



Final Report
EPA Grant #83692401

Submitted to the U.S. Environmental Protection Agency
Wetland Program Development Grants Program

by the Association of State Wetland Managers

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Report Introduction

This document represents the final report to EPA on the Association of State Wetland Managers' Wetland Program Development Grant project (EPA Grant #83692401) improving state and tribal permitting of pipeline projects in the United States.

This project was designed to provide strategic and technical assistance to state wetland programs throughout the United States to strengthen protection of wetlands and other aquatic resources from the impacts of oil and gas energy pipeline projects for both generation and transmission activities.

This project:

- Focused on helping state wetland program staff to understand and engage in the pre-planning and permitting processes for oil and gas projects working to develop or retrofit pipelines, well-pads, related water impoundments, and access roads.
- Considered a range of impacts on wetlands and other aquatic resources from these activities, including permanent, temporary and cumulative impacts.
- Was designed to encourage dialogue between state agencies responsible for conditioning permits and federal permitting agencies.
- Supported the development of best practices to train state wetland staff on how to more effectively engage in pre-application planning activities and permit review processes for these specific energy development activities.
- Facilitated collaborative review and documentation of opportunities to improve engagement and apply best practices through the publication of project products and other resources on the ASWM.org website for common access.

This report shares ASWM's pipeline permitting project activities, findings, products, new tools and opportunities the project has created. The report concludes with a summary of findings about the various approaches ASWM has identified to help states and tribes build their agency capacity to more

effectively and efficiently conduct permitting activities related to pipeline development projects. Additionally, ASWM has developed an [online project resource](#) on the ASWM.org website, which provides direct links to all the products of the project.

Specifically, the report will provide detailed reporting on each need-based element of the project, the products that were produced to meet the need, and links to web-based resources on the project resource webpage. At the end of the report, ASWM provides both a summary of the actual versus deliverables of the project and environmental outcomes.

Project Background

State permit review of energy development projects is a complex and time-consuming task, one that challenges most state wetland programs. Effectively participating in the permit planning and review process relies on state wetland program staff understanding how the energy permitting process works, what controls they have the ability to assert, and when in the process to do so. When state staff are not trained and experienced in how to review energy project development permits, wetlands are at risk of inadequate protection from both permanent and temporary impacts.

State wetland permit reviewers are faced with a steep learning curve when they first work on energy project permit applications. Permit applications may have upwards of 2,000 pages of technical information and include the need to assess a variety of issues that are outside of normal §404 permit/§401 certification review process, considerations, and timelines particularly for federal permits issued by the Federal Energy Regulatory Commission (FERC) and the Department of Energy (DOE). Additionally, the multiple impacts of these projects require extensive inter-agency coordination at the state level. Added to these challenges, is high state agency staff turnover and limited resources. In addition, permit applicants familiar with FERC and DOE processes may not have experience working in states with state authority to regulate activities in wetlands. While training and information is available on the permitting process, it has generally been designed for permit applicants and not state agencies tasked with reviewing permits for compliance with state statutes and regulations.

To fill these gaps, ASWM worked in collaboration with states, energy permitting/licensing agencies and a variety of stakeholders to explore a critical gap that exists for state permit reviewers: how to effectively engage in this review, comment and navigate conditioning processes which differ from one federal agency to another. Specific activities included:

- Coordination of a national workgroup to address energy project permitting issues.
- Completion of a needs assessment regarding common challenges, issues, needs and strategies to overcome them.
- Development of a white paper on cumulative impact considerations for pipeline permit reviewers.
- Creation of resources on language and terminology to improve communications between various pipeline development/permitting parties.
- Development of template process maps for federal and state natural gas pipeline permitting.
- Identification of best practices for pipeline planning and construction to inform permit review and conditioning, as well as administrative processes for more effectively/efficiently reviewing applications.
- Development of checklists and other resources to assist state regulators work more effectively with consultants that are assisting energy companies with permit planning and applications.
- Training webinars on energy project permitting for state wetland staff and other professionals working on state wetland issues.
- A dedicated webpage providing a clearinghouse of information for state wetland programs on energy permitting issue and resources.

Formation of a National Project Workgroup to Guide ASWM’s Pipeline Permitting Project

ASWM formed a national project workgroup to provide guidance to the grant project. The national project workgroup was formed to be representative of the range of different wetland programs, geographic distribution, and expertise with training programs.

ASWM Pipeline Permitting Workgroup (2017-2018)

Last	First	State	Entity
Berry	Amy	Michigan	MI DEQ
Bass	Florance	Mississippi	MS DEQ
Bates	Justin	Consultant	McCormick Taylor
Bax	Stacia	Missouri	MO DNR
Borwn	Clifford	West Virginia	WV DNR
Butterfield	Melinda	Oregon	Oregon DSL
Christie	Jeanne	ASWM	ASWM
Davis	Dave	Virginia	VA DEQ
Denoncour	Brianna	New York	NY DEC
Elliott	Danielle	West Virginia	WV DNR
Gitar	Rick	Tribe	Fond du Lac
Goerman	Dave	Pennsylvania	PA DEP
Goodale	Wing	Switzer Fellow	Biodiversity Research Institute
Hansen	Evan	Switzer Fellow	Downstream Strategies, LLC
Harcarik	Tom	Ohio	Ohio EPA
Higgins	Karen	North Carolina	NC DEP
Jacobson	Roy	New York	NY DEC
Kocchar	Medha	Federal Agency	FERC
Kovatch	Charles	Federal Agency	US EPA Headquarters
Mehaffey	Brad	Federal Agency	Department of Energy
Murin	Ken	Pennsylvania	PA DEP
Murtaugh	Jenny	New York	NY DEC
Parker	Robert	Consultant	Olsson Consulting
Price	Myra	Federal Agency	US EPA Headquarters
Pelloso	Andrew	Consultant	Burns and McDonald
Ryan	Patrick	New Jersey	NJ DEP
Voegler	Samantha	Kentucky	Kentucky Division of Water
Zollitsch	Brenda	ASWM	ASWM (Project Lead)

ASWM would also like to thank the following individuals for their input during specific phases of the project: Sarah Connick, Myra Finkelstein, David Murck, American Petroleum Institute

National Project Workgroup Calls to Gather Resources, Conduct Planning and Create Project Products

ASWM's Pipeline Permitting Project Workgroup met monthly through the majority of the grant project period. ASWM hosted a series of calls to discuss key project topics and guidance for the various elements of the project. Additional calls were held monthly or bi-monthly on specific topics, such as best management practices for pipeline permitting, cumulative impacts, and working with consultants.

The following is a list of primary project workgroup calls (agendas available upon request):

Full Workgroup Calls

- August 14, 2017
- September 11, 2017
- November 13, 2017
- December 11, 2017
- January 8, 2017
- March 12, 2018
- April 11, 2018
- May 14, 2018
- June 4, 2018
- July 9, 2018
- September 10, 2018
- October 17, 2018
- November 5, 2018

Additional Subworkgroup Calls

- January 30, 2018 - Cumulative Impacts
- February 12, 2018 – Best Management Practices
- March 12, 2018 – Best Management Practices
- May 14, 2018 – Best Management Practices
- May 22, 2018 Cumulative Impacts
- May 23, 2018 – Working with Consultants
- June 9, 2018 – Best Management Practices
- September 10, 2018 – Best Management Practices
- October 17, 2018 – Best Management Practices
- November 5, 2018 – Best Management Practices

Workgroup members participated in ongoing review of project materials until the end of the project period.

