



E C O S

GREEN REPORT

2017 Environmental Innovations: Leveraging Technology, Collaboration, and Creativity to Improve Outcomes

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Introduction

State environmental agencies are proven leaders in developing cutting-edge approaches that enable a more efficient and effective use of resources. By sharing initiatives with their state counterparts, ECOS members can help others solve pressing challenges, both in protecting human health and the environment and in enhancing operations within agencies themselves.

To facilitate the sharing of forward-looking initiatives, ECOS reports weekly on state environmental innovations in its newsletter ECOSWIRE and on its website and social media pages. ECOS also launched the State Program Innovation Awards a decade ago to recognize environmental agency practices that can serve as replicable models for other states. This year, the association was pleased to receive 28 compelling nominations, six of which were selected by the ECOS Executive Committee for award recognition at the Fall Meeting in Jackson Hole, Wyoming. ECOS created a short [video](#) to showcase this year's award recipients.

Nominations this year were sought in the areas of business process improvement, community outreach, and land revitalization – as well as air and water. Selected by the ECOS Executive Committee, this year’s honorees are:



Alabama Department of Environmental Management: Electronic Inspections. A new electronic inspection process allows state inspectors to capture data from a tablet device to enhance efficiencies, increase data accuracy, and improve timeliness for citizen access. Since implementation, the number of construction storm water inspections performed has increased by almost 30%.



Colorado Department of Public Health & Environment: Oil & Gas Health Information & Response Program. An initiative of oil and gas emissions experts serves to provide timely responses to health concerns, monitor and analyze data trends, assess health risks, and effectively communicate scientific findings. Since 2015, more than 300 health concerns have been reported to the program, and all have been responded to within one business day by health professionals.



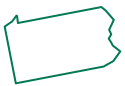
District of Columbia Department of Energy & Environment: Green Workforce Development. Three workforce development programs – the Green Zone Environmental Program, Solar Works DC, and River Corps – are preparing District residents for job opportunities in the green industry. Nearly 1,000 young people have participated in the programs, and a number of participants have gone on to land jobs in the field.



Idaho Department of Environmental Quality: Dixie Drain Project. The cost-effective alternative drain plan carried out by state and federal environmental agencies and the City of Boise addresses pollution in the Dixie Drain. The Dixie Drain facility is currently removing 25 pounds of phosphorus per day and is expected to remove 80 pounds per day in 2020.



Missouri Department of Natural Resources: Local Government Portal or “Assistance Gateway” Application. An innovative portal application gives communities customized online access to tools and resources that address their environmental compliance and infrastructure planning needs. During the soft launch of the app, 35 users registered, and three states and one tribe expressed interest in deploying their own version of the portal using Missouri’s code.



Pennsylvania Department of Environmental Protection: Brownfields to Playfields Initiative. The cooperative pilot project program aims to restore and repurpose more than 40 acres of former industrial lands for recreation and conservation, particularly in underserved communities, by improving project coordination among multiple state agencies, local governments, federal programs, and private partnerships. Over the summer, a groundbreaking ceremony at the first of seven pilot projects dedicated the future site of the Ira Reynolds Riverfront Park, transformed from a former railyard in Susquehanna County.

These innovation awardees and the other nominations are summarized below. ECOS hopes the information in this report will encourage its members to adopt, adapt, or collaborate on initiatives. The association looks forward to continuing the tradition of advancing innovation in 2018.

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Winner's Circle



Alabama's Electronic Inspections Enhance Efficiencies & Improve Timeliness for Citizen Access

Description of Initiative:

The Alabama Department of Environmental Management continuously searches for methods to enhance efficiencies and maximize the effectiveness of limited resources. A recent effort to move to an electronic inspection process has increased inspection numbers by almost 30% and has streamlined the electronic flow of inspection data to state and federal databases as well as to the department's electronic filing system, e-FILE, which makes the inspection data available for citizen viewing in a fraction of the time as compared to the previous method.

The new process allows inspection data, including pictures, to be captured electronically using a tablet device while at the facility. Once the inspector has wireless access, the inspection results automatically flow to the supervisor's computer for supervisor review. Upon arrival by the supervisor a transmittal letter is automatically generated and the inspection results automatically flow to the Department's e-FILE system where they are available for citizen viewing. The inspection results also automatically flow to a state database, which is uploaded daily to a federal database. This new electronic inspection process enhances efficiencies by eliminating the following tasks that inspectors had to perform when they returned to the office under the old inspection process:

- Eliminates the downloading of pictures from cameras;
- Eliminates the printing of paper copies of inspection reports for supervisor review;
- Eliminates the hand entry of data into the state database;
- Eliminates data errors associated with the hand entry of data;
- Eliminates the manual generation of transmittal letters; and
- Eliminates the hand coding and hand scanning of documents for e-FILE.

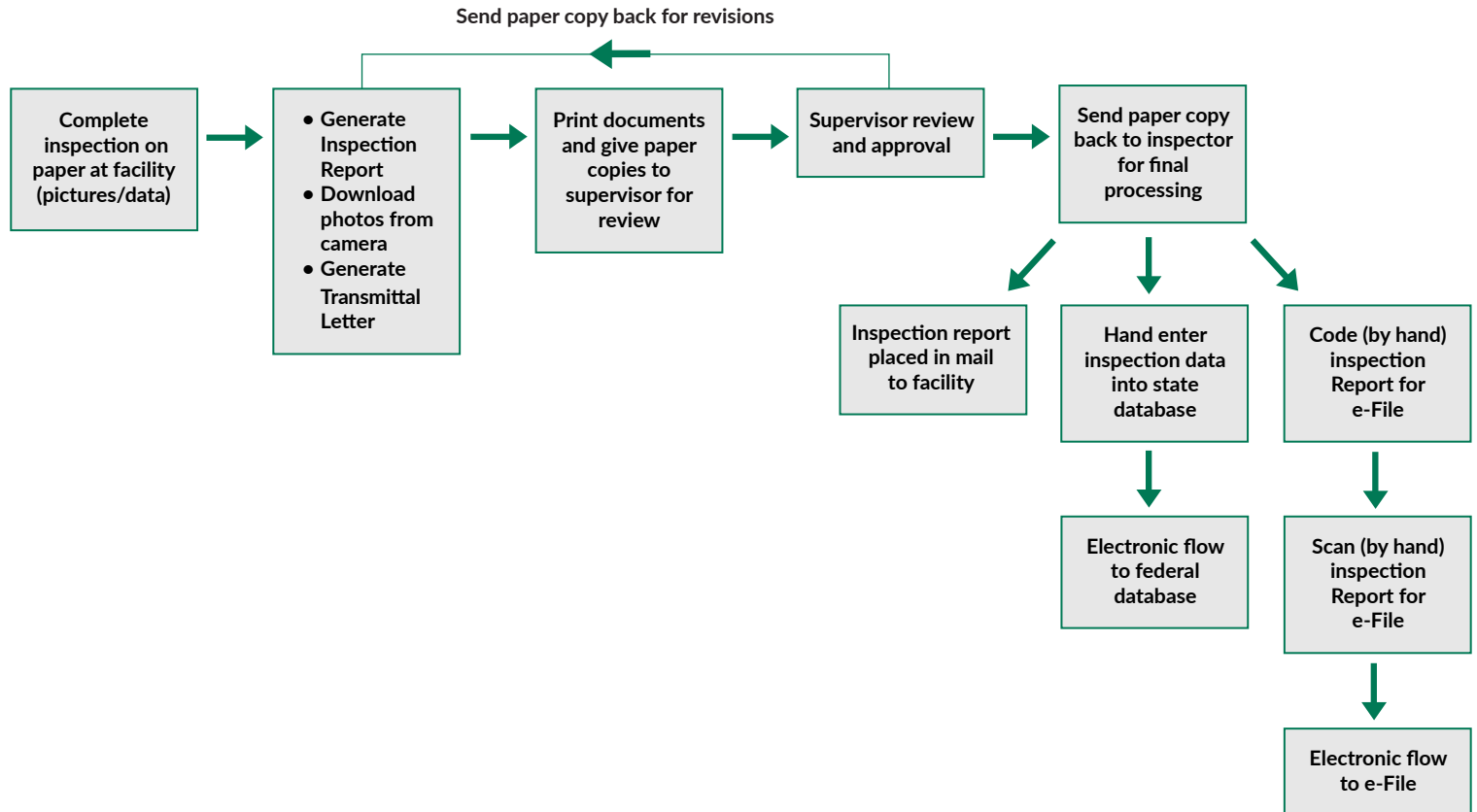
Results to Date:

Inspectors are now able to complete basically all of their work while at the facility, resulting in less time in the office. Allowing inspectors to spend more time in the field increases the number of inspections performed, which enhances the department's field presence and deters noncompliance at regulated facilities.

