Kentucky Division of Environmental Program Support

Annual Report

Fiscal Year 2018

(July 2017 to June 2018)

September 2018

Energy and Environment Cabinet
Department for Environmental Protection

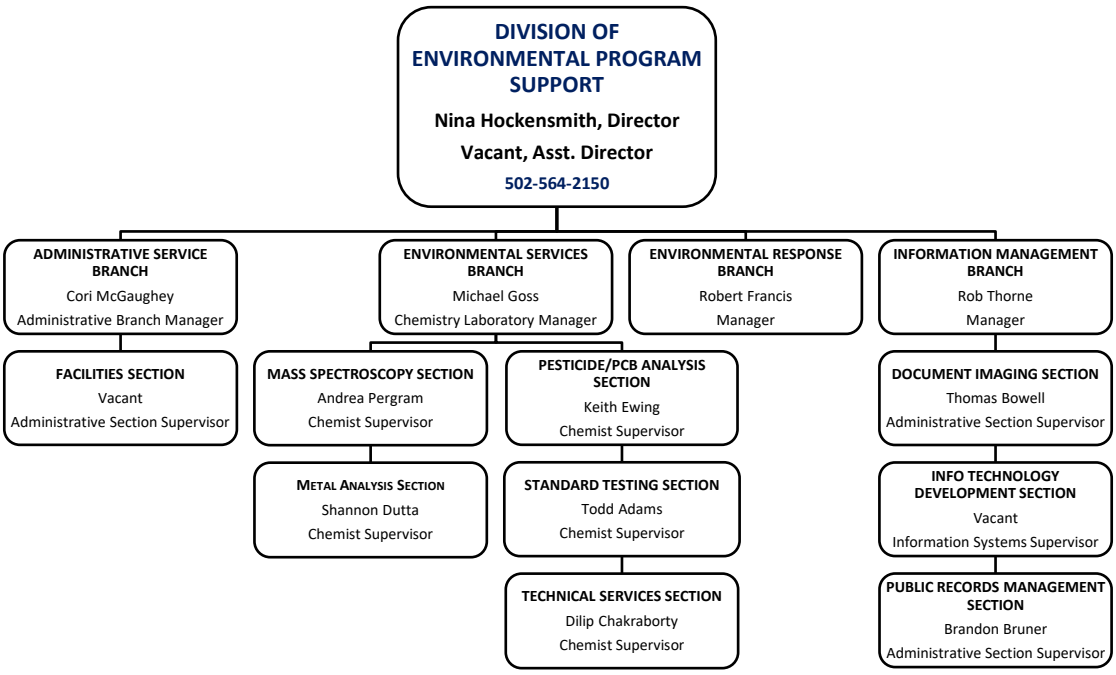
502-564-6120 (Lab)
dep.ky.gov/deps

Kentucky UNBRIDLED SPIRIT

DIVISION OF ENVIRONMENTAL PROGRAM SUPPORT

Introduction

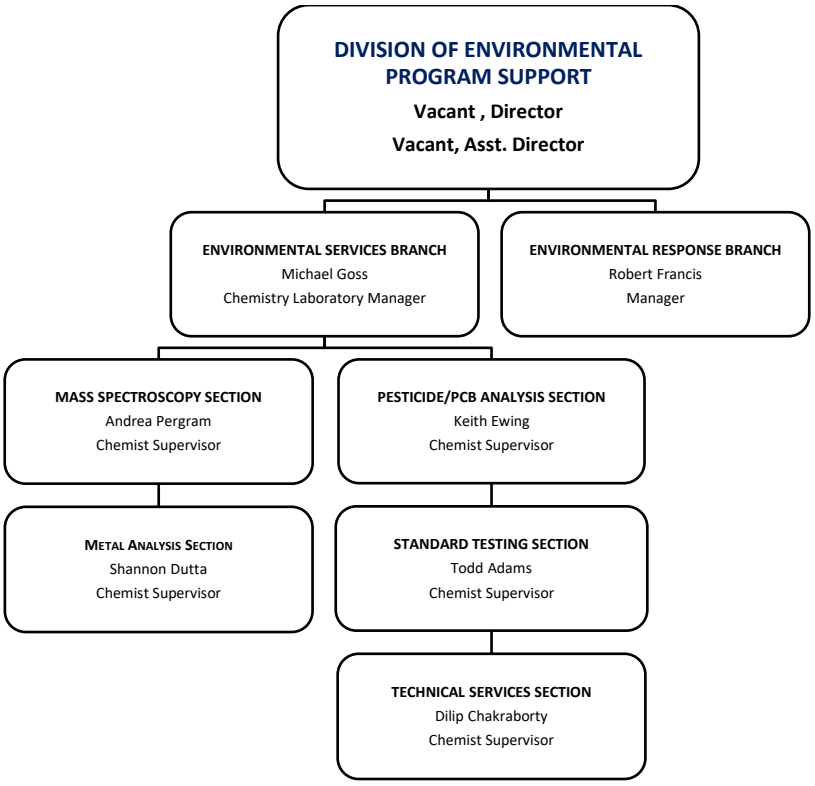
The Division of Environmental Program Support (DEPS) was organized in 2009 (Executive Order 2009-538). The department consolidated internal support functions for the department into the new division to create necessary efficiencies and redundancies. These functions included departmental administrative services, environmental laboratory services, and environmental response team (ERT) coordination. In fiscal years 2015 and early 2016, these functions expanded to include information/public records management, application development human resources management, and departmental budgeting. The organizational structure in the fall of 2017 is shown below.