Identified Barriers, Challenges and Strategies to Improve Pipeline Permitting

ASWM worked with state regulatory agencies to identify key challenges and issues that they face when working on pipeline project review. The document identifies the breadth of these, as identified by state and tribal regulators. These resources (designed to guide consideration of issues and strategies to overcome them) was developed through three stages of data collection. The first step involved a review of the literature, including both gray and peer-reviewed sources. The second step included review by the project workgroup. The third step included incorporation of data from a Switzer Foundation-funded survey that was conducted in collaboration with this project. Categories were created to create groupings of concerns that were similar and specific issues were sorted into these categories. A [list of issues and challenges](#) was compiled to guide state and tribal capacity building efforts.



Once compiled, the list was reviewed by the workgroup again and used to develop a [Challenges and Strategies Matrix](#) that added solutions, contacts and resources to assist states and tribes in addressing (at least in part) the issues, barriers and challenges listed in this document. The matrix identifies cases where states are working effectively to address these concerns.

The workgroup identified the following list of issues, barriers and challenges as some of the leading restraints and complications that limit and sometimes lead to delays in the permitting process (not listed in any specific order):

- 1) Expansion of Natural Gas Production
- 2) Lack of Access to Information about Pending Projects
- 3) Inadequate Numbers of Regulatory Staff to Complete Review and Enforcement Activities
- 4) Untrained/Inexperienced Regulatory Staff
- 5) Need for Resources and Expertise to Defend State Decisions
- 6) Complications from Multi-state Projects
- 7) Lack of Coordination/Consistency among Agencies
- 8) Specific Challenges for Smaller Project Review
- 9) Lack of Understanding of Systems between Entities Involved
- 10) Incomplete or Overly General Permit Applications
- 11) Lack of Information about Pipeline Route
- 12) Lack of Access to the Land being Impacted

- 13) Piecemeal Approach to Applying for Permit Approvals
- 14) Disagreement/Confusion on Applicability of Laws
- 15) Agency Consultation/Approval Delays
- 16) Inconsistent Agency Decisions
- 17) Threats of Environmental Lawsuits and Environmental Justice
- 18) Lack of Regulator Understanding about the Appropriate Applications for Specific Planned Activities
- 19) Political Uncertainty

Information about specific elements of these issues and challenges are included in the project document. The workgroup acknowledged that the listings are not exhaustive but provides critical insights and serves as a resource to those seeking to better understand the breadth of these issues and invest resources in identifying possible solutions and capacity building efforts at the state and tribal level.

ASWM also compiled a document targeted at state/tribal leadership, focusing on opportunities for strategic capacity building. The document, entitled “Improving Environmental Coordination of Oil and Gas Pipeline Permitting for States and Tribes: What Can be Done?” can be found at <https://www.aswm.org/wetland-programs/386-improving-pipeline-permitting-resources#barriers> .

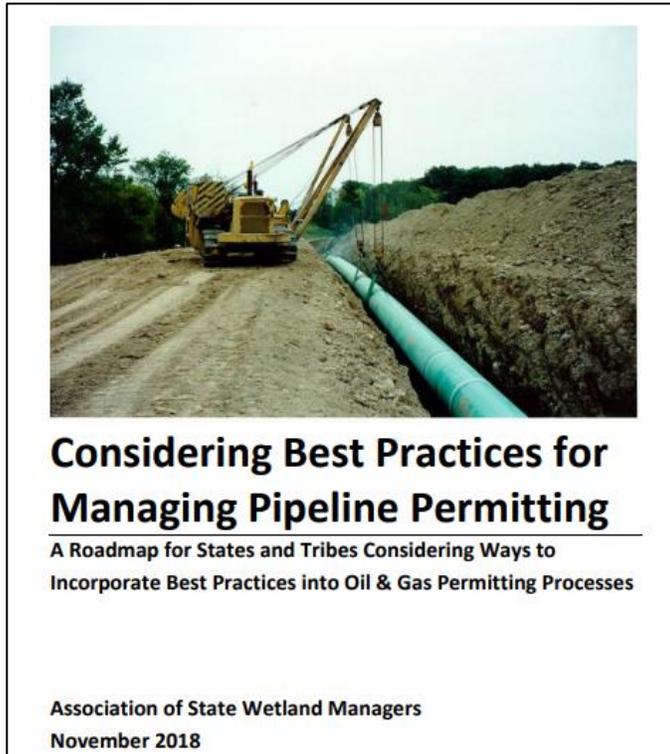
Identification and Documentation of Relevant Pipeline Permitting Best Practices, with Guidance for States and Tribes Seeking to develop their own BMPs

To avoid or reduce impacts to wetlands and other waters from pipeline development and maintenance activities, some states and tribes have adopted “best management practices” (BMPs). Best management practices (BMPs) are methods, techniques, processes or procedures found to be most effective and practical in achieving an objective (e.g. permitting process efficiency, water quality protection, regulatory or legal language necessary to support regulatory decision-making), while taking into consideration technological, economic, and institutional considerations.

The project included development of a **guide to assist states and tribes to**

identify, review and adopt BMPs that are valuable to improving their regulatory processes. The guide, entitled “[Considering Best Practices for Managing Pipeline Permitting: A Roadmap for States and Tribes Considering Ways to Incorporate Best Practices into Oil and Gas Pipeline Permitting Processes](#)” provides information about how to identify and document best practices. The document includes links to existing BMP manuals that provide insights into how a state/tribe might want to pursue the BMP development process.

The document’s **appendices provide lists and links to current examples of various types of best management practices** from states and agencies’ permitting pipeline projects. Noting that these practices are time and location-sensitive, the workgroup made the decision to include links in appendices instead of the body of the document. The appendices include more than 100 examples of best practices from a range of state and federal agencies. These BMPs are broken down into the following categories: administrative; legal and regulatory; project planning; construction; and post-construction.



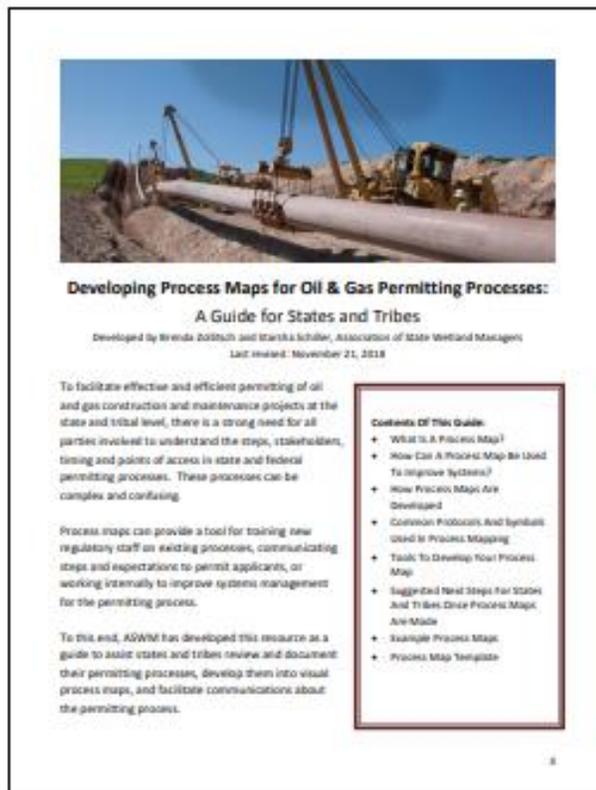
Development of Process Maps, Process Mapping Guidance and Template to Help States and Tribes Document Pipeline Permitting Processes

To support needs identified in regard to clarity, transparency and coming to agreement among parties on state and tribal permitting processes, ASWM also worked with a project sub-workgroup to develop tools to assist states that wanted develop process maps to document their §401 certification processes at the individual state and tribal level.

