Overview of the U.S. Department of Energy Formerly Utilized Sites Remedial Action Program (FUSRAP)

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ABSTRACT

The U.S. Department of Energy (DOE) initiated the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to address contamination remaining from Manhattan Engineer District and early U.S. Atomic Energy Commission activities. The DOE Office of Legacy Management determines if a site is eligible for FUSRAP remediation and conducts long-term surveillance and maintenance activities to maintain protectiveness. Since 1997, the U.S. Army Corps of Engineers conducts site investigations and remedial action. Depending on final site conditions when remediation is completed, DOE post-closure care requirements may include inspection, environmental monitoring, management of institutional controls, records and data management, and stakeholder relations.

INTRODUCTION

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) provides long-term surveillance and maintenance (LTS&M) support for remediated DOE sites. Of the more than 120 remediated sites that will eventually be assigned to DOE-LM for LTS&M, approximately 50 will have been addressed under the Formerly Utilized Sites Remedial Action Program (FUSRAP) (Figure 1).

Many remediated FUSRAP sites are expected to meet criteria that allow for unrestricted future use. For those sites, DOE-LM activities will consist of records management and stakeholder support. At other sites, some residual contamination may remain after remediation that will not allow all possible future land uses. In these instances, DOE will conduct "active" LTS&M activities, such as managing institutional controls and performing site inspections or environmental monitoring, to allow the highest beneficial land use while ensuring protectiveness.

PROGRAM BACKGROUND

Evolution of DOE LTS&M Programs

Before 1988, DOE provided LTS&M services for many sites as an extension of remedial action programs. Various DOE field and operations offices managed these sites. For instance, the Chicago (Illinois) Operations Office managed the decommissioned nuclear reactors at Hallam, Nebraska, and Piqua, Ohio; and the Oak Ridge (Tennessee) Operations Office managed the decommissioned nuclear reactor near Rincón, Puerto Rico.

Fig. 1. FUSRAP sites.

In the early 1980s, DOE began remediation of sites designated in Title I of the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA).[1] The U.S. Nuclear Regulatory Commission established a general license for these sites that does not expire. To comply with the general license provisions and the post-closure care requirements of sites remediated under other authorities, DOE designated the Grand Junction Office in 1988 as the “program office for disposal site long-term surveillance and maintenance.” To fulfill this responsibility, DOE established the Long-Term Surveillance and Maintenance (LTSM) Program, which by 2000 was responsible for 26 sites remediated under Title I and Title II of UMTRCA, the Nuclear Waste Policy Act of 1982 [2], and DOE Decontamination and Decommissioning programs (Figure 2).

In the 1995 and 1996 Baseline Environmental Management Reports, DOE compiled life-cycle cost estimates for sites in the DOE complex where some occurrences of hazardous radioactive waste could not feasibly be remediated to free-release conditions and post-remediation care and use restrictions would be required.[3] The DOE Office of Environmental Management (EM) sought to separate the accelerated remedial action of unneeded DOE sites, which was the primary mission of EM, from the post-closure care requirements of these sites.

DOE-EM established the Office of Long-Term Stewardship in 1999, which incorporated the LTSM Program. The Office of Long-Term Stewardship began to formerly establish policy for DOE LTS&M activities and compiled the first comprehensive estimate for Congress of the Department’s LTS&M obligations.[4] The Office of Long-Term Stewardship also solicited comments and input from stakeholders with regard to the LTS&M mission to serve as guide in decision-making for remedy selection and remedy maintenance at remediated sites.[5] To inform stakeholders of facility conditions, the Office of Long-Term Stewardship established the Central Internet Database [6] and the Stewardship Information Center, which served as a clearinghouse to promote awareness of policy development, research, and activities within the stewardship community.