Division Structure Changes

The Division of Environmental Program Support underwent major reorganization in the fall of 2017. This reorganization resulted in the abolishment of the tri-cabinet GAPS and the transfer of those administrative functions to the newly created Office of Administrative Services (OAS) within EEC. Two branches previously located in the DEPS structure were also reorganized into the newly formed OAS. This left the Division of Environmental Program Support with two branches. One being the Environmental Response Branch and the other the Environmental Services Branch. The Environmental Services Branch is located at 100 Sower Boulevard in Frankfort in the Central Laboratory Complex. The ERB branch is located in the 300 building on Sower Boulevard.

Below is a more accurate representation of the Division of Environmental Program Support today.



Environmental Services Branch – Activities and Accomplishments

The Environmental Services Branch (ESB) provides laboratory-testing services essential for the identification and characterization of environmental pollutants in the Commonwealth. These services are required by KRS 224.10-100(7) "Secure necessary scientific, technical, administrative, and operations services including laboratory services by contract or otherwise"; and (16) "monitor the environment to afford more effective and efficient control practices to identify changes and conditions in ecological systems and to warn of emergency conditions". Additionally, 40 CFR 123.26 - Requirements for Compliance Evaluation Programs states that "State programs shall have inspection and surveillance procedures to determine, independent of information supplied by regulated persons, compliance or non-compliance with applicable program requirements."

It is the mission of the Environmental Services Branch (ESB) to provide scientific data of known accuracy and precision in a timely manner to programs within the Department for Environmental Protection to enable those programs to make appropriate environmental decisions. The Branch maintains a technically skilled and properly trained staff and a fully equipped environmental laboratory to accomplish its mission.

The ESB has accomplished much over the past several years and expects to continue its reputation for high achievement. The branch attained national accreditation status under the National Environmental Laboratory Accreditation Program (NELAP) in 2007. In order to keep this accreditation the lab must pass a very rigorous and defined testing and auditing process. ESB lab was audited on-site by NELAP assessors in March of 2017 and has responded approvingly to all findings and recommendations that this prestigious accreditation required. NELAP auditors visit ESB on a bi-annual basis. The ESB lab was also audited in April 2018 by the US EPA Region 4 SESD (Drinking Water Laboratory Certification) staff. All responses and recommendations to EPA's audit findings have been submitted and are awaiting their approval. The lab is currently "Certified" and in good standing with all accrediting entities.

Concurrent with this achievement, the Environmental Services Branch (ESB) continues to maintain a high level of analytical services to the Department. The testing activities of the branch support over 17 individual programs managed by the Division of Water (DOW) along with several programs within the Division of Waste Management (DWM). Beginning in May of 2018, the lab started receiving a steady stream of analytical requests from the Paducah Gaseous Diffusion Plant monitoring program. The ESB Lab is

also a primary laboratory for the Environmental Response Team (ERT) network. Besides the regular DEP monitoring programs, the ESB lab provides analytical support for select Department of Natural Resources (DNR) programs. Through MOAs the lab provides work for both their Cumulative Hydrologic Impact Assessment (CHIA) project and the Abandoned Mine Lands (AML) program. In CY17 the lab received 461 CHIA and 22 AML samples. So far in 2018, the lab has received 228 and 32 respectively from these groups. ESB also analyzes a variety of samples for Military Affairs and Kentucky State University as needed and upon request.

Jennifer Clark (Technical Services Section – ES4) screens new samples for pH and temperature before entering them into ESB's LabWorks® LIMS (Laboratory Information Management System).

Dealing with environmental emergency situations is common for the Environmental Services Branch laboratory staff. Over the past several years professional chemistry services have been needed to identify and monitor a number of high profile events and be ready to ramp up analytical services in a timely manner to respond to environmental emergencies. Several examples illustrate ESB's readiness. The major spill of the compound 4-MCHM into the Elk River, a tributary of the Kanawha River in Charleston, West Virginia, took place in January 2014. This compound was so concentrated and of such a high volume that it was detectable in the Ohio River for hundreds of miles along the Kentucky border for over a week. The 4-MCHM was not a substance on the list for routine monitoring. The ESB acquired standards and performed the appropriate research and development work very quickly, established a method to analyze this compound, and began analyzing for this pollutant real time. ESB with the help of DOW field collection

staff, monitored the Ohio River at various sampling points for 7 continuous days until both the plume and a detectable concentration had passed through Kentucky.

Another noteworthy environmental occurrence on the Ohio River happened in the fall of 2015. The issue this time related to harmful algae blooms (HABs) that appeared along hundreds of miles of the river and required close monitoring and quick turnaround of results for a specific HAB strain called Microcystin. The Environmental Services Branch had earlier that year brought on line, two new methods to analyze for HABs and in hindsight it couldn't have worked out any better for DEP. This massive outbreak had many drinking water facilities and municipalities along the Ohio on edge as the bloom approached their communities. It even had Louisville wondering if they would have to cancel an Ironman event that was scheduled to take place. ESB chemists took on many additional hours, including weekends, to get results that everyone needed to make the "right" decisions.