The workgroup researched and collaborated to create formal, transparent oil and gas permitting process maps to share state/tribal permitting process with applicants and other parties involved in the planning and permit review activities using [ASWM's "Developing Process Maps for Oil and Gas Permitting Processes: A Guide for States and Tribes"](#).

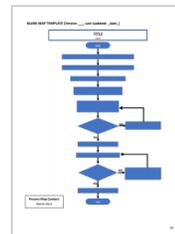
Elements of ASWM's Process Mapping Guide include:

- What is a process map?
- How can a process map be used to improve permitting systems?
- How process maps are developed.
- Common protocols and symbols used in process mapping.
- Tools to develop your process map.
- Suggested next steps for states/tribes once process maps are made.
- Example process maps (KY and MO).
- Process map template.



Providing a Pipeline Permitting Process Map Template

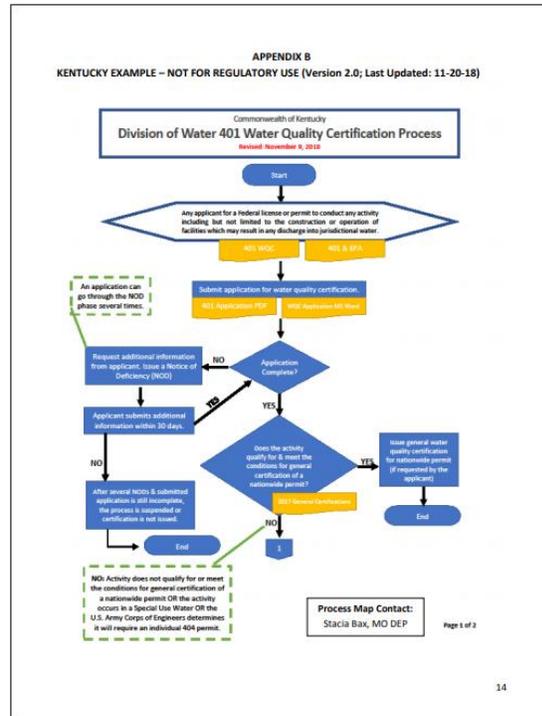
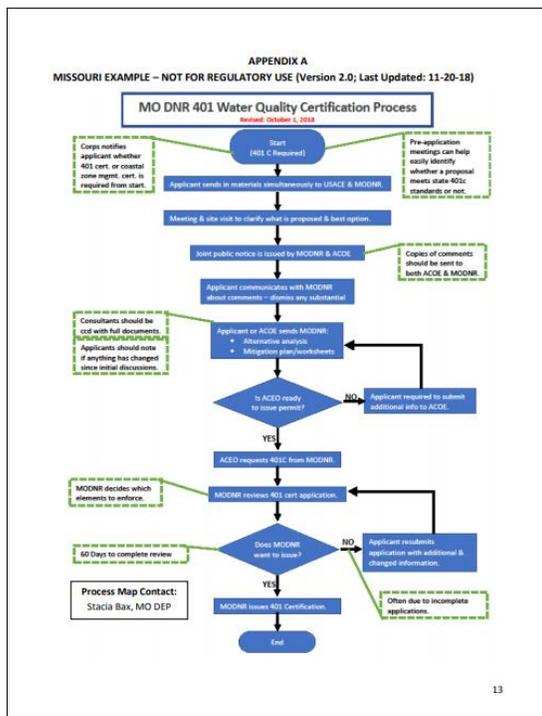
Through this process, the workgroup also developed an [adaptable template process map](#). ASWM's website includes all these resources, as well as links to FERC process maps for interstate natural gas pipeline permitting.



Testing ASWM's Process Map Template with Real World Pipeline Permitting Examples

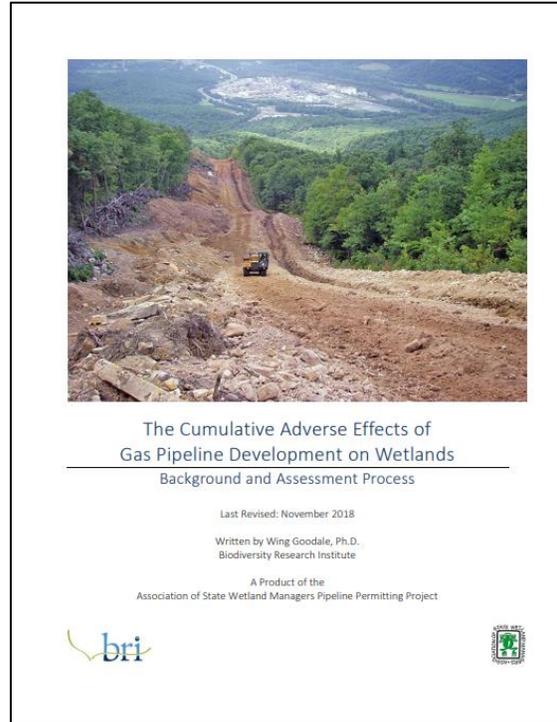
To support the use of process maps, ASWM worked with two states to develop and test the process mapping technique that was then included in the process mapping guidance document. Working with state regulatory staff in Missouri and Kentucky, ASWM developed examples of state process maps. The ability to view existing processes will assist other states and tribes trying to identify key components of their process. As a result of this collaborative effort, ASWM was able to draft a [§401 certification process map for Kentucky](#) and another [process map for Missouri](#).

By reviewing the maps of other states with differing types of processes, ASWM hopes to provide additional insights to help states and tribes as they use either the project's process mapping template or other processes to develop their own process maps (see images below).

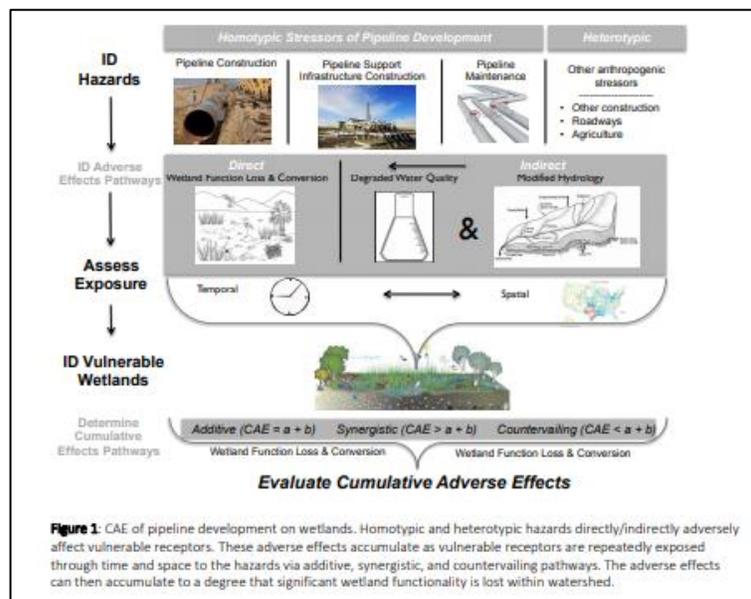


Helping States and Tribes Consider Cumulative Adverse Effects during Oil and Gas Pipeline Planning and Permit Review

