Comment:

I still have a well, so I'm still dealing with drinking groundwater. That was my concern. If you have proof of the effects that it's done in the past, then we have got something to look at to see if it's something that will help us in the future.

Response: See response to Comment 3.2.3.

3.2.5 Comment:

How are we to know that they didn't have a dump, cover it over with what you found was the clay and stuff, and then start another dump on top of that? How are we not to know that this might not be something that's tunneled on down?

Response: In addition to intrusive trenching to determine depths of buried waste, the USACE reviewed topographic maps and historic boring logs, and considered waste management methods specific to the operational era of the landfill. Although it is not possible to claim with 100 percent certainty that there are no multi-level waste disposal

areas present onsite, the information provided by subsurface boring and trenching does not confirm their presence. Historic documents for the site reference use of the "trench and fill" landfill technique, which was commonly used by the waste management industry during the operational period of the landfill. Backhoes were typically used for trench and fill waste disposal operations, and such equipment generally can only dig to depths up to 10 feet below ground surface. For these reasons, the landfill is believed to be a shallow landfill.

3.2.6 Comment:

Well, I know for a fact that there's a home down here, just across the bridge, the railroad bridge, that they hauled septic system stuff away and took it into their field and put lime on it and it sat there and that's how they disposed of it. That went on for years and years and years. So the Air Force could have used something like that, too. I mean, it's just – there's no guarantees.

Response: The USACE has no knowledge of the septic tank disposal that was referred to, since that occurred on property that is not the subject of this Decision Document. The USACE is prevented by federal law from investigating or remediating anything not caused by the actions of the DoD. We have no information that the U.S. Air Force engaged in such practices.

3.3 Public Comments and Lead Agency Responses – Ms. C. Ward

Commenter
Christie Ward
Lockbourne Village Council
Member and Resident

The commenter read a prepared statement and made other comments at the April 28, 2011, public meeting.

3.3.1 Comment:

My name is Christie Ward. I'm on the Village Council for Lockbourne. We want to share our disappointment in the lack of collaboration with the Village. It is unacceptable that we were not consulted or informed of the activities of the landfill assessment.

Response: The USACE involvement of the public in this site exceeds all federal requirements, starting with the USACE participating in Restoration Advisory Board meetings that were formerly hosted by the Air Force in support of its environmental restoration actions at the former AFB. At those meetings, the USACE provided status updates for its projects, including the landfill investigations. The USACE began a process to reassess project community relations activities in the spring of 2010, near the time that the landfill RI was finalized. Those efforts included the completion of community interviews to support preparation of a Public Involvement Plan that fulfills current USACE guidance. Interviewees included local government and environmental organization representatives. The findings of these activities are documented in the *Public Involvement Plan Former Lockbourne Air Force Base FUDS Property G05 OH0007*. A copy of the plan is available for review in the Administrative Record file at the Southeast Branch of the Columbus Metropolitan Library, 3980 S. Hamilton Road, Groveport, Ohio. It may also be accessed online at http://bit.ly/LockbourneAFB.

Pursuant to federal law, the USACE has requested any and all public input during a reasonable public comment period regarding the proposed remedial action for the landfill. The USACE also hosted a public meeting on April 28, 2011, to further support receipt of public comments during this time.

USACE community relations activities will continue throughout the duration of the restoration process, including the construction and subsequent long-term management phases, and will include interested stakeholders, including representatives of the village. These activities are anticipated to include, as appropriate, participation in local meetings, and distribution of project updates via regular and electronic mail and/or website. A public notice will also be advertised during completion of the five-year review process to solicit public input to be considered in the assessment of the continued protectiveness of the selected remedy.

3.3.2 Comment:

Section 2, Site Background, on page 2 of your final report, indicates that, from 1951 to 1971, the Air Force Base landfill was used to dispose of waste from the former Lockbourne Air Force Base. The types of waste include: general trash from base housing and administrative buildings, construction and demolition debris, and lime sludge from the base water-treatment plant.

Response: That is an accurate excerpt from the proposed plan, dated April 2011.

3.3.3 Comment:

Historical documents suggest the landfill may also have received pesticides and herbicides, ammunition, airplane parts, and hazardous materials. Wastes reportedly were buried in trenches up to 10 feet deep and dispersed on the ground surface.

Response: That is an accurate excerpt from the same page and section of the proposed plan, dated April 2011.

3.3.4 Comment:

As a result of these investigations, contaminants including, but not limited to, polynuclear aromatic hydrocarbons, polychlorinated biphenyls, dioxins/furans, and metals, were detected in soil, surface water, sediment, and groundwater, on or near the landfill. Your own assessments give us reasons to be concerned.

Response: See response to Comment 3.1.11. The commenter's concern is well founded. Without remediation, this site is hazardous to human health. That is why remediation of the site is needed.

3.3.5 Comment:

The proposed solution of covering the landfill with soil or clay are not only inadequate, but irresponsible, and do not address the long-term effects on the environment, wildlife, or human health of the residents of Lockbourne as well as Franklin & Pickaway Counties. Your recommendations still leave us with a hazardous dumpsite, and the contaminants will continue to seep into the soil and groundwater, ultimately ending up in the drinking water of Franklin & Pickaway County households, and remain a substantial threat to our lives.

Response: See response to Comments 3.1.32 and 3.1.36.

3.3.6 Comment:

The residents of Lockbourne have felt the effects of the contaminants in the landfill for the past 60 years. We continue to have a high stake in the decisions others will make in the future of the landfill. We formally request to be included in the decision process as well as the implementation of a viable solution.

Response: See response to Comments 3.1.32. and 3.3.1.

3.3.7 Comment:

All your studies document the hazardous waste dumped in our community and the continued negative impact on human, aquatic, wild, and plant life. The bottom line is that today, 60 years later, Lockbourne, Franklin, and Pickaway County residents are in danger and there is not a viable solution.

Response: See response to Comments 3.1.30 and 3.1.32.

3.3.8 Comment:

You had mentioned that you did site inspections and interviews. Where were those site inspections and who did you interview?

Response: That information is in the Administrative Record file for the site (online at http://bit.ly/LockbourneAFB) and the Information Repository (at the Columbus Metropolitan Library, Southeast Branch). There were numerous site inspections and interviews. All that information can be found at those sites.

3.3.9 Comment:

One of my concerns, I guess, is I don't know if you guys had actually done site inspections to the west of the landfill when you come into Lockbourne, and did you see all of the agricultural land that is between the landfill and Lockbourne? There is quite a bit. Now, my concern is what happens to all of that? The groundwater, you know, are those – are those areas affected?

Response: The USACE risk assessment did not find any unacceptable risk for the agricultural land outside the limits of the landfill, even if no remediation were done. After remediation, there should be no unacceptable risk from the landfill.

3.3.10 Comment:

But I – and I – I do thank you for explaining all of this. We're trying to understand it as well. I think the big concern is that, you know, our Village has been attacked by cancer. Now something has happened; why? And I know you didn't mean to trivialize it, but it appears that you are trivializing our circumstances. On our one block, there were seven houses. I just counted 31 percent of our residents, on one block, have died of cancer or they have cancer. I mean, that's not normal. I don't care how – it's just not normal. And there has to be a reason for it.

Response: See response to Comment 3.1.8.

3.3.11 Comment:

If you see the same things in the wells above, you know, are the other folks, the residents, are they getting the same amount of cancer as our residents? I mean, there has to be some explanation. And that's our big concern.

Response: See response to Comments 3.1.6. and 3.1.8.

3.3.12 Comment:

After the April 28, 2011 public meeting, the commenter submitted two additional comments via electronic mail. This is the first.

Thank you for the opportunity to submit a comment on the Former Lockbourne AFB Landfill for the record. Please see my statement below:

After reviewing the transcripts of the Public Meeting, held on April 28, 2011, at the Hamilton Township Community Center, it is apparent that the assessment of the Former Lockbourne Air Force Base Landfill is flawed. Even your own staff has admitted that there are a number of factors in the study that are still unknown. See excerpts from the transcript of the Public Meeting below.

> *PAUL KENNEDY: Could you clarify that statement that you did not conclude that that constituent in AOC 2 came from Air Force activities. Your statement is more about migration.*
>
> *CARLA HECK: It did not come from the landfill.*
>
> *PAUL KENNEDY: Right.*
>
> *CARLA HECK: I have no idea where it came from.*
>
> *PAUL KENNEDY: Right. I guess we just want to make sure that – we're not quite sure what all you looked at when you were doing your study, and that's what we're trying to understand, because there may be factors that needed to be looked at that you may not have looked at.*

I am appalled that a Proposed Plan has been finalized without further analysis, given the fact that the US Army Corp of Engineers doesn't even know the source. I strongly recommend that you stop progress towards your proposed solution and evaluate what you have missed.

Response: Our investigations did not determine the source of the groundwater contamination. The USACE assessed the potential hazardous substances presence and/or release at the former Lockbourne AFB landfill and identified a preferred remedy to address potential risks related to the landfill. That is the limit of our authorized actions. Information regarding other sources of impact is not needed to support assessment and remediation of the potential landfill-related impact. The USACE investigation findings for the landfill therefore are not believed to be flawed. Many of the COCs are present throughout the environment due to their widespread use in products such as fuels, paints, and pesticides; use for coal burning; and also due to their naturally occurring presence in geologic materials. As described in Section 2.1 of this document, the former AFB encompassed over 4,000 acres, and there are other AOCs for which USACE and/or U.S. Air Force environmental restoration actions have been completed or remain ongoing. The RI report for the landfill contains summary discussion regarding investigations and findings for some of the other AOCs on the former AFB. Upon completion of the remedial action for the landfill, the USACE's continued execution of FUDS projects will include evaluation of soil, surface water, and groundwater at other locations, as necessary, based on available information from other investigations, and as authorized by the Defense Environmental Restoration Program and FUDS policy.

3.3.13 Comment:

After the April 28, 2011 public meeting, the commenter submitted two additional comments via electronic mail. This is the second.

Although Lockbourne's residents are directly impacted by the dump, we were not informed of any activity relevant to the landfill. We want that to change and formally request that we be a participant in any future activity.

Response: See response to Comment 3.3.1.

3.4 Public Comments and Lead Agency Responses—Village of Lockbourne Ordinance 19-2011, enacted 12 May 2011

Commenter/Affiliation
Lockbourne Village Council,
Ralph Coon, Mayor

The village of Lockbourne sent a facsimile transmittal of Village of Lockbourne Ordinance Number 19-2011 titled "Ordinance Regarding the Final Proposed Plan as to the Former Lockbourne Air Force Base Landfill/Dump and Declaring an Emergency" and asked that it be included as a public comment.

3.4.1 Comment:

Whereas, there was discussion held regarding the Lockbourne Air Force Base Landfill / "Dump" where for at least 28 years the Government, by their / its own admission buried hazardous substances of all types in this landfill, and now after decades wants to cover the problem area with a soil or clay cap;

Response: See response to Comments 3.3.2., 3.3.3., and 3.1.36.

3.4.2 Comment:

Whereas, there was great distress among the attendees as to the problem and the proposed solution as the Village of Lockbourne is adjacent to this landfill. Since there has been an extremely high incidence of cancer and other health problems in Lockbourne, many suggestions were discussed; and,

Response: See response to Comment 3.1.8.

3.4.3 Comment:

Section 1: That the Village of Lockbourne, Ohio contact the U.S. Army Corps of Engineers, Mr. Andrew Brooks Evens, and convey to them/him that the only acceptable solution as regards the former Lockbourne Air Force Base Landfill (FUDS Property: G05 OH0007) is to physically remove all contents in the landfill as this is in the best interests of the health, safety and general welfare of the citizens of the Village of Lockbourne and the public at large. The Mayor and Clerk/Treasurer are authorized to execute any writings necessary and/or appurtenant thereto.

Response: See response to Comment 3.1.37.

3.4.4 Comment:

This is not an exhaustive list of concerns. It should be noted that the Government's report indicates that sources of countywide municipal water are only four miles from the dump. Thus the negative effects of not physically removing all of the contents of this dump now will, as the toxins continue to

pollute the water, continue to affect the health of countless citizens area wide well beyond the boundaries of the Village for generations to come.

Response: See response to Comments 3.1.1. and 3.1.29.

3.5 Public Comments and Lead Agency Responses—Local Resident Petition, dated 20 May 2011

Commenter/Lockbourne Residents

Virginia Lozier	Ingale White	Joni I. Walker
Margaret Lozier	(Undecipherable)	Mick Cline
Charlotte Jewell	Ralph S. Coon	Charles R. Vaughn
Crystal Crabtree	Emily F. Coon	Odis Marlowe
Brien Lozier	Louis Merrick	Christie McKinney
Danielle Calissie	Dan Tufts	Lorrie Stevens
Arthur W. Conn	Connie Tufts	Trina Haven
Russ R. Lord	Joyce Ward	Nichole Swisher
Lucille Dildine	Aaron Cheadle	Martin Hafey, Columbus
Alita Kay Cheadle	Dawn Cheadle	Peggy Hafey, Columbus
Dorwin E. Dildine	Steve Ross	R. Donald Coon
Ray Armentroit	Laura Kirk	Eric Feen
Tony Armentroit	Brian L. Kirk, Jr.	Willis Moore
John Harnal	John CMS Jonds	Juanita Moore
(Undecipherable)	Jason A. Walker	Christie Ward

3.5.1 Comment:

We, the undersigned, by affixing our signature, do hereby wish to protest the manner in which the US Army Corp [sic] *of Engineers (USACE) proposes to remedy the toxic conditions of the former Lockbourne Air Force Base "Hazardous Waste Dumpsite." We contend that the only acceptable solution is to dig it all up and haul it away to be disposed of in the proper manner. It has for years, and remains today, a threat to the health and welfare of the residents of the Village of Lockbourne Ohio, the City of Columbus, and surrounding neighbors in both Franklin and Pickaway counties. Per USACE studies compiled for the 'site', it exceeds acceptable limits for the safety of both human and animal life. While we are happy that the US Government acknowledges that there is a threat, and that something should be done to remove said threat, we do not feel that spending 12 to 15 million dollars of taxpayer money to simply apply a 'Band-Aid' fix will make it go away. 'Did* [sic] *it up, move it away.' (Exhibit 7)*

Response: See response to Comments 3.1.32. and 3.1.37.

3.6 Public Comments and Lead Agency Responses—Mr. Tufts, e-mail comments

Commenter/Affiliation
Daniel C. Tufts
Resident

3.6.1 Comment:

As a life long resident, former council member, and concerned citizen, I am glad to finally see someone interested in our cause. On behalf of myself, my family, and all the residents of the Village of

Lockbourne Ohio, both past and present, I would like to thank the USACE for the excellent report that they have generated detailing what their investigation uncovered with regards as to what substances were found to have been buried in the former Lockbourne AFB dumpsite. I feel that you have given us the first honest detailed analysis of this 'Toxic Cocktail' that has been brewing in our backyard for the last 60 years.

Response: Thank you. Though our sampling identified a number of contaminants, it would not be accurate to describe them as a "toxic cocktail," as most of the contaminants are at such low levels that they can only cause chronic, long-term issues for appropriate receptors.

3.6.2 Comment:

During that time span there has been a constant outcry from the community about what we feel is an inordinately high cancer rate in and around the Village. These past protests seem to have fallen on deaf ears. I pray that those you are hearing now do not suffer the same fate.

Response: See responses to Comments 3.1.5., 3.1.6., and 3.1.8.

3.6.3 Comment:

For many years now, the residents have felt that there were sinister, hazardous, contaminants leaking from the dump that were contaminating both the water supply and the surrounding land mass of the dumpsite. It has been our contention that this toxic waste was then ingested by village residents through the "poisoned" well water and/or direct contact with water, air, or material from the site. While there are a very limited number of individuals in the village today who still have a private water supply, it was just a few short years ago that everyone in the area used either a dug or drilled well. We argue that this is the cause of the unproportionately high percentage rate of cancer to former and present residents.

Response: See responses to Comments 3.1.7. and 3.1.8.

3.6.4 Comment:

I am attaching an incomplete list of those individuals who have at some time lived in or around Lockbourne, and have died or now are living with some form of cancer. This list was compiled by surveyors as they collected names on a petition of protest to proposed remedial action on the dumpsite. I can not swear that it is 100% accurate, but is to the best of my knowledge true as listed.

Response: See responses to Comments 3.1.7. and 3.1.8.

3.6.5 Comment:

While the study from USACE readily admits that the government caused the pollution, and that they are indeed responsible for it's [sic] *cleanup, it proposes to do so in a manner that we feel is "unacceptable". We maintain that since your favored alternative for cleanup is to dig up and consolidate contaminants to a centralized onsite location, why not physically remove it from the site since you would have already disturbed it anyway. Moving it away, not around, is he* [sic] *only way to fully eliminate the danger that it has, and continues to pose today.*

Response: See response to Comment 3.1.37.

3.6.6 Comment:

The public meeting that was held April 28, 2011 to get input from the community was ridiculous Those supposed experts who lead the meeting were either covering up something, or were so ill informed about the issue, that they admitted that they were confused themselves and simply rambling on.

Response: The 28 April 2011 public meeting met its objectives, which were as the commenter says "to get input from the community." USACE received numerous comments which are found in this Responsiveness Summary. However, because meetings do sometimes get confusing and chaotic, CERCLA provides this opportunity where every public comment is considered and answered in an orderly fashion.

3.6.7 Comment:

For instance. the statement was made that contaminants found outside the AOC were deemed to be coming from a source "upstream" from the base. Yet they could not, or would not, identify the source. We were told that we would have to seek other sources for that information. If they know that the Base Dump is being labeled as the contaminating source, and they say that it comes from somewhere else, why did they not seek out and identify that source?

Response: See response to Comment 3.3.12.

3.6.8 Comment:

They were evasive and simply glossed over and brushed aside some questions or statements.

Response: See response to Comment 3.6.6.

3.6.9 Comment:

Obviously, I can not address all the issues of concern in this e-mail, but I urge you to include those parties of concern most affected, namely the citizens and Village officials of Lockbourne, in your decision making process as to the "Cleanup" of the dumpsite. I feel that at this point in time that has not happened. The investigation process has been ongoing since 1986 and we have not been kept in the loop. Now would be a good time to mend fences. Let us work together for the good of Lockbourne, the City of Columbus, and Rickenbacker Port Authority.

Response: See response to Comment 3.3.1.

3.7 Public Comments and Lead Agency Responses—Ms. Bush

Commenter/Affiliation
Shannon Bush
Resident

3.7.1 Comment:

On today's landfills they've got liners and clay. That landfill was built over top—everything around here is gravel—it's over a gravel base. So your drainage is going to be a lot worse than the landfills. Is this the same thing you would do in a commercial landfill if you found contamination there? (Exhibit 1)

Response: The USACE's selected remedy is typically employed at commercial landfills. The USACE identified the remedy by considering the findings of prior investigations, particularly the human health and ecological risk assessments; transport mechanisms for the

COCs; and USEPA guidance regarding the containment "presumptive remedy" for municipal landfills. ("Presumptive remedies" are preferred technologies for common categories of sites based on historical patterns of remedy selection and the USEPA's scientific and engineering evaluation of performance data on technology implementation [USEPA 1996].) The selected remedy incorporates components of USEPA's containment remedy for landfills and is therefore typical of remedies that are commonly employed at commercial landfills. It is also noted that USACE investigations have identified the presence of a clay layer beneath the landfill, between the upper and lower water bearing zones. This clay layer is believed to be laterally continuous across the site and to serve as an aquitard between the upper and lower aquifers.

Copies of the USEPA presumptive remedy guidance are available in the Administrative Record file located at the Southeast Branch of the Columbus Metropolitan Library, 3980 S. Hamilton Road, Groveport, Ohio, and accessible online at http://bit.ly/LockbourneAFB.

3.7.2 Comment:

We have to be – EPA – we're on the storm-water runoff. We have to have monitoring on all the runoff everywhere. Isn't Lockbourne part of the permit thing where they come in and monitor your storm sewers? You don't know? Isn't that part of the EPA permit?

DIANA BYNUM: 'That would be the Division of Surface Water in my office.'

Storm-water levels?

DIANA BYNUM: 'Uh-huh.'

Response: This environmental restoration action is being completed in accordance with the provisions of the CERCLA, and as such, is exempt from permit requirements. However, the design of the landfill and cover will consider the runoff of storm water so as to control and minimize discharges. The long-term management plan will address all future monitoring efforts. The need for surface water sampling efforts that fulfill the intent of USEPA storm water requirements will be evaluated after the landfill cover is constructed and the groundwater flow conditions reassessed. Because buried wastes will be covered by a 24-inch soil cover, migration of chemicals from the landfill to adjacent surface water is not anticipated; therefore, surface water monitoring efforts are expected to be less robust than those for groundwater monitoring.

For reference, it is noted that the USACE completed surface water and sediment sampling during completion of its environmental investigations. Potential unacceptable human health risks were not identified related to exposure to COCs in surface water or sediment. Although potential unacceptable ecological risks were identified related to exposure to sediment in the East Ditch and West Ditch, and to surface water in the West Ditch, the habitat in or near the ditches surrounding the landfill is of poor quality and not believed to support ecological receptors. On this basis, a remedial action component to address ecological risks has not been identified.

3.7.3 Comment:

If you go up to Ridge Station, nobody should be drinking the water up there. People got 55-gallon drums running into their sewers, running into their water. You should have these things monitored through the EPA. You should have a permit.

Response: See response to Comment 3.7.2.

3.8 Public Comments and Lead Agency Responses—Mr. Easterday

Commenter/Affiliation
Richard Easterday
Resident

3.8.1 Comment:

Basically, you people have no idea what was put in there.

Response: The USACE completed its investigations in accordance with industry standards for environmental assessments, and with work plans that were reviewed and approved by the Ohio EPA. The USACE supplemented information that it obtained through review of historic documents, including aerial photographs and topographic information, with sample analytical data and visual observation findings obtained during intrusive trenching of the landfill. USACE sampled soil, groundwater, surface water, seeps, sediment, and landfill gas; and completed analyses for a suite of analytical chemicals that included metals, volatile organic compounds and SVOCs, pesticides, herbicides, PCBs, explosives, and dioxins/furans. Further, presumptive remedies are designed based on the idea that all of the site has not been fully characterized. See response to Comment 3.1.32.

3.8.2 Comment:

I've lived here for 65 years. I know what was put in there. You're not finding anything. I know there's diesel fuel, there's been paint, there's been paint thinner, all kinds of stuff put in there.

Response: Thank you for your information. You are right in that such contamination has not been verified. However, it is possible that volatile organic compounds, such as those you have mentioned, have already volatilized or otherwise biodegraded. See the response to Comment 3.1.11. for what contamination was found. Even with this additional contamination, the preferred alternative would not change.

3.8.3 Comment:

Why do you think it's only 10-foot deep? . . . You only went 10 feet. How do you know it don't go deeper?

Response: As described in Section 2.5.5 of this document, the extent of buried wastes was identified by completing geophysical surveys and intrusive trenching. The findings of the geophysical investigations were used to guide the selection of the areas in which intrusive trenching was performed. Intrusive trenching activities were stopped when native soils were observed, which supported the estimation of depth of wastes below ground. The most recent site inspection report describes these activities (CH2M HILL 2009). See also the response to Comment 3.2.5.

3.8.4 Comment:

It's too late. It's already spread all over the town. I was in Vietnam, so I know how it works.

Response: USACE only has authority to investigate contamination at the former Lockbourne AFB landfill, not contamination throughout the village of Lockbourne. See response to Comment 3.1.32.

3.9 Public Comments and Lead Agency Responses—Mr. Kennedy

Commenter/Affiliation
Paul Kennedy
Columbus Regional Airport
Authority
Manager, Energy and Environment

3.9.1 Comment:

Paul Kennedy with the Airport Authority. It might help, as you restart the Power Point, to maybe distinguish—the definition in the report and proposed plans are a description of the landfill itself. And maybe distinguish or contrast that with what is outside of the landfill or at the perimeter of the landfill, to kind of define movement and non-movement of the landfill, and then maybe how that cap is appropriate, so that there is the distinction between where the landfill stops and where the groundwater discussion stops. Because some of the things I hear in the room are some concerns that the conditions that are defined in the report also exist in the Village or in the County or in the City's wellfields.

Response: Mr. Kennedy, who represents the landowner, was trying to help organize the meeting that had gotten confused. Proposed plan Figure 3 is the map of the site showing the landfill, the consolidated landfill, the ditches and the village of Lockbourne.

3.9.2 Comment:

Having been at the Airport since 1993 and really just sort of an interested party reading the reports, I probably have more familiarity with the nature and extent of the landfill and what it means outside, you know, the boundaries of the landfill. So maybe for some of the people in the room and maybe that level of comfort you're talking about might come through in saying this is the landfill, this is not the landfill, this is why your remedy is appropriate in the way you designed it.

Response: Mr. Kennedy may be just "an interested party," however he represents the Columbus Regional Airport Authority who is the landowner and, therefore, a Potentially Responsible Party under CERCLA. See response to Comment 3.9.1.

3.9.3 Comment:

Well, if I could jump in to maybe touch back on the comment I made earlier. Maybe using this diagram, it might be helpful to define where the landfill is and the extent of contamination, and then the area between where that ends and where Lockbourne begins. And I think that the Corps or the Ohio EPA has even placed a well in the Village of Lockbourne.

DIANA BYNUM: The Corps.

The Corps did. And that was part of an investigative process for off-site. I don't want to misspeak because I don't represent either the Corps or Lockbourne. That's just my familiarity.

Response: The well placed in the village of Lockbourne was part of a system of wells designed to characterize the contamination in the landfill, not in the village.

3.9.4 Comment:

And, as I understood, both the community wells were tested, as Diana described, and a remote well was placed off-site, in the Village, for the purpose of establishing a relationship between the two. And I understood that the results of the Corps' well were negative detection. I don't have the results myself, but that's my understanding.

Response: During the 2003 and 2004 groundwater monitoring events that USACE completed, samples were collected from groundwater monitoring wells at or near the landfill, including downgradient well LCKMW-7. (Monitoring well LCKMW-7 is located west of the landfill, near the eastern edge of the Village of Lockbourne.) Dioxins/furans were detected in samples that were collected from wells screened in the shallow aquifer beneath the landfill, but they were not detected in the sample that was collected from downgradient well LCKMW-7 (CH2M HILL 2010). However, these samples were part of the effort to characterize contamination in the landfill, not in the village.

3.10 Public Comments and Lead Agency Responses—Mr. Hammond

Commenter/Affiliation
George Hammond, Resident

3.10.1 Comment:

Also my wife died in 2005 from cancer, pancreas.

Response: We sympathize with your loss. See response to Comment 3.1.8.