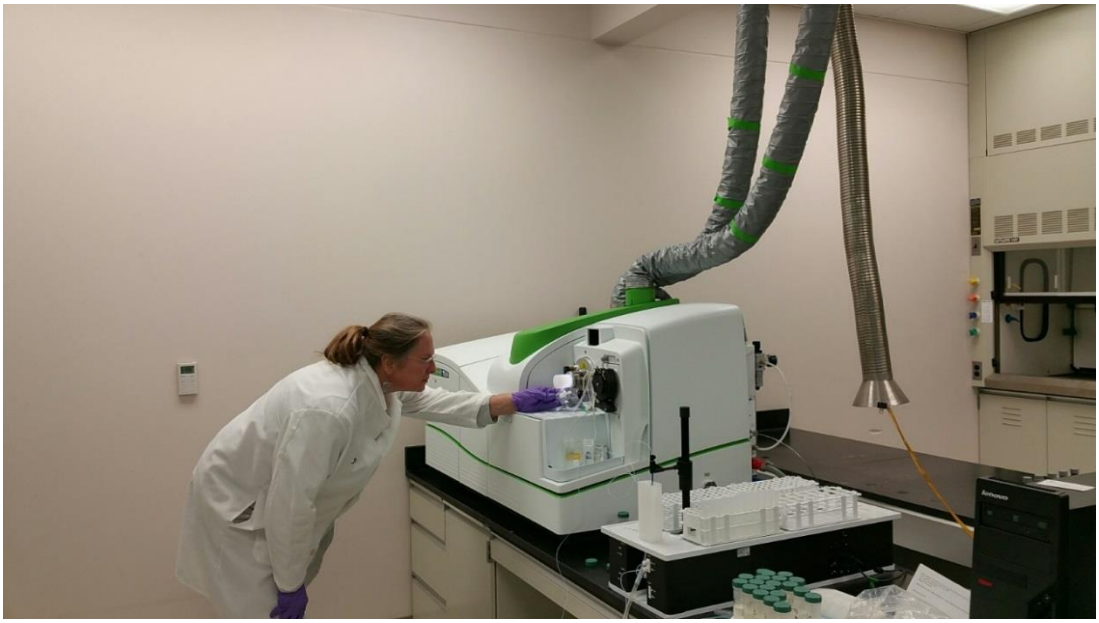
Harmful Algae Bloom on the Ohio River in October of 2015

In April of 2016, ESB's expertise and specialized analytical methods were again needed during an emergency response event involving a spill of what turned out to be yellow marking paint in Rockhouse Creek in Martin County. This investigation and media attention even drew the ire of Erin Brockovich. Through the positive identification of titanium in both paint and creek tainted waters, DEP was able to put this potential environmental issue to rest.

Tainted creek water in Rockhouse Creek in Martin County

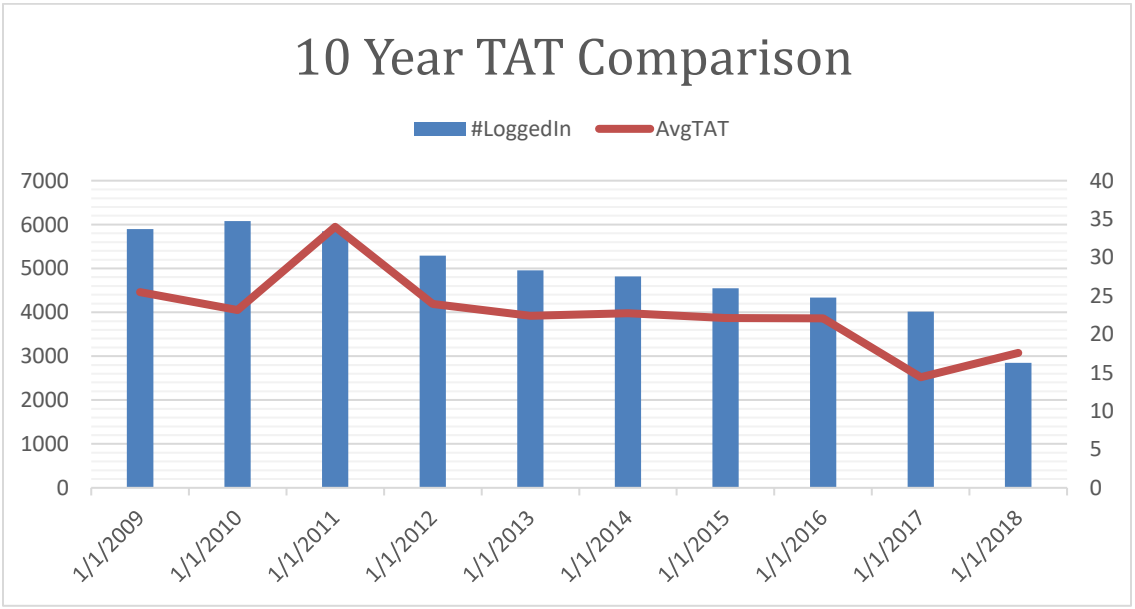
In September of 2016, ESB was asked to provide services in regards to the Long Lane/ Southern Wood property in Montgomery County. Due to the overwhelming high number of samples the soil testing during the remediation stages was handled by an outside contractor; however, ESB was one of the primary responders to this incident and did both the initial testing at this site in Mt. Sterling and a sister site in Winchester. ESB was also called upon to provide all of the air monitoring testing at the site over the course of the excavation and remediation process. Over all ESB ran over 280 samples from both sites.

