



U.S. DEPARTMENT OF
ENERGY

Legacy
Management



Fernald
Preserve

Community Meeting

October 13, 2010

8792

The Office of Legacy Management's community meeting was held on October 13, 2010, at the Fernald Preserve Visitors Center. The 40 people who attended the meeting received an update on site maintenance and Visitors Center use.



Agenda

- **Nature Nook**
- **Health and Safety**
- **Fernald updates**
- **Site operations**
- **Visitors Center**
- **Six-month look-ahead**

Agenda for the first part of the community meeting.



Nature Nook

Black-necked Stilt

(Himantopus mexicanus)

- Spotted at the site this spring
- Rarely seen east of the Mississippi River
- Visits shallow pools and feeds on small fish



8792.03 10/10

A regular feature of the community meeting is the Nature Nook, which highlights flora and fauna at the Fernald Preserve.



Fernald Preserve

Legacy Management Mission



Manage DOE's post-closure responsibilities and ensure the protection of human health and the environment.



Worker Health and Safety

OSHA Recordables (yearly)

| DOE Complex | LM | Industry |
|-------------|-----|----------|
| 1.4 | 0.6 | 4.2 |

Fernald Preserve (quarterly)

| Lost time | First aid | Recordables |
|-----------|-----------|-------------|
| 0 | 1 | 0 |

Safety at the Fernald Preserve—and across the Office of Legacy Management complex—continues to surpass industry standards.



Aquifer

- **Groundwater pumping rate for 2010 to date is 102 percent of design**
- **Continue treating groundwater as necessary to meet discharge limits**
- **Shut down pumping for 30 days (May–June)**
- **Continue pump-and-treat operations as necessary to meet regulatory commitments**



8792.06 10/10

The aquifer cleanup, which involves pumping water from the aquifer and treating it, is progressing as planned. Groundwater modeling predicts that the aquifer cleanup will be completed in 2026. Since treatment began in 1993, approximately 28.9 billion gallons of groundwater have been pumped from the aquifer.



Ecological Restoration

- **Ecological monitoring of wetlands**
- **Vegetation monitoring of prairies**
- **Erosion repair and reseedling activities**



8792.07 10/10

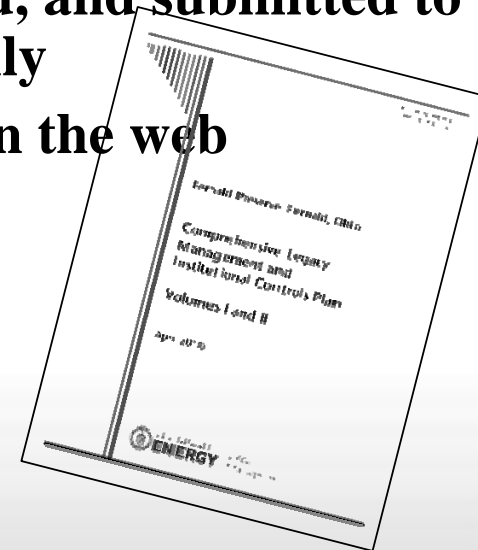
Work includes monitoring mitigation wetlands and seed prairies. Several erosion repair and reseedling projects were completed in September. Other activities include conducting prescribed burns to manage prairies and applying herbicide to control noxious weeds.



LMICP

Legacy Management and Institutional Controls Plan, Revision 4

- **LMICP is a two-volume document**
Volume I: Management details for the site
Volume II: Required under CERCLA remediation and is a legally enforceable document
- **LMICP is reviewed, revised, and submitted to the regulatory agencies annually**
- **Available and searchable on the web**



The *Legacy Management and Institutional Controls Plan* was developed to document the requirements for the Fernald Preserve's long-term care. It has been issued every year.



Sampling

2010

- **OSDF leak detection monitoring at 42 locations**
- **Groundwater sampling at 140 monitoring**
- **Surface water sampling at 21 locations**
- **Treated effluent sample at one location**
- **Direct radiation monitoring at 11 locations**
- **Continuing approved semi-annual, quarterly, and daily sampling**

8792.09 10/10

Routine environmental monitoring is conducted to ensure the continued effectiveness of the site's cleanup. The current monitoring regimen includes sampling groundwater, surface water, treated effluent, and direct radiation.



CERCLA Five-Year Review

- **Documents site remedial actions for five Operable Units since August 2006**
- **Required by the Comprehensive Environmental Response, Compensation, and Liability Act**
- **Review required for sites that implement remedial actions resulting in hazardous substance, pollutants, or contaminants remaining at the site above levels for unlimited use and unrestricted expose**

8792.10 10/10

The Comprehensive Environmental Response, Compensation, and Liability Act requires a five-year review. The public will be able to access the results of the five-year review when they become available later in 2010.



CERCLA Five-Year Review

- **Report due to EPA April 1, 2011**
- **DOE-LM is the lead agency conducting the review**
- **Five-Year Review process**
 - **Community notification**
 - **Community involvement**
 - **Document review**
 - **Data review and analysis**
 - **Site Inspections**
 - **Interviews (i.e. questionnaires)**
 - **Assess protectiveness**
- **Webpage at www.LM.doe.gov supporting the review process**

8792.11 10/10

The Comprehensive Environmental Response, Compensation, and Liability Act five-year reviews determine whether the remedy at a site is, or upon completion will be, protective of human health and the environment.



CERCLA Five-Year Review



Reprinted from EPA Five-Year Review Process in the Superfund Program

8792.12 10/10

The results of the Comprehensive Environmental Response, Compensation, and Liability Act five-year review will be available to the public.



Prescribed Burns

Fall activities



8792.13 10/10

Several additional areas are scheduled for prescribed burns in the fall of 2010.



Renewable Energy



8792.14 10/10

A new exhibit in the Fernald Preserve Visitors Center lobby is an interactive display describing renewable energy projects at DOE sites throughout the United States.



Visitors Center



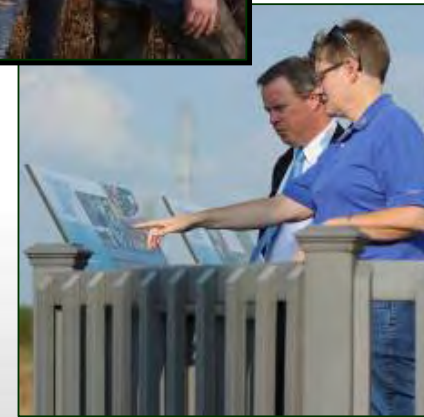
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Since the Fernald Preserve Visitors Center opened, schools, conservation organizations, hikers, cyclists, and other groups have used the Community Meeting Room.



Public Affairs

- **Events**
- **Fernald Preserve usage**



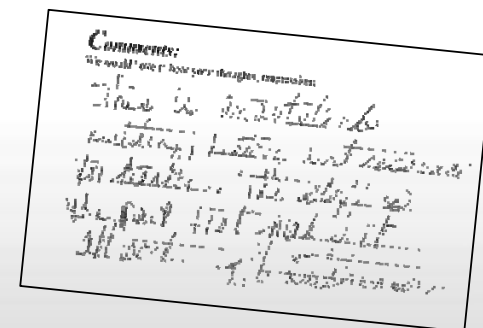
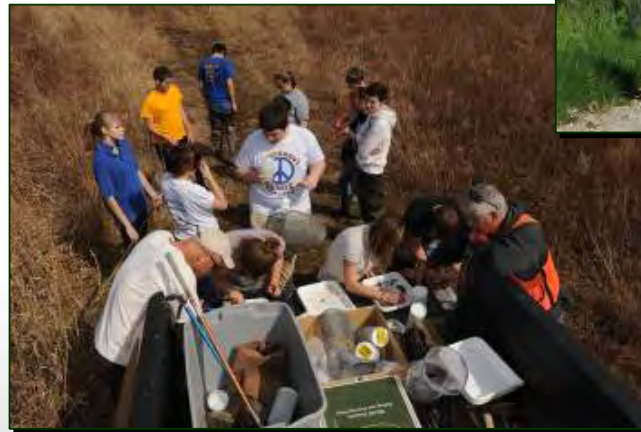
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During the Fernald Preserve Visitors Center's second year of operation, a wide variety of groups—including schools, birders, Scouts, and hikers—have stopped by.



Public Affairs

- Positive news coverage
- Visitor appreciation



Recent stories about the Fernald Preserve have appeared in a variety of news media, including the *Detroit Free Press* and *Voice of America*.



Look Ahead

October–April

- **Complete CERCLA five-year review**
- **Continue aquifer restoration**
- **Continue sampling**
- **Continue on-site disposal facility monitoring**
- **Continue to offer unique programs**
- **Prescribed burns**
- **Electrical upgrades**

The 6-month look-ahead explains the work forecast through the fall and winter.



Community Meeting

Join us:

April 13, 2011

6:30 p.m.

