WET WEATHER STAKEHOLDER TEAM

Agenda

Wet Weather Team
Stakeholder Group Agenda
March 22, 2016
5:30 p.m. – 8:15 p.m.

5:15 – 5:45 Dinner served

5:35 – 5:50 Welcome & Intro
Clay Kelly, Strand Associates

5:50 – 6:10 MSD & IOAP Update
John Loechle, MSD Engineering Director
Tony Parrott, MSD Executive Director

6:10 – 6:40 Sustaining Vital Infrastructure
Tony Parrott

6:40 – 6:55 Facility Plan Update - Overview
Gary Swanson, CH2M

6:55 – 8:05 Facility Plan - Service Area Updates
- 6:55 - 7:20 Stormwater - *Matt Newman, HDR*
- 7:20 - 7:35 Flood Protection - *Ryan Tinsley, Strand*
- 7:35 - 7:50 Wastewater - *Mark Sneve, Strand*
- 7:50 - 8:05 Facilities - *Mike Harris, JTL*

8:05 – 8:15 Observer Comments, Wrap-up and Adjourn
Clay

Meeting Summary

Meeting Summary
Wet Weather Team Stakeholder Group Meeting
March 22, 2016
MSD Main Office, Louisville

The Wet Weather Team (WWT), chartered by the Louisville and Jefferson County Metropolitan Sewer District (MSD), met on March 22, 2016, at MSD's main office. The objectives of the meeting were to:

- Provide a Consent Decree Integrated Overflow Abatement Plan (IOAP) update.
- Provide feedback on presentations prepared by MSD and the Facility Plan team to document needs within MSD's system and to present recommended spending projections to bring the community's wastewater, stormwater and flood protection systems up to current design standards.

Welcome

Clay Kelly of Strand Associates, opened the meeting by welcoming the members and reviewing the meeting objectives, agenda and basic ground rules. Clay introduced two new members, Marty Storch from Metro Parks and Billy Doelker with Key Homes and the Homebuilders Association of Louisville. Clay noted that Bob Marrett was stepping down from the WWT after 10 years and thanked Mr. Marrett for his service to the community.

MSD and IOAP Update

John Loechle, MSD Engineering Director, gave an update on the IOAP implementation progress. Overall progress is steady and on-schedule. Some projects are ahead of schedule and some are slightly behind schedule. Delays on projects have generally been related to weather or site conditions and they are all expected to be caught up by the end of the summer construction season. Several projects (Grand Avenue Pump Station, Fairmount Road Pump Station and Storage Basin, e.g.) that the WWT has heard about before are in service and performing as expected.

A stakeholder asked for an update on the Logan Street Basin. Tony Parrott, MSD Executive Director, responded saying that he had just come from a meeting about that project and that he believes a compromise has been found with the neighborhood association and stakeholders that will allow the project to be mostly underground without compromising the work that has been done to date. This solution is pending further review by MSD engineers and the contractor as well as approval by MSD's Board.

A stakeholder remarked that many people in her neighborhood have had trouble getting meeting notices even though they have provided contact information at previous events. John acknowledged that MSD has had trouble with its database of contacts and is working to resolve those issues. In the meantime, MSD is trying to put the word out about meetings through as many different channels as possible.

A question was raised by a stakeholder on what residents should do if they are concerned about damage from nearby blasting, or if they believe their home has been damaged by blasting. John encouraged anyone who believes their property was damaged by blasting to come to MSD so that it can be investigated and resolved. He noted that if blasting is going to be necessary for a project, it is announced at the public meetings and residents are encouraged to take pictures of their home. In addition, the contractor is required to complete a pre-blast survey of the area to document conditions and assist property owners in making damage claims.

A stakeholder asked whether excavation from the basins would be used to fill in wetlands at the I-64 and Grinstead Basin site. John said that MSD would not do that. It is against MSD's business practices, would violate permits, and is counterproductive to its mission.

One stakeholder requested an update on the Bells Lane Wet Weather Treatment Facility project. John said that the project was running slightly behind schedule due to the weather and delays caused by obtaining railroad crossing easements, but should be completed on-time by the end of the 2016.

A stakeholder suggested that MSD coordinate green projects with Metro's tree tracking database. John said that he thought it was already and would confirm that. If not being done now, John said MSD would investigate what it took to get MSD's tree planting efforts into the Metro database.

Sustaining Vital Infrastructure

Clay introduced Tony's presentation by saying that it was a draft presentation and that the WWT was being used as a focus group to test the message and to provide feedback. Highlights from Tony's presentation include:

- Information on the failing state of our nation's infrastructure, especially in water resources, as demonstrated by the recent crisis in Flint, Michigan.
- MSD's infrastructure dates back to the 1800s and simply keeping it running is a significant cost. While a significant portion of MSD's operating budget goes to repair of issues with the aging infrastructure, much of this effort is "band-aids" and other fixes to maintain functionality without correcting the root problems.
- The value of water is often discussed but not always in terms of its role as an economic engine. The investments in water infrastructure support growing communities, jobs, and economic enhancement.
- Through some preliminary findings of the Facility Plan, MSD has documented an approximately $1 billion need for infrastructure improvements and repairs in the next 5 years. Currently, MSD has approximately $350 million in bonding capacity left, which leaves a funding gap that must be closed if the recommended improvements are to be implemented.
- Currently, water and wastewater utility bills account for less than 2 percent of the average household's expenditures. Several local and national surveys have shown that the public supports paying more for reliable, quality water and wastewater service.
- If rates are raised, a larger number of households in the Louisville will be strained by the cost (defined as their bill being more than 2 percent of their household income) but MSD has programs and works with other agencies to assist those having trouble paying their bill. There are opportunities to do more if the community believes it should.
- Overall, there is a substantial documented need to address MSD's infrastructure now before it becomes a crisis that cannot be managed.

A stakeholder asked how much money is spent on "band-aids" on a yearly basis. Brian Bingham, MSD Chief of Operations, said that it was a difficult number to calculate but he could say that most of what MSD's crews do is keep the system operating through small fixes and/or repairs. He shared that capital projects that fall under John's responsibility are the real fixes. John said that as an example, based on experience, calculations, and projections, to just "fix" the problems MSD has with clay sewer pipes is approximately $124 million. That is the cost for fixing one particular type of asset, and MSD has many, many more.

A stakeholder noted that when talking about rates, bills, and the 2-percent threshold, it's important to remember that the 2 percent spent by a household on water services is an average. Lower-income people will be hit harder by rate increases. Furthermore, is it fair to ask someone whose home has been flooded multiple times to pay more if they are not even receiving the basic level of service as others who pay the same amount?

One stakeholder suggested emphasizing the age of infrastructure and correlating that to a person's own age. People can relate to how they tire as they get older and that they need to spend more money on their own health as they get older in order to continue to "operate" effectively. Several other stakeholders suggested using common comparisons and analogies when discussing infrastructure challenges, such as owning and maintaining a home or a car. Deferred maintenance typically results in larger capital expenditures because the problems tend to get worse if they are ignored.

Several comments were given that related to the need to make people more personally accountable for the problems we now face. It was suggested that MSD present a choice. Either the community can address these problems by making individual changes or they can fund a $1 billion program. Conservation, increased infiltration, behavioral changes, and others were given as examples.

A stakeholder noted that because the presentation includes such detailed costs, the audience could conclude that MSD should know what the appropriate rates should be and would expect to see that in the presentation. The stakeholders continued by noting that the beginning of the presentation showed the "D" the American Society of Civil Engineers gave levees and wastewater in the Infrastructure Report Card. It was suggested that MSD connect back to that report card by stating to what specific grade this $1 billion investment would raise the infrastructure.

Another stakeholder noted that the beginning of the presentation focused on the value of water, but the rest of the presentation was about spending money on infrastructure. Tony was encouraged to spend more time on the value of water, explain it further, and use the presentation as another much-needed opportunity to educate the public on the value of water.

One stakeholder felt that the presentation was made up of two separate presentations that were combined. The first was more sophisticated and focused on the national or big picture trends, the second was more local. Depending on the audience, they may not understand both or how they are related.

Several stakeholders added that the general public does not want to pay attention to, or worry about anything until it is a problem. To bring this to their attention, it will be necessary to make contact many times. Also, to get political support, MSD will need to show the connection to the elected officials constituents.

A stakeholder encouraged Tony to take this message public sooner rather than later as the crisis in Flint, Michigan has brought these issues to the forefront and that the climate to get results has never been better.

Lastly, a stakeholder suggested tailoring the presentation to match the audiences' demographics. For example, a younger audience will value different goods and services more than an older person. It was noted that some younger people would value the availability of technology higher than whether or not their water service is dependable.

20-Year Comprehensive Facility Plan Update - Overview

Gary Swanson of CH2M-Hill introduced this topic by saying that the Facility Plan is putting together an approach to get out of these failing grades. As part of the Plan development, rate structure recommendations will be developed but they are not ready at this point. The Service Area leaders will be presenting more specific information that can be used by Tony if he were asked for details or documentation about the needs or costs.

20-Year Comprehensive Facility Plan Service Area Updates

Clay introduced the next topic by saying that each of the four service area (Ohio River Flood Protection, Wastewater, Property, and Stormwater and Drainage) task leads would be sharing specifics about their areas and that Clay would seek feedback after each presentation. He reminded the stakeholders that they are a cross section of the community and they represent the community's perspective. MSD values their input as the stakeholders are expected to help shape this message of infrastructure needs.

<u>Stormwater and Drainage</u>

Matt Newman of HDR presented on the Stormwater and Drainage service area. Matt began by noting that MSD has made significant capital investments over the last 30 years to improve stormwater and drainage service which was directed by previous stormwater master plans. The Facility Plan team has documented a need for a new master plan to identify and lead future capital investments to meet the needs of the community. This master plan would include projects to address major capital needs that would help solve neighborhood and large scale watershed issues, basin retrofit projects, and improvements to viaduct flooding. The plan would also create budgets to fund the Drainage Response Initiative (DRI), floodplain buyouts, and MS4 permit compliance. Overall, the goal would be to raise the level of service for the community to be able to adequately convey the 10-year storm that is expected in 2035.

Following the heavy rains of 2015, many neighborhoods asked MSD to evaluate what it would take to make sure that kind of flooding never happened again. The Stormwater team looked at six areas and modeled solutions to control a greater than 100-year storm. Projecting those costs over the entire county totaled over $13 billion. However, projects to improve conditions for smaller storms were also identified and will be combined with studies being done by others.

The Facility Plan will also recommend that MSD update the storm definitions from what it currently uses. The current definitions date from the 1970s and it is recommended that MSD use the projected rainfall amounts that are expected in 2035. As part of this, it is recommended to update the local regulatory floodplain based on the new rainfall definitions and keep the FEMA floodplain unchanged. This would not require property owners to buy flood insurance, but would let them know about the risks and give them the opportunity to buy insurance if they desired.

A stakeholder recommended showing what an updated floodplain would look like for the area where this presentation is given. It would make a personal connection to the issues and help people realize how it could affect them.

One stakeholder raised the question of whether MSD should be providing the same level of service to everyone in the community. People who build in higher-risk areas should not automatically get the same level of protection as those that build in lower-risk areas. It was suggested that instead of spending money to protect these properties, MSD would be better off buying land and preventing anyone from building on them.

Another stakeholder expressed its belief that MSD's current development regulations do a great job with keeping people out of the floodplain and preventing building in higher-risk areas. It was noted that many of the problem areas pre-date MSD taking over stormwater and drainage responsibilities.

Several stakeholders commented that property owners would likely have a negative reaction to being told they are in the floodplain and/or may not be able to afford flood insurance. This may also create a perception that those homes are in the FEMA floodplain (when in fact they are not) and would make it difficult for home owners to sell their homes. MSD needs to carefully consider the unintended consequences of publicizing this information, even though the message is important and is intended to inform residents of the flooding risk. John agreed and said that it would have to be done carefully as the intention is to inform residents, not scare them. It was noted that MSD is not "putting" anyone in floodplain, they are intending to inform property owners of the potential risk they could face in the future. It was also noted that MSD is not changing the line delineating the FEMA floodplain areas.

Ohio River Flood Protection System

Ryan Tinsley of Strand Associates presented the Ohio River Flood Protection service area. Ryan noted that if the stormwater system was going to be upgraded top convey a 10-year storm to the flood pumping stations, then the Facility Plan team recommends those pumps should be able to convey that flow or else there would be

flooding in the interior of the flood protection system. (Note that the US Army Corps of Engineers (Corps) Levee Safety Evaluation (LSE) determined that the current capacity of the flood pump stations met FEMA standards for capacity based on a "coincident frequency analysis". Increasing the capacity of the flood pump stations would be a local decision to provide a level of protection better than the minimum required by FEMA.)

The floodwall and levees are the most important part of the Ohio River flood protection system and have been found by the Corps to be in acceptable condition. By the Corps' calculations, the floodwall and levee do not need to be raised, so the focus becomes maintaining its integrity. Some capital project have been identified for the first few years and operation and maintenance budgets have been developed to maintain its condition have been established for the remainder of the planning period. The costs associated with the floodwall and levee were approximately $45 million. It was noted that those costs are very similar to what MSD is currently spending to maintain the floodwall and levee.

However, the flood pumping stations would need capital improvements in order to pump the stormwater conveyed by a 10-year storm in 2035. These improvements range from minor upgrades to substantial expansions. The Facility Team also evaluated ways to provide secondary power so that the pump stations would be less affected by a power outage. Currently, most of the pump stations do not have back-up power. Ryan used the Paddy's Run flood pumping station as an example of the kinds of improvements that would be needed. Overall, the costs to upgrade all of the flood pumping stations totaled approximately $415 million. In the recommended plan, there would be a large increase in investment in 2017/2018 due to the need to replace two large, critical flood pumping stations: Paddy's Run and Shawnee Park. The recommendation to improve Shawnee Park is intended to allow work at the station to be done concurrently with the basin project to reduce neighborhood and park disruptions.

One stakeholder shared that the Beargrass Creek flood pumping station used to be available for tours but is no longer and suggested resuming them as they were very popular and enlightening. Brian said that unfortunately Homeland Security rules prevent having tours. The stakeholder then suggested including educational exhibits along the greenway instead.

A stakeholder asked whether the sizing and designing were being coordinated across all services areas to make sure that changes in one area did not create problems in another. Ryan confirmed that all groups are coordinating together.

A stakeholder asked if the overall goal for improvements to the Ohio River flood protection system is aging infrastructure or accounting for climate change. Ryan said that the two goals are reliability and capacity. The system is 60-plus years old and still has a lot of original equipment. The community needs to be able to rely on those pumps to operate when they are needed. Also, when they are used, they need the capacity to pump what is coming to them. Changing storms, land use changes and other factors need to be accounted for. Brian added that much of the equipment is so old spare parts are no longer available and that MSD's crew spend a lot of time making parts and checking the stations to be sure they will turn on when needed.

A stakeholder noted that reliability can be measured and predicted and a smart exercise would be evaluating the change before and what it would be after proposed improvements.