Replacing equipment with newer, more efficient instruments over time has been critical to the lab's ability to maintain productivity without the addition of staff. Since 2011, the laboratory has been able to acquire funding through various means for the purchase of much needed instrumentation. Examples include: Solid Phase Extractor (2011), Gas Chromatograph–Flame Ionization Detector (2011), Methyl Mercury Analyzer (2013), ICP-MS (2013), Buchi - Accelerated Solvent Extractor (2013), Dionex – High Pressure Liquid Chromatograph (2014), Ion Chromatograph (2014), Discrete Analyzer (2014), Gel Permeation Chromatograph (2015), Oil & Grease Extractor (2015), Nitrogen Generator (2015), GC MS/MS (2015), LC MS/MS (2015), GC/MS w/ Purge and Trap (2016), Perkin Elmer-ICPMS (2017). ESB has recently been approved to receive two new Mercury Analyzers. One will be used to look at low-level ambient water samples and the other for all other matrixes.



Analyst JoEllen Thompson (Metals Section - Chemist) changing out the pump tubing on the newest (2017) Inductively Coupled Plasma Mass Spectrometer (ICP-MS).

ESB continues to provide testing services for the Department in accordance with the allocated budget monies. In CY2016, the total number of samples analyzed was 4335 and the average turn-around time (TAT) was 22.08 days. In CY2017, the number of samples analyzed was (4018), with an average TAT of 14.4 days. In CY2018, the total number of samples so far (2975) is projected to be the highest total it has been in 4 years. The current TAT is around 17.6% days. The increased number of days is directly related to some key human resource departures and instrument repair delays. Over the past couple of years the lab has continued to make significant improvements in the area of TATs. Increasing weekly production levels without any risk to the quality of service is the lab's number one goal. Utilizing the most innovative techniques, purchasing the most efficient testing apparatus and emphasizing productive batch sizing have all contributed to this trend.

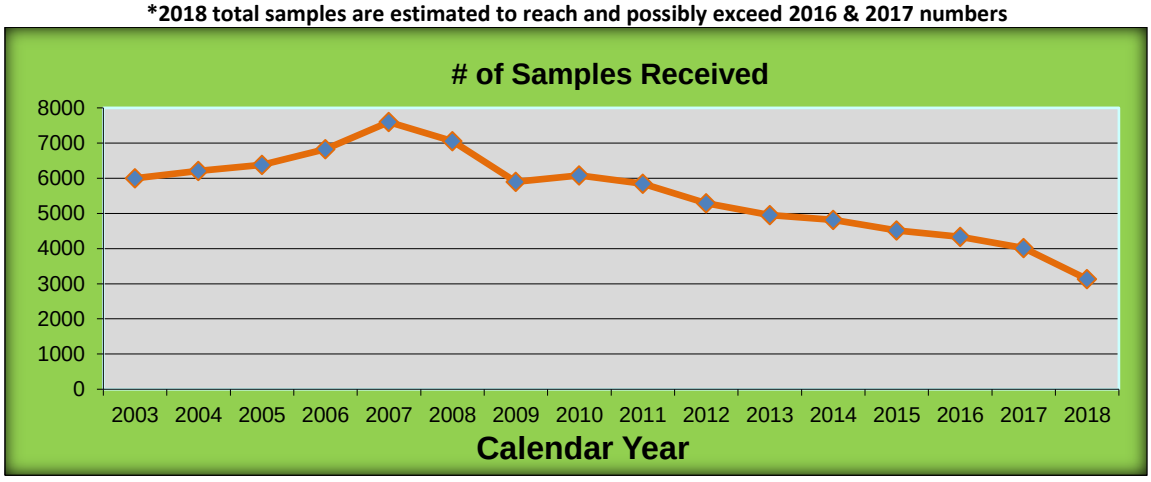


In regards to the laboratory's quality of work, it is inherent that one includes the proficiency studies that the lab participates in annually. These proficiency tests (PTs) are a requirement in order for the lab to maintain accreditation under the USEPA Drinking Water and NELAP programs. In CY16 ESB submitted 1414 results to PT Providers and received an approval rating of 94.8%. In CY17 ESB had an approval rating of 96.1% after correctly identifying 1023 compounds out of 1064 submissions. This is an outstanding achievement considering the number of other samples that pass through the lab and most of the tests are for non-routine parameters that are only run during PTs.