Fernald Preserve Visitors Center



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8792.19 10/10

The next meeting is April 13, 2011, at 6:30 p.m. After a short business meeting, attendees will be led on a trail hike starting at the Fernald Preserve Visitors Center.



Agenda

- **Site inspections**
- **Air monitoring**
- **Surface water monitoring**
- **On-site disposal facility**
- **Aquifer restoration**
- *Legacy Management and Institutional Controls Plan*

Agenda for second part of the community meeting.



Inspections

Site and On-Site Disposal Facility

- **Quarterly site inspections**
- **OSDF inspections**
- **Restoration Projects from Natural Resource Trustee walkdowns**



8792.21 10/10

The inspection process continues according to the *Legacy Management and Institutional Controls Plan*.



Monitoring

Ecological

- **Wetland mitigation monitoring**
- **Prairie functional monitoring**
- **OSDF Cell 8 herbaceous cover**



8792.22 10/10

Monitoring results in areas throughout the site demonstrate that many native plants and animals are thriving.



Monitoring

Air

- Radiological air particulate
- Direct radiation



8792.23 10/10

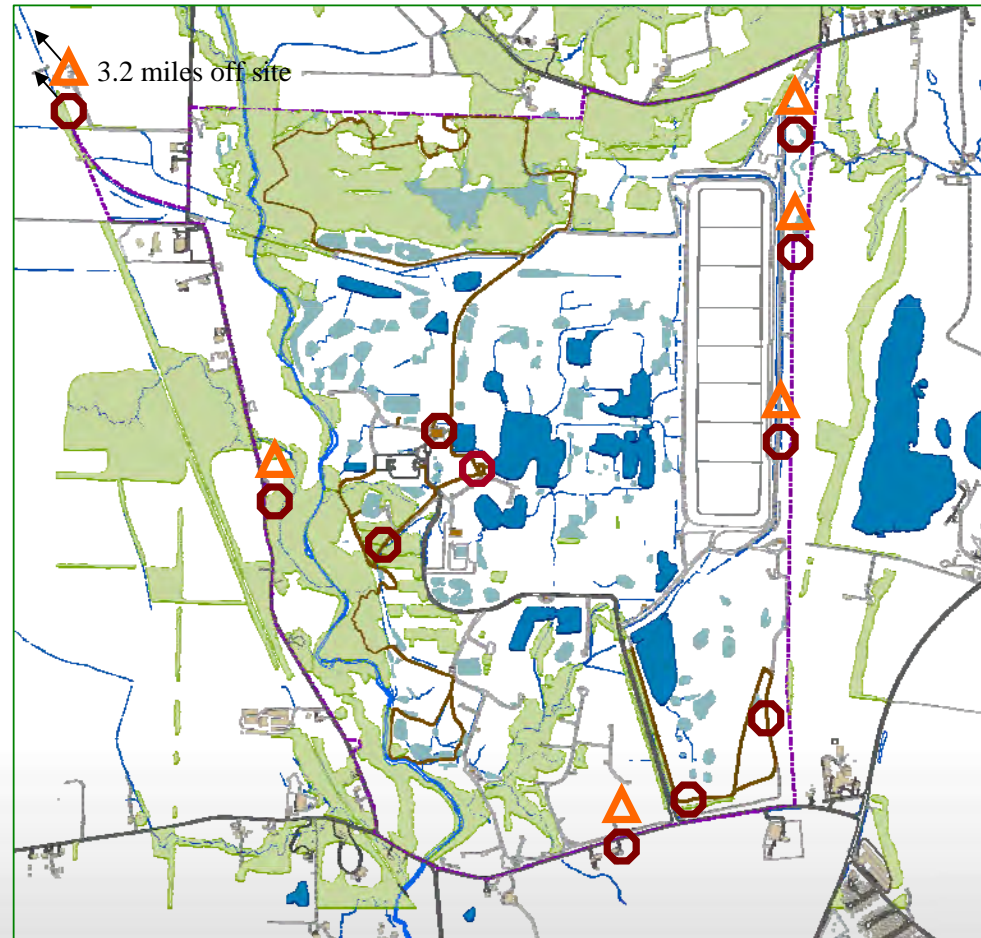
The air monitoring program provides an ongoing assessment of the completed site remediation.



Monitoring

Air and Dosimeter Locations

- ▲ Air particulate
- Dosimeter



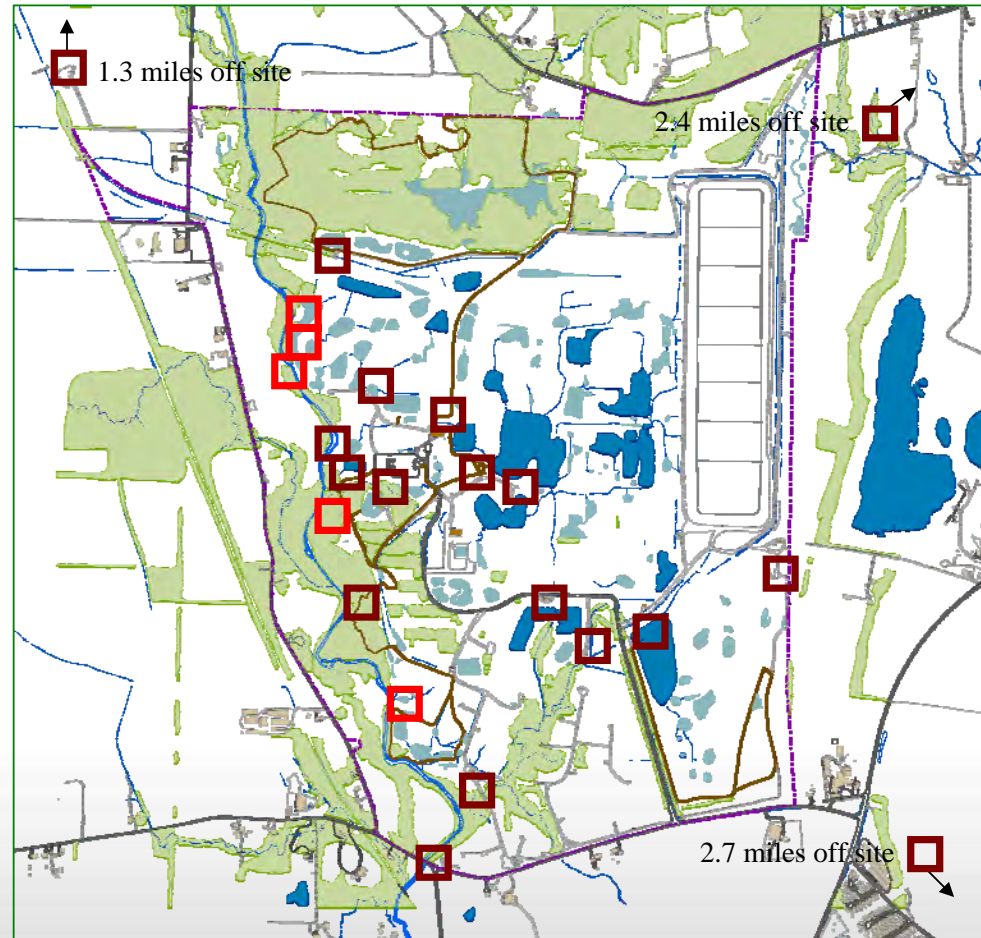
8792.24 10/10

Air and dosimeter locations.



Monitoring

Surface Water and Treated Effluent Locations



8792.25 10/10

The On-Site Disposal Facility is an engineered waste-storage area that holds 2.95 million cubic yards of waste.