In addition to LTS&M activities, the Department’s legacy commitments include worker transition and benefits, site closure, and mitigation of community impacts caused by site closure. DOE established the Office of Legacy Management (LM) in 2003 to consolidate all legacy commitments within a single organization.[7, 8]

DOE-LM is responsible for both site transition and site management of remediated sites. Site transition staff members have been active in preparing DOE-LM to assume responsibility for sites where DOE-EM has completed remedial action activities, such as the DOE Rocky Flats Environmental Technology Site near Denver, Colorado; the DOE Mound and Fernald sites in Ohio; and sites remediated under other authorities. The DOE-LM site management organization conducts LTS&M activities to maintain site protectiveness, manages records and data, and responds to stakeholder concerns. DOE-LM conducts all aspects of FUSRAP sites transition and subsequent LTS&M activities.

FUSRAP History

The U.S. Atomic Energy Commission (AEC) established FUSRAP to address residual contamination at Manhattan Engineer District (MED) and early U.S. Atomic Energy Commission (AEC) sites. Sites typically were contracted to conduct research or provide storage,

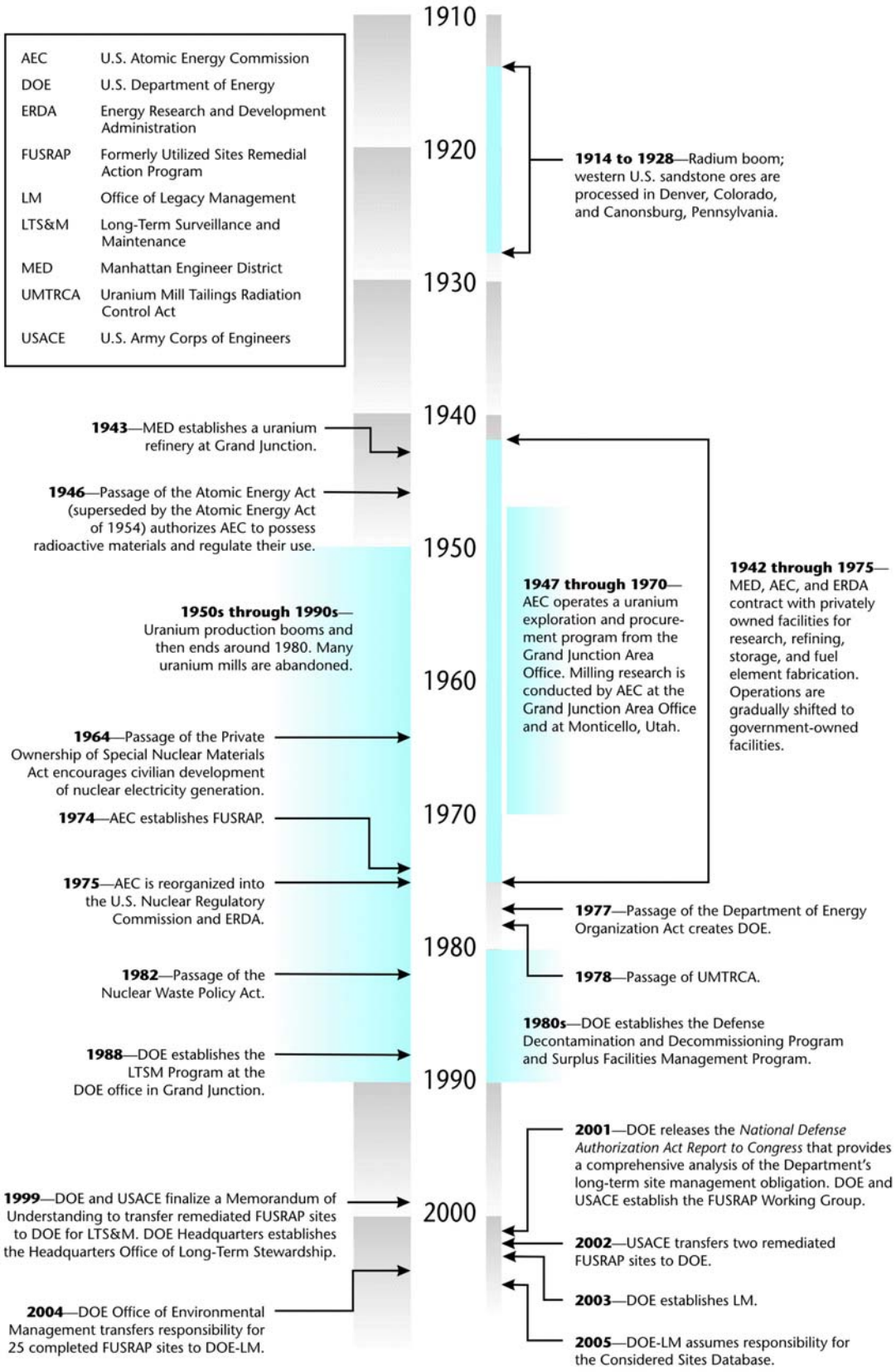

Fig. 2. Chronology of low-level radioactive waste.

ore processing, refining, or fuel element fabrication services. Because MED and, initially, AEC did not have an industrial base for performing this work in-house, the agencies had to procure these services from the private sector.[9]

By the mid 1950s, most AEC operations were performed in government-owned facilities, although activities at some sites continued into the 1970s (e.g., the Iowa Army Ammunition Plant). As government-owned facilities were established, AEC released the contracted sites. Release typically consisted of surveying the contracted sites and decontaminating them to comply with the standards in effect at the time.

By the early 1970s, AEC identified the need to review the status of the sites because cleanup standards had become more stringent and site conditions had changed. Some sites were no longer in use, were derelict, or facilities had been demolished. In some instances, residual contamination had spread to off-site vicinity properties. AEC chartered FUSRAP in 1974 to assess these sites and to ensure that they were protective of human health and the environment.

FUSRAP activities are authorized under the Atomic Energy Act of 1954.[10] Responsibility for FUSRAP was assumed by AEC successor agencies, the Energy Research and Development Administration [11] and the U.S. Department of Energy in 1977.[12]