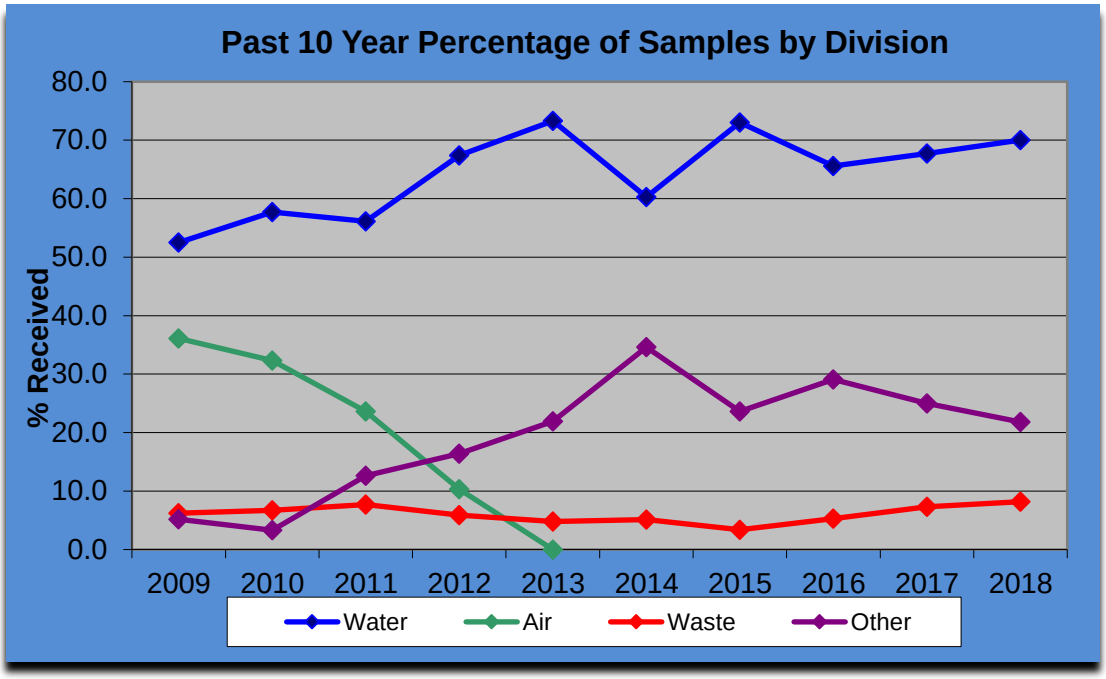
Section	Total by Section (2017)	Failed by section	%Passed by section
GC/MASS	597	16	97.3
Metals	114	4	96.5
Pesticide/PCB	227	9	96.0
Sample Prep	7	0	100.0
Standard testing	119	12	89.9
Total	1023	41	96.1

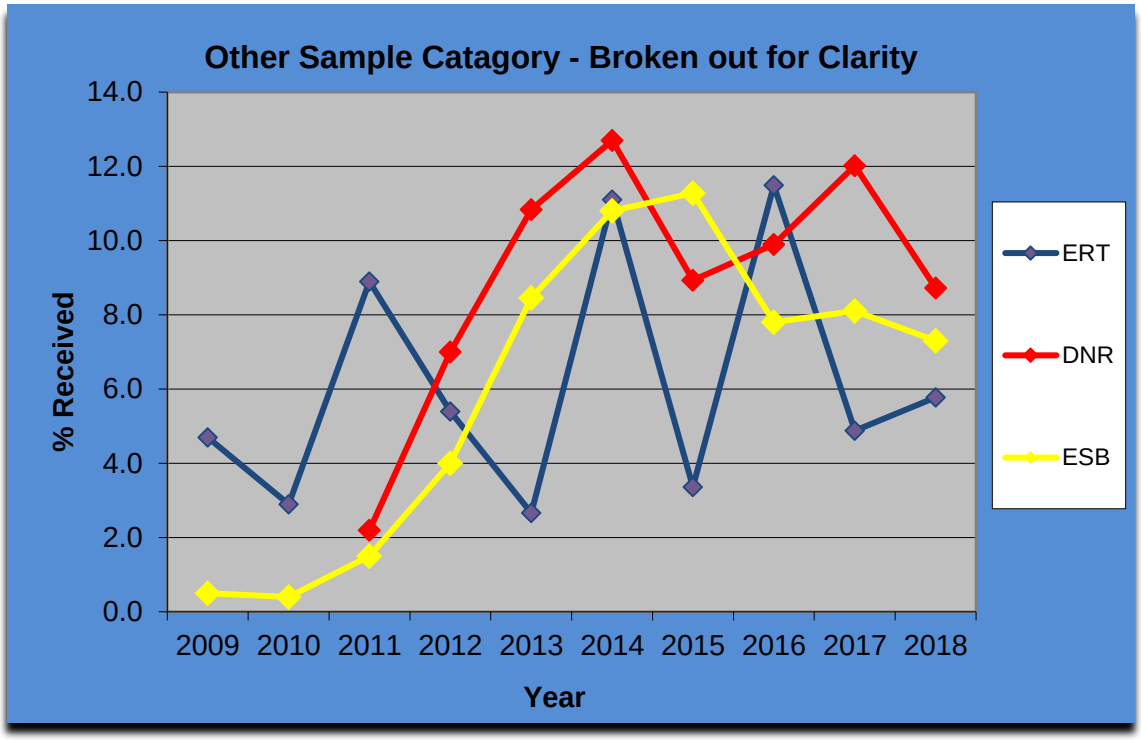
Environmental Services Branch – Samples Received from 1/01/03 to 9/1/18