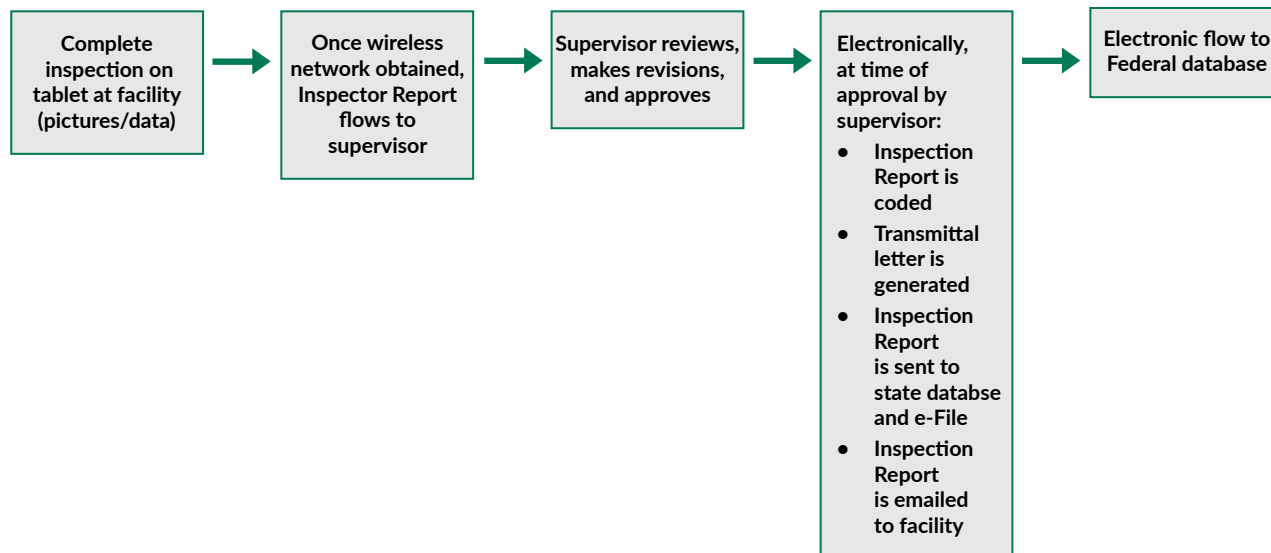
Full implementation of this electronic inspection process began with the start of fiscal year 2017, and through the first three quarters the department has seen almost a 30% increase in the number of construction stormwater inspections performed. Efficiencies should continue to expand as inspectors and supervisors gain familiarity with the system. Each fiscal year the department conducts approximately 2,500 inspections at construction sites and industrial/municipal facilities that operate under National Pollutant Discharge Elimination System permits. By achieving efficiencies in each of these almost 2,500 inspections, it is easy to visualize that the overall improvements in efficiency will be substantial. The enhancement of

data accuracy in state and federal databases, combined with the ability to improve the timeliness of inspection report availability for citizen viewing in e-FILE, is an added bonus.

Flow Chart for Paper Inspections:



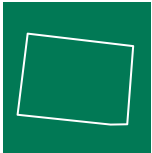
Flow Chart for Electronic Inspections:



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Colorado's Oil & Gas Health & Information Response Program

Description of Initiative:

Unconventional oil and gas (O&G) extraction is rapidly expanding in Colorado in close proximity to high-density residential areas. For example, there are approximately 54,000 active wells in Colorado, and more than 50% of these are in counties that also have some of the highest rates of population growth in the nation.

In 2014, the Colorado Oil and Gas Task Force developed a set of recommendations to help foster responsible development of oil and gas in Colorado. As part of its assessment, the Task Force stated that it “heard from many citizens who expressed concern and uncertainty about potential human health risks associated with exposure to emissions from oil and gas activities. The Task Force believes citizens deserve and need accurate, credible, peer-reviewed scientific information to help them evaluate risk” (Task Force Final Report, 2015).

To address these citizen concerns, the Colorado Department of Public Health and Environment established an intra-departmental program between the environmental and health divisions called the Oil and Gas Health Information and Response (OGHIR) Program. This brought together departmental experts in oil and gas operations, air quality measurement, exposure assessment, toxicology, environmental medicine, and health communication. The program established the following goals: (1) provide rapid response to citizen and local government health concerns; (2) monitor and analyze the geographical and temporal trends of health concerns; (3) utilize state-of-the-art air quality measurement and risk assessment methods to assess citizen concerns; and (4) effectively communicate investigation findings and other objective scientific information about the potential health risks associated with O&G emissions to citizens and policymakers. In order to better characterize emissions and exposures, the program designed and commissioned a mobile air quality monitoring laboratory with capabilities to measure near real-time concentrations of a large number of volatile organic compounds, criteria pollutants, and other potential emissions from O&G. OGHIR is one of the first programs in the nation to provide a centralized, state level program solely focused on tracking detailed information about citizen health concerns and investigating these concerns through community-level air quality monitoring for use in health risk assessments.

OGHIR has successfully developed relationships and work processes with oil and gas regulators, local health departments, and other government representatives to provide a coordinated and efficient response to citizen health concerns. OGHIR has also developed a tiered approach to efficiently collect air quality data to assess potential health risk. The first tier assessment includes site visits by staff to citizen's houses and

neighborhoods, partnering with citizens to collect symptoms and odors using online logs and short-term air samples during times when they experience strong odors and/or symptoms. Based on the results of the initial screening or the volume of health concerns reported, the mobile air quality monitoring laboratory may be deployed to conduct longer term or more detailed testing. All of these data are analyzed to provide citizens and stakeholders with an understandable report detailing potential health risks.

Results to Date:

- Since fall 2015, more than 300 health concerns have been reported to OGHIR. All of these have been responded to within one business day by health professionals.
- Sixty percent of these health concerns have resulted in the collection of community air quality samples or deployment of the mobile air quality monitoring laboratory and a resulting health risk evaluation report.
- The program published a comprehensive risk assessment covering the years 2008-2015 and outlining the potential health risks for residents living near O&G operations in Colorado.
- The program published a systematic literature review of published epidemiological studies evaluating the potential health effects for populations living near O&G operations.
- The program has provided outreach and education to more than 30 citizen or policymaker groups about the potential health risks associated with O&G emissions.

For more information about the program, visit www.colorado.gov/oghealth.

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District of Columbia's Green Workforce Development Programs

Description of Initiative:

The District Department of Energy and Environment (DOEE) has initiated three green workforce development programs for District residents: the Green Zone Environmental Program, Solar Works DC, and River Corps. DOEE is preparing District residents for entry into the job market and creating a pipeline to employment, and is supplying employers with a qualified, trained workforce to do the jobs needed, specifically in the green industry.

Green Zone Environmental Program (GZEP):

GZEP is one of the nation's largest summer green jobs training programs for youth and young adults. Every summer, DOEE partners with the Department of Employment Services (DOES), Marion Barry Summer Youth Employment Program to provide more than 300 youth and young adults, ages 14 to 24, with an opportunity to learn about energy and environmental issues, complete community-based environmental work projects such as rain gardens and storm drain markers, and prepare for careers. GZEP runs for six weeks and incorporates a traditional classroom model twice a week, community projects twice a week, and one day dedicated to our senior citizens. The program works with local not-for-profit organizations and educational institutions to execute specific projects. For example, participants have worked with the University of the District of Columbia to plant and maintain the East Capitol Urban Farm. Participants also have a chance to develop professional skills, prepare for jobs, and obtain meaningful certifications.

Solar Works DC:

In 2016, DOEE launched a pilot solar photovoltaic systems installation and job training program for District young adults, ages 18 to 24. Building on the success of the 2016 program, DOEE and DOES partnered to develop Solar Works DC, which accepted its first cohort in June 2017. Solar Works DC (SWDC) intends to train more than 200 District residents and install solar systems on up to 300 low-income single-family homes in the District over three years.

To implement the first year of Solar Works DC, DOEE and DOES awarded \$950,000 to GRID Alternatives Mid-Atlantic through a competitive grant process. With this funding, GRID is operating a year-round program (summer, fall, and spring cohorts) to train District residents in solar installation. In addition to preparing residents to enter careers in solar and related industries, SWDC will increase solar capacity in the District and reduce energy costs for qualified low-income District homeowners by installing solar systems on their homes. Solar Works DC participants will attain certifications in Occupational Safety and Health Administration (OSHA) 10-hour construction and safety training, CPR and first-aid, North American Board of Certified Energy Practitioners, and Installation Basics Training, which are all industry-recognized certifications and highly marketable to solar and industry employers.

River Corps:

In 2016 DOEE awarded a grant to the Latin American Youth Center to offer job training in green infrastructure and conservation to residents of the District of Columbia. The River Corps program provides field experience and classroom instruction, including job readiness training, certifications, and career development opportunities. Participants engage in photo-monitoring of District of Columbia streams,

invasive species management, and inspection and maintenance of RiverSmart homes and other bio-retention and low-impact development sites. Participants also are exposed to diverse skill-building workshops and activities, including professional development, life skills, and job preparedness.

These activities are reinforced through education courses focused on stormwater management and environmental restoration related to watershed protection and the conservation of native ecosystems. Participants have an opportunity to gain industry-recognized certifications, including CPR and first aid, OSHA 10-hour construction and safety training and Pesticide Applicator.

Results to Date:

GZEP:

- Over the past three years, 959 District youth have participated in GZEP.
- Program participants have helped hundreds of senior citizens with their lawn maintenance and beautification needs throughout the District, conducted cleanups at illegal dumping sites, cleared approximately 13,000 square feet of bush honeysuckle on Kingman Island in order to create a new trail, and constructed new picnic areas to aid with education programming resources, and improve the experience for park visitors.
- GZEP was awarded the Marion Barry Summer Youth Employment Program Visionary Program Award from DOES in 2016 for its innovative efforts to train young adults in the field of energy and the environment.

Solar Works DC:

- Fifteen program participants graduated in 2016, and eight qualified low-income households received solar panel installations through the solar pilot program.
- In 2016, 15 participants in the solar pilot program were trained in OSHA 10-hour construction and safety training and CPR. After the program ended, three participants were offered jobs by a reputable solar installer.
- The Solar Works DC launch event with Mayor Muriel Bowser was held in July 2017 at a home in Northeast DC where panels were recently installed.
- The current cohort comprised of 15 participants will graduate at the Ballou STAY Workforce Development Center in August 2017, and will receive case management support to obtain apprenticeships or part or full-time jobs in the solar and related industries.