Wastewater

Mark Sneve of Strand Associates presented on the Wastewater service area. He explained that while spending on IOAP projects has varied over the last 7 years, long-term spending for wastewater has been fairly consistent and represents the base amount necessary to keep the system running. The Facility Plan has identified projects to meet four overall goals:

1. Keep the system running.
2. Expand to meet community needs.
3. Address changing regulations.
4. Improve efficiency.

Over 300 project have been identified with over one-half of them being new needs that were documented by the planning process. Regulatory compliance, IOAP, and condition assessment were the largest categories of project drivers and accounted for almost one-half of all projects. Costs for the projects total approximately $2.5 billion but $300 million of that total is for potential new nutrient regulations and $1.3 billion is for potential new micro-constituent rules (note that the presentation given at the meeting presented older numbers. The information in these minutes is the most up to date). It is unknown when these regulations may be put in place but the responsible approach is to plan for it now. Several example projects were explained to illustrate how projects were identified and their benefit to the community.

There were no comments or questions from the stakeholders.

Property

Mike Harris of Jacobi, Toombs, and Lanz presented on the Property service area, which also includes facilities and mowing. The Facility Plan team has inspected 178 facilities so far and identified 280 projects needed in the first 5 years and 847 projects over the 20-year planning window. Typical projects are repairing/replacing roofs, addressing lead paint and mold issues, and structural repairs. Projects tended to fall into an acute need (i.e., approaching failure) or long-term maintenance needs with very little in between. That causes the number of projects and recommended spending to be more heavily weighted in the first 5 years as the acute projects are addressed and then shifting to a more modest budget for continued maintenance.

There was only one question from the stakeholders on whether or not roof replacements will be cool roofs? Mike said that the Plan will recommend material(s) and standardize roofing.

Observer Comments, Wrap-Up, and Adjourn

Clay went around the room seeking input from the stakeholders. All provided feedback. Highlights of their comments and questions are as follows:

- The presentations make the problem seem so daunting, it would be good to end with solutions and/or plan to complete the challenges. Gary and Clay responded that the solutions are being refined as part of the Facility Plan and will be coming forward as the Plan heads towards completion.
- The MS4 program shows a dramatic increase in spending after the first few years. What is driving that? Gary answered that a new permit is expected this summer and then again in 5 years. No one knows for sure what will be included in it so the Facility Plan looked at other neighboring communities (Nashville, Indianapolis, e.g.) that are further ahead and used their permits as benchmarks.
- Several stakeholders reaffirmed the recommendation to use simple, everyday analogies that everyone can understand. For example, neglecting the maintenance of your home or vehicle may save money in the short term but will cost much more when they fail.
- Multiple stakeholders shared that we should address these problems before they become disasters. Gary responded that disasters have already happened elsewhere. It is the Facility Plan team's hope that we can learn from the disasters that happened elsewhere so we don't have to suffer from our own disaster before we take action.

- One stakeholder suggested Tony give his presentation at a national conference or other similar venue to give it even more credibility. There is a public perception that a presentation that has been confirmed on a national level has more credibility.
- One stakeholder expressed that it is good to be prepared but that we cannot prepare for every potential threat. Priorities must be set and they should be decided by the community.
- Many stakeholders suggests preparing an answer, or proactively answering in the presentations, to the question "How did we get to this place?" The resounding answer from MSD staff was "deferred maintenance". By cutting budgets and keeping expenditures down to save costs to the community, the problems that should have been addressed through routine maintenance have now become capital projects.
- A stakeholder noted that changing behavior may reduce future needs but will not fix or replace aged infrastructure.
- A stakeholder recommended showing what Louisville's infrastructure grade increase would be with this investment.
- Numerous stakeholders said that the message needs to be personal and clearly show how these problems can or may affect them, what the cost to them is, and what the benefits to them will be.
- A stakeholder said that many people may wonder if there is ever an end to this? Will the need ever be completely met? When will the spending be curtailed?
- A stakeholder voiced a concern that asset renewal/replacement may get deprioritized by projects responding to or supporting growth.

Gary asked for feedback on how to present costs to the community. He said the plan was to show the total costs ("the big numbers") and then present that in terms of a monthly payment or cost per day. The stakeholders agreed that approach made sense and was a good way to communicate these concepts.

There were no comments from the observers.

Clay reminded everyone that the next meeting would be June 28, 2016.

Meeting Materials

- Agenda for the March 22, 2016 WWT Stakeholder Group Meeting
- Copy of the presentation slides

Meeting Summary
Wet Weather Team Stakeholder Group Meeting
March 22, 2016
MSD Main Office, Louisville

Meeting Participants

Wet Weather Team Stakeholders (Present)

Stuart Benson, Louisville Metro Council, District 20
Allan Dittmer, University of Louisville Provost Office
Billy Doelker, Key Homes
Mark French, University of Louisville Speed School of Engineering
Arnita Gadson, retired Executive Director, Kentucky Environmental Quality Commission
Tom Herman, retired from Zeon Chemicals
David James, Louisville Metro Council, District 6
Rick Johnstone, Deputy Mayor, Louisville Metro Mayor's Office (Retired)
Maria Koetter, Louisville Metro Government, Director of Sustainability
Bob Marrett, CMB Development Company
Kurt Mason, District Conservationist, Jefferson County Soil Conservation District
Jim Mims, Louisville Metro Planning & Design Services Department
Gina O'Brien, Brightside Executive Director
Lisa Santos, Irish Hill Neighborhood Association
Bruce Scott, Kentucky Waterways Alliance (retired)
Marty Storch, Louisville Metro Parks
David Tollerud, University of Louisville, School of Public Health and Information Sciences
David Wicks, Kentucky Conservation Committee, Jefferson County Public Schools Center for Environmental Education (retired)

Wet Weather Team Stakeholders (Not Present)

Steve Barger, Labor (Retired)
Susan Barto, Mayor of Lyndon
Rocky Pusateri, Elite Built Homes
Tina Ward-Pugh, WaterStep, citizen representative, former Metro Council member

Wet Weather Team MSD Personnel (Present)

Tony Parrott, MSD Executive Director
Angela Akridge, MSD Chief Engineer
Brian Bingham, MSD Chief of Operations
John Loechle, MSD Engineering Director

Technical Support

Gary Swanson, CH2M-Hill
Clay Kelly, Strand Associates
Paul Maron, Strand Associates

Meeting Observers

Mike Harris, JTL
Stephanie Laughlin, MSD
Steve McKinley, HDR
Matt Newman, HDR
Mark Sneve, Strand Associates
Ryan Tinsley, Strand Associates
Wes Syndor, MSD

Handouts

No Meeting Handouts

Presentations

PROJECT SPOTLIGHT

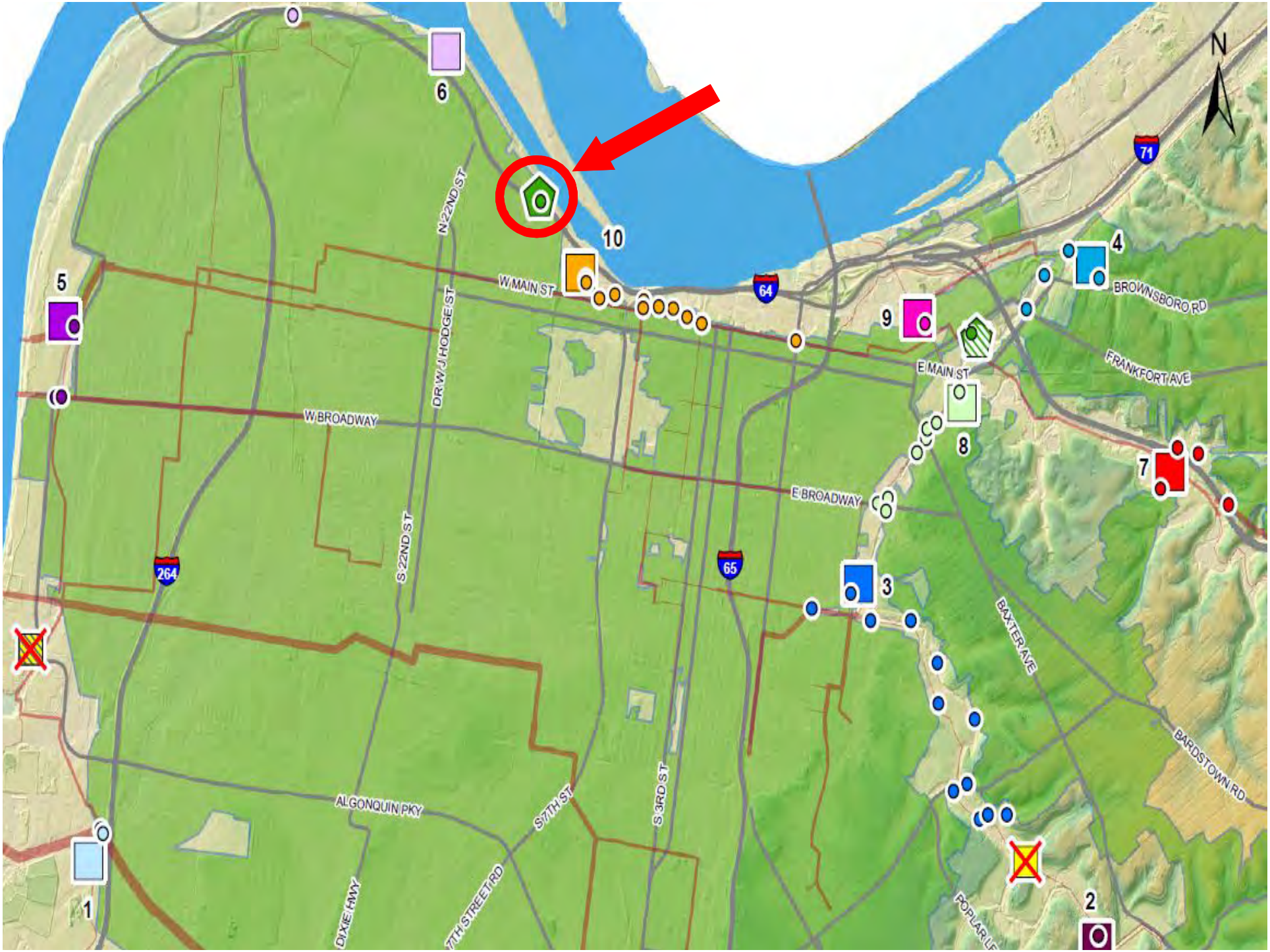
Significant Capital Project Overview

PROJECTS IN CONSTRUCTION

Significant Capital Project Overview

Significant Capital Project Overview | Project Spotlight

CSO 190 GREEN INFRASTRUCTURE PROJECT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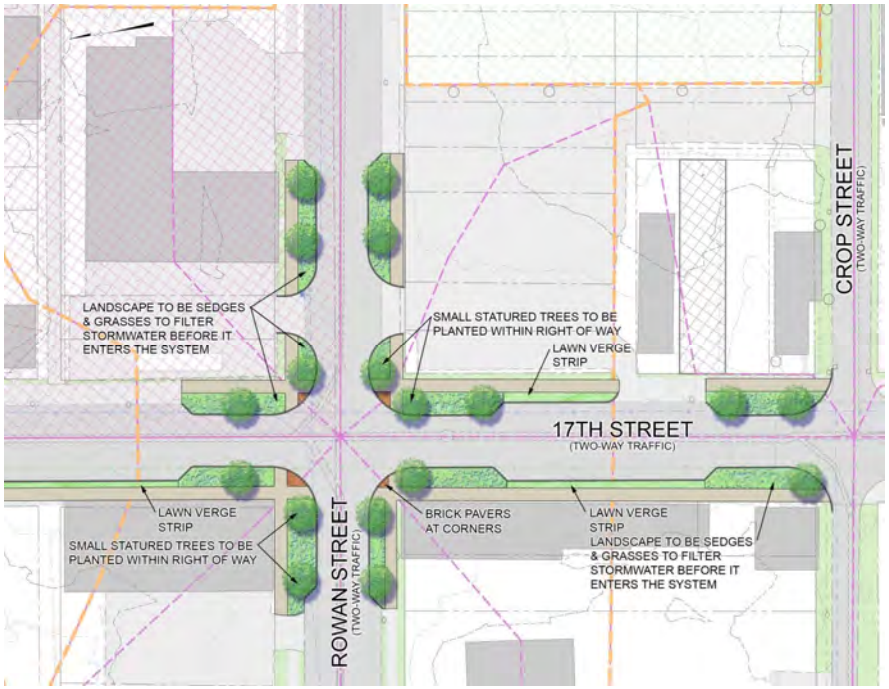
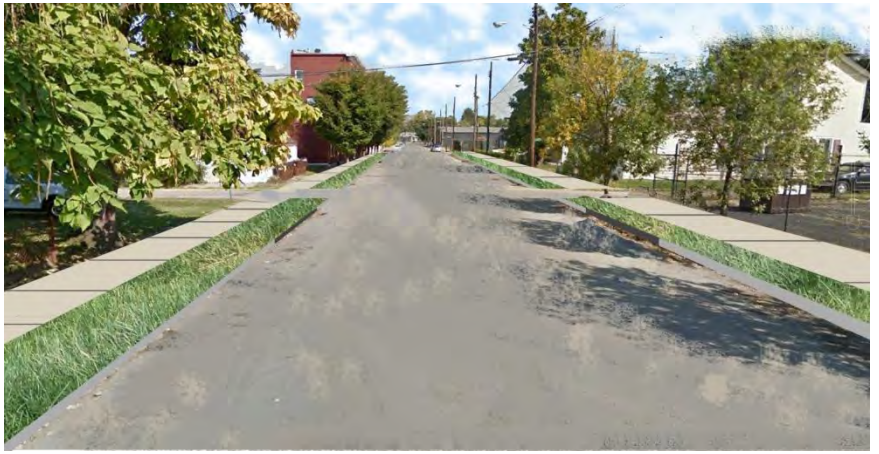
CSO 190 Green Infrastructure Project

Project Background

- 142 Acres
- 96 Acres Impervious
- Capture 63 Impervious Acres with Green Infrastructure
- 32 Million Gallons of Overflow Reduction in a typical year
- Streetscape Improvements, Bioswales, Treewells, and Infiltration Galleries
- Construction will be completed in 3 phases starting November 2015

CSO 190 Green Infrastructure Project





CSO 190 Green Infrastructure Project

Project & Public Meeting Schedule

- **January 26, 2015** - Met with District 5 Neighborhood Advisory Committee
- **February 9, 2015** – Planning Public Information Meeting
- **April 9, 2015** – Stakeholder Meeting
- **April 13, 2015** – Meeting with Metro Councilmen
- **April 14, 2015** – Conceptual Design Public Information Meeting
- **May 12, 2015** – Advanced Design Public Information Meeting
- **September 2015** - Advertising and Bidding
- **November 9, 2015** – Pardon Our Dust Public Information Meeting
- **November 2015 – June 2016** – Phase 1 Construction
- **2016** – Phase 2 Construction
- **2017** – Phase 3 Construction

