Division of Waste Management

Fiscal Year 2018 Annual Report

Commonwealth of Kentucky
Department for Environmental Protection
Division of Waste Management
502.564.6716
waste.ky.gov

CONTENTS

FIGURES

PHOTOGRAPHS

BRANCH HIGHLIGHTS

Cover Photographs: Installation of Underground Storage Tanks
Photos by Richard Thomas, Field Operations Branch

MESSAGE FROM THE DIRECTOR

On behalf of the Division of Waste Management, I am pleased to present the 13th edition of the annual report. This report includes division activities and accomplishments that transpired in Fiscal Year 2018 (July 1, 2017 to June 30, 2018).

Our primary mission is protecting human health and the environment. The staff has continued to provide unwavering commitment and hard work to preserve and improve Kentucky's environment.

The Division of Waste Management continues to deliver consistent success within each of the seven branches to ensure our mission is sustained.

To summarize the division's achievements in FY18, Kentucky counties have cleaned 116 illegal dumpsites by collecting 5,880 tons of waste. More than 2,744,000 thousand tons of common household recyclables and over 2,905,000 tons of municipal solid waste were recycled. There were over 9,300 inspections conducted by field operations, and over 570 directives were issued for site investigation and corrective action activities to underground storage tank sites.

The Maxey Flats Project has completed the closure phase and entered the 100-year Institutional Control Period. This phase of the project will support an enduring environment and environmental education opportunities for the immediate area and statewide.

I am appreciative of the dedication of this staff as it continues to address all areas entrusted to the division's care.

Jon Maybriar, Director
Kentucky Division of Waste Management

EXECUTIVE SUMMARY

The Kentucky Division of Waste Management (Division) is the largest division within the Department of Environmental Protection (DEP). The staff of 236 total remains unchanged from the previous fiscal year. The seven branches that comprise the Division are:

- **Field Operations**
- **Hazardous Waste**
- **Program, Planning, and Administration**
- **Recycling and Local Assistance**
- **Solid Waste**
- **Superfund**
- **Underground Storage Tank**

2017 CALENDAR YEAR AND 2018 STATE FISCAL YEAR SELECTED ACHIEVEMENTS AND CHALLENGES:

• BROWNFIELD REDEVELOPMENT PROGRAM:

Success continues with the Brownfield Redevelopment Program. In FY18, 46 brownfield sites were reviewed in accordance with KRS 224.1-415. The Division issued 30 Notice of Eligibility letters, and 37 Notification of Concurrence letters. Four sites are pending review at the end of this fiscal year.

• HOUSEHOLD MUNICIPAL SOLID WASTE (MSW) COLLECTION:

Participation in household MSW collection has remained steady since legislation in 2002 began requiring waste haulers and recycling haulers to register and to report in each county for which they provide service. Kentucky disposed of 4,440,607 tons of MSW in 2017, an increase of 123,389 tons from 2016.

• ILLEGAL OPEN DUMPSITES:

Since 1993, over 26,053 illegal open dumpsites have been addressed at a cost of $80.7 million. In 2017, counties cleaned 116 illegal open dumps at a cost of $1 million and collected 5,880 tons of waste. The fourteenth round of grants was awarded in January 2018 for the remediation of 108 dumpsites at a projected cost of $1.5 million.

• LITTER ALONG PUBLIC ROADS:

The Kentucky Personal Response in a Desirable Environment (PRIDE) Fund, Eastern Kentucky PRIDE, Bluegrass Greensource, Kentucky Transportation Cabinet, and Adopt-A-Highway, as well as cities and counties across the commonwealth, contributed to the cleanup of 11,543,300 pounds of litter at a cost of $7.1 million during 2017. The average cost of litter picked up in 2017 was 62 cents per pound.

• MAXEY FLATS PROJECT:

A total of over $43 million has been expended on the Maxey Flats Project, with $17 million allocated to the Final Closure period, which ended in 2016 with a warranty period expiring in spring 2019. This warranty period is a traditional warranty in which the cap constructor guarantees their work and repairs their constructions. Problems occurring during this period would indicate faulty construction.

Upon expiration, the project site will enter a period of long-term custodial monitoring and maintenance, known as the Institutional Control Period (ICP). The ICP is mandated for 100 years when it will be evaluated and renewed for an additional 100-year period.

Plans are being developed by the Division to look at the most effective use and long-term stewardship of the property at Maxey Flats, which includes over 1,000 acres of woodlands, valleys, and streams. The focus will be on uses which maintain the site but also encourage sustainability and provide environmental educational opportunities for the surrounding community and the commonwealth.

• METHAMPHETAMINE LAB CLEANUP PROGRAM:

In FY18, the Methamphetamine Lab Cleanup Program decontaminated 9 properties. A total of 774 properties have been decontaminated since the inception of this program in 2007.

• RECYCLING PROGRAM:

Kentuckians recycled 2,744,477 tons of common household recyclables (aluminum, cardboard, steel, plastic, newspaper, glass, and paper) for a recycling rate of 38.2 percent in 2017. Kentuckians recycled a total of 2,905,903 tons of municipal solid waste in 2017 including sludge, concrete, compost, and asphalt.

• STATE GOVERNMENT OFFICE PAPER RECYCLING PROGRAM:

This program continues to thrive, serving more than 115 agencies in Frankfort. Office paper, computer paper, newsprint, and cardboard are collected, sorted, shredded, baled, and sold to a paper mill. State employees recycled 1,144 tons of waste paper in 2017, approximately 176 pounds per individual. Although total tonnage slightly decreased, total revenue increased. Confidential document destruction continues to be provided at no charge.

• UNDERGROUND STORAGE TANK (UST) PROGRAM:

The UST program emphasizes timely and effective remediation. The number of open UST sites continues to decline. In FY18, The UST Branch issued 132 No Further Action letters, reviewed 94 closure assessments, 14 site checks and Phase II reports, and issued 579 directives for site investigation and corrective action activities.

• WASTE TIRE PROGRAM:

In FY18, waste tire collection events (formerly referred to as “tire amnesties”) were conducted at Kentuckiana Regional Planning & Development Agency (KIPDA), Northern Kentucky, Purchase, Pennyrile, Green River, and Barren River Area Development Districts (ADDs). These districts cover 48 counties. The equivalent of 731,298 waste tires were recovered through FY18 collection events at a cost of $1,277,212.30.

INTRODUCTION

The Division is one of six divisions within DEP in the Energy and Environment Cabinet (EEC). The departmental strategic operational plan for the state FY2018 describes the goals of the agency:

Division of Waste Management Mission Statement

"Preserve and restore Kentucky's land through the development and implementation of fair, equitable, and effective waste management programs."

To accomplish this mission, the department has established a set of objectives to be implemented by each division. The objectives, relevant to this division are:

Objective 1 - Ensure programs adhere to federal and state statutory and regulatory requirements.

Tactic 1.1: Review and revise administrative regulations, and propose legislative amendments to comply with federal regulatory requirements.

Measures:

- Number of legislative proposals drafted in the current fiscal year
- Number of regulatory packages developed, promulgated, and finalized in the current fiscal year
- Number of public notices issued and public hearings conducted by the branch

Action 1.1.1: Develop regulation packages for division programs that comply with state statutory and federal requirements in a manner protective of human health and the environment that accurately reflect programmatic policy.

Action 1.1.2: Prepare draft legislative agenda to address any issues requiring legislative solutions and pursue enactment.

Action 1.1.3: Develop regulation packages that are inclusive of stakeholder concerns.

Tactic 1.2: Provide resources and oversight to the regulated community to achieve compliance with federal and state regulations.

Measures:

- Number of underground storage tank owners and operators that have completed operator training
- Percentage of underground storage tank owners and operators in compliance with the requirement to have a trained Class A and Class B operator
- Number and percentage of solid waste sites submitting the Environmental Remediation Fee in accordance with KRS 224.43-500
- Number and percentage of solid waste sites submitting the Annual Renewal Fee in accordance with 401 KAR 47:090 and 46:120
- The percentage of authorized hazardous waste facilities in compliance
- The percentage of registered underground storage tanks in compliance
- Number of facility inspections completed by staff to ensure regulatory compliance

Action 1.2.1: Utilize KY Tank Operator Online Learning System (TOOLS) as the program for UST Operator Certification in accordance with the federal Energy Policy Act. KY TOOLS has implemented a site-specific approach to training and testing to support certification which will significantly aid in increased overall compliance and leak prevention.

Action 1.2.2: Maintain and enhance Advantage Regulatory Management (ARM) reporting to accurately track and report on measures.

Action 1.2.3: Inspect regulated sites at established intervals to facilitate and ensure compliance with agency requirements.

Action 1.2.4: Take enforcement action on regulated sites as necessary to facilitate and achieve compliance with agency requirements.

Tactic 1.3: Review and revise quality assurance documents annually and update as necessary.

Measures:

- Number of standard operating procedures and guidance documents developed or revised in the current fiscal year
- Number of quality assurance project plans developed or revised in the current fiscal year

Action 1.3.1: Develop and revise standard operating procedures that comply with state and federal requirements, and agency policy.

Action 1.3.2: Revise Quality Assurance Annual Report.

Action 1.3.3: Prepare the Division Annual Report and update the Strategic Operational Plan.

Action 1.3.4: Develop and revise quality assurance project plans as necessary.

Tactic 1.4: Ensure waste management programs are fiscally and administratively viable.

Measures:

- Division staffing levels as compared to cap and budgeted amounts
- Number of grant programs administered and completed
- Amount of Environmental Remediation Fee collected

Action 1.4.1: Prepare the division budget for the state fiscal year.

Action 1.4.2: Communicate and coordinate with DEP budget staff on the needs of the division.

Action 1.4.3: Track expenditures and receipts to ensure programs are within designated budgetary amounts.

Action 1.4.4: Implement the cabinet, department, and division's operational, personnel, and human resource policies and procedures.

Action 1.4.5: Monitor staffing levels and ensure timely processing of personnel actions.

Action 1.4.6: Educate division staff on cabinet, department, and division policies.

Action 1.4.7: Track grants programs and ensure grant programs are meeting expectations.

Action 1.4.8: Ensure accurate and timely data entry and reporting.

Action 1.4.9: Track amount of environmental remediation fee collected to build trending data on the success of division administration of the fee.

Objective 2 - Ensure permits are protective of human health and Kentucky's land resources.

Tactic 2.1: Issue appropriate, lawful permits in a timely manner.

Measures:

- Number of hazardous waste permit applications received
- Number of hazardous waste permits pending review
- Percentage of hazardous waste permit reviews completed within regulatory timeframes
- Number of solid and special waste permit applications received by type
- Number of solid and special waste permits pending review
- Percentage of solid and special waste permit reviews completed within regulatory timeframes
- Number of approved solid and special waste permit applications
- Number of training classes completed by Division staff

Action 2.1.1: Issue permitting actions that are inclusive of all federal and state regulatory requirements.

Action 2.1.2: Issue permitting actions within the regulatory timeframes.

Action 2.1.3: Utilize ARM to accurately track and report on permitting actions.

Action 2.1.4: Evaluate and implement streamlining opportunities to address procedural and institutional inefficiencies.

Action 2.1.5: Allocate staff as necessary to assist in data entry and permit review.

Action 2.1.6: Recruit qualified staff.

Action 2.1.7: Provide training to increase knowledge and enhance retention of qualified staff.

Tactic 2.2: Reduce, eliminate, and maintain zero permit and permit activity backlogs.

Measures:

- Number of hazardous waste permits pending review outside regulatory timeframes
- Percentage of hazardous waste permit reviews completed outside regulatory timeframes
- Number of solid and special waste permits pending review outside regulatory timeframes
- Percentage of solid and special waste permit reviews completed outside regulatory timeframes

Action 2.2.1: Obtain a zero backlog on all remaining applications beyond regulatory time frames.

Action 2.2.2: Allocate staff as necessary to assist with data entry and permit review.

Objective 3 - Ensure remedial investigation, restoration, and management in place decisions are site specific, risk based, and environmental performance standards prone.

Tactic 3.1: Restore sites or manage contamination at sites with known or suspected releases to soil or groundwater.

Measures:

- Number of sites with known or suspected releases with potential human exposures where no further action is required or otherwise controlled as a result of implementing a management in place technique
- Number of underground storage tank cleanups conducted that resulted in a no further action being issued and number remaining
- Number of hazardous waste program corrective actions completed and number remaining
- Number of U.S. Environmental Protection Agency (EPA) corrective action environmental indicators achieved
- Number of historic landfills remediated and number remaining
- Number of ongoing historic landfill projects

- Number of solid and special waste facilities in groundwater assessment
- Number of illegal open dumps remediated under the Kentucky PRIDE Program and number remaining
- Number of tire dumps remediated under the Waste Tire Trust Fund and number remaining
- Number of new Superfund sites
- Number of Potentially Responsible Party- (PRP) Lead State Superfund sites under review and number remediated
- Number of State-Lead sites that require remediation, number remediated utilizing the Hazardous Waste Management Fund, and number under review
- Number of sites with a release of petroleum or a petroleum product remediated from a source other than a petroleum storage tank and number of under review
- Number of methamphetamine contaminated properties reported and number decontaminated
- Number of emergency or incident responses made and number of cases closed.

Action 3.1.1: Identify resource and program constraints hindering achievement of our measures; pursue program changes and request funding as necessary in budget. At a minimum, work to maintain current level of funding in cleanup programs.

Action 3.1.2: Provide technical oversight and directives for projects to investigate, remediate, manage, or restore properties with contamination.

Action 3.1.3: Review analytical and reporting data for projects.

Action 3.1.4: Issue letters upon the completion of all corrective actions for facilities.

Action 3.1.5: Inventory the list of sites with known or suspected contamination.

Tactic 3.2: Plan, design and execute Final Closure Period activities at Maxey Flats while maintaining regulatory compliance.

Measures:

- Substantial completion of final cap construction was achieved on November 14, 2016
- Complete Institutional Control Period Work Plan by October 2017

Action 3.2.1: Substantial completion of final cap was achieved on November 14, 2016.

Action 3.2.2: Final construction completion walk-through completed June 15, 2017.

Action 3.2.3: One-year warranty period for final cap construction ended October 2017.

Action 3.2.4: Prepare Institutional Control Period Work Plan to ensure compliance and maintenance and monitoring activities beyond the final cap completion.

Action 3.2.5: Draft Institutional Control Period Work Plan on May 25, 2017. Completed Institutional Control Work Plan October 2017.

Objective 4 - Support and encourage economic redevelopment of property with real or perceived contamination.

Tactic 4.1: Provide oversight to the investigation, remediation, management, or redevelopment of properties with real or perceived contamination.

Measures:

- Number of sites under review pursuant to the Voluntary Environmental Remediation Program
- Number of brownfield sites assessed under the Targeted Brownfield Assessment Program and number awaiting review
- Number of KRS 224.1-415 Brownfields Redevelopment Program applications received, number of eligibility letters issued, and number of concurrence letters issued

Action 4.1.1: Review project data and determine compliance with program requirements.

Action 4.1.2: Issue notices and letters for projects in accordance with regulatory guidelines.

Objective 5 – Minimize waste generation and disposal.

Tactic 5.1: Assure proper management and disposal of waste.

Measures:

- Compliance rates for authorized solid waste management facilities
- Amount, by weight, of litter, open dump waste, and household hazardous waste collected by counties through the Kentucky PRIDE program

Action 5.1.1: Inspect regulated sites at established intervals to facilitate and ensure compliance with agency requirements.

Action 5.1.2: Increase communications between permitting central office staff and field operations staff.

Objective 6 – Encourage beneficial reuse and recycling.

Tactic 6.1: Encourage reduced waste generation and disposal by promoting beneficial reuse, recycling, waste minimization, and pollution prevention.

Measures:

- Tonnage of municipal solid waste recycled or reused, by type
- Tonnage of material recycled through the State Government Recycling Program
- Number of solid waste beneficial reuse determinations
- Number of registered special waste beneficial reuse sites
- Number of land farming and composting facilities
- Tonnage of solid or special waste used as Alternate Daily Cover (ADC)
- Percentage of solid or special waste used as Alternate Daily Cover (ADC)

- Number of waste tires used in tire-derived fuel projects, crumb rubber grants, and other beneficial reuse purposes as a percentage of number of tires generated
- Number of recycling grants and total amount of funding administered

Action 6.1.1: Maintain and enhance ARM reporting or other databases to accurately track and report on measures.

Action 6.1.2: Provide education and outreach for recycling opportunities.

Action 6.1.3: Update recycling fact sheets as more current information is available.

Action 6.1.4: Administer grant programs in accordance with regulatory requirements.

Action 6.1.5: Publish The Marketplace for Recycling Commodities newsletter.

Action 6.1.6: Identify resource and program constraints hindering achievement of measures; pursue program changes and request funding as necessary in budget.

Objective 7 – Continue to Support and Coordinate Ongoing Programmatic Activities.

Tactic 7.1: Identify recommendations that will assist in providing the service and responsiveness required for carrying out the day-to-day activities in the Division.

Measure:

- Activities performed and coordinated

Action 7.1.1: Coordinate the activities of the Environmental Response Team (ERT) to effectively respond to environmental incidents.

Action 7.1.2: Develop and maintain all Standard Operating Procedures and Standard Operating Guidelines of the ERT that include ERT Operations and Procedures Plan, On-Scene Coordinators Field Guide, Drinking Water Emergency Plan, Response Coordinators Guidelines, BGAD Re-entry & Recovery Plan, and Emergency Transition Plan.

Action 7.1.3: Coordinate training for the ERT On-Scene Coordinators (Hazardous Waste Operations and Emergency Response (HAZWOPER), Quality Control System (QCS), Air Monitoring, Oil Spill Containment, Flood Control, and Hazardous Materials).

Action 7.1.4: Coordinate grant activities for the ERT to receive grant money for equipment and training through Homeland Security, Emergency Management, and EPA.

Action 7.1.5: The ERT will seek to acquire a boat that is suitable for the navigation of the Ohio and Mississippi River and has the ability to shelter staff from harsh weather. This acquisition would allow a boat to be placed in the Western Kentucky area and give the Branch quicker response times and flexibility during spills in that area.

Action 7.1.6: The ERT will acquire three cargo trailers. The trailers will be outfitted with supplies consisting of sample containers, absorbent pads and booms, etc. This will allow the ERT to respond quicker with supplies during spills throughout the commonwealth.

Action 7.1.7: The ERT will work with the Kentucky Division of Emergency Management to acquire a quick deployment trailer for air monitoring and sampling. This trailer will give the ERT the ability to have equipment on charge, and loaded in the trailer, allowing for quicker deployment of air monitoring equipment during incidents throughout the commonwealth.

PROGRAM, PLANNING & ADMINISTRATION BRANCH

waste.ky.gov/ppa

The mission of the Program Planning and Administration (PPA) Branch is to provide administrative and operational support to all branches in the Division through efficient and effective financial administration, personnel management, and regulatory development.