4. References

SECTION 4

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TABLE 2-1
Human Health Risk Assessment Exposure Scenarios That May Pose Unacceptable Risk
Former Lockbourne AFB Landfill

Exposure Area	Exposure Medium	Human Receptors	Quantitative Risk Results		Blood Lead Level	Constituents of Concern[a] (Maximum Concentration[b])
			Carcinogenic	Noncarcinogenic Hazard Index		
AOC 1	Surface soil	Current/future maintenance worker	1.9×10^{-4}	0.017		***PAHs:*** benzo(a)pyrene (380 mg/kg) benz(a)anthracene (450 mg/kg) benzo(b)fluoranthene (340 mg/kg) benzo(k)fluoranthene (340 J mg/kg) dibenzo(a,h)anthracene (71 mg/kg) indeno(1,2,3-cd)pyrene (130 mg/kg) ***PCB:*** PCB-1248 (16 mg/kg)
AOC 1	Surface soil	Current/future youth trespasser/visitor	1.1×10^{-4}	0.025		***PAHs:*** benzo(a)pyrene (380 mg/kg) benz(a)anthracene (450 mg/kg) benzo(b)fluoranthene (340 mg/kg) dibenzo(a,h)anthracene (71 mg/kg) indeno(1,2,3-cd)pyrene (130 mg/kg) ***PCB:*** PCB-1248 (16 mg/kg)

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Exposure Area	Exposure Medium	Human Receptors	Quantitative Risk Results		Blood Lead Level	Constituents of Concern[a] (Maximum Concentration[b])
			Carcinogenic	Noncarcinogenic Hazard Index		
AOC 1	Total soil	Future construction worker	1.0×10^{-4}	0.39	7.1- 11.5%	***PAHs:*** benzo(a)pyrene (380 mg/kg) dibenzo(a,h)anthracene (71 mg/kg) benz(a)anthracene (450 mg/kg) benzo(b)fluoranthene (340 mg/kg) indeno(1,2,3-cd)pyrene (130 mg/kg) ***PCB:*** PCB-1248 (16 mg/kg) ***Metal:*** lead (9,340 mg/kg)
AOC 1	UWBZ groundwater	Future construction worker	1.4×10^{-5}	2.5		***PAHs:*** benzo(a)pyrene (0.00022 mg/L) dibenzo(a,h)anthracene (0.00069 mg/L) ***Dioxins/Furans:*** dioxins/furans (4.93×10^{-8} mg/L)[c]
AOC 2	UWBZ groundwater	Future construction worker	3.0×10^{-5}	3.1		***PAHs:*** dibenzo(a,h)anthracene (0.001 mg/L) benzo(a)pyrene (0.00063 mg/L) indeno(1,2,3-cd)pyrene (0.001 mg/L) ***Dioxins/Furans:*** dioxins/furans (3.433×10^{-8} mg/L)[c]
Off-landfill	IDA groundwater	Future offsite adult residents		5.7		***Dioxins/Furans:*** dioxins/furans (9.33×10^{-9} mg/L)[c]

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Former Lockbourne AFB Landfill

Exposure Area	Exposure Medium	Human Receptors	Quantitative Risk Results		Blood Lead Level	Constituents of Concern[a] (Maximum Concentration[b])
			Carcinogenic	Noncarcinogenic Hazard Index		
Off-Landfill	IDA groundwater	Future child residents		13		***Dioxins/Furans:*** dioxins/furans (9.33×10^{-9} mg/L)[c]
AOC 1	UWBZ groundwater	Future offsite adult resident		28		***Metals:*** arsenic (0.084 mg/L) iron (143 mg/L) manganese (2.94 mg/L) thallium (0.0087 mg/L) dioxins/furans (4.93×10^{-8} mg/L)[c]
AOC 1	UWBZ groundwater	Future offsite child resident		63	7.8%	***Metals:*** arsenic (0.084 mg/L) cobalt (0.04 mg/L) iron (143 mg/L) lead (0.124 mg/L) manganese (2.94 mg/L) thallium (0.0087 mg/L) ***Dioxins/Furans:*** dioxins/furans (4.93×10^{-8} mg/L)[c]
AOC 1	IDA groundwater	Future offsite adult resident		7.7		***SVOC:*** naphthalene (0.00056 mg/L) ***Dioxins/Furans:*** dioxins/furans (9.68×10^{-9} mg/L)[c]

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Former Lockbourne AFB Landfill

Exposure Area	Exposure Medium	Human Receptors	Quantitative Risk Results		Blood Lead Level	Constituents of Concern[a] (Maximum Concentration[b])
			Carcinogenic	Noncarcinogenic Hazard Index		
AOC 1	IDA groundwater	Future offsite child resident		17		***Metals:*** iron (45.8 mg/L) manganese (1.0 mg/L) ***SVOC:*** naphthalene (0.00056 mg/L) ***Dioxins/Furans:*** dioxins/furans (9.68×10^{-9} mg/L)[c]
Off Landfill	IDA groundwater	Future offsite lifetime resident	7.6×10^{-3}			***PAHs:*** benzo(a)pyrene (0.00031 mg/L) benzo(b)fluoranthene(0.00032 H mg/L) dibenzo(a,h)anthracene (0.0003 mg/L) indeno(1,2,3-cd)pyrene (0.00032 mg/L) benz(a)anthracene (0.00015 J mg/L) ***Dioxins/Furans:*** dioxins/furans (9.33×10^{-9} mg/L)[c]

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Former Lockbourne AFB Landfill

Exposure Area	Exposure Medium	Human Receptors	Quantitative Risk Results		Blood Lead Level	Constituents of Concern[a] (Maximum Concentration[b])
			Carcinogenic	Noncarcinogenic Hazard Index		
AOC 1	UWBZ groundwater	Future offsite lifetime resident	9.2×10^{-3}			***PAHs:*** benzo(a)pyrene (0.00022 mg/L) benzo(b)fluoranthene (0.00018 mg/L) dibenzo(a,h)anthracene (0.00069 mg/L) indeno(1,2,3-cd)pyrene (0.00049 mg/L) benz(a)anthracene (0.00015 mg/L) ***SVOCs:*** naphthalene (0.00016 mg/L) bis(2-ethylhexyl) phthalate (0.018 mg/L) ***Dioxins/Furans:*** dioxins/furans (4.93×10^{-8} mg/L)[c] ***Metal:*** arsenic (0.084 mg/L)
AOC 1	IDA groundwater	Future offsite lifetime resident	7.6×10^{-3}			***PAHs:*** benzo(a)pyrene (0.00016 J mg/L) benzo(b)fluoranthene (0.00012 mg/L) dibenzo(a,h)anthracene (0.0004 mg/L) indeno(1,2,3-cd)pyrene (0.00036 mg/L) ***SVOCs:*** naphthalene (0.00056 mg/L) bis(2-ethylhexyl) phthalate (0.017 mg/L) ***Dioxins/Furans:*** dioxins/furans (9.68×10^{-9} mg/L)[c]

TABLE 2-1
Human Health Risk Assessment Exposure Scenarios That May Pose Unacceptable Risk
Former Lockbourne AFB Landfill

Exposure Area	Exposure Medium	Human Receptors	Quantitative Risk Results		Blood Lead Level	Constituents of Concern[a] (Maximum Concentration[b])
			Carcinogenic	Noncarcinogenic Hazard Index		

[a] See Uncertainty Associated with the human health risk assessment section for a discussion about PAHs and dioxins/furans detected at the site.

[b] Maximum concentrations observed from previous investigations as referenced in Section 2.5.5. Includes the maximum concentrations of detected concentrations.

[c] Maximum concentration for dioxins/furans is the maximum concentration of 2,3,7,8-tetrachlorodibenzo-p-dioxin toxic equivalent.

J – estimated value
H - holding time exceeded

Acronyms are defined in the Acronyms and Abbreviations list.

TABLE 2-2
AOC 1 Analysis of Alternatives
Former Lockbourne AFB Landfill

Criterion	Alternative 1. No Action	Alternative 2. Consolidation, Contruction of a Compacted Clay Cap, Long-Term Management, and Institutional Controls	Alternative 3. Consolidation, Construction of a Soil Cover, Long-Term Management, and Institutional Controls
Overall Protection of Human Health and Environment			
Protection of human health	Human health is not protected, because this alternative does not prevent direct exposure to surface soil, total soil, and UWBZ and IDA groundwater.	Human health would be protected because this alternative would reduce risk associated with direct contact exposure to the contaminated surface soil, total soil, and groundwater.	Human health would be protected, because this alternative would reduce risk associated with direct contact exposures to the contaminated surface soil, total soil, and groundwater.
Environmental protection	Risk to ecological receptors is not addressed. Environmental protection is not achieved because infiltration of rainfall would not be reduced, nor would the potential migration of surface soil contamination by runoff.	The cap would eliminate runoff of COCs into adjacent ditches. The cap would reduce surface water infiltration, and thereby reduce migration of COCs from soil to groundwater. No remedial actions are proposed for residual COCs in existing sediment. This alternative will alter the habitat in the area and will possibly disrupt environmental receptors for some time, though recovery is ultimately expected.	The cover would eliminate runoff of COCs into adjacent ditches. The cover would reduce surface water infiltration, and thereby reduce migration of COCs from soil to groundwater. No remedial actions are proposed for residual COCs in existing sediment. This alternative will alter the habitat in the area and will possibly disrupt environmental receptors for a period of time, though recovery is ultimately expected.
Compliance With ARARs			
Chemical-specific	No chemical-specific ARAR were identified.	No chemical-specific ARARs were identified.	No chemical-specific ARARs were identified.
Location-specific	No location-specific ARARs were identified.	No location-specific ARARs were identified.	No location-specific ARARs were identified.
Action-specific	Not applicable. Action-specific ARARs are not applicable because no action will be taken under this alternative.	Yes. However, specific waivers are required, as presented in Table 2-4.	Yes. However, specific waivers are required, as presented in Table 2-4.

TABLE 2-2
AOC 1 Analysis of Alternatives
Former Lockbourne AFB Landfill

Criterion	Alternative 1. No Action	Alternative 2. Consolidation, Contruction of a Compacted Clay Cap, Long-Term Management, and Institutional Controls	Alternative 3. Consolidation, Construction of a Soil Cover, Long-Term Management, and Institutional Controls
Long-Term Effectiveness and Permanence			
Magnitude of residual risk	Residual risks would be high because the risk of exposure to contaminated surface soil would not be reduced. Furthermore, additional waste materials could become exposed in the future because of erosion. The risk resulting from rainwater infiltration also would not be reduced.	Installation of a clay cap would reduce much of the residual risk, such as contact with contaminated surface soil and infiltration of groundwater through the contaminated waste material.	Installation of a soil cover would reduce much of the residual risks such as contact with contaminated surface soil. The cover would reduce infiltration of precipitation, and thereby reduce migration of COCs from soil to groundwater.
Adequacy and reliability of controls	Some natural processes might reduce concentrations of COCs in groundwater over time, but this would not be documented.	Clay caps are a reliable and proven technology and institutional controls are considered effective in reducing potential risks. Inspections and repairs of the cap, groundwater monitoring, and reviews of the institutional controls would evaluated effectiveness of the remedy.	Soil covers are a reliable and proven technology and institutional controls are considered effective in reducing potential risks. Inspections and repairs of the cover, groundwater monitoring, and reviews of the institutional controls would evaluated effectiveness of the remedy.
Five-year review	Not applicable.	This alternative will need five-year reviews as long as hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure and institutional control are required to protect the selected remedy.	This alternative will need five-year review s as long as hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure and institutional control are required to protect the selected remedy.
Long-term management	Not applicable.	Long-term management will include regular maintenance of the cap, review of institutional controls, along with monitoring to evaluate effectiveness of the remedy.	Long-term management will include regular maintenance of the cap, review of institutional controls, along with monitoring to evaluate effectiveness of the remedy.

TABLE 2-2
AOC 1 Analysis of Alternatives
Former Lockbourne AFB Landfill

Criterion	Alternative 1. No Action	Alternative 2. Consolidation, Contruction of a Compacted Clay Cap, Long-Term Management, and Institutional Controls	Alternative 3. Consolidation, Construction of a Soil Cover, Long-Term Management, and Institutional Controls
Reduction of Toxicity, Mobility, and Volume through Treatment			
Reduction of toxicity and volume	No active treatment. Some reduction may happen due to natural attenuation processes, such as biodegradation, dilution, dispersion, sorption, volatilization, and chemical and biochemical stabilization of contaminants.	Some reduction will occur due to natural attenuation processes, such as biodegradation, dilution, dispersion, sorption, volatilization, and chemical and biochemical stabilization of contaminants.	Some reduction will occur due to natural attenuation processes, such as biodegradation, dilution, dispersion, sorption, volatilization, and chemical and biochemical stabilization of contaminants.
Reduction in mobility	Unknown but expected through natural attenuation.	Although, this alternative does not include treatment, the cap would prevent migration of COCs in surface soil offsite. Additional leachate reduction is not needed because the groundwater COCs are generally not mobile in the dissolved phase and the cap would reduce the amount of surface water infiltration.	Although, this alternative does not include treatment, the cover would prevent migration of COCs in surface soil offsite. Additional leachate reduction is not needed because the groundwater COCs are generally not mobile in the dissolved phase and the cover would reduce the amount of surface water infiltration
Short-Term Effectiveness			
Risk to community during remedial action	Not applicable.	Dust generation, increased noise levels, and increased truck traffic may have a small impact on the surrounding community. Risk would be minimal.	Dust generation, increased noise levels, and increased truck traffic may have a small impact on the surrounding community. Risk would be minimal.
Risk to workers during remedial action	Not applicable.	The risk to workers during construction includes use of heavy equipment, excavation, and consolidation of contaminated soil. Risk is expected to be minimal based on development of the Project Health and Safety Plan.	The risk to workers during construction includes use of heavy equipment, excavation, and consolidation of contaminated soil. Risk is expected to be minimal based on development of the Project Health and Safety Plan.
Time until remedial action objectives are achieved	Unknown.	RAOs would be achieved upon completion of the remedial action.	RAOs would be achieved upon completion of the remedial action.

TABLE 2-2
AOC 1 Analysis of Alternatives
Former Lockbourne AFB Landfill

Criterion	Alternative 1. No Action	Alternative 2. Consolidation, Contruction of a Compacted Clay Cap, Long-Term Management, and Institutional Controls	Alternative 3. Consolidation, Construction of a Soil Cover, Long-Term Management, and Institutional Controls
Environmental impacts	Present contaminant effects on local biology will continue.	Construction would introduce some environmental impacts initially due to fuel used by the construction equipment and dust generated during earthwork. Generally, these environmental impacts are negligible and can be addressed by inspecting equipment for leaks and application of dust mitigation strategies. The placement of a cap would improve the quality of the environment at the site when it is complete.	Construction would introduce some environmental impacts initially due to fuel used by the construction equipment and dust generated during earthwork. Generally, these environmental impacts are negligible and can be addressed by inspecting equipment for leaks and application of dust mitigation strategies. The placement of a cover would improve the quality of the environment at the site when it is complete.
Implementability			
Technical feasibility of operation and construction	Not applicable.	A clay cap is an easily implemented technology as it has been done at many other locations. Discussions regarding application of institutional controls have started for this site.	A soil cover is an easily implemented technology as it has been done at many other locations. Discussions regarding application of institutional controls have started for this site.
Reliability of technology	Not applicable.	Clay caps and institutional controls have been proven to work.	Soil covers and institutional controls have been proven to work.
Availability of services and material	Not applicable.	Readily available.	Readily available.
Cost			
Present value cost	$0	$15,482,200	$12,916,000
Modifying Criteria			
State acceptance	No.	Yes.	Yes.
Community acceptance	No.	Based on comments received during the public comment period, some members of the community are not in agreement with the selected remedy. Responses to comments received are included in the Responsiveness Summary in Section 3.	Based on comments received during the public comment period, some members of the community are not in agreement with the selected remedy. Responses to comments received are included in the Responsiveness Summary in Section 3.

Acronyms are defined in the Acronyms and Abbreviations list.

TABLE 2-3
AOC 2 Analysis of Alternatives
Former Lockbourne AFB Landfill

	Alternative 1. No Action	Alternative 2. Implementation of Institutional Controls
Overall Protection of Human Health and Environment		
Protection of human health	Human health is not protected as this alternative does not prevent direct exposure to groundwater.	Human health would be protected because this alternative would eliminate risks associated with exposures to groundwater.
Environmental protection	Not applicable because there are no risks identified to ecological receptors at AOC 2.	Not applicable because there are no risks identified to ecological receptors at AOC 2.
Compliance with ARARs		
Chemical-specific	No chemical-specific ARARs were identified.	No chemical-specific ARARs were identified.
Location-specific	No location-specific ARARs were identified.	No location-specific ARARs were identified.
Action-specific	Not applicable. Action-specific ARARs are not applicable because no action will be taken under this alternative.	Not applicable because this alternative involves the administrative implementation of institutional controls only.
Long-Term Effectiveness and Permanence		
Magnitude of residual risk	Residual risks would be high because the current risk of exposure to contaminated groundwater would not be reduced.	Implementation of institutional controls will eliminate the exposures to groundwater and therefore, reduce residual risks.
Adequacy and reliability of controls	Some natural processes might reduce concentrations of COCs in water over time, but this would not be documented.	Controls are adequate and reliable. Some natural processes might reduce concentrations of COCs in water over time, but this would not be documented.
Five-year review	Not applicable.	Five-year reviews will be performed.
Long-term management	Not applicable.	Long-term management will be required to help ensure compliance with the institutional controls.
Reduction of Toxicity, Mobility, and Volume through Treatment		
Reduction of toxicity and volume	No active treatment. Some reduction may happen due to natural attenuation processes, such as biodegradation, dilution, dispersion, sorption, volatilization, and chemical and biochemical stabilization of contaminants.	No active treatment. Some reduction may happen due to natural attenuation processes, such as biodegradation, dilution, dispersion, sorption, volatilization, and chemical and biochemical stabilization of contaminants.
Reduction in mobility	Unknown, but expected through natural attenuation.	Unknown, but expected through natural attenuation.
Short-Term Effectiveness		
Risk to community during remedial action	Not applicable.	No risk because institutional controls are administratively implemented.

TABLE 2-3
AOC 2 Analysis of Alternatives
Former Lockbourne AFB Landfill

	Alternative 1. No Action	Alternative 2. Implementation of Institutional Controls
Risk to workers during remedial action	Not applicable.	No risk because institutional controls are administratively implemented.
Time until remedial action objectives are achieved	Unknown.	Immediate upon institutional control implementation.
Environmental impacts	Not applicable.	No risk because institutional controls are administratively implemented.
Implementability		
Technical feasibility of operation and construction	Not applicable.	Easily implementable.
Reliability of technology	Not applicable.	Reliable.
Availability of services and material	Not applicable.	Readily available.
Cost		
Present value cost	$0	$67,900[a]
Modifying Criteria		
State acceptance	No.	Yes.
Community acceptance	No	See attached Responsiveness Summary in Section 3.

[a]Cost has been updated since the Proposed Plan, to include five-year review costs for the standard 30-year period.

Acronyms are defined in the Acronyms and Abbreviations list.

TABLE 2-4
Summary of ARARs
Former Lockbourne Air Force Base Landfill

	ARARs	Description of Regulation	Comments
1	OAC 3745-27-08 Construction Specifications for Sanitary Landfills	Specifies the minimum requirements for the soil/clay layers, granular drainage layer, geosynthetics, leachate management system, gas monitoring system, etc. Describes minimum standards for construction requirements for sanitary landfill facilities.	In coordination with Ohio EPA, USACE will be applying a waiver to this ARAR.
2	OAC 3745-27-10 (effective August 15, 2003) Groundwater monitoring program for a sanitary landfill facility	Requires groundwater monitoring program for all sanitary landfill facilities. Requires that the system consist of a sufficient number of wells that are located so that samples indicate both upgradient (background) and downgradient water samples. Details minimum requirements that the system must be designed to meet. Details sampling and analysis procedures. Specifies procedures for assessment and correction of contamination.	In coordination with Ohio EPA, USACE will be applying a waiver to this ARAR.
3	OAC 3745-27-13 (H) Sections 7 and 8 Disturbances Where Hazardous or Solid Waste Facility was Operated	Describes substantive limitations on any proposed filling, grading, excavating, building, drilling, or mining on land where a hazardous waste facility or solid waste facility was operated and how the activities will be accomplished.	
4	OAC 3745-27-11 (G) and (H) Final Closure of Sanitary Landfill Facilities	Requires closure of a landfill in a manner which minimizes the need for post-closure maintenance and minimizes post-closure formation and release of leachate and explosive gases to air, soil, groundwater, or surface water. Specifies acceptable cap design; barrier layer, granular drainage layer, soil and vegetative layer. Provides for use of comparable materials to those specified with approval of Director.	In coordination with Ohio EPA, USACE will be applying a waiver to this ARAR.
5	OAC 3745-17-08B Restriction of emission of fugitive dust	Requires reasonably available control measures to prevent fugitive dust from becoming airborne.	
6	40 Code of Federal Regulations 230.10 Guidelines for Specification of Disposal Sites for Dredged or Fill Material	Requires appropriate and practicable steps are taken that minimize potential adverse impacts of the discharge of dredged or fill material on the aquatic ecosystem.	

Acronyms are defined in the Acronyms and Abbreviations list.

TABLE 2-5
ARAR Waivers
Former Lockbourne AFB Landfill

ARAR	Waiver	Waiver Justification
OAC 3745-27-08 Construction Specifications for Sanitary Landfills	This requirement is not applicable because waste disposal ended at the site in 1979, before the March 1, 1990 initial effective date of the regulation and because the regulation applies to active sanitary landfills operating under an approved permit. OAC 3745-27-08 is relevant and appropriate to Alternatives 2 and 3 because it addresses sites similar to the former Lockbourne AFB landfill and migration of contaminants that are similar to those that have been identified at the site. However, based on the nature and extent of impacts at the site, many of the specific requirements are not needed and the standard of performance can be achieved with alternate designs. This ARAR will be waived, per the NCP 300.430(f)(1)(ii)(C)(4)) (see Note), because these alternatives will obtain a standard of performance that is equivalent to that required under OAC 3745-27-08.	Specifically, Alternative 2 with a compacted clay cap and Alternative 3 with a soil cover will meet the same performance standard for the site as the composite cap specified in OAC 3745-27-08. OAC 3745-27-10, effective July 29, 1976, will be used to guide the proposed landfill cap design and construction. OAC 2745-27-10 (effective July 29, 1976) is not an ARAR because it is not legally enforceable, but the rule provides technical information on how to perform and evaluate the proposed response actions. The composite cap, as specified in OAC 3745-27-08, is designed to prevent human contact with the landfill waste and other contamination, to eliminate runoff of contaminants from contaminated soils, and to block leaching to groundwater and subsurface soils. Alternative 2 cap and Alternative 3 cover will prevent direct contact with waste and contaminated soils, eliminate runoff of contaminants from contaminated soils, and reduce leaching to groundwater and subsurface soils. Additional leachate reduction is not needed at the site because the COCs for groundwater are PAHs, PCBs, and dioxins/furans, which generally are not mobile in the dissolved phase and migrate typically by colloidal transport or while sorbed to particulates. The additional redundancy provided by the composite cap/cover for reducing leaching is not needed at the site because leaching to groundwater is not a significant migration pathway. The soil cover and clay cap would both adequately protect groundwater from further contamination. Furthermore, the composite cap/cover includes additional elements that are not needed to protect human health and the environment at the site, such as an explosive gas control system. Because of the particular COCs at the site, Alternative 2 cap and Alternative 3 cover are as protective as the composite cap prescribed by OAC 3745-27-08. The composite cap required by OAC 3745-27-08 would cost an additional $125,000 to $220,000 per acre. Because both Alternatives 2 and 3 provide an equivalent level of performance specific to this site, there would be no benefit to incur the additional cost of implementing the composite cap as compared to the cost benefit of applying a waiver.

TABLE 2-5
ARAR Waivers
Former Lockbourne AFB Landfill

ARAR	Waiver	Waiver Justification
OAC 3745-27-10 (effective August 15, 2003) Groundwater Monitoring Program for a Sanitary Landfill Facility	This requirement is not applicable because waste disposal ended at the site in 1979, before the March 10, 1990 initial effective date of the regulation (the current rule has an effective date of August 15, 2003). OAC 3745-27-10 is relevant and appropriate to Alternatives 2 and 3 because it outlines the requirements for a groundwater monitoring system, which is needed at this site. However, the specific monitoring requirements of this regulation are unnecessary because the monitoring system that is planned will obtain a standard of performance that is equivalent to those requirements. This ARAR will be waived per the NCP 300.430(f)(1)(ii)(C)(4)) (see Note), because these alternatives will obtain a standard of performance that is equivalent to that required under OAC 3745-27-10.	The proposed Alternatives 2 and 3 will include groundwater monitoring. However, OAC 3745-27-10 includes additional monitoring requirements that are not needed to protect human health and the environment at this site. For example, OAC 3745-27-10 requires analysis of more than 200 parameters, many of which are not COCs at the site. Given the age of the landfill, the contaminants shown to drive risk in groundwater at the site are well known. The long-term management proposed for the site would be more tailored to the risk drivers documented at the site and, therefore, be significantly less expensive than the monitoring program specified in OAC 3745-27-10. As a result, it will achieve a standard of performance that is equivalent to OAC 3745-27-10.
OAC 3745-27-11 (H) Final Closure of Sanitary Landfill Facilities	This regulation is not applicable because waste disposal ended at the site in 1979, before the March 1, 1990 initial effective date of the regulation and because the regulation applies to active sanitary landfills operating under an approved permit. Subparts of OAC 3745-27-11 (H) are relevant and appropriate because they address the final closure of a landfill unit. However, several specific final closure elements included in these subparts will be met through alternate methods that will obtain a standard of performance equivalent to those requirements. Therefore, an ARAR waiver will be used for Alternatives 2 and 3, per the NCP 300.430(f)(1)(ii)(C)(4)) (see Note), because these alternatives will obtain a standard of performance that is equivalent to that required under OAC3745-27-11.	OAC 3745-27-11 (H) defines other closure requirements for closing sanitary landfills. The proposed surface water control design features and long-term management program, including groundwater monitoring for Alternatives 2 and 3 as well as the reuse of the site that will be included in the remedial design will achieve a standard of performance equivalent to the intent of the closure requirements identified in OAC 3745-27-11 (H).

Note: The NCP 300.430(f)(1)(ii)(C)(4)) states, “The alternative will obtain a standard of performance that is equivalent to that required under the otherwise applicable standard, requirement, or limitation through use of another method or approach.”

Acronyms are defined in the Acronyms and Abbreviations list.

TABLE 2-6

Estimated Cost for Selected Remedy at AOC 1

Former Lockbourne AFB Landfill

Site:	Former Lockbourne AFB Lanfill	**Base Year:**	2009	2010
Location:	Lockbourne, Ohio	**Date:**	9/25/2009	4/21/2010
Phase:	Remediation Cost Estimates			

Alternative 3

	Institutional Controls	Monitoring	Consolidation and Cover	Alternative 3 - Total
Capital Cost	$6,000	$83,800	$10,348,000	**$10,437,800**
Total Annual O&M Cost Year (1-2)	$0	$225,200	$13,700	**$238,900**
Total Annual O&M Cost Year (3-5)	$0	$122,300	$13,700	**$136,000**
Total Annual O&M Cost Year (6-30)	$0	$71,500	$13,700	**$85,200**
Total Periodic Cost every 5 years	$0	$389,400	$95,000	**$484,400**
Total Present Value of Alternative (30 yrs)	$ 6,000	$ 2,222,200	$ 10,687,800	**$12,916,000**

Disclaimer: The information in this cost estimate is based on the best available information regarding the anticipated scope of the alternatives. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design of the alternatives. This is an order-of-magnitude cost estimate that is expected to be within -50 to +100 percent of the actual project costs.

TABLE 2-6
Estimated Cost for Selected Remedy at AOC 1
Former Lockbourne AFB Landfill

Project Name:	**Lockbourne, Ohio**		
Scope:	**Institutional Controls**		
Site:	Former Lockbourne Airforce Base Lanfill	**Description:**	This estimate is part of Alternative 3. It includes institutional controls by filing of an environmental covanant, associated labor hours, and a contingency (20%). Discount rate is obtained from http://www.whitehouse.gov/omb/circulars_a094_a94_appx-c/. Need to consider the real discount rate for a 30-year period.
Location:	Lockbourne, Ohio		
Phase:	Remediation Cost Estimates		

CAPITAL COSTS

	DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL	NOTES
Environmental Covenant						
	Env Cov Filing Fees	1	LS	$200.00	$200	Engr's estimate
	Env Cov Filing Labor hours	40	hr	$120.00	$4,800	Engr's estimate. It is assumed that bulk of the work needed for developing the environmental covenants will be completed by CRAA. The hours indicated here are primarily for review
	SUBTOTAL				$5,000	
	Contingency	20%			$1,000	
	SUBTOTAL				$6,000	
	TOTAL CAPITAL COST				**$6,000**	

OPERATIONS AND MAINTENANCE COST (Annual Cost)

DESCRIPTION	YEAR	QTY	UNIT	COST	TOTAL	NOTES
Annual O&M			hrs		$0	
TOTAL O&M COST					**$0**	

PERIODIC COSTS

DESCRIPTION	YEAR	QTY	UNIT	UNIT COST	TOTAL	NOTES
Renewals & Replacements	5	1	LS	$0	$0	
Renewals & Replacements	10	1	LS	$0	$0	
Renewals & Replacements	15	1	LS	$0	$0	
Renewals & Replacements	20	1	LS	$0	$0	
Renewals & Replacements	25	1	LS	$0	$0	
Renewals & Replacements	30	1	LS	$0	$0	
				Total	$0	
TOTAL PERIODIC COST					**$0**	

PRESENT VALUE ANALYSIS (30-year) Discount Rate = 2.7%

End Year	COST TYPE	Total Cost	Periodic Cost	TOTAL COST/YEAR	DISCOUNT FACTOR	PRESENT VALUE
0	CAPITAL COST	$6,000		$6,000	1.000	$ 6,000
1	ANNUAL COST - O&M	$0		$0	0.974	$ -
2	ANNUAL COST - O&M	$0		$0	0.948	$ -
3	ANNUAL COST - O&M	$0		$0	0.923	$ -
4	ANNUAL COST - O&M	$0		$0	0.899	$ -
5	ANNUAL COST - O&M	$0	$0	$0	0.875	$ -

TABLE 2-6
Estimated Cost for Selected Remedy at AOC 1
Former Lockbourne AFB Landfill

Project Name:	**Lockbourne, Ohio**
Scope:	**Institutional Controls**

Site: Former Lockbourne Airforce Base Lanfill
Location: Lockbourne, Ohio
Phase: Remediation Cost Estimates

Description: This estimate is part of Alternative 3. It includes institutional controls by filing of an environmental covanant, associated labor hours, and a contingency (20%). Discount rate is obtained from http://www.whitehouse.gov/omb/circulars_a094_a94_appx-c/. Need to consider the real discount rate for a 30-year period.