River Corps:

- Seven participants successfully completed the River Corps program in the summer of 2017.
- Four of the seven participants have already moved on to jobs in the green industry (three are currently working for GZEP as Team Leaders, and one with the green infrastructure training at DC Water).

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Idaho's Dixie Drain Project

Description of Initiative:

As the Lower Boise River makes its 64-mile journey east from Lucky Peak Dam to the confluence of the Snake River, it flows through the urbanized area of Ada County and then through Canyon County, which is primarily made up of heavily irrigated farmland. Water quality in the river degrades as it reaches the confluence of the Snake River and becomes more concentrated with both sediment and phosphorus.

Due to the high concentrations of phosphorus in the Boise and Snake Rivers, wastewater treatment facility (WWTF) National Pollutant Discharge Elimination System permit limits required the point sources in the watershed to invest in major upgrades to treat and remove 98% of the phosphorous leaving their facilities. Although the phosphorus load from the point sources is reduced through requirements in the NPDES permits, much of the improvement in water quality throughout the watershed is not realized in the lower stretch of the river due to the nonpoint sources of phosphorus, which return to the river. Water used for irrigation picks up sediment and phosphorus and then returns back into the Boise River, unregulated, through drains and canals, which constitute a major source of pollutant load in the lower watershed near the confluence of the Snake River.

The Dixie Drain is an agriculturally influenced tributary in the lower stretch of the Boise River watershed that contributes up to 40% of the total phosphorus load from the Boise River into the Snake River. Due to the large quantities of sediment and phosphorus the Dixie Drain delivers back to the Boise River, at locations far below the City of Boise's WWTF, an opportunity for ingenuity was sought. The City of Boise was able to treat 93% of their phosphorus removal requirements through their treatment plants; however, the remaining 5% of phosphorus required in its NPDES permit would require very expensive modifications to existing facilities for only a slight reduction in phosphorus load in the lower stretches of the river.

Through a trusted partnership, Idaho Department of Environmental Quality (DEQ), U.S. EPA, and the City of Boise collaborated on an alternative plan to address the pollution in the Dixie Drain that would offset the remaining 5% of phosphorus removal required in Boise's NPDES permit. For the same cost as upgrading their existing treatment plant to remove the remaining phosphorus required in its NPDES permit, the Dixie Drain facility treats 1.5 times the amount of phosphorus that would be treated at its upgraded WWTF, resulting in a greater environmental return on investment.

Results to Date:

The Dixie Drain project results in less sediment and phosphorus in the Boise and Snake Rivers. The sediment- and phosphorus-laden drain water is diverted and cycled through constructed treatment ponds, where the sediment and phosphorus is removed and then returned back to the drain clear and clean of these contaminants. The City of Boise, in partnership with DEQ and EPA, developed an innovative solution to meet their permit limit while addressing nonpoint source phosphorus and sediment downstream. This project is an excellent example of city, state, and federal collaboration to look beyond merely spending money for the sake of regulation and instead addressing a problem with a watershed-based solution.

The facility currently is removing 25 pounds of phosphorus per day and will increase removal to 80 pounds per day in 2020. Running at full capacity, the Dixie Drain facility is capable of treating 130 million gallons per day and removing up to 140 pounds of phosphorus per day, or roughly 10 tons a year.

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Missouri's 'Assistance Gateway' Application

Description of Initiative:

Local governments are unique as regulated entities. In Missouri, 80 percent of the 960 cities are rural, many with populations smaller than 5,000. These communities – staffed by citizen mayors and aldermen with few professional staff – have a tremendous compliance burden to maintain and upgrade critical infrastructure with the economic challenges related to rural flight and poverty. In July 2014, a project proposed by Missouri was one of five projects selected by the E-Enterprise Leadership Council to showcase the value and capabilities of the E-Enterprise for the Environment initiative. A scoping team co-chaired by Missouri and U.S. EPA Region 1 included a broad coalition of stakeholders including states, tribes, trade organizations, and municipal staff. This team developed the business case and a positive return on investment analysis.

Funded by an FY15 Exchange Network grant and developed in consultation with state partner Arizona Division of Environmental Quality, Missouri designed the Local Government Portal or “Assistance Gateway” application to provide communities with customized online access to tools and resources that address their environmental compliance and infrastructure planning needs. The application was developed in the cloud using agile methodology featuring in-person user experience test sessions. It aims to enable communities to make informed decisions, save staff time and money, and provide improved service to their citizens. Key features include access to resources that match user interests, an extensive searchable resource catalogue, announcements, and an assistance wizard that returns custom recommendations based on a user’s

responses to a set of questions. In addition, a web service shares the host agency's resources with the E-Enterprise portal.

By developing this application with the “create once, deploy many” concept in mind, Missouri has helped other government entities with an ability to quickly adapt this assistance tool. Any government entity can access the source code and documentation through National Environmental Information Exchange Network. Highly configurable, the application's administrative function allows new host agencies to change as much as possible to suit their customer needs rather than requiring information technology staff to make many changes through programming. To implement a new system, the team estimates it may take another agency approximately 48-96 staff hours.

Results to Date:

- Thirty-five users registered during Missouri soft launch, with many more are anticipated after a new marketing campaign begins;
- Reports from early users indicate that the application is useful for understanding environmental obligations and planning infrastructure; and
- Inquiries have been received from three other states and a tribe interested in deploying their own version of the portal using the code.

To review the Missouri Gateway for Community Assistance portal, go to <https://dnr.mo.gov/gca/>.

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Pennsylvania's Brownfields to Playfields Initiative

Description of Initiative:

The Brownfields to Playfields pilot project program was established to accomplish one of the stewardship goals of Pennsylvania's award-winning Statewide Comprehensive Outdoor Recreation Plan to:

“Restore and repurpose brownfields, abandoned mine lands, and other damaged lands for recreation and conservation purposes through at least five pilot projects.”

The goals of the pilot projects are to provide better project coordination, particularly in smaller and economically disadvantaged communities, by enhancing communication between selected projects and state agencies, and to identify additional state and federal funding sources to aid in the successful

completion of the recreation project. It's a great example of government that works, as well as multi-agency cooperation. The new parks and trails will contribute to the quality of life for many citizens and improve their communities.

In March 2017, the Pennsylvania Departments of Conservation and Natural Resources, Environmental Protection, and Community and Economic Development announced the selection of seven Brownfields to Playfields Pilot Projects:

- **Mahanoy City Borough, Schuylkill County, Kaiers Playground**
Demolition of a dilapidated five-story former brewery building and redevelopment of the site into a community playground.
- **Carlisle Borough, Cumberland County, Fairground Avenue Linear Park**
Redevelopment of former industrial parcels into a mixed-use development that includes a linear park with underlying green stormwater infrastructure.
- **Susquehanna Depot Borough, Susquehanna County, Ira Reynolds Riverfront Park**
Cleanup of former Erie railyard along the Susquehanna River and reuse as a community park.
- **Williamsport City, Lycoming County, Susquehanna River Walk Extension**
Design and engineering of a three-mile extension of the Susquehanna River Walk Trail through an old landfill site and past multiple brownfield sites. This project site is listed as one of Pennsylvania's "Top 10 Trail Gaps."
- **Nanticoke City, Luzerne County, Lower Broadway Recreation Complex**
Development of recreation complex adjacent to former manufactured gas plant.
- **Charleroi Borough, Washington County, Waterfront Park**
Redevelopment of former stadium and glass factory into a recreational complex along the Monongahela River south of Pittsburgh.
- **Union Township, Washington County, Elrama Neighborhood Park**
Redevelopment of a former chrome shop into a public park.

Results to Date:

In July 2017, a groundbreaking ceremony was held at the future site of Ira Reynolds Riverfront Park. The event recognized the importance of public and private organizations working together to realize the community's vision for a new community park.

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Community Outreach & Environmental Justice Innovations



California's Creation of an Environmental Justice Task Force

Description of Initiative:

California Environmental Protection Agency (CalEPA) created the [Environmental Justice Task Force](#) (EJ Task Force) in 2013 to coordinate the compliance and enforcement work of federal, state, and local environmental enforcement agencies in areas of California that are disproportionately burdened by multiple sources of pollution. CalEPA boards and departments participating in this program include the Air Resources Board, the State and Regional Water Boards, the Department of Toxic Substances Control, the Department of Resources Recycling and Recovery, and the Department of Pesticide Regulation. Federal and local partners include U.S. EPA, air districts, and local government agencies with environmental regulatory programs, such as local environmental health departments and agricultural commissioners. The EJ Task Force has three main objectives:

1. Improve environmental compliance in communities disproportionately impacted by multiple sources of pollution in order to protect public health and safety;
2. Provide meaningful opportunities for communities to provide input on potential environmental justice concerns and incorporate that input into the enforcement and other work of the EJ Task Force agencies; and
3. Increase coordination among CalEPA boards and departments and with local, state, and federal regulatory and law enforcement agencies to facilitate compliance across all programs in disadvantaged communities.

The EJ Task Force works toward these objectives through neighborhood compliance and enforcement initiatives. These initiatives begin with robust community outreach efforts. In addition to partnering with local grassroots organizations, the EJ Task Force conducts a community-led bus tour of the neighborhood and a community meeting where the government partners receive input from residents about their concerns. This initial community consultation and bus tour serve to introduce regulators to the community and community members to the roles of the environmental regulators in protection of the public health and the environment. The EJ Task Force takes this input and develops a targeted inspection and compliance assistance plan for the neighborhood based on the problems that have been identified.