BUDGET

The budget for the Division covers numerous programs and activities, including partial funding of the Division of Enforcement and the ERT. The Division is financially supported by general funds, federal grants, and restricted funds (Figure 1). Monies received include fees collected for permits and registration activities, Petroleum Storage Tank Environmental Assurance Fund (PSTEAF), waste tire fees, environmental remediation fees, and an annual appropriation from the Kentucky Transportation Road Fund.

The Division has the budget to employ 236 full-time permanent employees in FY18 (Figure 2). While the number of funded positions decreased significantly in 2014, funded positions have remained relatively unchanged since then. However, previous reductions in personnel continue to challenge the division to evaluate program priorities and to identify efficiencies (Figure 3).

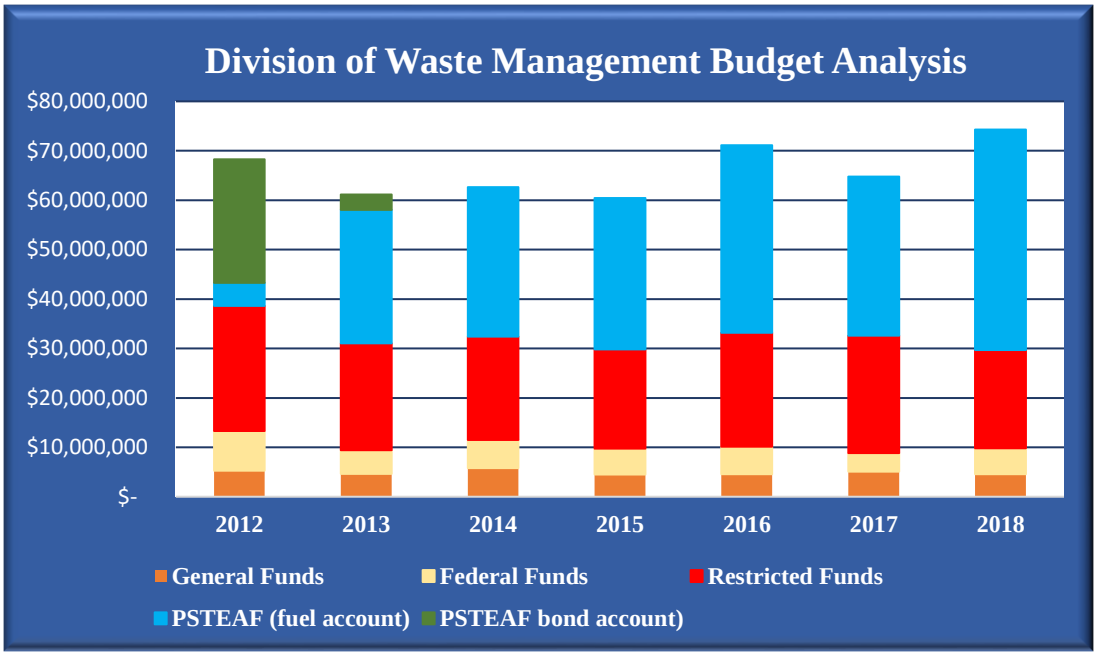


Figure 1: Division of Waste Management Budget Analysis

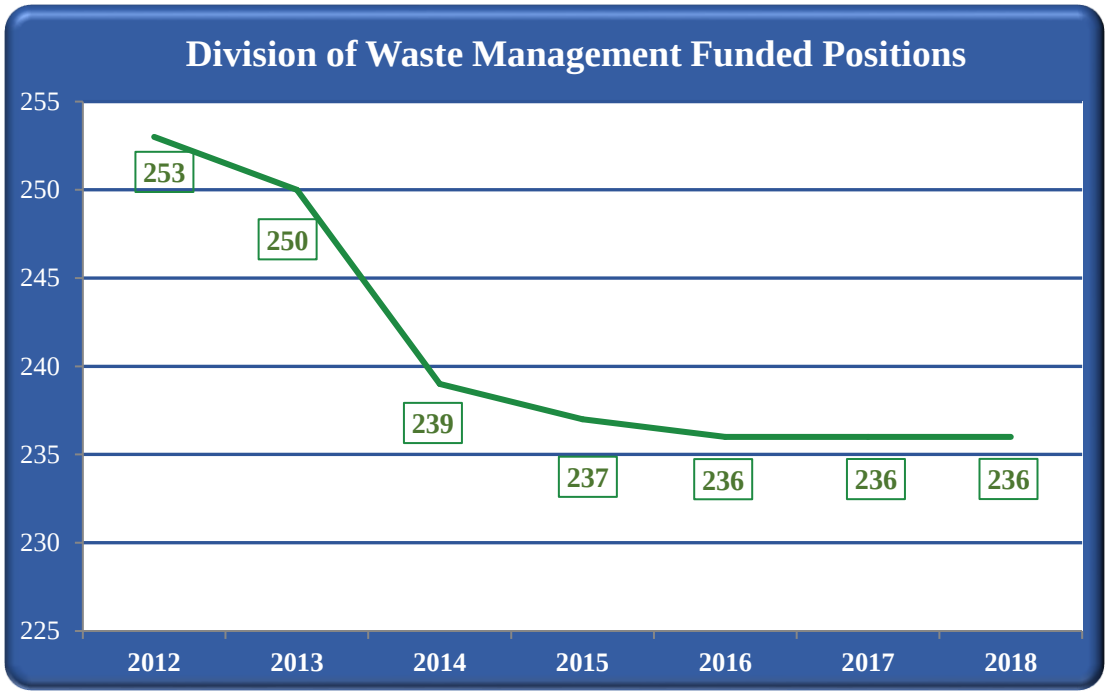


Figure 2: Division of Waste Management Funded Positions

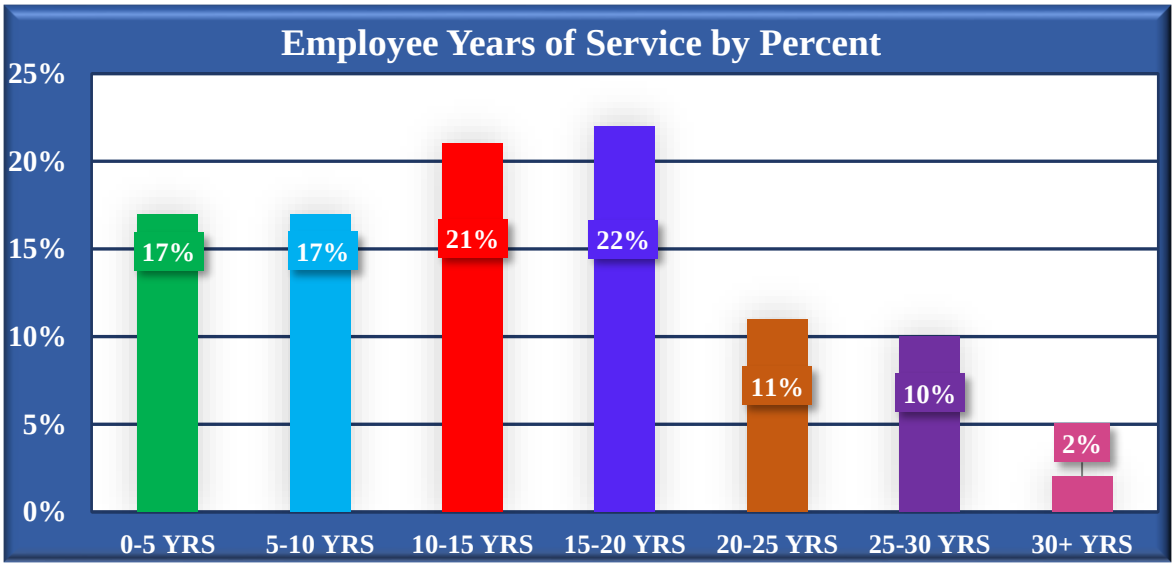


Figure 3: Employee Years of Service by Percent

PROJECT ADMINISTRATION SECTION

The Project Administration Section performs the division's procurement, contract administration, and grant management. This section also manages the division's accounts payable functions and payment processing for major fee-supported programs.

Project Administration typically manages a number of personal service contracts, memoranda of agreements (MOA) with other government entities, and the solicitation and contracting for necessary goods and services. In FY18, the Division worked with EEC's new Office of Administrative Services to expand the use of an existing MOA with Western Kentucky University. As a result, the Division of Abandoned Mine Lands, along with the Division of Mine Reclamation, now have the ability to utilize the geophysical services offered through this contract. The Finance and Administration Cabinet's Office of Procurement Services, renewed the Master Agreement, which was issued to Liberty Tire Recycling for the collection and hauling services under the Division's waste tire program for an additional two-year period. In addition, a personal service contract was issued to Defiant Technologies, Inc. to provide in-house and field-use training of Division staff on the functionality of a Frog 4000 portable mass spectrometer.

Many of the Division's programs are completely supported by federal funds, while others are only partially supported or not supported by federal funds at all. Currently, the Division receives funding from a total of 14 federal grants and cooperative agreements. This financial support includes:

- The Assembled Chemical Weapons Alternative (ACWA) Grant from the U.S. Department of Defense (DoD) provides financial support for the Division's efforts to ensure compliance with storage regulations; to review, amend and approve permit applications; to keep stakeholders and the community informed; and to ensure compliance during construction and operation of the Bluegrass Chemical

Agent-Destruction Pilot Plant (BGCAPP) and the Explosive Destruction Technology (EDT) facility.

- The Agreement in Principle (AIP) with the U.S. Department of Energy (DOE) funding allows the Division to conduct independent and impartial assessments of potential environmental impacts of DOE activities at the Paducah Gaseous Diffusion Plant (PDGP). Through the support of the agreement, the Division is able to manage independent environmental monitoring and research. These funds also allow the Division to enhance communications with concerned citizens.
- The Federal Facilities Agreement (FFA), a three-party agreement between DOE, EPA, and Kentucky, was developed to ensure compliance with and avoid duplication between the corrective action provisions of the Resource Conservation and Recovery Act (RCRA) permitting program and the corrective action requirements as established by Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) at the PGDP site. The FFA outlines regulatory structure and guides interactions between the three parties.
- In accordance with Section 128(a) of CERCLA, the EPA provides financial support to the Brownfield Redevelopment Program to address the assessment, cleanup, and redevelopment of brownfield sites.
- The DoD and State Memorandum of Agreement (DSMOA) provides funding to improve communication, coordination, and cooperation between DoD and the Division in providing protection of human health and the environment on DoD installations in Kentucky. The DSMOA program ensures environmental restoration at DoD installations occurs consistently with state and federal law.
- The Five-Year Review Cooperative Agreement (FYR) provides funding from the EPA to the Superfund Program to perform five-year reviews of remedial action at National Priority List (NPL) sites in Kentucky. The purpose of a five-year review is to determine whether a site's ongoing or completed remedial actions will remain protective of human health and the environment.
- The Support Agency Cooperative Agreement (SACA) provides additional financial support to the Superfund Program to perform five-year reviews of remedial action at NPL sites in Kentucky.
- With financial support from the Preliminary Assessment/Site Investigation Cooperative Agreement (PASI), the Superfund Program assists the EPA with the evaluation of sites with known or suspected releases of hazardous substances, pollutants, or contaminants. Under PASI, the Division assists the EPA through all aspects of the site assessment process and helps identify candidate sites for the NPL list. The NPL list consists of CERCLA sites that represent the most significant risk to human health and the environment.
- The Brownfields Assessment and Cleanup Grant (BAG) from the EPA provides funding to communities that wish to address brownfield properties in order to protect and or improve water resources. This grant was designed to target rural

areas impacted by coal mining, but it may also be used to assess approved sites throughout the commonwealth.

- Financial assistance from the Core Program Cooperative Agreement (CORE) helps the Division's Superfund Program carry out its activities and responsibilities as established by CERCLA in identifying, investigating, and addressing environmentally contaminated sites in accordance with CERCLA.
- The Leaking Underground Storage Tank (LUST) Cleanup Cooperative Agreement with the EPA provides financial assistance to the Underground Storage Tank (UST) program to oversee the cleanup of leaking USTs by responsible parties and to ensure the cleanup at sites where an owner or operator is unwilling or unable to take necessary corrective action.
- The LUST Prevention Assistance Agreement with the EPA provides financial support for the development, implementation, and maintenance of the UST program as well as financial support for the detection and prevention, of leaking USTs in Kentucky.
- The RCRA Grant provides the Division's Hazardous Waste Management Program with the financial support necessary to implement RCRA permitting, corrective action, closure, compliance, and enforcement in accordance with the EPA's performance expectations.
- The EPA's Toxic Substances Control Act (TSCA) Compliance Monitoring Cooperative Agreement provides financial support to the Division to implement the polychlorinated biphenyls (PCBs) compliance monitoring program. The agreement allows the Field Operations Branch (FOB) to perform PCB inspections, generate inspection reports, and track facility information in the PCB Transformer Registration Database.

PERSONNEL AND ADMINISTRATIVE SUPPORT SECTION

The Personnel and Administrative Support Section performs support-related duties for the PPA Branch and the Division. These duties include the coordination and procurement of goods and services on state contracts such as office supplies, equipment, furniture, uniforms, and boots for the Division's Central Office. This section provides support in identifying facility needs for Division personnel, including workspace logistics and new phone installations.

Furthermore, the Personnel and Administrative Support Section is tasked with the coordination of employee training and development, in-state and out-of-state travel logistics, and reimbursement of expenses. In FY18, Division personnel participated in 603 trainings and development opportunities. In accordance with new department training requirements developed in 2016, Division employees have continued to enroll in various curricula in the Kentucky Enterprise Learning Management System (KELMS) based upon their job functions. The curricula consist of a series of required online-training modules and instructor-led courses. All Division employees are required to complete the DEP safety training curriculum, while field and technical personnel are required to complete an additional training curriculum. The Division has also conducted training

for managers and supervisors on the enhancement of performance planning and an update regarding new statewide hiring and selection policies.

This section also works closely with the ERT in processing invoices and payments related to emergency responses and cleanups. In FY18, 57 new ERT contracts were awarded to vendors, 17 of which were done so in an emergency declaration. Moreover, this section provides support in recovering response costs when viable responsible parties are available. For FY18, the Division was able to recover a total of $251,481 in emergency response costs. These funds were deposited back into the Hazardous Waste Management Fund (HWMF) to be reutilized for the remediation of environmental contaminations throughout Kentucky.

PROGRAM DEVELOPMENT SECTION

The Program Development Section performs a variety of functions, such as management of planning initiatives, development of regulations, and coordinating the review of proposed bills during the legislative session.

REGULATION DEVELOPMENT

The division amended two regulatory packages during FY18, the Hazardous Waste Program and a regulatory package focused on Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM). These packages were filed in July 2017, and they became effective in December 2017.

LEGISLATION

The Kentucky Legislature passed House Bill 50, an amendment to KRS Chapter 13A, in the 2017 Legislative Session. This amendment enables state agencies to make conforming changes to administrative regulations. Chapter 13A now requires ordinary administrative regulations with effective dates on or after July 1, 2012, to expire seven years after its last effective date, and regulations with effective dates prior to July 1, 2020, to expire on July 1, 2019.

To maintain the validity of the Divisions regulations, this section will file letters of certification with the Legislative Research Commission's (LRC) Compiler stating that the regulations will be amended, or remain in effect with no amendments. Administrative regulations that will be amended must be filed within eighteen (18) months of the certification date that the letter is filed with the LRC.

The Division has identified, and is in the process of filing letters for 104 administrative regulations for FY19 in the following areas:

- Chapter 30, Waste Management, General Administrative Procedures
- Chapter 39, Hazardous Waste
- Chapter 40, Enforcement and Compliance Monitoring
- Chapter 42, Underground Storage Tanks
- Chapter 45, Special Waste
- Chapter 46, Coal Combustion Residuals

- Chapter 47, Solid Waste Facilities
- Chapter 48, Standards for Solid Waste Facilities
- Chapter 49, Solid Waste Planning
- Chapter 100, Environmental Planning
- Chapter 101, Methamphetamines
- Chapter 102, Brownfields Redevelopment

This process will eventually set all administrative regulations on a continuous seven-year cycle for renewal or expiration, and allow state agencies to review and reconsider whether aging regulations are still necessary.

REPORTS

During FY18, PPA prepared the HWMF Biennial Report, as mandated by KRS 224.46-580(13)(c), which discusses information related to the expenditures and revenues of the HWMF for FY17 and FY18. This report is available for review by accessing the Division website, HWMF section, at http://waste.ky.gov/Pages/AnnualReports.aspx.

In addition, PPA prepared the Division's Strategic Operational Plan and mid-year status updates of planning initiatives for CY2018.

The Waste Tire and Trust Fund (WTTF) FY2018 Annual Report was submitted in January 2018, as mandated by KRS 224.50-872. This report provides information relevant to Kentucky's waste tire program, its expenditures, revenues, and effectiveness in developing markets. The benefits of the fee in funding the EEC's implementation of the waste tire program and recommendations for improvement were included. This report is available for review by accessing the Division website, Waste Tire Program Report section, at http://waste.ky.gov/Pages/AnnualReports.aspx.

FIELD OPERATIONS BRANCH

waste.ky.gov/fob

The mission of the FOB is to identify and abate imminent threats to human health and the environment through inspections, technical assistance, and education.

This branch performs inspections at sites managing solid waste, hazardous waste, USTs, and PCBs. The primary duty of a regional inspector is to inspect regulated facilities for compliance.

The FOB includes a central office, Richmond satellite office, and ten regional offices located throughout Kentucky. The regional staff is familiar with the local waste management issues and responds to questions and concerns.

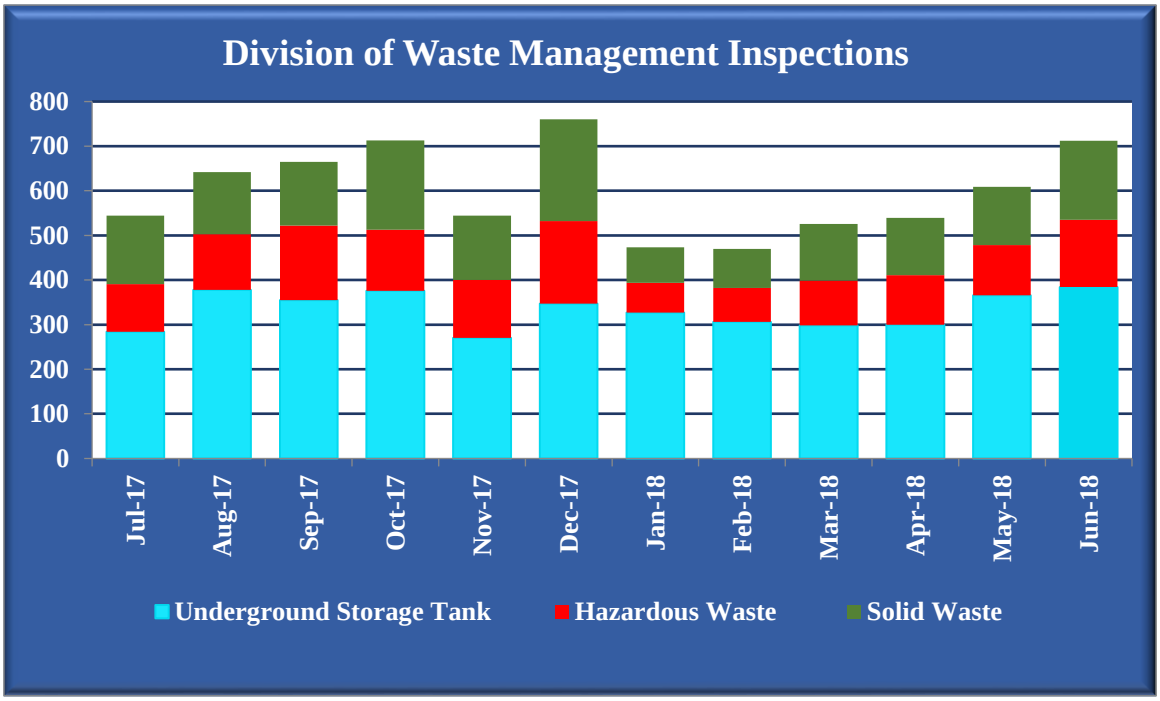


Figure 4: Division of Waste Management Inspections

During FY18, the FOB conducted 7,197 UST, solid waste, and hazardous waste inspections. This was virtually the same number of inspections as in FY17.