6	ANNUAL COST - O&M	$0		$0	0.852	$	-
7	ANNUAL COST - O&M	$0		$0	0.830	$	-
8	ANNUAL COST - O&M	$0		$0	0.808	$	-
9	ANNUAL COST - O&M	$0		$0	0.787	$	-
10	ANNUAL COST - O&M	$0	$0	$0	0.766	$	-
11	ANNUAL COST - O&M	$0		$0	0.746	$	-
12	ANNUAL COST - O&M	$0		$0	0.726	$	-
13	ANNUAL COST - O&M	$0		$0	0.707	$	-
14	ANNUAL COST - O&M	$0		$0	0.689	$	-
15	ANNUAL COST - O&M	$0	$0	$0	0.671	$	-
16	ANNUAL COST - O&M	$0		$0	0.653	$	-
17	ANNUAL COST - O&M	$0		$0	0.636	$	-
18	ANNUAL COST - O&M	$0		$0	0.619	$	-
19	ANNUAL COST - O&M	$0		$0	0.603	$	-
20	ANNUAL COST - O&M	$0	$0	$0	0.587	$	-
21	ANNUAL COST - O&M	$0		$0	0.572	$	-
22	ANNUAL COST - O&M	$0		$0	0.556	$	-
23	ANNUAL COST - O&M	$0		$0	0.542	$	-
24	ANNUAL COST - O&M	$0		$0	0.528	$	-
25	ANNUAL COST - O&M	$0	$0	$0	0.514	$	-
26	ANNUAL COST - O&M	$0		$0	0.500	$	-
27	ANNUAL COST - O&M	$0		$0	0.487	$	-
28	ANNUAL COST - O&M	$0		$0	0.474	$	-
29	ANNUAL COST - O&M	$0		$0	0.462	$	-
30	ANNUAL COST - O&M	$0	$0	$0	0.450	$	-
				TOTAL PRESENT VALUE OF ALTERNATIVE		**$**	**6,000**

Inflation is considered to 2.1%

TABLE 2-6
Estimated Cost for Selected Remedy at AOC 1
Former Lockbourne AFB Landfill

Project Name: **Lockbourne, Ohio**
Scope: **Monitoring**

Site: Former Lockbourne Airforce Base Lanfill
Location: Lockbourne, Ohio
Phase: Remediation Cost Estimates

Description: This estimate is part of Alternative 3. It includes installation of five new groundwater monitoring wells and abandonment and replacement of five existing monitoring wells. This estimate also includes costs associated with sampling and well maintenance.

Capital costs presented in this estimate include allowances for project management (15%), project planning ($10,000 lump), and contingency (20%). O&M costs include a contingency of 20%. Discount rate is obtained from http://www.whitehouse.gov/omb/circulars_a094_a94_appx-c/. Need to consider the real discount rate.

CAPITAL COSTS

DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL	NOTES
Well Abandonment (5 onsite wells will be abandoned)					
Mobilization and demobilization	1	LS	$1,000.00	$1,000	Engr's estimate
Construction of temporary decontamination station	1	LS	$300.00	$300	Engr's estimate
Well abandonment	5	per well	$800.00	$4,000	Engr's estimate
Miscellaneous related to IDW disposal	1	LS	$1,000.00	$1,000	Engr's estimate
SUBTOTAL WELL ABANDONMENT				$6,300	
Well Installation (5 new wells and 5 replacement wells - avg depth - 20 ft)					
Mobilization and demobilization	1	LS	$1,000.00	$1,000	From a previous quote
Construction of temporary decontamination station	1	LS	$1,000.00	$1,000	From a previous quote
Construct 2" PVC wells (10 wells, 20 feet each)	10	LS	$2,000.00	$20,000	From a previous quote
Install riser protective covers, pads	10	ea	$250.00	$2,500	From a previous quote
Well development (4 hrs per well)	40	hr	$110.00	$4,400	From a previous quote
Miscellaneous related to IDW disposal	1	LS	$2,000.00	$2,000	From a previous quote
Provide reconditioned drums	4	ea	$50.00	$200	From a previous quote
Per diem (2 drillers plus 1 consultant)	5	day	$2,160.00	$10,800	From a previous quote
SUBTOTAL WELL INSTALLATION				$41,900	
SUBTOTAL				$48,200	
Contingency	20%			$9,640	on construction
SUBTOTAL				$57,840	
Work Planning, Permitting, QA/QC plans and H&S Requirements		LS		$15,000	
SUBTOTAL				$72,840	
Project Management	15%			$10,926	on total cost, includes oversight labor
SUBTOTAL				$83,766	
TOTAL CAPITAL COST				**$83,800**	

OPERATIONS AND MAINTENANCE COST (Annual Cost)

DESCRIPTION	YEAR	QTY	UNIT	COST	TOTAL	NOTES
Years 1 and 2 (quarterly sampling)						
GW Sampling (Total 21 wells, 3 additional samples for QA/QC)						
Groundwater Sampling for VOCs (4 events/yr)		96	ea	$95	$9,120	
Groundwater Sampling for SVOCs (4 events/yr)		96	ea	$225	$21,600	
Groundwater Sampling for Dioxins (4 events/yr)		96	ea	$600	$57,600	
Groundwater Sampling for Pesticides (4 events/yr)		96	ea	$100	$9,600	
Groundwater Sampling for Metals (4 events/yr)		96	ea	$125	$12,000	
Groundwater Sampling, Level D		4	LS	$300	$1,200	
Labor (prep & sampling)		240	hrs	$110	$26,400	60 hrs/event
Equipment - meters		4	LS	$300	$1,200	
Consumables		4	LS	$200	$800	
Data Validation		72	hrs	$120	$8,640	12 hrs/event + 24 hrs for initial event

TABLE 2-6
Estimated Cost for Selected Remedy at AOC 1
Former Lockbourne AFB Landfill

Project Name:	**Lockbourne, Ohio**					
Scope:	**Monitoring**					
Site:	Former Lockbourne Airforce Base Lanfill	**Description:**	This estimate is part of Alternative 3. It includes installation of five new groundwater monitoring wells and abandonment and replacement of five existing monitoring wells. This estimate also includes costs associated with sampling and well maintenance.			
Location:	Lockbourne, Ohio					
Phase:	Remediation Cost Estimates					
			Capital costs presented in this estimate include allowances for project management (15%), project planning ($10,000 lump), and contingency (20%). O&M costs include a contingency of 20%. Discount rate is obtained from http://www.whitehouse.gov/omb/circulars_a094_a94_appx-c/. Need to consider the real discount rate.			
	Subtotal Annual O&M (Yr 1 to 2) - quarterly sampling				$148,160	
	Years 3, 4, and 5 (semiannual sampling)					
	GW Sampling (Total 21 wells, 3 additional samples for QA/QC)					
	Groundwater Sampling for VOCs (2 events/yr)	48	ea	$95	$4,560	Analytical Costs
	Groundwater Sampling for SVOCs (2 events/yr)	48	ea	$225	$10,800	Analytical Costs
	Groundwater Sampling for Dioxins (2 events/yr)	48	ea	$600	$28,800	Analytical Costs
	Groundwater Sampling for Dioxins (2 events/yr)	48	ea	$100	$4,800	Analytical Costs
	Groundwater Sampling for metals (2 events/yr)	48	ea	$125	$6,000	Analytical Costs
	Groundwater Sampling, Level D	2	LS	$300	$600	
	Labor (prep & sampling)	120	hrs	$110	$13,200	60 hrs/event (two people for three ten hour days)
	Equipment - meters	2	LS	$300	$600	
	Consumables	2	LS	$200	$400	
	Data Validation	32	hrs	$120	$3,840	12 hrs/event
	Subtotal Annual O&M (Yr 3 to 5) - semi-annual sampling				$73,600	
	Subtotal Annual O&M (Yr 6 to 30)				$36,800	(annually)
	Reporting (1 annual report)	1	LS	$15,000	$15,000	
	Contingency (Yr 1 to 2)	20%			$32,632	
	Contingency (Yr 3 to 5)	20%			$17,720	
	Contingency (Yr 6 to 30)	20%			$10,360	
	Subtotal Annual O&M (Yr 1 to 2)				$195,792	
	Subtotal Annual O&M (Yr 3 to 5)				$106,320	
	Subtotal Annual O&M (Yr 6 to 30)				$62,160	
	Project Management (Yr 1 to 2)	15%			$29,369	
	Project Management (Yr 3 to 5)	15%			$15,948	
	Project Management (Yr 6 to 30)	15%			$9,324	
	TOTAL ANNUAL O&M COST Year 1 to 2				**$225,200**	
	TOTAL ANNUAL O&M COST Year 3 to 5				**$122,300**	
	TOTAL ANNUAL O&M COST Year 6 to 30				**$71,500**	
PERIODIC COSTS						
	DESCRIPTION	**YEAR**	**QTY**	**UNIT**	**UNIT COST**	**TOTAL**	**NOTES**
	Renewals & Replacements	5	1	LS	$61,568	$61,568	Well replacement and/or maintenance
	Renewals & Replacements	10	1	LS	$62,861	$62,861	20% of capital cost
	Renewals & Replacements	15	1	LS	$64,181	$64,181	%-year review report = $40,000
	Renewals & Replacements	20	1	LS	$65,529	$65,529	
	Renewals & Replacements	25	1	LS	$66,905	$66,905	
	Renewals & Replacements	30	1	LS	$68,310	$68,310	
					Total	$389,354	
	TOTAL PERIODIC COST					**$389,400**	
PRESENT VALUE ANALYSIS (30-year)		Discount Rate = 2.7%					

TABLE 2-6

Estimated Cost for Selected Remedy at AOC 1

Former Lockbourne AFB Landfill

Project Name: **Lockbourne, Ohio**
Scope: **Monitoring**

Site: Former Lockbourne Airforce Base Lanfill
Location: Lockbourne, Ohio
Phase: Remediation Cost Estimates

Description: This estimate is part of Alternative 3. It includes installation of five new groundwater monitoring wells and abandonment and replacement of five existing monitoring wells. This estimate also includes costs associated with sampling and well maintenance.

Capital costs presented in this estimate include allowances for project management (15%), project planning ($10,000 lump), and contingency (20%). O&M costs include a contingency of 20%. Discount rate is obtained from http://www.whitehouse.gov/omb/circulars_a094_a94_appx-c/. Need to consider the real discount rate.

End Year	COST TYPE	Total Cost	Periodic Cost	TOTAL COST/YEAR	DISCOUNT FACTOR	PRESENT VALUE
0	CAPITAL COST	$83,800		$83,800	1.000	$ 83,800
1	ANNUAL COST - O&M	$225,200		$225,200	0.974	$ 219,279
2	ANNUAL COST - O&M	$225,200		$225,200	0.948	$ 213,515
3	ANNUAL COST - O&M	$122,300		$122,300	0.923	$ 112,906
4	ANNUAL COST - O&M	$122,300		$122,300	0.899	$ 109,937
5	ANNUAL COST - O&M	$122,300	$61,568	$183,868	0.875	$ 160,936
6	ANNUAL COST - O&M	$71,500		$71,500	0.852	$ 60,937
7	ANNUAL COST - O&M	$71,500		$71,500	0.830	$ 59,335
8	ANNUAL COST - O&M	$71,500		$71,500	0.808	$ 57,775
9	ANNUAL COST - O&M	$71,500		$71,500	0.787	$ 56,256
10	ANNUAL COST - O&M	$71,500	$62,861	$134,361	0.766	$ 102,936
11	ANNUAL COST - O&M	$71,500		$71,500	0.746	$ 53,337
12	ANNUAL COST - O&M	$71,500		$71,500	0.726	$ 51,935
13	ANNUAL COST - O&M	$71,500		$71,500	0.707	$ 50,570
14	ANNUAL COST - O&M	$71,500		$71,500	0.689	$ 49,240
15	ANNUAL COST - O&M	$71,500	$64,181	$135,681	0.671	$ 90,983
16	ANNUAL COST - O&M	$71,500		$71,500	0.653	$ 46,685
17	ANNUAL COST - O&M	$71,500		$71,500	0.636	$ 45,458
18	ANNUAL COST - O&M	$71,500		$71,500	0.619	$ 44,263
19	ANNUAL COST - O&M	$71,500		$71,500	0.603	$ 43,099
20	ANNUAL COST - O&M	$71,500	$65,529	$137,029	0.587	$ 80,427
21	ANNUAL COST - O&M	$71,500		$71,500	0.572	$ 40,863
22	ANNUAL COST - O&M	$71,500		$71,500	0.556	$ 39,788
23	ANNUAL COST - O&M	$71,500		$71,500	0.542	$ 38,742
24	ANNUAL COST - O&M	$71,500		$71,500	0.528	$ 37,724
25	ANNUAL COST - O&M	$71,500	$66,905	$138,405	0.514	$ 71,103
26	ANNUAL COST - O&M	$71,500		$71,500	0.500	$ 35,766
27	ANNUAL COST - O&M	$71,500		$71,500	0.487	$ 34,826
28	ANNUAL COST - O&M	$71,500		$71,500	0.474	$ 33,910
29	ANNUAL COST - O&M	$71,500		$71,500	0.462	$ 33,019
30	ANNUAL COST - O&M	$71,500	$68,310	$139,810	0.450	$ 62,867
			TOTAL PRESENT VALUE OF ALTERNATIVE			**$ 2,222,200**

Inflation is considered to 2.1% (Global Insight)

TABLE 2-6
Estimated Cost for Selected Remedy at AOC 1
Former Lockbourne AFB Landfill

Alternative:	**3**
Name:	**Lockbourne, Ohio**
Scope:	**Consolidation and Cover**
Site:	Former Lockbourne Airforce Base Lanfill
Location:	Lockbourne, Ohio
Phase:	Remediation Cost Estimates

Description: This estimate is part of Alternative 3. It includes consolidation of various waste piles and installation of a 24-inch thick soil landfill cover. This estimate also includes annual and periodic costs associated with monitoring and maintenance of the soil cover. This alternative assumes all waste material will be kept on site (no offiste transport) and that stormwater management will be covered under a separate action.

Capital costs presented in this estimate include allowances for construction management (15%) and contingency (20%). O&M costs include a contingency of 20%. Discount rate is obtained from http://www.whitehouse.gov/omb/circulars_a094_a94_appx-c/. Need to consider the real discount rate.

CAPITAL COSTS

DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL	NOTES
Waste Consolidation - Clearing AOC 1 and AOC 2					
Mobilization/demobilization	1	ls	$15,000.00	$15,000	Engr's Estimate
Fence cost (includes removal of existing fence and installation of new fence around the AOC 1	1	LS	$100,000.00	$100,000	Engr's Estimate
Vegetation removal - heavy brush, light trees, clear, chip, grub, and haul	75	acre	$6,500.00	$487,500	RS Means 2010
Excavation and relocation of waste materials to be consolidated	87,120	cu yd	$6.00	$522,720	RS Means 2010
Decontamination	1	ls	$4,000.00	$4,000	CCI 2010
Backfill - unclassfied fill from off site	87,120	cu yd	$20.00	$1,742,400	Common fill is $15/cy to import and then another $5/cy to place/grade.
SUBTOTAL WASTE CONSOLIDATION				$2,871,620.00	
Soil Cover Installation					
Mobilization/demobilization	1	ea	$15,000.00	$15,000	Engr's Estimate
Monitoring with PID reader	4	month	$1,300.00	$5,200	
Grading	193,600	sy	$2.20	$425,920	CCI 2010
Cover placement (6-inch lifts, 24-inch total depth)	129,712	cu yd	$30.00	$3,891,360	Topsoil is $25/cy to import and then another $5/cy to place/grade.
Hydroseeding/mulching and vegetative establishment	40	acre	$3,528.00	$141,120	
Topographic survey (2-foot contours)	1	ls	$40,000.00	$40,000	
Decontamination	1	ls	$10,000.00	$10,000	
SOIL COVER INSTALLATION				$4,528,600	
Passive Landfill Gas Management					
Total installed cost per vent	25	ea	$600.00	$15,000	CCI 2010
PASSIVE VENT INSTALLATION				$15,000	
SUBTOTAL				$7,415,220	
Contingency	20%			$1,483,044	
SUBTOTAL				$8,898,264	
Work Planning, Permitting, QA/QC plans and H&S Requirements and landfill closure design	1	ls	$100,000.00	$100,000	
SUBTOTAL				$8,998,264	
Construction Management	15%			$1,349,740	Includes oversight labor
SUBTOTAL				$10,348,004	
TOTAL CAPITAL COST				**$10,348,000**	

OPERATIONS AND MAINTENANCE COST (Annual Cost)

DESCRIPTION	YEAR	QTY	UNIT	COST	TOTAL	NOTES
Cover Maintenance						
Biannual inspection		16	hrs	$100	$1,600	
Biannual mowing (labor plus equipment) (40 acres plus surrounding)		96	acres	$50	$4,800	
Annual minor repairs		1	ls	$5,000	$5,000	

TABLE 2-6
Estimated Cost for Selected Remedy at AOC 1
Former Lockbourne AFB Landfill

Alternative:	**3**
Name:	**Lockbourne, Ohio**
Scope:	**Consolidation and Cover**
Site:	Former Lockbourne Airforce Base Lanfill
Location:	Lockbourne, Ohio
Phase:	Remediation Cost Estimates

Description: This estimate is part of Alternative 3. It includes consolidation of various waste piles and installation of a 24-inch thick soil landfill cover. This estimate also includes annual and periodic costs associated with monitoring and maintenance of the soil cover. This alternative assumes all waste material will be kept on site (no offiste transport) and that stormwater management will be covered under a separate action.

Capital costs presented in this estimate include allowances for construction management (15%) and contingency (20%). O&M costs include a contingency of 20%. Discount rate is obtained from http://www.whitehouse.gov/omb/circulars a094 a94 appx-c/. Need to consider the real discount rate.

SUBTOTAL CAP MAINTENANCE		$11,400
Subtotal Annual O&M		$11,400
Reporting (included elsewhere)		
Contingency	20%	$2,280
TOTAL ANNUAL O&M COST		**$13,700**

PERIODIC COSTS

DESCRIPTION	YEAR	QTY	UNIT	UNIT COST	TOTAL	NOTES
Renewals & Replacements (includes 5-yr review report)	5	1	LS	$15,000	$15,000	
Renewals & Replacements (includes 5-yr review report)	10	1	LS	$15,315	$15,315	
Renewals & Replacements (includes 5-yr review report)	15	1	LS	$15,637	$15,637	
Renewals & Replacements (includes 5-yr review report)	20	1	LS	$15,965	$15,965	
Renewals & Replacements (includes 5-yr review report)	25	1	LS	$16,300	$16,300	
Renewals & Replacements (includes 5-yr review report)	30	1	LS	$16,643	$16,643	
				Total	$94,859	
TOTAL PERIODIC COST					**$95,000**	

PRESENT VALUE ANALYSIS (30-year) Discount Rate = 2.7%

End Year	COST TYPE	Total Cost	Periodic Cost	TOTAL COST/YEAR	DISCOUNT FACTOR	PRESENT VALUE
0	CAPITAL COST	$10,348,000		$10,348,000	1.000	$ 10,348,000
1	ANNUAL COST - O&M	$13,700		$13,700	0.974	$ 13,340
2	ANNUAL COST - O&M	$13,700		$13,700	0.948	$ 12,989
3	ANNUAL COST - O&M	$13,700		$13,700	0.923	$ 12,648
4	ANNUAL COST - O&M	$13,700		$13,700	0.899	$ 12,315
5	ANNUAL COST - O&M	$13,700	$15,000	$28,700	0.875	$ 25,121
6	ANNUAL COST - O&M	$13,700		$13,700	0.852	$ 11,676
7	ANNUAL COST - O&M	$13,700		$13,700	0.830	$ 11,369
8	ANNUAL COST - O&M	$13,700		$13,700	0.808	$ 11,070
9	ANNUAL COST - O&M	$13,700		$13,700	0.787	$ 10,779
10	ANNUAL COST - O&M	$13,700	$15,315	$29,015	0.766	$ 22,229
11	ANNUAL COST - O&M	$13,700		$13,700	0.746	$ 10,220
12	ANNUAL COST - O&M	$13,700		$13,700	0.726	$ 9,951
13	ANNUAL COST - O&M	$13,700		$13,700	0.707	$ 9,690
14	ANNUAL COST - O&M	$13,700		$13,700	0.689	$ 9,435
15	ANNUAL COST - O&M	$13,700	$15,637	$29,337	0.671	$ 19,672
16	ANNUAL COST - O&M	$13,700		$13,700	0.653	$ 8,945
17	ANNUAL COST - O&M	$13,700		$13,700	0.636	$ 8,710
18	ANNUAL COST - O&M	$13,700		$13,700	0.619	$ 8,481
19	ANNUAL COST - O&M	$13,700		$13,700	0.603	$ 8,258
20	ANNUAL COST - O&M	$13,700	$15,965	$29,665	0.587	$ 17,411
21	ANNUAL COST - O&M	$13,700		$13,700	0.572	$ 7,830
22	ANNUAL COST - O&M	$13,700		$13,700	0.556	$ 7,624

TABLE 2-6

Estimated Cost for Selected Remedy at AOC 1

Former Lockbourne AFB Landfill

Alternative:	**3**						
Name:	**Lockbourne, Ohio**						
Scope:	**Consolidation and Cover**						
Site:	Former Lockbourne Airforce Base Lanfill		**Description:**	This estimate is part of Alternative 3. It includes consolidation of various waste piles and installation of a 24-inch thick soil landfill cover. This estimate also includes annual and periodic costs associated with monitoring and maintenance of the soil cover. This alternative assumes all waste material will be kept on site (no offiste transport) and that stormwater management will be covered under a separate action.			
Location:	Lockbourne, Ohio						
Phase:	Remediation Cost Estimates						
				Capital costs presented in this estimate include allowances for construction management (15%) and contingency (20%). O&M costs include a contingency of 20%. Discount rate is obtained from http://www.whitehouse.gov/omb/circulars a094 a94 appx-c/. Need to consider the real discount rate.			
23	ANNUAL COST - O&M	$13,700		$13,700	0.542	$	7,423
24	ANNUAL COST - O&M	$13,700		$13,700	0.528	$	7,228
25	ANNUAL COST - O&M	$13,700	$16,300	$30,000	0.514	$	15,412
26	ANNUAL COST - O&M	$13,700		$13,700	0.500	$	6,853
27	ANNUAL COST - O&M	$13,700		$13,700	0.487	$	6,673
28	ANNUAL COST - O&M	$13,700		$13,700	0.474	$	6,498
29	ANNUAL COST - O&M	$13,700		$13,700	0.462	$	6,327
30	ANNUAL COST - O&M	$13,700	$16,643	$30,343	0.450	$	13,644
			TOTAL PRESENT VALUE OF ALTERNATIVE			**$**	**10,687,800**

Inflation is considered to 2.1% (Global Insight)

TABLE 2-7

Estimated Cost for Selected Remedy at AOC 2

Former Lockboourne AFB Landfill

Project Name:	**Lockbourne, Ohio**
Scope:	**Institutional Controls**

Site:	Former Lockbourne Airforce Base Land	**Description:**	This estimate is part of Alternative 2. It includes institutional controls by filing of an environmental covanant, associated labor hours, and a contingency (20%). Discount rate is obtained from http://www.whitehouse.gov/omb/circulars_a094_a94_appx-c/. Need to consider the real discount rate for a 30-year period.
Location:	Lockbourne, Ohio		
Phase:	Remediation Cost Estimates		

CAPITAL COSTS	**DESCRIPTION**		**QTY**	**UNIT**	**UNIT COST**	**TOTAL**	**NOTES**
Deed Restriction							
	Env Cov Filing Fees		1	lump sum	$200.00	$200	Engr's estimate
	Env Cov Filing Labor hours		40	hours	$120.00	$4,800	Engr's estimate. It is assumed that the CRAA will complete the bulk of the work needed for developing the environmental covenants. The hours indicated are primarily for review.
	Subtotal					$5,000	
	Contingency		20%			$1,000	
	Subtotal					$6,000	
	TOTAL CAPITAL COST					**$6,000**	
OPERATIONS AND MAINTENANCE COST (Annual Cost)							
	Annual O&M			hours		$0	
	TOTAL O&M COST					**$0**	
PERIODIC COSTS							
	Renewals & Replacements (including five-year review)	5	1	lump sum	$15,000	$15,000	
	Renewals & Replacements (including five-year review)	10	1	lump sum	$15,468	$15,468	
	Renewals & Replacements (including five-year review)	15	1	lump sum	$15,951	$15,951	
	Renewals & Replacements (including five-year review)	20	1	lump sum	$16,448	$16,448	
	Renewals & Replacements (including five-year review)	25	1	lump sum	$16,961	$16,961	

TABLE 2-7

Estimated Cost for Selected Remedy at AOC 2

Former Lockboourne AFB Landfill

Project Name:	**Lockbourne, Ohio**					
Scope:	**Institutional Controls**					
Site:	Former Lockbourne Airforce Base Land	**Description:**	This estimate is part of Alternative 2. It includes institutional controls by filing of an environmental covanant, associated labor hours, and a contingency (20%). Discount rate is obtained from http://www.whitehouse.gov/omb/circulars_a094_a94_appx-c/. Need to consider the real discount rate for a 30-year period.			
Location:	Lockbourne, Ohio					
Phase:	Remediation Cost Estimates					
	Renewals & Replacements (including five-year review)	30	1	lump sum	$17,491	$17,491
					Total	$97,319
	TOTAL PERIODIC COST					**$194,638**

TABLE 2-7

Estimated Cost for Selected Remedy at AOC 2

Former Lockboourne AFB Landfill

Project Name:	**Lockbourne, Ohio**
Scope:	**Institutional Controls**

Site:	Former Lockbourne Airforce Base Land	**Description:**	This estimate is part of Alternative 2. It includes institutional controls by filing of an environmental covanant, associated labor hours, and a contingency (20%). Discount rate is obtained from http://www.whitehouse.gov/omb/circulars_a094_a94_appx-c/. Need to consider the real discount rate for a 30-year period.
Location:	Lockbourne, Ohio		
Phase:	Remediation Cost Estimates		

PRESENT VALUE ANALYSIS (30-year) Discount Rate = 2.7%

End Year	COST TYPE	Total Cost	Periodic Cost	TOTAL COST/YEAR	DISCOUNT FACTOR	PRESENT VALUE
0	Capital Cost	$6,000		$6,000	1.000	$ 6,000
1	Annual Cost—O&M	$0		$0	0.974	$ -
2	Annual Cost—O&M	$0		$0	0.948	$ -
3	Annual Cost—O&M	$0		$0	0.923	$ -
4	Annual Cost—O&M	$0		$0	0.899	$ -
5	Annual Cost—O&M	$0	$15,000	$15,000	0.875	$ 13,129
6	Annual Cost—O&M	$0		$0	0.852	$ -
7	Annual Cost—O&M	$0		$0	0.830	$ -
8	Annual Cost—O&M	$0		$0	0.808	$ -
9	Annual Cost—O&M	$0		$0	0.787	$ -
10	Annual Cost—O&M	$0	$15,468	$15,468	0.766	$ 11,850
11	Annual Cost—O&M	$0		$0	0.746	$ -
12	Annual Cost—O&M	$0		$0	0.726	$ -
13	Annual Cost—O&M	$0		$0	0.707	$ -
14	Annual Cost—O&M	$0		$0	0.689	$ -
15	Annual Cost—O&M	$0	$15,951	$15,951	0.671	$ 10,696
16	Annual Cost—O&M	$0		$0	0.653	$ -
17	Annual Cost—O&M	$0		$0	0.636	$ -
18	Annual Cost—O&M	$0		$0	0.619	$ -
19	Annual Cost—O&M	$0		$0	0.603	$ -
20	Annual Cost—O&M	$0	$16,448	$16,448	0.587	$ 9,654
21	Annual Cost—O&M	$0		$0	0.572	$ -
22	Annual Cost—O&M	$0		$0	0.556	$ -
23	Annual Cost—O&M	$0		$0	0.542	$ -
24	Annual Cost—O&M	$0		$0	0.528	$ -

TABLE 2-7

Estimated Cost for Selected Remedy at AOC 2

Former Lockboourne AFB Landfill

Project Name:	**Lockbourne, Ohio**						
Scope:	**Institutional Controls**						
Site:	Former Lockbourne Airforce Base Land	**Description:**	This estimate is part of Alternative 2. It includes institutional controls by filing of an environmental covanant, associated labor hours, and a contingency (20%). Discount rate is obtained from http://www.whitehouse.gov/omb/circulars_a094_a94_appx-c/. Need to consider the real discount rate for a 30-year period.				
Location:	Lockbourne, Ohio						
Phase:	Remediation Cost Estimates						
25	Annual Cost—O&M	$0	$16,961	$16,961	0.514	$	8,714
26	Annual Cost—O&M	$0		$0	0.500	$	-
27	Annual Cost—O&M	$0		$0	0.487	$	-
28	Annual Cost—O&M	$0		$0	0.474	$	-
29	Annual Cost—O&M	$0		$0	0.462	$	-
30	Annual Cost—O&M	$0	$17,491	$17,491	0.450	$	7,865
			TOTAL PRESENT VALUE OF ALTERNATIVE			**$**	**67,900**

Note: Inflation is considered to be 2.1%.