Once the inspection and compliance assistance efforts are complete, the EJ Task Force returns to the community to report results of the initiative. This report-back meeting brings the participating agencies together with the community to give an overview of the work done by the agencies, as well as identify any on-going efforts that will continue. These meetings are also an opportunity to share ways in which the community can work with local agencies to identify violations and share educational resources and complaint hotlines for the community to report violations they see in their neighborhoods.

Results to Date:

The EJ Task Force has conducted three initiatives in Fresno, Los Angeles (Boyle Heights and Pacoima neighborhoods), and Oakland (East and West Oakland neighborhoods). Information about those initiatives and examples of enforcement that resulted are provided below.

1. The [Fresno Initiative](#) uncovered a number of [significant violations](#) at a metal recycling facility related to its management of hazardous waste.
2. [Seven criminal complaints](#) were filed against businesses for unsafe storage of highly toxic chemicals as a result of the [Los Angeles Initiative](#).
3. The inspections of discount stores from the [Oakland Initiative](#) led to the discovery of [118 styles of jewelry](#) that contained dangerous levels of lead or cadmium. The Oakland Initiative final report is under development and is expected to be released in fall of 2017.

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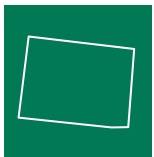
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Colorado's Incorporation of Environmental Justice in Permitting

Description of Initiative:

In June 2016 the Colorado Department of Public Health and Environment (CDPHE) developed its policy to address equity and justice in the administration of its programs. Among other goals, this policy provided authority to integrate race, income, and health data into decision making and promoted collaboration with community partners. The policy requires environmental programs to consider equity and justice in monitoring, permitting, compliance and enforcement, and technical assistance and voluntary programs. In order to support the goals of the policy, the environmental programs developed a set of guidance documents, one of which is the department's plan to ensure stakeholders in areas with known socio-economic and health-related disparities are given a fair opportunity to participate in environmental permitting processes that may have public health or environmental impacts. This guidance was published in May 2017.

Results to Date:

- Development of a GIS mapping tool containing socio-demographic and health data layers that identifies specific geographic areas in Colorado with the most significant socio-economic and health-related disparities (i.e., "priority areas").

- Identification of a specific subset of permits considered “target permits,” which are those that have the highest potential for significant public health and/or environmental impacts (i.e., Title V operating permit issuances, National Pollutant Discharge Elimination System discharges to receiving waters that exceed standards, sites where soil or groundwater contamination pose a human health exposure risk for carcinogens, and so forth).
- Development of a screening process to identify target permits within a priority area. Enhanced public outreach must be conducted for these permits.
- Development of an enhanced outreach strategy, including: mechanisms to purposefully identify and engage non-traditional community stakeholders; ways to encourage the regulated entity to engage with the community; improved processes to accept public comment; improved communication techniques; and ultimately, how to incorporate community input into a permit.
- Development of mechanisms to evaluate the impacts of enhanced outreach including questionnaires that can be distributed to the community, the source, and internal staff.

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Mississippi's Community Collaboration with Local Industries

Description of Initiative:

In 2013, Mississippi Department of Environmental Quality (MDEQ) began a focused strategic collaboration effort between industries and a local citizens group to hear the concerns of residents, leverage relationships, share ideas, and develop methods to address concerns. The MDEQ used collaborative methods to enhance cooperation among the community and industry, as well as local, state, and federal governments that shared responsibilities and overlapping jurisdictions. The MDEQ collaborative efforts were designed to bring these groups together to work on problems not easily solved by one group alone. Through these collaborative partnerships, residents and community groups have strengthened their capacity and confidence to work with the industries to address environmental concerns.

A critical component of this effort was getting industries located in the Industrial Park to evaluate their processes for fugitive emissions. Once industries were committed to collaborating with the community, MDEQ incorporated a Dust Management Plan into the Title V permits of two of the nearest shipbuilding industries. One industry agreed to conduct monitoring for sulfur dioxide in the surrounding neighborhood. All the industries provided direct numbers (both landlines and cell) to community representatives for immediate responses to concerns. The Local Emergency Planning Committee (LEPC) used 2016 grant monies to start a Code Red (Reverse 911) Communication Awareness Campaign and purchase shelter-in-place kits for the community. MDEQ hosted informational sessions, served on the Pascagoula Air and

Water Team, and sent out numerous fact sheets with updates about activities taking place at and around Industrial Park.

MDEQ will maintain focus on community engagement and outreach by taking opportunities to engage stakeholders, partner with federal and nonfederal partners, and share information and tools that are important to communities and consistent with MDEQ early efforts. Today, MDEQ continues to work on sustaining ongoing interaction and open lines of communication between the community and industries.

Results to Date:

- 2016 MDEQ Air Division drafted ambient air sampling plan after collaborating with a community. Plan sent to community for review and comments. Implemented in Fall 2016.
- 2015 Communities organized an Air and Water Team with industry and government representation, and LEPC creates sub-group to review notification process in Emergency Response Plan. Community representative to serve on subgroup.
- 2014 MDEQ and U.S. EPA partnered to sponsor a full-day Community Air Permitting Workshop for the public.

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North Carolina's 'It's Our Air' Program Provides Air Quality Curriculum for High School Students

Description of Initiative:

How can a state help students, who are the next generation of drivers, consumers, and decision makers, become better critical thinkers and be aware of how to solve complex environmental issues? The North Carolina Department of Environmental Quality Division of Air Quality's education and outreach program, NC Air Awareness, created a series of activities and engaging videos to help teachers do just that. By leveraging its mission of reducing air pollution through voluntary actions by individuals and organizations, NC Air Awareness seeks to empower youth through "It's Our Air" to not only do their part but also become effective influencers.

It's Our Air was the result of a multi-year collaboration of teachers, curriculum writers, non-formal educators, industry representatives, nonprofit representatives, and other stakeholders. The free North Carolina specific curriculum creates an air quality unit for the state's high school level Earth and

Science teachers or STEM classrooms.

It's Our Air is designed to help students develop a better understanding of the science and technology that helps explain, monitor, predict and protect air quality. This is accomplished through student engagement in a variety of hands-on activities and dynamic video segments. The comprehensive curriculum can be used as is or adapted by teachers to fit their course needs. All activities are aligned with the NC Essential Standards for high school Earth and Environmental Science courses.

The curriculum consists of three modules: Air Pollutants and Their Sources, Predicting Air Pollution, and Problems and Solutions. These modules contain 15 structured, hands-on classroom and field activities in which students use data analysis, experimentation, creativity, research, and mapping to understand air quality science and issues. Nine short videos are associated with specific concepts or activities with the goal of enhancing learning via animated illustration of scientific concepts, virtual field trips, and interviews with scientists. Videos feature an engaging host/teacher and a diverse group of North Carolina high school students.

It's Our Air also includes teacher tips from an award-winning Earth Science teacher, including orientation videos, activity grouping, and scheduled workshops where teachers can earn continuing education credits.

Results to Date:

- It's Our Air launched at a kick-off event with North Carolina Governor Roy Cooper in April 2017.
- North Carolina Division of Air Quality has conducted numerous presentations to educators and is actively scheduling teacher workshops across the state.
- More than 45,000 visits have been logged to the www.itsourair.org website since its launch.

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Pennsylvania's Environmental Justice Listening Tour

Description of Initiative:

In 2001, a workgroup convened by the Pennsylvania Department of Environmental Protection (DEP) produced an Environmental Justice Work Group Report (EJWG) recommending the development of an Environmental Justice Advisory Board and an office within DEP to address environmental justice (EJ) issues. What is now called the Office of Environmental Justice (OEJ) was created in 2002, and in 2004 a Public Participation Policy was developed with the intent of providing enhanced public participation to certain communities when select major permit applications are submitted to the department.

When Governor Tom Wolf's administration began in 2015, the OEJ was vacant. In late 2015, a Director for the OEJ was appointed by the administration, and the DEP began an intensive review of its current outreach to EJ communities, EJ policies, and current practices as it related to environmental justice. As a result of this review, the OEJ began to plan a nine-stop statewide listening tour to evaluate the state of EJ across the commonwealth and to determine what changes, if any, needed to be made to the current EJ program.

The OEJ developed a list of questions to help guide testimony given at the listening sessions. Questions solicited input on the existing definition of EJ and what parameters constitute an EJ community, how DEP can improve community outreach and engagement, and access to information, among other topics. Testimony submitted by mail and email also counted as public comment and was attributed to the listening tour.

Beginning in July 2017, the OEJ reconvened an internal workgroup to evaluate the comments received from the listening tour and to develop an action plan regarding topics and issues raised throughout the listening tour testimony.

Results to Date:

- Three hundred and fourteen comments received from 147 individuals and organizations across the state have been categorized and will result in the reevaluation of Department policies and procedures.
- An EJ Viewer GIS tool has been developed and will incorporate suggestions received during the listening tour. This tool will allow the public to easily view EJ areas, permitted activity, demographics, and health data obtained from DEP and other state departments.

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South Carolina's Community Engagement

Description of Initiative:

The South Carolina Department of Health and Environmental Control (DHEC) is one of three combined public health and environmental departments in the country. DHEC's Office of Environmental Affairs emphasizes the importance of engaging with communities just beyond the fence line of facilities or sites it permits or oversees. The Community Engagement Team is made up of staff from all five program areas (Air Quality, Water, Land & Waste Management, Environmental Health Services, and the Office of Coastal Resource Management) who serve as representatives of communities in high-level agency staff meetings. They also routinely reach out to concerned citizens regarding environmental projects or issues in the state and frequently serve as facilitators for public meetings and public hearings. Within Environmental Affairs Administration is a Community Engagement Coordinator who leads weekly meetings with all community engagement positions, coordinates coverage of projects, and works to continually improve processes related to community engagement.