Phase 1
66,843 C.F. Captured

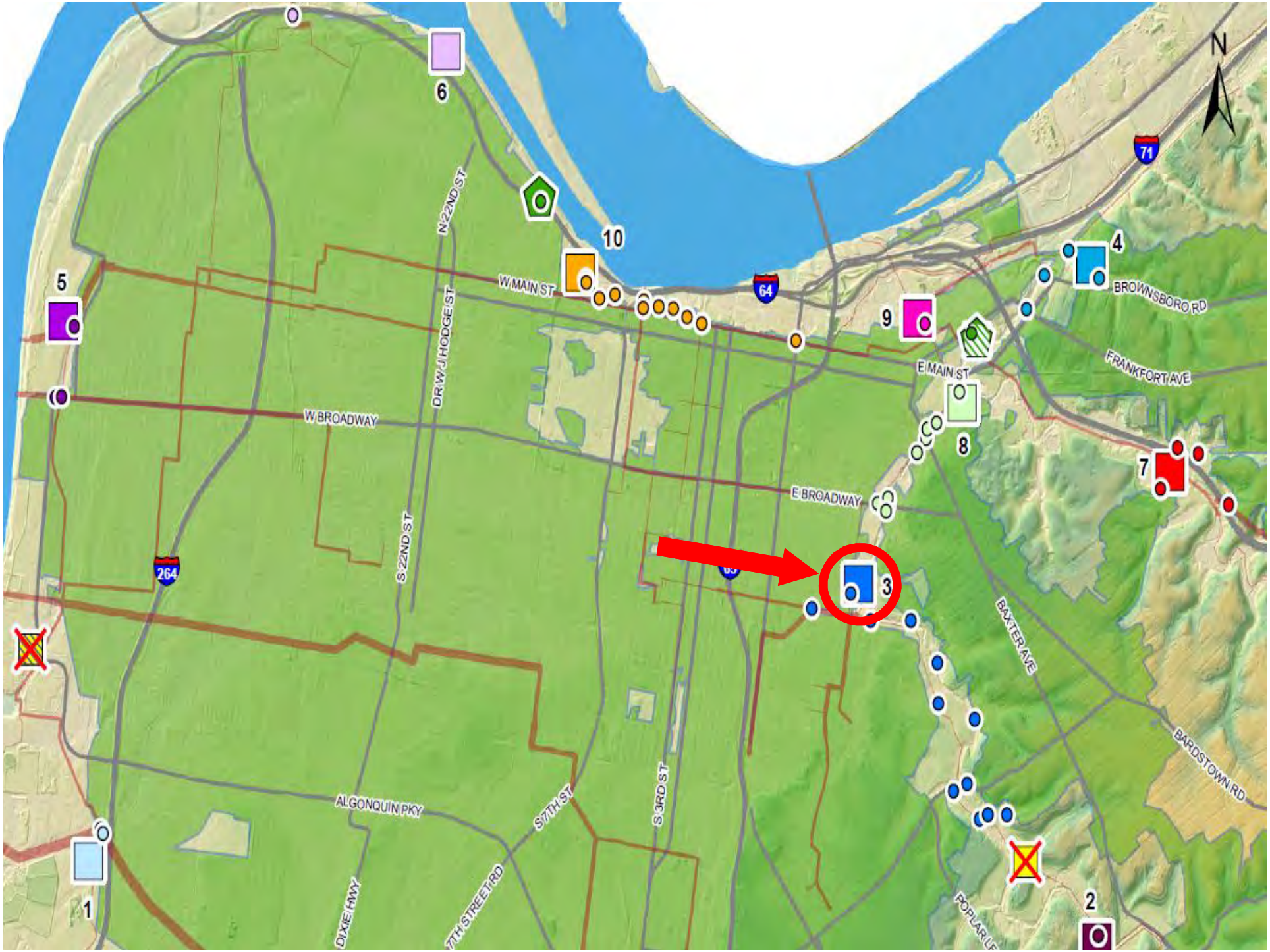
Phase 3
82,477 C.F. Captured

Phase 2
106,230 C.F. Captured

Stipend Partners
18,517 C.F. Captured

Significant Capital Project Overview | Project Spotlight

LOGAN STREET CSO BASIN & INTERCEPTOR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Logan Street CSO Basin & Interceptor

Project Background

- The original IOAP recommended an 12 MG Basin
- Revised project consists of 17 MG Basin
- Eight overflows per year in combined system
- The IOAP project completion deadline is December 31, 2017

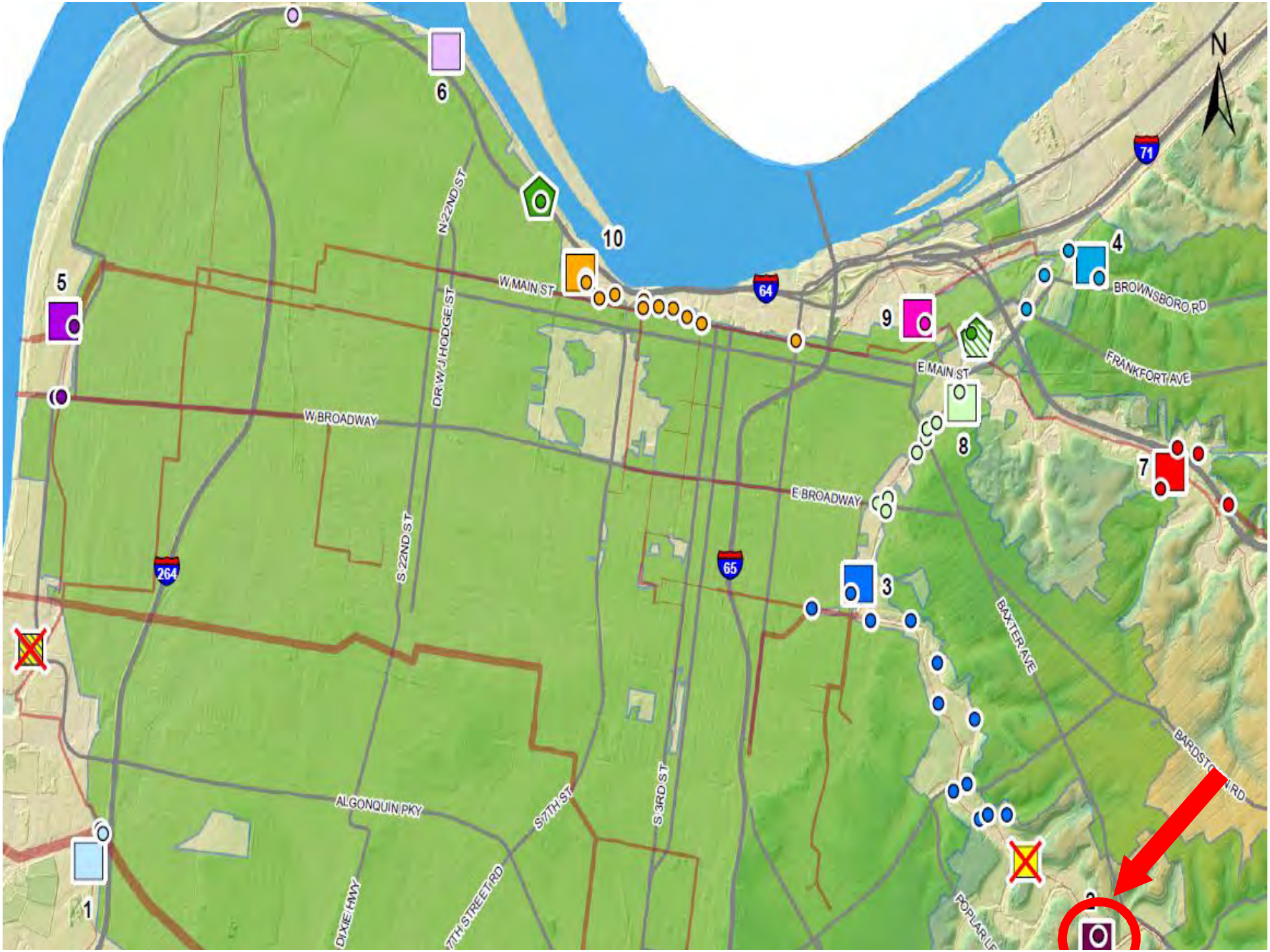
Logan Street CSO Basin & Interceptor

Project Schedule

- Interceptor Construction began February 2014
- Interceptor Final Completion expected December 2016
- Basin Construction began April 2015
- Basin Final Completion expected December 2017

Significant Capital Project Overview | Projects In Construction

NIGHTINGALE PUMP STATION & BASIN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Nightingale Pump Station & Basin

Project Background

- Addresses one (1) CSO:
  - overflow an average of 28 times per year, combined, approx. 155 MG per year
- Revised project consists of 8 MG Basin
- Zero overflows per year
- The IOAP project completion deadline is December 31, 2016

Significant Capital Project Overview | Projects In Construction

MUDDY FORK INTERCEPTOR SSO STORAGE BASIN


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Muddy Fork Interceptor SSO Storage Basin

Project Background

- 6 SSO's:
  - overflow an average of 21 times per year, combined, approx. 5 MG per year
- Revised project consists of 1.5 MG Basin
- Zero overflows per year in separate system
- The IOAP project completion deadline is December 31, 2016

Muddy Fork Interceptor SSO Storage Basin

Project Schedule

- Construction began May 2015
- Anticipated duration of construction is 18 months
- Final completion expected November 2016

Significant Capital Project Overview | Projects In Construction

GRAND AVENUE PUMP STATION


HEWITT PLACE CT
GRAND AVE
10335 GRAND AVE
BLUEBIRD LN
WATTERSON TRL
ELECTRON DR

Grand Avenue Pump Station

Project Schedule

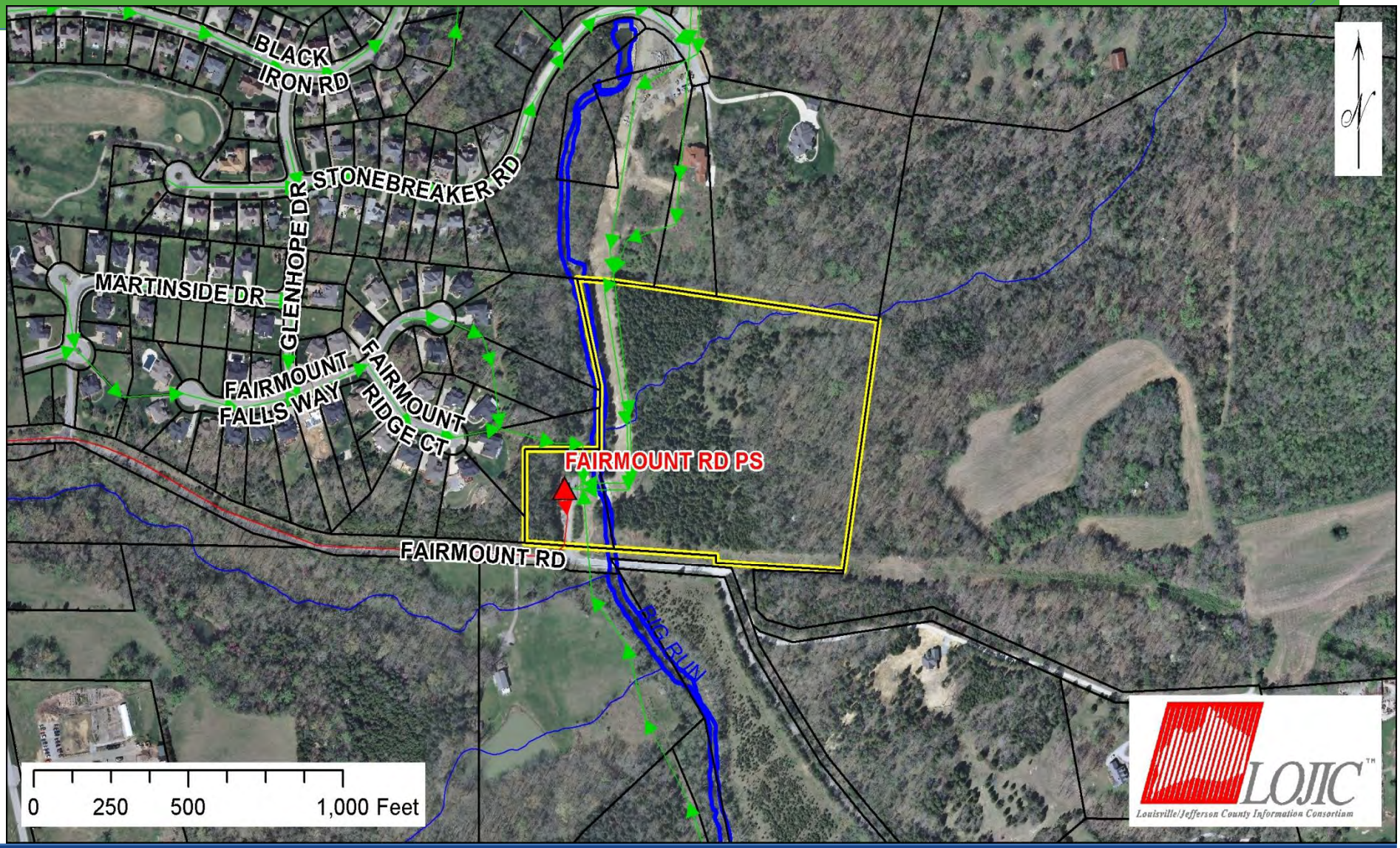
- Construction began December 2013
- Project certified December 23, 2016.
- Final completion expected Q1 2016

COMPLETE!

Jtown Eliminated

Significant Capital Project Overview | Projects In Construction

FAIRMOUNT ROAD PUMP STATION AND SANITARY SEWER OVERFLOW STORAGE BASIN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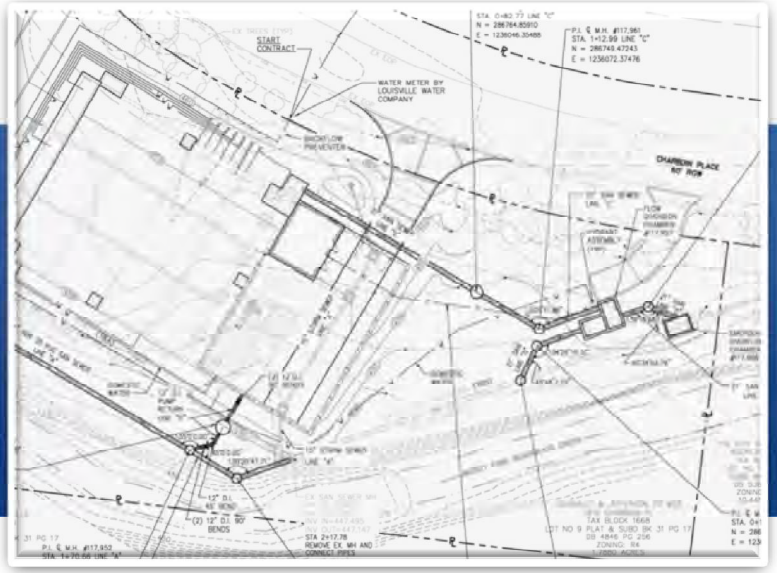
LOJIC
Louisville/Jefferson County Information Consortium

Fairmount Road PS and SSO Storage Basin

Construction Schedule

- Construction Started in July of 2014
- MSD accepted major equipment.
- MSD using basin.
- Construction to be certified by March 31, 2016.