Figures

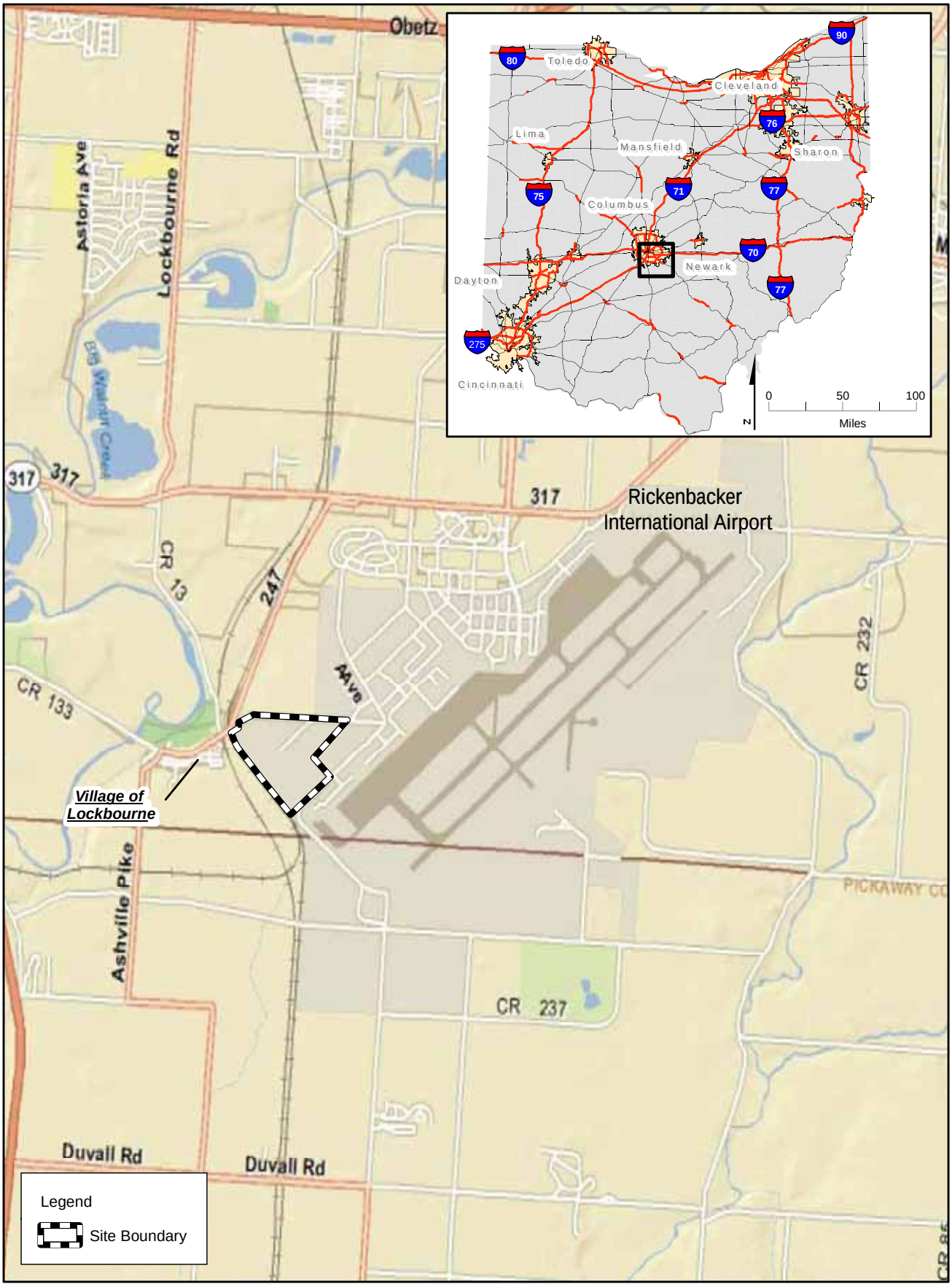


Figure 1-1
Site Location Map
Decision Document
Former Lockbourne Air Force Base Landfill, Columbus, Ohio

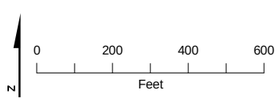
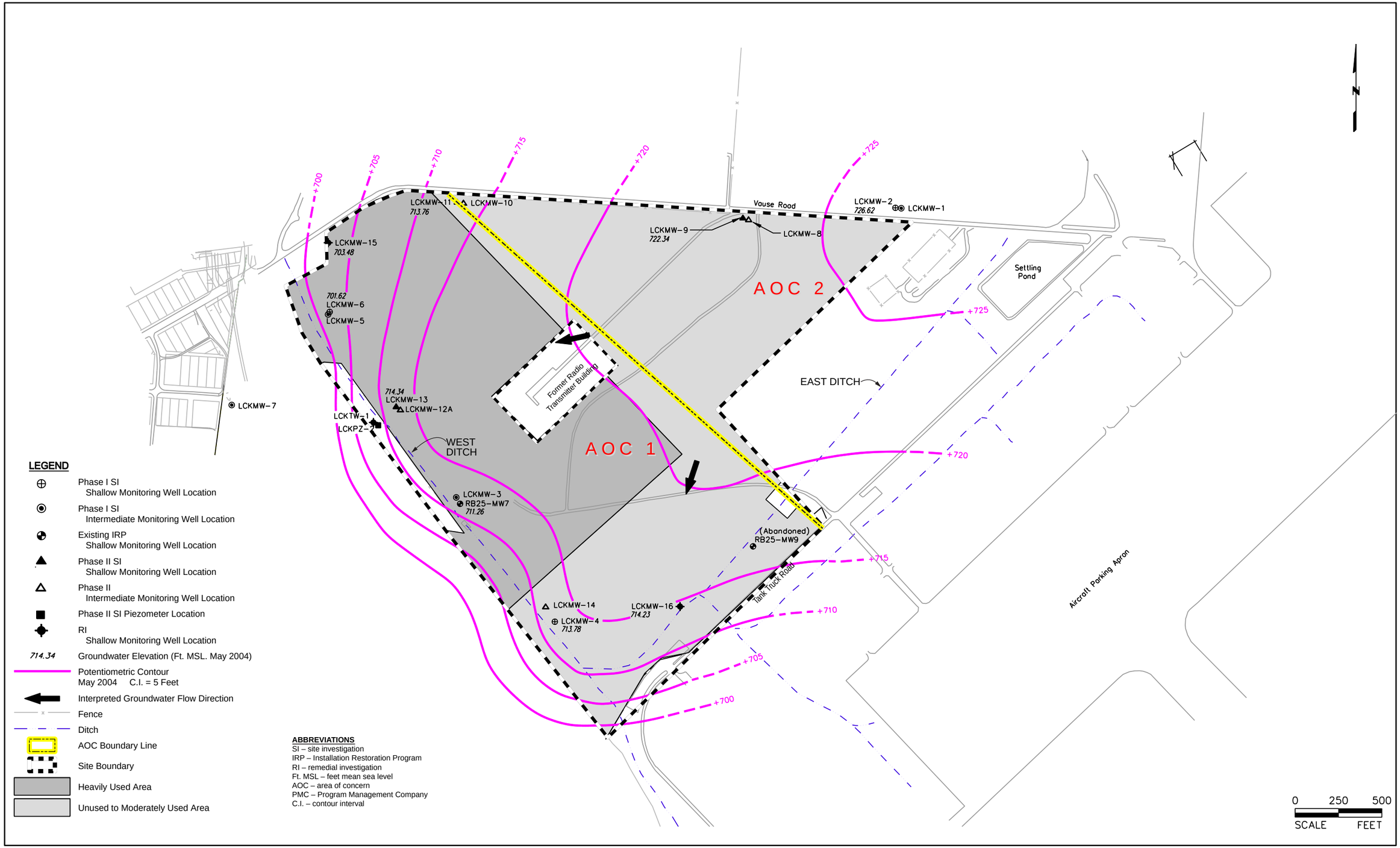


Figure 2-1
Site Features Map
Decision Document
Former Lockbourne Air Force Base Landfill, Columbus, Ohio

V:\USACE\LOUISVILLEDISTRICT\366856LOCKBOURNE\MAPFILES\DD_FIGURES\FIGURE 2-1 - SITE FEATURES MAP V3.MXD BHATHAWA 4/4/2012 10:40:50 AM



LEGEND

- Phase I SI Shallow Monitoring Well Location
- Phase I SI Intermediate Monitoring Well Location
- Existing IRP Shallow Monitoring Well Location
- Phase II SI Shallow Monitoring Well Location
- Phase II Intermediate Monitoring Well Location
- Phase II SI Piezometer Location
- RI Shallow Monitoring Well Location
- 714.34 Groundwater Elevation (Ft. MSL. May 2004)
- Potentiometric Contour May 2004 C.I. = 5 Feet
- Interpreted Groundwater Flow Direction
- Fence
- Ditch
- AOC Boundary Line
- Site Boundary
- Heavily Used Area
- Unused to Moderately Used Area

ABBREVIATIONS

SI – site investigation
IRP – Installation Restoration Program
RI – remedial investigation
Ft. MSL – feet mean sea level
AOC – area of concern
PMC – Program Management Company
C.I. – contour interval

Figure 2-2
Upper Water-Bearing Zone Potentiometric Surface Map, May 2004
Decision Document
Former Lockbourne Air Force Base Landfill, Columbus, Ohio

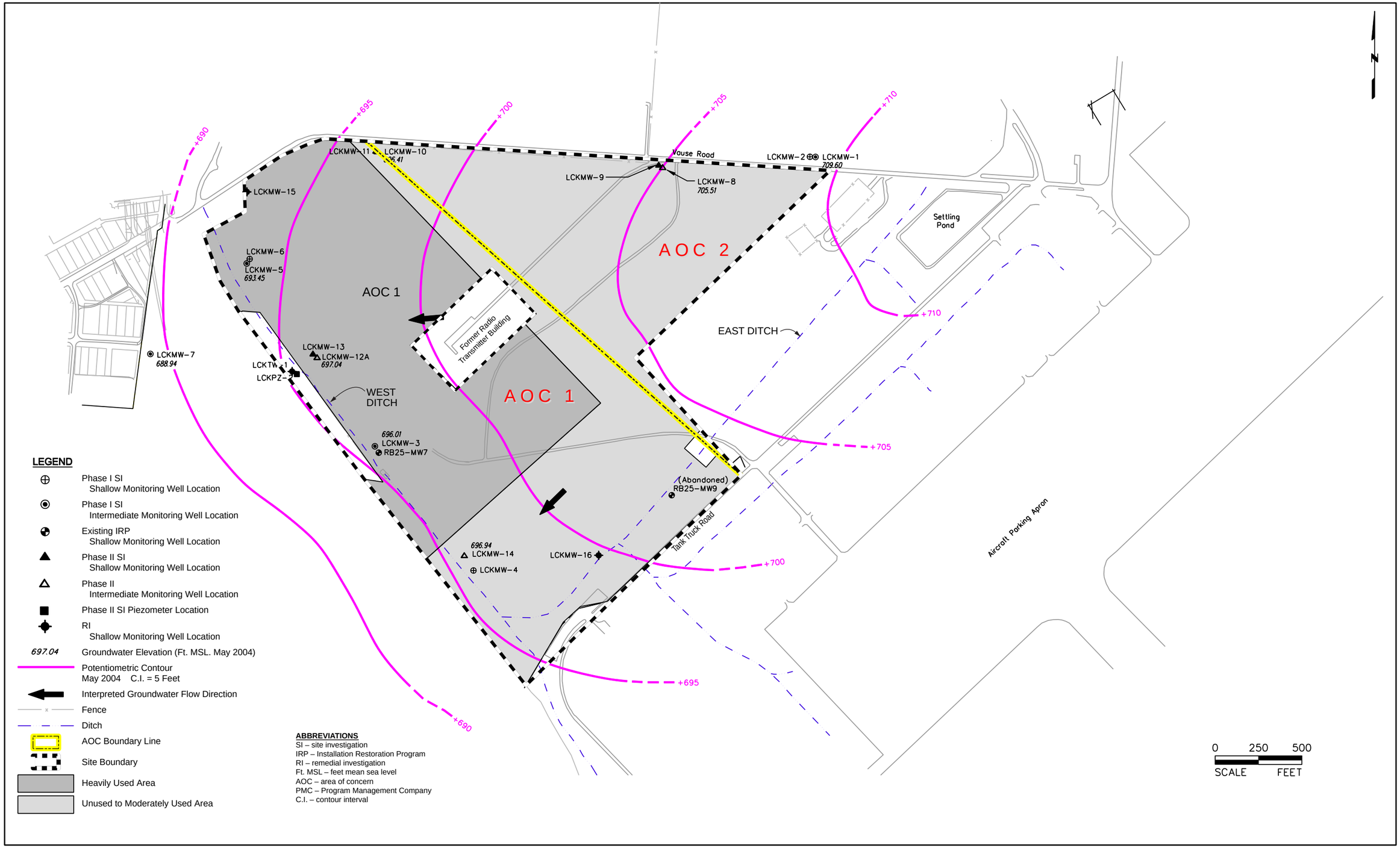
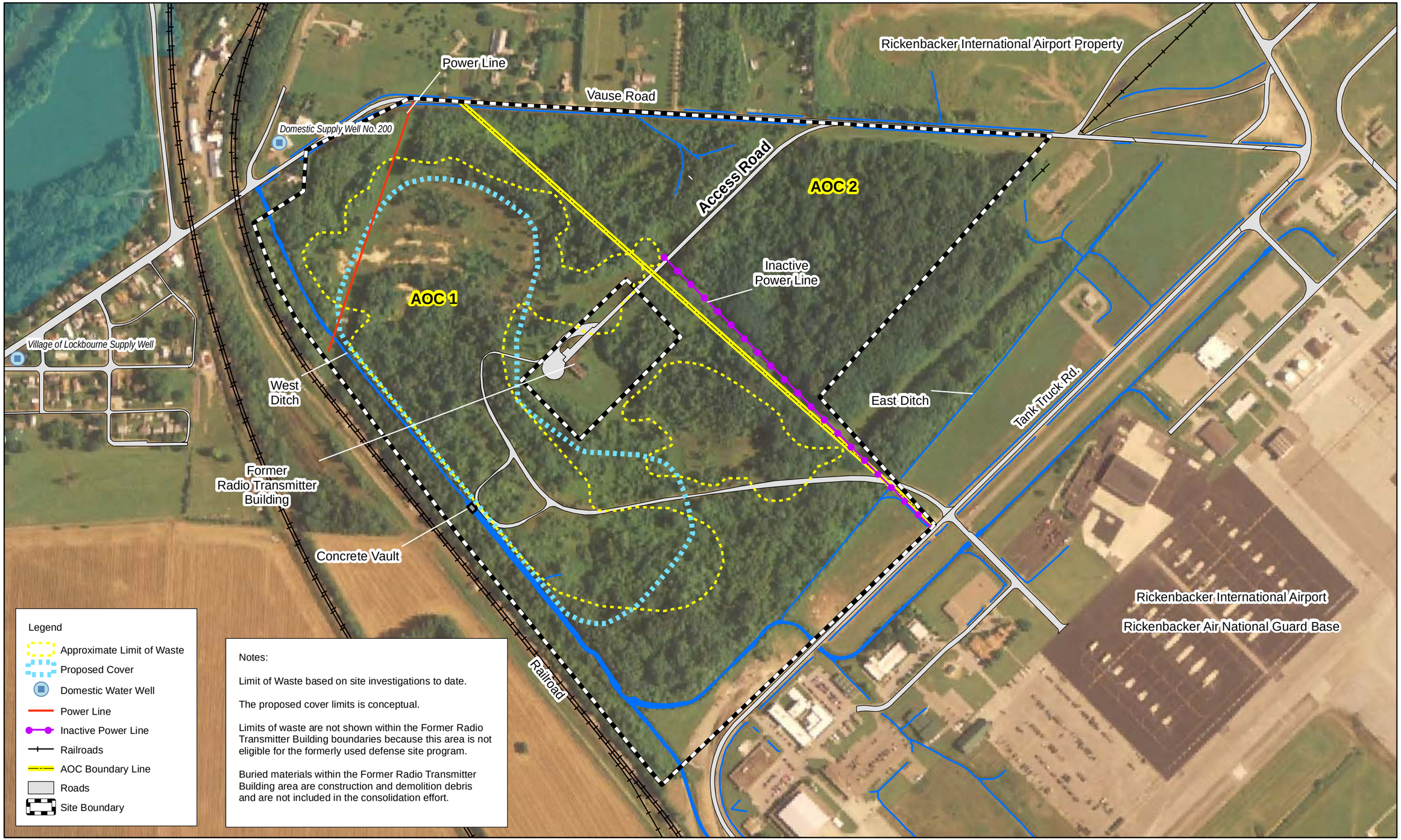


Figure 2-3
Intermediate Depth Aquifer Potentiometric Surface Map, May 2004
Decision Document
Former Lockbourne Air Force Base Landfill, Columbus, Ohio



N

0 550 1,100
Feet

Figure 2-4
Cover Area and Approximate Limits of Waste
Decision Document
Former Lockbourne Air Force Base Landfill, Columbus, Ohio

V:\USACE\LOUISVILLEDISTRICT\366856LOCKBOURNE\MAPFILES\DD_FIGURES\FIGURE 2-4 - PROPOSED SOIL CAP AREA V3.MXD BHATHAWA 4/4/2012 10:36:26 AM

Exhibits

Exhibit 1

Transcript of April 28, 2011 Public Meeting

U.S. ARMY CORPS OF ENGINEERS

- - -

Public Meeting Concerning the Proposed Cleanup of the Former Lockbourne Air Force Base Landfill.

- - -

PROCEEDINGS

at the Hamilton Township Community Center, 6400 Lockbourne Road, Lockbourne, Ohio, called at 7:35 p.m. on Thursday, April 28, 2011.

- - -

ARMSTRONG & OKEY, INC.
222 East Town Street, 2nd Floor
Columbus, Ohio 43215-5201
(614) 224-9481 - (800) 223-9481
Fax - (614) 224-5724

- - -

PRESENT:

Presenters:
Cindy Ries, USACE
Carla Heck, USACE
Colleen Reilly, CH2M Hill
Tiffany Chapman, CH2M Hill

Public:
George Hammond
Ralph Coon
Diane Cad
Richard Easterday
Aristotle Matsa
Judy Campbell
Diana Bynum
Shannon Bush
Candy Walters
Paul Kennedy
Tiffany Chapman
Daniel Haake
Christie Ward
Joyce Ward

- - -

1 Thursday Evening Session,
2 April 28, 2011.
3 - - -
4 CARLA HECK: My name is Carla Heck. I'm
5 the project manager for the U.S. Army Corps of
6 Engineers responsible for the Lockbourne Landfill and
7 the remedial activities that are going to take place
8 there. We have other folks here with us tonight.
9 We're going to go through and present a
10 little bit of history about the landfill, the history
11 of the regulatory process and how that works, and how
12 we got to where we are today, what the proposed
13 remedial actions are for the landfill, and then the
14 process by which, you know, you guys can make
15 comments.
16 We don't necessarily have to stick to
17 this format. If anybody wants to -- and then,
18 obviously, we would open it up for questions
19 afterwards. And we do have some fact sheets. And I
20 think everybody signed in.
21 And if you have comments that you don't
22 feel comfortable making tonight, if you want to write
23 in, or, when you leave here, if you find out more
24 information, we've got ways for you to write in and

1 give us information.
2 But if anybody wants to make a statement
3 before we get started.
4 (No response.)
5 CARLA HECK: I take it that's a no, so
6 I'll go ahead and get started.
7 Why are we here? We want to talk to you
8 about and I'll start off by saying every single
9 person, in this room, knows more about this site than
10 I do, so I definitely want to hear what you have to
11 say.
12 I've got a lot of technical background.
13 I know a lot about landfills. I know a lot about
14 contamination. I know a little bit about Lockbourne.
15 I'm relatively new to the Army Corps of Engineers.
16 My one-year anniversary is this past year, so I've
17 only been a government employee for a year. So I
18 will be deferring to other folks in the room if I
19 don't know the specifics, and I'm more at the
20 50,000-foot level. So feel free to correct me if I'm
21 wrong.
22 I want to keep this informal. So if you
23 have any questions, raise your hand. If I don't see
24 your hand, just yell at me, there's no problem with

1 that whatsoever.
2 But the purpose of this meeting is, as I
3 said, is to present what the Corps' team has come up
4 with, with regard to the proposed remediation for the
5 landfill.
6 The regulations that I'll talk about in a
7 minute actually require that we have public -- that
8 we publish the proposed plan and seek stakeholder
9 input on the plan. And this is what the plan looks
10 like. And it's available, there will be contact
11 information at the back, and this is available
12 electronically in the library. And if anybody wants
13 us to provide anything to them, we can do that for
14 you.
15 The stakeholders are the Columbus
16 Regional Airport Authority. They're actually the
17 landowner. And Paul Kennedy is here representing
18 CRAA. A lot of you folks may already know Paul.
19 The community members, and if anybody
20 wants to identify themselves at this point, I met a
21 couple of you before the meeting. Just raise your
22 hand if you want us to know who you are.
23 As I said, the Army Corps of Engineers is
24 the lead agency for this type of project, which I'll

1 get into the regulatory framework for that in a
2 minute.
3 My name is Carla Heck. I'm the project
4 manager. This is Cindy Ries who's also with the
5 Corps in Louisville and she's the technical manager.
6 Supporting us is a consulting firm known
7 as CH2M Hill. And the project manager/program
8 manager for that organization is Colleen Reilly.
9 And, Tiffany, I'm embarrassed because I'm going to
10 get your last name wrong --
11 TIFFANY CHAPMAN: Chapman.
12 CARLA HECK: Chapman.
13 And the Ohio Environmental Protection
14 Agency, which is the lead regulatory agency that we
15 work hand-in-hand with throughout this entire
16 process, and that's Diana Bynum, who's sitting back
17 there next to Paul. And I think Paul, and I know
18 Diana, has been involved with this project for more
19 than a few years now --
20 DIANA BYNUM: Early '90s.
21 CARLA HECK: Early '90s. Okay.
22 This is a very brief summary of what is
23 the site, so other folks may -- this is just a
24 distillation of what we've learned over the last 15

1 or so years doing investigations at the site:
2 A 50-acre area that was used to dispose
3 of general trash from the Air Force Base housing and
4 administrative buildings. Based on the information
5 that we have, it's mostly that type of construction
6 and material debris. There is lime sludge from the
7 base water-treatment plant.
8 We have done a lot of trenching and this
9 is based on the historical documentation and the
10 trenching that we've done when we've actually, you
11 know, seen things and taken samples of things, this
12 is what we know about what's there. Obviously, there
13 could be some things we don't know. But based upon
14 the extensive information that we have, that's how we
15 know what's there.
16 The depth is reportedly up to 10 feet. I
17 think that's -- that is the max that it's been down
18 at was at 10 feet, so it's anywhere up to that. A
19 lot of places it's a lot shallower than that.
20 This next chunk of information makes it
21 sound more confusing than it is and it was more of a
22 regulatory thing that made us do this. But there's
23 actually two separate areas and the regulatory term
24 of art is "Area of Concern." And they broke it into

1 two areas of concern just to make it easier because
2 they were more alike. It was discernable two
3 separate areas.
4 So AOC 1 is 100 acres on the western half
5 of the site where the waste disposal occurred. AOC 2
6 is 40 acres where there was just debris on the ground
7 surface. So you'll hear us refer to those two
8 separate areas as we go through here, Area of Concern
9 1, Area of Concern 2, because they will have
10 different remedies at the end because they have
11 different histories.
12 You all know this more than I do. I
13 think everybody -- is there anybody in the room who
14 doesn't know where the landfill is?
15 (No response.)
16 CARLA HECK: Okay. So I won't talk about
17 that. From what somebody told me, we're, like, right
18 around in here somewhere, because I'm geographically
19 challenged.
20 This is what I meant by AOC 1 and AOC 2.
21 They're just discreet footprints that because of
22 their different histories, the investigations and the
23 summary of information that we have about those are
24 kept separate just because it would make more sense

1 to address them separately than together if they're
2 different.
3 Okay. The regulatory background. And I
4 apologize, a lot of you, because of the history of
5 this site, may already know all of this. So if I'm
6 speaking to you as though you're a second grader and
7 you're really a tenth grader, I apologize.
8 In the early '80s, the EPA came out with
9 a regulation. How many of you folks have heard of
10 Superfund?
11 (Hands raise.)
12 CARLA HECK: Some of you have.
13 In the early '80s, the EPA came out with
14 these regulations as a way to clean up old
15 contaminated sites; to force industry and to force,
16 actually, individual land owners to clean up
17 contaminated sites. At the same time they didn't
18 just deal with, you know, the commercial/civilian
19 population, they also wanted the federal government
20 to be responsible too.
21 So this particular program that we have
22 is called a "Formerly Used Defense Site." And what
23 that means is that any property that the Department
24 of Defense used and got rid of, either sold to

1 somebody or gave to somebody or transferred to
2 another agency, but if the Department of Defense
3 transferred that property before October 17, 1986,
4 that property, if contaminated, the Department of
5 Defense was responsible for cleaning it up.
6 The bright-line of that date, all that
7 really means is that if it was transferred before
8 that -- we call this "FUDS" -- FUDS money pays for
9 it. If it was owned by DoD after that, it's still
10 getting cleaned up, it's just a different bucket of
11 money. So it's not like EPA said we only care about
12 contamination before 1986. And this is the FUDS
13 number for Lockbourne.
14 So we actually have a parallel program
15 with, you might hear folks on TV talking about
16 Superfund sites because we've been hearing about that
17 for about 20, more than 20 years now, more than 25
18 years now. And this is the parallel program in the
19 Department of Defense.
20 Does that make sense? Anybody have any
21 questions about that?
22 (No response.)
23 CARLA HECK: And the one thing that -- so
24 at the same time the Army is cleaning up its own

1 stuff at active sites, we're helping to clean up what
2 the Army did in the past. And there are several of
3 these sites. I don't remember what the total number
4 is, but there are several of these sites in Ohio and
5 obviously they're scattered all across the country.
6 I don't know that there's a state that doesn't have
7 one.
8 Next slide. Okay.
9 CERCLA which -- go back one -- because we
10 use a lot of ridiculous acronyms. When I say
11 "CERCLA" because it's a lot easier than saying this:
12 it's the Comprehensive Environmental Response,
13 Compensation, and Liability Act. And it basically
14 means we're going to clean up old stuff.
15 So the process -- which, personally, I
16 think it's way more complicated than it has to be --
17 you start at the beginning. If you know a site is
18 potentially contaminated because the Army was there
19 and you want to look at it, then we go in and we do a
20 preliminary assessment which is, in the beginning,
21 you're just doing kind of a record search. You go
22 and you try to find out everything you can possibly
23 find out about it. And, more often than not, you do
24 a site visit.

1 That takes you to the next step where you
2 actually do a remedial investigation. So these steps
3 you're just collecting data, as much information. We
4 do interviews, you do record searches, and you do
5 sampling. That's pretty much the major three things.
6 You're getting information from people, you're
7 getting information from paper, and information from
8 taking all different kinds of environmental samples.
9 Once you got the data, then these two
10 pieces: the remedial and the feasibility study -- I
11 mean, you know, God forbid the USEPA would use
12 something that's a little bit less confusing than
13 something like "feasibility study" -- then you go in
14 and you evaluate.
15 Like, here, we have a landfill. Other
16 places you might have, oh, because we're talking
17 about the Army, I mean, there are some sites where
18 they were, you know, active firing ranges. So the
19 actual environmental concern is old rounds, whether
20 they might be live rounds and that's a risk, and you
21 might just have lead contamination from the old
22 munitions.
23 So you look at what's actually out there
24 physically and you evaluate the risk to people and to

1 the environment, to plants and animals, and the food
2 chain and that type of thing. And that's a real
3 scientific process that involves numbers and lots and
4 lots and lots and lots and lots of data that the
5 federal, excuse me, EPA has been working with a long
6 time to come up with numbers that we use as
7 above-bad/below-okay.
8 And this process and this feasibility
9 study, what that means is you take all of the
10 information that you have, you look at the risk to
11 the various receptors whether they're human or
12 they're animals, and then you look at, okay, based on
13 what we have out there and what are the risks, what
14 are some things that we can do.
15 Using munitions as an example. The most
16 obvious thing, depending on the circumstances, but
17 the most obvious thing is you go out there and you
18 pick them up.
19 And then a feasibility study, you come up
20 with proposed alternatives based on the data that you
21 have. And then you look at it. There's -- in the
22 CERCLA regulations it's very specific. There are
23 nine criteria. And you look through very specific
24 things on how to evaluate the best path forward.