On-Site Disposal Facility



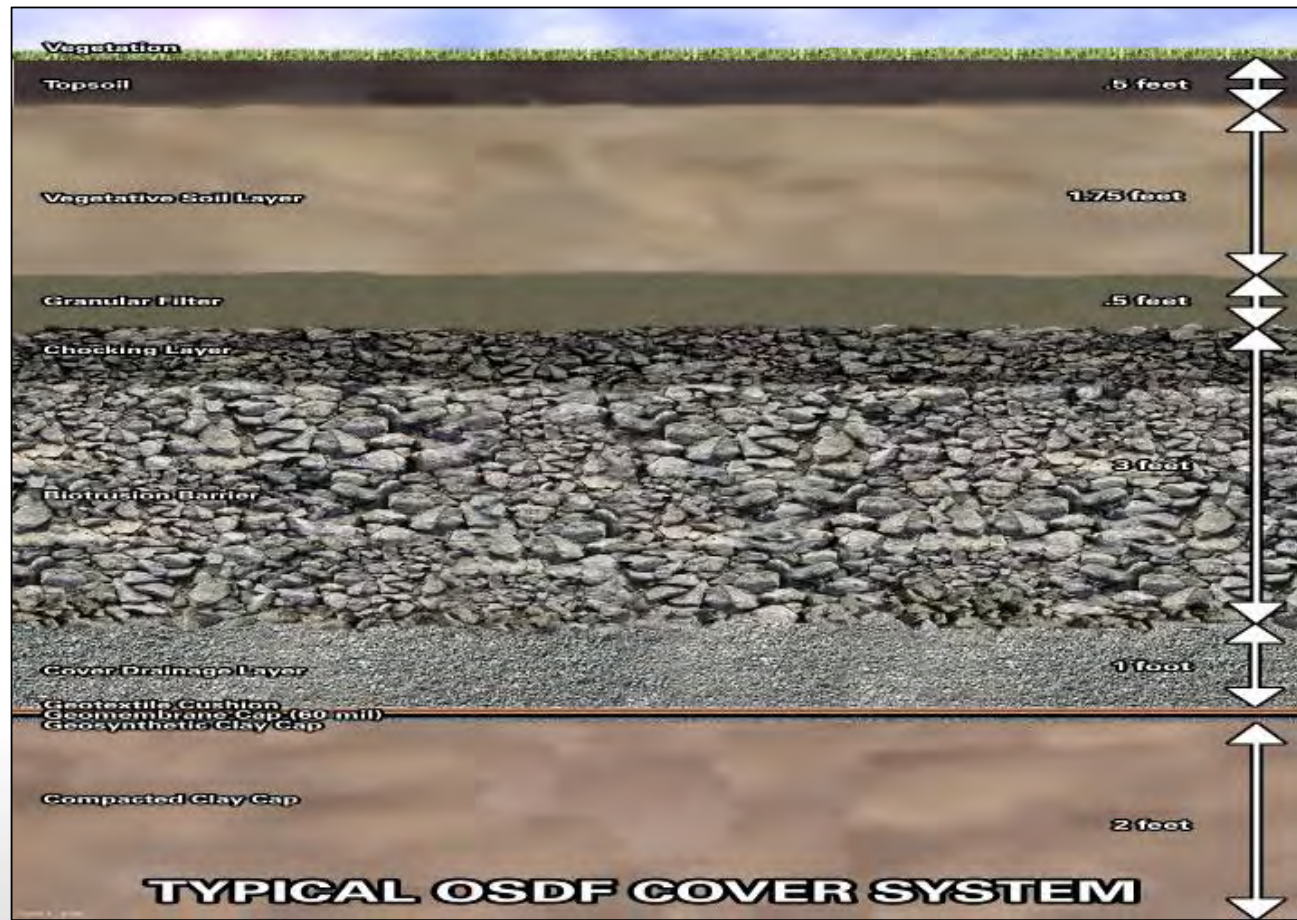
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The On-Site Disposal Facility is an engineered waste-storage area that holds 2.95 million cubic yards of waste.



On-Site Disposal Facility

Cover



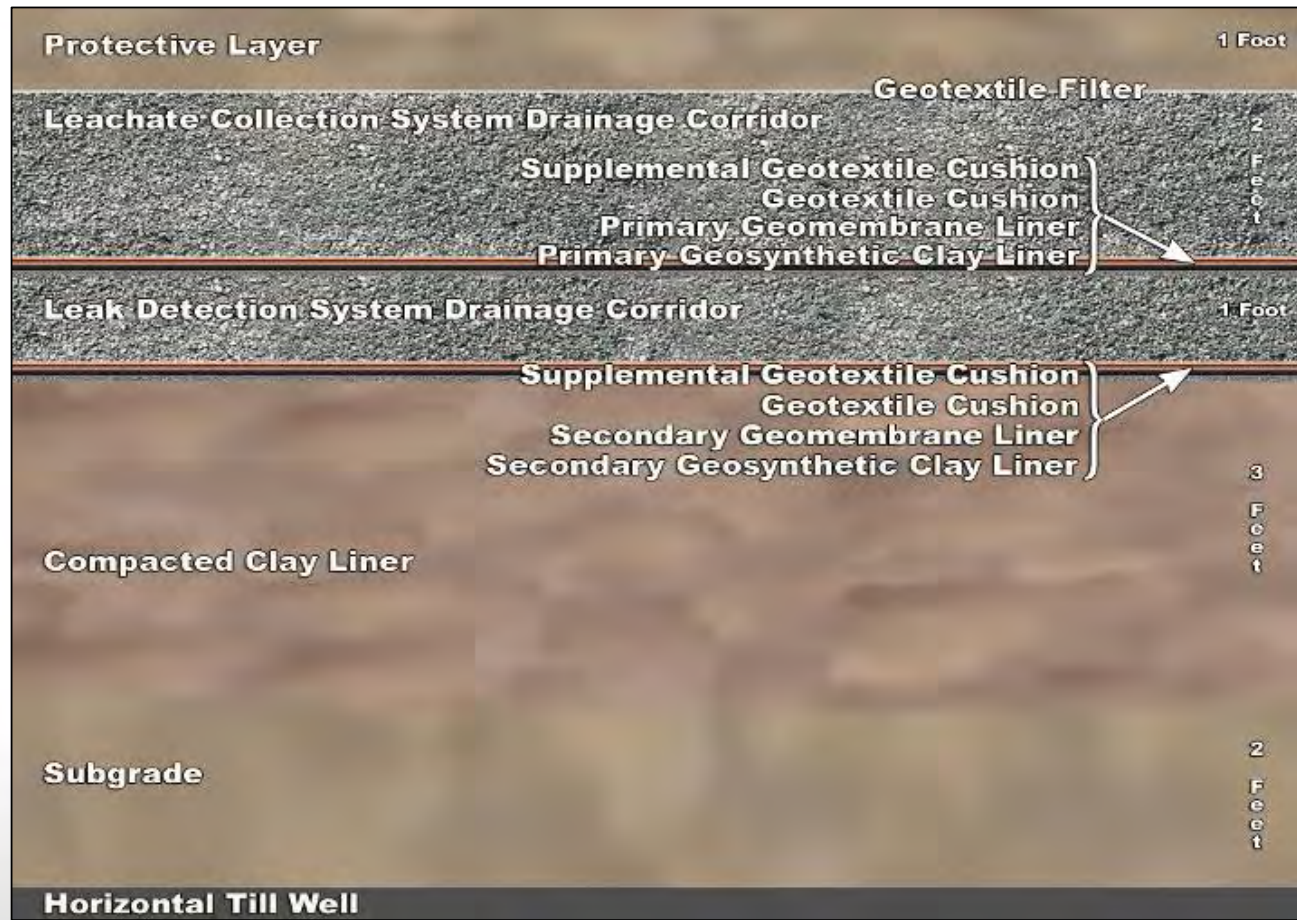
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The On-Site Disposal Facility's engineered cover system.