Examples of Successful Engagement in Action:

High levels of lead and arsenic were found in industrial soil during testing for a real estate transaction. Soil testing found elevated lead and arsenic levels in a neighborhood next to the site as well. The Community Engagement team, along with technical experts, went door to door in the neighborhood to explain what was happening and to get permission to sample yards. As it turned out, research found that there had been a fertilizer plant in the area that had been built around 1900 and torn down in the early 1930s. The plant was the source of the legacy contamination, and EPA conducted an emergency removal. DHEC offered biological monitoring for both lead and arsenic to citizens in the neighborhood. DHEC and EPA held several public meetings to explain the findings of the investigation as well as the cleanup. Biological monitoring results were negative in the community members that were tested, and the process helped relieve any fears of potential health impacts of the soil contaminants found.

Other Incidents:

A long list of projects have benefited and are writing permits or designing cleanups. While the perception used to be that community engagement delayed the process, staff now see and appreciate the many benefits of engaging citizens and hearing and addressing their concerns early in the process.

Results to Date:

The state is working to quantify the benefits of community engagement by evaluating its efforts in association with the number of permits issued, the number of appeals, and various other metrics. Stay tuned to SC DHEC Community Engagement for more exciting results moving forward.

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Permit and Business Process Improvement Innovations



Arizona's Air Permit Streamlining

Description of Initiative:

The construction industry plays a major role in driving economic growth for the State of Arizona. A subset of this industry includes the portable rock product industry – crushing and screening, hot mix asphalt, and concrete production. These industrial processes, if not operated in accordance with state and federal regulations, have the potential to produce dust and other emissions that could potentially impact public health and the environment. Air quality permits incorporate applicable regulations to protect the public and environment.

Historically, permitting practices required businesses to follow inefficient and complex permit application procedures. The process to obtain a simple general permit took two months on average. The permit application was more than 10 pages long and required applicants to perform emission calculations and, in some cases, provide superfluous and unnecessary additional information to draft a permit. In seeking the voice of the customer, dissatisfaction with the duration and complexity of these processes and associated negative business impacts became clear. In addition, three counties have local jurisdiction to enforce their own rules and regulations but are not informed when these operations move into their jurisdiction since the statewide portable facilities obtain their permits from Arizona Department of Environmental Quality. When facilities failed to submit a move notice or other compliance reports, enforcement became a challenge when their location of operation was unknown.

The agency looked into ways to issue permits faster and increase compliance rates while reducing the burden to the business community. Several Lean initiatives were implemented which reduced processing time from months to weeks or days by eliminating waste in the process. While these efforts achieved a timelier process than in past years, a multitude of permitting and compliance transactions in paper format still remained.

Therefore, the agency proposed to provide an online web service that would allow businesses to transact electronically versus in paper format. Incorporation of technology to make the process more efficient was analyzed. The result was an online self-service tool for the business. The application was designed with

a TurboTax®-like question-and -answer wizard that radically simplified and reduced errors in the application process. It eliminated the need for complex calculations by automating them into the system and also seamlessly integrated compliance reporting. The system was made available 24/7, and a permit could be obtained within minutes, radically simplifying compliance with environmental obligations. The system also included timely alerts for submitting compliance reports that increased compliance rates by more than 70 percent. In addition, the online system allows for instantaneous collaboration with three county air quality agencies by automatically notifying them when facilities move into their jurisdiction.

Results to Date:

Permitting through the web portal occurs seamlessly, serves the rock product industry's needs effectively, and allows it to obtain permits at the speed of business. Using this straightforward portal, the agency is seeing a positive impact on compliance. As a collateral benefit, automation through the portal has freed up precious staff capacity needed to conduct complex tasks to support the agency's mission work.

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Arkansas' Office of Compliance & Continuous Improvement

Description of Initiative:

In January 2017, Arkansas Department of Environmental Quality (ADEQ) Director Becky Keogh created the Office of Compliance and Continuous Improvement (OCCI). The purpose of the office is two-fold. One primary goal is the development of a compliance management system with the goal of providing the agency a clear and accountable process for agency legal obligations and commitments as part of overall succession management. Another primary goal of this new office is to implement a Lean Six Sigma (LSS) management system that will enable continuous improvement to become part of the everyday culture at ADEQ. A strategic plan for implementing LSS has been created by the OCCI and approved by Director Keogh.

The plan focuses on three primary objectives: (1) to create LSS projects to improve processes; (2) to train ADEQ staff on LSS tools and concepts; and (3) to initiate visual management to make processes and metrics visible. In February, Director Keogh challenged ADEQ to develop SMART goals to line up with a agency strategic goals. The OCCI made training sessions available for every ADEQ office, section, and employee to facilitate the development of agency strategic goals and SMART goals. The SMART goals became the foundation for ADEQ's LSS program.

Results to Date:

To date, early successes have been gained internally and in multi-agency efforts. ADEQ, in partnership with U.S. EPA, conducted value stream analysis and efficiency improvements in its enforcement processes. In addition, a cross-agency effort with the Arkansas Crime Lab (ACL) resulted in improvement and identification of time reduction opportunities in personnel hiring processes. ADEQ, ACL, and Arkansas Department of Human Services have partnered to apply process-driven efficiency improvement lessons at ADEQ and ACL to the state Foster Care program.

Six LSS training decks have been completed, and ADEQ employees have been trained on five of these six trainings, including 92% and 84% of agency employees on Lean 101 and SMART goals, respectively. One section of the agency has been using visual management since the beginning of 2017, while other sections of the agency are transitioning to visual management. ADEQ is continuing to implement this continuous improvement plan across agency programs. This work is also advanced in partnership with the newly charted Arkansas Government Transformation Office created by Governor Hutchinson.

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District of Columbia's Stormwater Database

Description of Initiative:

In urban areas, impervious surfaces such as rooftops, roads, and pavement cause increased stormwater runoff. Stormwater carries oil, trash, pet waste, fertilizers, and other pollution sources into rivers and waterbodies, often with no treatment. The District of Columbia is 43% impervious, and the District government has established some of the nation's most stringent regulations and innovative incentive programs to encourage green infrastructure (GI) projects that reduce and treat stormwater runoff. This includes a first-of-its-kind credit trading program to allow for off-site compliance with the District's stormwater management regulations.

The District's river-protecting stormwater management programs are complex and require a robust database that can track program implementation and report on milestones to EPA, environmental stakeholders, and District decision-makers. The District's challenge has been to implement many related stormwater management programs in a coordinated way while preserving the District's ability to adaptively manage these programs. To resolve this challenge, the Department of Energy and Environment (DOEE) developed the Stormwater Database.

The Stormwater Database tracks detailed information for the thousands of green infrastructure practices that are approved every year to manage stormwater runoff in the District. The database tracks the size and location of each practice, and DOEE's inspectors complete inspection forms in the field using the database on tablets. DOEE develops custom reports to show the amount of area retrofitted with green infrastructure across the District and evaluates how programs are achieving environmental benefits in targeted areas. This information is all reported publicly.

DOEE took an unconventional approach to developing the Stormwater Database. After working with database contractors over a period of several years, DOEE found that the contractors could not achieve the results DOEE needed. Instead, DOEE custom-built the Stormwater Database in-house at low cost with an existing license to use an online database platform. Because DOEE staff who are responsible for implementing programs have also been responsible for designing and constructing the database components, DOEE's program staff have the ability and expertise to adapt the Stormwater Database as necessary to meet changing program needs. This has made the Stormwater Database a robust tool and has allowed the District to implement its many river-protecting programs effectively and in coordination.

Results to Date:

In addition to tracking key program data, the Stormwater Database manages DOEE's business process for application submittal, permit review, inspection, and various other functions. By integrating these many programs and functions into a single system, DOEE has streamlined its business processes, reduced duplicative applications, and provided more effective customer service. For example, using the Stormwater Database, DOEE analyzes its permit turnaround time to identify bottlenecks and implement process improvements to issue permits more quickly.

Program Dashboards: Dashboards provide program evaluation, allowing DOEE to adaptively manage its programs, including permit review and the environmental outcomes of Stormwater Retention Credit (SRC) trades.

Public Layer of Data: The Stormwater Database automatically publishes a weekly update on the location and size of green infrastructure throughout the District, which can be viewed online or downloaded as a spreadsheet or shapefile.

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Hawaii's Section 401 Water Quality Certification Streamlining

Description of Initiative:

The Hawaii Department of Health, Clean Water Branch (DOH-CWB) administers the Section 401 Water Quality Certification (WQC) program in the state. Section 401 WQCs are required for any activity/project that requires a federal permit or license and may result in a water pollutant discharge to state waters. On average, the DOH-CWB receives 35 new Section 401 WQC applications per year and has one staff engineer to process these applications. Many of the government agency applicants expressed concern about long Section 401 WQC processing times (approximately one year on average). These applicants needed the Section 401 WQC processed sooner so they can complete projects to benefit Hawaii.

To address the long processing time concerns, the DOH conducted a Kaizen improvement process that focuses on eliminating waste, improving productivity, and achieving sustained continual improvement. The Kaizen was held during a week in 2015 and was facilitated by a consultant specializing in streamlining government processes. There were 14 participants, including regulatory agencies (Army Corps of Engineers, U.S. EPA, and DOH-CWB) and Section 401 WQC government applicants (Department of Transportation, City and County of Honolulu, and Department of Land and Natural Resources).