The initial task under FUSRAP was to identify potential sites for cleanup. After reviewing records and radiometric surveys and assessing risk for more than 600 candidate sites involved with early federal nuclear energy and weapons programs, DOE identified 46 sites that were eligible for cleanup under FUSRAP. Site data were captured in an internal database and in site files. In response to questions about site conditions posed by stakeholders, DOE made the Considered Sites Database available to the public in 2000.[13]

DOE began limited cleanup of FUSRAP sites in 1979, and major cleanup projects were under way in 1981. Between 1981 and 1997, DOE remediated 25 of the 46 sites.

Through the 1998 Energy and Water Development Appropriations Act, Congress directed the U.S. Army Corps of Engineers (USACE) to conduct all field activities for FUSRAP.[14] DOE retained responsibility for determining site eligibility for remediation under FUSRAP and for LTS&M. This assignment of responsibilities was clarified in the 1999 Energy and Water Development Appropriations Act.[15] USACE was directed to conduct remedial actions in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act [16] and the National Oil and Hazardous Substances Pollution Contingency Plan.[17]

Since 1997, four more sites were identified as eligible or were added to the program by congressional order and have been scheduled for remedial action by USACE. Three other sites were eligible for FUSRAP remedial action but contaminant levels did not exceed authorized limits, and USACE notified Congress that the sites required no further action. USACE is conducting assessment activities at three sites that DOE has determined are eligible for remedial action.

The process of transferring responsibility for a site from USACE to DOE must ensure that there are no lapses in site care and that DOE has the knowledge to maintain site protectiveness in perpetuity. To achieve this, DOE and USACE established the FUSRAP Working Group in 2001.

USACE developed transition procedures, which were tested in 2002 when USACE transferred the remediated Madison, Illinois, and Bliss and Laughlin, New York, sites to DOE for LTS&M.

Until 2004, DOE-EM was responsible for the 25 FUSRAP sites that had been remediated by the Department. In that year, responsibility for these sites was reassigned to DOE-LM. DOE-EM records and data systems and all remaining FUSRAP responsibilities were transferred to DOE-LM in 2005.