On-Site Disposal Facility

Liner



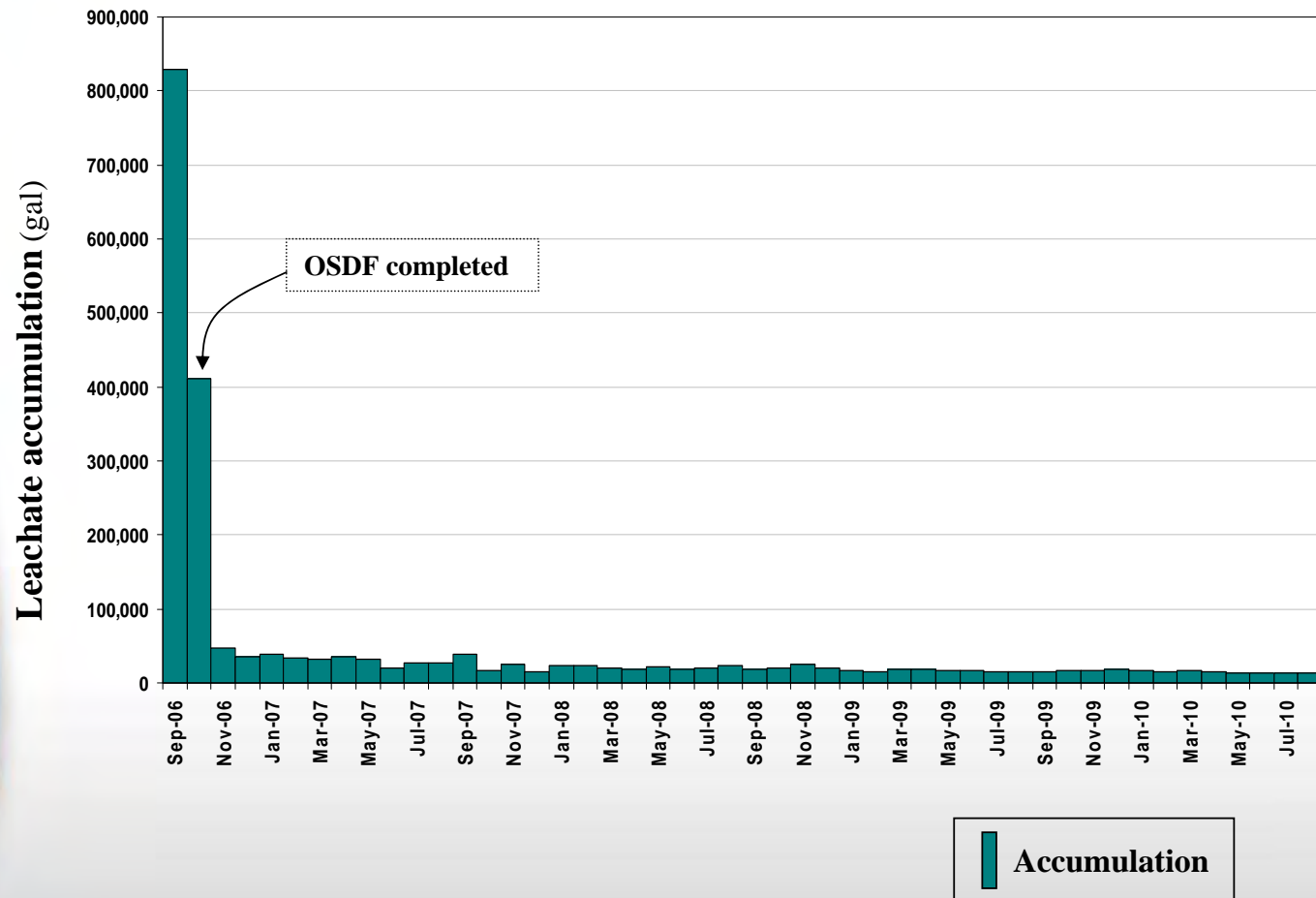
8792.28 10/10

The On-Site Disposal Facility's engineered liner system.



On-Site Disposal Facility

Leachate Collection System



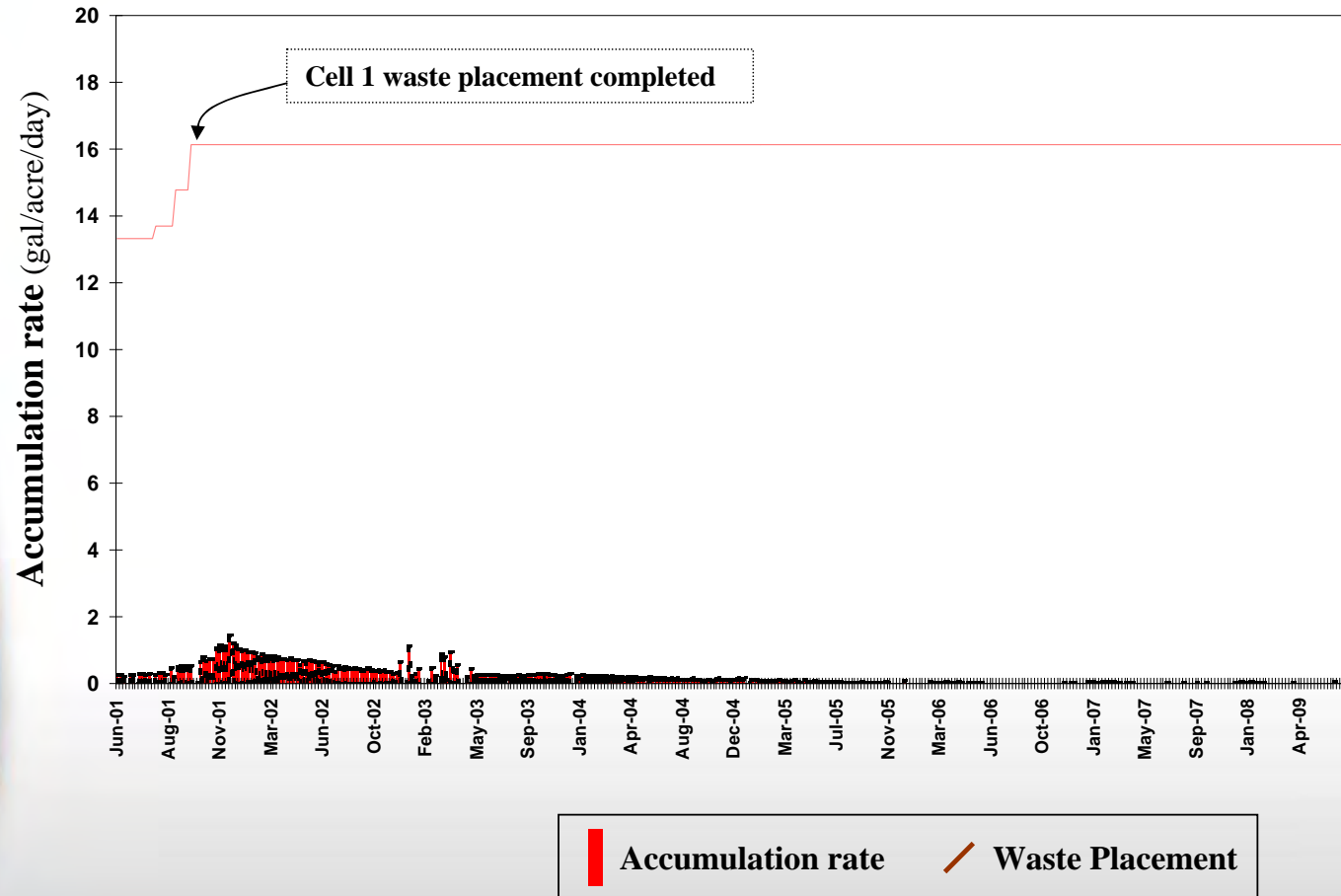
Leachate is the moisture in the waste within the On-Site Disposal Facility. The leachate is collected and transferred to a treatment facility. Before the cover system was completed in October 2006, hundreds of thousands of gallons of leachate flowed each month. Since then, monthly leachate flows have decreased to less than 15,000 gallons per month total.



On-Site Disposal Facility

Leak Detection System: Cell 1

20-Gallon Action Level



8792.30 10/10

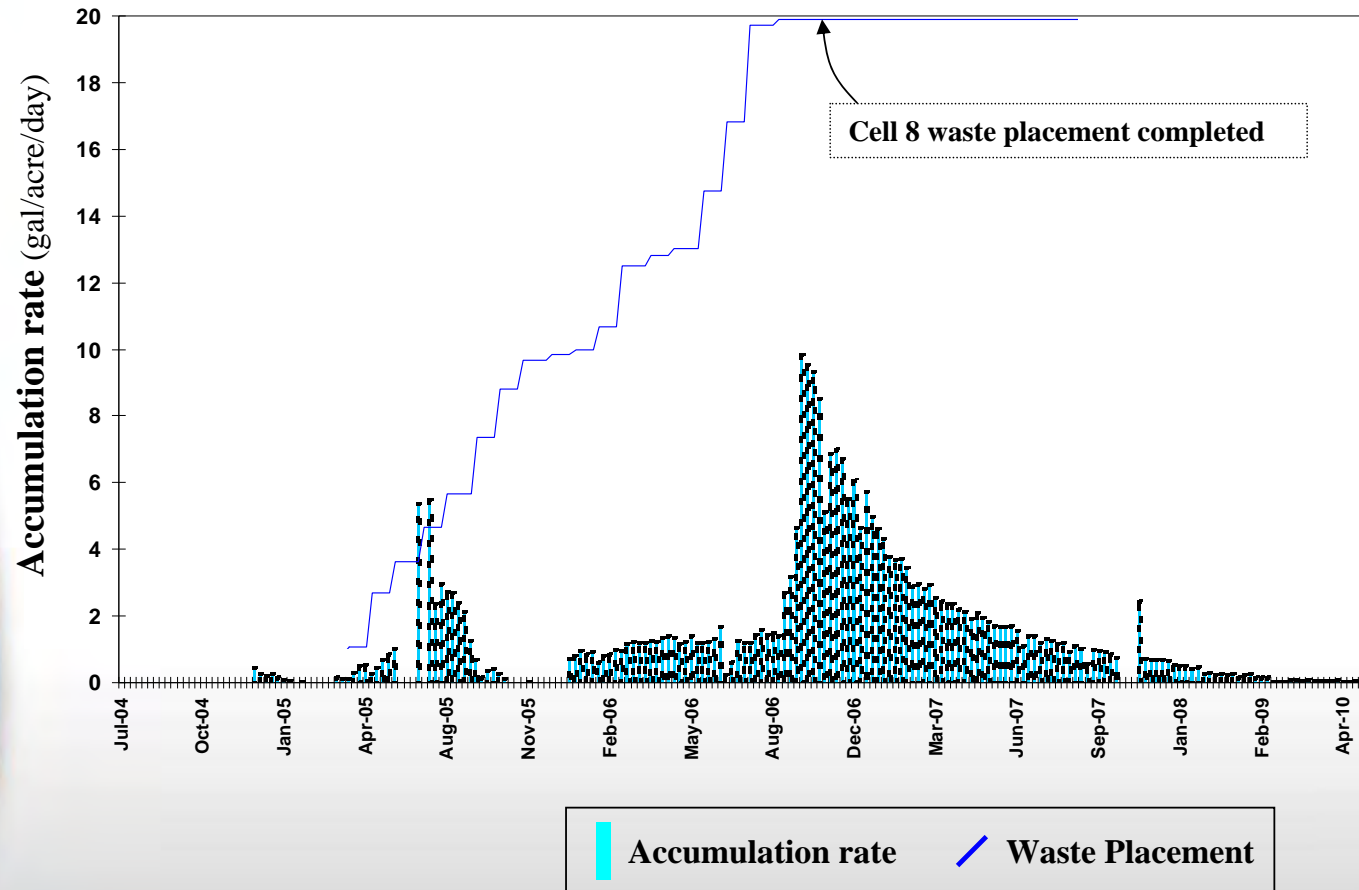
Cell 1 of the On-Site Disposal Facility was the first of eight cells filled with waste and capped. The volume of water collected from this cell's leak detection system is well below the action level, and the system is operating as designed.