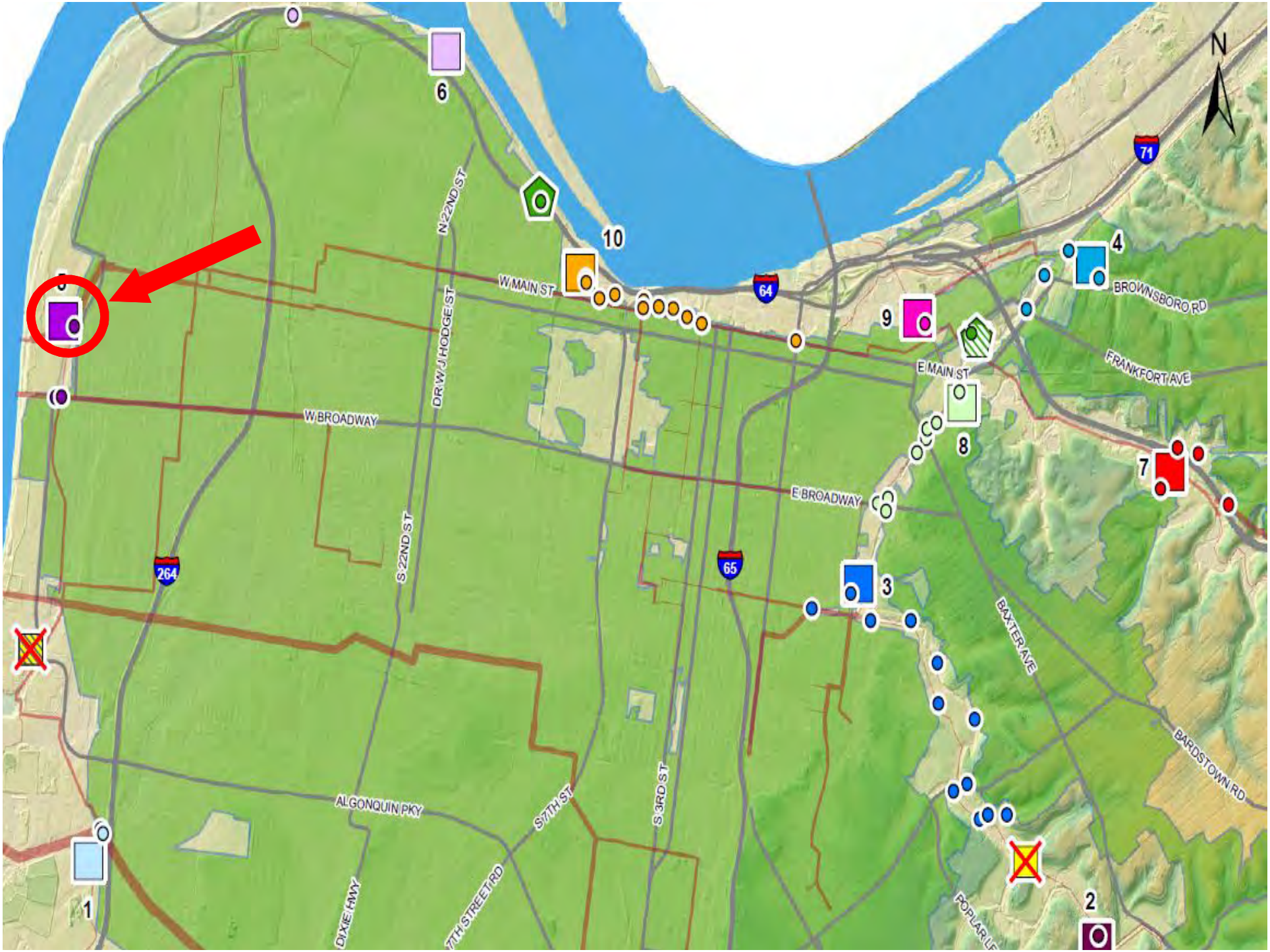


PROJECTS IN DESIGN

Significant Capital Project Overview

Significant Capital Project Overview | Projects In Design

SOUTHWESTERN PARKWAY CSO BASIN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Southwestern Parkway CSO Basin

Project Background

- Updated flow monitoring increased the size to a 20 Million Gallon Storage Basin providing a level of control of eight (8) overflows during the typical year.
  - Revised basin size and Level of Control approved by EPA.
- Progressive Design-Build procurement selected.
- The Advanced Design Meeting for this project has not been scheduled, but is planned for Q3 2016.
- Easement acquisition in negotiations
- Construction start estimated Q3 2016 or sooner.
- The IOAP project completion deadline is December 31, 2018.

Southwestern Parkway CSO Basin

Project & Public Meeting Schedule

September 24, 2013 – IOAP Public Input Meeting

March 10, 2015 – Neighborhood Orientation Meeting

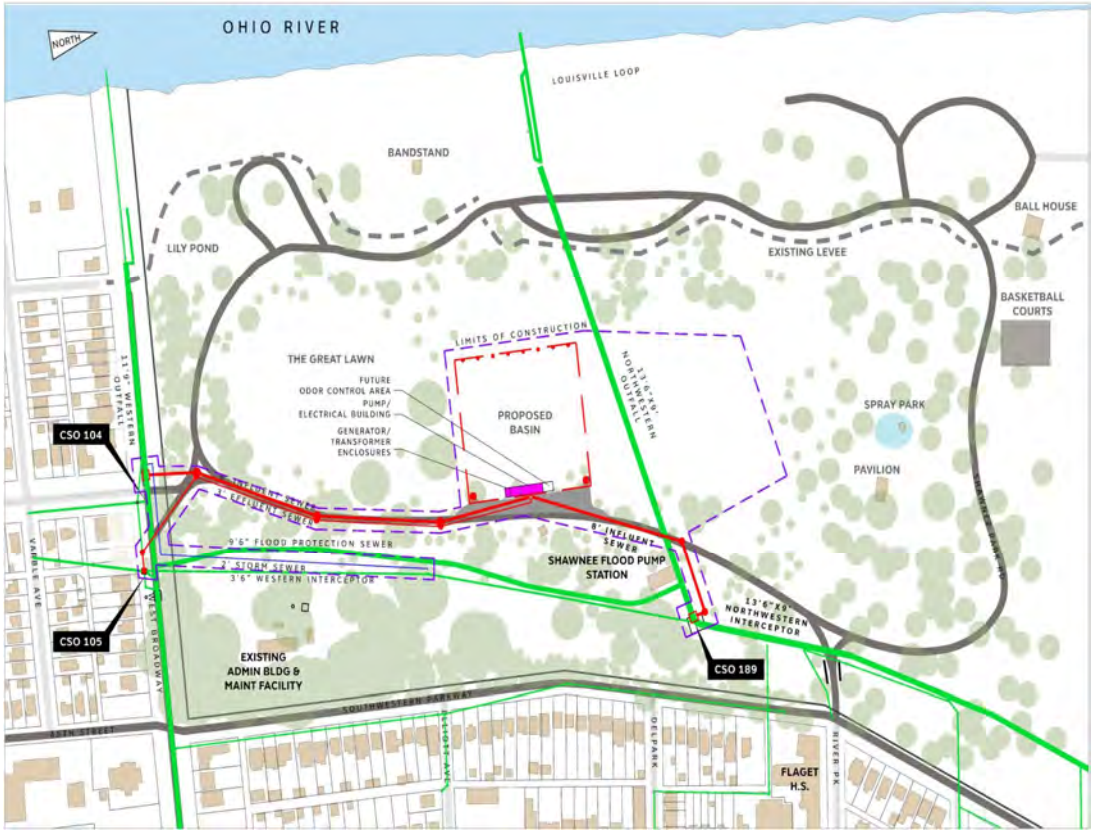
March 23, 2015 – Conceptual Design Public Information Meeting #1

October 19, 2015 – Met with Councilwoman Bryant Hamilton and Residents

November 12, 2015 – Conceptual Design Public Information Meeting #2

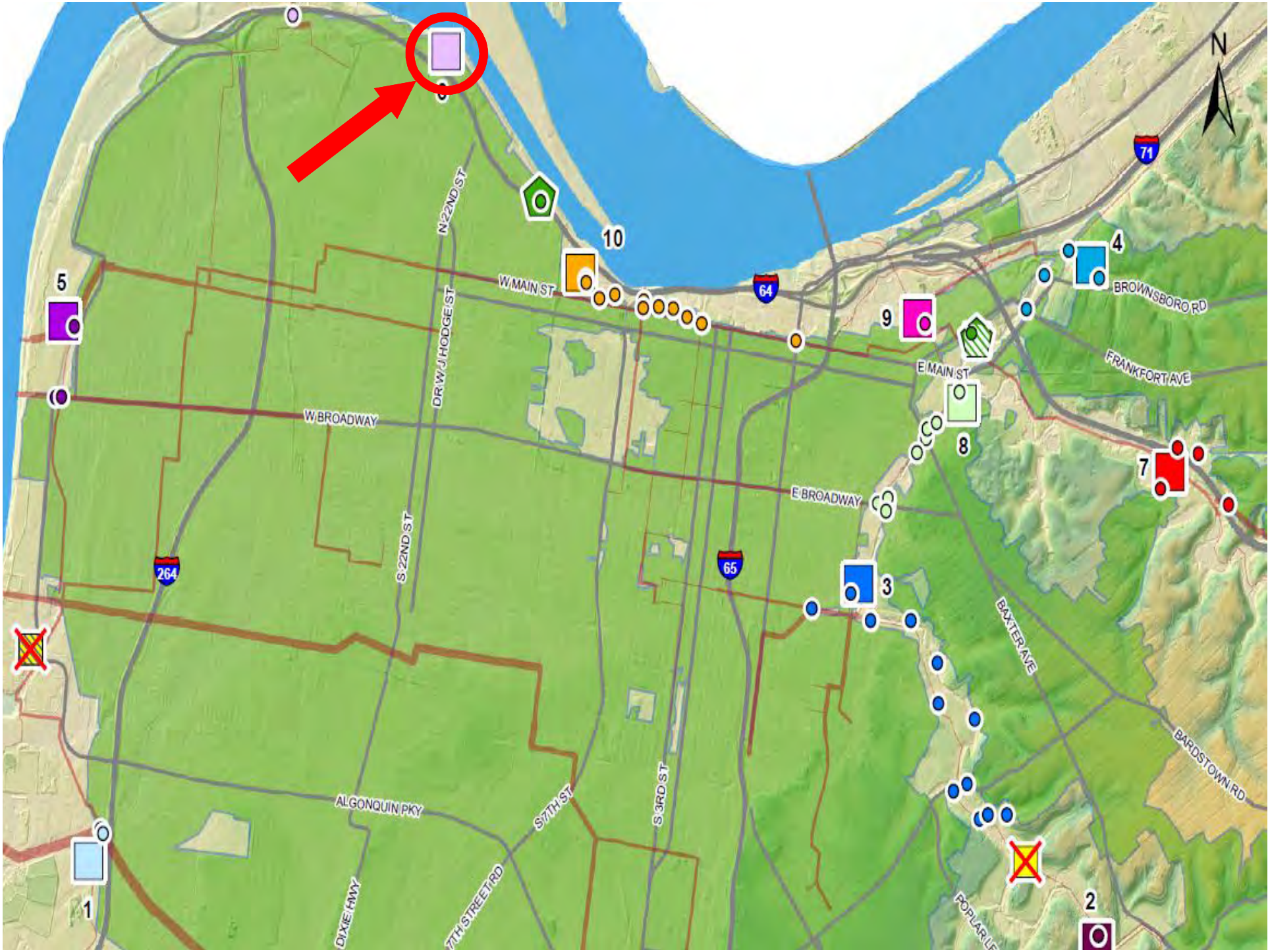
December 14, 2015 – Conceptual Design Public Information Meeting #3

February 11, 2016 – Met with Shawnee Neighborhood Association



Significant Capital Project Overview | Projects In Design

PORTLAND CSO STORAGE BASIN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Portland CSO Basin

Project Background

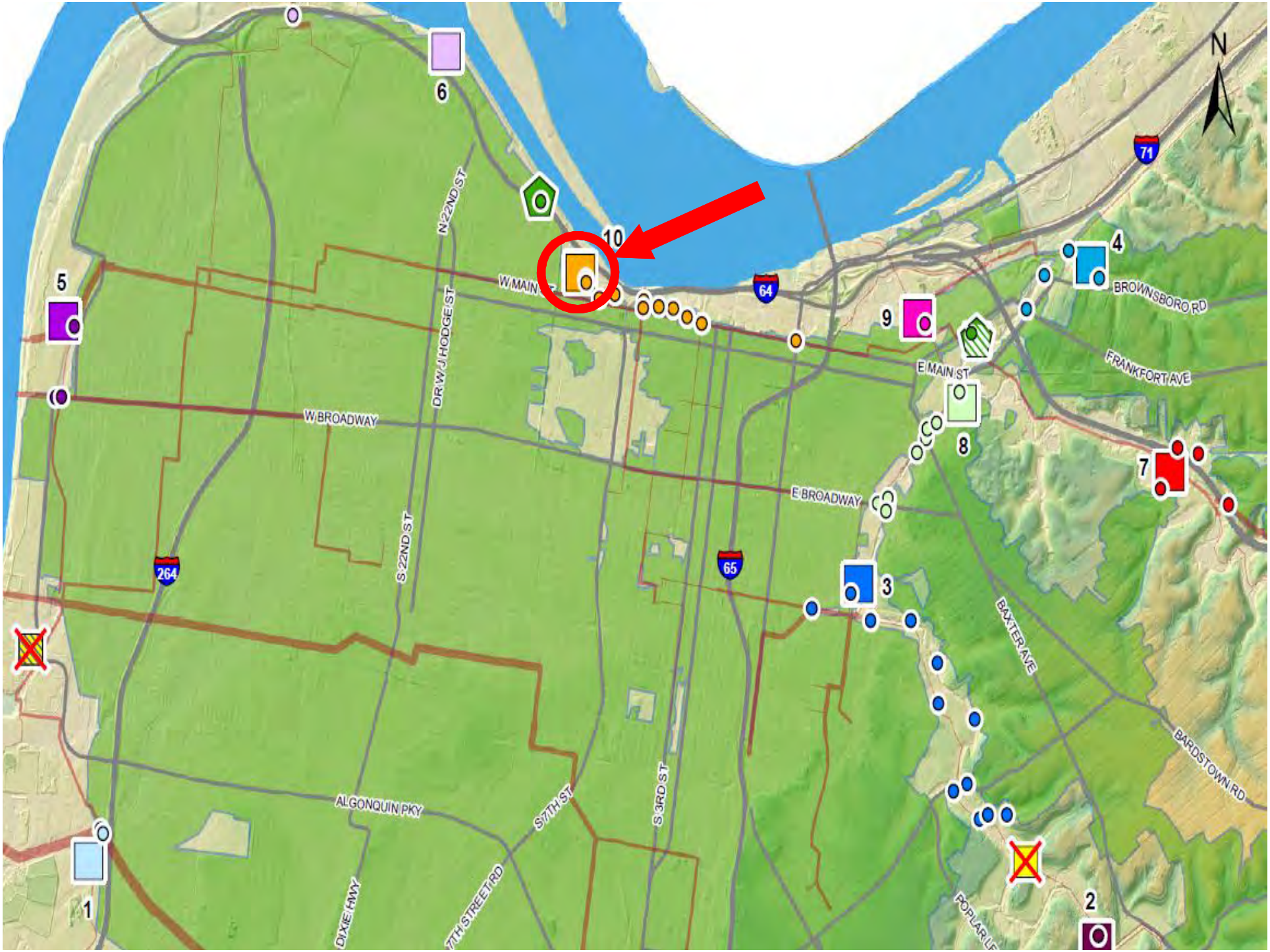
- CSO 019 currently overflows an average of 43 times per year, combined, producing approximately 58 MG per year.
- Update flow monitoring information obtained in Feb 2015 increased the size to 7 Million Gallons. .
- MSD is in the 10% Design Phase of this project with Heritage.
- The Advanced (IOAP) Meeting for this project has not been scheduled, but is planned for June 2016.
- Easement acquisition in negotiations
- The IOAP project completion deadline is December 31, 2019.