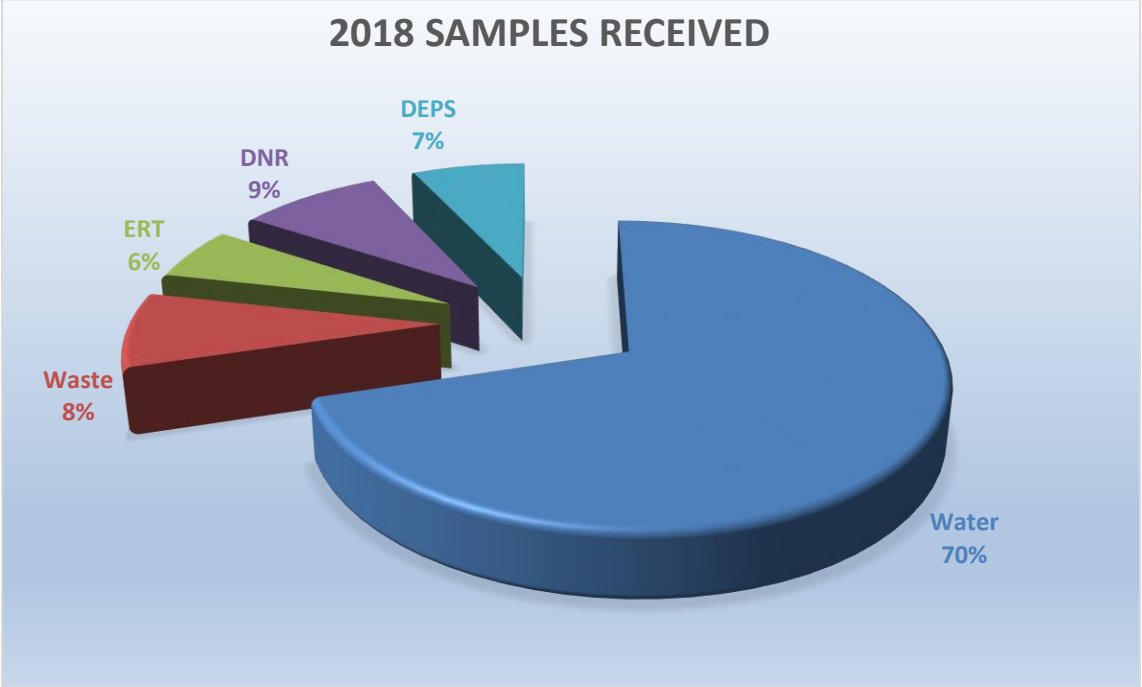
***2018 total samples are estimated to reach and possibly exceed 2016 & 2017 numbers**



Over the past 10 years the ESB laboratory has undergone a significant number of changes that affect laboratory testing output. These changes include but are not limited to reorganizations, budget cuts, monitoring adjustments/requests by other divisions, lab resource reallocations (human and lab space) and instrument purchasing strategies. The total sample number may have gone down over the past 12 years but they are projected to increase during the current calendar year. Unless programmatic changes within the department drastically drop, this upward turn will happen this calendar year.


Past 10 Year Percentage of Samples by Division
% Received
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
Water
Air
Waste
Other


Other Sample Catagory - Broken out for Clarity
% Received
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
Year
ERT
DNR
ESB



Environmental Response Branch – Activities and Accomplishments

The Energy and Environment Cabinet (EEC) is mandated to protect human health and to provide for efficient, coordinated and effective action to minimize damage to the air, land, and waters of the Commonwealth from toxic or hazardous releases of pollutants and contaminates. To achieve this goal, the Department for Environmental Protection formed the Environmental Response Team (ERT) in 1980.

The language in KRS 224.1-400 mandates the Cabinet to have a 24-hour environmental response line and designates the Cabinet as the lead agency for emergency spill responses. In addition, KRS 224.46-580 mandates the Cabinet to respond effectively and timely to emergencies created by releases per 224.1-400.

ERT is a departmental function composed of staff with various environmental discipline backgrounds from DOW, DAQ, DWM and DEPS with the majority of the staff from the regional offices. The Environmental Response Branch is composed of three full time staff, 30 part-time responders (365 days per year, 24 hours a day), and 2 alternates. ERT is operationally based in the Division of Environmental Program Support in Frankfort.

ERT responsibilities include:

- Maintain a 24-hour emergency report/notification phone line for spills and releases.
- Coordinate and transfer non-emergency and post emergency incidents to appropriate DEP staff.

- Serve as On-Scene Coordinator for releases of toxic and hazardous substances, pollutants and contaminants that threaten the environment.
- Coordinate with local and state agencies, US EPA, other federal agencies and neighboring state's agencies related to environmental releases.
- Provide staffing and coordination of EEC efforts for KY Emergency Operations Center (EOC) during activation of EOC due to natural disasters such as flooding and tornadoes.
- Assist in training and planning activities of other local and state agencies.