On-Site Disposal Facility

Leak Detection System: Cell 8

20-Gallon Action Level



8792.31 10/10

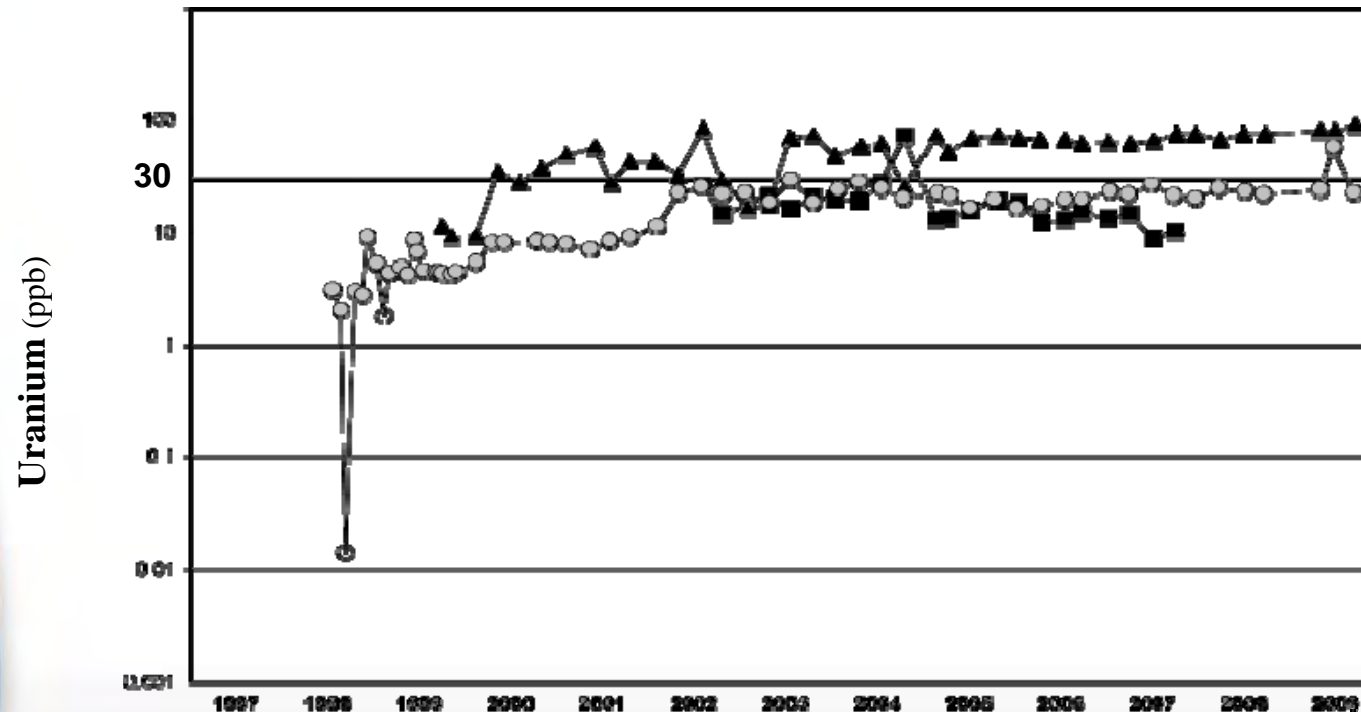
Cell 8 of the On-Site Disposal Facility was the last of eight cells filled with waste and capped. The volume of water collected from this cell's leak detection system is well below the action level, and the system is operating as designed.



On-Site Disposal Facility

Uranium Concentrations: Cell 3

LCS/LDS/HTW



▲ Leachate Collection System ■ Leak Detection System ● Horizontal Till well

8792.32 10/10

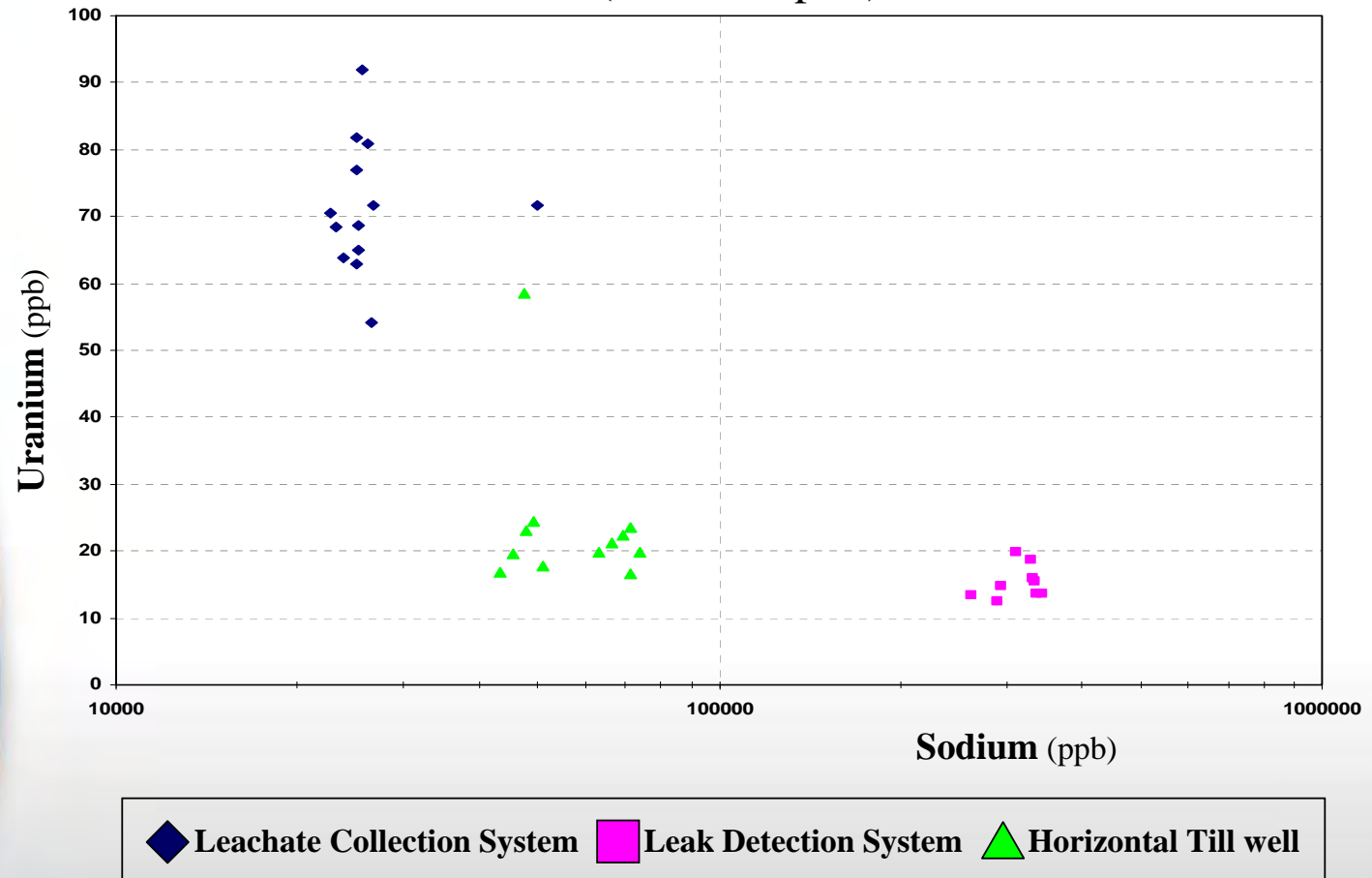
Uranium concentrations in and below Cell 3 demonstrate that the liner system is working as designed.



