MAHONING RIVER BASIN WATER MANAGEMENT UPDATE kickoff meeting, Jan. 29, 2019, Youngstown

SLIDE ONE: COMMANDER COL COBY SHORT & DEPUTY DISTRICT ENGINEER LENNA HAWKINS PRESENT

SLIDE TWO: PURPOSE, INTENT, AGENDA

SLIDE THREE: INTRO TO ARMY CORPS & UPPER OHIO RIVER BASIN

Thank you all for coming out on a cold January night for the kickoff of our Mahoning River Basin Water Management Update. I'm going to try to keep this presentation brief because my intent is to first introduce you to the Army Corp. Second, explain our upcoming effort to collect and analyze information so that we can better optimize our reservoir operations. And third, give you an opportunity to ask questions and provide comments. This is also an opportunity for me to introduce you to the high caliber people working on this update. You've met Lenna and Jeff. Down front, we have other subject matter experts that I'll ask to stand when I introduce them. [Introduce team]

- I want to recognize our federal elected officials who have supported the effort to better understand the Mahoning River Basin so that we may optimize our reservoir operations. [Introduce Congressional who have been identified and then ask if there are any others in attendance].
- The Corps certainly can't tackle a task like this on its own, so we count on leveraging information and insight from our many partners to include state and federal environmental agencies, watershed associations, chambers of commerce, councils of government, conservation districts and others.
- And finally, an essential member of our team – the residents and business owners of this area and those who visit the beautiful region.
- If I may, I'd like to provide you with a quick Pittsburgh District 101.
- With about 700 employees, the Pittsburgh District is one of 43 U.S. Army Corps of Engineers districts world-wide. Our boundaries take in the headwaters of the Upper Ohio River in western Pennsylvania as well as parts of Maryland, New York, Ohio and West Virginia.
- Pittsburgh District supports commercial navigation on the upper Ohio, Allegheny and Monongahela Rivers. Along our three rivers, we operate and maintain more locks and dams than any other district in the Corps of Engineers. Last year, 45,000 barges carried 66.9 million tons of cargo valued at over $5.6 billion through our locks, maintaining the Port of Pittsburgh as the nation's 3rd busiest inland port.
- The Pittsburgh District built, operates and maintains 16 multi-purpose reservoirs. When a storm hits, our reservoirs retain excess water upstream of the dams, then provide controlled releases of the water to reduce flood peaks. Last year alone, our reservoirs prevented more than a billion dollars in flood damages with the operation of the Berlin, M.J. Kirwan and Mosquito Creek dams. Overall, since their construction, these 16 federal dams have prevented more than $13 billion in flood damages. During drier times, these reservoirs provide stored water downstream of the dam to dilute industrial, commercial, agricultural, natural and other pollutants.

- In addition to our reservoirs, 80 local flood damage reduction projects – including the famous Johnstown flood control project -- protect communities along nearby rivers and tributaries, preventing nearly $2.4 billion in flood damages in their lifetime.
- Through our Civil Works missions, Pittsburgh projects and staff of dedicated professionals directly and indirectly enhance the lives of the area's 5.5 million residents.
- One of the direct benefits is the recreation opportunities provided by 90,000 acres of public land and water at our reservoirs. 5.3 million visitors enjoyed our lakes last year, providing $214 million in economic benefit to the region. We also welcomed over 1,800 volunteers who worked 28,370 hours and contributed $618,000 worth of public service.
- Pittsburgh employees serve not only the region but a much wider arena. Our team supports emergency response and disaster recovery efforts throughout the U.S. We manage the nation's emergency power contract for FEMA. With the string of hurricanes and typhoons that struck American lands, you probably won't be surprised to learn the our emergency operations center has been open more than 500 days since Hurricane Harvey touched down in the Houston area in Aug. 2017. The next longest duration of continuous operations was for Hurricane Sandy on the East Coast, which totaled 61 days.
- The Pittsburgh District team also supports the Corps of Engineers' Overseas Contingency Operations with employees currently deployed to Afghanistan.
- Thank you for giving me that time to introduce you to the Army Corps of Engineers and the Pittsburgh District. You can see that the Corps has a lot of infrastructure in the upper Ohio River Basin that benefits communities every day.

SLIDE FOUR: MAHONING RIVER BASIN and CORPS DAMS

For purposes of this meeting, I want to zoom in on an area of interest. The Corps operates four reservoirs in the Beaver River Basin that reduce the risk of flooding and sustain water quality to downstream communities. The Corps has one dam on the Shenango River and three in the Mahoning River Basin that join in Lawrence County, Pennsylvania to form the Beaver River, which then flows into the upper Ohio River.

For this initiative, we are funded and tasked to look at the three reservoirs that operate in the Mahoning River Basin as well as the watershed as a whole to better understand the current needs, benefits and challenges within the region.

SLIDE FIVE: 1913 FLOOD OF RECORD

As many of you probably know, this area suffered a terrible flood event on March 23, 1913. Through the Flood Control Act of 1938, Congress authorized and funded the building of Berlin and Mosquito Creek dams with the primary purpose of reducing the flood risks to downstream communities. M.J. Kirwan was authorized in the Flood Control Act of 1958.

Over the four days, the Mahoning Valley got between 7 and 9 inches of rain adding that rainfall averages were 8.8 inches in the west branch basin of the Mahoning River, 7.15 inches on the river's main stem and 8.35 inches along Mosquito Creek, which flows into the river in Niles.