EEC/DEP ENVIRONMENTAL RESPONSE TEAM
KY EMERGENCY OPERATIONS PLAN RESPONSIBILITIES
ERT SUPPORT ROLES FOR KY EOC

During an emergency event in Kentucky, the KY Emergency Operations Plan (coordinated by the KY Division of Emergency Management) is activated, which places requirements on the EEC/DEP and the Environmental Response Team to work within a framework with other state, local, and federal agencies to coordinate efforts to mitigate the emergency.

Beyond the routine response activities by ERT, the KY EOP places specific duties on the EEC to provide the following:

- Provide an on-scene coordinator.
- Provide staffing to State Emergency Operations Center.
- Provide technical assistance and initial evaluation of pollution hazards.
- Assist in early assessment and extent of hazard by dispatching staff to spill/release site when required.
- Approve and direct on-site operations plan for cleanup, treatment, or containment and mitigation of environmental damage.
- Assure proper disposal of resulting waste materials.
- Establish environmental sampling, testing and analysis programs to measure environmental effects.
- Determine environmentally safe concentrations for water quality and ensure safe public drinking water supplies effected by releases.
- Coordinate with US Environmental Protection Agency, Federal Region IV Regional Response Team, US Army Corps of Engineers, US Coast Guard and other federal agencies.

KRS 224.1-400 mandates coordination by requiring "consultation with other federal, state and local agencies, and private organizations." It must occur at all stages and in all elements of emergency response activities. This coordination is managed by use of the Incident Command System (ICS) as set forth in the KY Emergency Operations Plan and the OSHA safety standards.

The Incident Command System is a standardized system of incident management based upon a chain of command and common terminology for all responding agencies. ICS incorporates the concept of a unified command system, which are employed at large incidents where multiple agencies have jurisdictional concerns.

ERT has daily coordination/communication activity with the KYEM's Emergency Operations Center duty officers who receive the initial calls on the ERT 24-hour phone after normal work hours. The duty officers receive and log the calls and forward the information to the ERT coordinator on call at that time. The duty officers also perform the same services for several other state agencies including the State Fire Marshal, Department of Agriculture and Department for Health Services (Radiation Control Branch). They are also in communication with several other agencies such as Kentucky State Police, Kentucky Transportation Cabinet, Fish and Wildlife, Kentucky Vehicle Enforcement, Kentucky National Guard, and the regional and local KYEM emergency managers.

COORDINATION/COMMUNICATION

The present notification/communication structure is as follows:

- ERT receives and evaluates incidents
- ERT makes decision on response and severity of incident
- ERT notifies appropriate Branch Managers and Director of appropriate Division if situation warrants
- ERT notifies Commissioner and EEC Secretary if necessary

Some emergencies due to unknown or unresponsive responsible parties may require the Cabinet to act to control and cleanup releases. The procedure for these situations is:

- ERT determines that an emergency exists requiring immediate response to prevent/limit environmental damage due to the situation.
- ERT determines that a responsible party is either unknown or unresponsive.
- ERT notifies the Commissioner and asks for approval to authorize and acquire necessary contractors to deal with the emergency.
- Commissioner gives verbal approval to ERT to proceed under spending guidelines.
- Commissioner notifies EEC Secretary and gains upward approvals for emergency declaration.
- ERT processes documentation for contractor and emergency declaration.

There are three cost recovery procedures.

- For non-enforcement actions, expenditures are calculated and a letter is sent to the responsible party requesting payment. Failure to pay, results in formal enforcement action.
- Cost recovery associated with formal enforcement action is included in an overall settlement calculation.
- If the preceding two procedures fail to recover ERT costs, reimbursement from the Federal OPA fund is sought.

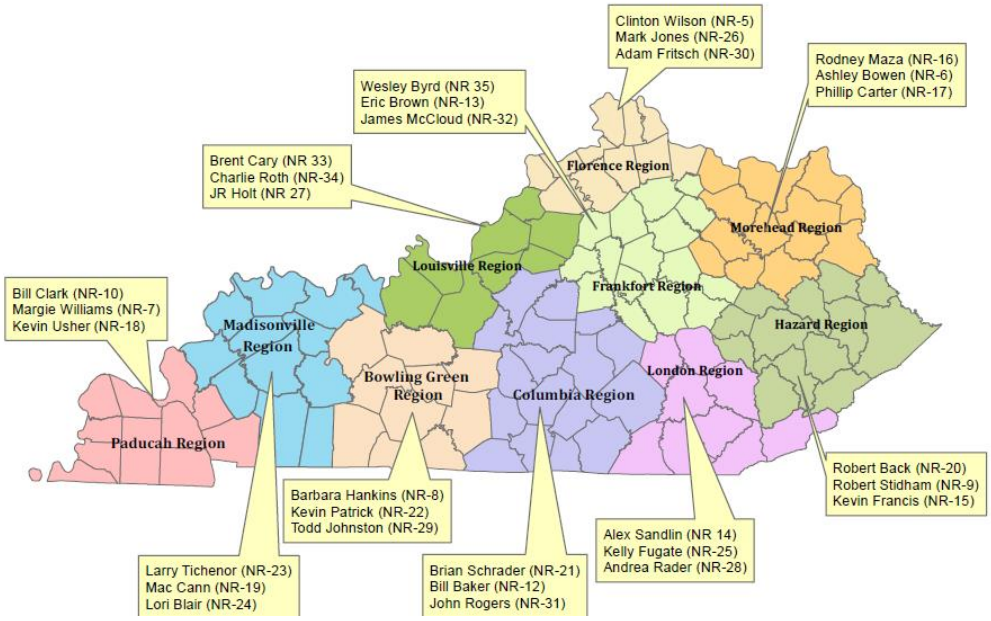
ERT Coverage Areas and Responders

The Environmental Response Team is composed of employees from the Department for Environmental Protection selected from interested applicants based on areas of expertise and work area to assure statewide coverage and specialized training and experience. ERT members assume the additional responsibilities of ERT responder in addition to their regular work duties.