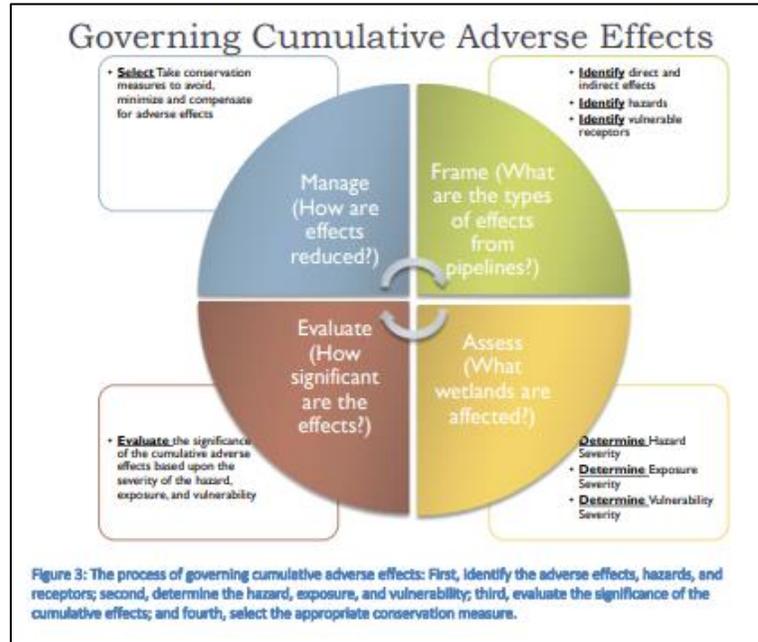
To support review of permits that include cumulative impacts, ASWM’s project explored ways that states and tribes (and others) can conceptualize and incorporate consideration of cumulative impacts into permitting activities. With grant funding from the Switzer Foundation, ASWM subcontracted with cumulative impacts expert Dr. Wing Goodale from the Biodiversity Research Institute to develop information for states on potential ways to frame, assess, evaluate, and manage cumulative adverse effects (CAE) from pipeline development. Additionally, ASWM’s collaborative work with Dr. Goodale and our project partners addressed the need for regulators to be able to identify how CAE can be included in planning and permitting decisions. As a result, such review can include consideration of multiple crossings within one watershed and in areas where high quality or rare aquatic resources exist.



Using the best available information and expert opinion, for each step in the assessment process, state regulators are able to determine on a scale from 0 (negligible) to 5 (high) the severity of each component of the risk assessment (Table 1). The four components of the assessment are used to create a simple index of risk. As knowledge is gained about cumulative effects, the equation can be modified to become a weighted linear combination where each element receives a weight of importance.



The assessment concept and associated method provides a basic structure that can be adapted to meet various planning, regulatory and research needs to conceptualize and assess CAE. Tracking risk using a consistent tool will allow state regulators to identify trends in overall risk. The identified trends can then be used to evaluate how individual projects are incrementally contributing to CAE within specific watersheds, across a state, or regionally. Based upon the evaluation, regulators could then identify the level of conservation measures they will require for a project under review (see image to the right).



Tying this portion of the project in with the other findings from ASWM’s pipeline permitting project, a final suggestion is to utilize CAE analysis in conjunction with the review of best practices to determine whether more extensive adverse effects may warrant consideration of requiring different or more rigorous use of specific best practices.

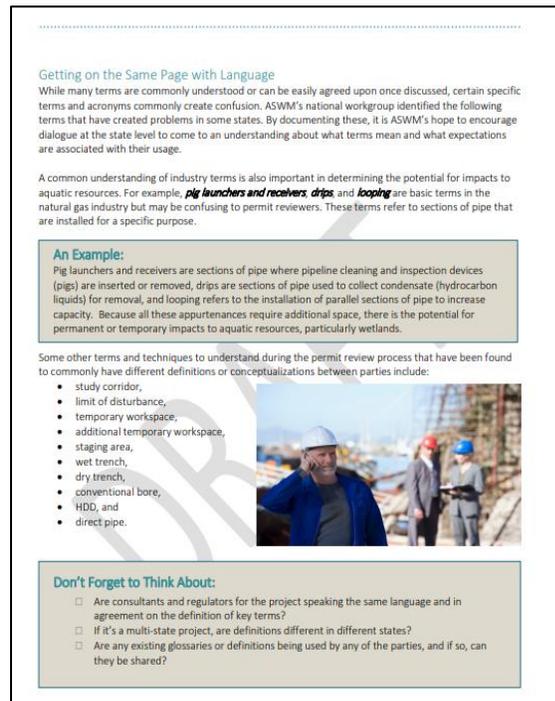
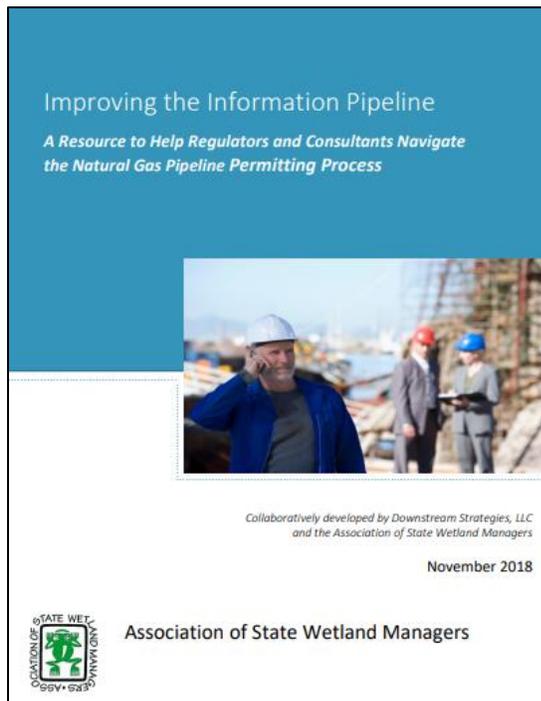
The resulting document, compiling and explaining this work is ASWM’s document by Dr. Wing Goodale, entitled, [“The Cumulative Adverse Effects of Pipeline Development on Wetlands: Background and Assessment Processes.”](#) Within this document is a literature review, explanation of the framework used to assess these impacts and the adaptable CAE Assessment Model.

ASWM delivered an informational webinar to provide an overview of the white paper and model, which has stimulated interest from several states in working to try out or adapt the CAE assessment process for their needs (e.g. New York Department of Environmental Conservation).

ASWM also published a feature article on this topic in ASWM’s *Wetland News* (July/August 2018), entitled [“Considering the Cumulative Adverse Effects of Pipeline Development on Wetlands”](#) detailing some common disconnects between parties and strategies for overcoming them.

Resources to Help States and Tribes Improve Coordination with Pipeline Project Consultants

To address the need to improve relationships and communication with intermediary consultant companies that play a key role coordinating permit preparation and applications between pipeline companies and state/tribal regulators, ASWM worked with a sub-workgroup and Evan Hansen of Downstream Strategies, LLC (funded by the Switzer Foundation) to develop a document designed to stimulate dialogue and provide an introduction to the topic. This document is called "[*Improving the Information Pipeline: A Resource to Help Regulators and Consultants Navigate the Natural Gas Pipeline Permitting Process*](#)." The resource includes hyperlinks to the project products and "Don't Forget to Think About..." pop-out boxes to help guide both regulators and consultants think through some of the most common issues that lead to miscommunication and issues.



ASWM also published a feature article on this project work in ASWM's *Wetland News* (January/February 2018), entitled "[*When My Pig isn't the same as Your Pig: Helping State and Tribal Wetland Regulators Address Complexity in Linear Oil and Gas Pipeline Development Permitting Processes*](#)" detailing some common disconnects between parties and strategies for overcoming

New Web Resource to Connect States and Tribes, as well as Oil and Gas Companies and Consultants with Pipeline Permitting Information

ASWM developed a comprehensive web resource on pipeline permitting resources as part of the project. The web resource is housed on the ASWM.org website and is divided into resource pages for states and tribes, resources for oil and gas companies and useful external resources on oil and gas pipeline permitting.