Portland CSO Basin

December 19, 2014 – Meeting with Metro Public Works
January 13, 2015 - Meeting with Metro Parks & Recreation
January 26, 2015 - Meeting Councilwomen Hamilton's District 5
February 9, 2015 - Orientation Public Information Meeting
February 12, 2015 - Meeting with Metro Parks & Recreation
March 3, 2015 - Meeting with Portland NOW
April 16, 2015 - Meeting with Metro Parks & Recreation
May 5, 2015 - Meeting with Portland NOW
June 3, 2015 - Meeting with Metro Parks & Recreation
November 11, 2015 - Meeting with Councilwomen Hamilton
December 1, 2015 - Meeting with Portland NOW
December 22, 2015 - Meeting with Metro Parks & Recreation
January 18, 2016 - Meeting with Metro Parks & Recreation
January 26, 2016 - Conceptual Design Public Information Meeting

Significant Capital Project Overview | Projects In Design

13TH & ROWAN CSO BASIN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13th & Rowan CSO Basin

Project Background

- 12 CSO's addressed overflow an average of 294 times per year, combined, producing approximately 129 MG per year.
- Updated flow monitoring increased the size to a 10 Million Gallon Storage Basin providing a level of control of eight (8) overflows during the typical year.
- MSD is in the 10% Design Phase of this project with Black & Veatch.
- The Orientation (IOAP) Meeting for this project has not been scheduled, but is planned for Q3 2016.
- Property acquisition in negotiations
- The IOAP project completion deadline is December 31, 2020.

13th & Rowan CSO Basin

Project & Public Meeting Schedule

January 5, 2016 - Meeting with Councilman Tandy

June 2016 – IOAP Public Input Meeting

Significant Capital Project Overview | Projects In Design

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Story and Main CSO Basin

Project Background

- 2 CSO's addressed with this project overflow an average of 51 times per year, combined, - approximately 436 MG per year.
- Updated flow monitoring increased the size to a 8 Million Gallon Storage Basin providing a level of control of eight (8) overflows during the typical year.
- Currently, MSD is in the 10% Design Phase of this project with HDR Engineering.
- Property acquired, awaiting closing.
- The Advanced Design (IOAP) Meeting planned for Q3 2016.
- The IOAP project completion deadline is December 31, 2020.

Story and Main CSO Basin

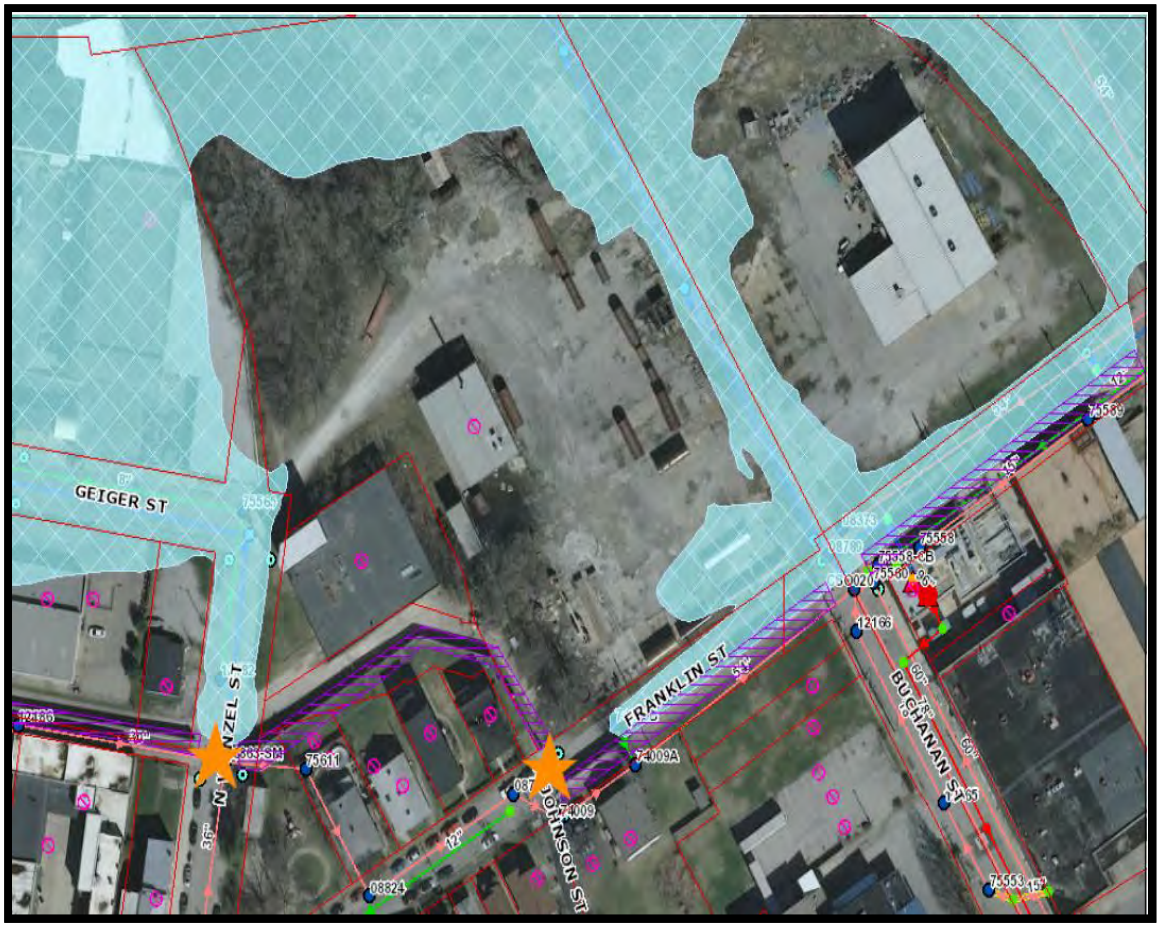
Project & Public Meeting Schedule

June 16, 2015 – IOAP Public Input Meeting

February 10, 2016 – Conceptual Design Meeting

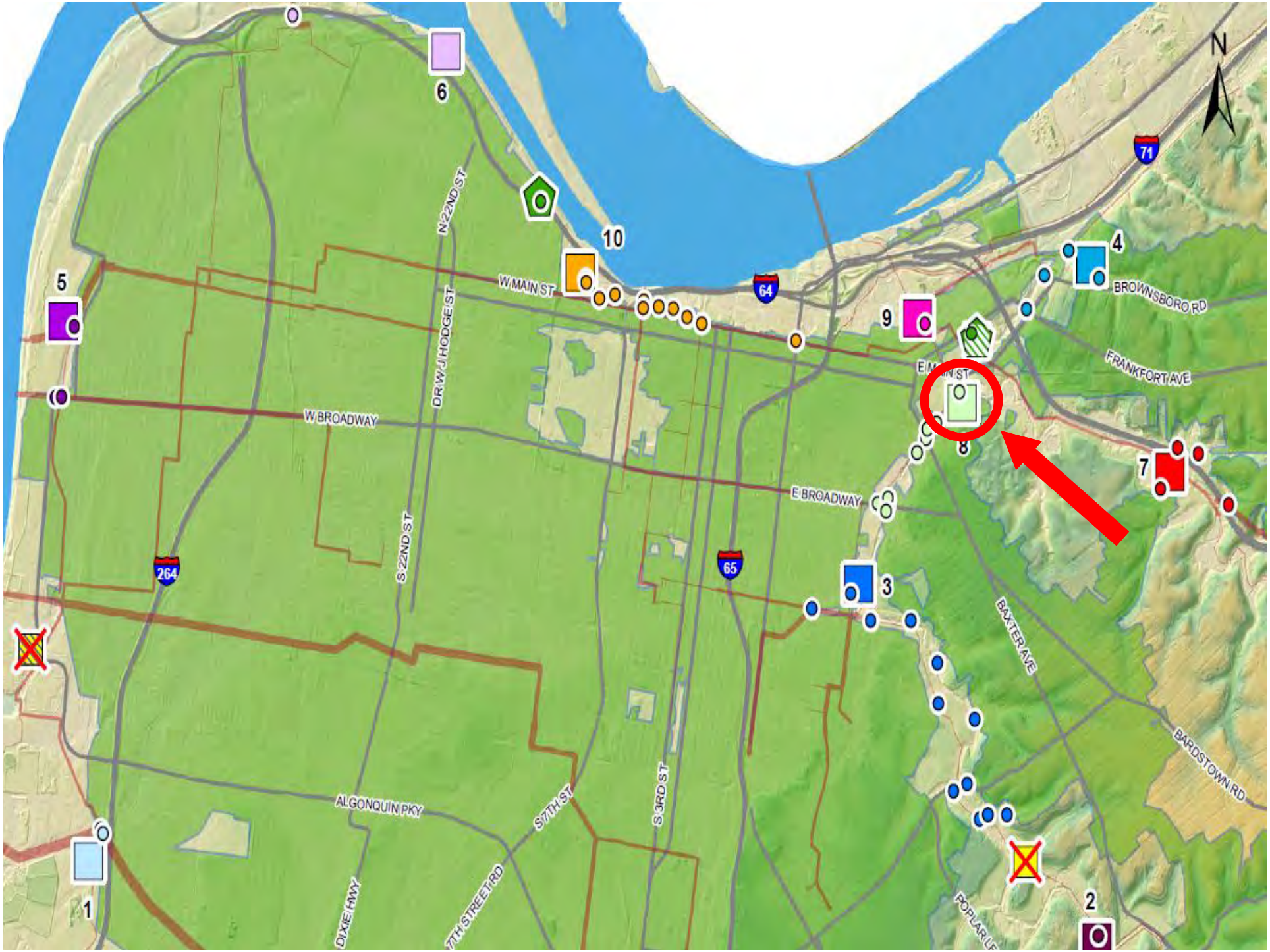
March 8, 2016 – Meet with area business stakeholder (More meetings to follow)

July 25, 2016 – Advanced Design (*tentatively scheduled for this date)*



Significant Capital Project Overview | Projects In Design

LEXINGTON & PAYNE CSO BASIN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Lexington & Payne CSO Basin

Project Background

- 9 CSO's overflow an average of 380 times per year, combined, producing approximately 211 MG per year.
- Updated flow monitoring increased the size to a 14 Million Gallon Storage Basin providing a level of control of zero (0) overflows during the typical year.
- MSD is in the 10% Design Phase of this project with Hazen and Sawyer.
- The Conceptual Design Meeting for this project has not been scheduled, but is planned for Q2 2016.
- Property acquisition in negotiations
- The IOAP project completion deadline is December 31, 2020.

Lexington & Payne CSO Basin

Project & Public Meeting Schedule

November 16, 2015 – Met with Councilman Hollander

January 5, 2016 – Met with Council President Tandy

January 19, 2016 – Orientation Public Information Meeting

April 26, 2016 – *Conceptual Design Public Information Meeting (tentatively scheduled for this date)*

Significant Capital Project Overview | Projects In Design

CLIFTON HEIGHTS CSO BASIN


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Clifton Heights CSO Basin

Project Background

- 5 CSO's overflow an average of 195 times per year, combined, producing approximately 120 MG per year.
- Updated flow monitoring increased the size to a 7.00 Million Gallon Storage Basin providing a level of control of four (4) overflows during the typical year.
- Currently, MSD is advertising the project for construction.
- Construction anticipated start June 2016.
- The IOAP project completion deadline is December 31, 2018.

Clifton Heights CSO Basin

Project & Public Meeting Schedule

September 15, 2015-IOAP Public Input Meeting

April 20, 2015 – Met with Councilman Bill Hollander

May 19, 2015 – Conceptual Design Public Meeting

May 26, 2016- Pardon Our Dust Meeting*(tentatively scheduled for this date)*

Significant Capital Project Overview | Projects In Design

I-64 & GRINSTEAD DRIVE CSO BASIN


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I-64 & Grinstead Drive CSO Basin

Project Background

- 4 CSO's addressed with this project currently overflow an average of 149 times per year, combined, producing approximately 93 MG per year.
- Updated flow monitoring increased the size to a 15 Million Gallon Storage Basin providing a level of control of four (4) overflows during the typical year.
- MSD is in the 30% Design Phase with QK4 Engineers.
- The Advanced Design Meeting for this project has not been scheduled, but is planned for Q2 2016.
- Easement acquisition in negotiations
- The IOAP project completion deadline is December 31, 2020.

I-64 & Grinstead Drive CSO Basin

Project & Public Meeting Schedule

September 24, 2013 – IOAP Public Input Meeting

March 10, 2015 – Neighborhood Orientation Meeting

March 23, 2015 – Conceptual Design Public Information Meeting #1

October 19, 2015 – Met with Councilwoman Bryant Hamilton and Residents

November 12, 2015 – Conceptual Design Public Information Meeting #2

December 14, 2015 – Conceptual Design Public Information Meeting #3

February 11, 2016 – Met with Shawnee Neighborhood Association

QUESTIONS/COMMENTS????