ERT responders are assigned to eight geographic coverage areas with 3 responders in each region being on call in a three-week rotation (one per week) plus an alternate to fill in as needed.

Kentucky Department for Environmental Protection
Environmental Response Team
300 Sower Blvd
Frankfort, KY 40601
24 hr Spill Reporting Hotline 1-800-928-2380

Robert Francis, Manager (NR-1)
David Leo, Response Coordinator (NR-2)
Kevin Strohmeier, Response Coordinator (NR-3)
Brittany Wells, Administrative Support
Steve Jackson, Prepardness Coordinator



ERT Responders by Area

<u>Bowling Green</u>	Barbara Hankins (DWM -Bowling Green)
	Todd Johnston (DWM -Bowling Green)
	Kevin Patrick (DWM -Bowling Green)
<u>Columbia</u>	John Rogers (DWM -Columbia)
	Bill Baker (DOW -Bowling Green)
	Brian Schrader (DWM -Columbia)
<u>Frankfort:</u>	Eric Brown (DWM -Frankfort)
	Wes Byrd (DOW -Frankfort)
	James McCloud (DOW -London)
<u>Hazard:</u>	Robert Back (DOW -Hazard)
	Robert Stidham (DWM – Hazard)
	Kevin Francis (DWM – Hazard)

Florence:	Clinton Wilson (DWM -Florence)
	Mark Jones (DOW -Florence)
	Adam Fritch (DWM -Florence)
Louisville:	JR Holt (DWM -Louisville)
	Charlie Roth (DOW -Louisville)
	Brent Cary (DWM –Louisville)
Madisonville:	Lori Blair (DAQ-Owensboro)
	Larry Tichenor (DWM -Madisonville)
	Mac Cann (DAQ-Owensboro)
Morehead:	Rodney Maze (DWM -Morehead)
	Philip Carter (DWM -Morehead)
	Ashley Markwell (DOW-Ashland)
	James Bevins (DOW – Morehead) - Alternate
London:	Kelly Fugate (DOW -Hazard)
	Alex Sandlin (DWM –London)
	Andrea Rader (DWM -London)
Paducah:	Kevin Usher (DAQ -Paducah)
	Vacant (DWM -Paducah)
	Margie Williams (DWM -Paducah)

Photo (left): ERT Staff participated in a field exercise with the Jessamine County and Fayette County Fire Departments simulating a response to a hazardous materials release.
Photo (right): ERT staff conducting training on a new boat that was purchased to enhance the team's capability to respond to spills on the Ohio and Mississippi Rivers.

ENVIRONMENTAL INCIDENT NOTIFICATIONS

All incidents and notifications received through the ERT section are evaluated and responded to according to the established DEP business rules as follows:

- **Emergency -** on site response within 2 hours of notification
- **High Priority -** DEP staff will make site visit for follow-up within 2 working days of notification
- **Routine-** DEP staff will make site visit or contact notifier within 5 working days of notification


Photo (left): ERT staff worked with locals on a response to a recycling center fire (Clark County)
Photo (right): ERT staff worked with the Department of Parks to lower a lake, in order for Parks to work on the dam (Boone County)

There were 5 major incidents with severe or potentially catastrophic impacts to human health or the environment occurred in the last two fiscal years. A summary of events follows.

DATE	INCIDENT	COUNTY	IMPACTS
12/19/17	A barge had a catastrophic structural failure that resulted in a release of 467,000 gallons of urea ammonium nitrate to the Ohio River. Water monitoring was conducted for several days to ensure the protection of the City of Louisville drinking water supply.	Boone	Water
1/8/18	A petroleum above ground storage tank failed releasing 7,000 gallons of diesel fuel to a stream. Containment, cleanup, and water monitoring of the spill occurred for several weeks.	Perry	Water, Soil
5/1/18	A train derailment occurred that resulted in 2 locomotives overturned and 6 rail cars that caught fire and resulted in a release of 2,500 gallons of diesel fuel.	Bullitt	Water, Soil
6/9/18	A recycling center had a debris pile that caught fire and caused a large plume to be released to nearby homes. Air monitoring was conducted to provide technical assistance to local officials. Water sampling of the runoff from fire fighting efforts was also conducted.	Clark	Water, Soil, Air
6/22/18	A local distillery had a warehouse collapse that involved 18,000 barrels of alcohol. It is estimated that approximately 190,000 gallons of alcohol released and an unknown amount entered a nearby stream from the first collapse. A second collapse occurred and the company had a contingency plan in place that 190,000 gallons was contained and not released to the stream.	Nelson	Water, Soil