1 And then you pick the most likely and you
2 compare those. And you compare those both from a
3 technical standpoint; you also compare those from a
4 cost standpoint; you also compare those from a pure
5 logic standpoint; I mean, some things just don't make
6 any sense to do.
7 So once this report -- this report will
8 come out with, okay, these are the things we can go
9 do, this is the one that makes the most sense and
10 it's the proposed remedy. That's where we end up
11 with where we are now. We have a proposed plan and
12 that's what this meeting is, to discuss the proposed
13 plan. And then, during this public comment period,
14 anybody and everybody, including our own agency, has
15 the opportunity to make comments on the plan.
16 And then from that, as many years as
17 we've been working on this, this is where we are.
18 And the process, once we get through this, is that we
19 will actually, there will be a decision document.
20 And, for a project of this magnitude, it will go all
21 the way up through the Department of Army in D.C. as
22 far as the approval to get the money for this.
23 And then once we're at that stage and
24 we're ready to move forward, then you actually have a

1 remedial action. We're in the process of doing a
2 design. You actually do the construction. And
3 then -- we'll go into more detail about this later --
4 but for something like a landfill cap, it's not like
5 we put a cover on there and then walk away. It is
6 continually monitored until it's decided by everyone,
7 including the stakeholders, that it doesn't need to
8 be monitored anymore. The grass will be mowed, the
9 slopes will be maintained, groundwater monitoring
10 will be conducted, and that will be routinely
11 reviewed until it's determined that we don't need to
12 do it anymore, if that ever happens.
13 Okay. I'm going to turn this over to
14 Colleen, who has far more of the technical specifics
15 of the history of the remedial investigations that we
16 have done. So this is the big picture. She's going
17 to start back in the beginning with what's been done
18 to evaluate the project since we got started.
19 Any questions on the general beginning?
20 (No response.)
21 CARLA HECK: Okay. This is Colleen
22 Reilly with CH2M Hill.
23 COLLEEN REILLY: Hello. Nice to be here
24 in rainy Columbus. I'm from Milwaukee, so I came

1 from snow in Milwaukee.
2 So, as Carla said, if you go back to that
3 slide, we're in the process. And, yes, it's taken a
4 while to get just to this phase, but that's very
5 normal. Typically, this whole investigation phase
6 takes the longest in the process. And once you do
7 all the investigations and you understand what you
8 have and you decide what kind of remedial action is
9 required, then everything moves very quickly from
10 there.
11 So even though this shows up as only
12 three blocks in this whole process, that happens to
13 be, if you put a time scale on it, the longest. And
14 this tends to be very -- well, except for the
15 long-term part because that might be indefinite --
16 but through here, any way, that tends to be very
17 quick.
18 As Carla said, I'm going to start us back
19 to where did we start with the landfill. So we go to
20 the next slide.
21 The first investigation -- which
22 really was more of a site walk; there wasn't any
23 samples taken at that point -- was done by USEPA back
24 in 1986. And at that time they obviously saw that it

1 was a landfill and knew that there was further
2 investigation that was needed.
3 At that point the Corps of Engineers took
4 over the investigation responsibility for the
5 landfill. And they started their in-depth sampling
6 at the sites, conducting more interviews, looking at
7 all of the historical information that they could,
8 back in 1995, with some groundwater samples.
9 So there's wells out there on the site
10 that are drilled down to collect groundwater; samples
11 of the soil, both at the surface, right, you know, as
12 you see on the ground, and then also we dig down or
13 drill down and collected from the underground; there
14 are ditches on either side of the site, so we collect
15 surface water and sediment that's in those ditches.
16 And so progressively you gather more and
17 more information, as you do some initial
18 investigations, to see what is out there, what types
19 of contamination, if any, are out there. And then
20 once you have a good sense that there is some
21 contamination, you want to understand how far does
22 that extend out.
23 Because this is a landfill, obviously one
24 of the most important things we needed to know was

1 where is the waste and where isn't the waste. So we
2 did some geophysical-survey measurements -- that's a
3 fancy word for kind of a metal detector, a very
4 powerful metal detector that looks underground and
5 sees what's natural soil versus what's not natural
6 soil and clearly buried material -- as well as, as
7 Carla had said, we dug test pits. We actually had a
8 backhoe out there, digging in the ground, and
9 physically seeing where's the edge of the waste and
10 what type of waste is there and how deep does it go.
11 So this is the first couple phases in
12 that process of this iterative sampling regime to
13 really understand what we call the "nature and extent
14 of the contamination." What's out there; the nature.
15 And how far, how big of an impact is it; that's the
16 extent.
17 CARLA HECK: Down and out.
18 COLLEEN REILLY: So this is a picture of
19 the site. And what you can see in the yellow-shaded
20 areas are where the geophysical-survey measurements
21 as well as basically the big metal detector as well
22 as the test-pitting activities that we did where
23 waste was found.
24 So you can see that -- if you saw the

1 site now, it's pretty level. So this is mostly
2 subsurface because they buried things in trenches.
3 But it wasn't one, nice consolidated area. So we
4 kind of had debris underneath the ground in several
5 different spots on the property.
6 And, as you can tell, all the waste
7 disposal occurred on AOC 1. There's a little
8 thumbnail into AOC 2, but we'll get to that a little
9 bit later. But, nonetheless, this was the waste
10 disposal area and this is where we're going to focus
11 on in terms of active remedies. We'll get to the
12 active remedy for AOC 2 a little bit later.
13 After we collected all of that data, the
14 groundwater, the soil sampling, the surface water and
15 sediment samples, the process to understand if you
16 have a problem at the site or not have a problem is
17 called "a risk assessment." Are there issues of
18 concern to either humans or to the environment, like
19 Carla indicated.
20 And this boils it down into four simple
21 steps, but this is a process that EPA uses -- Ohio
22 EPA also uses this same process -- that you take all
23 of your data, you figure out who's, you know, if
24 there's contamination here, who's exposed to the

1 contamination, how will the contamination affect
2 people or animals, and then you come up with is there
3 a risk there or is there no risk there.
4 So this becomes really the foundation for
5 if there's no risk there, you don't need to do any
6 clean up, right. So this is really central to
7 understanding do you need to take remedial action at
8 a site or not. So this is kind of where all that
9 data gets collected and decisions get made after the
10 risk assessment.
11 So the data-collection-evaluation piece.
12 What the groundwater, soil samples, surface water,
13 sediment samples showed was that there are
14 contaminants at the landfill. Probably not a
15 surprise. They did burning at the landfill as well
16 as they disposed of waste and burned it as well. So
17 you see contaminants that are very consistent with
18 burning of materials.
19 These very long word, "polynuclear
20 aromatic hydrocarbons," we just shorten it and say
21 "PAHs." That is -- those are fairly common
22 contaminants. You see it in car exhausts, you see it
23 if you burn wood in your fireplace at home, if you
24 burn leaves; those actually produce polynuclear

1 aromatic hydrocarbons. That they burned waste in the
2 landfill, it shouldn't be too much of a surprise;
3 but, nonetheless, they're there.
4 Polychlorinated biphenyls. You've
5 probably heard of PCBs in the news. They used to be
6 used back in the '70s, and prior to that, to
7 basically lubricate electrical equipment and for
8 cooling. We did find some levels of PCBs at the
9 landfill.
10 We categorize "other organic compounds."
11 It was really only one and it's kind of a plastic.
12 It's called "phthalate." We identified that.
13 Dioxins and furans, also the result of
14 burning waste. That's very ubiquitous as well as
15 PAHs. Very common in the environment. In any
16 industrialized setting you're going to have dioxins
17 and furans.
18 And then metals, which is commonly
19 associated with landfills because you're burying
20 waste.
21 We mentioned methane here because if
22 you've driven past a landfill, sometimes you see
23 these vents that stick out of the landfill. As waste
24 starts to decompose, it produces gas. If you leave

1 something in your refrigerator, you'll also notice
2 that there's gas that gets produced from that. But
3 it's a very important aspect of the investigation
4 because you want to understand if you've got gas, you
5 don't want gas building up in a landfill. And so we
6 needed to find out if, in fact, this waste is
7 continually degrading and producing gas.
8 And, in fact, we find this waste, if you
9 remember Carla said they stopped landfilling back in
10 1979, so that's been there a pretty long time now in
11 terms of landfills and waste degradation. So we
12 aren't seeing methane gas in high concentrations,
13 which we wouldn't expect to at this 30-plus-year-old
14 landfill.
15 So that's the data collection. We've got
16 all this data. We understand what's out there and
17 the concentrations that are out there.
18 So the second part of the risk assessment
19 process is who's going to be coming in contact with
20 any of that contamination. Who uses the site and how
21 will they be using the site.
22 And the site is owned by the CRAA. And
23 there's maintenance that's done at the site or will
24 be. Typical maintenance workers would be someone

1 mowing the grass, trimming something, trees or
2 otherwise.
3 You also have people who might visit the
4 site or maybe are really trespassing at the site. So
5 accidentally, you know, walking across the site, both
6 currently and potentially in the future.
7 Construction workers, anyone who needs to
8 get out there to do utility work. They might be
9 digging in the ground for whatever reason. That's a
10 jackhammer. There's nothing to jackhammer out there
11 right now. But in case they wanted to redo the road
12 that went through there, that would be an example of
13 a construction worker.
14 And since no one lives on the site right
15 now and they won't be, and there's no drinking of the
16 groundwater there, we did look at the potential for
17 any contaminants from the landfill to migrate in the
18 groundwater off-site, and people who might be
19 drinking the groundwater from a well in their yard;
20 what would happen to that.
21 So we look, those are the people we've
22 looked at that could come in contact with it and how
23 would they come in contact. The maintenance worker,
24 you know, might be touching the soil. Obviously the

1 trespasser because they might get it on their shoes
2 and then take their shoes off later and they have it
3 on their hands. The construction worker clearly more
4 involved because he's right there in the dirt. And
5 then a resident might be potentially drinking the
6 groundwater if they were using well water from their
7 yard.
8 CHRISTIE WARD: Excuse me. May I make
9 one comment?
10 COLLEEN REILLY: Uh-huh.
11 CHRISTIE WARD: The comment at the
12 bottom: "Most Village of Lockbourne residents drink
13 city water," that is true now, but prior to about 15
14 years ago, the residents were drinking well water.
15 And that's not part of the study at all.
16 COLLEEN REILLY: Yes. But the data
17 probably now is indicative of also what might have
18 been. But you're right.
19 CHRISTIE WARD: Even so, now there are
20 many residents that use well water to water their
21 plants and their gardens and things.
22 COLLEEN REILLY: Right.
23 CHRISTIE WARD: Has that been considered
24 at all?

1 COLLEEN REILLY: The risk assessment
2 looks at the most conservative route, right. So the
3 most conservative route would be drinking. And if
4 it's safe for drinking, then presumably it would be
5 safe for other activities.
6 CHRISTIE WARD: So you're saying that in
7 the well water, the water in the wells are safe to
8 drink?
9 COLLEEN REILLY: Well, I'll get to the
10 risk characterization right now.
11 There was a study done, back in 1998 and
12 1999, generally about groundwater in the area. And
13 this often happens in industrialized settings
14 where, you know, the well water, particularly shallow
15 wells, aren't -- because of industrial, because of
16 human use, et cetera -- aren't the best source of
17 drinking water anymore. And that's why people start
18 to convert over to city water. It's better
19 monitored; they get the water from known, clean
20 sources.
21 So the study back then, back in '98 or
22 '99, looked at groundwater kind of across the whole
23 area and did, you know, see that there's kind of
24 ubiquitous contamination in this groundwater. And

there was a recommendation made that people go on city water which is probably partly why, you know, I think they converted to city water even before that. I think back when the Air Force was still here, there was a recommendation that everyone go on to city water. And that was a general issue with the whole area, not necessarily specific to the landfill.

So basically if you go kind of on one side, you know, groundwater moves in one direction naturally. In this case it does go west-southwest towards Lockbourne and then southwest. But if you take samples of groundwater before you get to the landfill and samples of groundwater when you are downgradient of the landfill, you see the concentrations are the same, roughly the same. So what that says is the problem is bigger than just the landfill.

So this risk assessment takes a very conservative approach and looks at all the contamination and comes up with a characterization of risk.

TIFFANY CHAPMAN: Actually, if you don't mind, for the record we would like to get names. Can you state your name for the --

1 CHRISTIE WARD: Christie Ward.
2 TIFFANY CHAPMAN: Thank you.
3 And then any further comments, if you
4 don't mind, say your name that way we can get it
5 recorded and then ask your question. That would be
6 great.
7 COLLEEN REILLY: Yeah. We should say
8 there is a court reporter here to document all of the
9 -- yes.
10 ARISTOTLE MATSA: My name is Rick Matsa.
11 I, as is Ms. Ward, and many of the other people here,
12 are here on behalf of the Village of Lockbourne. I
13 think there are a number of things that I'd like to
14 comment on.
15 First of all, you're indicating that the
16 groundwater is the same in different parts and that's
17 equally bad. And that may be indicative of the fact
18 that it's been polluted by the dump for so many
19 years, that there's been a lot of seepage and
20 migration of those toxins and all of those things
21 that you've identified in your report as being
22 harmful to the people that live in Lockbourne and to
23 the environment.
24 The fact that the problem is spreading or

1 widespread, even beyond the area of the dump, I think
2 commonsense would suggest that it's because it's been
3 a dump spewing toxins into the groundwater for so
4 many years and that may be indeed why it's so
5 widespread.
6 The second comment I'd like to make at
7 this point is that your board says most Village
8 residents drink city water. The assumption there is
9 that it gives -- I think it gives an incorrect
10 impression. It ought to be clear to you that there
11 are Village residents that are still drinking well
12 water and are still being affected by the toxins from
13 the dump in that well water.
14 I think more importantly there are
15 residents who are using well water to water their
16 gardens, to water their lawns, which is bringing all
17 of those things back to the surface and making them
18 part of the surface in the Village of Lockbourne, in
19 addition to what's below the surface.
20 So even if many of the residents are not
21 drinking the water, are not affected by, you know,
22 directly by drinking it, they're still being, they
23 and their property and their health is still being
24 affected by all of those toxins being brought up from

1 belowground and essentially being placed on the
2 surface.
3 And if you eat fruits and vegetables that
4 are watered with, what appears to be from your
5 report, toxic materials, certainly the health risks
6 that you would get from eating those fruits and
7 vegetables would be affected by what's being brought
8 up from below the surface.
9 Would this be a good time, I had some
10 other comments? I mean, would you like me to make
11 them now or would you like me to wait?
12 COLLEEN REILLY: Sure. I think -- yeah,
13 I mean, right?
14 CARLA HECK: Yeah.
15 COLLEEN REILLY: I think this should be
16 an open forum and comments get on the record.
17 ARISTOTLE MATSA: Okay. For decades the
18 residents of the Village of Lockbourne have
19 complained to the federal government and the state
20 authorities about what we've called the "dump" and
21 the "ditch."
22 And I think your report correctly pointed
23 out that there had been some public input, years ago,
24 back in the '90s. But then, from all of that time

1 forward, there really wasn't any opportunity for
2 public input. So I commend you on, you know, this
3 opportunity for us to actually, you know, communicate
4 to you.
5 And for all of those years, the residents
6 of the Village of Lockbourne have been trying to
7 convey clearly and with enthusiasm the message that
8 they were being poisoned and that their families were
9 being killed by the toxins that were in the dump,
10 that were being transferred from the dump and the
11 ditch into the Village.
12 For decades the government and its
13 representatives assured the residents of the Village
14 of Lockbourne that there was no danger, that there
15 were no health concerns, and that their friends and
16 relatives were not suffering or slowly dying because
17 of what had been buried at the dump at the base.
18 The government's latest revelations,
19 which I think is through your good efforts and your
20 report, have proven that those complaints of the dead
21 and dying of the Village were accurate and were, in
22 fact, well founded.
23 And I'm really humbled at the task of
24 attempting to be one of the voices of those who

1 passed and those who continue to be harmed by the
2 government's actions and inactions.
3 I have basically four points in terms of
4 a summary of the facts. The first is, for decades,
5 the government buried substances, that are deadly to
6 humans, next to and upstream from the Village. Those
7 buried poisons have been and continue to harm and
8 kill the men, women, and children of the Village.
9 The second thing is the Village cancer
10 rates have been staggeringly higher than they would
11 have been but for the dump and the ditch. Switching
12 to municipal water obviously has helped that, but the
13 fact that those toxins are still in the ground and
14 are still leaching through the ground throughout the
15 Village, I think is of great concern to the residents
16 of the Village of Lockbourne and all their friends
17 and family.
18 The Village residents have a right to use
19 and drink the water beneath their homes. It's
20 essential to their survival that they use it to water
21 and grow food in their gardens. The government
22 acknowledges that Village residents still use the
23 water from their wells, thus has to know that Village
24 residents are continuously being exposed to harmful

1 toxins in their food and their water.
2 The government must now acknowledge that
3 there is an ongoing continuous taking of the Village
4 residents' property rights, their health and their
5 lives without compensation, due process, or equal
6 protection.
7 I think the proof -- and, again, I
8 understand you're a private contractor that did the
9 report for the government -- the proof, I think, is
10 in your own report and there's just a few things that
11 screamed out.
12 Your report says that as a result of
13 these investigations, contaminants including, but not
14 limited to, and you've defined them, polynuclear
15 aromatic hydrocarbons, polychlorinated biphenyls,
16 dioxins/furans, and metals, were detected in soil,
17 surface water, sediment, and groundwater at or near
18 the landfill.
19 Well, Lockbourne is right next to the
20 dump. So when we say "near," what we're really
21 talking about, I think, is, at least in part, the
22 Village of Lockbourne.
23 You mentioned about the shallowness of
24 wells. Shallow zones generally do not produce much

1 water. Therefore, it is the deep aquifer that is the
2 zone typically used as a groundwater source in the
3 county. That's where Columbus and most of Franklin
4 County get its water. I think in your report you
5 indicated that City of Columbus uses surface water
6 from the Big Walnut Creek along with groundwater from
7 the south wellfield area and southeast Franklin
8 County.
9 The south wellfield area is approximately
10 4 miles from the site. Several residents in
11 Lockbourne obtain drinking water from their private
12 wells even to this day. You indicated that seeps
13 have been inconsistently observed along the western
14 boundary of the site during your investigations.
15 At Area of Concern 1, you noted there
16 were PAHs and PCBs, dioxins/furans, and metals
17 including lead, silver and thallium, which were
18 detected in surface soil samples above human health
19 screening levels established by the USEPA.
20 You indicated in your report that PAHs,
21 PCBs, dioxins/furans, and metals including aluminum,
22 mercury and thallium, were detected in subsurface
23 soil samples, again above human health screening
24 levels. And I assume that means at dangerous levels;

levels that need to be of concern.

PAHs and PCBs, dioxins, and metals including aluminum, mercury and thallium, were detected in subsurface soil samples, again above human health screening levels.

Surface soil samples were collected from 0 to 1 foot below ground surface, and subsurface soils were collected from 1 to 10 feet below ground surface. PAHs, dioxins/furans, metals including aluminum, arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, thallium and vanadium, were detected above their respective screening levels in the groundwater.

Dioxins/furans, arsenic, all of those were also detected above their respective screening levels in surface water collected from the East and West Ditches, along with phthalate.

In sediment, PAHs, and metals including aluminum, arsenic, cobalt, iron, manganese and thallium, were again detected above their respective screening levels.

You mentioned that there was no dumping at AOC 2, which the report does point out that there were dioxins/furans, and metals including cobalt,

1 magnesium and thallium, again above their respective
2 screening levels in surface soil. PAHs,
3 dioxins/furans, and metals including aluminum,
4 arsenic, cobalt, iron, magnesium, were detected above
5 their respective screening levels in the groundwater
6 there as well.
7 There were two volatile organic
8 compounds, methylene chlorine and
9 trans-1,3-dichloropropene and naphthalene that were
10 detected in soil above their respective screening
11 levels, and also in the indoor air.
12 Your report says that at Area of Concern
13 1, the HHRA determined that, under current land use
14 conditions, surface soil may pose an unacceptable
15 cancer risk from PAHs and PCBs. You indicated the
16 total soil, that is both surface and subsurface soil,
17 also poses an unacceptable cancer risk; a risk
18 greater than 10 I think you get to the minus four,
19 from PAHs and PCBs. Exposure to lead in the site
20 soil may result in unacceptable risks to children.
21 Future use of groundwater may also pose an
22 unacceptable cancer risk to off-site residents.
23 And, again, I think it's the Village
24 residents, the people in the Village of Lockbourne,

1 their friends, their visitors, everyone that goes
2 there, that is exposed to what you're describing as
3 an unacceptable cancer risk. They're the off-site
4 residents.
5 But I think the problem potentially is
6 much more widespread because that same, all of those
7 things that you listed in your report, are also only
8 4 miles away from where you indicated that Columbus
9 is getting its water. So Columbus is getting its
10 water and Franklin County is getting its groundwater,
11 Arlington, Bexley, Worthington, then that arguably is
12 water that everyone that uses Columbus municipal
13 water is getting, in which case it's all being
14 affected.
15 Primarily because of PAHs, dioxins/furans
16 and, to a lesser extent the metals and polyethyl
17 polyphosphate, you indicated that future exposure to
18 groundwater may pose an unacceptable noncancer risk
19 in some areas and that the groundwater may pose an
20 unacceptable risk to off-site residents from all
21 those things that you listed.
22 I'd like to congratulate the government
23 for finally disclosing the risks to the public,
24 albeit, about 60 years after the Village started

1 voicing its concerns and complaints that the dump and
2 the ditch was and is continuously killing them.
3 Unfortunately, the government solution --
4 which is covering the problem area with soil at a
5 cost of about $13 million, or with clay at a cost of
6 approximately $50 million -- we don't believe will
7 solve the problem of the poisoning of the Village and
8 its residents.
9 Logic dictates that pollution of
10 groundwater next to the Village and only 4 miles from
11 where it's used by the City of Columbus and all of
12 Franklin County residents, including the Village's
13 municipal water, is continuously affecting and
14 polluting all the drinking water as well.
15 The Village is better poised, with a
16 transfer of economic support from the federal
17 government, the polluter of this dump site, to fully
18 solve the problem. The Village estimates that it
19 can, over time, fully implement its proposed solution
20 as to items 1 and 2 -- and I'll provide those to you
21 in writing in letter form -- as well or better with
22 the same amount of money that the government proposes
23 to spend on a solution which we believe will not
24 solve the problem.

1 The difference being the Village, at the
2 local level, can avoid those things associated with
3 big government contractual spending. The government
4 is urged to consider economically addressing two
5 other items; the ones that I've listed in my letter
6 as items 3 and 4.
7 The Village has a vested goal in
8 effectuating a real and complete solution, and a
9 proven track record of efficiently administering its
10 projects properly and within budget.
11 It is of some concern to the Village that
12 we only received notice of this just recently. It's
13 been an ongoing problem. The Village has expressed
14 its concerns and believes it should be an active
15 participant in this process from beginning to end,
16 not just at one public-input hearing.
17 The Mayor of the Village of Lockbourne is
18 here, council members of the Village of Lockbourne
19 are here. And I'd like, as soon as I'm done, which
20 will be very soon, for them to introduce themselves
21 as well because these are the real stakeholders;
22 these are the people whose lives are being affected;
23 these are the people who've lost family members due
24 to the toxins from the dump; these are the people who

1 are very concerned that there be a real solution, so
2 that in 60 years, after more monitoring, it's not the
3 same situation that it is now in terms of what's
4 being affected by the things that were placed in the
5 ground, by the government, at the dump site.
6 As for the solution, Lockbourne proposed
7 four simple, straightforward things:
8 Number one, it should be obvious, that
9 the toxic dump materials which are in the trenches,
10 and they're only 10 feet deep below the surface,
11 should be removed and relocated to a location where
12 they will no longer pollute the Village's ground and
13 subsurface water; and, thus, cease the slow death to
14 the Village residents;
15 (2) The Village residents should receive
16 free water and sewer service for as long as they are
17 precluded from safely using their ground and
18 subsurface water;
19 (3) The Village residents should be
20 compensated for their costs, to date, including, but
21 not limited to, the costs associated with the
22 installation and maintenance of their water and sewer
23 systems, and their purchases from this system; and,
24 finally,

1 (4) The Village residents should be
2 compensated for the effect on their health, the
3 deaths of their loved ones, and their lost quality of
4 life.
5 I would like to personally thank you for,
6 Ms. Reilly, for being so patient and giving me this
7 opportunity to share these things with you.
8 If you don't mind, I think it would be
9 really great if we could just kind of go around the
10 room and give everybody else a chance -- besides me,
11 since I feel as though I kind of monopolized -- at
12 least a few moments here to introduce themselves and
13 perhaps put their comments in as well.
14 COLLEEN REILLY: Yes. Thank you.
15 Before we do that, if you don't mind, I
16 know Diana Bynum has been raising her hand, back
17 there, patiently. So if we could give Diana a chance
18 to also speak.
19 DIANA BYNUM: Diana Bynum, Ohio EPA.
20 Okay. In the mid '80s a couple of things
21 happened. One was that the Village water wells were
22 sampled by Ohio EPA and I think also the Ohio
23 Department of Health also conducted sampling of many
24 of the wells in the Village, and discovered that the

1 contamination was actually from the septic systems.
2 A lot of the homeowners' septic systems were in poor
3 condition and the contamination from those septic
4 systems were getting into the drinking water wells.
5 Another thing that occurred in the mid
6 '80s was that the Ohio Department of Health or the
7 Franklin County Health Department, I don't remember
8 which, a study was headed up by Dr. Robert Indian,
9 regarding the cancer occurrence in the Village of
10 Lockbourne, and he determined that they weren't
11 unusual. They might have been a bit high, but they
12 weren't unusual.
13 CHRISTIE WARD: Can we have copies of
14 those studies?
15 DIANA BYNUM: Yes. You can call Lisa
16 Oltman in my office, it's O-l-t-m-a-n, in the central
17 district office, and make a request to have those
18 copied.
19 CHRISTIE WARD: Okay.
20 DIANA BYNUM: And also in the mid '90s, I
21 went out to some of the shallow wells that were still
22 being used by the residents in Lockbourne, with
23 someone from groundwater. We collected samples and
24 analyzed them and found that there were no chemicals

1 of concern.
2 And then also you mentioned that the
3 residents in Lockbourne never had an opportunity to
4 make their concerns known. But during the RAD
5 meetings that the Air Force had, many residents came
6 to the meetings -- even though they were for the Air
7 Force projects and not the landfill -- they were
8 frequently expressing their opinions about the
9 landfill and letting us all know about their
10 concerns.
11 And also you mentioned the trash at the
12 landfill, the 10-foot trenches that had trash in
13 them. I was out there when the Army Corps was
14 conducting their survey of the trash with the
15 backhoe, digging it up. All I saw was municipal
16 waste, computer printouts, that kind of thing, jars
17 of Dippity-Do, other things that you would normally
18 find as just trash. It doesn't mean that there
19 aren't other things there that -- we didn't go
20 through and uncover every single foot of the
21 landfill, but we did find the extent of the trash and
22 that's what we saw.
23 And also many of the contaminants that we
24 have found are slow-moving. They tend to adhere to

1 soil particles. And also the Army Corps plans to put
2 in more monitoring wells and I suspect they're
3 probably going to be downgradient of the landfill, so
4 it would be between the landfill and the Village of
5 Lockbourne, and we would get a better understanding
6 of the contamination.
7 COLLEEN REILLY: Thank you, Diana.
8 I mean, I think the important thing here
9 is that, yes, this has been studied for a long time
10 and it's time for the site to be cleaned up. The
11 Corps is taking action now to clean up the site. The
12 issues around the groundwater, that has to be
13 monitored because this is a landfill; that will
14 continued to be monitored long-term.
15 And if action needs to be taken because
16 of groundwater, if eventually some risk gets shown
17 from the landfill to groundwater, then action would
18 be taken then as well.
19 So the government isn't trying to skirt
20 its responsibility. They're actually taking
21 responsibility for cleaning up the landfill right
22 now.
23 CARLA HECK: Before we move on with the
24 actual discussion of the risk assessments, I'd be

1 happy to hear what the other folks have to say.
2 RALPH COON: My name is Ralph Coon. I'm
3 the Mayor of the Village of Lockbourne. I'm glad
4 that you guys are here. I do have one question.
5 You talk about cleaning it up. What I
6 understand is you're just going to put dirt over the
7 top of it, or are you going to take everything out?
8 CARLA HECK: We won't be excavating
9 everything. That's not usually -- let me think of
10 the best way to say this.
11 In the country we're always going to have
12 landfills that are, you know, that are there,
13 commercially available, whether it's for hazardous
14 materials or just our garbage. And so the way those
15 are designed, obviously we wouldn't be digging those
16 up because you would just be starting the problem
17 some place else.
18 So they're designed and closed in such a
19 way and then monitored so that the waste stays in
20 place. There are lots and lots of contaminated areas
21 where the waste, the most logical thing is for the
22 waste to remain in place and to monitor it, which is
23 what we're doing.
24 So no, all of the waste materials won't

be dug up. What will happen -- and Colleen will get to this in a little bit -- is that in order to have a little bit more control and to get the waste out of areas that it shouldn't be, we'll be pulling it back and reducing the footprint of the waste.

And then once you do that, then we will be putting a cover on it and at a specific grade so that, because one of the biggest issues when you have a landfill or when you have any waste in place is water getting in, so you don't want water to get in, you want water to run off, and that's what hadn't been happening in the last many years. It's a long-winded answer to your question.

RALPH COON: I keep hearing "the cleanup," but --

CARLA HECK: I agree with you. That's not -- I actually said this before we --

COLLEEN REILLY: It's a misnomer in the term.

RALPH COON: Covering dirt over top of it, to me, is not cleaning it up.