MSD
Metropolitan Sewer District

20-Year Comprehensive Facility Plan Stormwater & Drainage

Wet Weather Team

Stakeholder Group

March 22, 2016

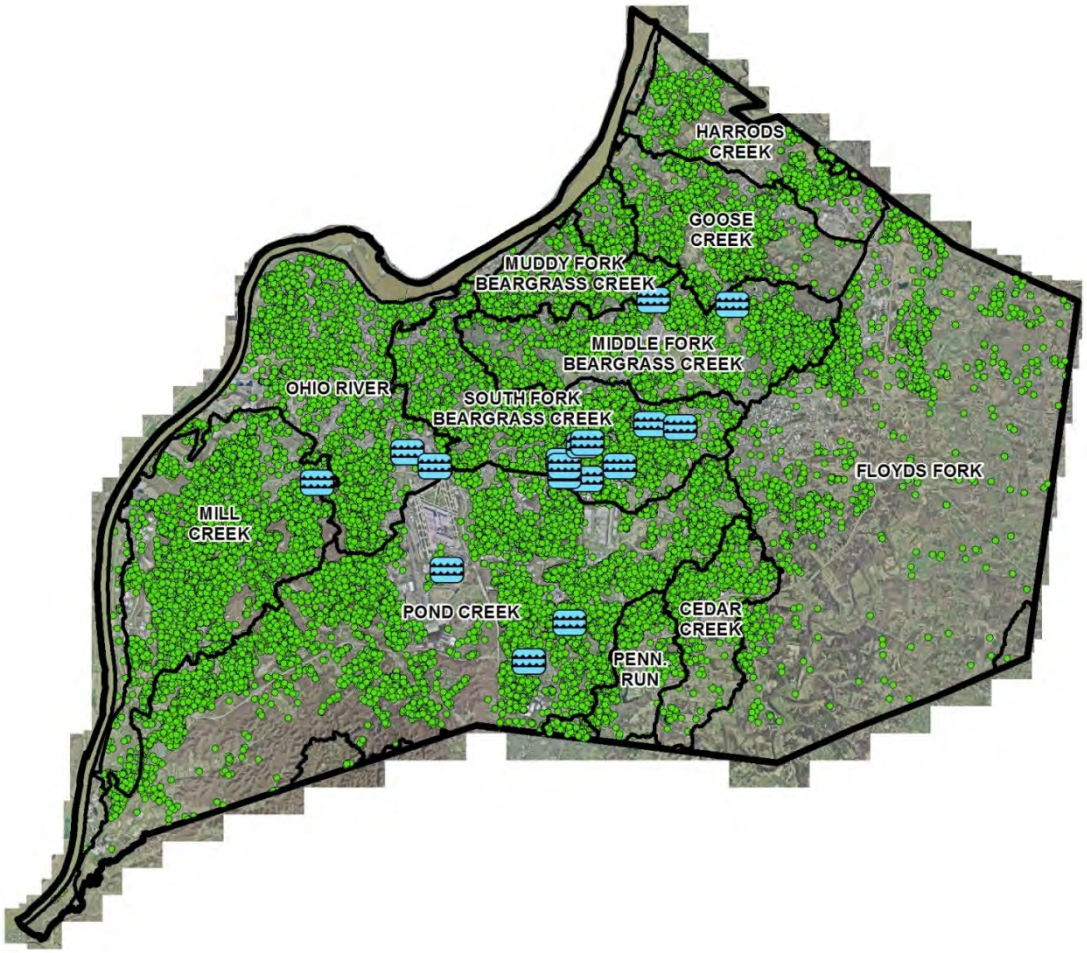
Stormwater Discussion Topics

Vision of Final Product

- Recommended projects to be prioritized
- Recommended budgetary items
- Recommended policy changes

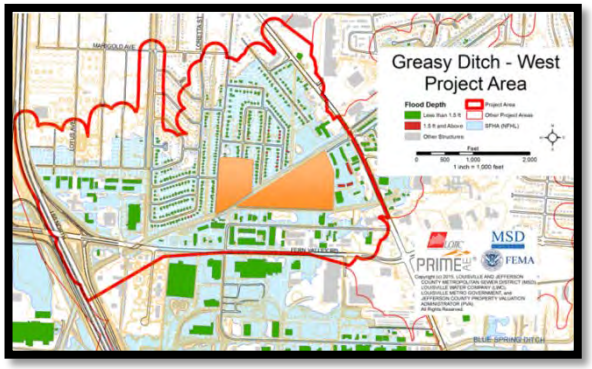
A Look Back

- MSD has invested $170 million in capital improvements as part of the drainage response initiative (DRI) initiated in 2003
- 17 regional flood basins constructed – with more than one billion gallons of storage constructed since 1997



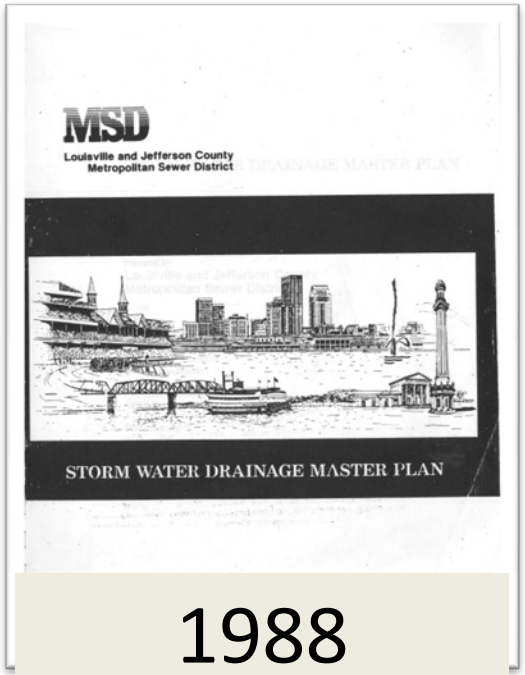
Recommended Projects

- Flood mitigation & prioritization report
  - Did not identify any feasible structural or nonstructural projects for floodplain mitigation. (Nearly all acquisitions)
- Basin retrofit projects
  - Promote infiltration & improve water quality to 8 regional basins.
- Viaduct flood relief projects
  - Very broad planning effort for viaducts to establish long term budgets.
  - Preliminary design effort needed for individual locations.
- *Gap identified*
  - Comprehensive watershed / neighborhood drainage plan



Future Stormwater Capital Program

- Need to develop comprehensive storm water plan study for entire county to develop stormwater capital program
  - Identify needs based on 10-year return intervals (10% annual occurrence).
  - Incorporate green infrastructure where practical and feasible.



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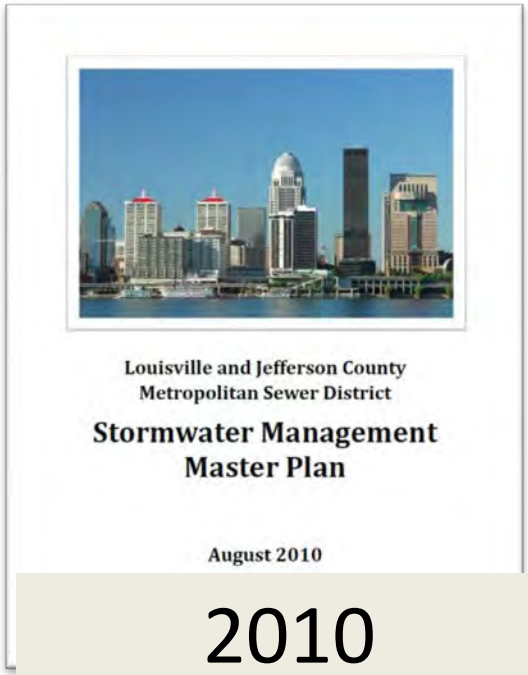
Numerous Capital Projects



2010

Watershed Summaries & DRI Projects

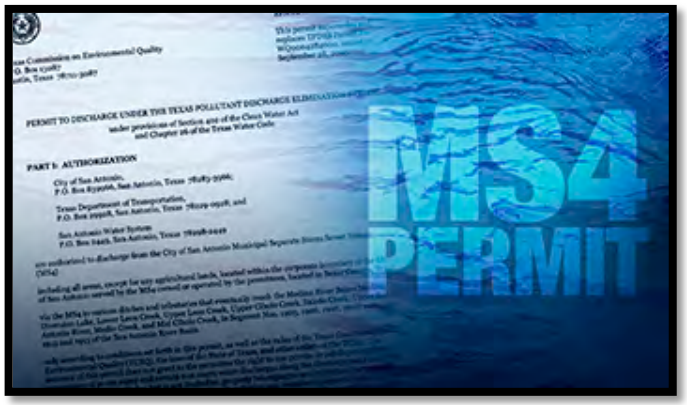
2016/2017

Future

Will Recommend Capital Projects

Recommended Budget Items

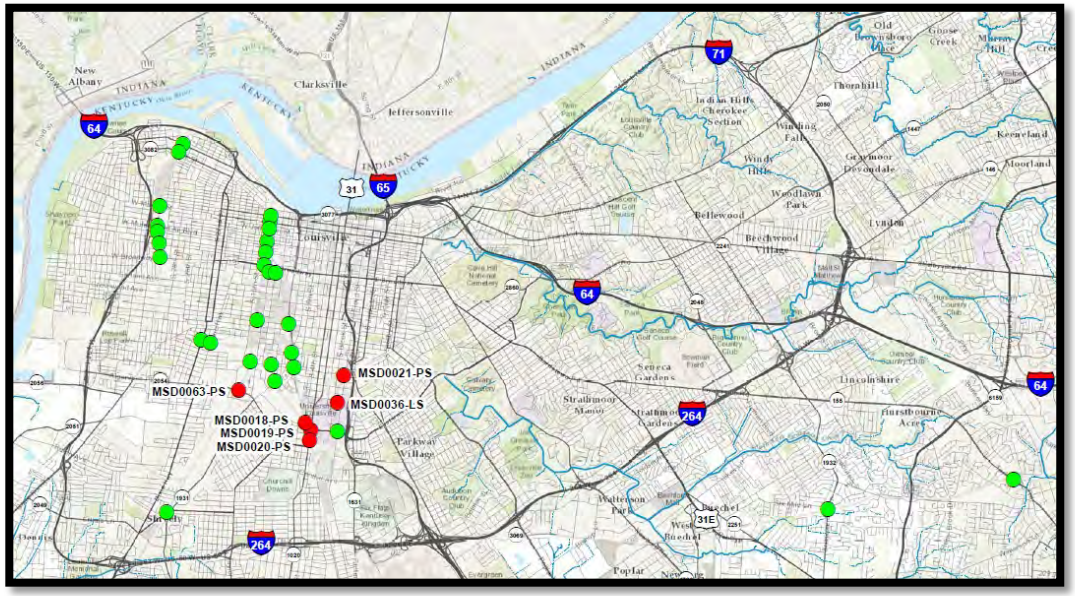
- Drainage response initiative (DRI)
  - Important component of the stormwater service area
  - Continue to fund ~ $5 million/year
- Floodplain buy out “rainy day” fund
  - Minimum $4 million annually
  - Used for for FEMA grant coordination, grant local share contributions, and post-event quick buys and flood proofing
- Future MS4 regulations
  - 1 to 5 years: $2.1 million annual cost
  - 5 to 20 years: $7.6 million annual cost



Viaducts Flooding Solutions

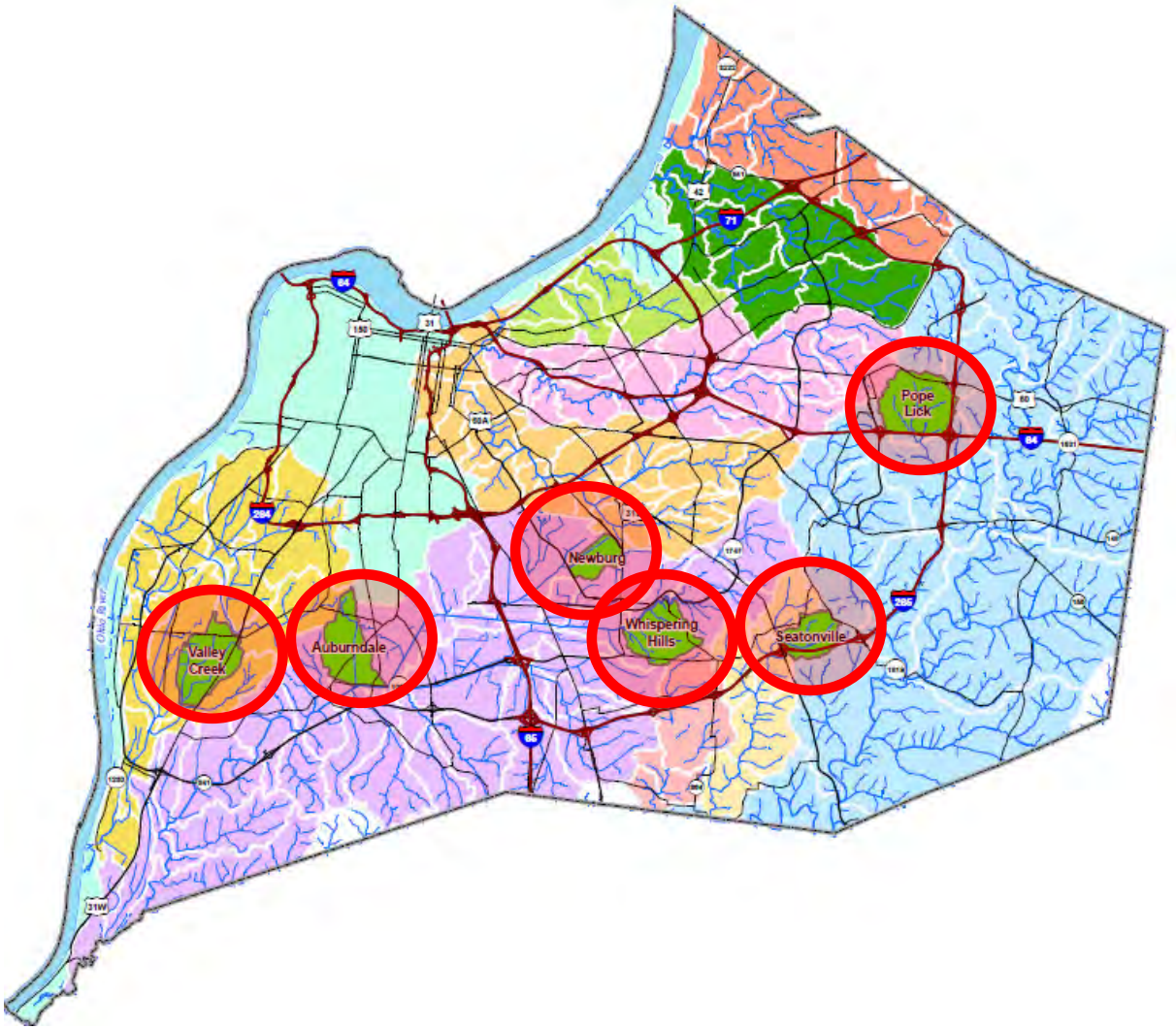
- Pump excess stormwater to storage facility (similar to CSO elimination projects)
- Pump or drain by gravity back into the System once storm has passed.
- Total Cost
  - 25 YR LOS: ~ $254M
  - 100 YR LOS: ~ $317M
- Need to perform Preliminary Engineering & Feasibility Study for each specific Site