During the event, participants learned about Kaizen streamlining principles; discussed the existing Section 401 WQC process, concerns with the existing process, and potential causes of the long processing times; and applied Kaizen tools and principles to develop streamlining recommendations targeting the long processing times. It was determined that the existing Section 401 WQC process was lengthy due to 1) back-and-forth correspondence between the DOH-CWB and applicants regarding proposed Best Management Practices (BMPs) and monitoring plans; 2) the same applicants submitting Section 401 WQC applications for different projects with similar activities, but with different proposed BMPs and monitoring plans due to having different project consultants, resulting in DOH-CWB having to do project specific reviews for every application; 3) DOH-CWB reviewing each Section 401 WQC application in the same manner and imposing the same requirements regardless of project size and potential impact to water quality; 4) DOH-CWB having one reviewer for the entire state; and 5) the DOH-CWB reviewer spending a lot of time with applicants wanting to change their BMPs and monitoring plans after the Section 401 WQC is issued.

The DOH-CWB decided to implement a streamlining process based on a combination of recommendations from the Kaizen that addressed each of the causes of the long application processing times. This streamlined process is voluntary and involves applicants developing their own Standard Operating Procedures (SOPs) for activities they normally perform that require a Section 401 WQC. The SOPs must contain design requirements to protect water quality and have considerations to restore the natural function of receiving waterbodies; construction requirements with activity-specific BMPs; and administrative requirements to ensure that applicants include their SOPs in their contracts/bid documents and enforce their own SOPs. Once the DOH-CWB accepts the SOPs, the applicant can reference it in its Section 401 WQC applications for any activity requiring an Army Corps of Engineers Nationwide Permit, which are for activities that have relatively minor environmental impacts. Since the SOPs will have already been approved, the DOH-CWB will not have to review it again. This minimizes the causes of the long

processing times identified in the Kaizen by ending the back and forth with the applicant over BMPs and monitoring plans. Also, the SOPs allow the applicant to pre-determine the suite of BMPs they know will work based on their experience, eliminating the need for different BMP proposals from their consultants and the need to change BMPs after the Section 401 WQC is issued. The DOH-CWB's 1 reviewer will have more time to focus on larger projects with a greater potential to impact water quality.

Results to Date:

- The DOH-CWB held a series of group stakeholder meetings to explain the streamlining process.
- The DOH-CWB has also been meeting with individual applicants who are actively developing SOPs.
- The Department of Transportation, Highways Division and the Federal Highways Administration, Central Federal Lands Division developed SOPs that have been approved by the DOH-CWB. These SOPs were used in three of their applications, and the average processing time was 30 days. This is a 92% improvement in processing time compared to the previous one-year processing time.

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Pennsylvania's Online Permit Application System

Description of Initiative:

The Pennsylvania Department of Environmental Protection (DEP) reinvented its permit application process by building its own extensible electronic platform (e-permitting). This modernization effort streamlined the application, review, and approval processes. It improved service to both internal and external stakeholders through efficiencies, enhancements, and business process reengineering.

The pilot was sponsored by and designed for the Bureau of Mining Programs (BMP) and built by DEP's Bureau of Information Technology (BIT). BMP and BIT worked hand-in-glove to create the new online application. The new process saves time, effort, and paper for both the applicants – mine operators – and reviewers. The mere act of moving from analogue to digital also produced a leaner application, reducing the number of modules from 27 to 21. The e-permit – now submitted through a secure web portal rather than the U.S. mail – also includes a tracking system, automated notifications, electronic payments, and a completeness review. The platform was released to production and went live for use in February 2017.

And because the platform is extensible, other agency permits can now be more easily converted to electronic as well. Current conversion plans include the expansion for use by the Office of Oil and Gas

Management, and the Bureaus of Air Quality, Environmental Cleanup and Brownfields, Clean Water, and Radiation Protection.

The development and introduction of e-permitting at DEP is just one part of a larger effort to transform and modernize agency operations and processes.

Results to Date:

E-permitting provides significant productivity savings by eliminating;

- Paper applications;
- The need to hand-enter data into the department's enterprise database;
- Payments by paper check; and
- Data retrieval from cumbersome paper-based files.

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Pennsylvania's Mobile Inspection Application

Description of Initiative:

Pennsylvania's Department of Environmental Protection (DEP) revolutionized its inspection process by building an electronic inspection (e-inspection) application. DEP's Bureau of Oil and Gas Planning and Program Management (BOGPPM) and Bureau of Information Technology (BIT), and the Pennsylvania Department of Transportation, Office of Information Technology (PennDOT OIT) worked hand-in-hand to design and build the new e-inspection application.

BOGPPM is responsible for administering the laws and regulations governing the development of oil and gas operations in Pennsylvania. As part of their mandate, it conducts onsite inspections of both surface and sub-surface drilling activities. The existing inspection process was entirely paper-based. Inspectors were armed with clipboards and carbonless, triplicate forms. The data were then manually keyed in the agency's enterprise database. Inspectors found themselves in the office one day for every two days in the field.

With the introduction of the e-inspections, DEP inspectors have ditched the paper and pencils for iPads. The app is designed as a fully mobile tool for collecting and documenting inspection information while

onsite, automatically updating and synchronizing data to the enterprise database and producing inspection results instantaneously before leaving the inspection site.

The application was designed as an extensible solution – so other agency inspections can now be more easily converted to e-inspections. The next conversion into the e-inspection application will be the Bureau of District Mining Operations.

The development and introduction of e-inspections at DEP is just one part of a larger effort to transform and modernize agency operations and processes.

Results to Date:

E-inspections provide significant productivity savings:

- Inspectors spend 20% more time in the field;
- Paper inspection forms are eliminated;
- Double entry of inspection data – once in the field/once in the office – is eliminated;
- Inspection results are provided instantly to the customer;
- Data quality is improved; and
- Errors resulting in inspector and manager reviews are reduced.

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Tennessee's Statewide Uniform Inspectors Training

Description of Initiative:

Tennessee's Department of Environment and Conservation, Division of Solid Waste Management has developed and implemented a statewide uniform inspectors training program that was originally designed as a business process improvement focused on increasing the consistency and transparency of the inspection process across the state. It has now expanded as an outreach offering to the regulated community to increase compliance, build trust and engagement, and promote fairness. Statewide Uniform Inspectors Training (S.U.I.T.) was initiated after the Division Director noticed inconsistencies in the way staff was performing solid waste landfill inspections across the state. The Director's message to staff was that

“we need to call balls and strikes the same in Johnson City and Memphis, and all parts in between.” (Tennessee has eight field offices located from Memphis in West Tennessee to Johnson City in East Tennessee, nearly 500 miles apart.) The Division established a committee composed of representatives from each field office, representatives of the Office of General Counsel, and a technical editor to create the manual and accompanying training course.

Results to Date:

To date, 40 Division staff members (managers, inspectors, and engineers) have had inspector training on Class 1, 2 and 3 landfills. In the training, each violation is covered individually, as are regulatory citations. Photos are included to provide clarity on more complex determinations. Training is conducted annually throughout the field offices. Inspector training provided for the regulated community (Solid Waste Landfill Directors/Operators) began in 2016 for Class 1, 2 and 3 landfills. More than 300 individuals have participated. A nominal fee is charged to attendees to offset the cost of the class and attendees receive landfill operator training certification credit.

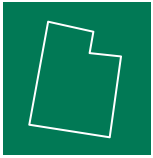
As part of S.U.I.T., Division inspectors from various field offices, and the landfill operator, participate in a joint inspection at selected landfills. Each individual fills out an inspection checklist, and upon completion of the inspection, a meeting is held to discuss the findings of each inspector and the landfill operator. The goal is to have very similar findings on the checklist, and for inspectors and operators to find the same violations (if any) and grade them in the same manner. This hands-on aspect to the training fosters open communication with the regulated community about what to expect during inspections and provides guidance regarding the Division’s compliance expectations.

Growth opportunities on the horizon include creating standard training manuals and a companion training module for transfer stations, tire storage facilities, used oil collection, compost facilities, convenience centers, land application, and the more complex arena of hazardous waste landfills.

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Utah's Local Health Department Governance Process

Description of Initiative:

A vast, geographically diverse state, Utah encompasses an area just under 85,000 square miles. An estimated 80-85% of the population lives along a 120-mile-long strip abutting the Wasatch Mountains. The remainder of the population – just under one million – is spread out statewide in rural areas. From its Salt Lake City headquarters, Utah Department of Environmental Quality (DEQ) engineers and scientists manage the air, land, and water requirements established by state and federal statute. The challenge is made easier through a formalized partnership with Utah's 13 local health departments (LHDs). The LHDs are another set of hands to assist with processes such as surveying Drinking Water systems and providing timely on-the-ground responses and/or another set of eyes when needed. They also add a local perspective to issues under investigation.

For more than 20 years, DEQ has contracted with each LHD to provide services, attended regular meetings of the Local Health Officers and Environmental Directors, and hosted an annual partnership meeting to discuss common issues and legislative strategy. As many partnerships do at times, relationships sometimes wear thin and need to be reinvented. Three years ago, when it became apparent that more was needed, a governance process was proposed by the LHDs and DEQ and adopted by statute.

The Governance Committee has been meeting monthly since 2015. The six-member committee includes the DEQ Executive and one Deputy Director, a rotating Division Director, and three representatives of LHDs appointed by the local health departments in the state. In addition, there are three ex officio members including the Conference of Local Environmental Health Administrators (CLEHA) President, the Utah Association of Local Health Departments (UALHD) Executive Director, and DEQ's Local Health Liaison.

The committee is empowered to coordinate the implementation and maximize the effectiveness of environmental -quality programs by reviewing the allocation of resources, coordinating grant applications, and evaluating DEQ policies that affect local health departments.