On-Site Disposal Facility

Uranium vs. Sodium Concentrations: Cell 3

LCS/LDS/HTW (Bivariate plot)



8792.33 10/10

A comparison of uranium concentrations and sodium concentrations in and below Cell 3 demonstrates that the liner system is working as designed.



On-Site Disposal Facility

2009 Performance

- **No indication of leaks**
- **Highest leak detection system maximum accumulation**
 - Cell 5: 0.48 gallons per acre per day (gpad)
 - 20 gpad initial response leakage rate
 - 200 gpad action leakage rate
- **Leachate collection system volumes have stabilized and continue to diminish**
- **Leak detection system accumulation rates indicate liner systems are performing within cell design**
- **Water quality trends in the horizontal till wells and Great Miami Aquifer wells are concentration fluctuations beneath the facility**
- **No visual signs of compromised cap integrity**

8792.34 10/10

The On-Site Disposal Facility cap and liner systems are performing as designed.



Aquifer Restoration

Through August, 31 2010

- **4,775 gallons per minute target flow rate**
- **23 extraction wells**
- **140 monitoring wells**
- **28.9 billion gallons extracted**
- **9.85 billion gallons treated**
- **10,066 pounds of uranium removed**
- **Project completion in 2026**



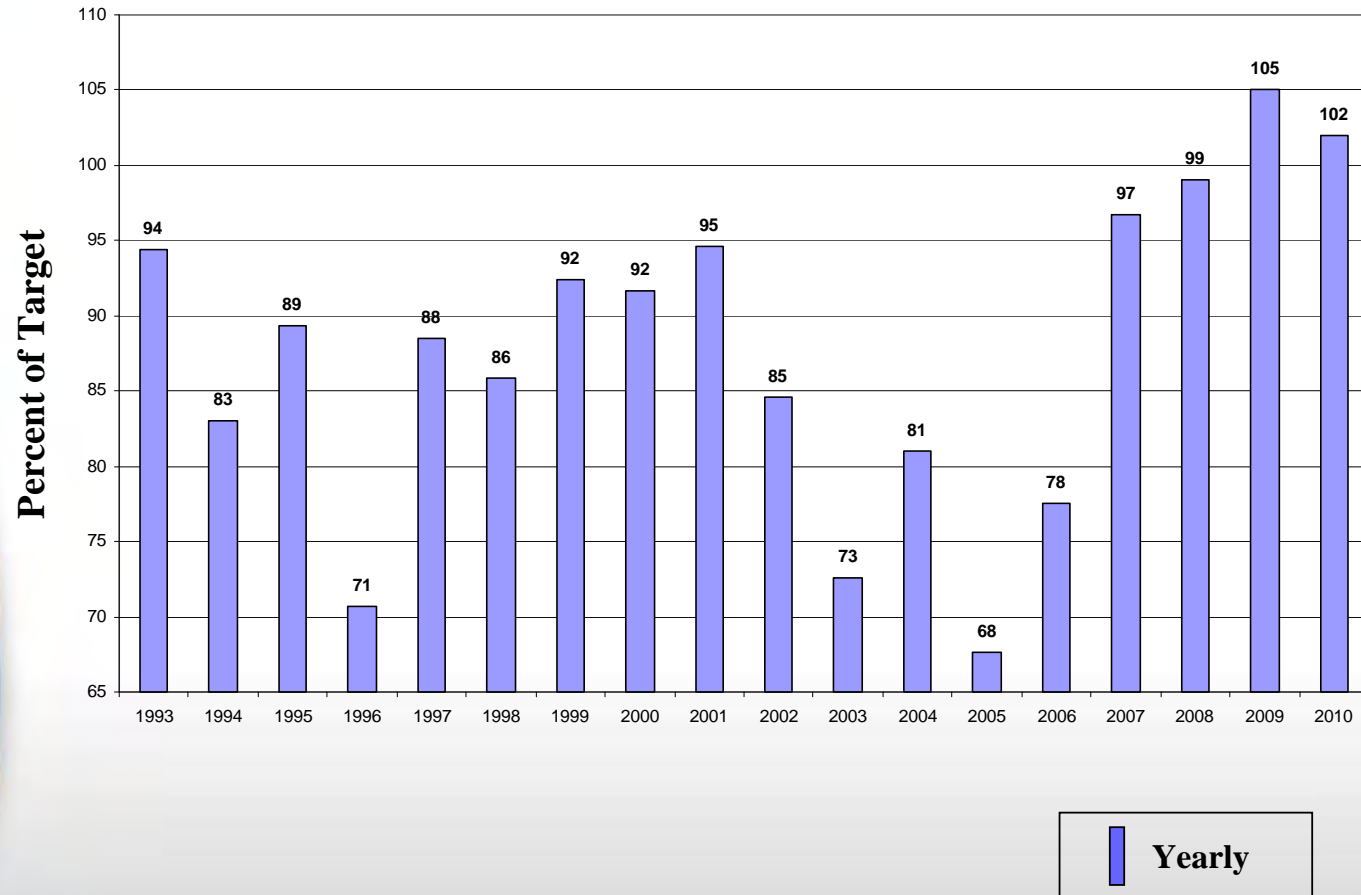
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Groundwater cleanup continues at the Fernald Preserve.



Aquifer Restoration

Pumping – Percent of Target Achieved



8792.36 10/10

2009 has been the best year so far for operations related to the site's groundwater cleanup.



Aquifer Restoration

Regulatory Limits

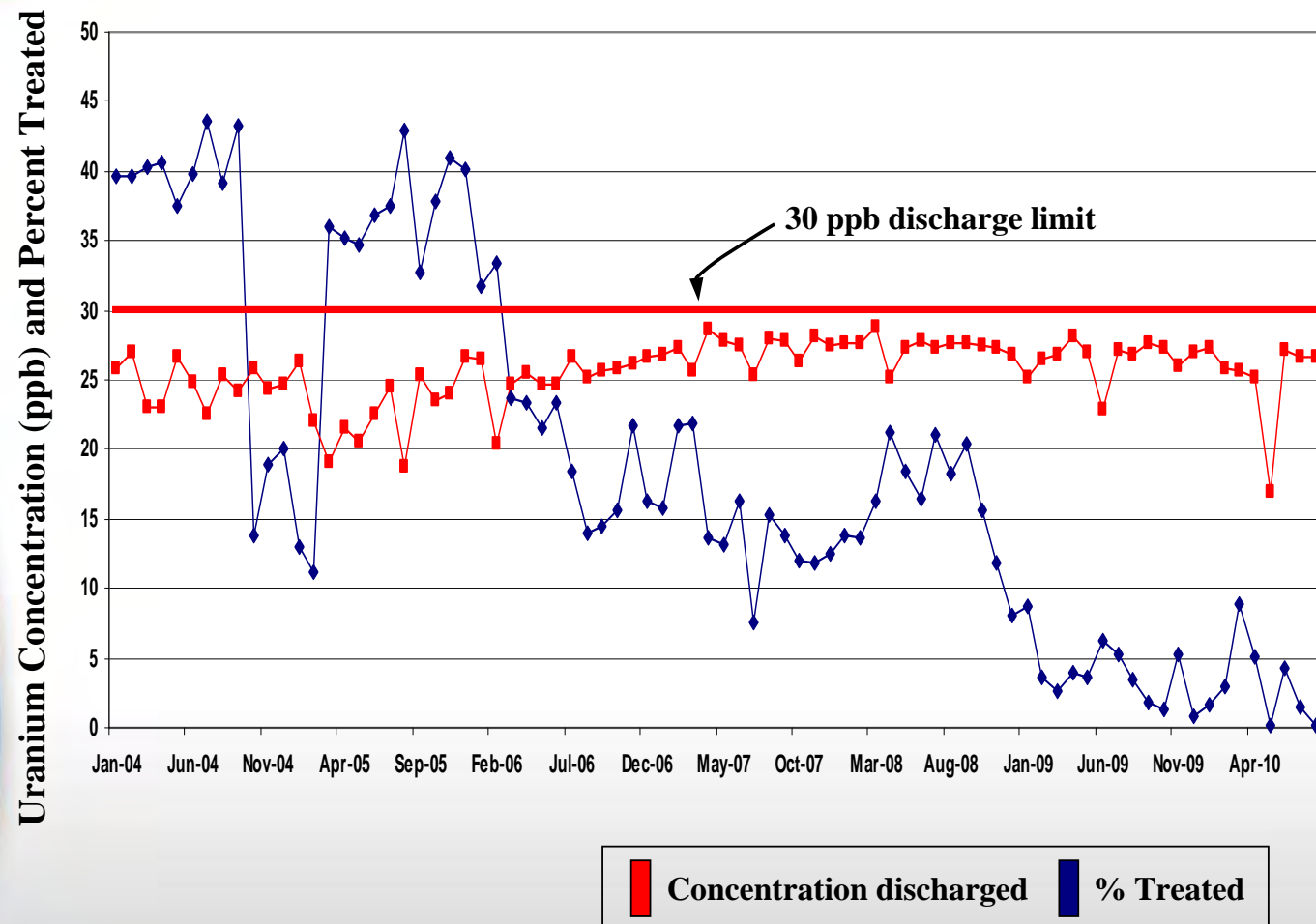
- Meet 30 parts per billion monthly average uranium discharge limit to Great Miami River
- Meet 600 pound per year uranium discharge limit to the Great Miami River

The U.S. Environmental Protection Agency sets regulatory limits for the Fernald Preserve.