34 Total Viaducts



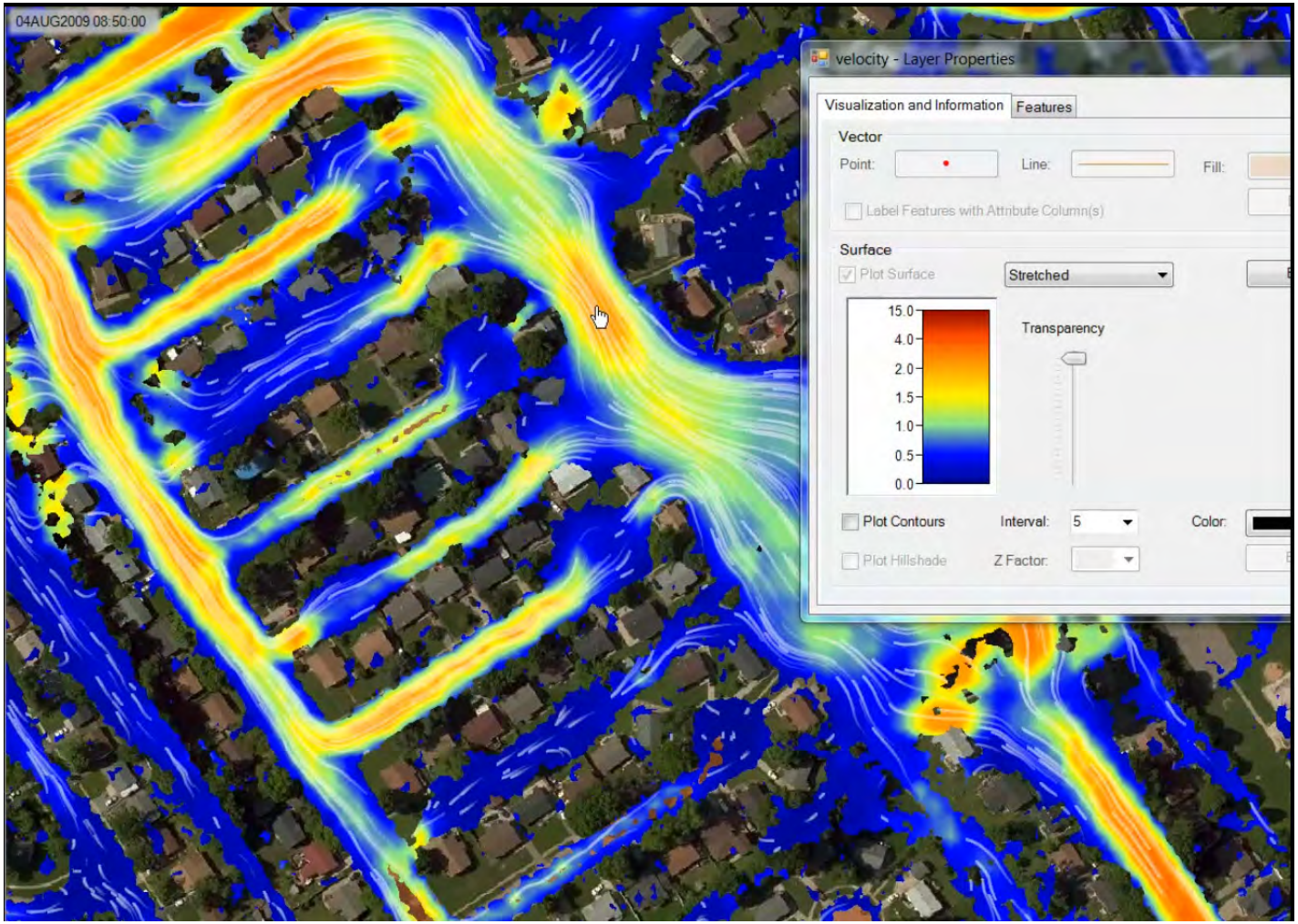
Extreme Storm Events

- Extreme storm evaluations
  - Modeled 6 pilot areas
- Selected areas outside of mapped floodplains
- Goal was to identify cost to protect against “extreme” rainfall
- Useful for public communication tool



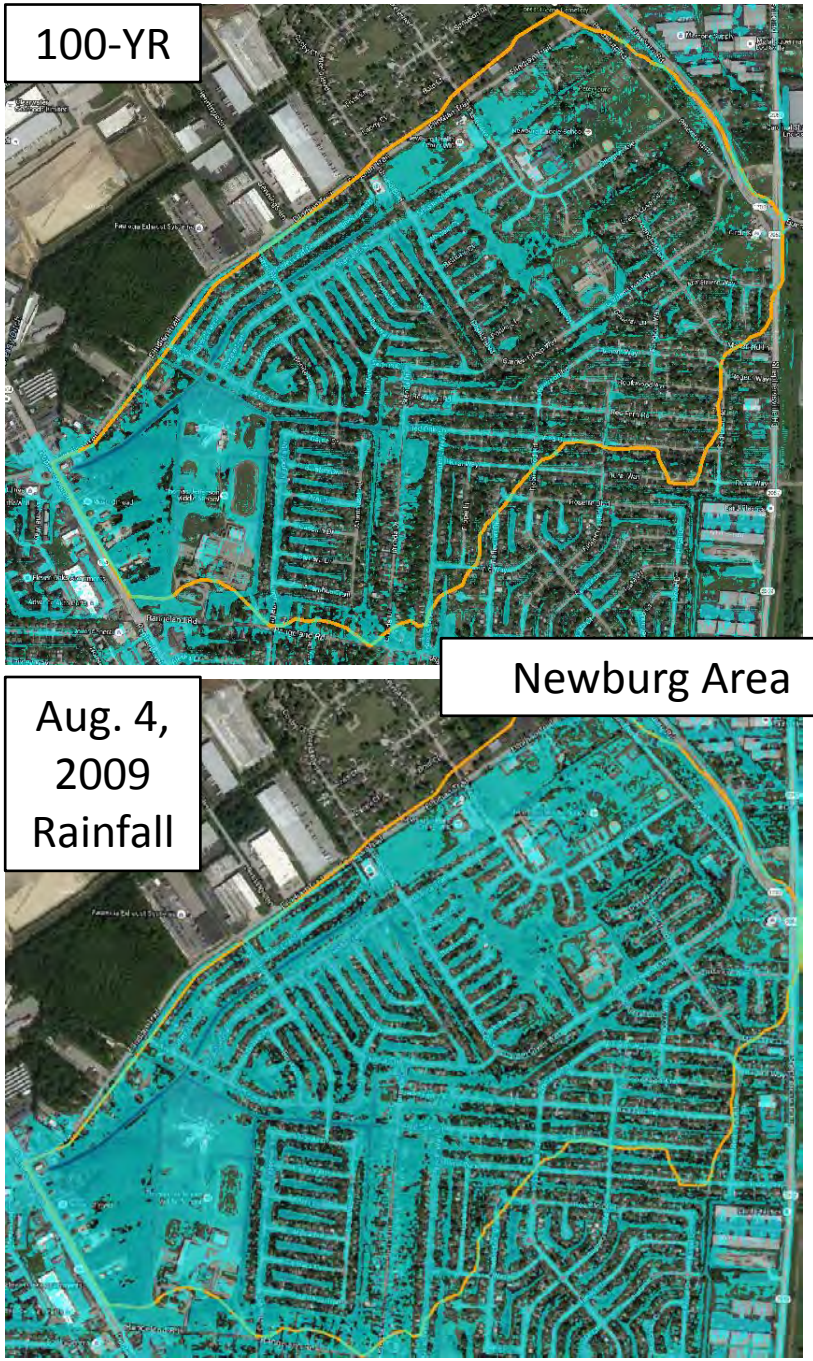
Extreme Storm Events

- Modeled august 4, 2009 rainfall over each area
- Advances in computer modeling allows us to see “where the water goes”



Extreme Storm Events

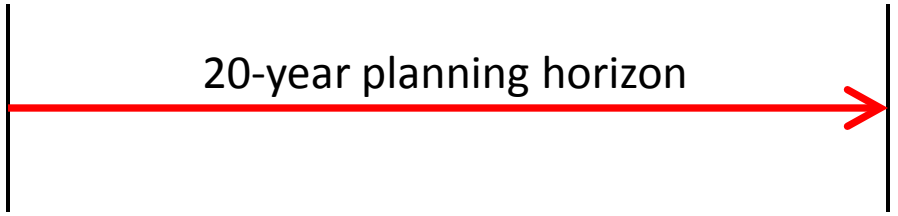
- Solutions include
  - Large storage & conveyance upgrades
  - Acquisitions for storage basins
- Newburg area $57 million
- Total county wide cost estimate (for >100-year storm): **$13 billion**



Recommended Policy Changes

- Recommend Policy Changes
  - Change the rainfall depths that are currently being used for design and floodplain calculations
  - Review rainfall data at least once every 10 years and make changes as necessary

24-Hour Rainfall Depths (inches)					
Returned Period (Years)	MSD Design Manual (TP-40, 1979)	NOAA Atlas 14 (through 2000)	Updated NOAA Atlas 14 (through 2014)	2035 Projection	2065 Projection
10	4.5	4.45	4.82	5.1	5.3
100	6.2	6.93	7.81	8.4	9.1

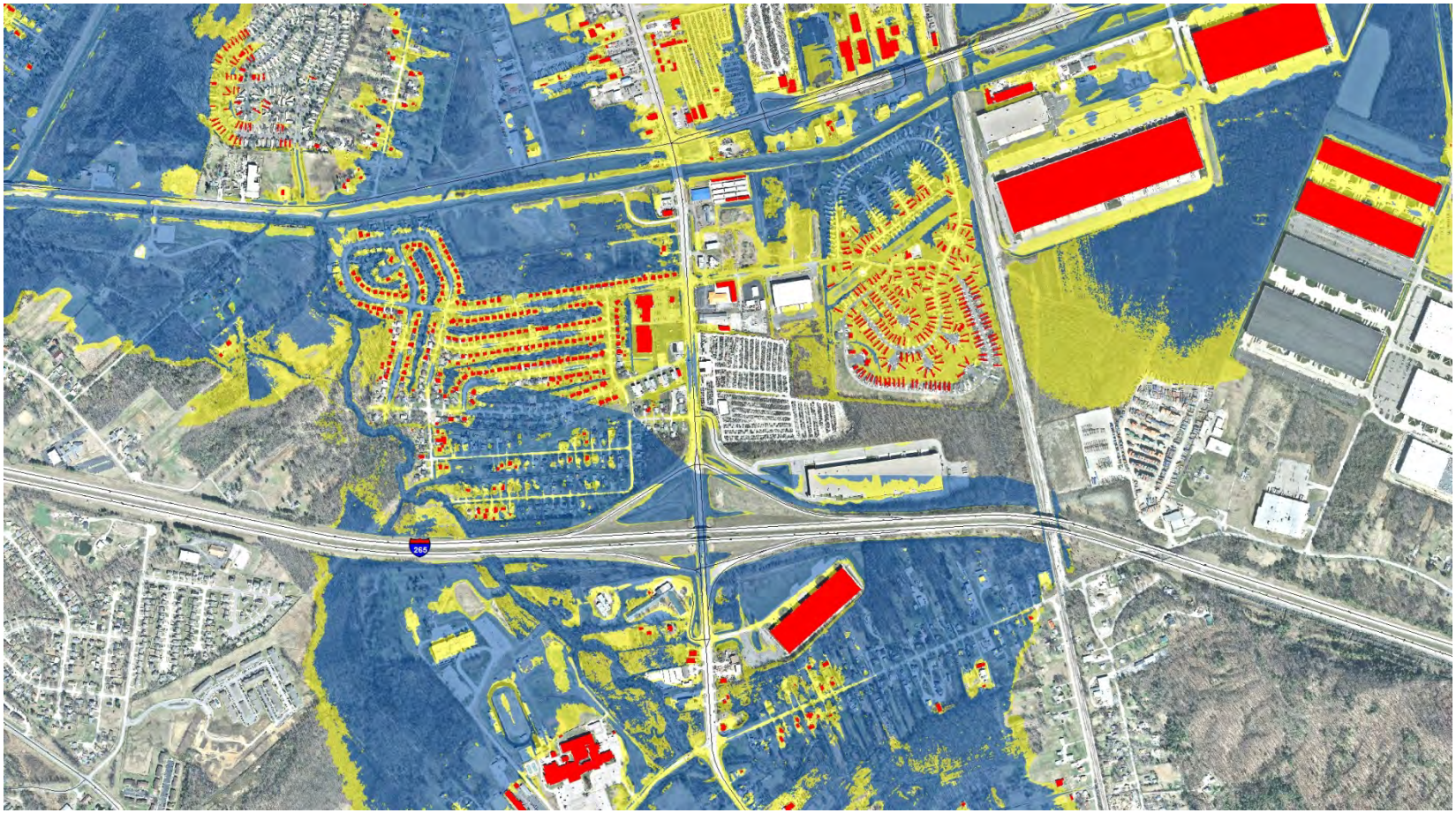


What we are using

What we need to be using

Recommended Policy Changes

- Floodplain Mapping
  - Redefine the Local Regulatory Flood (LRF) to incorporate 2035 rainfall.
  - Consider Increasing freeboard requirement to 2’ above LRF for new development