This resource provides access to the range of tools and resources developed by the project to build the capacity of state and tribal wetland programs to protect aquatic resources impacted by energy development through more informed and effective engagement in both the pre-application and §401 certification phases of the permitting process.

The screenshot displays the ASWM.org website interface. At the top left is the ASWM logo, which includes the text 'ASSOCIATION OF STATE WETLAND MANAGERS' and 'ASWM'. To the right, a 'ASWM Upcoming Webinars' section lists several events, including a 'Compensatory Mitigation Webinar' and 'Hot Topics Webinars'. Below this is a navigation menu with links for Home, ASWM, I Am..., Webinars & Trainings, Publications, Science, Wetland Programs, Law & Policy, and Jobs. A search bar is located below the menu. The 'Main Menu' section includes links for Join/Renew, Contact Us, Wetland Breaking News - Current Issue, Webinars, ASWM Publications, Wetlands One-stop Mapping, Donate, and Volunteer. The 'Member's Login' section features fields for Username and Password, a 'Remember Me' checkbox, and a 'Log In' button. Below the login section are logos for GSA Contract Holder, GoodSearch, Amazon Smile, and GreatNonprofits. The central content area features a large banner titled 'Improving State and Tribal Permitting of Pipeline Projects in the United States' with the sub-heading 'ASWM Resources'. Underneath, there is an 'Overview' section followed by three resource boxes: 'Resources for States and Tribes', 'Resources for Oil and Gas Companies and Consultants', and 'Useful External Resources for Oil and Gas Pipeline Permitting'. At the bottom, there is a 'SEAL OF TRANSPARENCY' logo and a paragraph of text regarding project contributors and funding.

By providing two portals of access to these resources, one for states and tribes and another for oil and gas companies and their consultants (see image below), the site is able to provide a more action-oriented focus for how the project's resources can be used by different parties.



Resources for States and Tribes
ASWM has developed a set of resources to assist states and tribes build their capacity to review natural gas and oil pipeline permits. These resources focus on the pre-application phase and the §401 Certification Process.
[Learn more](#)

Resources for Oil and Gas Companies and Consultants
ASWM has developed a set of resources that may help facilitate better communication between consultants who serve as intermediaries to energy companies and state/tribal regulators.
[Learn more](#)

STATES AND TRIBES WEB RESOURCE: To address the growing need for states and tribes to build their permitting capacity, ASWM has developed resources to help staff:

- [Understand and overcome common issues and challenges to effective state/tribal pipeline permitting,](#)
- [Make transparent state/tribal 401 certification permitting processes and points of access using permitting process maps,](#)
- [Identify and adopt best practices,](#)
- [Consider cumulative impacts,](#)
- [Build shared understanding between parties engaged in the permitting process; and](#)
- [Encourage regular, ongoing training of new and existing staff engaged in permit review.](#)

OIL AND GAS COMPANIES AND CONSULTANTS WEB RESOURCE: ASWM has developed the following resources that may be of interest to oil and gas pipeline project applicants and those who assist them. This page provides information that may help you:

- [Build shared understanding and improve communications with state and tribal regulators;](#)
- [Learn about state and tribal §401 certification processes and process maps,](#)
- [Explore pipeline permitting best practices being used by states/tribes,](#)
- [Consider cumulative impacts during planning and application development phases,](#)
- [Understand common issues and challenges to effective state/tribal pipeline permitting,](#)
- [Encourage regular, ongoing training for company staff and consultants](#)

Sharing Key Pipeline Permitting Project Concepts and Project Findings through Live Webinars

In order to share project findings with wetland professionals, ASWM worked with experts to develop and deliver four live webinars focused on key issues identified by the workgroup. These four webinars focused on delivering a Pipeline Permitting 101 informational webinar, a webinar on considering Cumulative Adverse Effects (CAE) in pipeline permitting processes and review, a webinar on Horizontal Directional Drilling and when it is appropriate, as well as a final webinar to share insights on how to improve working relationships with consultants that serve as intermediaries between energy companies and state/tribal regulators. Details of these four webinars are listed below:

Webinar #1: Pipeline Permitting 101: An Overview of Basic Oil and Gas Pipeline Permitting Processes and Concepts for Wetland Regulators

Live Webinar Delivery Date: November 7, 2018

Presenters: Clifford Brown, West Virginia Department of Natural Resources; Robert Parker, Wetland Policy Consultant; and Brenda Zollitsch, Association of State Wetland Managers

Number of Registrants: 636

Number of Participants: 352

Abstract: This webinar provides a basic overview for regulators that are new to oil and natural gas pipeline permitting and provide a review for others who already are engaged in this work. The webinar began with an overview of the expansion of oil and especially gas pipeline development in recent years and the associated growing need for review of pipeline permit applications by state and tribal aquatic resource regulators. The webinar covered pipeline basics – how pipeline projects are planned, the general steps in construction, and the potential to participate in a pre-application phase during which many key planning decisions are made. The webinar discussed the different processes involved in oil and gas permitting. Next, the webinar provided an overview of §401 Water Quality Certification and where this review process fits into overall planning and permitting. The webinar discussed examples of how states and tribes have dealt with conditioning §401 certifications and share lessons learned. The webinar concluded by describing new resources designed for those working on pipeline permitting that will soon be available on the ASWM website.



The archived webinar and presenter PowerPoints can be downloaded at:

<https://www.aswm.org/aswm/aswm-webinarscalls/4142-past-energy-project-webinars-series#hdd1029>

Webinar #2: Cumulative Adverse Effects of Pipeline Development on Wetlands and Other Aquatic Resources

Live Webinar Delivery Date: July 24, 2018

Presenter: Wing Goodale, Biodiversity Research Institute

Number of Registrants: 561

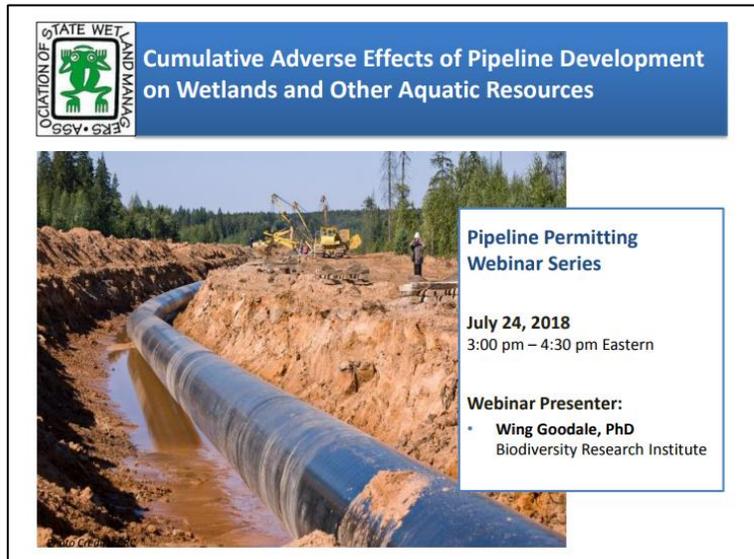
Number of Participants: 380

Abstract: Energy projects, particularly pipelines, affect a range of aquatic resources, including wetlands. Impacts to wetlands from pipeline activities range from both short- and long-term destruction and disruption of wetlands and other aquatic resources to water quality impacts, habitat loss, increasing invasive species and compromised quality of critical areas. The adverse effects of a pipeline on a single wetland are important, but of equal or greater concern is the effect of pipelines that cross multiple watersheds and multiple wetlands. A single pipeline can cross hundreds of wetlands and streams, which can lead to cumulative adverse effects (CAE).