Aquifer Restoration

Treatment Needs



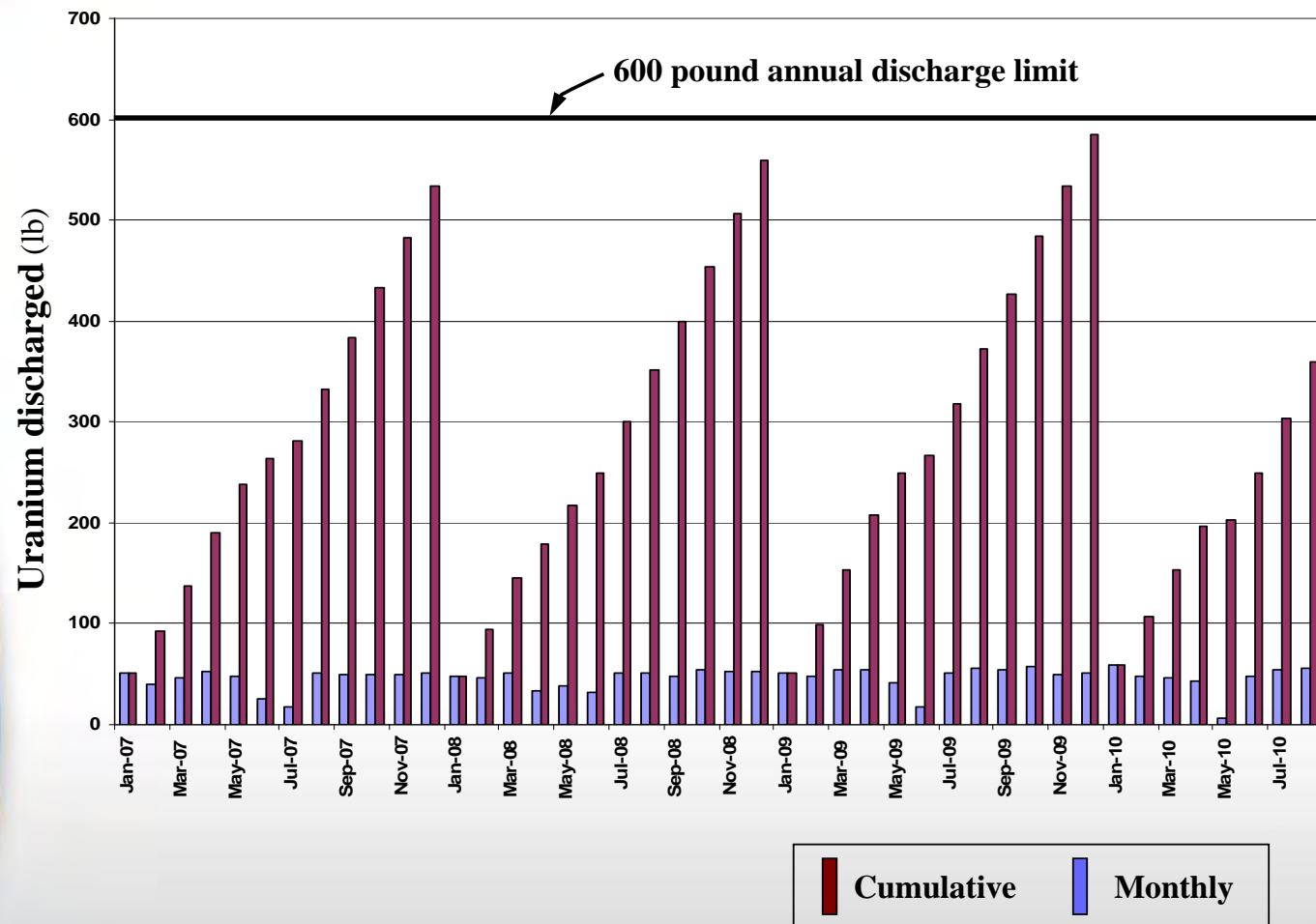
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Treatment needs have declined over time. Compliance with the uranium discharge limit has been maintained.



Aquifer Restoration

Uranium Discharged (pounds)



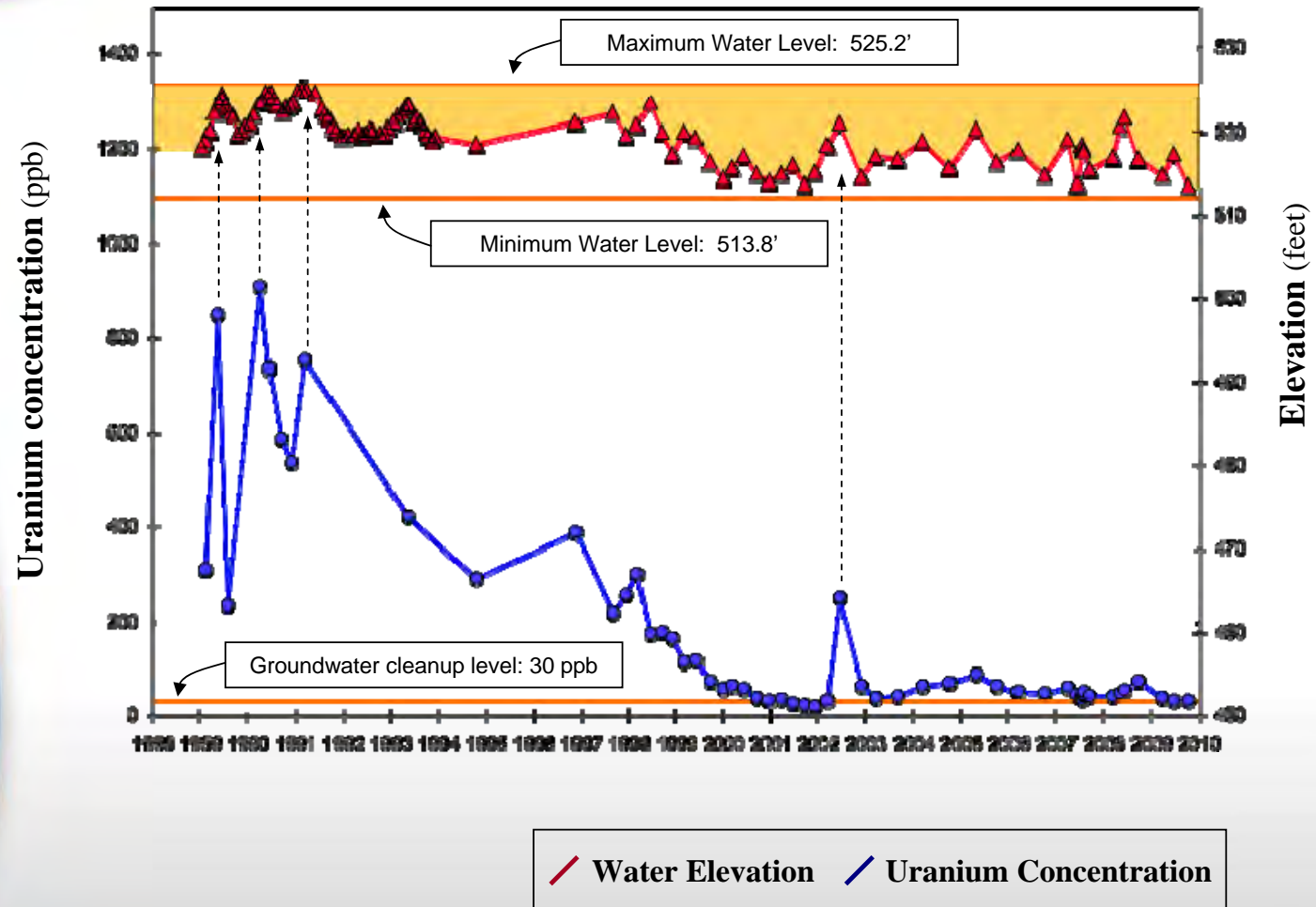
8792.39 10/10

Uranium discharge levels to the Great Miami River comply with the limits set by the U.S. Environmental Protection Agency.