The 3,991 UST inspections conducted in FY18 accounted for 55 percent of the total inspections. UST inspections were up 1 percent from the previous year. UST compliance rates[1] were up 5 percent from the previous year at 57 percent. UST Notices of Violations declined from FY17 by 14 percent. Compliance rates have been on the increase the last several years. The increase can be attributed to awareness with the new regulations which incorporated provisions of the Energy Policy Act of 2005.

The FOB conducted 1,737 solid waste inspections in FY18. This is a 1 percent increase from the previous year. The compliance rate for solid waste facilities was at 70 percent. Compliance rates increased by 1 percent from FY17.

The FOB conducted 1,469 hazardous waste inspections in FY18, a decrease of 4 percent from the previous year. The decrease in inspections is attributed to time hazardous waste inspectors spent updating the requirements library to reflect changes from EPA's Hazardous Waste Generator Improvements Rule published in the Federal Register in November 2016. The compliance rate for hazardous waste facilities totaled at 78 percent. Compliance rates decreased 4 percent from FY17.

[1] *"Compliance Rate" means the percent of total inspections where an inspector noted that no violation had occurred. This does not include investigations triggered by citizen complaints.*

In FY18, FOB conducted 9,392 complaint investigations, total inspections, and investigations. UST technical compliance inspections (TCI) remained between 52 and 60 percent through from July 2017 through July 2018. (Figure 5).

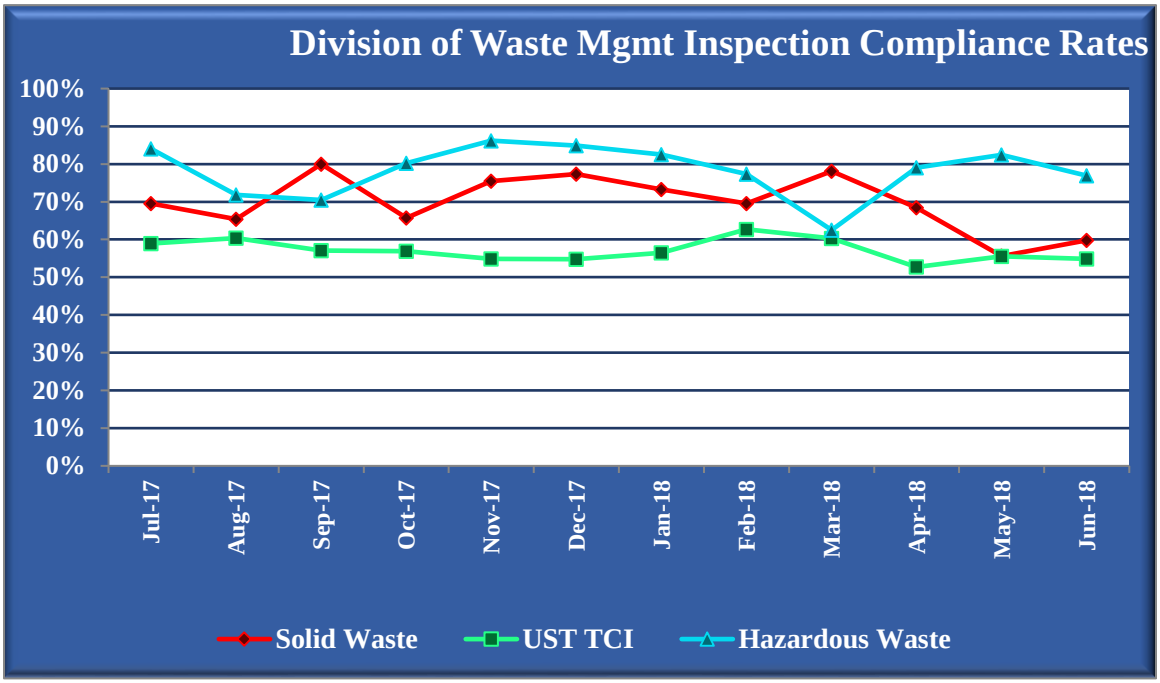


Figure 5: Division of Waste Mgmt Inspection Compliance Rates

Field Operations Branch Highlight
By Rob Mauer

The Division has purchased two drones using federal grants. A DJI Phantom 4 and a DJI Mavic Pro are used by the FOB to fly missions throughout the state. The Phantom 4, used by the Division for several years, safely and efficiently monitors the maintenance needs and progress of constructions at the Maxey Flats disposal facility. The FOB recently purchased the Mavic Pro drone for statewide use. This drone has successfully surveyed, photographed, and recorded videos of landfills, open dumps, and citizen complaints. It is also used in emergency situations to track smoke plumes, hazardous waste releases, inspections of facilities, and to document pre- and post-construction activities and cleanups. The Division currently employs two licensed drone pilots; one is stationed at the Maxey Flats site, and the other conducts flight operations throughout the state. As utilization of drones becomes more frequent, the number of licensed pilots is expected to increase.

Photo 1: Three dimensional rendering of an active landfill. Photo taken by DJI Mavic Pro drone.

The maximum potential of drones as tools for the Division is evolving, and as software and hardware upgrades become more affordable, the FOB will be able to expand the capabilities of the tasks of these drones. The Division is working with the ERT to send drones with air monitoring equipment into plumes as a future task. Currently, drones are used to observe the paths of smoke plumes, but the goal is to transport air monitoring equipment into smoke plumes to record air contaminant levels. The benefits would include collecting better data while enhancing staff safety.

Photo 2: Drone image of smoke plume at a recycling plant fire. Photo taken by DJI Mavic Pro Drone.

There are responsibilities with the use of drones. The FOB balances the use of these tools by maintaining favorable public perception associated with flyovers of public and privately owned lands.

HAZARDOUS WASTE BRANCH

waste.ky.gov/hwb

HAZARDOUS WASTE CORRECTIVE ACTIONS

The Corrective Action Section of the Hazardous Waste Branch (HWB) completed numerous significant activities of interest during FY18. The Section has continued to make progress in meeting Environmental Indicators (EIs), which are measures developed by the EPA to track remediation achievements. These include "Remedy Constructed", "Performance Standards Attained" and "Ready for Anticipated Use." The Corrective Action Section also continued to conduct groundwater monitoring program inspections and assessments, completed work on sites not on the GPRA baseline, and completed one post-closure permit renewal.

ENVIRONMENTAL INDICATORS DETERMINATIONS COMPLETED

In FY18, 8 total EIs were completed, which involved the evaluation and documentation of the meeting of certain requirements. These included:

3 Remedy Selected Attainments:

- Philips, Danville
- Koppers, Guthrie
- Federal Mogul, Scottsville

1 Ready for Anticipated Use

- Safety Kleen, Ashland

4 Performance Standards Attained:

- Ashland Route 3, Ashland
- Grede Foundries, Cynthiana
- Industrial Container Service, Louisville
- Virtus Precision Tube, Franklin

GROUNDWATER MONITORING SYSTEM INSPECTIONS CONDUCTED

A total of 16 groundwater monitoring inspections were conducted during FY18 at these sites:

- Ashland Route 3, Ashland
- Atkemix Ten, Louisville
- Florida Tile, Lawrenceburg
- GE Appliance Park, Louisville
- Hallmark, Harrodsburg
- Industrial Container Service, Louisville
- IPSCO Tubulars, Wilder
- Kelley Technical Coatings, Louisville

- Koppers, Guthrie
- Ledvance, Versailles
- Monument Chemical, Brandenburg
- Naval Ordnance Station, Louisville
- Owensboro Riverport Properties
- Rohm and Haas, Louisville
- Virtus Precision Tube, Franklin
- YKK, Lawrenceburg

POST-CLOSURE PERMITS REVIEWED/RENEWED/ISSUED

Corrective Action Section personnel also completed the following actions:

- Issued two Notices of Deficiencies regarding permit renewals
- Determined 3 permit renewal applications as complete
- Completed the public involvement process for 2 permit renewals
- Issued 1 permit renewal

INVESTIGATION AND REMEDIATION WORK PLANS AND REPORTS

During FY18, 4 RCRA Facility Investigation related activities and 4 Interim Measures related activities were completed. A total of 6 Corrective Measures Study/Corrective Measures Implementation activities were performed and 6 miscellaneous actions were completed. This branch reviewed 24 monitoring reports in FY18, and section personnel also completed 4 Contained-In Waste Determinations.

Photo 3: Demolition of former pesticide manufacturing facility. Arkema, Calvert City. Photo by GHD Group Party, Limited.

Significant work was conducted by the HWB pertaining to the following specific projects:

- Work and planning towards achieving closure of a drip pad at Southern Wood Treatment
- Completion of an Agreed Order and plan approval for removal of lead contaminated soils and sediment in an unrestricted access streambed owned by Ledvance
- Planning in preparation for removal of contaminated sediments from a wastewater pond at the Kentucky Electric Steel property
- Imposition of off-site investigations at General Electric Appliance Park and Atkemix Ten
- Closure of a surface impoundment at Arkema

- Coordination with the U.S. Corps of Engineers regarding the investigation of spent ordnance located in the confines of the former Camp Breckenridge property

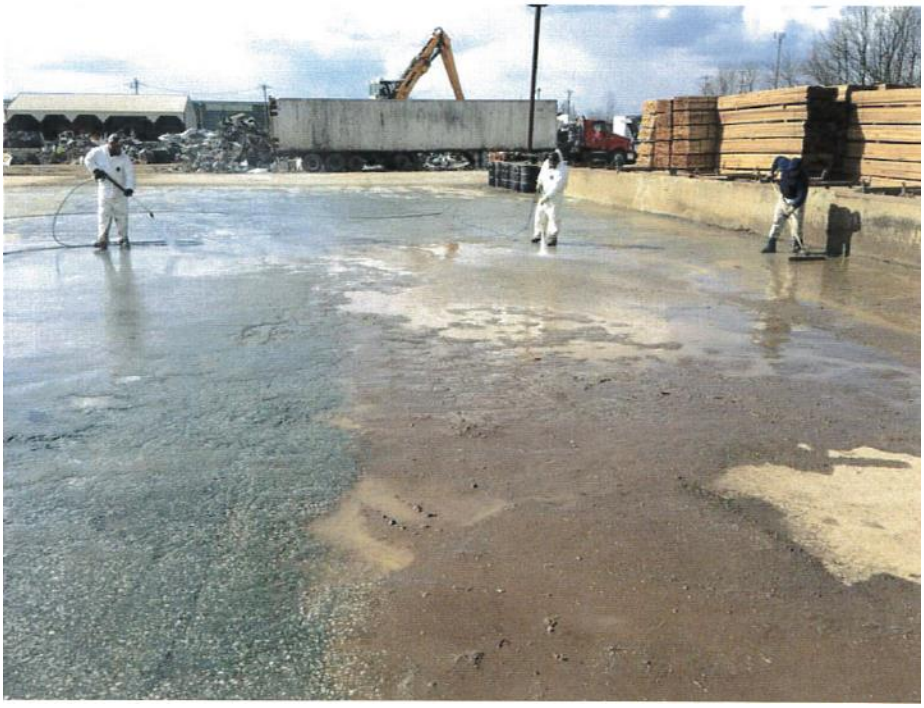


Photo 4: Drip pad decontamination at Southern Wood Treatment Plant. Winchester, KY. Photo courtesy of Lineback Funkhouser.

Hazardous Waste Branch Highlight
By April Webb, P.E.

During FY2018, the HWB updated the hazardous waste regulations, which were previously revised in 2007. The new regulations, effective December 7, 2017, fully incorporate the current federal language from the EPA. HWB is waiting for notification in the Federal Register public notice that the EPA has granted authorization for the program. Changes in the regulations will permit affiliated Very Small Quantity Generator (VSQG) facilities to send their waste materials to Large Quantity Generator (LQG) facilities. Generators could realize cost savings through reduced operating and shipping costs. A total of 2 LQGs have already taken advantage of the VSQG waste consolidation at an LQG since the hazardous waste regulations were updated.

In FY18, the HWB completed a major remediation project to remove lead and arsenic contaminated environmental media at the former Philips industrial property in Danville, Kentucky. This project was initiated March 15, 2016, when the branch approved a work plan for remediation of 3,965 feet (0.75 miles) of an unnamed tributary to Clarks Run Creek. Work began September 6, 2016, and was completed June 15, 2017. Remedial efforts included removal and disposal of 23,100 cubic yards (yd^3) of the lead and arsenic contaminated soil and sediment from the creek and an adjacent 2.5-acre wetland area. When removal activities were completed, stream and wetland restoration was performed, which included the replacement of the contaminated soil with

clean soil, as well as contouring and planting native species of trees, shrubs, grasses, and flowers. This restored the area to its preexisting conditions. As a result of these efforts, potential exposures to lead and arsenic by human and ecological receptors have been abated. A final report documenting this remediation work was submitted by Philips to the HWB in August 2017.

RECYCLING & LOCAL ASSISTANCE BRANCH

waste.ky.gov/rla

The Recycling and Local Assistance (RLA) Branch works primarily with county and local governments to assist in solid waste management planning, as well as recycling, litter abatement, and illegal open dump cleanup. RLA provides technical assistance, outreach, and training to public and private entities, and administers numerous grant programs.

In accordance with KRS 224.43-315, recyclers are required to report annually to their counties the amount of municipal solid waste collected for recycling by volume, weight, or number of items, and the type of items recycled. Data received for CY2017 showed a statewide recycling rate of 38.2 percent, which is a small increase from 37.2 percent in 2016 (Figure 6). This fluctuation could be due to market forces or improvements to individual recycling programs, or it could simply reflect minor inconsistencies in data collection and reporting methodologies from year-to-year. This branch relies on individual counties and recycling operations to report accurate data. A strong effort by this branch to confirm and cross check these numbers, ensures that entities are consistent with uniform data generation.

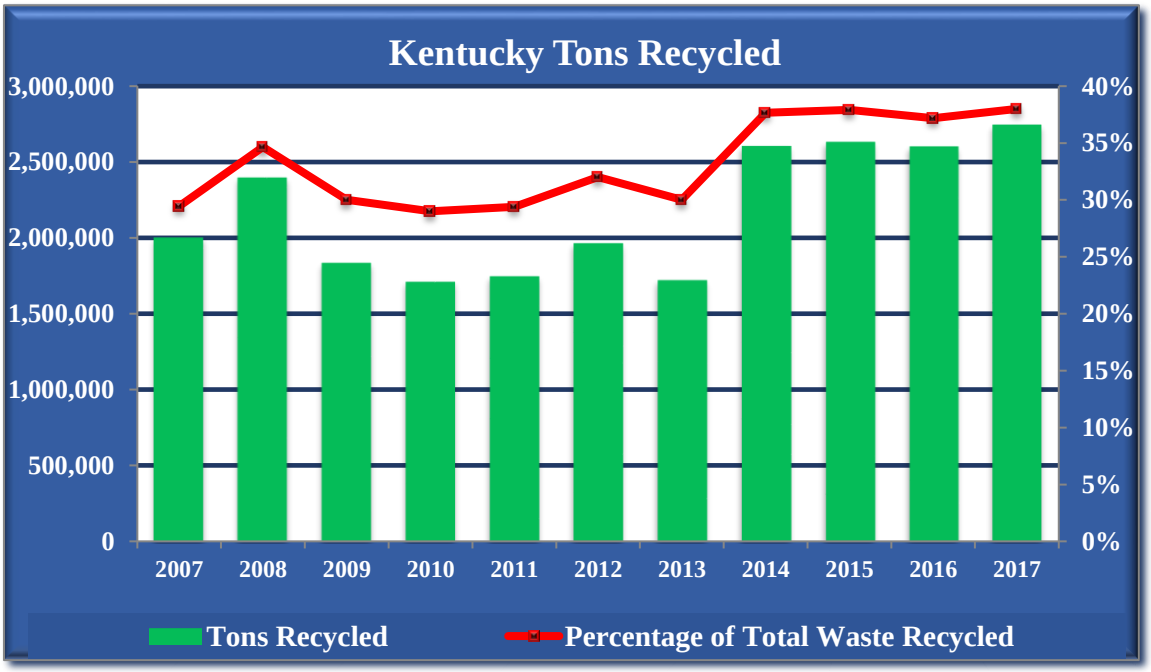


Figure 6: Kentucky Tons Recycled

Significant year-to-year fluctuations were reported in the volumes of individual commodities. In CY2017, increases were reported in electronic scrap, ferrous metals, non-ferrous metals, steel cans, aluminum cans and polyethylene terephthlate (PET) plastic. A decrease was reported in glass, high density polyethylene (HDPE) plastic, and fiber commodities. The overall recycling rate in Kentucky, and nationally, has remained essentially flat (between 35 percent and 40 percent) in recent years.

The State Office Paper Recycling Program

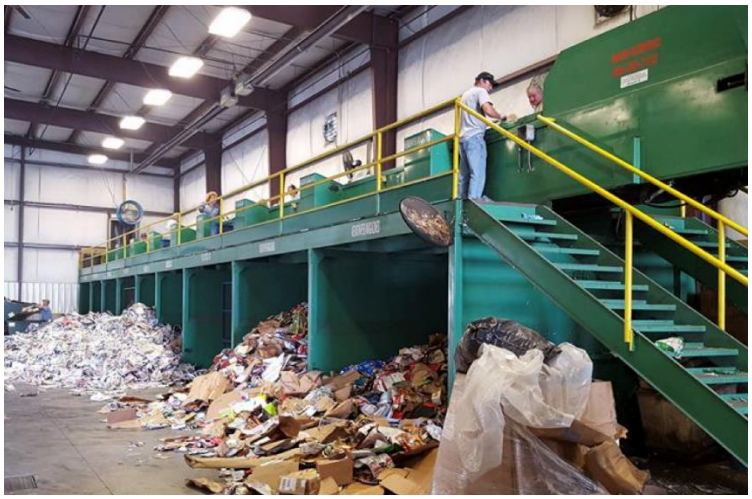


Photo 5: Sorting Line, Pulaski County Recycling Center. Photo by Lisa Evans

The Government Recycling Section continues to operate the State Office Paper Recycling Program, serving more than 115 agencies in Frankfort. The program offers free pickup and document destruction of governmental office paper. Their location on Northgate Drive in Frankfort offers a secure environment to ensure proper processing of confidential documents. Office paper represents 80 percent of the waste stream in the office environment. Since 2006, state employees recycled more than 17,384 tons of waste paper, generating approximately $3.46 million in revenue. In CY2017, state employees recycled 1,144 tons of waste paper, an average of approximately 176 pounds per state employee. A slight decrease in tonnage and a slight increase in revenue in CY2017 reflects typical fluctuations in commodity prices over time (Figure 7).