This webinar provided an introduction about how CAE can be conceptualized, the language used to discuss CAE, and the legal basis for CAE. The presentation discussed a framework for considering adverse effects, including a review of general approaches for CAE assessments and ways to address these effects. The webinar concluded with the presentation of a thought-provoking approach to conducting simple assessment of CAE that could be adapted for use by wetland professionals as they work to identify and address CAE for projects they are planning and/or permits they are reviewing. The webinar ended with information about the Association of State Wetland Managers' recent pipeline permitting project and forthcoming resources on CAE that will be available on ASWM's website.

The archived webinar and presenter PowerPoints can be downloaded at:

<https://www.aswm.org/aswm/aswm-webinarscalls/4142-past-energy-project-webinars-series#hdd1029>



Webinar #3: Horizontal Directional Drilling: Understanding Context when Reviewing Oil and Gas Pipeline Permit Applications

Live Webinar Delivery Date: October 29, 2018

Presenters: Richard Dalton, New Jersey Department of Environmental Protection; Patrick Ryan, New Jersey Department of Environmental Protection; Rick Gitar, Fond du Lac Reservation; and Brenda Zollitsch, Association of State Wetland Managers

Number of Registrants: 648

Number of Participants: 472

Abstract: Horizontal Directional Drilling (HDD) is often considered a best practice for pipeline construction. However, in practice, HDD is only appropriate in certain contexts. This webinar started with a geology primer identifying contexts where HDD both commonly works and does not work well and why. Next, the state and tribal regulators shared their perspectives on reviewing permits that include HDD and some of their lessons learned. They shared the kinds of information that it is beneficial for reviewers to request and common

considerations when reviewing and conditioning permit applications that include proposed HDD. Alternatives to HDD and their strengths and weaknesses also was discussed. The webinar concluded with information about new resources for those working on pipeline permitting efforts that will soon be available on the Association of State Wetland Managers' website.

The archived webinar and presenter PowerPoints can be downloaded at:

<https://www.aswm.org/aswm/aswm-webinarscalls/4142-past-energy-project-webinars-series#hdd1029>



The graphic features the ASWM logo on the left, a blue header with the title, a photo of a yellow excavator at a construction site, and a white box on the right containing webinar details. The photo credit 'Photo credit: NJDEP' is visible at the bottom of the photo.

Horizontal Directional Drilling:
Understanding Context when Reviewing
Oil and Gas Pipeline Permit Applications

**Pipeline Permitting
Webinar Series**

October 29, 2018
3:00 pm – 5:00 pm Eastern

Webinar Presenters:

- Richard Dalton, New Jersey Department of Environmental Protection
- Patrick Ryan, New Jersey Department of Environmental Protection
- Rick Gitar, Fond du Lac Reservation
- Brenda Zollitsch, Association of State Wetland Managers

Photo credit: NJDEP

Webinar #4: Improving the Information Pipeline: Working with Consultants during Oil and Gas Pipeline Permitting Processes

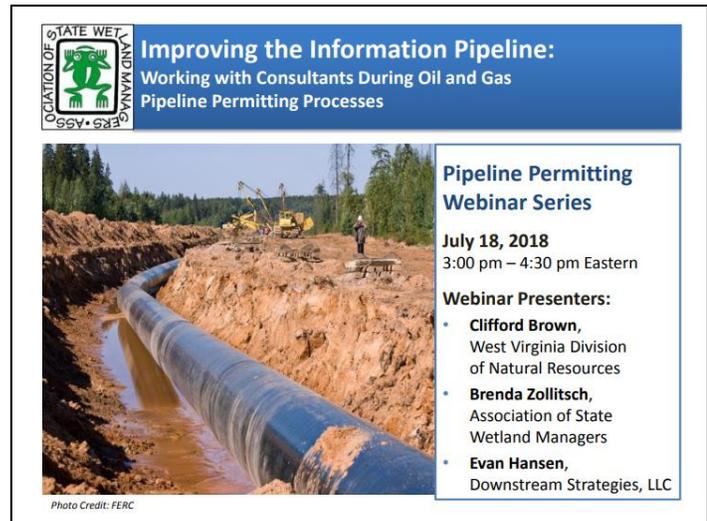
Live Webinar Delivery Date: July 18, 2018

Presenters: Clifford Brown, West Virginia Department of Natural Resources; Brenda Zollitsch, Association of State Wetland Managers; Evan Hansen, Downstream Strategies, LLC

Number of Registrants: 323

Number of Participants: 209

Abstract: This webinar provided insights about how wetland and other aquatic resource regulators can improve working relationships with consultants who serve as intermediaries for energy companies working on oil and gas pipeline development projects. This webinar shared insights from state permit reviewers on some of the common challenges, ranging from different understandings of permitting processes, points of access, pipeline terms and use of language. The webinar discussed helpful ways of working together to establish common understanding, share key concerns about impacts to aquatic resources and incorporate best practices to address those impacts. The webinar presented a new resource developed by ASWM to help guide more productive conversations and relationships between regulators and consultants, focusing on creating transparency, common understandings, and strong relationships that facilitate both efficient permit review processes and protection of aquatic resources.

A graphic for the webinar series. It features a blue header with the ASWM logo and the title "Improving the Information Pipeline: Working with Consultants During Oil and Gas Pipeline Permitting Processes". Below the header is a photograph of a large blue pipeline being laid in a trench. To the right of the photo is a white box with the text "Pipeline Permitting Webinar Series", the date "July 18, 2018", the time "3:00 pm - 4:30 pm Eastern", and a list of presenters: Clifford Brown, Brenda Zollitsch, and Evan Hansen.

Improving the Information Pipeline:
Working with Consultants During Oil and Gas Pipeline Permitting Processes

Pipeline Permitting Webinar Series

July 18, 2018
3:00 pm – 4:30 pm Eastern

Webinar Presenters:

- **Clifford Brown**, West Virginia Division of Natural Resources
- **Brenda Zollitsch**, Association of State Wetland Managers
- **Evan Hansen**, Downstream Strategies, LLC

Photo Credit: FERC

The archived webinar and presenter PowerPoints can be downloaded at:

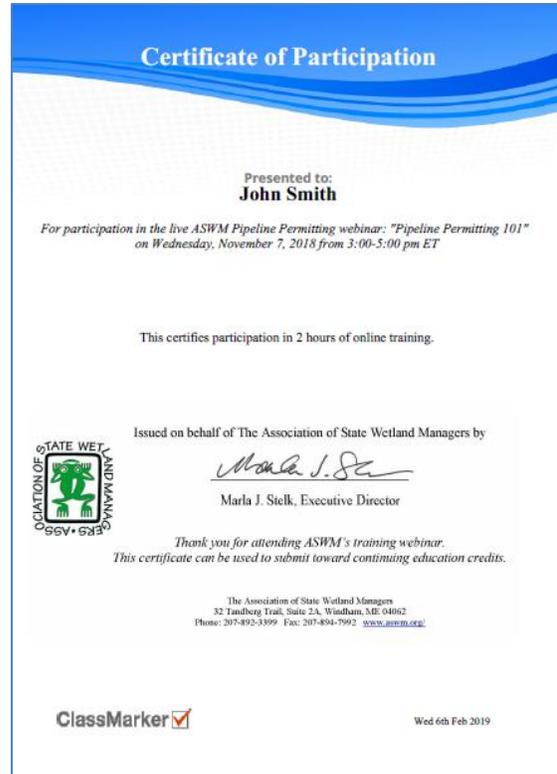
<https://www.aswm.org/aswm/aswm-webinarscalls/4142-past-energy-project-webinars-series#hdd1029>

Supporting Professional Development for Wetland Professionals by Offering Certificates of Participation

ASWM continued to support wetland professionals in their continuing education and professional development through the provision of Certificates of Participation for those webinar viewers completing the viewing of the live webinar session.