CARLA HECK: I agree with you, 100 percent. I don't like the use of that phrase because it's misleading; it assumes you are picking

1 up and taking away.
2 And the whole -- in environmental -- in
3 the environmental arena, whether you're talking
4 industry or in your garage or, you know, what the
5 Army has done, you look at what you have and that's
6 why we focus so much on risk because it is -- it ends
7 up being a statistically -- I mean, if you look at --
8 I'm losing my train of thought.
9 You are evaluating the impact of what's
10 there on the people and your surroundings. And with
11 that you also have to take into account some of the
12 things Diana mentioned. You can't look at, in this
13 particular example, you can't look at the landfill in
14 isolation because there are other external factors.
15 I've worked on some projects where there
16 are naturally-occurring things that are in the soil
17 that, by definition, by some EPA standard, might be
18 considered dangerous, but they're naturally
19 occurring. So you're not going to dig a core, you
20 know, all the way through the earth to clean
21 something up.
22 Well, I think I've completely lost my
23 train of thought, so I'm going to stop there before I
24 confuse myself, because I think I'm definitely

1 confusing you if I'm confusing myself.
2 TIFFANY CHAPMAN: Well, I think it's
3 important you're saying that, like, once you have
4 chemicals detected and then a risk assessment, so you
5 really need to focus on, you know, after we've done
6 the study, which you'll present more on the risk, and
7 then address the risk. So I think there seems to be
8 some confusion on the location of the contamination
9 and what risk it could be causing.
10 CARLA HECK: And risk assessments are --
11 it's a very unique, very detailed science that's
12 actually completely over my head when it starts
13 talking about how you evaluate cancer risk for
14 people, or certain, you know, hazard indices that
15 affect plants and animals.
16 There's a tremendous amount, we know a
17 whole lot more now than we did ten years ago, and a
18 whole lot more now than ten years before that, just
19 with regard to the data that the states and EPA and
20 companies have put together with regard to what are
21 negative impacts to people.
22 SHANNON BUSH: Shannon Bush, Hamilton
23 Township. On today's landfills they've got liners
24 and clay. That landfill was built over top --

1 everything around here is gravel -- it's over a
2 gravel base. So your drainage is going to be a lot
3 worse than the landfills. Is this the same thing you
4 would do in a commercial landfill if you found
5 contamination there?
6 CARLA HECK: You mean like an old
7 commercial landfill?
8 SHANNON BUSH: Yeah. You found somebody
9 that had a landfill, commercial, that they picked up
10 trash and dumped it. What would you do to them? The
11 same thing you're doing here?
12 CARLA HECK: Yeah.
13 COLLEEN REILLY: Yes. You know, the EPA
14 did a big study about what to do with all these old
15 dumps, essentially, because they're all over the
16 country, and communities can't afford to dig up all
17 these old dumps and consolidate them in one spot.
18 So what they determined, after a lot of
19 studies on this, was the best way to manage these
20 dumps is to put a cover over them and, you know,
21 promote surface drainage so the water flows off of
22 the landfill rather than going down into the
23 landfill; and to make sure that no one comes in
24 contact with the trash that's in there because we

1 don't, you know, we know something of what we
2 observed, but, you know, a lot of people don't know
3 what people throw in their trash and ends up in the
4 dump, so you generally don't want people coming in
5 contact with trash.
6 So you put covers over them to prevent
7 that and you allow a mounding of that soil so it
8 promotes water to run off rather than sinking down
9 there. And that's a very standard method of
10 remediating, rather than cleaning up, remediating a
11 landfill, closing a landfill out.
12 CARLA HECK: Long-term monitoring, in a
13 situation like this, is one of the things that's the
14 most key. You're not walking away. Whether it's an
15 industrial landfill, like, you know, your stuff's
16 going to Waste Management or BFI, once the cap goes
17 on, the regulations for those types of facilities say
18 that you'll monitor it for 30 years. But it also
19 means that if you're monitoring it for 30 years, in
20 Year 15, if you find out things that didn't happen in
21 Year 3, all bets are off.
22 The same thing is true here. Like Diana
23 said, we would be putting in more wells downgradient,
24 which we call that "a point of compliance." We're

1 trying to monitor to make sure that this doesn't get
2 to here if there is anything in here. If something
3 does cross that line, again all bets are off; you
4 relook at everything; it's not a static solution.
5 SHANNON BUSH: Well, I'm sure the City
6 has monitoring wells in the area because they've got
7 them everywhere. They should be monitoring it
8 already.
9 CARLA HECK: Oh, they are, yeah.
10 COLLEEN REILLY: Is there anyone else
11 that wants -- before I continue.
12 CHRISTIE WARD: I just want to make a
13 statement for the Village of Lockbourne. And we'll
14 probably put together a position statement to send to
15 you.
16 My name is Christie Ward. I'm on the
17 Village Council for Lockbourne. We want to share our
18 disappointment in the lack of collaboration with the
19 Village. It is unacceptable that we were not
20 consulted or informed of the activities of the
21 landfill assessment.
22 Section 2, Site Background, on page 2 of
23 your final report, indicates that, from 1951 to 1971,
24 the Air Force Base landfill was used to dispose of

1 waste from the former Lockbourne Air Force Base. The
2 types of waste include: general trash from base
3 housing and administrative buildings, construction
4 and demolition debris, and lime sludge from the base
5 water-treatment plant.
6 Historical documents suggest the landfill
7 may also have received pesticides and herbicides,
8 ammunition, airplane parts, and hazardous materials.
9 Wastes reportedly were buried in trenches up to 10
10 feet deep and dispersed on the ground surface.
11 As a result of these investigations,
12 contaminants including, but not limited to,
13 polynuclear aromatic hydrocarbons, polychlorinated
14 biphenyls, dioxins/furans, and metals, were detected
15 in soil, surface water, sediment, and groundwater, on
16 or near the landfill. Your own assessments give us
17 reasons to be concerned.
18 The proposed solution of covering the
19 landfill with soil or clay are not only inadequate,
20 but irresponsible, and do not address the long-term
21 effects on the environment, wildlife, or human health
22 of the residents of Lockbourne as well as Franklin
23 and Pickaway counties.
24 Your recommendations still leave us with

1 a hazardous dump site, and the contaminants will
2 continue to seep into the soil and groundwater,
3 ultimately ending up in the drinking water of
4 Franklin and Pickaway County households, and remain a
5 substantial threat to our lives.
6 The residents of Lockbourne have felt the
7 effects of the contaminants in the landfill for the
8 past 60 years. We continue to have a high stake in
9 the decisions others will make in the future of the
10 landfill. We formally request to be included in the
11 decision process as well as the implementation of a
12 viable solution.
13 All your studies document the hazardous
14 waste dumped in our community and the continued
15 negative impact on human, aquatic, wild, and plant
16 life.
17 The bottom line is that today, 60 years
18 later, Lockbourne, Franklin County, and Pickaway
19 County residents are in danger and there is not a
20 viable solution.
21 CARLA HECK: Before we go on, I just want
22 to, because obviously you all have -- we can't speak
23 to all the points that you brought up; this isn't the
24 venue for that; I don't have people here to do that.

1 And you mentioned that you will be responding
2 formally through the public-comment period, so we'll
3 get what you just said in writing.
4 ARISTOTLE MATSA: Actually, I'd like for
5 everything that I've said, I'll actually give it to
6 your court reporter, now, to be included as part of
7 your record.
8 CARLA HECK: Yeah. Absolutely.
9 ARISTOTLE MATSA: And I've also given a
10 copy to your colleague as well.
11 CARLA HECK: Okay.
12 ARISTOTLE MATSA: So it's not something
13 that, at least I'm not intending to mail it, since
14 I'm providing it to you, already today.
15 CARLA HECK: Okay.
16 In the beginning -- and I realize this
17 isn't what you all want to hear; I just have to say
18 it to make sure we're all on the same page.
19 In the beginning of the presentation, we
20 talked about the program, the federal program that
21 brought us here as far as the bucket of money that
22 will pay to have this done. I can't even imagine the
23 frustration of being in the community, the perception
24 of what the federal government may or may not have

1 done, because this has gone on for decades.
2 The law that actually allows us to have
3 this meeting and do this work, did not happen until
4 the late '80s. And in the process after that, it
5 was, you know, it's a slow process getting things
6 started. I'm not saying it's right; I'm just saying
7 it is what it is. It took what it took to get us
8 here today.
9 So we have to, I mean "we" being the
10 Corps, are doing everything we can to be
11 forward-thinking. I can't make any statements about
12 what happened before the CERCLA laws came into effect
13 during that time period or while the Air Force was
14 here or after the Air Force sold it to the airport.
15 All I can do is work within the confines of the
16 federal program that brought us here.
17 So I think everybody is aware of that. I
18 just wanted to make sure that we were clear. We will
19 have to -- there are legal constraints as to what we
20 can and can't do. And, in a lot of ways, the
21 regulations that we're operating in are very
22 proscriptive.
23 That being said, we still want to hear
24 everything you want to say. We just want to make

1 sure that you do understand that we may not be the
2 audience that you need to tell it to for some of the
3 things. But we certainly want you to be involved as
4 much as you wish to participate and be involved
5 through this process.
6 I mean, as far as where we are, and
7 Colleen will speak to that a little later, the CERCLA
8 regulations, I mean, it sets up a clock. We're going
9 to do this, we're going to do this, and then we're
10 going to do this. And we'll make sure we know who we
11 need to stay in contact with, so you guys can keep
12 your constituents in the community involved with
13 where we are. But we don't have a whole lot of
14 flexibility in how we go forward.
15 ARISTOTLE MATSA: You mentioned other
16 forms that you think we might also benefit from
17 addressing. I think you're extremely experienced in
18 these areas; could you make any suggestion of other,
19 when you said there are others --
20 CARLA HECK: As soon as that came out of
21 my mouth, I started thinking the way that this
22 process works with where we are now, there is a very
23 specific comment period which we will take what you
24 all have said and anything else that we may get from

1 people who aren't here, phone calls, letters, you
2 know, anybody that responds to what's in the paper,
3 and that information will be evaluated.
4 I'm actually not a CERCLA expert. I'm an
5 environmental expert. This particular law, I'm
6 getting to be an expert, but I'm more of a novice. I
7 don't know if there's a place in any of the next
8 steps that allow for another iteration of discussion.
9 COLLEEN REILLY: In terms of the
10 decision-making process, you know, how will the
11 landfill be remediated, this is the time to be
12 engaged and voice opinions, concerns, et cetera, with
13 the government about their proposed clean-up action.
14 And then the Army Corps of Engineers will
15 work in coordination with Ohio EPA to look at those
16 comments, and evaluate do those comments, do they in
17 any way question what we're proposing to do, and how
18 can we address their concerns by the remedy that
19 we're proposing to put on.
20 So essentially there is a formal response
21 that goes back to anyone who provides comments,
22 including those tonight, that explains if the
23 government still moves forward with a cap, why
24 they're moving forward with a cap on the landfill and

1 how that will address your concerns.
2 In the CERCLA process, this is the public
3 forum prior to the decision-making. After the
4 decision-making, you know, there's flexibility
5 around, you know, do you want to be involved in the
6 remedial design so people understand the design a
7 little bit better; how are you making sure that this
8 is being designed to protect the residents of the
9 Village of Lockbourne.
10 During construction, sometimes there's a
11 public-invite during construction to see the process
12 of how it occurs. There's safety issues with that,
13 as you can imagine, but you can structure it so
14 people can see the construction going on. So there
15 are other processes that they can, that the Corps of
16 Engineers could implement to engage the public as
17 part of the remedial design and implementation of the
18 remedy.
19 Also the process, because, as a landfill,
20 assuming it would be left in place, again every five
21 years the government has to come back and do a very
22 comprehensive review of the remedy. And there is a
23 public involvement component to that; notifying the
24 public that that's happening; inviting input during

that process. That probably doesn't make you feel better because that's five years down the road, but it doesn't end, I guess, my point is. The opportunities for public input does not end. But in terms of making the decision, this is the time and the opportunity for input.

Yes, ma'am.

JUDY CAMPBELL: Do they have a history or a report of how these caps have worked in the past and how safe they've been for groundwater in the past? Is there some place that they can get a report or we can get a report?

COLLEEN REILLY: Yes. In fact, at the end of this, and actually it might be in the fact sheet, too, where you can find documents at the, there's a website, and then the library, the local library has it on compact disk, and it has some of those studies that talk about why do we cap landfills and how that is protective of communities that live adjacent to landfills, et cetera.

As Carla indicated, long-term monitoring for a landfill is a critical part of that remedy. You know, you cap a landfill, you got to make sure that you are actually containing the contamination

1 when you do that. And part of that is putting
2 groundwater-monitoring wells downgradient to make
3 sure that any contaminants from the landfill are not
4 migrating to somewhere they shouldn't be.
5 JUDY CAMPBELL: But I still have a well,
6 so I'm still dealing with drinking groundwater. That
7 was my concern. If you have proof of the effects
8 that it's done in the past, then we have got
9 something to look at to see if it's something that
10 will help us in the future.
11 CHRISTIE WARD: Because you're not that
12 far from the landfill, yourself.
13 JUDY CAMPBELL: No, I'm not.
14 TIFFANY CHAPMAN: Can we get your name
15 for the record?
16 JUDY CAMPBELL: Yeah. I'm sorry. It's
17 Judy Campbell.
18 TIFFANY CHAPMAN: Thank you.
19 JUDY CAMPBELL: I'm a resident.
20 RICHARD EASTERDAY: Basically, you people
21 have no idea what was put in there.
22 COLLEEN REILLY: Well, we wouldn't know
23 unless we dug everything up. But we've got, through
24 interviews and --

RICHARD EASTERDAY: I've lived here for 65 years. I know what was put in there. You're not finding anything. I know there's diesel fuel, there's been paint, there's been paint thinner, all kinds of stuff put in there.

CARLA HECK: One thing, because we've had this discussion also with the State, we base the remedial design based on the information that we have. I mean, I realize we don't have everything, but we do have substantial information.

Once we get out there and start moving things, and we've taken a lot of data and a lot of analysis, and those types of things haven't shown up. And that doesn't mean that they're not there, it just means that the sampling that we've done are not indicative of those types of things being there.

But if we ran into something that was completely unexpected -- the whole -- anything, when you're in the environmental arena, it's all kind of iterative. You get more information, you have to change your decision-making; you get more information, you have to change your decision-making.

The fact that we may come up with a decision document and a remedial design, doesn't at

1 all mean it's ironed in stone. All it takes is new
2 information and we course-correct based on that
3 information.
4 RICHARD EASTERDAY: Why do you think it's
5 only 10-foot deep?
6 CARLA HECK: Why do I think it's only
7 10-foot deep?
8 RICHARD EASTERDAY: Right.
9 CARLA HECK: Actually, I don't remember
10 where that information came from.
11 COLLEEN REILLY: When we dug into the
12 waste in test pits.
13 RICHARD EASTERDAY: You only went 10
14 feet. How do you know it don't go deeper?
15 COLLEEN REILLY: Well, we did find
16 natural, the clay soils that are there below that.
17 But to your point, that's part of why you
18 do all this sampling, you know, to get a better
19 understanding of whatever might be in that landfill;
20 you want to make sure that it's contained within that
21 landfill. That's why you do all the sampling and you
22 put the groundwater wells in.
23 You know, there were some reports,
24 anecdotal information about, you know, as you read,

about hazardous materials being disposed of there, which is part of what, you know, stimulates this whole process to begin with. That's why we analyze for all these different compounds to see what are we seeing coming out of this landfill, if anything.

And so if there were those components or those types of things disposed of in that landfill -- right now, all the data collected, over ten years, doesn't show that; diesel fuels, that kind of thing. It's not to say it's not there; it's just not coming out of the landfill. We want to make sure it doesn't, which is why we're proposing to cap it and be able to then monitor it after that.

RICHARD EASTERDAY: It's too late. It's already spread all over the town. I was in Vietnam, so I know how it works.

TIFFANY CHAPMAN: Can I get your name, also, for the record?

RICHARD EASTERDAY: Richard Easterday, councilman, Village of Lockbourne.

JUDY CAMPBELL: How are we to know that they didn't have a dump, cover it over with what you found was the clay and stuff, and then start another dump on top of that? How are we not to know that

1 this might not be something that's tunneled on down?
2 COLLEEN REILLY: Well, some of the -- we
3 don't just use test pits. We actually drill. So you
4 can -- you can see if there's anything different in,
5 if there's waste here, if they covered it with soil
6 and if there's more waste.
7 And then if you think back on how they
8 actually, you know, that was not a big hole back
9 then; that, historically, was pretty flat land. So
10 what did they use to dispose of the dirt, and they
11 would use things like backhoes which don't dig that
12 deep. So they trench. It's a fairly common thing,
13 "trench and fill." It was not unique to the Air
14 Force. It's a common way that people disposed of
15 waste all over the world actually. It's called
16 "trench and fill."
17 You can actually see some of the trenches
18 still today. In the aerial photo, you can see
19 evidence of the trenches. So just the limitation of
20 the equipment would suggest that you can't go much
21 deeper than -- they probably didn't go much deeper
22 than 10 feet.
23 So it's a bit of anecdotal information, a
24 bit of how do they really typically dispose of waste.

1 When you had a flat land, you didn't have a ravine or
2 a ditch or anything, the natural low area to dispose
3 of waste, and they would dig trenches and put waste
4 in and cover it up.
5 JUDY CAMPBELL: Well, I know for a fact
6 that there's a home down here, just across the
7 bridge, the railroad bridge, that they hauled septic
8 system stuff away and took it into their field and
9 put lime on it and it sat there and that's how they
10 disposed of it. That went on for years and years and
11 years. So the Air Force could have used something
12 like that too. I mean, it's just -- there's no
13 guarantees.
14 COLLEEN REILLY: Well, the sludge from
15 the treatment plant did go there. There's visual
16 evidence of that on the surface there. And that's,
17 you know, partly why it needed to be covered, you
18 know, so it's not exposed to the air.
19 You're right. Back before there were
20 environmental laws in the '80s, people disposed of
21 their trash in many different ways. They burned it
22 in their backyards, et cetera, or they had village
23 dumps where everyone took their trash.
24 So, in any case, the way they, the common

1 remedy for a dump is to cap it, and that is largely
2 why those are the alternatives we looked at for this
3 particular landfill.
4 CARLA HECK: I mean, I can't think of
5 anything, in my experience, where a landfill was
6 completely excavated and removed. Especially if
7 you're looking at any type of groundwater
8 contamination; that's not really going to do anything
9 anyway because you're still going to be dealing with
10 that.
11 If you're looking for some place where
12 there's waste in place -- not waste in place --
13 contamination in place, whether or not it's waste or
14 you have contaminated soil, then what you're looking
15 at protecting for the future is preventing
16 infiltration of water, and then evaluating -- I'm
17 usually somebody that likes to, I draw really, really
18 poorly, but I'll usually draw this kind of stuff --
19 but you try to, with your monitoring, understand, you
20 know, what you have, so that you can know whether or
21 not, again if the stuff is in the groundwater, you
22 want to know that it's not getting past a certain
23 controlled line for lack of a better word. So you're
24 trying to control the surface and you're trying to

1 control under the surface.
2 For me, anyway, my background is in
3 chemical engineering, but I'm not much of an
4 engineer, but one of the things that's the hardest in
5 any environmental work, like I think Colleen
6 mentioned, it's amazing how late the country was at
7 even addressing any of this. I mean, we didn't have
8 an Environmental Protection Agency until 1970. So
9 these rules didn't start coming out until the '80s.
10 So we're making up for a whole, whole, whole lot of
11 lost time for stuff that was going on.
12 And it's not -- it would be a lot easier
13 if it was just real black and white, you know, this
14 is bad and this is good. But it doesn't work out
15 that way. And for, you know, not just as taxpayers
16 but as consumers, you wouldn't want it to be like
17 that because it just would not be cost-effective,
18 which is how -- why so much of this type of work is
19 based on risk.
20 And that, for me, personally, sometimes
21 that's a really hard concept for me to understand
22 when I'm talking to risk assessors. But it's the
23 same thing we do in our personal lives when we go buy
24 a car, or go get a loan and buy a house, or anything.

1 You evaluate, you know, your own personal risk.
2 I'm hoping and I'm confident that, as we
3 go through the -- you're not going to get a warm
4 fuzzy. I mean, by the time we finish with this
5 presentation, I don't think anybody, you aren't going
6 to feel real confident. I hope you feel more
7 confident in our decision-making process on how the
8 data which gets fed into a risk assessment and then
9 looks at real numbers and then helps us determine the
10 path forward.
11 Because I can't imagine a scenario,
12 actually at all, for this landfill, where the
13 recommendation would have been to dig it up. I mean,
14 I can't -- I can't think of any -- if there was
15 anything that we don't know now, you know, some
16 possibility of something that could be in here where
17 our decision-making would be any different; I don't
18 know, but I can't think of anything.
19 Paul.
20 PAUL KENNEDY: Paul Kennedy with the
21 Airport Authority.
22 It might help, as you restart the Power
23 Point, to maybe distinguish -- the definition in the
24 report and proposed plans are a description of the

landfill itself. And maybe distinguish or contrast that with what is outside of the landfill or at the perimeter of the landfill, to kind of define movement and non-movement of the landfill, and then maybe how that cap is appropriate, so that there is the distinction between where the landfill stops and where the groundwater discussion stops.

Because some of the things I hear in the room are some concerns that the conditions that are defined in the report also exist in the Village or in the County or in the City's wellfields.

So, again, I don't know what's further into the Power Point, but that might be a good distinction.

Having been at the Airport since 1993 and really just sort of an interested party reading the reports, I probably have more familiarity with the nature and extent of the landfill and what it means outside, you know, the boundaries of the landfill.

So maybe for some of the people in the room and maybe that level of comfort you're talking about might come through in saying this is the landfill, this is not the landfill, this is why your remedy is appropriate in the way you designed it.

1 CARLA HECK: Well, I'm going to turn it
2 back over to Colleen. But I do, I mean, just anybody
3 that wants to jump in, just jump in. I mean, I don't
4 want this to -- I want it to be as interactive as you
5 guys want it to be. It might help a little bit to
6 get through a little bit more of the risk process.
7 I'll sit down and shut up.
8 COLLEEN REILLY: Particularly in light of
9 some of the comments that were read and to Paul's
10 point that, you know, this is really important, I
11 guess, to take this opportunity to understand it
12 because it does focus on where is there contamination
13 and where isn't there contamination. And I think
14 that what was read will, you'll see how that all gets
15 played out into where is there risk and how did we
16 determine where there was risk.
17 I guess what I'm trying to say is please
18 stop me if you don't understand what's being said
19 here or want to dig into it deeper, so that we can
20 flush this out a little bit more, and maybe not get
21 to a warm-and-fuzzy, but at least an understanding of
22 why we've come to the point where we're at today and
23 what the data show.
24 Just to kind of recap that these were the

1 people that we looked at that might come in contact
2 with any contamination at the landfill and how they
3 would. There's groundwater, surface soil, subsurface
4 soil, et cetera.
5 So in the third process, third step of
6 the risk assessment is you look at these contaminants
7 and you find out, well, at what levels do they cause
8 health effects. So you want to understand, you know,
9 in some cases, you know, a level of a contaminant
10 doesn't have any effect; but if it gets to a higher
11 concentration, then it does.
12 So when you're doing a risk
13 characterization, you need to understand if what
14 you're finding at the site is at high enough
15 concentrations to cause some kind of health effect.
16 EPA develops those concentrations. They
17 develop a number, essentially, that says this is the
18 concentration at which there's adverse health
19 effects. And those tend to be very, very
20 conservative, so they tend to be a lot lower, and
21 that's -- you want that to be. You want to
22 overestimate your risk; you don't want to
23 underestimate your risk, so you make sure you're
24 being protected. But they have built-in kind of

1 safety margins in those estimates.
2 So once you figured out who might be
3 coming in contact with anything at the site or your
4 contamination at the site, and you figured out at
5 what concentrations those constituents need to be at
6 in order to cause an adverse health effect, you
7 combine those two pieces of information, the exposure
8 assessment and the toxicity assessment, and you
9 calculate your risk.
10 So we did divide this up into AOC 1 and
11 AOC 2, because there's waste buried in AOC 1, and in
12 AOC 2 there was generally just surface debris. And
13 what you find is, in the surface soil, that the
14 maintenance workers, and anyone visiting the site or
15 trespassing across the site, there would be risk, if
16 they came in contact with that surface soil, from
17 PAHs and PCBs.
18 In the subsurface soil -- and, again,
19 that was the construction worker, right. He might be
20 digging down into the dirt. If they came in contact
21 with that subsurface soil, might be at risk with
22 exposure to PAHs, PCBs, and lead.
23 In the groundwater, we have potential
24 future risk. And the reason that's future risk is

1 because we did a very conservative evaluation of
2 groundwater. And in that groundwater we had PAHs,
3 metals, dioxins/furans, and then this phthalate. I
4 told you that was kind of a plastic.
5 And then construction workers, not that
6 they're drinking the water; they would come in
7 contact with it if they were digging. You know,
8 groundwater is fairly shallow, you know, sometimes at
9 4 feet. If they were doing some digging, they'd come
10 in contact with it.
11 But what we did with the groundwater
12 here, we automatically assumed everything that was in
13 the groundwater is from the landfill, which isn't
14 actually correct, particularly with PAHs,
15 dioxins/furans and phthalates.
16 There are wells that are groundwater
17 wells that are located before the landfill so to
18 speak, and groundwater does move in one direction.
19 It's kind of a law of physics. Groundwater moves in
20 one direction. Usually it goes toward some discharge
21 location, either a big body of water or maybe a small
22 body of water, a river, a creek. And, in this case,
23 that's where this heads. It heads to the discharge
24 location in the creeks and the rivers, west and

1 southwest.
2 So you've got, if you put wells before
3 the landfill, whatever's in that groundwater is not
4 coming from the landfill. Just physically it is not
5 possible because the law of physics has groundwater
6 moving in one direction.
7 So what we did with the groundwater is we
8 just assumed, no matter what we found when we drilled
9 in the landfill proper and tested the groundwater,
10 that that was coming from the landfill, which isn't
11 necessarily true.
12 We also assumed that, as Diana mentioned,
13 that these contaminants, particularly dioxins/furans,
14 PAHs, they bind very tightly to soil. Again, it's a
15 chemical and physical process that those tend to
16 really like soils and they bind tightly to them.
17 Well, when you drink from wells, even
18 private wells, you're filtering out all that soil
19 mostly because no one likes to look at dirty water
20 and they wouldn't want to drink it. But they filter
21 that out, the well process does that. So we assume
22 that you're automatically drinking all that soil
23 along with the groundwater. And, again, this is on
24 the landfill, right now, itself.

1 So, again, it's a conservative estimate
2 of what might be at risk if people drink this
3 groundwater. In actuality, those things don't occur;
4 you don't drink dirty water; you have clean water
5 that you're drinking; it's not filled with soil
6 particles.
7 So that's why you've got this future risk
8 to off-site residents, that risk in groundwater,
9 because of very conservative assumptions that
10 essentially what's under the landfill, now, is what
11 people off-site might be drinking.
12 For AOC 2 which is, again that's
13 upgradient of the landfill. If you remember that
14 picture, AOC 2 is on the east side and AOC 1 is on
15 the west side. You still have this contamination in
16 groundwater from dioxins and furans in particular.
17 That's what's driving the risk here for a
18 construction worker.
19 But this points to a very interesting
20 component of, well, what's happening; where are the
21 dioxins and furans coming from? If they're not
22 coming from the landfill, which they likely aren't
23 because AOC 2 is upgradient from the landfill,
24 they're coming from some other place.

1 And, again, these types of contaminants,
2 whether you're talking about PAHs, dioxins/furans,
3 are very ubiquitous in the environment. It's just an
4 unfortunate consequence of human activities that we
5 have caused these contaminants to migrate into our
6 groundwater and they're widespread problems. They're
7 why cities have drinking water sources and don't
8 drill into the ground anymore, largely why; also
9 because they need a lot of water.
10 But, in any case, we didn't distinguish,
11 again, whether this was from the landfill or not. We
12 just automatically assumed it was here. Here it's
13 not from the landfill. But, nonetheless, if the CRAA
14 wanted to do anything on that property in the future,
15 we would recommend, and you'll see in the remedy
16 here, that you don't let anyone drill and drink from
17 that groundwater because we don't know where the
18 contamination is coming from. It's coming from
19 somewhere upstream, so to speak, so we don't want
20 anyone drilling and drinking that groundwater at AOC
21 2.
22 Yes. Do you have a question?
23 GEORGE HAMMOND: George Hammond. I've
24 lived in Lockbourne since 1962. In 1947 I lived on

1 Shook Road where the dump is now. So I've been
2 around a while.
3 There's a ditch that comes up along the
4 west side of the dump and goes under Commerce Street
5 and empties in the Big Walnut through a ditch that
6 goes through the Village of Lockbourne. Is anything
7 going to be done to that?
8 COLLEEN REILLY: There wasn't any human
9 health risk associated with surface water and
10 sediment. And so from a human health perspective,
11 no, there's no plans to do anything with the ditch.
12 That ditch, that was created by the Air
13 Force, I think, to manage all the surface water
14 runoff from the base. Maybe it existed before the
15 Air Force Base.
16 GEORGE HAMMOND: Also my wife died in
17 2005 from cancer, pancreas.
18 COLLEEN REILLY: I'm sorry to hear that.
19 Any other questions before I move on?
20 What I just went through with you was the
21 human health risk assessment. We also look at plants
22 and animals, the wildlife, to see if any of the
23 contaminants at the site would be impacting
24 negatively any of the wildlife.