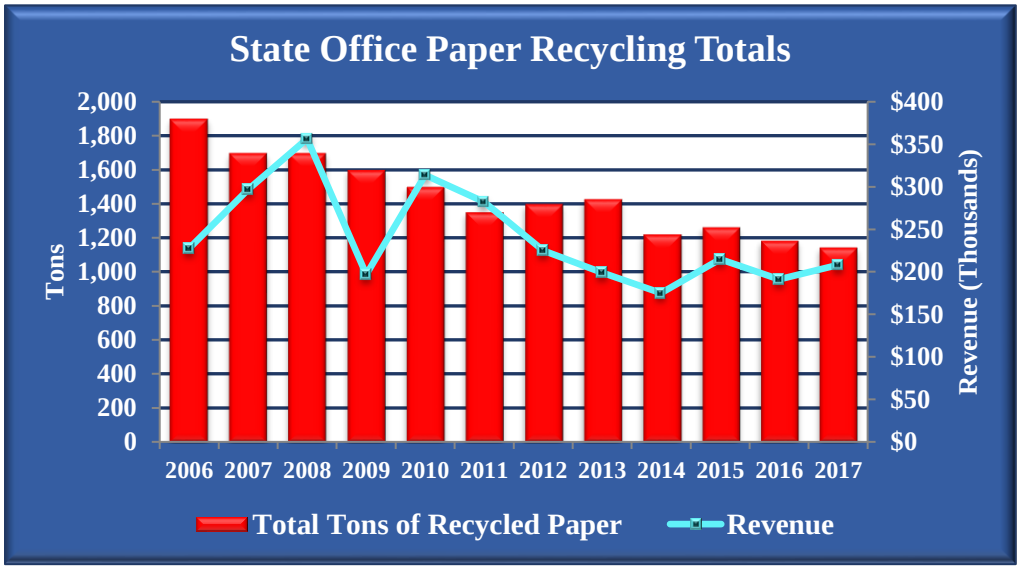


Figure 7: State Office Paper Recycling Totals

THE MARKETPLACE

Through publication of *The Marketplace* newsletter, the Division reports on the prevailing prices paid for aggregate recyclable materials. The charts in Figures 8 through 11 demonstrate the trends for various commodities. Changes in China's policies on accepting exported recyclable commodities have significantly affected global markets. The "National Sword" initiative includes slowing the issuance of Chinese import permits for recyclables, greatly decreasing acceptable contamination levels, and a complete import ban on certain materials.

The MARKETPLACE For Recycling Commodities

The effects of this policy is especially notable in the lower value fiber commodities, with mixed paper and newsprint approaching zero value. Sorted paper and cardboard prices are volatile but remain fairly strong. Sorted white ledger, generally the most valuable fiber commodity, saw a significant drop at the end of the fiscal year but has since recovered. It is difficult to predict how China's import policies may evolve, but they are likely to become a major factor in prices of certain commodities for the immediate future (Figure 8).

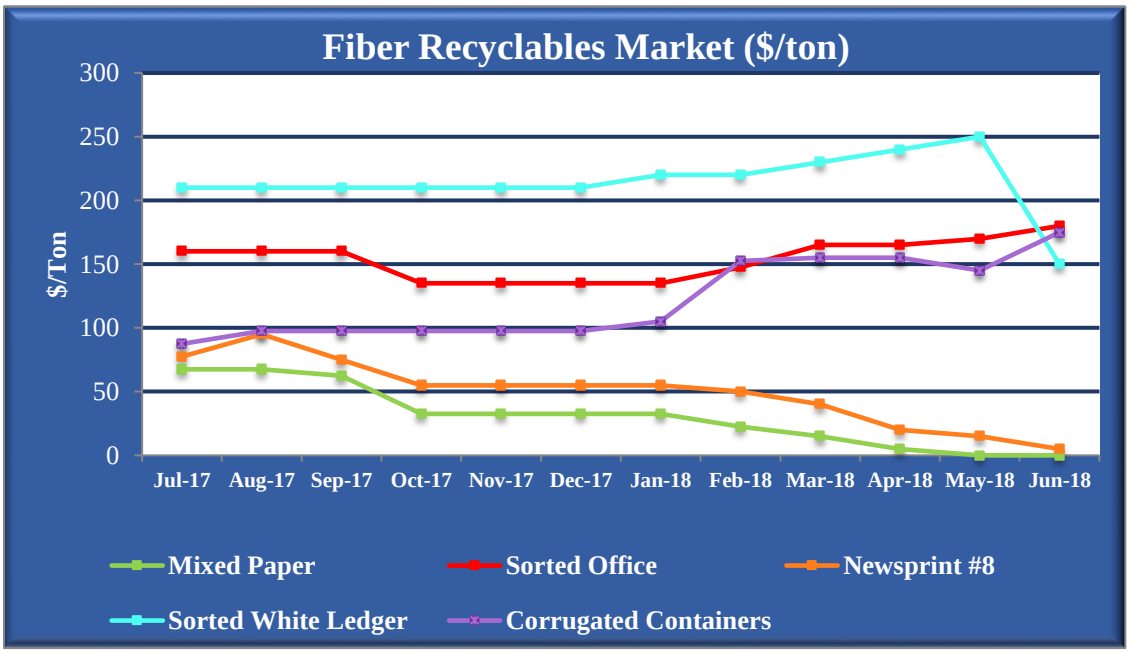


Figure 8: Fiber Recyclables Market ($/ton) [2]

[2] *Corrugated Containers: typically, brown cardboard boxes.*
Mixed Paper: lower grade of material that includes slick advertising inserts, junk mail, paperboard containers and other types of paper mixed together.
Newsprint #8: baled sorted newspaper, with no sun exposure, with the typical amount of slick advertising inserts, as would be delivered to a home or at a newsstand.
Sorted Office: an assortment of white, colored and coated, ground wood-free copier and printer paper.
Sorted White Ledger: white paper.

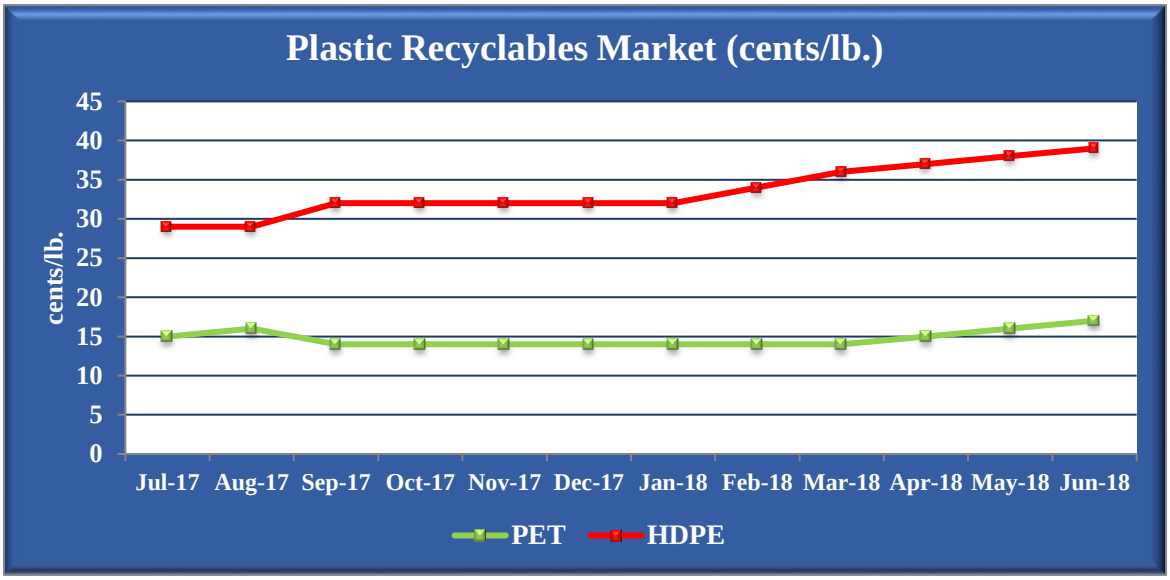


Figure 9: Plastic Recyclables Market (cents/lb.)

Petroleum prices have an effect on global plastic markets, which are also dependent on regional demand and processing capacity. PET and HDPE prices have remained steady while some grades of mixed plastics, which were targeted by China's stricter import policies, have dropped significantly and reflect a negative value in some cases (Figure 9).

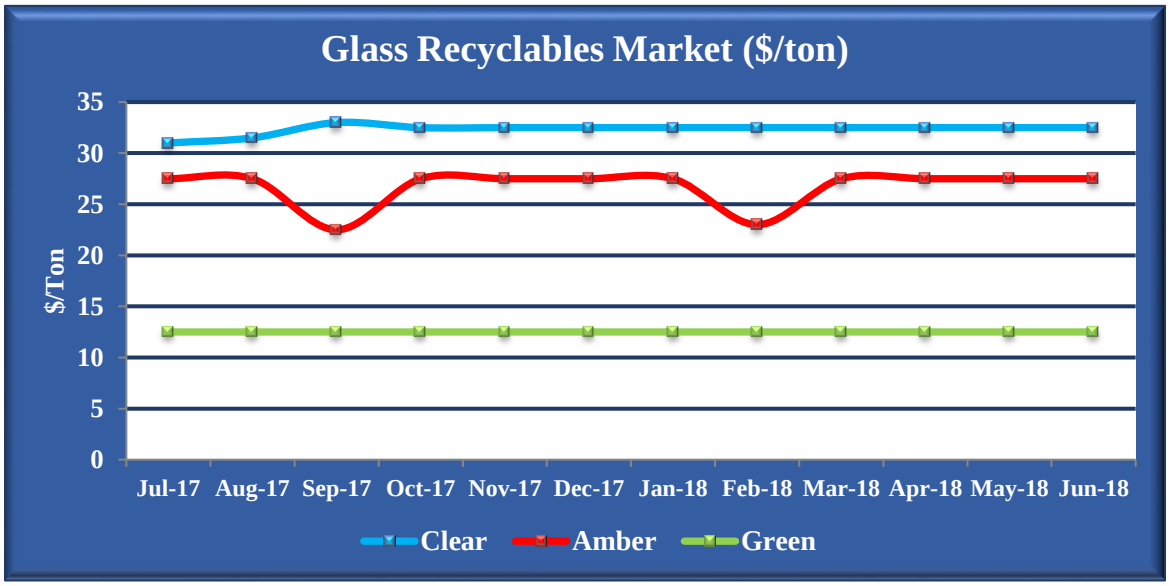


Figure 10: Glass Recyclables Market ($/ton)

Residential glass recycling remains problematic due to single stream and curbside collection that often results in cross contamination of materials (co-mingled colors and glass with paper mixed in) which greatly diminishes its market value. Glass prices are "break-even" at best. Many recycling operations find the best uses are in local projects including roadbed amendment, landscaping mulch,

or decorative art projects. It is difficult to avoid accepting glass in community recycling programs, and minimizing the handling cost of this material is often the best option (Figure 10).

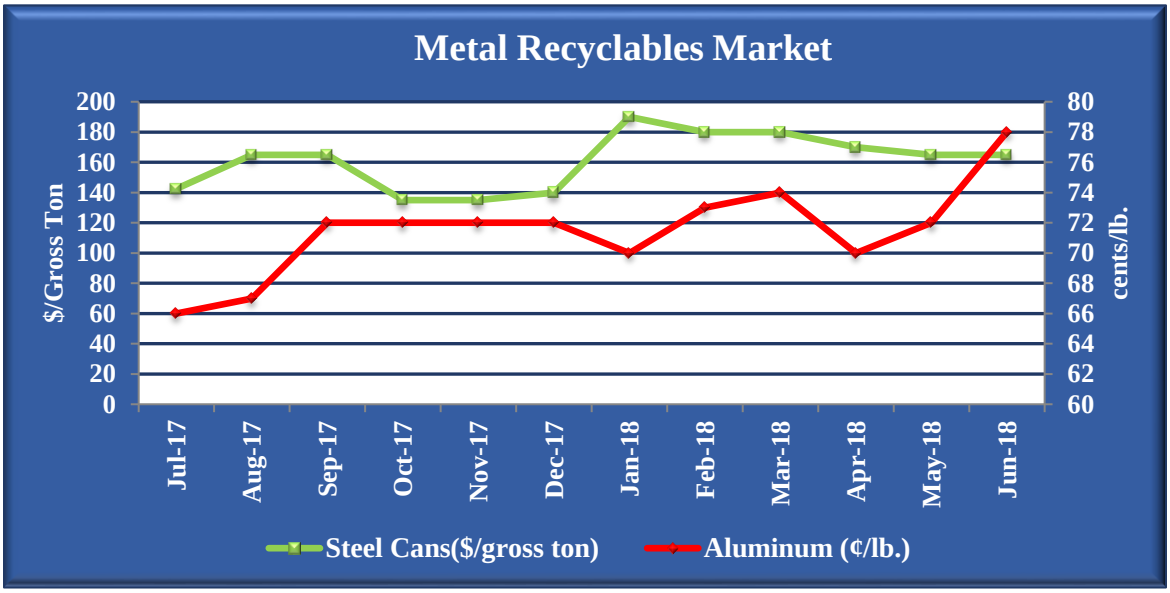


Figure 11: Metal Recyclables Market

Both ferrous and non-ferrous metals bottomed out in early 2016, but quickly recovered and showed slight growth through June 2018. There is optimism for more stable pricing within the industry (Figure 11).

Scrap steel (including white goods, i.e., appliances), steel cans, aluminum, and copper bearing scrap will continue to be in demand, especially as the global economy continues to improve. Most of these items require little or no processing, which makes them valuable additions to a community recycling program. White goods prices tend to have very little volatility.

Waste Tire Trust Fund

The WTTF was reauthorized by the General Assembly in their 2018 session and will remain effective through June 30, 2020. The previous 1 dollar fee on the sale of all new motor vehicle tires sold in Kentucky, which is the source of the WTTF, was increased to 2 dollars per tire. The Fund is used to conduct waste tire collection events, provide annual funding directly to counties for waste tire management, award crumb rubber and rubber-modified asphalt grants, facilitate market development for the use of waste tires, and to clean up waste tires at mismanaged sites.

Beginning in 2011, the Division offered a $3,000 annual grant available to counties for recycling or disposal of waste tires. This amount was increased to the current $4,000 in FY2014. At an illegal tire dump cleaned up this year, a total of 8,710 tires were removed from a property in Ohio County.

Photo 6: Illegal Tire Dump in Marion County. Photo by Grant White

CRUMB RUBBER/TIRE DERIVED PRODUCTS GRANT:

From 2004 to 2018, the Division has awarded 467 grants totaling over $8 million to local governments, schools, daycares, churches, and other entities for projects using products made from recycled tires. In FY18, 13 grants totaling $309,946 were awarded for the application of crumb rubber used for landscaping and other tire-derived products from recycled Kentucky tires. This is approximately $100,000 more than was awarded in the previous year, at least partly due to the promotion of poured-in-place rubberized pavement projects. This material can be used for walking trails, playgrounds, outdoor patios, or courtyards, etc., and is increasing in popularity statewide.

Photo 7: Poured-in-place rubber surfacing. Fischer Park, Somerset, Photo by Lisa Evans

WASTE TIRE WORKING GROUP

In 2011, House Bill 433 established a Waste Tire Working Group (WTWG). The WTWG is a committee, appointed by the governor in accordance with KRS 224.50-855, to discuss and research topics in waste tire management, and make recommendations to the cabinet in efforts to improve Kentucky's programs. The committee is tasked with meeting twice per year with all meetings open to the public. The WTWG consists of two ex-officio members and six appointed members:

Governor Matthew Bevin appointed Edna Berger and reappointed Shane Gabbard to the WTWG on August 3, 2018, to terms that expire August 1, 2021. Ms. Berger is the Mayor of Elizabethtown and Mr. Gabbard is Jackson County's Judge/Executive. These newest appointees will be the WTWG's Mayoral and County Judge Executive representation, respectively.

Current members of the WTWG:
Director of the Division or designee:.....Byron Bland (ex-officio)
Manager of the Division's Recycling and Local Assistance Branch:.....Gary Logsdon (ex-officio)
Kentucky Department of Agriculture representative:.....Harlan Hatter
Kentucky Solid Waste Coordinators, two representatives:.....Kelly Bowlin (Boone Co.)
.....Scott Tussey (Madison Co.)
Mayor:.....Edna Berger (Elizabethtown)
County Judge/Executive:.....Shane Gabbard (Jackson Co.)
Retail tire sales in private industry representative:.....Joe Durkin

RUBBER MODIFIED ASPHALT:

In the spring of 2016, the RLA launched the Rubber-Modified Asphalt Chip Seal Grant program. This grant was open to counties for the application of chip seal on county roads utilizing rubber-modified asphalt (RMA). Chip seal is a process that combines one or more layers of asphalt with one or more layers of aggregate, and it is used to extend the life of existing road surfaces. In June 2016, the Division announced that up to $500,000 would be awarded for RMA chip seal projects. The RMA grant was continued for the CY2017 and 2018, and it was expanded to include a RMA thin overlay pavement. This thin overlay product mixes dimensional recycled ground rubber tires into the asphalt and aggregate mix to produce a smooth pavement asphalt instead of the coarser texture product of chip seal. This grant provides funding to apply the thin overlay (1.5-inch thickness) to county roads with a chip seal or paved foundation.

Photo 8: Rubber-modified asphalt project in Green County. Photo by Gary Logsdon

The Division awarded six RMA grants in FY18, and expects to award seven additional grants in FY19. At the end of FY18 the Division had awarded a total of 11 grants and $870,950 in grant money for RMA paving projects.

KENTUCKY PRIDE FUND

The Kentucky PRIDE Fund is supported by an environmental remediation fee of $1.75 per ton of waste disposed in Kentucky landfills. This money is used for closure of historic landfills, recycling grants, household hazardous waste management grants, and remediation of illegal open dumps. Additionally, this fund receives $5 million annually from Kentucky Transportation Cabinet funds, specifically for distribution to counties and incorporated cities for litter abatement activities.