In 2016, ASWM developed an electronic system through ClassMarker (an online testing website) to provide certificates. The certificate can be sent to accrediting organization of choice by the participant for them to apply for continuing education units (CEUs) or other professional development credits. The accrediting organization is responsible for determining the percentage of hours that they will accept towards CEUs.

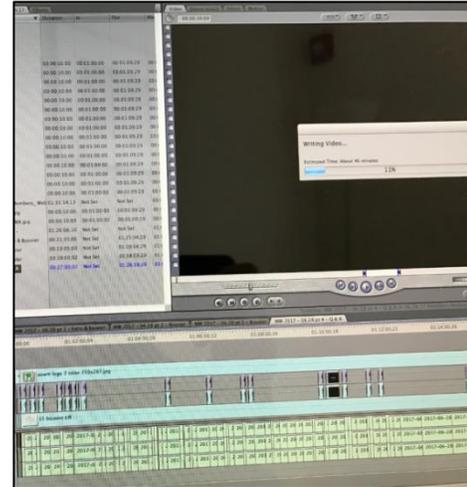
Certificates of Participation Provided: A total of 163 certificates were processed for the four project webinars.



Post-Processing and Posting Archived Project Webinar Recordings for Online Anytime/Anywhere Access

ASWM's post processing of the webinars developed by this project included:

- Recording each live webinar presentation through GoToWebinar.
- Downloading the recording into video format (generally .wmv).
- Editing and adjusting audio levels.
- Adjusting video or replacing with still images.
- Separating the recording into segments of approximately 18 minutes (following TED Talks length guidelines).
- Uploading video segments to ASWM's Vimeo host site (private hosting for viewing control and lighter load on website).
- Adding links on website to individual downloadable PDF versions of webinar PowerPoints for use by viewers.



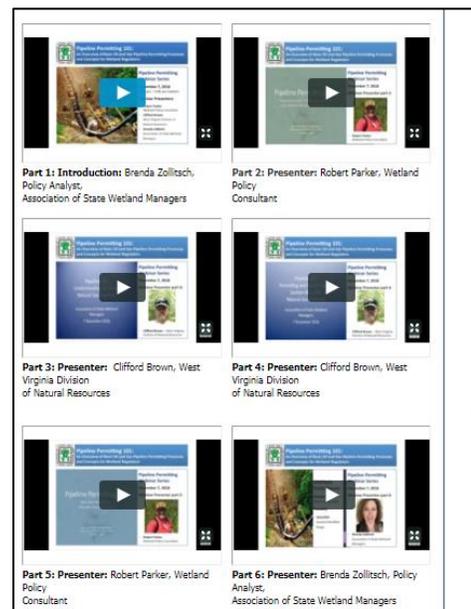
Project Webinar Recordings Available to the Public on the ASWM website at:

<https://www.aswm.org/aswm/aswm-webinarscalls/4142-past-energy-project-webinars-series>

Views of Webinar Recordings

The four pipeline permitting webinars were posted on the ASWM.org website. ASWM is currently tracking use through online analytics.

Views of Recordings: As of February 6, 2019, ASWM had a total of 345 plays of individual elements of the four pipeline permitting archived Vimeo recordings.



Promoting Capacity Building through Training

On the heels of ASWM’s EPA Wetland Program Development Grant on Improving Access to Wetland Training, ASWM looked at the training needs expressed in the barriers and issues element of the project.

Applying both the findings from the training project and the pipeline project, ASWM developed a training guidance document on [Building State and Tribal Oil and Gas Pipeline Permitting Capacity through Training](#) document.

The project training document includes findings on specific training needs, elements of high quality training, and guidance on matching training needs to the right delivery mechanisms.



Building State and Tribal Oil and Gas Pipeline Permitting Capacity through Training

State and tribal staff training needs related to oil and gas pipeline permitting include, but are not limited to:

- ❖ The Clean Water Act, including the Section 404 Program and §401 Water Quality Certification Program and how both are involved in oil and gas pipeline permitting
- ❖ The role of Nationwide Permits
- ❖ Wetland basics – hydrology, soils, plants, biology, hydro-bio connections, etc.
- ❖ Potential water quality impacts from oil and gas pipeline development and maintenance activities (temporary and permanent impacts; direct, indirect and cumulative impacts)
- ❖ Training on avoidance, minimization and mitigation and how they relate to pipeline permit planning and review
- ❖ How to assess and incorporate consideration of cumulative impacts into permit planning and review
- ❖ Specific training topics related to pipeline permitting include:
 - what permitting processes are required
 - which agencies are responsible for what elements of the permitting process
 - specific steps and timing for different pipeline permitting processes
 - at which points in the permit process is the reviewer provided opportunities for input
 - §401 certification review options (approve, waive, condition, or deny)
 - what constitutes a complete §401 certification application (this must include discussion of state/tribe-specific requirements)
 - how to review a permit and provide input
 - Common or critical best practices to consider for different phases of the permitting process
 - what types of conditions have been successfully incorporated into permits in other states/tribes (peer-to-peer sharing)
 - how to integrate requirements into permits
 - how to develop, implement and evaluate mitigation requirements; and
 - how to review and evaluate planned outcomes.
 - Training on “little known but important aspects” of pipeline construction and how to address these in review and conditioning
- ❖ Peer-to-peer sharing on permitting processes and activities that have been effective and efficient in other states/tribes
- ❖ Information about the differences between oil and gas pipeline projects and their permitting
- ❖ Training on long-term impacts from habitat/wetland conversion attributed to pipeline projects
- ❖ Training on targeted monitoring and assessment techniques and tools
- ❖ How to effectively use monitoring and assessment tools to measure performance
- ❖ Training on restoration options and performance measures
- ❖ Training on building positive work relationships with the range of permitting process participants



Pipeline Permitting Project Resource

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Promotion of Pipeline Project Products

ASWM's Communications Committee has undertaken the organization's standard publicity process to promote the products from this grant. This process consists of pre-publication and post-publication publicity. Promotion has been garnering interest and inquiries about the module training series and has resulted in a spike in module use. ASWM's promotion process has included:



- ✓ Standalone web resource on ASWM.org.
- ✓ Promotion on ASWM's homepage.
- ✓ Promotion in Wetland News (ASWM Members'-only bi-monthly newsletter).
- ✓ Publication in Insider's Edition (ASWM's Weekly News Bulletin).
- ✓ Information posts in Wetland Breaking News (ASWM's monthly newsletter).
- ✓ Publication of feature article in ASWM's major Wetland News publication.
- ✓ Promotion of individual elements and complete project resource on ASWM's social media outlets (Facebook, LinkedIn, and Twitter).
- ✓ Sharing at ASWM's State/Tribal/Federal Coordination Workshop (April 2017 and 2018).
- ✓ Presentation through ASWM webinars (ASWM Hot Topics Webinar on July 11, 2018).
- ✓ ASWM's publicity distribution list (direct email promo about complete web resource).