1 So the way the ecological risk assessment
2 is done is a very similar, multi-step process just
3 like the human health risk assessment. A little bit
4 different tweaks to it. You actually have to look at
5 is there actually each ecological habitat there, and
6 are there food sources there for critters that they
7 might be eating at that site, like plants.
8 GEORGE HAMMOND: I did count 14 deer out
9 there along --
10 COLLEEN REILLY: Yes, there are deer out
11 there. And we've seen hunters out there after those
12 deer.
13 Yes, we know there's wildlife out there.
14 We tend to focus on the wildlife that lives there
15 almost permanently, because the deer have a very big
16 roaming range.
17 GEORGE HAMMOND: They were more or less
18 in a herd, right together.
19 COLLEEN REILLY: Right. Right.
20 So as a conservative thing, we look at
21 animals that are there all the time.
22 So, again, we look at, once we understand
23 that there is a habitat there for plants and animals
24 or there's a food source there, then we look at how

1 they would be exposed to the contamination.
2 Typically it's through ingestion. And then, again,
3 at what levels do the contaminants have to be present
4 before they cause some negative effect. All of that
5 information comes together and you come up with your
6 ecological risk characterization.
7 So the ecological risks at this site, at
8 AOC 1, again the surface soils and this is where the
9 waste is. The surface soils do pose a risk, right
10 now, to mammals. And we looked, again, at these
11 animals that have very small ranges that are living
12 there almost full-time, like a shrew or a fox or a
13 muskrat. And similar types of contaminants affecting
14 these wildlife as with the humans.
15 Birds, that's mostly from feeding on
16 shrews or mice that are there; from lead and PCBs.
17 And then "lower-trophic receptors" is a
18 fancy way of calling plants and earthworms. And
19 clearly those are -- they live in the dirt, including
20 plants -- from pesticides. That is the first time
21 that pops up in terms of causing risk because these
22 are very sensitive receptors, as you can imagine an
23 earthworm.
24 The water and the sediment in the storm

1 water ditches. To your point, yes, we did find some
2 potential risks to these plants and earthworms; very,
3 very, sensitive receptors. However, that habitat
4 there is not a high-quality habitat. What you look
5 at earthworms for is actually as a food source to
6 birds particularly. And it's not a high-quality
7 habitat that many birds go and feed in those ditches.
8 So that weighs into your decision-making about, well,
9 is there a risk or isn't there a risk. If there's
10 not really a habitat there for animals to use it as a
11 food source, then there isn't a risk.
12 So here, while we do have these
13 contaminants that might affect plants and earthworms,
14 it doesn't go beyond plants and earthworms, so to
15 speak, and get higher up into the food chain, which
16 is what we get concerned about with ecological
17 receptors.
18 At AOC 2 there were no unacceptable risks
19 to the ecological receptors there.
20 So as I started talking about the risk
21 assessment, the estimation of risk and whether you
22 have risk at a site or not, if you don't have risk at
23 a site, that's what I guess causes you to determine
24 if you need to look at remedial actions; do you need

1 to do something at the site. If you have
2 unacceptable risk at a site, you need to do
3 something. So, clearly, I just went through, we have
4 unacceptable risk at the site; we have to do
5 something about it.
6 The remedial alternatives, what
7 alternatives you're going to look at, how you compare
8 them, that's all done in a report called the
9 "feasibility study." In that feasibility study we
10 actually set forth objectives; what are our goals of
11 remediating the site.
12 And here we came up with five. And you
13 can see these are driven by the risks that we found
14 at the site:
15 One is to eliminate the risk to human
16 health and the environment that is posed by the soil,
17 surface soil, and subsurface soil;
18 The other is to eliminate the
19 unacceptable risk from the groundwater;
20 The third. We don't want to transfer.
21 So you can imagine what happens currently on that
22 landfill. You have surface soils that are
23 contaminated right now that are being exposed to
24 rainwater, and that runs off into the ditches. So we

1 want to cut that pathway off. Not that we actually
2 found risk to human health in the ditches; we didn't.
3 But to allow it to continue and potentially impact
4 more ecological receptors, we want to cut that off.
5 So that's one of our primary objectives.
6 We have two secondary objectives here
7 that have more to do with sustainability and with
8 being greener, I guess, in how we implement this
9 remedy. So in the era now of sustainability and
10 green building, et cetera, we wanted to look at were
11 there opportunities for us, in remediating this site,
12 to do so in a greener fashion; and then also to
13 maximize the reuse of the property long-term. And
14 we'll get into how we're going to meet all of these
15 objectives with the proposed remedy in one of the
16 later slides.
17 So in the feasibility study, again we
18 evaluated the cleanup alternatives and then there's a
19 process by which you compare those. It's a very
20 formal process that's dictated by the EPA on how you
21 compare the cleanup alternatives to one another.
22 So for AOC 1, we're required, under
23 CERCLA, the whole process we're following here, to
24 look at no action. What would happen if we didn't do

1 anything at the site. And as you can imagine, that's
2 not an acceptable alternative. Some remedy has to be
3 taken at that site because we've identified some
4 unacceptable risks.
5 So the second alternative was capping and
6 covering the landfill. We have a clay-cap and
7 soil-cover options for basically covering the
8 landfill. And the institutional controls that go
9 along with that basically restrict the use of the
10 site and would prevent anyone from using groundwater.
11 So those are more administrative actions that get
12 done to make sure that the site's being used
13 appropriately, because it's going to be a -- it would
14 be a covered landfill.
15 At AOC 2 we had risks in the groundwater.
16 And so, again, we had to look at the no-action
17 alternative. The way to remedy the issues with the
18 groundwater would be to prevent anyone, using
19 institutional controls, prevent anyone from drilling
20 a well and using that groundwater.
21 So the feasibility study looks at all
22 these cleanup alternatives and compares them against
23 each other. And through that comparison, typically a
24 remedy pops out as the best remedy based on the

1 comparison. And that best remedy is what is proposed
2 in the proposed plan.
3 So the proposed plan that's put out right
4 now proposes remedies for both AOC 1 and AOC 2 that,
5 after all this evaluation, we believe are the most
6 appropriate remedies for these two sites.
7 At AOC 1 is to cover the landfill and
8 implement institutional controls. Part of that
9 covering of the landfill, if you remember that
10 objective we had of maximizing the beneficial reuse
11 of the site, you know, or the availability of land on
12 the site. Part of that is to, if you also remember
13 that picture where there was waste kind of scattered
14 underneath, buried, but scattered in different spots.
15 So we are going to consolidate those wastes into a
16 smaller area that is covered right now.
17 ARISTOTLE MATSA: In order to
18 consolidate, do you have to dig up the waste?
19 COLLEEN REILLY: Yes.
20 ARISTOTLE MATSA: Why not truck it off
21 the site instead of moving it around and putting it
22 back in a place where it can still continue leaching
23 into the groundwater?
24 COLLEEN REILLY: Well, we would be

1 consolidating it over other waste that's already
2 there, rather than trucking it off-site. So you
3 would still be -- you'd still have a landfill there
4 essentially. You know, even if you removed some of
5 it, you would still have the main portion of the
6 waste still remaining on site.
7 So after we consolidate the waste, and
8 again that's to meet the objective of maximizing the
9 reuse of the site, is to construct a soil cover over
10 the waste, which, in effect, prevents anyone from
11 coming into contact. If you put 2 feet of soil over
12 it, plus 6 inches of topsoil, and you put vegetation,
13 grass, over that, then it's very difficult for anyone
14 to come in contact with that surface and subsurface
15 soil that was causing risk.
16 And then the long-term management piece
17 which is where the groundwater -- well, in both these
18 cases addresses the risk to the groundwater. The
19 long-term management includes groundwater monitoring.
20 It also includes things like checking the cap over
21 time. You don't want the cap to start eroding. You
22 don't want the cap to start to settle and then
23 suddenly there's a little low spot where water can
24 settle on there. You want to have a nice grade on

1 the landfill that keeps water from running off of it.
2 You want to keep it mowed. And the
3 reason you want to keep it mowed is because you don't
4 want trees growing on a landfill. You put trees on a
5 landfill, they grow roots in the landfill, they pop
6 out the side of the landfill. So you want to be able
7 to have your cap remain as a viable cap long-term.
8 So you keep mowing it to keep the bigger plants from
9 growing there and having deeper root structures.
10 So the groundwater-monitoring piece of
11 the long-term management, again we'll be monitoring
12 the groundwater both upgradient or upstream of the
13 landfill, as well as downstream of the landfill to
14 make sure that we understand what's happening, what's
15 come into the landfill from other sources and what's
16 coming out of the landfill from the landfill, and
17 making sure that any contaminants from the landfill
18 are not migrating where they shouldn't be going.
19 And that's why there's, you know, very --
20 this is being developed, we have to develop this
21 long-term management plan, but to basically have a
22 nice network of monitoring wells in both directions
23 to make sure that we don't have migration of
24 contaminants from the landfill going off-site.

1 And then in terms of on-site groundwater,
2 imposing the institutional control, or environmental
3 covenant is another term for it, that would prevent
4 people from putting wells in the landfill area,
5 itself, of AOC 1.
6 And then AOC 2, since the risk there was
7 exposure to groundwater, that we would impose the
8 that same environmental covenant of restricting the
9 use of the groundwater.
10 So this is just a conceptual drawing of
11 what this might look like. And the yellow dashed
12 lines there are where we believe there to be buried
13 waste now. Again, this is a conceptual idea of what
14 the footprint of the landfill will look like, but
15 essentially pulling these areas into a more
16 centralized area and then capping that there.
17 So you see my point here, if you dug
18 those up, you still have the landfill itself. The
19 reason we kind of choose this thing even conceptually
20 is because historically there was discussion around
21 where did they use -- where were the areas of AOC 1
22 that were used most heavily to dispose of waste, and
23 it was generally this area. So those are the pieces
24 that we want to cover. And then these more scattered

1 areas, just roll them into -- over the predominant
2 waste disposal area and then put a cover there.
3 So where does that lead us. We kind of
4 discussed this point in the decision-making process
5 is a very critical part of understanding community
6 input and community concerns. So your comments on
7 the proposed plan are very much considered by the
8 Army, as well as Ohio EPA, before making the final
9 decision about what remedy they would like to
10 implement at AOC 1 and AOC 2.
11 So following this proposed plan and the
12 public-comment period associated with it, they will
13 be reviewing the responses -- reviewing the comments
14 and developing responses, and putting that into the
15 decision document, which is the ultimate document
16 that commits the government to spending these funds
17 to meeting those remedial objectives, those clean-up
18 objectives that we talked about, and basically says
19 to the government, it's a legally-binding document
20 that says the government said they were going to
21 clean this up, they have to clean it up.
22 Now, it's always subject to the
23 availability of funds, so there's --
24 CARLA HECK: It's not an if, it could be

1 a when.
2 COLLEEN REILLY: When. Right.
3 It's a legally-binding thing that the
4 government has to do this once this is signed.
5 And as Carla mentioned, because of this
6 proposed dollar value, 12 to 15 million dollars, it
7 goes all the way up to the Pentagon, right, for
8 signature.
9 Once that decision document is signed,
10 the government's on the hook for remediating the
11 landfill. Then, you know, all the rest of those
12 boxes, on that flowchart that we showed first, kick
13 in. So then you got to design and implement the
14 remedial action. And then once the remedial action,
15 if we're covering the landfill, then once the
16 landfill cover is in place, then you begin your
17 long-term management activities.
18 And then the five-year review is
19 something that's required. Not that things aren't
20 going to be done less frequently than five years.
21 You know, the long-term management activities, this
22 is typically, at a minimum, on an annual basis, you
23 know, where you're going, well, certainly having to
24 mow the lawn, usually that's three times a year;

1 you're doing inspections of the landfill cover to
2 make sure you don't have any erosion; you're doing
3 your groundwater monitoring. Those are done on a far
4 more frequent basis than five years.
5 The five-year reviews are required, by
6 the CERCLA process, to provide a very formal way of
7 reevaluating the whole remedy; is it protective; is
8 it still working the way it was designed. And as
9 part of that process is also community input. So
10 there's notification to the community that this
11 five-year review is up and we're going to do the
12 five-year review. Inviting input to that process.
13 Once it's completed, there's another
14 notification saying we completed it; here's what we
15 found. So there's another -- there's recurring
16 opportunities for the community to know what's
17 happening with this remedy long-term.
18 So I know we kind of discussed a lot of
19 studies and people have cited them here, so I'm glad
20 to hear that at least you know where to find them.
21 In case people haven't yet found or read up on either
22 the proposed plan or the supporting documents, and I
23 really do encourage you, especially in light of some
24 of the comments here tonight, encourage you to read

1 through some of that and then provide comments.
2 Those documents can be found, again, on
3 compact disk. You won't find hard copies there, but
4 the librarian will have a compact disk at the
5 Southeast branch here, and then also at the website.
6 And that can be found, that link can be found --
7 CARLA HECK: Do we have wireless in here?
8 I just thought we could pull up the website.
9 COLLEEN REILLY: So you could find the
10 website on here. In case you don't want to make it
11 to the library, you can read it at home.
12 Okay. I think, is that it? Are there
13 any other questions?
14 CHRISTIE WARD: You had mentioned that
15 you did site inspections and interviews. Where were
16 those site inspections and who did you interview?
17 COLLEEN REILLY: You know, we have a
18 public-involvement plan that I don't -- I don't know
19 if they were allowed to use names in the
20 public-involvement plan.
21 CHRISTIE WARD: Did you talk with
22 residents of Lockbourne? Did you talk with, you
23 know, residents around the area? Did you --
24 COLLEEN REILLY: Yes, we did. In fact --

1 CHRISTIE WARD: Not necessarily the
2 names.
3 COLLEEN REILLY: Yes, we did. So it was
4 residents. In fact, Mayor, I think we talked with
5 you and other residents. The Restoration
6 Advisory Board members, when that was up and running
7 still, and they also gave us recommendations of folks
8 to talk to.
9 CHRISTIE WARD: One of my concerns, I
10 guess, is I don't know if you guys had actually done
11 site inspections to the west of the landfill when you
12 come into Lockbourne and did you see all of the
13 agricultural land that is between the landfill and
14 Lockbourne? There is quite a bit.
15 Now, my concern is what happens to all of
16 that? The groundwater, you know, are those -- are
17 those areas affected?
18 PAUL KENNEDY: Well, if I could jump in
19 to maybe touch back on the comment I made earlier.
20 Maybe using this diagram, it might be
21 helpful to define where the landfill is and the
22 extent of contamination, and then the area between
23 where that ends and where Lockbourne begins.
24 And I think that the Corps or the Ohio

1 EPA has even placed a well in the Village of
2 Lockbourne.
3 DIANA BYNUM: The Corps.
4 PAUL KENNEDY: The Corps did. And that
5 was part of an investigative process for off-site. I
6 don't want to misspeak because I don't represent
7 either the Corps or Lockbourne. That's just my
8 familiarity.
9 And, as I understood, both the community
10 wells were tested, as Diana described, and a remote
11 well was placed off-site, in the Village, for the
12 purpose of establishing a relationship between the
13 two. And I understood that the results of the Corps'
14 well were negative detection. I don't have the
15 results myself, but that's my understanding.
16 COLLEEN REILLY: Right. There was a well
17 installed probably roughly I think it's further west
18 here. And then there were soil samples, some soil
19 samples off site in various locations here. There
20 were no issues with the soil samples.
21 The groundwater well, what we found in
22 that groundwater well was, again, consistent with
23 what we're seeing all over this area in the
24 groundwater. That's why I said that this risk

1 assessment approaches this very conservatively
2 because it automatically assumes that it's from the
3 landfill; when, in fact, if you look at what's in
4 this well and what's in other wells, you see roughly
5 the same thing. So this is upgradient of the
6 landfill. This is downgradient of the landfill.
7 JUDY CAMPBELL: The flow is what? Like
8 just pretty much --
9 COLLEEN REILLY: Yeah, it kind of goes
10 west-southwest.
11 So when you do look at that groundwater
12 well, you'll see similar contaminants as you see
13 upgradient from the landfill, which suggests it's not
14 the landfill, but we conservatively assume it is.
15 CHRISTIE WARD: But I -- and I -- I do
16 thank you for explaining all of this. We're trying
17 to understand it as well.
18 I think the big concern is that, you
19 know, our Village has been attacked by cancer. Now
20 something has happened; why?
21 And I know you didn't mean to trivialize
22 it, but it appears that you are trivializing our
23 circumstances.
24 On our one block, there were seven

1 houses. I just counted 31 percent of our residents,
2 on one block, have died of cancer or they have
3 cancer. I mean, that's not normal. I don't care
4 how -- it's just not normal. And there has to be a
5 reason for it.
6 If you see the same things in the wells
7 above, you know, are the other folks, the residents,
8 are they getting the same amount of cancer as our
9 residents? I mean, there has to be some explanation.
10 And that's our big concern.
11 COLLEEN REILLY: I understand.
12 ARISTOTLE MATSA: And I think with all
13 due respect to Ms. Bynum and the study that she cited
14 from back in the 1980s, the former mayor of
15 Lockbourne, and the council, actually met with people
16 from your agency and the health department. They
17 went through specific lists of residents and what
18 diseases and illnesses they had.
19 And the conclusion that was voiced at
20 those meetings, which perhaps you probably weren't
21 present at, is that the 1986 study was flawed. You
22 can have a study and that study can be wrong and not
23 be conclusive of what the actual problem is.
24 What's very difficult for all of us in

1 Lockbourne is if you have a, as Ms. Ward said, a
2 31-percent cancer rate, and if the average in
3 Franklin County is 3 percent -- and if I'm mistaken,
4 correct me in terms of what the average rate is in
5 the area -- versus what the rate is in Lockbourne; 31
6 percent versus 3 percent can't be explained away
7 easily, especially by what could very well have been
8 a flawed study back in 1986.
9 So I think that it's better what you
10 folks have been doing in terms of trying to look at
11 the situation, and not citing back to something from
12 1986, but rather looking in terms of what we do now
13 and what do we do in the future.
14 Now, I suppose what we're asking, if not
15 begging you to consider is that the high cancer rate
16 in the Village of Lockbourne is a significant issue,
17 and that the most logical explanation is that it's
18 coming from the things that are in the ground.
19 And part of the problem that we have is
20 that, and I think your soils analysis, though I'm not
21 a soils expert, is that this is -- the water is not
22 very deep and that this is very wet and spongy soil.
23 Clearly not the best place to put a dump in the first
24 place in terms of trying to encapsulate the dump.

1 It's really in a place where it all just kind of
2 spreads.
3 So if you're spreading all these toxins
4 from 1951 to 2011, now, how much they've spread and
5 how that happens, I think is more a look at the past,
6 instead of what's the best way to not have the
7 problem continue. And I think that's our real
8 concern is that -- I think you've approached this in
9 a very principled way and I think this is the best
10 information that we have to date.
11 And I think what we're saying is, given
12 the high rate of illness that can only be explained
13 by the dump, that the, you know, whatever more can be
14 done to prevent this from continuing as a problem for
15 the residents of Lockbourne, I think is very
16 important to us.
17 CARLA HECK: Well, you know, as I've said
18 before, when it comes to what we look at and how we
19 look at it, you know, we have very specific
20 guidelines that we can't physically get outside of.
21 I mean, it would be against the law for me to try to
22 do something that the law doesn't allow me to do. So
23 from that standpoint, I mean, we were able to look at
24 what we were able to look at.

1 And in no way, I'm sure, do any of us
2 mean to trivialize what is going on in your
3 community. My mother died of cancer and I've lost my
4 father, I've lost my sister, and I have an aunt and
5 an uncle that will die, this year, of cancer. It
6 hasn't been a few good years for my family.
7 But, you know, that being said, I don't
8 know enough about the entire history of the area to
9 be able to speak to it. But based on what we know
10 about this particular area now -- I mean, I'm not
11 saying in the years past of what could have possibly
12 contributed to ill effects on the community -- what
13 we know about that now is that shouldn't happen, that
14 shouldn't be a factor.
15 And just as an example, you know, there's
16 a constituent that's in the groundwater here, that's
17 also in the groundwater here, and it's physically
18 impossible for that constituent to have come from the
19 landfill. So there are other influences on this
20 water that did not come from this landfill. What
21 those are, I don't know, other than like, you know,
22 Colleen was indicating we have done a lot to
23 contaminate this country; it's just the nature of the
24 beast.

ARISTOTLE MATSA: Are you saying that the same amount of constituents that are in that area that you pointed to above the landfill, are pervasive in equal amounts in the entire county?

CARLA HECK: No, that -- that I have no idea. All I'm saying --

COLLEEN REILLY: Our study didn't go that extensive.

CARLA HECK: Right. All I know is that there is groundwater contamination here. There's a constituent that's in here, that's in here, but this one couldn't have come from here, it had to have come from some place else because this is upgradient. This is flowing this way. It's physically impossible for the constituents that are here to go here.

CHRISTIE WARD: But it still came from the base.

ARISTOTLE MATSA: Right.

CHRISTIE WARD: It still came from the base, regardless.

CARLA HECK: And that goes back to as far as the remedy for the landfill.

COLLEEN REILLY: Versus other sites on the base; it would be a different remedy addressing

1 those.

2 PAUL KENNEDY: Could you clarify that

3 statement that you did not conclude that that

4 constituent in AOC 2 came from Air Force activities.

5 Your statement is more about migration.

6 CARLA HECK: It did not come from the

7 landfill.

8 PAUL KENNEDY: Right.

9 CARLA HECK: I have no idea where it came

10 from.

11 PAUL KENNEDY: Right. I guess we just

12 want to make sure that -- we're not quite sure what

13 all you looked at when you were doing your study, and

14 that's what we're trying to understand, because there

15 may be factors that needed to be looked at that you

16 may not have looked at.

17 CARLA HECK: And there could be, you

18 know, and I hope that from a, you know, federal

19 employee, I'm not speaking out of turn and get myself

20 in trouble and I'm on the record as saying this, but,

21 you know, it could be that there are certain, you may

22 have to go through different venues to get some of

23 the answers that you want. I mean, we will do

24 whatever we can to help you, but we can only do what

1 we can do.
2 And that website, I mean, there's lots of
3 other information that's ancillary to this particular
4 project. I mean, what's going to be on that website
5 is for this project and it might have some other
6 studies that --
7 COLLEEN REILLY: Well, how landfills are
8 capped and why that works; that's on there.
9 CARLA HECK: Okay. From a national
10 perspective, there's probably a whole lot of
11 information out there, but if it's not specifically
12 tied to this, it may not be on there.
13 The bottom line is probably, before we do
14 a whole lot of things, we have to talk to our
15 lawyers, but that's just the nature of the beast.
16 But if we can direct you to any type of
17 reference materials and that type of thing -- I know
18 Diana feels the same way -- whatever information that
19 we can get you that you may not already know about
20 with regard to just what is local versus what is
21 technically appropriate for a landfill like this,
22 which is pretty much what our job is.
23 COLLEEN REILLY: I will point out one
24 other thing about this well. That well, the

1 concentrations of things that we did find that
2 actually do meet what they call "maximum contaminant
3 levels," MCLs -- minimum contaminant levels --
4 CARLA HECK: Maximum. It's confusing.
5 COLLEEN REILLY: Maximum contaminant
6 levels that the EPA sets forth in drinking water, and
7 I think what you were referring to also, Diana, was
8 even back in the '80s when they did, or '90s
9 actually, when they sampled some off-site residents'
10 wells, that they also met federal and state drinking
11 water standards.
12 So, you know, even though they're seeing
13 dioxins there, for example, they're actually at a
14 level that would be acceptable in drinking water.
15 That's the unfortunate reality of, again, our
16 industrialized society now.
17 But to the point of where is
18 contamination and where are the levels at, that was
19 what was found in the off-site well.
20 ARISTOTLE MATSA: Are those results on
21 your website, as well, for each of those wells?
22 COLLEEN REILLY: Yes.
23 So the report that will have all of that
24 specific data is the Remedial Investigation Report

1 and that's the compilation of all the studies that
2 were done between 1986 and into 2008. So if you look
3 for the Remedial Investigation Report --
4 CARLA HECK: Obviously, a report like
5 that is pretty dry reading, and I might want someone
6 to help me walk through it and her name might be
7 Cindy or it might be Colleen.
8 COLLEEN REILLY: Yes, sir.
9 SHANNON BUSH: We have to be -- EPA --
10 we're on the storm-water runoff. We have to have
11 monitoring on all the runoff everywhere. Isn't
12 Lockbourne part of the permit thing where they come
13 in and monitor your storm sewers?
14 You don't know?
15 Isn't that part of the EPA permit?
16 DIANA BYNUM: That would be the Division
17 of Surface Water in my office.
18 SHANNON BUSH: Storm-water levels?
19 DIANA BYNUM: Uh-huh.
20 SHANNON BUSH: If you go up to Ridge
21 Station, nobody should be drinking the water up
22 there. People got 55-gallon drums running into their
23 sewers, running into their water. You should have
24 these things monitored through the EPA. You should

1 have a permit.
2 COLLEEN REILLY: Any other questions,
3 comments?
4 (No response.)
5 COLLEEN REILLY: All right.
6 CARLA HECK: Tiffany, would you mind
7 pulling up the last item and -- actually, I can sit
8 there and type it in, rather than write my stuff down
9 on a bunch of -- I'm just going to put my name and
10 phone number and e-mail address up here, and that way
11 if anybody wants to get ahold of me, because I forgot
12 business cards.
13 ARISTOTLE MATSA: I think we'd all like
14 to thank the Army Corps of Engineers and the people
15 from CH2M Hill -- whoever came up with that name --
16 also, of course, the gentleman from the Port
17 Authority, and the Ohio EPA for coming as well. I
18 think we really appreciate the input and the
19 opportunity to provide input as well.
20 CARLA HECK: It's actually refreshing to
21 have this much interest. You'd be surprised at the
22 number of public meetings at places that are
23 controversial and have a lot of issues that you don't
24 get this kind of input. So we're very, very thankful

1 that you all came.
2 And feel free, again, I appreciate the
3 dialogue and the open exchange and we'll take what
4 you provided in writing and we'll send it --
5 CHRISTIE WARD: There's a couple
6 sentences on the page that didn't get printed out. I
7 didn't realize until I was --
8 COLLEEN REILLY: And what was recorded
9 here will become part of the official comments as
10 well. Okay.
11 (The public meeting concluded at 9:45
12 p.m.)
13 - - -
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1 CERTIFICATE

2 I do hereby certify that the foregoing is a
3 true and correct transcript of the proceedings taken
4 by me in this matter on Thursday, April 28, 2011, and
5 carefully compared with my original stenographic
6 notes.

7 _____
8 Carolyn M. Burke, Registered
Professional Reporter, and
Notary Public in and for the
9 State of Ohio.

10 My commission expires July 17, 2013.

11 - - -

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Exhibit 2

Statement: Aristotle R. Matsa, Village of Lockbourne, Solicitor/Attorney & Prosecutor

US Army Corps of Engineers
Louisville District

COLUMBUS, OHIO,
FORMER LOCKBOURNE AFB LANDFILL

PROPOSED PLAN

April 28, 2011

We appreciate your questions and comments concerning former Lockbourne Air Force Base Landfill.

Write your comments below, or send us a letter on your own stationery. Our mailing address is on the reverse side. Your comments must be received no later than May 21, 2011. Comment sheets can also be turned in prior to leaving the public meeting.

LETTER ATTACHED

Your signature

Please provide your name and address on the reverse.

Optional information

(so we can send you announcements in the future):

Name: A. R. MATSA

Address: 728 N. High Street, Suite 1000

Columbus,

City, State, ZIP: Ohio 43215

Business Phone # (614) 299-9111

Home Phone #

E-mail address:

fold here

Mailing Options:

1. Simply fold this sheet (or send us a letter on your organization's stationery), and mail to the address below (attach correct postage).

or

2. Leave with one of the attendants at the public meeting on Aug. 24.

fold here

Your complete return address:

STAPLE HERE

First-class postage required

TO: Mr. Brooks Evens
U.S. Army Corps of Engineers
CELRL-ED-E-E
P.O. Box 59
Louisville, KY 40201-0059

LAW OFFICE OF
ARISTOTLE R. MATSA
A LEGAL PROFESSIONAL ASSOCIATION

728 NORTH HIGH STREET, SUITE 1000, COLUMBUS, OHIO 43215 TELEPHONE (614) 299-9111

April 28, 2011

Mr. Andrew Brooks Evens
U.S. Army Corps of Engineers,
Louisville District CELRL-ED-E-E
P.O. Box 59
Louisville, KY 40201-0059

Re: Village of Lockbourne, Franklin County, Ohio
Comments regarding:
Final Proposed Plan, Former Lockbourne Air Force Base, Landfill, FUDS Property: G05 OH0007, Prepared for U.S. Army Corps of Engineers, Louisville District, Contract No. W91236-07-D-0012, Delivery Order No. CY01

Dear Mr. Evens:

For decades the residents of the Village of Lockbourne, Franklin County, Ohio (the Village) have complained to their Federal, and State authorities that the "Dump" and "Ditch" (the Dump) at the Lockbourne Air Force Base (the Base) was poisoning and killing them and their families.

For decades the Government and its representatives have assured the residents of the Village of Lockbourne that there was no danger, that there were no health concerns, and that their friends and relatives were not suffering, or slowly dying off because of what had been buried in the Dump at the Base.

The Government's latest revelations have proven that those complaints of the dead and dying of the Village were accurate and well founded. I am humbled by the task of attempting to be the voice for those who have passed and for those who continue to be harmed by the Government's actions and inactions.

The summary facts are as follows:

(1) For decades the Government buried substances that are deadly to humans next to and up stream from the Village. These buried poisons have been and continue to harm and kill the men, women, and children of the Village.

(2) The Village cancer rates have been staggeringly higher than they would have been but for the Dump and the Ditch.

(3) Village residents have a right to use and drink the water beneath their homes. It is essential to their survival that they use it to water and grow food in their gardens. The Government acknowledges that Village residents still use the water from their wells and thus has to know that Village residents are continuously being exposed to harmful toxins in their food and water.

(4) The Government must now acknowledge that this is an ongoing and continuous taking of the Village residents' property rights, health and their lives without compensation, due process nor equal protection.