LITTER ABATEMENT

In 2001, the Division began tracking the cost of litter activities and the amount of litter collected. Litter abatement grant funding through the Kentucky PRIDE Fund was initiated in FY02. In 2017, counties removed 577,165 bags of litter (11,543,300 pounds) from 182,121 miles of Kentucky roadways. The amount of litter collected on public roads may not include litter collected by state road crews as part of the Transportation Cabinet's efforts to maintain state roads. Litter collection costs totaled $7.14 million, an average cost of 62 cents per pound. Litter collection is expensive, at $1,237 per ton, when compared to the average landfill disposal rate of $39.91 per ton. The most common items found on roadways are plastic bottles and food containers.

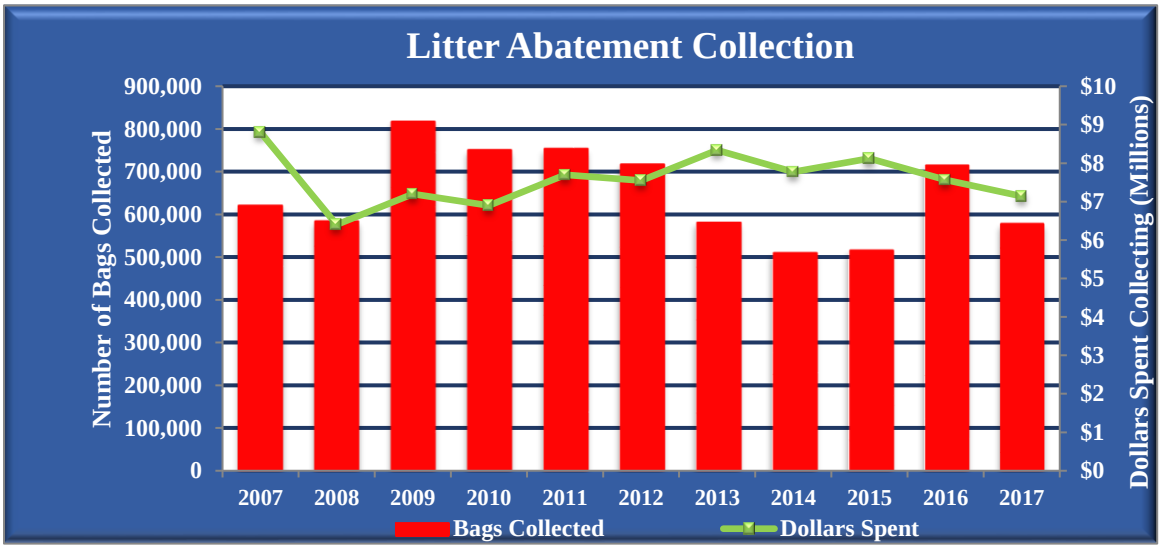


Figure 12: Litter Abatement Collection

There has been a substantial variation of dollars spent per number of bags collected over the past 10 years (Figure 12). Collection and recordkeeping procedures might not be consistent among the counties. Expenses such as education and outreach, which do not contribute to the number of bags collected, can vary considerably from year to year.

RECYCLING AND HOUSEHOLD HAZARDOUS WASTE

The Kentucky PRIDE Fund was amended in 2006 to provide grants for the development and expansion of recycling programs and household hazardous waste (HHW) management. During FY18, 83 entities were awarded grants exceeding $4.6 million. A total of 53 recycling grants were awarded to cities, counties, and universities. These grants assist in funding the establishment or expansion of recycling operations. The goal of the Recycling Grant Program is to build recycling infrastructure, emphasizing regional cooperative efforts, in areas where limited opportunities for citizens currently exist.

In addition, a total of 5 entities were awarded composting grants in FY18, and more composting projects may be funded in the future. The cities or counties receiving this grant award are required

to provide a 25 percent local match in the form of cash or "in-kind" personnel, educational activities/materials, or advertising to promote the program.

In FY18, HHW grants were awarded to 28 counties in Kentucky. Over 300 tons of HHW were collected by counties through this program. Materials collected included electronic scrap, pesticides, solvents, mercury, and other potentially hazardous products from residences.

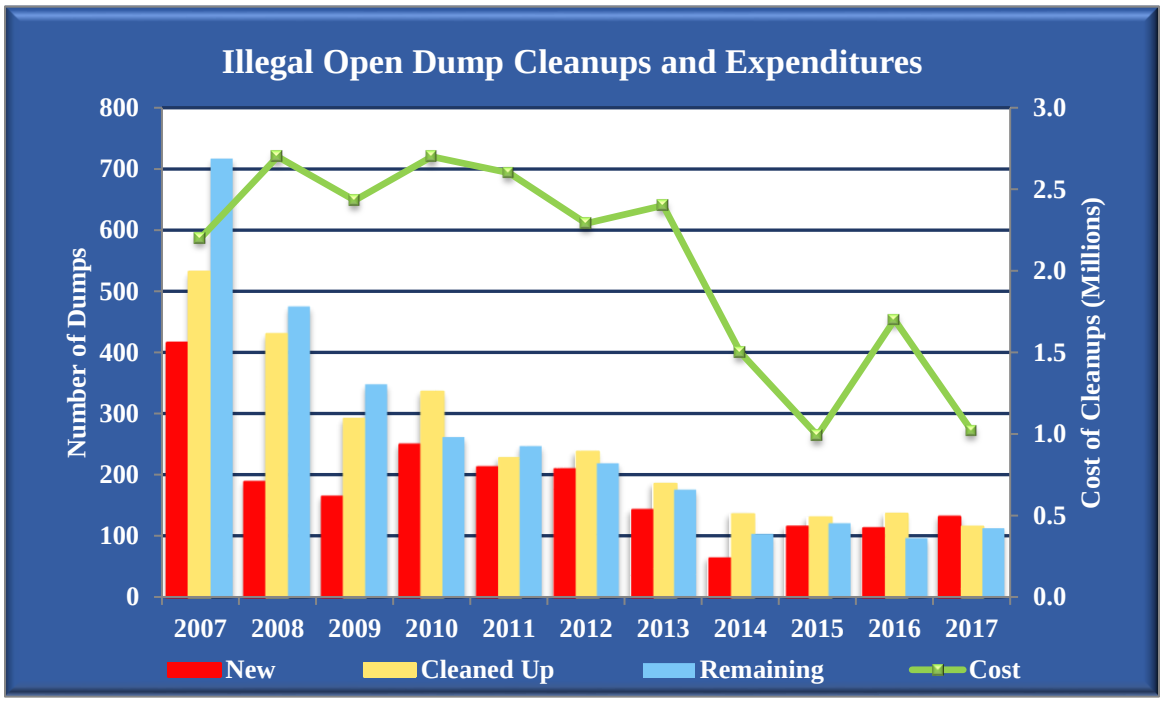


Figure 13: Illegal Open Dump Cleanups and Expenditures

Financial assistance through the Kentucky PRIDE Fund Illegal Open Dump Grant Program has provided counties with incentives and necessary resources to identify and clear their communities of old dumpsites. Since this program was amended in 2006, more than $18.6 million has funded the cleanup of 2,025 dumpsites. In CY2017, counties cleaned 116 illegal open dumps at a cost of $1 million, collecting 5,880 tons of waste. The 14th round of grants was awarded in January 2018 for the remediation of 108 dumpsites at a projected cost of $1.5 million.

All documented dump cleanups were cleaned with funding sources other than the Illegal Open Dump Grant. Overall, more than 26,053 illegal open dumpsites have been cleaned at a cost of $80.7 million since 1993.

E-Scrap Recycling

The challenge of properly managing waste computer and electronic parts and equipment (e-scrap) continues to be emphasized throughout the state. Over 50 counties offer some type of e-scrap collection, year-round drop-off programs, or periodic events. Counties reported nearly 2,496 tons of e-scrap collected in CY2017, an 8.7 percent increase from the 2,296 tons collected in 2016. Both of these totals are slightly lower than totals collected prior to 2015, possibly due to issues with the

statewide e-scrap collection contract, or more generally related to weak markets for recycled e-scrap.

From 2009 to 2015, the Finance and Administration Cabinet awarded an e-scrap contract to provide services to the state. This "all-agency" contract allowed the executive, judicial, and legislative branches of government, school districts, universities, and other public not-for-profit organizations convenient access to e-scrap recycling. This contract provided for statewide pickup and recycling services, and it was unique because the vendor would typically pay the generator a small reimbursement for the items collected. From January 2009 to September 2015, over 7,937 tons of e-scrap were collected under the contract, and refurbished or recycled in an environmentally sound and data-secure manner. Payments to generators netted over $494,000 during this timeframe.

In late 2015, it was determined that Global Environmental Services, the statewide e-scrap contractor, was in violation of several environmental regulations, and their contract was voided. This was the second vendor to go out of business while holding the statewide contract. Management and internal issues likely played significant roles in each instance, but it became more evident that e-scrap management was struggling by altering business models throughout this industry. In response, the Division collaborated with other executive branch agencies to develop a new contract framework for statewide e-scrap collection based on current market conditions and increasing data security needs. A request for proposals was issued in May 2018, and responses are currently under review.

The Division also promotes proper management of e-scrap through the HHW Grant Program. Since 2006, the Kentucky PRIDE Fund has provided grant awards for the management of HHW, a category that includes e-scrap and mercury bearing wastes.

Recycling and Local Assistance Branch Highlight

By Lynn True

The RLA Branch has evolved through the years to meet legislative requirements and to provide grant funding to local solid waste management areas. At the core of the branch's program is the requirement to coordinate the solid waste planning and management activities of local government. Realizing the need to streamline strategic planning and grants administration, RLA charted a new course in 2017.

Although the course of action involved several objectives to be implemented by the Local Planning Assistance Section (LAS), the primary focus was to develop facility siting strategies for local government. Facility siting is dynamic and often unpredictable. As evidenced by siting-related problems in recent years, both local and state officials were in need of a structured set of policies and guidelines to simplify the process and ensure consistency.

The purpose of facility siting is to locate and establish solid waste management facilities while ensuring local approval. The siting process is a complex, multi-dimensional process that involves environmental, economic, and social issues, requiring local officials to be knowledgeable, flexible, and able to maintain a dialogue with the public at every stage of development. State officials must be available to convey technical information and provide assistance while expediting the process.

Acknowledging that past siting difficulties were consequences of miscommunication, inaccurate data, and lack of proper planning, the LAS staff realized that developing strategies would require, at a minimum, a year-long commitment. The initial step involved in-depth reviews of historic records and existing permits. Secondly, a spreadsheet was created to record, verify, and track pertinent data. Subsequently, as the third step, protocols provided internal program guidance. The final step required development of informational materials. By the end of the year, the resources and strategies were complete and ready for implementation.

LAS has claimed several successful siting outcomes since developing these resources and strategies. Local officials in Grant, Marshall, Pendleton, and numerous other counties have expressed their appreciation of the resources and informational materials that were developed. In response to requests from these local officials, and realizing that there is no perfect siting model, LAS continues to refine the processes; the group is currently developing a training module for siting facilities.

Guidance documents and resources developed to improve facility siting include:

Resources for Local Government

- Instructions and Forms for Local Determination
- Certification for Local Determination
- Annual Authorized Capacity Report

Fact Sheets

- Fact Sheet: Types of Facilities
- Fact Sheet: Facility Siting
- Fact Sheet: Planning and Zoning for Waste Facilities
- Fact Sheet: Host Community Agreements (County and Facility Contracts)

Internal Documents

- Total Authorized Capacity Spreadsheet
- Host Community Agreements Spreadsheet
- Guidance Document: Authorizing Capacity
- Protocol for Reviewing Proposed Facilities
- Protocol for Reviewing Local Determination
- Protocol for Reviewing Plan Amendments

SOLID WASTE BRANCH

waste.ky.gov/swb

The mission of the Solid Waste Branch (SWB) is to ensure proper management of Kentucky's waste materials. This is accomplished by implementing a comprehensive program for solid and special waste disposal facilities. This branch reviews permit applications, issues permits, and monitors construction and operational activities at solid and special waste facilities.

The SWB is responsible for reviewing technical applications and reports for all types of landfills, including residential garbage, construction debris, industrial waste, and coal ash, in addition to

land application and composting facilities. These waste streams are grouped into either solid waste or special waste. Solid waste can be household, commercial, or industrial solid waste. Municipal solid waste is household and commercial waste. Special waste is specifically defined by KRS 224.50-760. The most commonly managed special wastes in Kentucky are wastewater treatment and water treatment sludge, and utility-generated coal ash.

The SWB issues or denies construction and operation permits based on information provided by the applicant and verified by the branch's personnel. This branch is also responsible for the registration of solid waste permit-by-rule facilities and closures of abandoned historic landfills.

The population in Kentucky reached 4,454,189 in 2017, generation of waste materials has increased as population has increased (Figures 14 and 15). It is necessary for residents to continue to be provided with convenient, accessible collection services, and disposal and recycling facilities.

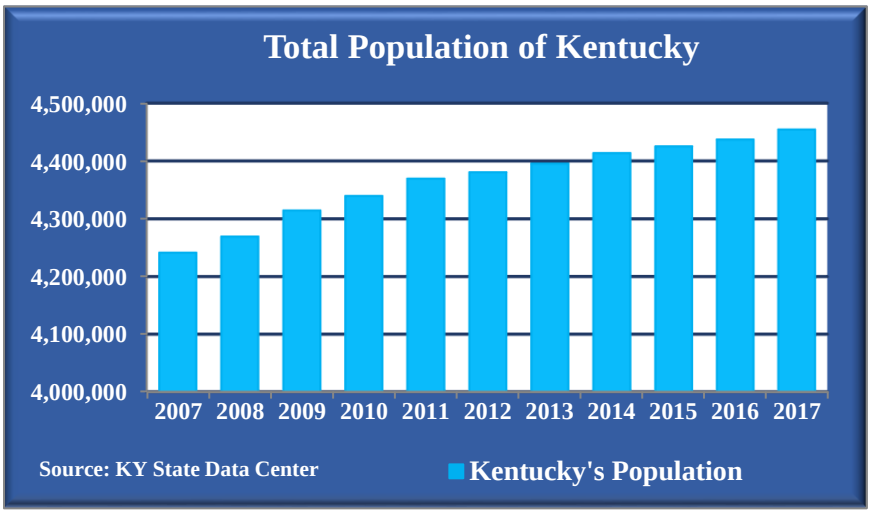


Figure 14: Total Population of Kentucky

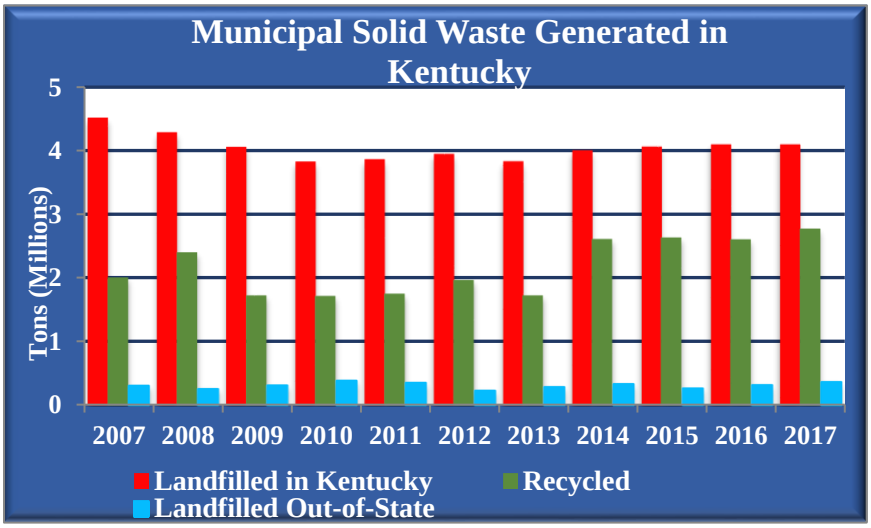
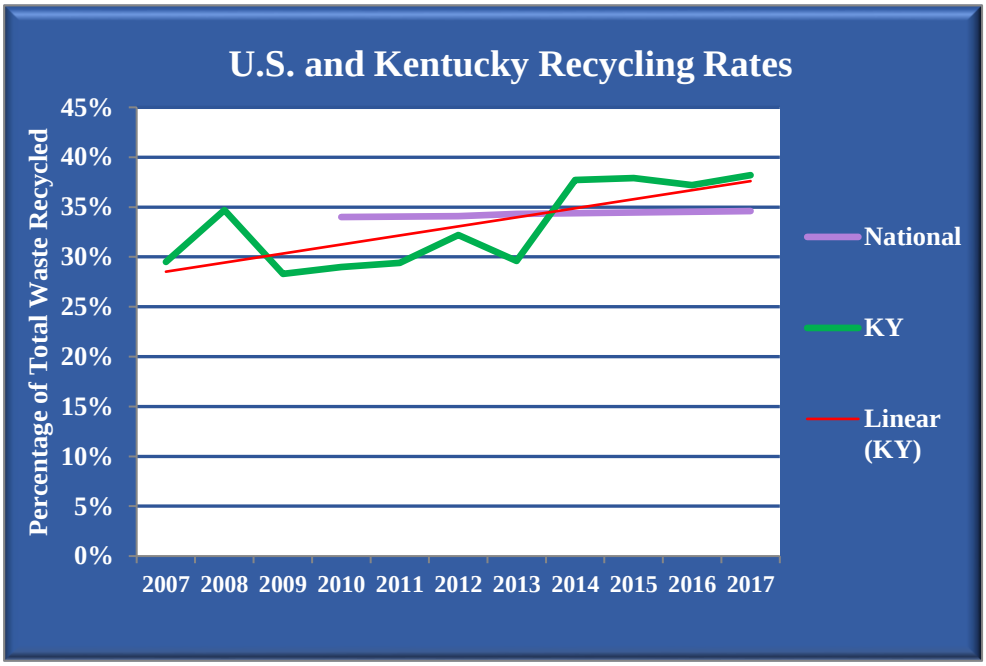


Figure 15: Municipal Solid Waste Generated in Kentucky



The recycling rate in Kentucky also indicates a small increase from 37.2 percent in 2016 to 38.2 percent in 2017 (Figure 16). These rates are slightly higher than the national recycling rate, which has remained steady within the 33 to 35 percent range for the past 10 years.

Figure 16: U.S. and Kentucky Recycling Rates

Kentucky experienced a 0.02 percent increase in disposed municipal solid waste (MSW) in Kentucky landfills and a 30.3 percent decrease in the amount of out-of-state MSW disposed of in Kentucky landfills. Kentucky disposed of 4,440,607 tons of MSW in 2017, a 123,389 ton increase from 2016 (Figure 17).