Aquifer Restoration

Monitoring Well 2046 Water Level



8792.40 10/10

The uranium concentration in the groundwater is related to aquifer water levels beneath some areas of the site.



Aquifer Restoration

Water Level Rebound Study

Purpose

- Uranium on sediments above water table under some source areas
- Shut down 19 of 23 extraction wells for one month
- Allow water levels to rebound
- Redissolve uranium bound to sediments

Maximum Water Level Rise

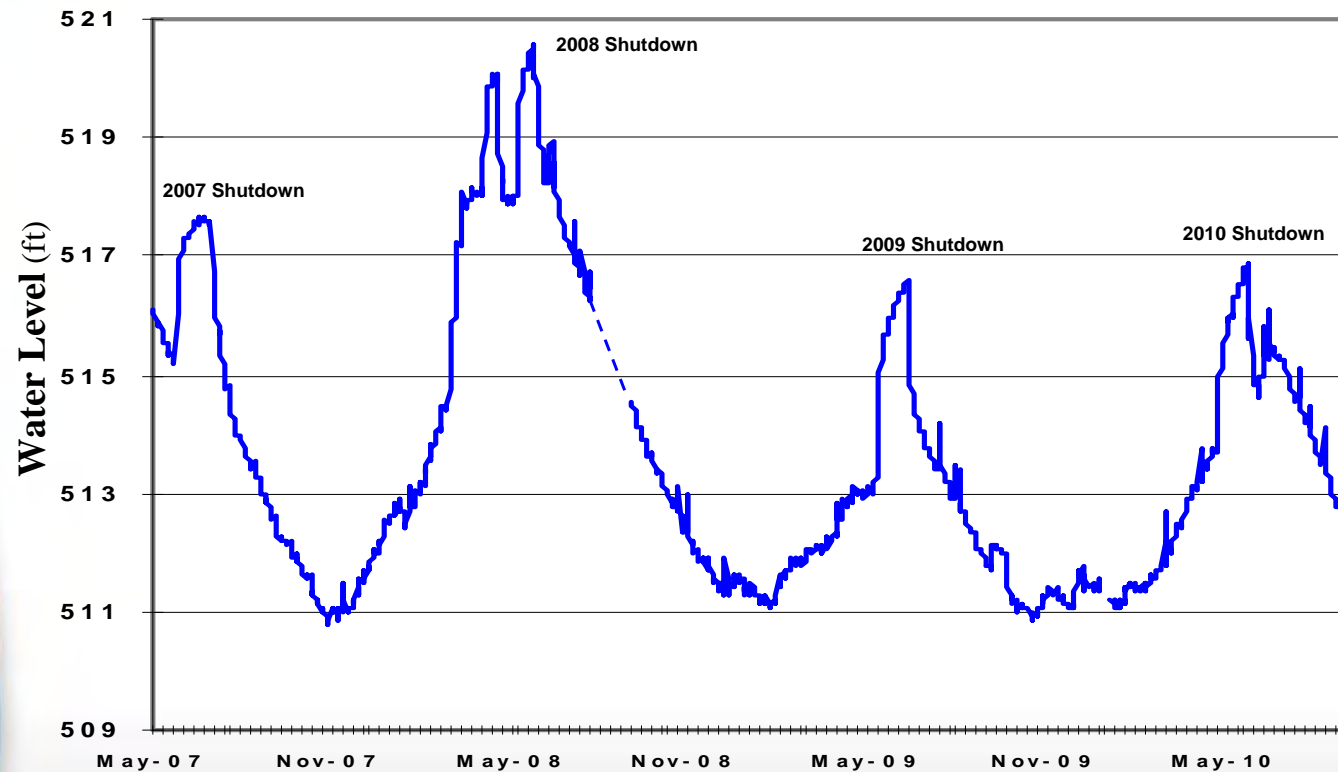
- 2007: approximately 2.6 feet
- 2008: approximately 2.5 feet
- 2009: approximately 3.1 feet
- 2010: approximately 3.4 feet

Annual well field pumping shutdowns are designed to help remove uranium from the Great Miami Aquifer.



Aquifer Restoration

Water Levels
(May 2007 – August 2010, Well 62433)



8792.42 10/10

Water levels in the Great Miami Aquifer change seasonally and are highest in the late spring and early summer.



LMICP

Legacy Management and Institutional Controls Plan

- **Developed to document the requirements for long-term care of the site and is reviewed, revised, and submitted annually to regulatory agencies.**
- **Volume I provides details for site management**
- **Volume II is required by the CERCLA remediation process and is legally enforceable document as part of the site remedy.**

8792.43 10/10

The *Legacy Management and Institutional Controls Plan, Revision 4*, and the change pages are available on the Office of Legacy Management website: www.LM.doe.gov.



LMICP

Volume II Attachments

- ***Attachment A: Operations and Maintenance Master Plan for Aquifer Restoration and Water Treatment***
 - No significant changes
- ***Attachment B: Post-Closure Care and Inspection Plan***
 - Switch OSDF mowing from spring to autumn
- ***Attachment C: Groundwater/Leak Detection and Leachate Monitoring Plan***
 - Refined parameter lists
- ***Attachment D: Integrated Environmental Monitoring Plan***
 - Discontinue air particulate monitoring
- ***Attachment E: Community Involvement Plan***
 - No significant changes

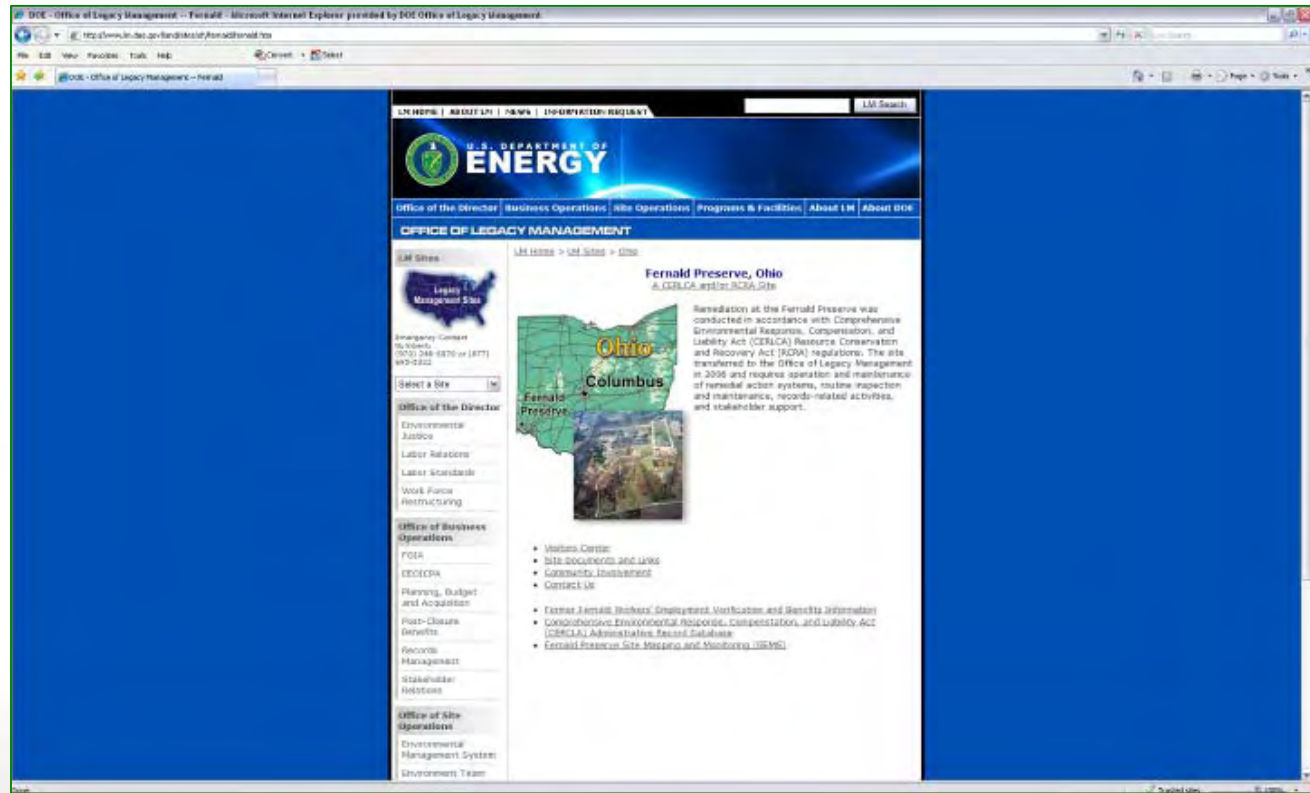
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LMICP

www.LM.doe.gov



8792.45 10/10

Further information can be found on the Office of Legacy Management website at www.LM.doe.gov.



Questions?



8792.46 10/10

Questions were answered at the end of this meeting.