FUSRAP EXECUTION AND ADMINISTRATION

A 1999 Memorandum of Understanding (MOU) between DOE and USACE establishes roles and responsibilities for each agency.[18]

DOE Responsibilities

DOE responsibilities include making initial site eligibility determinations and providing LTS&M services. LTS&M requirements are based on the remedy selected and implemented for the site.

USACE Responsibilities

Before a site is remediated under FUSRAP, DOE first establishes that the site meets FUSRAP eligibility criteria.[1] USACE is responsible for conducting assessments, informing Congress of the decision to remediate a site or to not perform further action, conducting detailed investigations, selecting and obtaining regulator approval for a remedy and implementing the remedy, completing site closeout, and conducting operations and maintenance (O&M) for 2 years following remedial action. USACE will also evaluate remedy effectiveness 5 years after completion.

FUSRAP SITES LTS&M

The DOE-LM FUSRAP program consists of the following elements.

Eligibility Determination

DOE first reviews historical records to document that a candidate site was contracted to provide services in support of MED or AEC. DOE next establishes that radioactive materials were used at the site and that there is a reasonable potential for residual contamination to remain. Finally, DOE determines that the Department is legally responsible for the residual contamination and is authorized to conduct remedial action. DOE notifies USACE of the results of eligibility determinations.

Site Transition

The USACE transition process provides DOE notice of site status so that DOE can plan to assume site responsibility and provide LTS&M services. USACE notifies DOE at three milestones: Record of Decision completion; remedial action completion and start of the 2-year

[1]A site can also be added to FUSRAP by congressional order.

O&M period; and 90 days before transition occurs. USACE also provides regular updates to its site completion schedule, which is dependent on funding.

DOE-LM transition activities include establishing records and data management systems, identifying and acquiring needed data, reviewing documents and interviewing remediation staff, attending stakeholder meetings, and generating LTS&M plans for sites that cannot be released for unrestricted use. One of the principal goals of site transition is to capture institutional knowledge of site history and conditions. DOE-LM seeks to maintain a close partnership with USACE to ensure that there is an opportunity for the staff members of both agencies to interact and the DOE-LM custodians can acquire essential knowledge about the transition sites.

LTS&M Operations

DOE-LM conducts all activities necessary to ensure that sites remain protective and in full compliance with applicable regulations after remedial action is complete. The remedy selected by USACE and approved by regulators defines LTS&M requirements. If residual contamination remains on a site, LTS&M activities can include maintaining access or institutional controls, conducting inspections or monitoring, and reporting site conditions to stakeholders. Other activities will likely include periodic evaluations of site protectiveness (Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA] 5-year reviews), monitoring data evaluations, and risk assessments. DOE-LM conducts all activities using LM federal and contractor staffs and drawing upon existing resources and expertise.

DOE-LM is currently reevaluating LTS&M requirements for the 25 sites remediated before 1997. The objective of this activity is to determine if site end states, land use and risk assessment assumptions, and LTS&M requirements that were established for these sites are still applicable. The work includes document research and site visits. Figure 3 and Figure 4 show two of the sites visited by DOE-LM staff in fall 2005.

At the Aliquippa, Pennsylvania, site (Figure 3), AEC contracted to have uranium billets heated and rolled into rods in 1948 and 1949. DOE certified the site to be released for unrestricted use in 1996. DOE-LM determined that the building where most of the radioactive materials were used was in good repair and was being used for warehouse space. Another remediated portion of the facility had been razed. Two monitor wells at the site may have been installed during site investigations. DOE-LM will determine if the Department is responsible for the wells and will decommission them, if necessary. Because this site was released for unrestricted use, there are no other concerns at this site.

At the Middlesex Municipal Landfill, New Jersey (Figure 4), AEC disposed of soil contaminated with uranium ore from the nearby Middlesex Sampling Plant. DOE certified the site to be released for unrestricted use in 1989. DOE-LM found the site to be unchanged from when remedial action was completed. Several monitor wells at the site that may have been installed during site investigations. DOE-LM will determine if the Department is responsible for the wells and will decommission them, if necessary. Because this site was released for unrestricted use, there are no other concerns at the site.