Additionally, ASWM has worked with project and other partners to share specific elements and the full project resource through its network of support organizations

Summary Table Comparing Actual with Anticipated Grant Outputs and Outcomes

Status	Agreed to	Actual
COMPLETED	Documentation of energy project permitting processes and timeline	<ul style="list-style-type: none"> • Development of a guide for developing state and tribal pipeline permitting • Creation of an adaptable template for state/tribal use in developing pipeline permitting process maps • Sample process maps for 401 certification permitting processes in Kentucky and Missouri
COMPLETED	A series of issue briefs on state needs, barriers, best practices and recommendations for improving energy permit review by state wetland programs to stimulate national dialogue and support training decisions.	<ul style="list-style-type: none"> • Challenges, Issues and Strategies Issue Paper and Matrix • Best Practices Guidance Document and Appendices of Vetted Example State BMPs • Process Mapping Guidance Document • Considering Cumulative Adverse Effects White Paper • Working with Consultants Guidance Document and Checklist
COMPLETED	A dedicated web-based resource page on ASWM.org providing links to key contacts, best practices, tools, research studies and other resources to support state wetland program work on energy project permitting; and	<ul style="list-style-type: none"> • ASWM Pipeline Permitting Web Resource: • Page for States and Tribes • Page for Energy Companies and their Consultants • Page Providing Access to Additional Useful Resources:
COMPLETED	A series of at least four training webinars on key energy permitting wetland training topics to increase the capacity of state programs to conduct this work effectively;	<ul style="list-style-type: none"> • Pipeline Permitting 101 • HDD • Cumulative Adverse Effects • Working with Consultants

Summary Table Comparing Actual with Anticipated Grant Outputs and Outcomes, Continued

COMPLETED	Documentation of energy project permitting processes and timelines for, at a minimum, projects that require federal permitting subject to §401 certification from the Federal Energy Regulatory Commission (FERC), the Department of Energy (DOE) and the Army Corps of Engineers (ACOE)	<ul style="list-style-type: none"> • Guide to Developing Pipeline Permitting Process Maps • Kentucky Sample Process Map • Missouri Sample Process Map • Template Process Map for Use by States and Tribes • Link to FERC and DOE Process Maps
COMPLETED	A session on improving state engagement in energy project permitting at the ASWM State/Tribal/Federal Coordination Workshop in 2018 to encourage information transfer to state and tribal wetland program staff (based on project findings and final products)	<ul style="list-style-type: none"> • ASWM STF Coordination Meeting 2017 Panel and Workgroup Session • ASWM STF Coordination Meeting 2018 Panel and Workgroup Sessions
COMPLETED	Ten to twelve meetings of a national workgroup to address the issue of improving protection of wetlands by state wetland programs engaged in review and conditioning of energy permits	ASWM hosted workgroup meetings on a monthly basis, with additional meetings of sub-workgroups throughout the project (listed in this report)
COMPLETED	A final report detailing the findings of the study and providing a summary of support resources available to state wetland programs	This document represents the final report for the project.

Environmental Improvements

Better overall regional outcomes for protection of wetlands and other aquatic resources around multi-state energy projects from better communication between state wetland programs.

- ASWM's project focused on mid-Atlantic states and improving understanding and communication between those states. Other states and one tribe also benefitted from participating in these dialogues.
- ASWM facilitated two years of dialogue between states, tribes and other partners to better understand their pipeline permitting needs and strategies to address those needs, with a focus on building the capacity of states and tribes to do this work. Shared learning resulted in the collection and disseminating of a vast range of resources and the creation of products.
- Each of ASWM's products focused on improving overall outcomes by providing guidance.

Expedited/streamlined permit processing because better understanding of energy projects and permitting will lead to wetland and other aquatic resource issues being more effectively addressed earlier in the process – measured by feedback from state wetland program staff.

- ASWM identified as one of the project findings, a critical need for states and tribes to be engaged in pre-application permitting activities as a way to decrease permit review time, improve compliance with expectations for 401 certification review and build relationships between regulators and applicants.
- ASWM's work to assist states develop process maps will help states make their processes more transparent, predictable and stimulate dialogue. Additionally, these maps allow states to track changes to their process over time and troubleshoot when processes are not working as planned.

Consideration of both permanent and temporary impacts to wetlands and other aquatic resources in permit conditions – measured by feedback from state wetland staff.

- Using the CAE model developed by the project, reviewers are able to qualitatively determine: the extent of the project; the quantity of wetlands that will potentially be converted or lose functionality; the degree that the proposed project incrementally contributes to adverse effects from past, present, and future development; and the significance or quality of the wetlands exposed.
- Ultimately, in the absence of region-wide strategic planning efforts, the only way to reduce cumulative adverse effects is to reduce the adverse effects of each individual project to ensure there is no net loss. The project's CAE evaluation tool can be used to identify the extent of conservation measures and the management actions that will be required on a project-by-project basis.

More thorough protection of wetlands and other aquatic resources in states through strengthened permit conditioning.

- ASWM’s project identified more than 100 best practices that are commonly used by states and tribes to guide permitting processes. Some of these focus on the administration of the permitting process, but others focus on the actual conditions adopted by a state.
- ASWM focused not only on identifying best practices, but also on providing guidance to states that want to identify and develop their own BMPs.
- ASWM is tracking whether these resources or BMPs are incorporated over time, both through a survey funded by the McKnight Foundation in 2019 and through anecdotal reporting by states and tribes to ASWM.

At least 10 states will formally adopt one or more new best practices as a result of access to resources and practices developed by this report within three years of completion of the report – measured by feedback from state wetland program staff.

- NY DEC is working to adapt the CAE model to incorporate cumulative impacts into its permit review process.
- KY and MO both created formal process maps, increasing the transparency and improving the ability to communicate among permitting parties.
- Numerous states reported identifying key considerations they plan to incorporate during permit planning and review from ASWM’s pipeline permitting webinar series.
- Several states utilized the Pipeline 101 webinar as group training for permitting staff, reporting that they aim to improve consistency among reviewers and more comprehensive understanding about the permitting process and ways to improve their consideration of impacts to aquatic resources.
- Workgroup states and tribes identified numerous BMPs during the project that they would like to explore or adopt for their own state/tribal considerations/conditions.
- More than 1,010 wetland professionals participated in the live webinars, providing opportunities to share findings from the project and learn about these key topics.

Report Conclusion

As ASWM has explored each element of this project, resources were developed to respond to that specific need – in content, form and function. All products were need- and research-based and now provide tools for use on-the-ground by those involved with state and tribal- level permitting activities for oil and gas pipelines.

This project has completed all promised outcomes. It has also identified a very real need to provide additional training, dialogue and clarification about numerous permitting issues. The project has identified as a pressing need, the importance of states and tribes being at the table as early as possible in the pre-application process for pipeline development processes, as well as for parties in the pipeline permitting process to identify differences in understandings about terminology and processes. The use of BMPs by states appears to be another area ripe for growth, with potential benefits from specific expectations around practices that encourage strong resource protection, while also offering greater predictability for applicants around practice expectations.

Some areas for additional research and discussion are rapidly emerging, such as changing policies, the applicability of new standards and the applicability of new technological approaches, such as the use of horizontal directional drilling (HDD). The need to continue to understand contexts within which these practices can be successful and case studies showing lessons learned will be important in the future. While many states and tribes want to take cumulative impacts into considerations, this project shows that there are many ways that this can be done in a more concrete manner. By proposing a potential model for CAE assessment, the project has set forth an opportunity for states and tribes to adapt this or other models and work to improve their application.

In conclusion, this project was able to provide a number of capacity building tools to states. However, there is much more work to be done over time to strengthen these processes in the face of increasing impacts from the growing energy industry. Over time, ASWM hopes to continue this dialogue and help provide technical assistance to states and tribes in ways that protect aquatic resources while also improving the effectiveness and efficiency of state and tribal permitting activities.

To learn more about the products from this project or ASWM's other work, please contact:

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