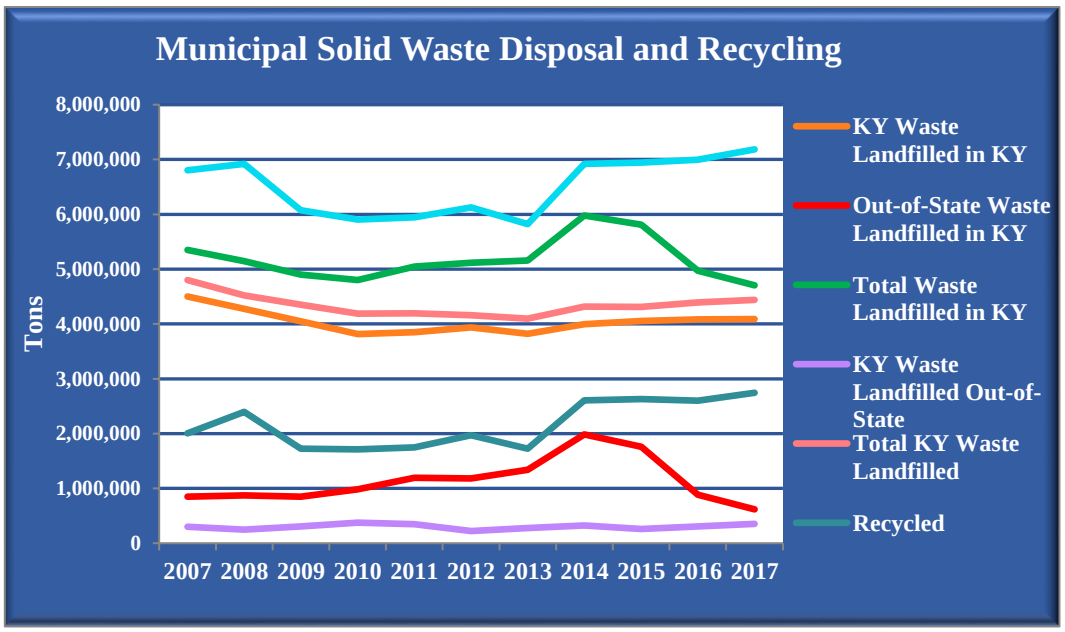


Figure 17: Municipal and Solid Waste Disposal and Recycling

The SWB permits a variety of facilities that divert waste from disposal and reuse it in ways that preserve natural resources and prevent pollution. These facilities include locations where solid and special wastes are beneficially reused, landfarm facilities where solid and special wastes are used to promote soil structure and fertility, and composting facilities where organic materials are turned into compost and distributed for use. There are 29 active landfarm facilities, 33 active compost facilities, and 95 sites where special wastes are being beneficially reused.

There were 45 solid waste permits pending at the end of FY18. Of these, 39 were within and 6 exceeded, regulatory timeframes (RTF). In FY18, of the 141 solid waste permit reviews completed, 124 (88 percent) were within the regulatory timeframe (Figure 18). Additionally, branch personnel reviewed documentation for, and approved the closure of, 7 facilities. For the past 5 years, this branch has completed an average of 93 percent of permit application reviews within the time frame designated by regulation.

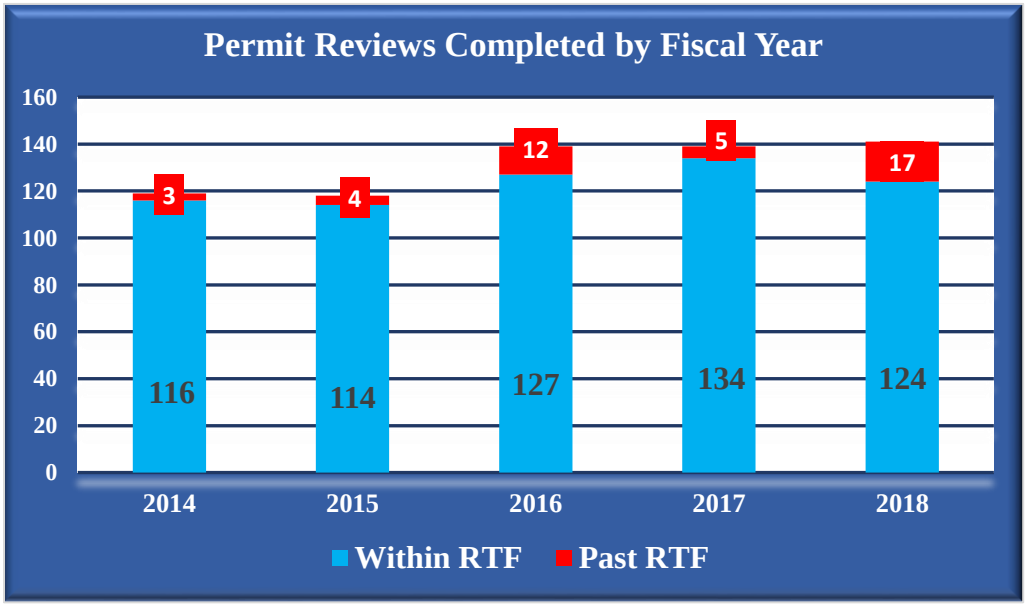


Figure 18: Permit Reviews Completed by Fiscal Year

Sites where solid waste are beneficially reused are designated "permit-by-rule," meaning the operator may begin beneficial reuse activities without having obtained written authorization from the cabinet, as long as the operation meets regulatory requirements. Some operators choose to receive written authorization from the cabinet, and in FY18, SWB approved requests for the beneficial reuse of solid waste at four facilities.

Environmental Remediation Fee

The Environmental Remediation Fee (ERF) was established by KRS 224.43-500. This statute requires all generators of waste in Kentucky to pay $1.75 per ton of waste disposed in a municipal solid waste disposal facility to be collected by municipal solid waste facilities or transfer stations. ERF fees are deposited into the Kentucky PRIDE Fund and used to fund grants for the cleanup of illegal open dumps, recycling, and household hazardous waste management. Compliance rates for ERF reporting continue to be high (Figure 19).

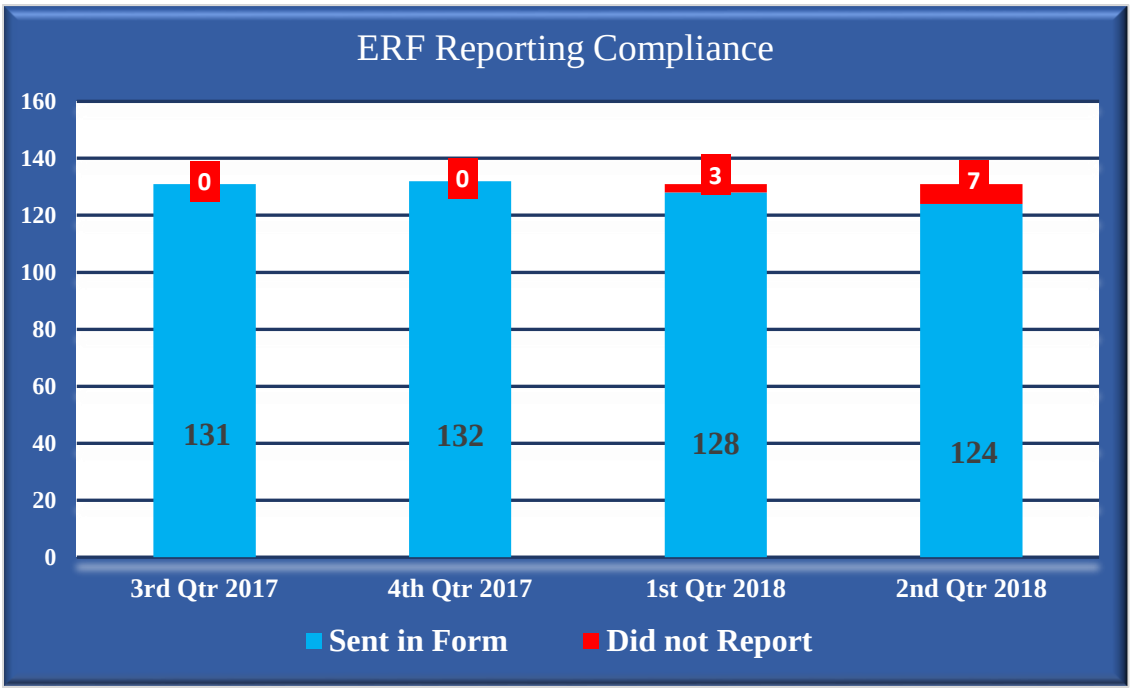


Figure 19: ERF Reporting Compliance

GROUNDWATER MONITORING

Groundwater assessment requires the owner or operator of a facility to determine the existence, extent, and depth of groundwater degradation, as well as the rate and direction of migration of contaminants in the groundwater. Groundwater assessment is triggered if the analysis of groundwater at the facility indicates one or more parameters exceeding the maximum contaminant levels (MCL) specified by regulation, or an increase over the naturally occurring background levels of parameters lacking promulgated MCLs. Of the 77 facilities currently required to monitor groundwater, 15 are in groundwater assessment (19 percent).

Corrective action requires the owner or operator of a facility to abate groundwater contamination, prevent further groundwater contamination from the facility, and restore or replace public or private water supplies affected by contamination from the special waste facility. Groundwater corrective action is currently being carried out by 6 facilities (8 percent).

HISTORIC LANDFILLS

A total of 97 historic landfills have been closed through construction and remediation projects or by no further action due to intensive site studies. Total costs associated with the closure projects exceed $70 million, excluding branch personnel direct and indirect expenses.

Trigg County Landfill has completed construction and within its one year warranty period. This period is a traditional warranty in which the constructor guarantees their work and repairs their constructions. Problems occurring during this period would indicate faulty construction. Costs are estimated to total approximately $1.8 million.

Four historic landfill closure projects are in the design phase and will be scheduled for construction once the design has been completed. Construction and engineering oversight costs are estimated to be approximately $13 million.

- Johnson County Landfill
- Bullitt County Landfill
- City of Covington Landfill
- Butler County Landfill – Phase 2

Ten historic landfill projects are in the site characterization phase at an estimated cost of $2 million.

- McCracken County Landfill
- Mercer County Landfill
- Harlan Drum Site
- Henderson Drum Site
- Goodridge Avenue
- Foothills Sanitary Landfill
- Hobson Grove Landfill
- Mount Sterling Landfill
- Northwest-Central KY Area (Breckinridge, Grayson, Hancock, Meade, and Ohio Counties)
- South Central KY Area (Adair, Allen, Barren, Cumberland, Green, Hart, Metcalfe, Monroe, and Taylor Counties)

Initial characterization of 288 landfills is complete. The landfills are being prioritized based on the perceived threat to human health and the environment. The approximate cost for the initial site characterization of these sites is $3.9 million. There are 524 historical landfills remaining to be closed.

Solid Waste Branch Highlight
By Ken Melton, P.E.

The Trigg County Landfill is located approximately two miles Northeast of Cadiz, Kentucky. The Trigg County Fiscal Court received a construction permit for a sanitary landfill on March 5, 1970. This original permit contained approximately 6.25 acres off State Highway 124 for the purpose of disposal of household wastes and refuse. According to the permit application, Trigg County pursued the permit as a means to "eliminate some of the unsightly road side dumps" that existed at that time. Waste materials from this sanitary landfill site were buried in trenches five (5) feet in depth and twelve (12) feet wide. As these trenches reached maximum volume capacity, a June 11, 1981, expansion was approved for an additional approximate 18 acres adjoining the existing landfill area.

Photo 9: Trigg County Landfill, 1990
Photo by William J. Clark

As this newer area also began to approach capacity, Trigg County Fiscal Court began exploring permitting of another expansion, which included conducting dye trace studies to aid in the design of the groundwater monitoring network. These early dye trace studies concluded that the dye injected in a well, which was intended to be utilized as an up-gradient monitoring well, was detected at the City of Cadiz Town Spring, and that downgradient monitoring wells were not reliable monitoring points. The detection at Cadiz Town Spring was a significant discovery because the spring is a raw water supply source for the Cadiz's drinking water treatment plant. Studies verified that the site was no longer able to meet geological site requirements of the newly effective Solid Waste Regulations in 1990. Therefore, the site ceased accepting waste on June 30, 1992, as required in 401 KAR 47:080.

In 1999, the Cadiz Water Department began receiving violations of federal and state drinking water standards for nitrate with detectable concentrations of chlorinated solvents. Additional dye trace studies were conducted to assist in locating all groundwater contributions to the Cadiz Town Spring. In July 2006, a dye trace study, conducted by the U.S. Geological Survey, confirmed that groundwater flowing beneath the landfill was flowing rapidly (within 24 hours) to Cadiz Town Spring.

Photo 10: Trigg County Landfill, 2009
Photo by Margie Williams

Additional concerns for the property occurred in 2009 when county officials sold the landfill property sold to a local citizen, who placed structures on the landfill cap.

Late in 2015, the SWB Closure Section began working with the Trigg County Fiscal Court to relocate the property owner and to repurchase the landfill property. The contracted consultant also began designing landfill remediation alternatives in 2015. Initially, total waste excavation and removal was evaluated, but it was determined not to be economical. A second alternative, reconstruction of the cap with the installation of a geomembrane synthetic liner was considered, but was eliminated due to the cost benefit analysis and the sinkhole potential beneath the site. State and local officials selected an alternative to reconstruct the cap with on-site soil materials and to assist the City of Cadiz in funding the design and construction of a new Drinking Water Treatment Plant, with a new raw water source; the City of Hopkinsville’s water intake from Lake Barkley.

Photo 11: Trigg County Landfill, October 2016
Photo by Tim Rogers

Photo 12: Trigg County Landfill, May 2018.
Photo by Jessie York, DOW Paducah Regional Office

In 2016, the Trigg County Fiscal Court was reimbursed $135,000 by the Division through the Kentucky PRIDE Fund program for the repurchase of the property, acquisition of new property, and owner relocation expenses. A local contractor began clearing the site for the cap reconstruction in August 2016. Completion of the reconstructed cap with grass cover crop coincided with the initiation of the one-year warranty period on June 26, 2017. At present, the Closure Section is working in partnership with a consultant to resolve minor issues prior to completion and termination of the project from the Orphan Landfill Program. An additional post closure task will require the clean backfilling of two sinkholes which developed in early 2018, considerably beyond the waste boundary's footprint on the site perimeter. The Closure Section is also currently working with the City of Cadiz on a new Drinking Water Treatment Plant. Construction is scheduled to begin in late 2018 or early 2019. In summary, approximately $3 million in Kentucky PRIDE Funds will be used to remediate this historic landfill and to aid the City of Cadiz with providing safe drinking water to the citizens.

SUPERFUND BRANCH

waste.ky.gov/sfb

The Superfund Branch (SFB) seeks to ensure that contaminated sites are evaluated and cleaned up in a timely manner to reduce risks to human health and the environment. Usually this is accomplished by overseeing companies or individuals who have taken responsibility for cleaning up contamination found on their property. In cases where a responsible party cannot be found or is unable to act, the SFB may take a direct role in cleaning up a site. This program handles oversight of cleanup of hazardous substances, pollutants, and contaminant releases and non-UST petroleum releases across the commonwealth.

The SFB maintains a list of sites in which releases are managed on-site through some form of engineered control; a cap or structure and/or institutional control, such as an environmental covenant or deed restriction. There are currently 248 sites where releases to the environment are managed on- and off-site. These sites require inspections and reporting such as an annual report or 5-year review as established by statute. For sites that are being managed by using institutional and/or engineering controls, the obligations to continue to manage the releases are indefinite. Therefore, the amount of total managed sites in Superfund have and will continue to increase as new sites are approved for closure under this option. The only way a site can be removed from the managed site list is if additional cleanup is performed to restore the site to safely allow for unrestricted (residential) use of the impacted land(s). A total of 124 Site Final Actions were completed by SFB in 2018 (Figure 20).

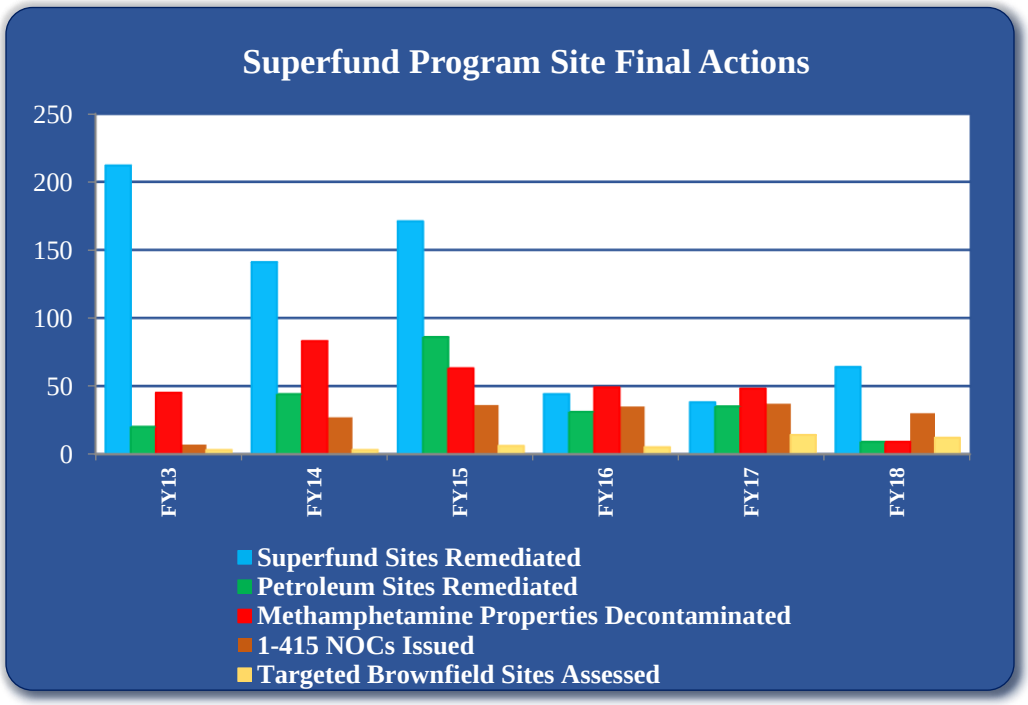


Figure 20: Superfund Program Site Final Actions

In FY18, the SFB remediated 64 state Superfund sites with 465 pending review and/or actions, and 27 new state sites. The branch remediated 1 major state-lead site using the HWMF, and 23 sites are in the process of review. There were 2 cleanups conducted by state oversight by means of the Voluntary Environmental Remediation Program.

There were 27 sites in FY18 with a release of petroleum or a petroleum product remediated from a source other than a petroleum storage tank, with 129 pending review or actions. There were 30 new petroleum sites registered.

BROWNFIELDS

Brownfields are abandoned, idled, or underutilized industrial and commercial facilities/sites where expansion or redevelopment is complicated by real or perceived environmental contamination. They can be in urban, suburban, or rural areas. The Brownfield redevelopment is a joint effort between the Division of Waste Management and the Division of Compliance Assistance. In FY18:

- 12 Targeted Brownfields Assessments were conducted, and 4 are awaiting review. Multiple other sites have been reviewed and technical assistance was provided for recipients of various EPA 128(a) Brownfields Grants.
- 46 Brownfield sites were reviewed in accordance with KRS 224.1-415, 30 Notice of Eligibility letters issued, 37 Notification of Concurrence letters issued, and 4 sites were pending review at the end of FY18.