Fig. 3. Aliquippa, Pennsylvania, site, September 2005.

Fig. 4. Middlesex, New Jersey, Municipal Landfill site, September 2005.

DOE-LM will continue the process of visiting and researching the 25 DOE-EM FUSRAP sites to ensure that all postclosure care requirements are satisfied and site information is documented for future program staff.

Stakeholder Support. DOE-LM partners with stakeholders to extend site oversight, establish awareness of LTS&M activities and requirements, and maintain institutional knowledge. Stakeholders can include owners, regulators, state and local officials, and the public.

Site and program information is available on the Internet at http://www.lm.doe.gov/. DOE-LM provides information directly to stakeholders in response to inquiries or Freedom of Information Act (FOIA) requests. DOE-LM expects to receive between 12 and 18 FOIA requests each year. The Considered Sites Database is available on the LM public-facing website at http://csd.gjo.doe.gov/index.cfm. The database presents the results of eligibility evaluations for the approximately 600 candidate FUSRAP sites and documentation that supports the decisions, as well as documentation through cleanup and site closure for remediated sites.

For sites with monitoring requirements, DOE-LM posts monitoring results in the Geospatial Environmental Mapping System (GEMS), which is part of the DOE-LM website and is available at http://g  gjo.doe.gov/index.cfm. Future GEMS enhancements may include presentation of land-use restriction boundaries and instruments. DOE-LM real property managers maintain files of these and other real property instruments, and scanned document images are available to DOE-LM staff at all geographic locations.

Contact information is posted at sites with access controls. If institutional controls are imposed on a site, implementing and oversight agencies are contacted periodically. LM may host public meetings or distribute press releases before commencing significant activities or during site transition.

DOE-LM also is involved with the larger LTS&M community. DOE-LM participates in organizations such as the Association of State and Territorial Solid Waste Management Officials, the Interstate Technology and Research Council, and other organizations that include regulators and stakeholders in their membership.

Records and Data Management. Site records are archived for the use of future custodians. Records must describe site operations that resulted in waste generation, the extent of contamination, remedial action activities, final site conditions, site verification, and regulator concurrence. When a site transitions, DOE-LM will review available site information, identify gaps, and obtain missing records.

During the course of evaluating eligibility for the candidate FUSRAP sites, DOE-EM copied records and created a Considered Sites collection. DOE-LM has assumed responsibility for this collection and is currently scanning it for use by program staff at any DOE-LM location. The scanned records will be keyword searchable.

Many FUSRAP records remain at Federal Records Centers operated by the National Archives and Records Administration. Other records are in archives at major DOE facilities, such as the Savanna River Site in South Carolina. DOE-LM is currently verifying the location of FUSRAP site records, obtaining custody to records that are crucial to maintaining site protectiveness, and entering index (metadata) information into DOE-LM records collections.

When USACE transfers a site to DOE, DOE-LM will request electronic copies of site documents, geospatial data, monitoring results, photographs, and any other available electronic information. Milestone documents will be posted on the DOE-LM website. DOE-LM will use the geospatial data for base maps for use at sites with active LTS&M requirements. Monitoring data are needed to track trends and demonstrate protectiveness. DOE-LM also acquires metadata

from USACE remediation records. The USACE FUSRAP records are scheduled for permanent retention and will likely be transferred to DOE-LM when any proprietary information is no longer sensitive. Part of the records management task includes responding to FUSRAP-related inquiries and FOIA requests: Typically, these requests are for documents and records.

Real Property Management. DOE owns six FUSRAP sites. In keeping with the Department’s goal of returning sites to beneficial use, DOE-LM intends to disposition the sites as quickly as possible after transition from USACE. DOE-LM expects the New Brunswick, New Jersey, site to be released by USACE in the near future, and the Wayne, New Jersey, site should transition to DOE-LM in 2006. DOE-LM intends to assign the Wayne site to the General Services Administration Land for Parks program soon after transition.