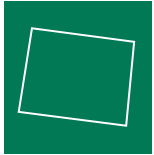
Results to Date:

In the two years it has been meeting, the Governance Committee has developed a heightened understanding of the challenges and limitations each member faces. Under the committee's direction, there has been an increase in participation by the Local Health Departments on DEQ stakeholder committees, DEQ funding to locals has been reallocated, and a joint workgroup has just completed a review of the Sanitary Survey process and is implementing process improvements. Another workgroup will next evaluate shared Water Quality interests.

As federal budget cuts loom and there is an increased push for efficiency in providing services, the governance process provides a forum to plan for the more efficient use of limited resources.

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Wyoming's Air Quality Enterprise Data System

Description of Initiative:

The State of Wyoming's Inventory, Monitoring, Permitting, And Compliance Tracking system, called IMPACT, has significantly facilitated the submission, tracking, analysis, review, and issuance of air quality permits and reports for the Wyoming Department of Environmental Quality, Air Quality Division (WDEQ-AQD). Prior to 2014, air permit applications, compliance reports, stack test reports, continuous emission monitoring reports, and emissions inventories were submitted to the WDEQ-AQD on paper. Receiving paper copies via the mail created numerous inefficiencies, including: delays receiving reports and applications from industry; inadequate or incomplete information; and staff transcribing information provided on paper to electronic databases. These inefficiencies caused delays in permit issuance and report review timelines.

To address these issues and inefficiencies, the WDEQ-AQD pursued development of an enterprise air data system that that would dynamically improve the submission, tracking, analysis, review, and issuance of air quality permits and reports for WDEQ-AQD staff, as well as members of industry. Starting in 2013, the WDEQ-AQD began the process of requirement gathering and development of the IMPACT system. Although development of IMPACT continues today, the initial version of IMPACT went live in September 2014 with permitting, emissions inventory reporting, compliance reporting, stack test reporting, and workflow modules. This version also allowed industry users to submit permit applications, compliance reports, and stack test reports to the WDEQ-AQD electronically. With the introduction of IMPACT, the WDEQ-AQD received permit applications and reports instantaneously, allowing WDEQ-AQD staff to begin working immediately. Built-in data validations prevented users from submitting incomplete applications and reports, and system-generated workflow tasks made tracking permits and waivers more efficient. With electronic permit applications and reports submitted by industry, WDEQ-AQD staff could focus on reviewing and analyzing permit applications and reports, instead of data entry. As development continued, several other IMPACT core features were introduced, including ambient monitor reporting, continuous emission monitoring reporting, permit billing, enforcement action, and National Environmental Policy Act (NEPA) tracking modules. Like the modules developed previously, these also included workflow tracking (where necessary) and increased efficiency by reducing data entry time, receiving required information via built-in validations at submission, and enhanced data tracking.

Results to Date:

Since IMPACT came online, adoption by WDEQ-AQD staff and industry has been profound and its successes are numerous. There are currently 92 State of Wyoming employees and 446 industry members representing 184 companies who utilize the system. Title V facility usage of IMPACT has been outstanding, with 88% of Title V facilities having obtained secure access to IMPACT to submit permit applications and reports. Since September 2014, there have been 20,642 total electronic submissions by industry, including: 6,616 facility contact changes; 5,439 facility inventory changes; 4,324 compliance reports; 1,846 stack test reports; 349 ambient monitor reports; and 344 Title V emissions inventories. In regards to permitting, 1,653 New Source Review applications and 71 Title V permit applications have been submitted electronically through IMPACT.

In addition, IMPACT has streamlined the permitting process for WDEQ-AQD staff and industry, while also increasing the efficiency with which permits are processed. As of July 2017, the WDEQ-AQD has issued more than 3,107 NSR permits and waivers through IMPACT, including both paper and electronically submitted applications. Since IMPACT went live in September 2014, the average time from application receipt date to NSR permit issuance decreased by 43 days when submitted electronically compared to paper. Average time from application receipt date to NSR waiver issuance decreased by 15 days when submitted electronically compared to paper during the same period.

The WDEQ-AQD has achieved great success with the IMPACT system since it went live less than three years ago. Each year more industry users sign up and begin using the system to submit permit applications and reports. With more users, the WDEQ-AQD anticipates efficiencies will only continue to grow.

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Water Innovations



Arkansas' Water Quality Technology and Efficiency

Description of Initiative:

Harmful Algal Bloom Notification App: The Arkansas Department of Environmental Quality (ADEQ) Office of Water Quality Planning section has been working with ADEQ Computer Services to develop a simplified, real-time notification process utilizing the ADEQ app that will allow individuals to submit images and

the location of algal blooms. The app will include fields for both nuisance and harmful algal blooms and will provide a mechanism to enable ADEQ staff and other state and federal partners to have a timely response in locating and assessing potential blooms. In years past, the ability to identify specific locations or to see images of a potential bloom in order to provide a knowledgeable response has been limited. This effort demonstrates the flexibility and usefulness of our existing app and creates a wider audience to use this resource. In the long term, ADEQ would like to refine this notification system and potentially develop a spin-off, standalone application. But it has sought to create this update now to ensure that the resource is being used during the dry season of late summer and early fall.

E-Permitting for Short-Term Activity Authorizations: Another successful efficiency and effectiveness tool deployed by ADEQ is its ePortal system. This has been implemented over time by the Water and Air offices and has been used with increasing effectiveness by both. During the last year, the Office of Water Quality (OWQ) has taken the plunge to use the system for entire segments of its permitting process and is in the final stages of going to a full electronic review for all permit types. Perhaps an even better story is how this tool can be used by a small group to enhance its process. During the last year, OWQ's Planning section has implemented an ePortal review process for short-term activity authorizations (STAAs). The transition from paperwork to electronic review was driven by Lazendra Hairston, the STAA lead, working on her own initiative to implement a useful tool. An internal support team helped her in this effort, but she was the driver from the idea to implementation. She is working with others in her team to integrate the invoicing system to further improve work flow. This has led to improvements in the review process time and in accuracy of the review. The ePortal process also helps with necessary expedited reviews, such as responses to emergency situations, and also can result in a rapid approval critical to public and private projects, i.e., county and highway road construction projects, infrastructure improvement and construction projects, oil and gas pipeline and production site development.

Results to Date:

Harmful Algal Bloom Notification App:

- Since implementing the notification tool, ADEQ has received approximately 10-12 submissions. In addition, ADEQ has been contacted by interested individuals to learn more about the tool. This is helping to transition the conversation from one of concerns/complaints to a public engagement and education opportunity for ADEQ. Having a specific outlet for questions/concerns has helped foster a more positive tone in interactions on this issue.
- These submissions have enabled ADEQ to provide timely responses to citizen concerns and ensured data would be collected in a timely manner to understand the conditions at the time of the bloom. This helps inform ADEQ's understanding of the waterbody and will provide a basis for comparison going forward.
- In order to quickly respond to a situation, ADEQ has shared notifications about blooms with partners including state and federal agencies who have helped with the field work and collecting additional information about the situation. While still early, this tool seems to be helping bolster important partnerships in addressing such concerns.

E-Permitting for Short Term Activity Authorizations:

- Implementation of an electronic submission and review of authorizations has resulted in more timely, efficient reviews. As of the end of October, the team is on pace to complete more reviews than in the previous calendar year. In addition, electronic routing has given staff more time to focus on the substantive portion of the review and enabled staff to tackle several challenging projects in a

timely manner.

- This approach has provided line of sight for the process that has enabled staff monitor reviews (particularly those that are time sensitive) and to identify additional opportunities for process improvements. This has become a dynamic process.
- Communication with applicants has improved greatly as staff are able to identify precisely where the STAA is in review and, for those submitting electronically, even allow the applicant to track the progress from their own user profile.

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Kentucky's Water Maps Portal Informs Public about Wide Range of Water Information

Description of Initiative:

The mission of the Kentucky Department for Environmental Protection (KDEP), Division of Water (DOW) is to manage, protect, and enhance the quality and quantity of the Commonwealth's water resources for present and future generations through voluntary, regulatory, and educational programs. The management and dissemination of data for these purposes continues to challenge the division. The watermaps.ky.gov site was designed to make DOW's geospatial information more accessible both internally and to the public. Everyone now has access to a wide range of data related to water, can view it spatially on a map, and then can use those data to make determinations on a variety of regulatory, educational, recreational, and health-related issues.

- The **Water Health Portal** is an interactive map featuring the status of all assessed waters, Outstanding State Resource waters, and Total Maximum Daily Load waters. It includes supporting documentation in plain language, and waterway specific information accessed from an interactive map.
- The **RiskMAP Portal** provides the public with a means to access the Flood Insurance Rate Maps (FIRMs), and the supporting hydraulic and hydrologic data used to develop the FIRMs, enabling stakeholders to determine if, or how much, flood insurance coverage is mandatory under the National Flood Insurance Program.
- The **Harmful Algal Bloom** viewer provides the latest information on the status of HAB recreational health advisories in the Commonwealth. Advisories are based on potential public health risks from algal toxins found in Kentucky's lakes and rivers.
- The **Drought Viewer** allows the public to see current drought conditions by county, and provides detailed information on the severity of drought conditions.

- The **Story Map Gallery** informs the public of wild rivers, wetlands and watershed issues throughout the Commonwealth.
- The **Kentucky Watershed Viewer** offers up a wide variety of information regarding the Commonwealth's Watersheds Data layers available include: river flow data, DOW Kentucky Pollutant Discharge Elimination System permitted facility locations, water withdrawal sites, karst trace flows, and much more.