METHAMPHETAMINE LAB CLEANUP

The Division works in conjunction with law enforcement and health departments to remediate structures and homes contaminated with illicit methamphetamine (meth) waste through the division's Methamphetamine Lab Cleanup Program. Due to methamphetamine waste being toxic, especially to small children, and due to its ability to absorb into home surfaces and structures, it must be remediated by certified contractors. Since the SFB initiated this program in 2007, 774 meth properties have been remediated, out of 2,151 reported properties. In FY18, there were 12 contaminated residences reported and at present, 9 residences have been decontaminated through the Methamphetamine Lab Cleanup Program.

STATUS OF SUPERFUND, HAZARDOUS WASTE MANAGEMENT FUND, AND COMMONWEALTH OF KENTUCKY'S LIABILITY

Superfund's process progresses from site investigation and characterization through selecting an appropriate cleanup option to implementing the remedy selected. After a remedy is executed and the cleanup has achieved the *de minimis* remedial concentrations, a site can be truly considered closed. If *de minimis* concentrations are not achieved immediately, a remedy will continue in operation until *de minimis* levels are achieved. Under the latter scenario long-term management, maintenance, and operations continue, for all intents and purpose, in perpetuity, thus costs continue.

The majority of superfund sites are state-lead sites; the EPA does not address them with funding or other resources. The state and federal roles vary on the few sites addressed by EPA depending on the type of site. The state acts as a support agency to the EPA to achieve initial remedy

implementation at sites with viable responsible parties with cleanup costs funded by them whenever possible. If there is no viable or financially solvent responsible party, then the EPA and the state share cleanup costs under a 90/10 percent arrangement. Presently, the EPA is researching the collection of the 10 percent cost shares from the states.

Sites where the federal government pays for the cleanup are called “fund-lead”. Sites partially funded by the federal government in which the remainder of the cleanup is funded by responsible parties are called “orphan share sites”. The state can take either a lead or support role on orphan share sites.

When remediation is federally funded (e.g. NPL, NPL delisted, or other federal lead/funded non-NPL sites), the EPA requires the state to assume responsibility for 100 percent of the ongoing operation and maintenance of the remedy. The EPA has the discretionary ability, but not obligation, to continue a 90/10 cost-share for the first 10 years of operation for groundwater restoration and longer term remedies.

After the termination of this cost-share or when it is not instigated, the state assumes all future responsibility. This includes costs and resources, even in cases where a responsible party has been identified on an NPL site and is responsible under the Superfund’s legally binding Record of Decision (ROD) for 100 percent of the recommended remedy. When the ROD expires, that responsible party may no longer be responsible beyond the ROD’s duration.

The RODs, as established by CERCLA, run approximately 30 years. Most of Kentucky’s RODs on NPL caliber sites have either expired or are within 5 to 20 years of reaching their term limits. NPL sites in Kentucky are of such magnitude, nature, and severity that the remaining contamination was simply buried and capped in place. In some cases, they require active large volume groundwater pump and treatment systems to maintain hydraulic control. Kentucky’s NPL sites are some of the oldest existing NPL sites in the nation. Kentucky’s infamous “Valley of the Drums”, in Shepherdsville, was one of the two national archetypical sites that precipitated the promulgation of the federal CERCLA (a.k.a. “Superfund”) in 1980, along with upper New York state’s notorious “Love Canal”. Simply put, many of Kentucky’s NPL site RODs have expired and several more will be terminating fairly soon; most under eight years or less. These NPL sites require on-going, very costly, and resource intensive annual long-term (in perpetuity) sampling, maintenance, and operations that *revert to the state*.

The state’s *sole source* of any long-term operations and maintenance at sites, expired NPL RODs, and other cleanup actions, is the HWMF. This fund is applied to all Superfund related activities, which include the reversion of NPL RODs sites, state super fund long-term operations and maintenance requirements, initial ERT and state-lead emergency cleanups/actions, and non-emergency/non-NPL remedial actions. This fund also covers the internal cost for the required oversight of sites in which managed closure was the selected protective measure; institutionally controlled sites requiring deed instruments such as environmental covenants, deed restrictions, and deed notices.

The HWMF was created to provide the Division with the necessary funds to implement its omnibus to protect the health of the citizens and natural resources of the commonwealth from threats

associated with releases of hazardous substances, pollutants, and contaminants. The Division uses this fund to provide for technical reviews, oversight of responsible party driven actions, and contracted state-lead investigations and remediation projects. This fund finances regulatory oversight, emergency responses, state-lead, and time-critical remediation projects at sites across the commonwealth. These projects range from large industrial sites, medium sized sites, to persistent dry cleaners' plumes, and small projects such as roadside drums, orphan wastes, and transformer releases. Presently, there are no other available funding sources to conduct emergency response, NPL responsibilities, state-lead cleanup actions, or regulatory oversight.

Under the present circumstances, the HWMF can no longer nominally meet its statutory obligations to protect human health and the environment. Currently, the HWMF can no longer plausibly or realistically undertake the existing and projected superfund long-term operations and maintenance of the state's NPL sites, state superfund backlog, or sustain sufficient funding to mount medium- to large-scale emergency and state-lead remedial projects that arise year to year.

Major categories of site groupings:

1. The existing active superfund universe as of FY17 (588+)
2. High risk Resource Conservation and Recovery Information System (RCRIS) Generator sites likely to have had a release (609+)
    - Dry Cleaners (293+)
    - Wood Treating (38+)
    - Plating Operations (73+)
    - Battery Operations (25+)
    - Other General (180+)
3. NPL ROD Reversion Sites LTMOM in perpetuity (14)
4. High potential near future NPL caliber sites (2)
5. Annual ERT Short-Term Emergencies (avg. 1,000 per yr. require action)
6. Long-Term Option B Managed "Closure" Sites Long-Term state Oversight in perpetuity (232).

Major assessment categories of costs:

1. Total Initial Remedial Cost
    - Cost at Worst Case Scenario ($2.4 Billion)
    - Cost at Medium Case Scenario ($2.0 Billion)
    - Cost at Best Case Scenario ($1.6 Billion)
2. Total Annual Long Term Monitoring Operations & Maintenance plan (LTMOM) Reoccurring Cost ($4.0 million /Year)
3. X Years Out Cost Totals for Annual LTMOM Reoccurring Cost
    - 5 Years Out ($20 million)
    - 10 Years Out ($40 million)
    - 20 Years Out ($80 million)
    - 30 Years Out ($120 million)

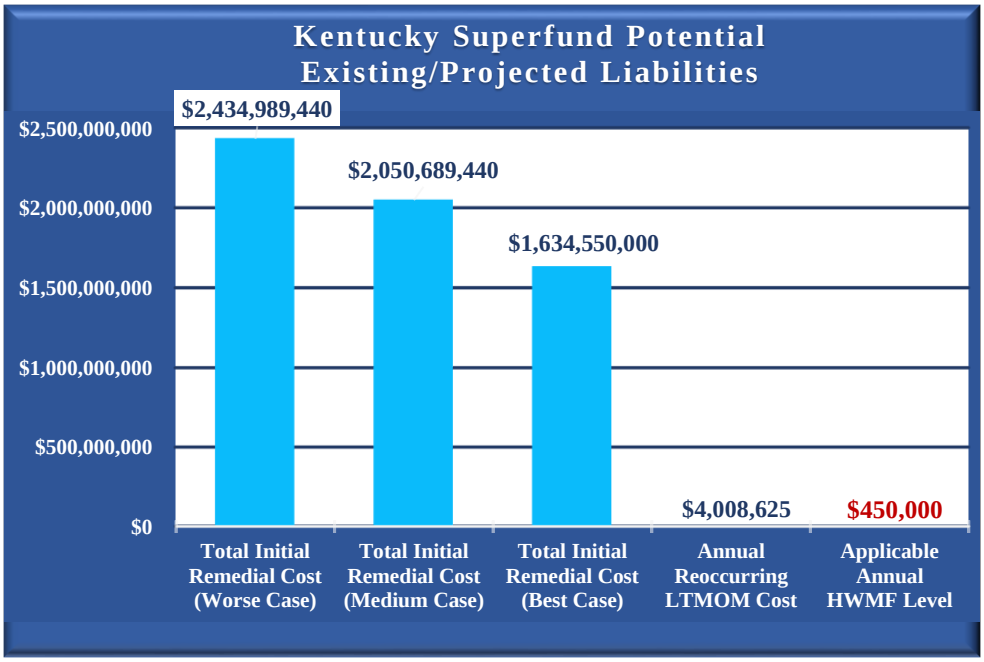


Figure 21: Kentucky Superfund Potential Existing/Projected Liabilities

The Division requested that the SFB assess the state's existing, near future, and projectable long-term potential liability costs (Figure 21) for its existing active and known likely potential superfund universe as they relate to Kentucky. While many assumptions were necessary to estimate a project of this magnitude, shifting the assumptions to a worse or better case scenario will not significantly change the degree of the cost and funding liability required of the state.

Presently, the annual HWMF available is estimated to be $450,000. It is apparent that current funding levels are no longer nominally sufficient to address single, small-to-medium site events, and large emergencies (e.g., Long's Lane, Wiley, Polluck arsenic sites). Moreover, it is evident that funding levels will challenge the abilities to meet LTMOM obligations at NPL ROD reversion sites and other state LTMOM sites, let alone initial remedial costs at sites in which responsible party(ies) no longer exist or are financially insolvent for the cost of cleanup.

MAXEY FLATS PROJECT

The Maxey Flats Project (MFP), formerly known as the Maxey Flats Nuclear Disposal Site, was a 55-acre commercial disposal facility for radioactive waste that operated from 1962 until 1977. During its operations, solid and liquid nuclear waste was buried in unlined earthen trenches. Upon the discovery of nuclear materials in off-site groundwater, the facility was closed to alleviate the environmental threat and protect human health.

In 1978, Kentucky purchased the facility to ensure immediate closure and proper remediation. The MFP was placed on the NPL by the EPA in 1986 for the nearly 4.7 million cubic feet of buried waste.

The facility has over 51 responsible parties, including Kentucky. After many years of federally required initial remediation, interim monitoring, and maintenance activities by the Division Maxey Flats employees, and several phases of remedial work conducted under the oversight of the EPA, the MFP, located in Fleming County, was placed into the Final Closure Period in November, 2012.

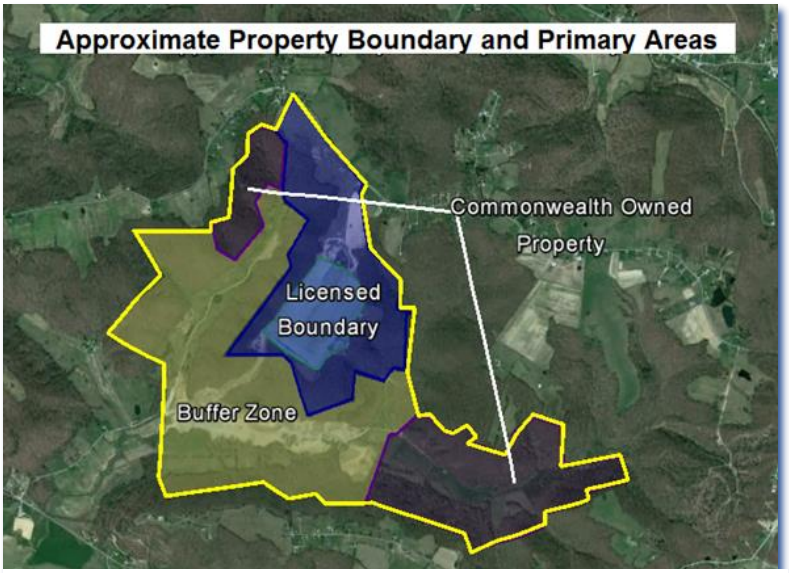


Photo 13 Maxey Flats Project Buffer Zone, Commonwealth Property

Photo by Superfund Branch

The final closure plan included installation of an interim but permanent vegetative cap over the disposal area, installation of permanent surface water control features, and installation of surface monuments to identify concerns and location of buried waste. Following an extensive planning, remedial design and contractor selection process, construction of the permanent vegetative cap began in mid-January of 2015.

Work began by clearing a portion of the southern hillside and building a haul road to enable soils to be transported from state-owned borrow areas in the southern valleys to the landfill cap. Surface water management features were also constructed from January through May 2015. In June, 2015 contractors began hauling and placing soil over the existing flexible membrane liner (FML) to achieve proper slope and grade conditions, and installing geosynthetic liner systems as part of the final cap.

By the end of the CAP build-design in November 2016, a total of 442,672 yd^3 of soil finished the emplacement of the CAP. Approximately 55 acres of welded Geosynthetic Clay Liner and High Density Polyethylene geomembrane liner has been deployed over top of that with a final vegetative cover. A storm water and perimeter drainage network with inspections of Best Management Practices storm water control measures continue in perpetuity. The immediate capped unit and licensed boundary (60 acres with 55 acres under final CAP), and buffer zone constitute a total restricted acreage of greater than 1,000 acres.

A total of over $43 million have been expended at MFP, with $17 million allocated to the Final CAP. The Final Closure period ended in 2016 with a CAP warranty period ending in spring 2019. Upon expiration of the warranty period the site goes into long-term custodial monitoring and maintenance, ICP, for a mandated 100 years after which the ICP will be evaluated and reset for an additional 100-year period.

Plans are also being developed by the division to look at the most effective use and long-term stewardship of the property at Maxey Flats, which includes over 1,000 acres of woodlands, valleys, and streams. The focus will be on uses which maintain the site but also encourage sustainability

Photo 14: Maxey Flats Project Aerial View of Final Cap
Photo by Superfund Branch

and provide environmental educational opportunities for the surrounding community and Commonwealth.

Superfund Branch Highlight

By Cliff Hall, P.G.

Southern Wood Treatment
Long Lane, Montgomery County

August 2016 – August 2018: Long Lane has been an active SFB site since 2016 when the staff discovered that the former wood treating facility's property had been redeveloped for residential use. Utilizing the branch's handheld x-ray fluorescence (XRF) unit, staff targeted metals known to be part of the former treatment process (ammoniacal copper arsenate). XRF readings indicated that one of the residential property's surface soils contained arsenic at three orders of magnitude above normal background concentrations. This site was quickly declared an emergency and efforts to prevent exposures from residential use were enacted.

Due to the excessive costs, the initial goal of removing all contamination at the site had to be revised to a goal of removing the emergency. The SFB would have preferred complete removal of all contamination at the site, but that estimated cost was $17 million. The branch's main source of funding, the HWMF, provides approximately $450,000 annually for state cleanup. The cost to remove the emergency still far exceeded the capability of the HWMF. Necessary government expenditures (NGE) or the "rainy day fund" was allocated by the State Budget Office to address the emergency situation at the site.

During the emergency phase, 15 properties underwent a removal action and/or capping. A total of 197 yd^3 of contaminated soil were disposed of as hazardous waste, and 24,100 yd^3 of contaminated soils were disposed of as solid waste. All utilities were replaced and occasionally upgrades were required due to preexisting code violations. The $5.6 million appropriated from the NGE covered all expenses through June 9, 2017, when the Emergency Phase of the project ended. The majority of the excavated areas are now overlain by a 1-foot cap (one residence required a 2- to 3-foot cap). The 2 vacant properties that formerly housed the wood treatment area were capped with 2 feet of soil. A total of 15,600 yd^3 of borrow material was used to cap the properties. All affected residences were temporarily relocated at state expense during field activity at the site.

Photo 15: Locked gate, fencing surrounding former production area.
Maintenance of cap is one of the primary activities SFB staff perform.
At rear of photo from crest to tree line, the slope is steep and subject to erosion.
Photo by Superfund Branch

Since the emergency phase of the project, SFB has characterized the surface drainage basins for the site. The extent of arsenic in the drainage appears to be limited, but clearly present. The transport of arsenic by runoff and the dissolution of arsenic containing materials contribute to the drainage ways. The assessment of the groundwater at the site was recently attempted during the summer of 2018. Four bedrock assessment wells were drilled to 100 feet below ground surface. All wells were positioned near the source areas to gauge potential impacts, and the borings were found to be dry in both the unconsolidated material and the bedrock. No further groundwater assessment is planned.

Until additional money can be appropriated for future phases of clean up, the SFB will oversee the site to verify that no exposures affect the residences. Erosion control measures have been

implemented to stabilize all capping work. The branch is maintaining the cover over the production area by mowing and spraying to prevent plant growth from penetrating the protective cap. These activities are conducted by staff typically at 3-week intervals during the growing season. SFB staff reports the condition of the cap and arranges repairs as needed.

LWD, Inc. – Former Incinerator Site (Calvert City)

Photo 16: Vegetative cover on the recently constructed engineered cap. Trees in the background represent the boundary with Paducah & Louisville Railroad. Stacks are from Westlake Monomers. View is to the northeast. Photo by Superfund Branch

LWD, Inc. is a former hazardous waste treatment and storage facility that stored and incinerated hazardous waste. In 2004, the company filed for bankruptcy protection. Monies posted prior to bankruptcy, as financial assurance to operate a hazardous waste treatment and storage facility, were collected by the HWB. This money was later placed in a restricted account to reimburse the HWMF for expenses the state might incur for corrective action. The Division entered an agreement with a group of responsible parties that are former customers of LWD, Inc. The Division directed these responsible parties to implement corrective action to close the site as established by KRS 224.1-400. Upon completion of remedy construction, the group of responsible parties submitted receipts for the corrective action expenses and the Division reimbursed the group for the balance of the account.

The responsible parties are accountable for operations and maintenance of the engineered cap. This includes maintaining the cap and preventing erosion, sampling seeps, sampling groundwater, and generating reports of site conditions. No obvious changes have been revealed in trend analyses for groundwater dating back to 1990, however, only a few rounds of sampling have been conducted over that length of time. Trend analysis of most parameters indicate stable concentrations, and it would be premature to evaluate the effect that construction of the engineered cover has on groundwater concentrations. The capping may have impacted the seeps, which have been dry at each of the past two sampling events. The responsible parties are currently in the second year of a 30-year commitment to operate, maintain, and monitor this site. Natural attenuation is evaluated during each monitoring event to document the breakdown of parent constituents to daughter products.

Both a deep and shallow aquifer are monitored. The shallow aquifer is primarily impacted by petroleum hydrocarbons (Benzene), chlorinated ethenes (Vinyl Chloride) and chlorinated ethanes (1, 2, Dichloroethane). The deep aquifer has detects of these constituents, but only exceed maximum contaminant levels at one well.

Louisville, Jefferson County

The SFB has elected to use the HWMF to investigate and remediate 3 properties in Louisville that were contaminated by historic dry cleaning operations. In all 3 instances, environmental site assessments conducted by prospective purchasers discovered groundwater contamination from tetrachloroethylene, a common dry cleaning solvent.

Two of the properties were eventually purchased by entities that obtained liability protection through available state or federal Brownfields legislation. Such legislation allows these entities to own the impacted properties and not become responsible for any investigation or cleanup that might otherwise be required of a responsible party. The owners are required to utilize the properties as established in a cabinet-approved property management plan. The plan allows the property to be used in a manner that does not contribute to the existing problem or expose the public and environment to unacceptable harm. However, such plans do not address the actual problem or prevent exposures that may occur on adjoining properties.