The U.S. Weather Bureau pegged Ohio's 1913 flood death toll at 367, but the U.S. Geological Survey put it at 467. With 94 towns affected, 220 bridges destroyed, and 33,833 buildings flooded, Ohio suffered, by far, the most damage and loss of life among seven Ohio River Valley.

Since then, Mahoning River flood levels have not approached the river crests witnessed in 1913 predominantly due to the construction of the flood risk management dams.

The reservoirs help catch water and control flooding on the river. They also keep the water levels up in the dry months.

SLIDE SIX: BERLIN DAM & RESERVOIR

All flood risk management dams had multiple authorizations, which often competed with each other. Berlin Dam was completed first in 1943 and authorized for Flood Control, Low-flow Augmentation – or adding additional flows to the Mahoning River to dilute pollutants and cool industrial outputs, Water Quality, Water Supply, Fish and Wildlife Enhancement and Recreation. The reservoirs behind these dams had storage allocated for flood control, low-flow augmentation, water quality and water supply but no storage was allotted for Fish and Wildlife Enhancement or Recreation. These missions were subservient to the other four.

Berlin Dam watershed is 249 sq. miles and is capable of capturing up to 22 percent of the precipitation and runoff within the Mahoning River Basin.

Flood Control Act 1944 (PL 78-534)

Provides authorities to "…to construct, maintain, and operate public park and recreational facilities at water resource development projects under the control of the sectary of the army, and to permit construction, maintenance, and operation of such facilities."

SLIDE SEVEN: MOSQUITO CREEK DAM & RESERVOIR

Congress authorized Mosquito Creek Dam, completed in 1944, with the same set of project purposes as Berlin Dam.

It has a watershed of 97.4 sq. miles and is capable of capturing up to 8.6 percent of the precipitation and runoff within Mahoning River Basin.

SLIDE EIGHT: MICHAEL J. KIRWAN DAM & RESERVOIR It would be more than 20 years until the third dam, Michael J. Kirwan Dam and Reservoir, was authorized. It completed construction in 1966 and has the same project purposes as the other two dams.

M.J. Kirwan Dam has a watershed of 80.5 sq. miles and is capable of capturing up to 7 percent of the precipitation and runoff within the Mahoning River Basin.

SLIDE NINE: WATER CONTROL MANUAL UPDATES

A lot has changed since the early 40s though the mid-60s. The high-temperature output from once active steel mills and other industries is not as prevalent however there are indications that new burdens on the Mahoning River Basin threaten to degrade water quality. The flood risk still exists as demonstrated by the dams' effectiveness in cutting seven feet off the flood crest at Leavitsburg as the remnants of Tropical Storm Gordon hit the region in 2018. Recreational boating on the reservoirs is

popular and provides a boost to the local economy but the need to augment river flows to dilute pollutants and create space to capture flood waters often conflict with that benefit.

SLIDE TEN: WHAT IS A WATER CONTROL MANUAL?

After the Corps built the dams, they created manuals to help instruct on how to operate and maintain them. Much like a manual to a new car, these manuals created a reference to present and future operators. In part, the manuals include a water control plan that instructs operators on gate operations to manage and balance the various missions.

This graphic helps to demonstrate the difference between a single purpose flood risk management reservoir and a multi-purpose reservoir. All three of the Corps' Mahoning River Basin reservoirs are multipurpose. As the graphic shows, these reservoirs have functions that creates fluctuations in the water level. The Corps maintains storage in the reservoir to capture storm runoff and reduce the river crest downstream of the dam to mitigate flooding; we also keep water in the reservoir for drier times to add flows to the river that will help dilute pollutants and lower temperatures from various industrial and other sources.

SLIDE ELEVEN: WATER MANUAL UPDATE PROCESS

As I mentioned in the beginning of this brief, the intent of the update is to better understand current conditions, challenges, and concerns in the basin and to optimize reservoir operations to meet existing and future needs. We will be looking at several factors and taking several actions to update our knowledge of the watershed and adjust operations accordingly. We'll look at hydraulic & hydrologic modeling; water quality modeling; sedimentation surveys; climate change impacts; changes in watershed characteristics; changes in development, industry, population and other demographics. We will engage with users, stakeholders and partners to understand their concerns and leverage their resources.

We estimate that this will take up to 18 months.

Our outputs are updated Water Control Manuals, which are documents we use to operate the facility, everything from emergency notification rosters to mowing the grass.

We will also verify or determine that there's a need to revise our Water Control Plans, which are the guide curves we use to instruct our gate operations – in other words, what to release and what to hold back.

Any revision to the Water Control Plan cannot impact the authorized purposes of the projects.

SLIDE TWELVE: BASIN CONCERNS & INTERESTS

We know that there are ongoing challenges, worthwhile missions and sometime conflicting actions in the basin with relation to the operations of our dams. We are working on a continuous basis with our partners to explore ways to leverage our authorities and expertise to help address concerns and support opportunities with the goal of improving the quality of life for the people who reside in and visit the basin.

SLIDE THIRTEEN: UPCOMING PROJECTS & EVENTS

Here are some of our ongoing projects and events at the reservoirs.

SLIDE FOURTEEN: THE WAY FORWARD / HOW TO ENGAGE

SLIDE FIFTEEN: DISCUSSION

SLIDE SIXTEEN: ENDING SLIDE