The proof of the Village residents is in the Government's own report. It states in pertinent part:

> "As a result of these investigations, contaminants including, but not limited to, **polynuclear aromatic hydrocarbons** (PAHs), **polychlorinated biphenyls (PCBs), dioxins/furans**, and metals were detected in soil, surface water, sediment, and groundwater on **or near** the landfill."
>
> "Geologically, the site is underlain by silty clay from the ground surface to depths ranging from approximately 55 feet to more than 80 feet below ground surface (bgs). Sand and gravel deposits occur below the silty clay, followed by a clay unit at a depth of approximately 130 feet bgs, and then bedrock at 200 feet bgs. Groundwater beneath the site is generally present in three distinct water-bearing zones or layers, the first, the **upper water-bearing zone** (UWBZ), occurs at depths ranging from 0 to 50 feet bgs. Within this zone, a shallow water table has been observed from approximately 4 to 16 feet bgs. Within the UWBZ, groundwater flows west and southwest in interbedded sand lenses within the primarily silty clay unit. The second zone, the intermediate depth aquifer (IDA) occurs at depths from approximately 50 to 130 feet bgs. The third zone, the **deep aquifer**, occurs at a depth of approximately 130 to 200 feet bgs; however, it can occur at shallower depths in areas of the county where bedrock is closer to the ground surface. The shallow zones generally do not produce much water;

therefore, the deep aquifer is the zone typically used as a ground water source in the county."

"Groundwater at the former Lockbourne AFB landfill is not used for drinking water. The village [*sic*] of Lockbourne receives drinking water from the Columbus municipal water system. The city of Columbus uses surface water from the Scioto River, Big Walnut Creek, and Hoover and Alum Creek reservoirs for its supply, along with groundwater from the south wellfield area in southeast Franklin County. The south wellfield area is approximately **4 miles from the site. Several residents in Lockbourne obtain drinking water from private wells;** however, the majority of residents are connected to the municipal water system. Seeps have been inconsistently observed along the western boundary of the site during the investigations.

At AOC 1, PAHs, PCBs, dioxins/furans, and metals (including lead, silver, and thallium) were detected in surface soil samples **above human health screening levels** established by USEPA. PAHs, PCBs, dioxins/furans, and metals (including aluminum, mercury, and thallium) were detected in subsurface soil samples **above human health screening levels.** Surface soil samples were collected from 0 to 1 foot bgs, and subsurface soil samples were collected from 1 to 10 feet bgs. PAHs, bis(2-ehthylhexyl)phthalate, dioxin/furans, and metals (including aluminum, arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, thallium, and vanadium) **were detected above their respective screening levels in groundwater.**

Bis(2-ehthylhexyl)phthalate, [*sic*] dioxins/furans, and metals (including arsenic, lead, and thallium) **were detected above their respective screening levels in surface water collected from the East and/or West Ditches.** In sediment, PAHs and metals (including aluminum, arsenic, cobalt, iron, manganese, and thallium) **were detected above their respective screening levels.**

At AOC 2, PAHs, dioxins/furans, and metals (including cobalt, manganese, and thallium) were detected **above their respective screening levels** in surface soil samples. One metal (arsenic) **exceeded its screening level in subsurface soil.** PAHs, dioxins/furans, and metals (including aluminum, arsenic, cobalt, iron, lead, manganese, nickel, and vanadium) **were detected above their respective screening levels in groundwater.** Two **volatile organic compounds** (VOCs) (methylene chloride and trans-1,3-dichloropropene) and naphthalene were detected in soil **above their respective screening levels for protection of indoor air."**

The report at, 5.1.1 AOC 1, states:

"At AOC 1, the HHRA determined that under current land use conditions, **surface soil may pose an unacceptable cancer risk** (risk greater than 1×10^{-4}) to maintenance workers and youth trespasser/visitors from PAHs and PCBs. Under future land use conditions, risks from surface soil to maintenance workers and youth trespasser/visitors from PAHs and PCBs are the same as that under

> current land use conditions. Total soil (that is, both surface and subsurface soil) **also poses an unacceptable cancer risk** (risk greater than 10_{-4}) to construction workers from PAHs and PCBs. Exposure to lead in site soil may result in **unacceptable risk to children.**
>
> **Future use of groundwater may also pose an unacceptable cancer risk to offsite residents,** primarily because of PAHs and dioxins/furans, and to a lesser extent from metals and bis(2- ethylhexyl)phthalate. **Future exposure to groundwater may pose an unacceptable noncancer risk** (HI greater than 1) for future construction workers from dioxins/furans. **Future use of groundwater may also pose an unacceptable noncancer risk to offsite residents from, dioxins/furans, PAHs, and metals (including arsenic, iron, lead, manganese, and thallium)."**[1]

Emphasis supplied.

Congratulations to the Government for finally disclosing the risks to the public, albeit approximately sixty (60) years after the Village started voicing its concerns and complaints that the Dump and Ditch was and is continually killing them. Unfortunately, the Government's solution, covering the problem area with soil at a cost of approximately 13 million dollars or with clay for approximately 15 million dollars will not solve the poisoning of the Village and its residents.

Logic dictates that pollution of the ground water, next to the Village and only four (4) miles from where it is used by the City of Columbus for drinking water of all Franklin County Residents including the Village's municipal water, is continuously affecting and polluting all of that drinking water as well.

The Village is better poised, with a transfer of economic support from the Federal Government, the polluter of this Dump site, to fully solve the problem. The Village estimates that it can, over time, fully implement its proposed solution, as to items 1 and 2 below, with the same amount of money that the Government proposes to spend on a solution which will not solve the problem. The difference being that the Village, at the local level, will avoid the waste associated with big government contractual spending. The Government is urged to consider economically addressing items 3 and 4 below. The Village has a vested goal to effectuate a real and complete solution and a proven track record of efficiently administering its projects properly and within budget.

---

[1] Quotations are from the, Final Proposed Plan, Former Lockbourne Air Force Base, Landfill, FUDS Property: G05 OH0007, Prepared for U.S. Army Corps of Engineers, Louisville District, Contract No. W91236-07-D-0012, Delivery Order No. CY01 April 2011, Prepared by, CH2MHILL.

Now as to the solution.

(1) It should be obvious that the toxic dumped materials which are in trenches no more than ten (10) feet below the surface should be removed and relocated to a location where they will no longer pollute the Village's ground and subsurface water; and, thus cease the slow death on the Village residents;

(2) The Village residents should receive free water and sewer service for so long as they are precluded from safely using their ground and subsurface water;

(3) The Village residents should be compensated for their costs to date including but not limited to the costs associated with the installation and maintenance of their water and sewer system; and, their purchases from this system; and,

(4) The Village residents should be compensated for the effect on their health, deaths of their loved ones, and their lost quality of life.

Very truly yours,
Law Office of Aristotle R. Matsa
By: Dictated but not read. /es[1]/ A. R. Matsa
Village Solicitor / Attorney
and Prosecutor Village of Lockbourne

ARM:sk

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[1] [Electronic signature.]€

Exhibit 3

Comment Letter: Judy Campbell, Resident

US Army Corps of Engineers
Louisville District

COLUMBUS, OHIO,
FORMER LOCKBOURNE AFB LANDFILL

PROPOSED PLAN

April 28, 2011

We appreciate your questions and comments concerning former Lockbourne Air Force Base Landfill.

Write your comments below, or send us a letter on your own stationery. Our mailing address is on the reverse side. Your comments must be received no later than May 21, 2011. Comment sheets can also be turned in prior to leaving the public meeting.

Much of the Soil in our area has been Contaminato with Old Chemicals used by farmers, etc. with the flood of 1959 and subsiquent excessive rainfalls, causing Stream Creeks and river water to spill out of their banks.

When a gasoline stations tanks are found to be leaking or a gasoline station is torn down so land can be used for another purpose All the Surronding Soil is totally removed to prevent any Contamination* Why is this dumping any different from that situation. When asbestos is found to be present in a building demolition, everything stops, specialist are called in and all the asbestos must be removed before the demolition can continue.* Why is this contamination being so casually being done? Please do ~~a~~ Considerate-erable more testing before you make the desion on how best to contain any contamination known or unknow that may be in the L.A.F.B. Dump.

M. Judy Campbell
Your signature

Please provide your name and address on the reverse.

Optional information

(so we can send you announcements in the future):

Name: M. Judy Campbell

Address: 853 E. London-Groveport Rd

City, State, ZIP: Lockbourne, Ohio 43137

~~Business~~ Cell Phone # 614-563-9876

Home Phone # 614-491-1194

E-mail address: _____

Mailing Options:

1. **Simply fold this sheet (or send us a letter on your organization's stationery), and mail to the address below (attach correct postage).**

   or

2. **Leave with one of the attendants at the public meeting on Aug. 24.**

fold here

Your complete return address:

Judy Campbell
853 London Groveport Rd
Lockbourne OH 43137-9220

USA FIRST-CLASS FOREVER

TO: **Mr. Brooks Evens**
U.S. Army Corps of Engineers
CELRL-ED-E-E
P.O. Box 59
Louisville, KY 40201-0059

Exhibit 4

Statement: Christie Ward, Village of Lockbourne Council Member

Statement of Village of Lockbourne Council Member, Christie Ward on:

Former Lockbourne Air Force Base Landfill Proposed Plan
Public Meeting: April 28, 2011 @ 7:30 p.m.
Hamilton Twp Community Center

I am disappointed in the lack of collaboration with the Village. It is unacceptable that we were not consulted or informed on the activities of the landfill assessment.

Section 2: Site Background, on page two of your final report, indicates that "from 1951 – 1979 the AFB Landfill was used to dispose of wastes from the former Lockbourne AFB. The types of waste included general trash from base housing & administrative buildings, construction & demolition debris and lime sludge from base water treatment plant.

Historical documents suggest the landfill may also have received pesticides and herbicides, ammunition, airplane parts and hazardous materials. Wastes reportedly were buried in trenches, up to approx 10 feet deep and dispersed on the ground surface.

As a result of these investigations, contaminants include, but not limited to, polynuclear aromatic hydrocarbons, polychlorinated biphenyls, dioxins/furans and metals were detected in soil, surface water, sediment and groundwater on or near the landfill." Your own assessments give us real reasons to be concerned.

The proposed solutions of covering the landfill with soil or clay are not only inadequate, but irresponsible and do not address the long term effects on the environment, wildlife or human health of the residents of Lockbourne, as well as Franklin & Pickaway Counties.

Your recommendations still leave us with a hazardous dumpsite and the contaminants will to continue to seep into the soil and groundwater, ultimately end up in the drinking water of Franklin & Pickaway County households and remain a substantial threat to our lives.

The residents of Lockbourne have felt the effects of the contaminants in the landfill for the past 60 years. We continue to have a high stake in the decisions others will make in the future of the landfill. We formally request to be included in the decision process, as well as the implementation of a viable solution.

All your studies document the hazardous waste dumped in our community and the continued negative impact on human, aquatic, wild & plant life. The bottom line is that today, 60 years later, Lockbourne, Franklin County & Pickaway County residents continue to live with the risks of these hazardous materials, with no clear solution in sight.

Exhibit 5

Comment letter: Christie Ward, Village of Lockbourne Council Member

From: Christie Ward <caward9960@yahoo.com>
To: Evens, Andrew B LRL
Cc: Ralph Coon <Coonrsc@aol.com>; Dan Tufts <dtufts@copper.net>;
Rick Matsa <lawyers2@yahoo.com>
Sent: Sat May 21 13:23:34 2011
Subject: Former Lockbourne AFB Landfill Comment

Dear Brooks Evens,

Thank you for the opportunity to submit a comment on the Former Lockbourne AFB Landfill for the record. Please see my statement below:

After reviewing the transcripts of the Public Meeting, held on April 28, 2011, at the Hamilton Township Community Center, it is apparent that the assessment of the Former Lockbourne Air Force Base Landfill is flawed.

Even your own staff has admitted that there are a number of factors in the study that are still unknown. See excerpts from the transcript of the Public Meeting below.

PAUL KENNEDY: Could you clarify that statement that you did not conclude that that constituent in AOC 2 came from Air Force activities. Your statement is more about migration.

CARLA HECK: It did not come from the landfill.

PAUL KENNEDY: Right.

CARLA HECK: I have no idea where it came from.

PAUL KENNEDY: Right. I guess we just want to make sure that -- we're not quite sure what all you looked at when you were doing your study, and that's what we're trying to understand, because there may be factors that needed to be looked at that you may not have looked at.

I am appalled that a Proposed Plan has been finalized without further analysis, given the fact that the US Army Corp of Engineers doesn't even know the source. I strongly recommend that you stop progress towards your proposed solution and evaluate what you have missed.

Although Lockbourne's residents are directly impacted by the dump, we were not informed of any activity relevant to the landfill. We want that to change and formally request that we be a participant in any future activity.

Exhibit 6

Village of Lockbourne Ordinance Number 19-011 Regarding the Final Proposed Plan as to the Former Lockbourne Air Force Base Landfill/Dump and Declaring an Emergency

FACSIMILE / E-MAIL TRANSMISSION COVER SHEET
PERSONAL AND CONFIDENTIAL

May 18, 2011

Please deliver the following to:

Mr. Andrew Brooks Evens
U.S. Army Corps of Engineers,
Louisville District CELRL-ED-E-E
P.O. Box 59
Louisville, KY 40201-0059

Re: Village of Lockbourne, Franklin County, Ohio
Comments regarding:
Final Proposed Plan, Former Lockbourne Air Force Base, Landfill, FUDS Property: G05 OH0007, Prepared for U.S. Army Corps of Engineers, Louisville District, Contract No. W91236-07-D-0012, Delivery Order No. CY01

Dear Mr. Evens:

Per your request, attached please find Ordinance 19-2011 of the Village of Lockbourne to be included as comment / input of the Village of Lockbourne, Ohio regarding the above matter. Any response should be directed directly to the Mayor of the Village of Lockbourne.

Thank you for your continuing assistance as regards this matter. Please advise as to any additional information which would be assistance to you in your deliberations.

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Please note that all individuals and/or entities associated herewith do not provide any counseling, advise, guidance and / or other information as to tax related matters or advise. Regarding, IRS CIRCULAR 230 DISCLOSURE, and disclosure generally, please note that in order to ensure compliance with any requirements imposed by the U.S. Internal Revenue Service, you are informed that we do not provide any federal, state or local tax advise and that anything, though not intended, that might be construed as federal, state or local tax advice contained in this communication (including any attachments and/or references thereto) is not intended or written to be used, and it cannot be used for any purpose including but not limited to the purpose of (i) avoiding penalties that may be imposed under the U.S. Internal Revenue Code or (ii) promoting, marketing, or recommending to another person, any transaction or other matter whatsoever whether or not addressed herein, either directly or indirectly.

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ORDINANCE NO.: 19-2011

ORDINANCE REGARDING THE FINAL PROPOSED PLAN AS TO THE FORMER LOCKBOURNE AIR FORCE BASE LANDFILL / DUMP AND DECLARING AN EMERGENCY

WHEREAS, the citizens of the Village of Lockbourne, Ohio have attended various meeting(s) and the Council of the Village of Lockbourne, Ohio has conducted a public meeting for the purpose of obtaining citizen input, public comment and discussion as to the 'Final Proposed Plan, Former Lockbourne Air Force Base, Landfill, FUDS Property: G05 OH0007, as prepared for U.S. Army Corps of Engineers, Louisville District, Contract No. W91236-07-D-0012, Delivery Order No. CY01';

WHEREAS, there was discussion held regarding the Lockbourne Air Force Base Landfill / "Dump" where for at least 28 years the Government, by their / its own admission buried hazardous substances of all types in this landfill, and now after decades wants to cover the problem area with a soil or clay cap;

WHEREAS, there was great distress among the attendees as to the problem and the proposed solution as the Village of Lockbourne is adjacent to this landfill. Since there has been an extremely high incidence of cancer and other health problems in Lockbourne[1], many suggestions were discussed; and,

WHEREAS, the Council of the Village of Lockbourne, Ohio has found and determined that it is in the best interest of the Village to contact the U.S. Army Corps of Engineers, Mr. Andrew Brooks Evens, and convey to them / him that the only acceptable solution is to physically remove all contents in the landfill. This being in the best interests of the health, safety and general welfare of the citizens of the Village of Lockbourne, the Council has determined to enact such legislation at the earliest possible time as such is clearly in the interest of the general welfare of the citizens, residents, and public;

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE VILLAGE OF LOCKBOURNE, OHIO:

Section 1: That the Village of Lockbourne, Ohio contact the U.S. Army Corps of Engineers, Mr. Andrew Brooks Evens, and convey to them / him that the only acceptable solution as regards the former Lockbourne Air Force Base, Landfill (FUDS Property: G05 OH0007) is to physically remove all contents in the landfill as this is in the best interests of the health, safety and general welfare of the citizens of the Village of Lockbourne and the public at large. The Mayor and Clerk / Treasurer are hereby authorized, to do all things necessary to effectuate the intent of this legislation; and, the Mayor and Clerk / Treasurer are authorized to execute any writings necessary and/or appurtenant thereto;

Section 2: This council finds and determines that all formal actions of this Council concerning and relating to the adoption of this ordinance were taken in an open meeting of this Council and that all deliberations of this Council and of any of its committees that resulted in those formal actions were in meetings open to the public in compliance with the law; and,

Section 3: That for the reasons stated in the preamble hereto, which are made a part hereof, this Ordinance is hereby declared to be an emergency measure and should take effect and be in force from and after the earliest period allowed by law.

Ralph S. Coon, Mayor

PASSED: May 12, 2011

ATTEST:

E. Jane McJunkin, Clerk

I, E. Jane McJunkin, Clerk/Treasurer of the Village of Lockbourne do hereby certify that the foregoing Ordinance was duly published by posting copies thereof at five of the most public places as determined by the Council of the Said Village by Ordinance, each for a period of fifteen days. I do further certify that there is no newspaper published in the Said Village.

E. Jane McJunkin
Clerk/Treasurer

[1] This is not an exhaustive list of concerns. It should be noted that the Government's report indicates that sources of countywide municipal water are only four miles from the dump. Thus the negative effects of not physically removing all of the contents of this dump now will, as the toxins continue to pollute the water, continue to affect the health of countless citizens area wide well beyond the boundaries of the Village for generations to come.

Exhibit 7

Letter of Protest Against Proposed Remedies for Former Lockbourne AFB Hazmat Dump Site Clean Up

FACSIMILE / E-MAIL TRANSMISSION COVER SHEET
PERSONAL AND CONFIDENTIAL

May 20, 2011

Please deliver the following to:

Mr. Andrew Brooks Evens
U.S. Army Corps of Engineers,
Louisville District CELRL-ED-E-E
P.O. Box 59
Louisville, KY 40201-0059

Re: Village of Lockbourne, Franklin County, Ohio
Comments regarding:
Final Proposed Plan, Former Lockbourne Air Force Base, Landfill, FUDS Property: G05 OH0007, Prepared for U.S. Army Corps of Engineers, Louisville District, Contract No. W91236-07-D-0012, Delivery Order No. CY01

Dear Mr. Evens:

Attached / following please find additional comment letter(s) to be included regarding the above. Please note that this is an ongoing process and that the Village and its citizens reserve the right to supplement as needed. You should consider the attached a sample representative of the continuing public protest.

Thank you for your continuing assistance as regards this matter. Please advise as to any additional information which would be assistance to you in your deliberations.

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Please note that all individuals and/or entities associated herewith do not provide any counseling, advise, guidance and / or other information as to tax related matters or advise Regarding, IRS CIRCULAR 230 DISCLOSURE, and disclosure generally, please note that in order to ensure compliance with any requirements imposed by the U.S. Internal Revenue Service, you are informed that we do not provide any federal, state or local tax advise and that anything, though not intended, that might be construed as federal, state or local tax advice contained in this communication (including any attachments and/or references thereto) is not intended or written to be used, and it cannot be used for any purpose including but not limited to the purpose of (i) avoiding penalties that may be imposed under the U.S. Internal Revenue Code or (ii) promoting, marketing, or recommending to another person, any transaction or other matter whatsoever whether or not addressed herein, either directly or indirectly

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"LETTER OF PROTEST AGAINST PROPOSED REMEDIES FOR FORMER LOCKBOURNE AFB HAZMAT DUMP SITE CLEAN UP"

To the United States Army Corp of Engineers:

We, the undersigned, by affixing our signature, do hereby wish to protest the manner in which the US Army Corp of Engineers (USACE) proposes to remedy the toxic conditions of the former Lockbourne Air Force Base "Hazardous Waste Dumpsite". We contend that the only acceptable solution is to dig it all up and haul it away to be disposed of in the proper manner. It has for years, and remains today, a threat to the health and welfare of the residents of the Village of Lockbourne Ohio, the City of Columbus, and surrounding neighbors in both Franklin and Pickway counties.

Per USACE studies compiled for the "site", it exceeds acceptable limits for the safety of both human and animal life. While we are happy that the US Government acknowledges that there is a threat, and that something should be done to remove said threat, we do not feel that spending 12 to 15 million dollars of taxpayer money to simply apply a "Band-Aid" fix will make it go away. "Did it up, move it away."

NAME	ADDRESS	PHONE OR E-MAIL
1. Virginia Lozier	56 Williams St.	(614) 390-0610
2. Margaret Lozier	116 Commerce St	614 409-9026
3. Charlotte Sewell	116 Commerce St.	614-[illegible]
4. Crystal Crabtree	207 Comm St	614-409-32
5. Brian Lozier	141 Commerce St	614 376 3747
6. Danielle Calissie	141 Commerce St	614-756-7758
7. Arthur W Conn	135 Commerce St	614 402-0586
8. [illegible]	131 Commerce St	
9. Lucille Dildine	71 Landis St	Lockbourne Ohio 43137 554 6591
10. Alita Kay Chandler	72 Commerce	Lockbourne Ohio 43137
11. Dorwin E Dildine	71 Landis St	Lockbourne Ohio 43137
12. Ray Armentrout	70 Landis St.	Lockbourne oh 43137
13. Tony Armentrout	1 Decker st	lockBourne oh 43137
14. [illegible]	964 Breathitt Ave	
	69 Landis st	Lockborne oH 43137

15. Lyle White 69 Landis St. Lockbourne OH 43137
16. [illegible] 69 Landis St Lockbourne OH 43137
17. Ralph S Coon 55 Landis ST Lockbourne Oh 43137
18. Emily J. Coon 55 Landis St. Lockbourne Oh. 43137
19. Jim Merrick Louis Merrick 38 Lozier Ln Lockbourne OH.
20. [illegible] 30 Lozier Ln. 614-497-2661 Lockbourne OH
21. Connie Jutte 30 Lozie Ln. 614-497-2661
22. Joyce Ward 26 Lozier Ln
23. Aaron Cheadle 32 Landis
24. Dawn Cheadle 32 Landis St. Lockbourne OH 43137
25. [illegible] 59 Landis St Lockbourne Oh. 4313
26. Laura Kirk 54 Landis St. Lockbourne, OH 43137
27. Brian T. Kirk jr. 54 Landis St. Lockbourne, OH 43137
28. Joel C. McFarland 37 Commerce
29. Jason A. Walker 31 Commerce St.
30. Fred Walker 31 Commerce St Lockbourne, Ohio 43137
31. Mick Cline Cline's corner
32. Charles R Vaughn 115 commerce st Lockbourne Ohio 43137
33. Odis Marlowe 50 COMMERCE
34. Christie McKinney 54 Commerce St
35. Lonnie Stevens 54 commerce St.
36. Dina Haven
37. Nichole Sunshine

38. Martin Hafey Martin Hafey 863 Kingland Dr Columbus, Ohio 43207 614-491-3271
39. Peggy Hafey, Peggy Hafey 863 Kingland Dr Col. Ohio 43207 614-491-3271
40. Roland Cox 120 Commerce 43137
41. Eric Fern 131 Commerce St. 614-554-6698
42. Willie Moore 178 Commerce St 491-1079
43. Juanita Moore 178 Commerce St 491-1079
44. Christie Ward 26 Lozier Lane Lockbourne 491-3316
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Exhibit 8

Comment Letter: Daniel C. Tufts, Resident

From: Evens, Andrew B LRL
Sent: Friday, May 20, 2011 4:33 PM
To: Ries, Cynthia A LRL; 'Tiffany.SwovelandChapman@CH2M.com'; 'Colleen.Reilly@CH2M.com'; Heck, Carla M LRL
Subject: FW: Former Lockbourne AFB "Hazardous Waste Dump"
Attachments: Incomplete List of Onetime Residents Who Have.doc

Another comment

Andrew Brooks Evens
USACE Louisville District
502-315-6335
502-315-6309 fax

Comments on our Environmental Services are invited:
http://ice.disa.mil/index.cfm?fa=card&site_id=915&service_provider_id=115446

-----Original Message-----
From: Dan Tufts [mailto:dtufts@copper.net]
Sent: Friday, May 20, 2011 3:52 PM
To: Evens, Andrew B LRL
Subject: Former Lockbourne AFB "Hazardous Waste Dump"

Dear Mr. Evens,

As a life long resident, former council member, and concerned citizen, I am glad to finally see someone interested in our cause.
On behalf of myself, my family, and all the residents of the Village of Lockbourne Ohio, both past and present, I would like to thank the USACE for the excellent report that they have generated detailing what their investigation uncovered with regards as to what substances were found to have been buried in the former Lockbourne AFB dumpsite. I feel that you have given us the first honest detailed analysis of this “Toxic Cocktail” that has been brewing in our backyard for the last 60 years. During that time span there has been a constant outcry from the community about what we feel is an inordinately high cancer rate in and around the Village. These past protests seem to have fallen on deaf ears. I pray that those you are hearing now do not suffer the same fate.

For many years now, the residents have felt that there were sinister, hazardous, contaminants leaking from the dump that were contaminating both the water supply and the surrounding land mass of the dumpsite. It has been our contention that this toxic waste was then ingested by village residents through the “poisoned” well water and/or direct contact with water, air, or material from the site. While there are a very limited number of individuals in the village today who still have a private water supply, it was just a few short years ago that everyone in the area used either a dug or drilled well. We argue that this is the cause of the unproportionately high percentage rate of cancer to former and present residents. I am attaching an incomplete list of those individuals who have at some time lived in or around Lockbourne, and have died or now are living with some form of cancer. This list was compiled by surveyors as they collected names on a petition of protest to proposed remedial action on the dumpsite. I can not swear that it is 100% accurate,

but is to the best of my knowledge true as listed.

While the study from USACE readily admits that the government caused the pollution, and that they are indeed responsible for it's cleanup, it proposes to do so in a manner that we feel is "unacceptable". We maintain that since your favored alternative for cleanup is to dig up and consolidate contaminants to a centralized onsite location, why not physically remove it from the site since you would have already disturbed it anyway. Moving it away, not around, is he only way to fully eliminate the danger that it has, and continues to pose today.

The public meeting that was held April 28, 2011 to get input from the community was ridiculous Those supposed experts who lead the meeting were either covering up something, or were so ill informed about the issue, that they admitted that they were confused themselves and simply rambling on. For instance. the statement was made that contaminants found outside the AOC were deemed to be coming from a source "upstream" from the base. Yet they could not, or would not, identify the source. We were told that we would have to seek other sources for that information. If they know that the Base Dump is being labeled as the contaminating source, and they say that it comes from somewhere else, why did they not seek out and identify that source? They were evasive and simply glossed over and brushed aside some questions or statements.

Obviously, I can not address all the issues of concern in this e-mail, but I urge you to include those parties of concern most affected, namely the citizens and Village officials of Lockbourne, in your decision making process as to the "Cleanup" of the dumpsite. I feel that at this point in time that has not happened. The investigation process has been ongoing since 1986 and we have not been kept in the loop. Now would be a good time to mend fences. Let us work together for the good of Lockbourne, the City of Columbus, and Rickenbacker Port Authority.

Respectfully Yours,

Daniel C. Tufts
30 Lozier Ln.
Lockbourne, Oh 43137

Incomplete List of Onetime Residents Who Have / Had Cancer **(* Indicates Deceased)**

1. **Nancy Bethel** *
2. **Tim Tufts** *
3. **Faith Ann Dick** *
4. **Ruth Hart** *
5. **Bill Day** *
6. **Beatrice Bethel** *
7. **Steve Clay**
8. **Anna Lozier** *
9. **Melvin Lozier** *
10. **Margaret Lozier**
11. **Gladys Cremeans**
12. **Betty McCumber** *
13. **Blanche Vaughn** *
14. **John Christian Sr.** *
15. **Ruth Echard** *
16. **Jerry Echard** *
17. **Ferne Bedard** *
18. **Robert Bedard** *
19. **Earl Cummins** *
20. **Sean Howell**
21. **Evan Vaughn** *
22. **Ray Kuhlwein** *
23. **Bonnie Warning** *
24. **Ben Warning** *
25. **Jerry Tufts** *
26. **Leona Bailey** *
27. **Jack Weaver**
28. **Gene Crouse** *
29. **Tom Crouse**
30. **Art Crouse**
31. **Susie Coon** *
32. **Joann Hayes** *
33. **Fred Cheadle** *
34. **Nancy Raines**
35. **Jane Hammond** *
36. **Les Hunter** *
37. **Brad Tufts** *
38. **Bob Brown** *
39. **Virgil McCumas** *
40. **Rob Bobst** *
41. **Jack Meadows**
42. **Bob Bethel** *
43. **Charlotte Jewell**
44. **John Stevens**

45. Darwin Dildine
46. Patricia Kocher *
47. John McCumber *
48. Clarence Ward *
49. Ken Caldwell *
50. Cathy Needham
51. Barry Halcrow
52. Don Haffey
53. Dan Tufts
54. Archie Mills
55. Dixie Christian *
56. Virgie Farmer *
57. Bob Farmer *
58. Betty Farmer *
59. Ronald Reese
60. Pete Tufts