The third property was actually discovered by a party that purchased a property located next to an old dry cleaners. The adjacent property was found to have elevated tetrachloroethylene levels in the groundwater that likely migrated from the dry cleaning property. The previous dry cleaning operations closed many years ago and are no longer viable responsible parties. The current owner of the dry cleaners leases the building for storage purposes. The cabinet has directed the owner to address the contamination. However, the party has not been responsive and does not appear to be financially viable.

The cabinet ultimately decided to address the contamination at all three sites using funds set aside in the HWMF. During 2017, the cabinet contracted Western Kentucky University to conduct geophysical surveys on all three sites. These non-intrusive investigations provided information regarding the subsurface geology and likely migration paths for the contaminated groundwater. As all three sites are located in Louisville with similar geology, the cabinet decided to contract one environmental firm to investigate and remediate all three sites. Bundling the sites into one contract should provide a substantial cost saving compared to establishing & managing three separate contracts with different firms.

During late 2017, the SFB participated in the Finance Cabinet's process for selecting an environmental engineering firm. The selection committee chose AMEC Earth & Environmental (now, Wood Environment & Infrastructure Solutions, Inc.) to do the work. However, Wood has not received a contract with the Finance Cabinet. The Finance Cabinet indicates the delay is caused by the expiration of Wood's certification for Master Agreement (engineering) work. Wood re-applied for certification as of April 2018 although re-approval requires a vote by a Finance Cabinet committee. During May 2018, Wood submitted an initial work plan for the project. The SFB reviewed the plan and had no requests for changes. The Finance Cabinet project manager provided

some comments to the work plans. However, the SFB has no information indicating that Wood has been re-certified to conduct engineering work for the commonwealth.

Capital Construction Account: C2PW, C83A, and C83G – Account balances (total): $359,655 in 701 (investigation) monies, $150,000 in 703 (cleanup) monies, and $915 in E166 (lab expense) monies

Parrish Avenue Dry Cleaner Site
Owensboro, Daviess County
2017/18 Expenditures $19,899

This parcel was the site of a former dry cleaner facility that released chlorinated solvents into soil and groundwater. It included two buildings and a parking lot. The former dry cleaner was operating in the building that recently housed the Fraternal Order of Eagles. The building closer to Parrish Avenue which was formerly used as a shopping center was razed in 2015.

2017 – 2018 Update: To determine if there are any preferential pathways for contaminant migration leading to vapor intrusion, Ensafe Incorporated has been chosen through the Finance Cabinet's Request for Proposal (RFP) process to conduct site characterization in the area.

The SFB, working with Thomas Brackman Western Kentucky University, Near Surface Geophysics has completed geophysics of the preferential pathways on site. Ensafe has recently completed a groundwater investigation, but the final report has not been submitted.

Photo 17: Western KY University Staff set up equipment for geophysical survey.

One of three former dry cleaner sites, this site is located at the end of a strip mall visible in the photo. Survey provided information about subsurface conditions along the length of the survey cable, which will be used to plan future sampling efforts. Photo by Superfund Branch.

Preliminary results indicate the plume(s) to be more extensive than previously thought and with higher concentrations of chlorinated solvents.

Mellow Mushroom (Former Miracle Dry Cleaners)
Louisville, Jefferson County
2017/18 Expenditures $57,258

The former Miracle Dry Cleaners property is located at 1023-1025 Bardstown Road in Louisville. The site featured dilapidated buildings on approximately 0.13 acre, in which former perchloroethylene (PCE) solvent-based dry cleaning operations occurred from 1947 through 1999. This property is located in a mixed residential, commercial, and industrial area in north-central Jefferson County. Recognized environmental conditions were identified during due-diligence investigations related to the dry cleaning operations. Additionally, the site was part of the Superfund program as established by KRS 224.1-400, and the staff identified soil and groundwater contamination associated with the former dry cleaning operations. Subsequent Phase I and Phase II investigations confirmed these impacts to the soil and groundwater, in addition to identifying the potential for vapor intrusion into the on-site buildings.

2017 – 2018 Update: A geophysical survey of the area was completed, and 3 groundwater monitoring wells were installed and sampled. Results indicated that impacts are relatively low and are limited to an approximate one-half block area with the exception of 1 well located in an alley to the rear of the former facility.

In 2018, a soil gas survey plan was submitted by Wood PLC (consultant for the project) and approved. This will include at least 2 properties that are currently residential and several non-residential tracts. This survey will be completed in the near future after which options for remedial action will be evaluated. The property is currently occupied by an active business, a Mellow Mushroom restaurant.

Familee Laundry
Hodgenville, Larue County
2017/18 Expenditures $62,930.07

The Familee Laundry site is a high concern due to its proximity to the Hodgenville water intake located on the Salt River. Historic site characterization work was conducted by the responsible party's consultant and then by the SFB, when the responsible party became nonviable. Chlorinated solvent contamination appears to be localized on-site with one well containing high levels of perchloroethylene. Monitoring wells have been placed along the Salt River just upstream of the Hodgenville water intake, which is also routinely sampled to ensure water quality. To date, no contamination has been detected in these wells. While the plume appears limited, chlorinated solvents can migrate long after the original release creating a potential pathway for human exposures.

2017 – 2018 Update: The SFB has hired SM&E, an engineering and environmental firm, to conduct characterization work that will define site conditions, and to develop a remediation plan for this abandoned former dry cleaner property. This effort has defined the extent of historic releases at the site with an emphasis on source reduction, groundwater remediation, and cost effective containment or management strategies. A plan is currently being developed to conduct a pilot study for injection on the site to address any PCE. The plan, developed late in the spring of 2018, is scheduled to be implemented by fall of 2018.

UNDERGROUND STORAGE TANK BRANCH

waste.ky.gov/ust

The mission of the Underground Storage Tank (UST) Branch is to provide for the prevention, abatement, and control of contaminants in regulated USTs, contaminants that may threaten human health, safety, and the environment. This branch regulates the registration, compliance, closure, inspections, and corrective actions of UST systems. Through cleanup, former UST sites become assets to their communities. Vacant UST properties in cities and towns are often on busy street corners and main roadways, making them potential opportunities for economic and community development, and neighborhood revitalization.

Photo 18: Tank pit area being prepared for installment of USTs.
Photo by Rob Staley, Field Office Branch

Photo 19: Dispensing area for installment of USTs.
Photo by Rob Staley, Field Office Branch

The Administrative Section oversees the registration of tanks, the annual invoices for tank fees, and collects tank fees. In 2018, a total of 712 new and amended registrations were received. Invoices were mailed resulting in the collection of $274,020 in annual tank fees.

The Compliance Section has been focused on building relations with the regulated community to provide ongoing support to field inspectors with data input into the cabinet's database. Compliance staff continues to assist trained operators with Kentucky Underground Storage Tank Operator Online Learning System (KY TOOLS), the online compliance training program.

KY TOOLS has been utilized as a UST operator training course since it began in May of 2013. Currently, an estimated 2,797 of Kentucky's 3,175 active UST facilities have successfully designated a trained operator and completed online training to fulfill state and federally mandated training requirements for UST personnel. Successful completion of the training is required annually. In accordance with federal law, states are to ensure that UST operators are trained according to state-specific requirements. Currently, 88 percent of Kentucky's UST facilities have at least one employee who is responsible for compliance that has completed the KY TOOLS online training.

The Claims and Payments Section, which manages the Petroleum Storage Tank Environmental Assurance Fund (PSTEAF), obligated $13,095,936.42 for small owner tank removal account (SOTRA), Financial Responsibility Account (FRA), and the Petroleum Storage Tank Account (PSTA) corrective actions. Claims are reviewed and approved within an average of 15 days upon report approval. Reimbursements totaled $13,298,437.45 from all PSTEAF accounts.

The UST Branch also includes two sections that are responsible for cleaning up UST sites. Both sections review and process closure assessment reports, site characterizations and site remedies, and phase II reports upon request. In FY18, they reviewed 94 closure assessments; 14 site checks and phase II reports; issued 579 directives for site investigation/corrective action activities; and issued 132 No Further Actions (NFA) letters. This work was performed by their 14 geologists and scientists.

Photo 20: Newly discovered leaking UST.
Photo by Rob Staley, Field Office Branch

While the number of NFAs (132 in FY18) has been decreasing in the past few years, these totals are drawn from a smaller total number of ongoing cleanups. The UST Branch reports that 23 percent of the cleanup workload received NFAs in FY18. Only the sites that received a NFA in a given year are included. The surge of NFA letters issued in FY08 and FY13 were due, in part, to regulatory changes in FY07 and FY12 (Figure 22).

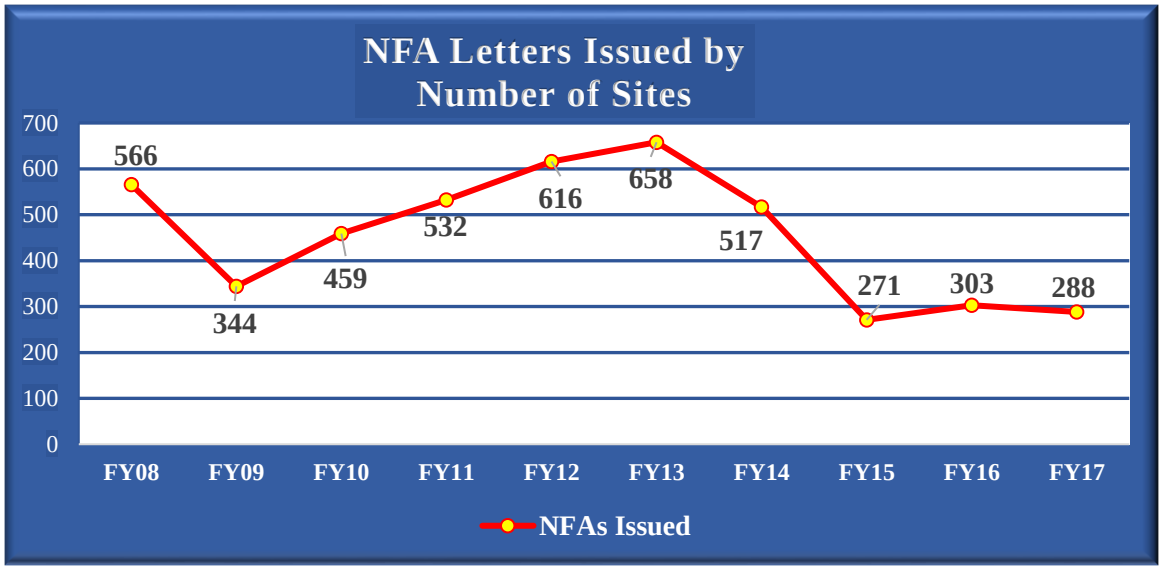


Figure 22: NFA Letters Issued by Number of Sites

As a direct result of changes in the regulatory process in 2006 and 2011, the total number of UST cleanups remaining has decreased substantially. There were 570 UST cleanups requiring further work before they received NFA letters at the close of FY18 (Figure 23).

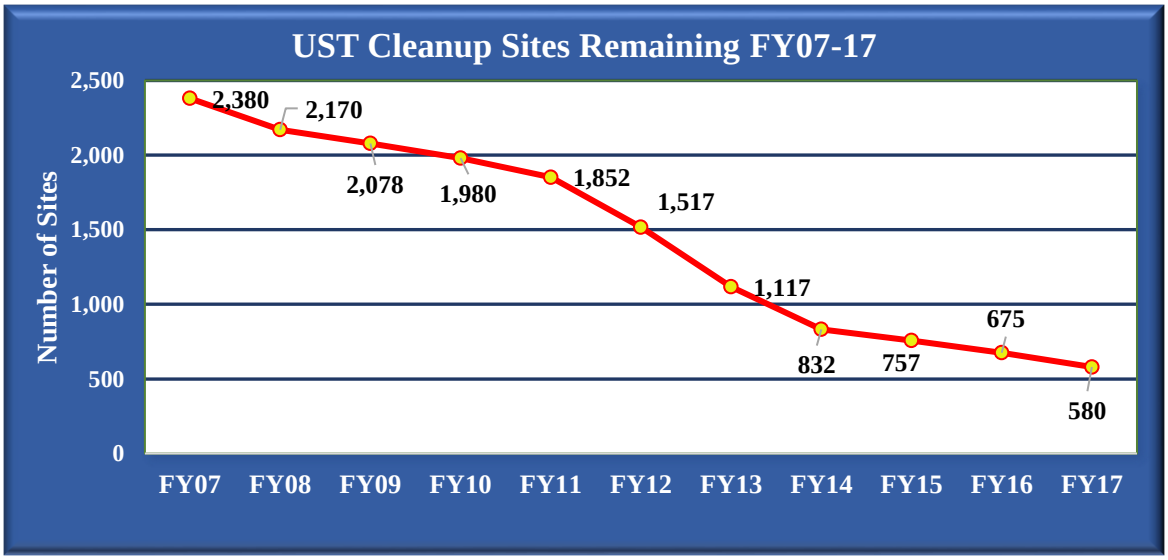


Figure 23: UST Cleanup Sites Remaining FY 07-17

UST Branch Highlight
By Cheryl Yunt

Prior to 2016, the Claims and Payments Section maintained data in two databases: Microsoft Access 97 and ARM. Section staff were operating in both databases, which was inefficient to say the least. Additionally, the Access 97 database was becoming unstable due to upgrades in programs

and operating systems. Access 97 was simply too antiquated to be updated, and this obsolescence resulted in an incompatibility between Access 97 and more current versions of Access. The solution to this problem was to migrate from Access 97 to the ARM database. In 2016, after three years of preparation, all Claims and Payments operations were consolidated into the ARM database.

In addition to instability issues, the Access 97 database had discrepancies between pending obligations to unpaid claims, eligible companies were not linked to owner and operator applications, and other staff within the branch did not have rights to view the Access 97 database and thus, see the status of obligations, claims, and applications. Upon converting all existing data from the Access 97 database to ARM, the UST Claims and Payments Section can now match obligations to claims, and link eligible companies to the application, obligations, and claims. All branch staff now have the ability to view the status of any obligation and claim. Additionally, the ARM database allows public access to all facility records and documents via the web and facilitates open records requests.

UST Branch Highlight
By Todd Mullins, P.G.

Activities are underway to utilize a UST corrective action site as a test site for BOS 200 Trap and Treat® injection. Some of the site characterization has been completed, including microbial analysis. BOS 200 was injected over much of the site. Pre- and post-injection soil samples have been collected as have multiple rounds of groundwater samples. Microbial testing has also been performed. The microbial testing should help to determine whether there is a marked change in the microbial population that could be attributed to BOS 200 bio-stimulation. Typically, a drop in sulfate concentration post-injection, along with a drop in dissolved-phase BTEX concentrations, are used as lines of evidence that anaerobic microbial degradation of BTEX is taking place. Microbial analysis may provide a quantitative means of determining the effect of BOS 200 injection on anaerobic degradation rates. Preliminary results from this study will be presented at the 26th National Tanks Conference & Exposition to be held in Louisville, Kentucky in September 2018.

ACRONYMS

ACWA	Assembled Chemical Weapons Alternative
ARM	Advantage Regulatory Management
BAG	Brownfields Assessment and Cleanup Grant
BGAD	Bluegrass Army Depot
BGCAPP	Bluegrass Chemical Agent-Destruction Pilot Plant
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CORE	Core program cooperative agreement
DEP	Department of Environmental Protection
Division	Division of Waste Management
DoD	Department of Defense
DOE	Department of Energy
DSMOA	DoD and State MOA
EDT	Explosive Destruction Technology
EEC	Energy and Environment Cabinet
EI	Environmental indicator
EPA	U.S. Environmental Protection Agency
ERT	Emergency Response Team
FOB	Field Operations Branch
FRA	Financial Responsibility Account
FYR	5 year review
HDPE	High density polyethylene plastic
HHW	Household hazardous waste
HWB	Hazardous Waste Branch
HWMF	Hazardous Waste Management Fund
ICP	Institutional control period
LAS	Local Assistance Section
LRC	Legislative Research Commission
LQG	Large quantity generator
LUST	Leaking underground storage tank
MCL	Maximum contaminant levels
MFP	Maxey Flats Project
MOA	Memorandum of agreement
MSW	Municipal solid waste
NFA	No further action
NGE	Necessary government expenditures
NPL	National Priority List
PASI	Preliminary Assessment/Site Investigation
PCB	Polychlorinated biphenyl
PCE	Perchloroethylene
PET	Polyethylene terephthalate plastic
PGDP	Paducah Gaseous Diffusion Plant

PPA	Program Planning and Administration
PRIDE	Personal Response in a Desirable Environment
PRP	Potentially responsible party
PSTA	Petroleum Storage Tank Account
PSTEAF	Petroleum Storage Tank Environmental Assurance Fund
RCRA	Resource Conservation and Recovery Act
RFP	Request for proposal
RLA	Recycling and Local Assistance
RMA	Rubber-modified asphalt
ROD	Record of decision
RTF	Regulatory timeframe
SACA	Support Agency Cooperative Agreement
SFB	Superfund Branch
SOTRA	Small Owner Tank Removal Account
SWB	Solid Waste Branch
TOOLS	Tank Operator Online Learning System
TSCA	Toxic Substances Control Act
UST	Underground storage tank
VSQG	Very small quantity generator
WTWG	Waste Tire Working Group
XRF	X-ray fluorescence

ACKNOWLEDGMENTS

Commonwealth of Kentucky
Governor Matthew G. Bevin

Energy and Environment Cabinet
Secretary Charles G. Snavely
Deputy Secretary R. Bruce Scott, P.E.

Kentucky Department for Environmental Protection
Commissioner Anthony R. Hatton, P.G.
Deputy Commissioner Sean O. Alteri

Kentucky Division of Waste Management
Director Jon Maybriar
Assistant Director Edward Winner, Ph.D.

This annual report is intended to provide a concise set of facts and measurements to support environmental decision-making. We welcome your questions and comments to:

Kentucky Division of Waste Management
300 Sower Boulevard, 2nd Floor, Frankfort, Kentucky 40601
Phone: 502-564-6716 Fax: 502-564-4245
waste.ky.gov

We acknowledge the contributions of management and personnel of the Division of Waste Management:

Heather Alexander
Danny Anderson, P.E.
Robin Green
Cliff Hall, P.G.
Billy Hill
J. R. Holt
Larry Hughes, P.G.
Gary Logsdon
Ken Melton, P.E.
Jason Monarch
Todd Mullins, P.G.
Jamie Nielsen
Brian Osterman
Bart Schaffer, P.G.
Richard Thomas
Lynn True
Sheri Uhlenbruch, P.G.
Daniel Walker
April Webb, P.E.
Cheryl Yunt

Compiled by: John W. Brown

Printed with state funds on recycled paper, September 2018

Photo 21 Atkemix Ten Air Stripping Tower, Louisville, KY.

Site visit by HWB to inspect site prior to a groundwater sampling. Photo by Ashley Bandy