Results to Date:

- **Cost savings due to:**
 - Decreased staff time spent releasing data by individual request;
 - Decreased staff time spent explaining information to the public; and
 - Rethinking and streamlining processes in order to provide the quantity of complex data in a format that public can easily and quickly consume
- **Positive reviews on individual portals:**
 - Page One Kentucky: "This is an example of state government getting something right"
 - Kentucky Chamber of Commerce: "I cannot thank your team enough for listening to our concerns and needs upfront to get this project right the first time. This truly will be a tool that businesses of all sizes will utilize across the state."
- **Data transparency improves data quality. The public points out inconsistencies that can then be corrected.**
- **Improved relationships between DOW and the people and businesses it serves.**

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South Carolina's River Coalition

Description of Initiative:

Along a scenic river commonly used for recreation in Columbia, South Carolina, there are some major permitted discharge sources (six within the 10-mile stretch), as well as several nonpoint sources of bacteria that flow into the river during rain events.

A history of unpermitted discharges to this river resulted in multiple fines to permit holders as well as an active Riverkeeper, which felt the need to fill the role of watchdog regarding regulatory compliance issues that routinely affected the river. The weekend of July 4, 2016, a significant discharge resulted in the South Carolina Department of Environmental Control (SCDHEC's) issuance of swim advisories at popular recreational entry points onto the river. The result was some unfavorable media coverage for regulators and permit holders as well as a significant loss of revenue for several businesses engaged in boat rental and/or river access fees.

As a result of this event, the South Carolina Department of Environmental Control (DHEC) convened a series of three meetings as follows:

- A group of stakeholders ranging from county park managers to boat rental companies, Riverkeeper, homeowners associations, and the local Riverbanks Zoo and Botanical Gardens were brought together to discuss what could be done collaboratively to improve and maintain conditions on the river that were more protective of public health and the environment.
- A second meeting was convened with all of the permitted point source dischargers into the river. Hard conversations were held regarding the way in which equipment upsets, operator errors and other root causes of unpermitted discharges could be addressed.
- The third meeting was a combined meeting that included all interested stakeholders. Attendees at each of the two previous meetings approached SCDHEC staff separately and asked the same question: "How did you get THEM to come to this meeting?!" Staff's reply was, "They want the same thing you do."

That third meeting was the start of an unlikely partnership. After a great deal of discussion, the group concluded that additional data would provide users of the river with information that they could then use to make better decisions about when and where to recreate on the river. Stakeholder entities asked DHEC to come up with what the cost of an enhanced monitoring program would be and what it would look like. A recommendation was made to sample bacteria weekly at eight locations. The local Council of Governments agreed to manage the money if other partners would contribute to the cause. A technical and communication work group was formed. The University of South Carolina, Arnold School of Public Health agreed to establish a website from which the weekly data is displayed (howmyscriver.org). Three weeks after the plan was laid out, a contractor was hired and was on the river taking samples. The coalition now meets periodically to tweak the process and plans to provide this enhanced river monitoring from May to September each year.

Results to Date:

The benefits of this collaborative partnership are many. First and foremost, it results in an increased level of trust between entities that often view an issue from different perspectives. In addition, it shows the power of convening stakeholders who all ultimately have the same goal, just different roles. There is an increase in mutual respect, a greater level of civil (outside of the media) communication among what in the past were adverse parties. A significant educational opportunity is woven throughout this effort in which SCDHEC can help the public better understand and manage the risks associated with its use of recreational waters. Ultimately, the result is a safer, healthier river and better informed citizens.

The model created is scalable and reproducible, and the department hopes to find other opportunities to put it to use within South Carolina. SCDHEC is also more than happy to share it with any other agencies interested in giving it a try!

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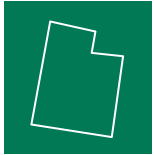
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Utah's Web-based Reporting Database – Weblink

Description of Initiative:

The Utah Department of Environmental Quality, Division of Drinking Water (DDW) oversees the Safe Drinking Water Rules for over 1,000 public water systems. These systems serve a total population of more than two million people. This large customer base includes members of the public, water operators/managers, partner agencies, and sections within DDW. The large and diverse customer base urgently needed an interactive online reporting database that provided access to DDW's extensive data in a way that streamlines business interactions with partner agencies, displays searchable live data, and enables the community to research water system's sources, treatment, and compliance status.

In 2015, UDDW worked with State of Utah Department of Technology Services to create "Waterlink", a web-based reporting database found at waterlink.utah.gov. Waterlink provides reports to the public and water-system operators displaying inventory, sampling requirements, and the compliance status of each water system. This information is live and readily available. Users can easily download and mine the data using Excel. Instead of wading through the records request process, anyone can easily find needed information on Waterlink's public-facing pages. Waterlink's increased transparency saves UDDW time and provides the public with immediate information about their drinking water.

Waterlink also integrates DDW engineers, geologists, and environmental scientists in the process of approving new drinking water facilities. Built into Waterlink are tools which allow searches on permits and inspections managed by DDW staff, and links to DDW's electronic files. Features such as automatic alert emails, which notify staff of high-priority tasks, are included in each step of our streamlined permitting in Waterlink.

Waterlink provides real value across a wide spectrum, including: emergency response and harmful algal bloom tracking; operator certification management; Google Maps displaying facility locations; and DDW's own priority tracking mechanism, the 'Improvement Priority System Rule.' Future additions include building inspection tools that connect to our State Drinking Water Information System database, and a user-friendly tool for the public to search the water system serving their residence.

Results to Date:

As drinking water regulators prepare for a new web-based federal database in the coming years (i.e., Prime), multiple states have approached DDW to adapt versions of Waterlink for their reporting and engineering reports and workflows. Waterlink is web-based, easy-to-learn, and adaptable for multiple state applications.

It has successfully connected to the new EPA Prime database and effectively provides live information about drinking water the public requires. In addition, UDDW now avoids costly meetings and miscommunications by using Waterlink's permitting workflow.

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Land Reuse & Revitalization Innovations



Mississippi's Grant Writing Workshops Empower Communities to Revitalize Brownfield Properties

Description of Initiative:

Accidents, spills, leaks, and improper handling of hazardous materials and waste have led to contaminated land, water, and air in several communities. While communities seek ways to improve these areas, many times they lack the funding and the expertise to seek funding. Since 2011, in cooperation with the Mississippi Municipal League (MML) and U.S. EPA Region 4, MDEQ has held a "Brownfield Grant Writing Workshop" at the Mississippi Coast Coliseum and Convention Center during the annual MML Conference in Biloxi, Mississippi.

Historically, Mississippi communities have been unsuccessful in securing these competitive EPA Brownfield Grants. In 2009, only one community (Hattiesburg) received a grant. In 2010, no Mississippi communities were awarded an EPA Brownfield grant. Recognizing the competitive nature of the national grant writing field, MDEQ stepped up its outreach efforts to help communities write better grant proposals. The workshop provides communities in Mississippi that have been unsuccessful in receiving an EPA Brownfield grant an opportunity to receive feedback on their grant proposals from others who frequently are successful in securing these grants. The Brownfield Grant Writing Workshop identifies weaknesses that should be eliminated and strengths that should be highlighted, while using collaborative techniques to produce partnerships.

MDEQ believes that the enhanced outreach efforts have shown positive results with a sustained increase in the Brownfield grant success rate.

Results to Date:

- On May 31, 2017, U.S. EPA awarded a record nine Brownfield grants to entities in the State of Mississippi.

- In FY 2016, four Mississippi communities received Brownfield grants.
- In FY 2015, Mississippi received its first-ever cleanup grants and an area-wide planning grant. One of these grants was awarded to nonprofit organization Mississippi Conference of Black Mayors for Itta Bena.
- In FY 2014, five communities (Biloxi, Corinth, Gautier, Laurel, and Monroe County) received a Brownfield grant, totaling \$1,950,000 in grant funding.
- In FY 2013, six communities (Greenville, Holly Springs, Moss Point, Pascagoula, Starkville, and West Point) were successful in competing for Brownfield grants.

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Montana's Collaboration to Restore Coal Mine Lands to Beneficial Reuse

Description of Initiative:

Government agencies often struggle to communicate effectively with the public. In seeking improved ways of communicating with people at a time when attention spans are at an all-time low, the Montana Department of Environmental Quality (DEQ) recognized the power of video and the role it plays in today's fast-paced, information-driven society.

Coal mining is currently at the forefront of many national environmental debates and is often usurped by "clean" energy in today's storyline. While many of the issues surrounding coal are controversial, there are some very good stories yet to be told. Often overlooked is that lands mined for coal can be returned to other beneficial uses, often resulting in more productive land than there was to begin with.

Montana began regulating strip mining in 1971 when the Legislature adopted the Montana Open Cut and Strip Mine Reclamation Act. It said that all lands disturbed by the taking of natural resources shall be reclaimed and the Legislature, which shall provide procedures and standards for the reclamation. Today, the Montana Department of Environmental Quality works with coal mining companies in Montana to allow for human activity without compromising the environment.

Reclaimed lands are often used for cattle grazing, farming, and recreation and in many instances feature abundant wildlife habitat. Often the reclamation is so well done that the average person would have a difficult time identifying lands as former coal mines.

DEQ hired Back Country Media of Bozeman, Montana, and with the cooperation of several of these coal mines set out to create a video that would not only explain reclamation, but help broaden the public's perspective on DEQ's role in the process of regulating coal mining in Montana. The result is a stunning video proactively displayed on the home page of the DEQ website, capturing audiences on a topic that could otherwise easily be dismissed.

Results to Date:

The [video](#) has received positive feedback from the public, stakeholders, reclamationists, environmental professionals, and other government entities.

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