Program Management. The DOE-LM FUSRAP task is managed from Washington, DC. Program support is provided from DOE-LM units in Grand Junction, Colorado; Morgantown, West Virginia; and Pittsburgh, Pennsylvania. Currently, DOE-LM manages 27 FUSRAP sites. By 2016, based on USACE scheduling, DOE-LM anticipates it will be responsible for approximately 50 sites (Table I).

ACKNOWLEDGMENTS

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Table I. USACE FURSRAP Site Completion Schedule

Site	City	State	Est. Year Const Comp	Est.Year Transferred	Owned By	EPA NPL Site	NRC License	Status 10/2005
Bliss & Laughlin Steel	Buffalo	NY		2002	Private	NO	NO	Transferred
Madison	Madison	IL		2002	Private	NO	NO	Transferred
Wayne Interim Storage Site	Wayne	NJ	2004	2006	DOE	NJ1891837980	NO	ROD and ESD completed,final RA completed in 2003, EPA R2 cert'd constr complete 9/03,5-yr GW mon required
Painesville Site	Painesville	OH	2007	2009	Private	NO	NO	
Seaway Industrial Park	Tonawanda	NY	2012	2014	Private	NO	NO	
Shpack Landfill	Attleboro	MA	2006	2008	Private	MAD980503973	NO	Estimated; EPA/PRPs to complete RA after USACE removes rad
Ashland 2	Tonawanda	NY	1999	2007	Private	NO	NO	
Ashland 1	Tonawanda	NY	2005	2007	Private	NO	NO	
E.I. Du Pont	Deepwater	NJ	2009	2011	Private	NO	NO	RI for Bldg 845 and F-Corral completed 3/04; char for Cent Drainage Ditch and Bldg J-26 completed 12/03
Linde Air Products Div	Tonawanda	NY	2007	2009	Private	NO	NO	
Colonie Interim Storage Site	Colonie	NY	2007	2009	DOE	NO	NO	
Middlesex Sampling Plant	Middlesex	NJ	2008	2010	DOE	NJ0890090012	NO	
St. Louis Airport Site	St. Louis	MO	2006	2014	Private	MOD980633176	NO	Transfer w/ SLAPS, HISS, and VPs
St. Louis Downtown Site	St. Louis	MO	2010	2012	Private	NO	YES	
W.R. Grace Co.	Curtis Bay	MD	2012	2014	Private	NO	NO	
Harshaw Chemical Company	Cleveland	OH	2010	2012	Private	NO	NO	
Luckey Site	Luckey	OH	2010	2012	Private	NO	NO	
Combustion Engineering	Windsor	CT	2007	2009	Private	NO	YES	
Hazelwood Interim Storage Site/Latty Ave	St. Louis	MO	2012	2014	Private	MOD980633176	NO	
Maywood Interim Storage Site	Maywood	NJ	2012	2014	DOE	NJD980529762	YES	
St. Louis Airport Site Vicinity Properties	St. Louis	MO	2012	2014	Private	NO	NO	
Niagara Falls Storage Site	Lewiston	NY	2014	2016	DOE	NO	NO	
IA Army Ammunition Plant (IAAP)	Middletown	IA	2011	2013	DOD	IA7213820445	NO	
.	Vandergrift	PA	2010	2012	Private	NO	YES	
Sylvania-Corning	Hicksville	NY	Unknown	Unknown	Private	NO	NO	
Guterl Specialty Steel Corp.	Lockport	NY	Unknown	Unknown	Private	NO	NO	
Dayton 6 (Scioto Laboratory)	Dayton	OH	Potential Site		Private	NO	NO	
Dayton Warehouse	Dayton	OH	Potential Site		Private	NO	NO	
Joslyn Manufacturing & Supply Company	Fort Wayne	IN	Potential Site		Private	NO		
Updated 10-24-2005 from information provided by USACE through Chris Clayton and Dayton determination letters								

Green text indicates USACE is conducting site assessments and has not decided if remediation is required.

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