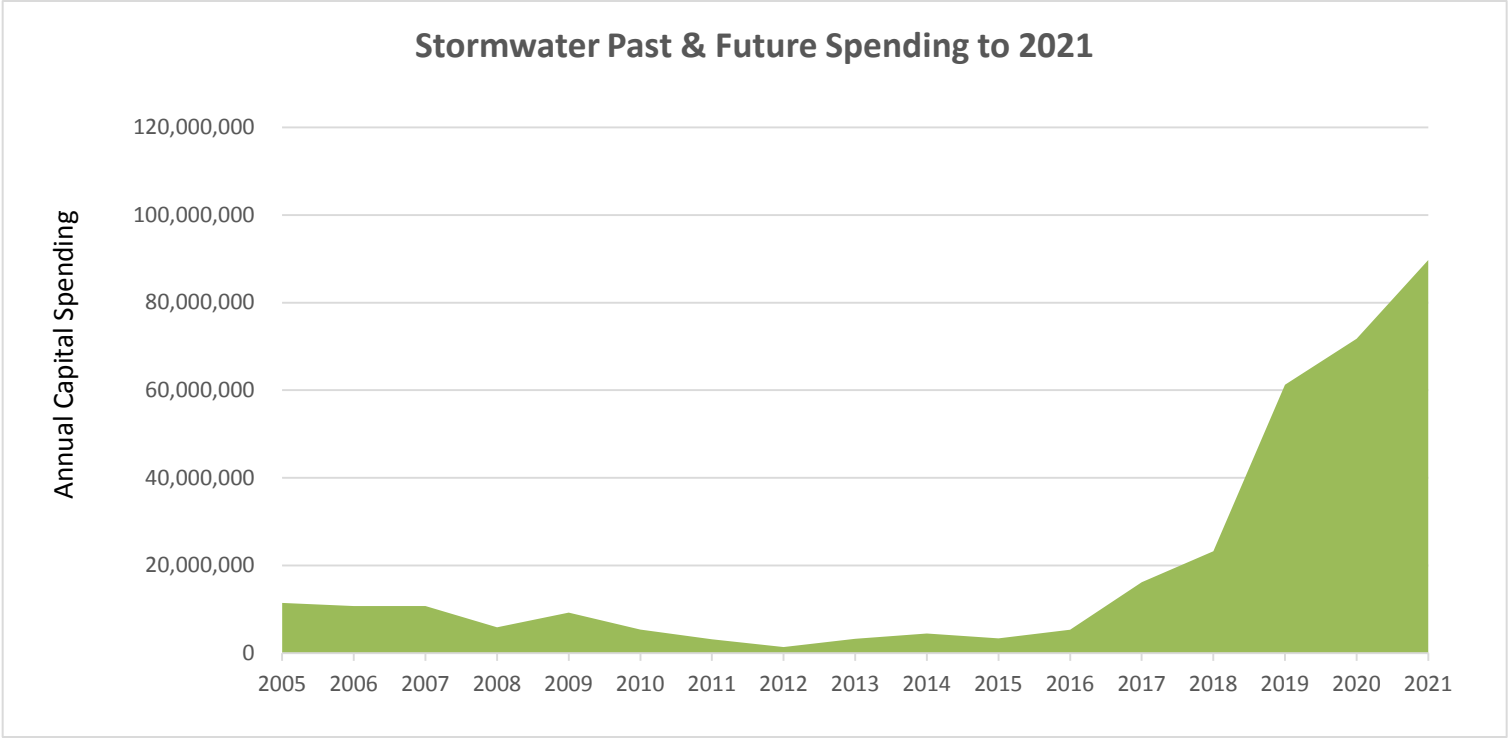
Stormwater Summary

FUNDING

- DRI - $5 million/year
- Floodplain buyout fund - $4 million/year
- Viaducts: $320 million total
- New capital program – $250 million – $1 billion (*planning level cost still being calculated*)

POLICY

- Update rainfall
- Update floodmaps



MSD
Metropolitan Sewer District

20-Year Comprehensive Facility Plan
Ohio River Flood Protection System
Service Area

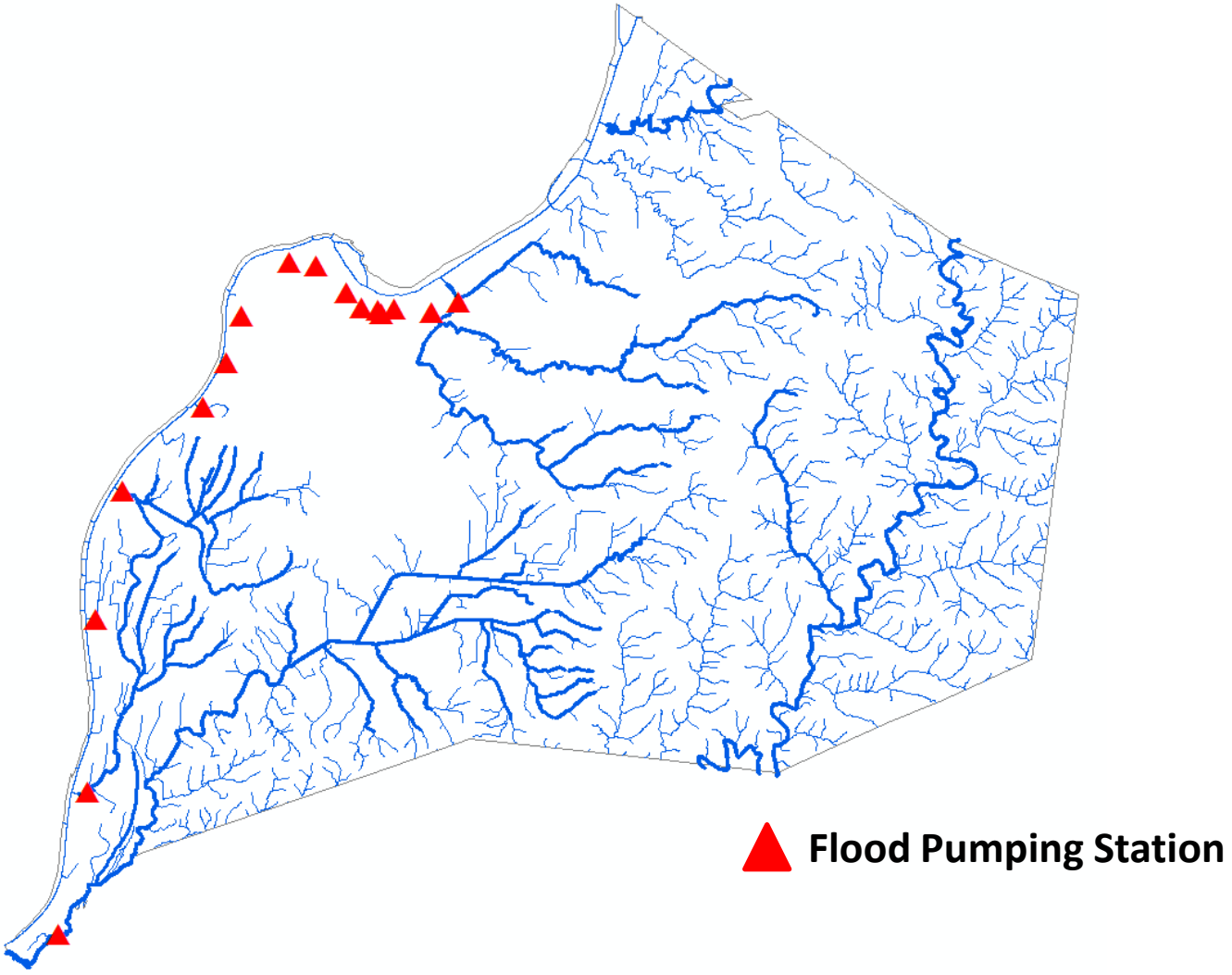
Wet Weather Team

Stakeholder Group

March 22, 2016

Draft

Stormwater System Should Convey 10-Year Storm to Pump Stations



Flood Protection System is Critical when Needed

Louisville, Kentucky
January 27, 1937

New Orleans, Louisiana
August 30, 2005

Floodwall and Levee Projects Maintain System Integrity

- Repair/replace gates, closures, and panels
- Maintain the levee free of encroachments and settlement
- Improve the efficiency of installing closures
- Comprehensive risk assessment to identify most critical areas
- Preliminary potential costs: $45 million (over 20 years)

Flood Pumping Station Improvement Projects (2035 10-year storm)

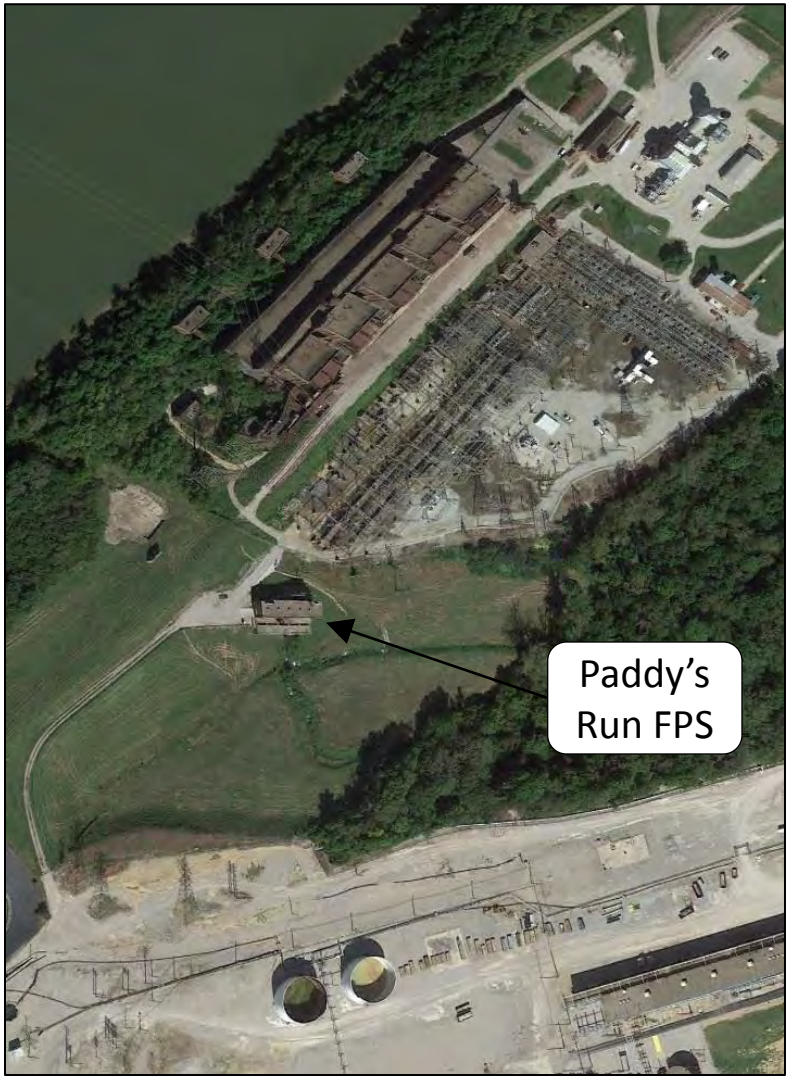
Flood Pumping Station	Minor Upgrades	Rehab to Current Capacity	Rehab and Expand Capacity	Add Secondary Power
Beargrass Creek			X	
Robert J. Starkey	X			
Bingham Way			X	X
4th Street			X	X
5th Street		X		X
10th Street		X		X
17th Street			X	X
27th Street			X	X
34th Street		X		
Shawnee Park			X	X
Western Parkway			X	
Paddy's Run			X	X
Upper Mill Creek			X	X
Riverport		X		X
Lower Mill Creek		X		X
Pond Creek		X		X

Flood Pumping Station Improvement Projects (2035 10-year storm)

Flood Pumping Station	Minor Upgrades	Rehab to Current Capacity	Rehab and Expand Capacity	Add Secondary Power
Beargrass Creek			X	
Robert J. Starkey	X			
Bingham Way			X	X
4th Street			X	X
5th Street		X		X
10th Street		X		X
17th Street			X	X
27th Street			X	X
34th Street		X		
Shawnee Park			X	X
Western Parkway			X	
Paddy's Run			X	X
Upper Mill Creek			X	X
Riverport		X		X
Lower Mill Creek		X		X
Pond Creek		X		X

Paddy's Run FPS
Possible Improvements

- Double capacity
  - 925 MGD -> 1,900 MGD
- Replace 1950s technology
  - Electronics and controls
- Accessibility
  - No direct access
- Utilities
  - No sewer or potable water

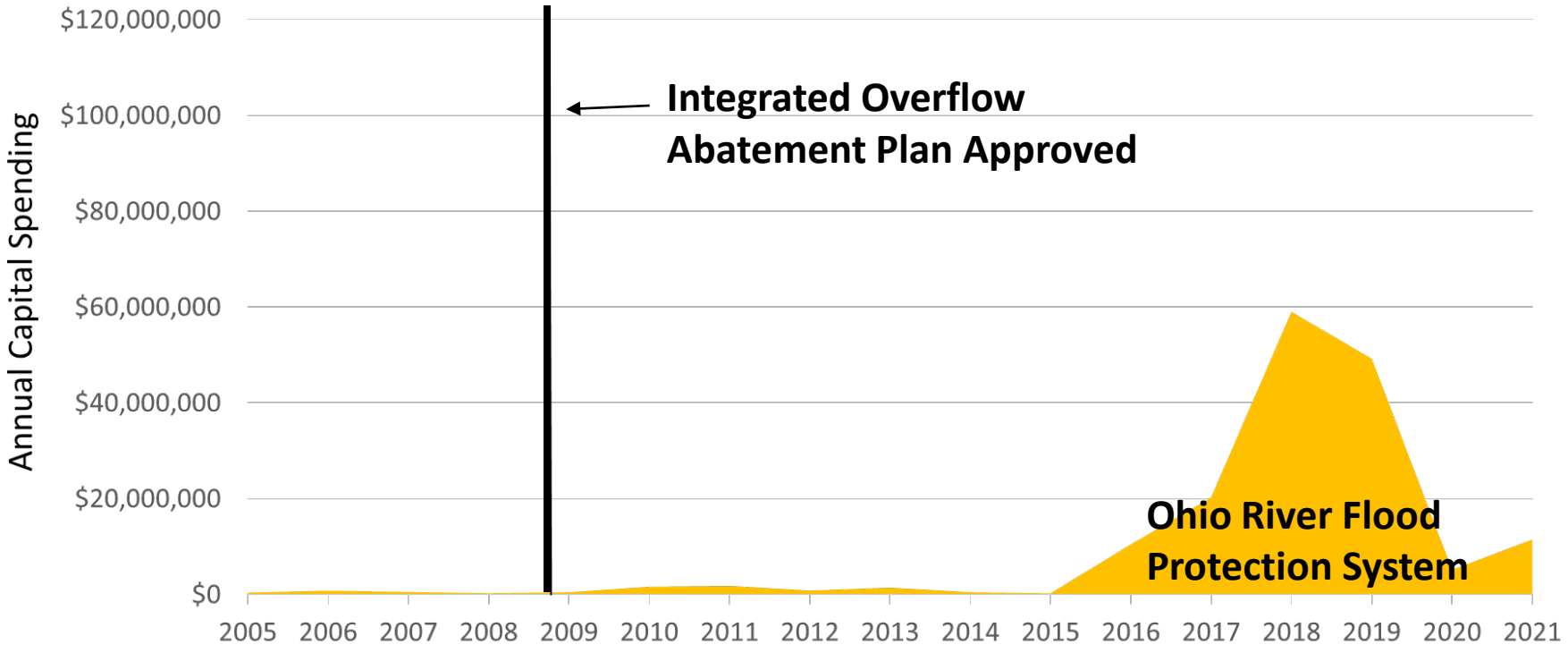


Preliminary Opinion of Probable Costs to Upgrade All Pump Stations

Flood Pumping Station	Potential Costs
Beargrass Creek	$ 103,900,000
Robert J. Starkey	$ 4,100,000
Bingham Way	$ 6,700,000
4th Street	$ 10,900,000
5th Street	$ 2,400,000
10th Street	$ 2,900,000
17th Street	$ 7,700,000
27th Street	$ 11,400,000
34th Street	$ 3,200,000
Shawnee Park	$ 42,300,000
Western Parkway	$ 17,500,000
Paddy's Run	$ 59,700,000
Upper Mill Creek	$ 46,700,000
Riverport	$ 5,700,000
Lower Mill Creek	$ 12,400,000
Pond Creek	$ 77,300,000

Total preliminary costs = $415 million

Preliminary Opinion of Probable Costs to Upgrade All Pump Stations



MSD
Metropolitan Sewer District

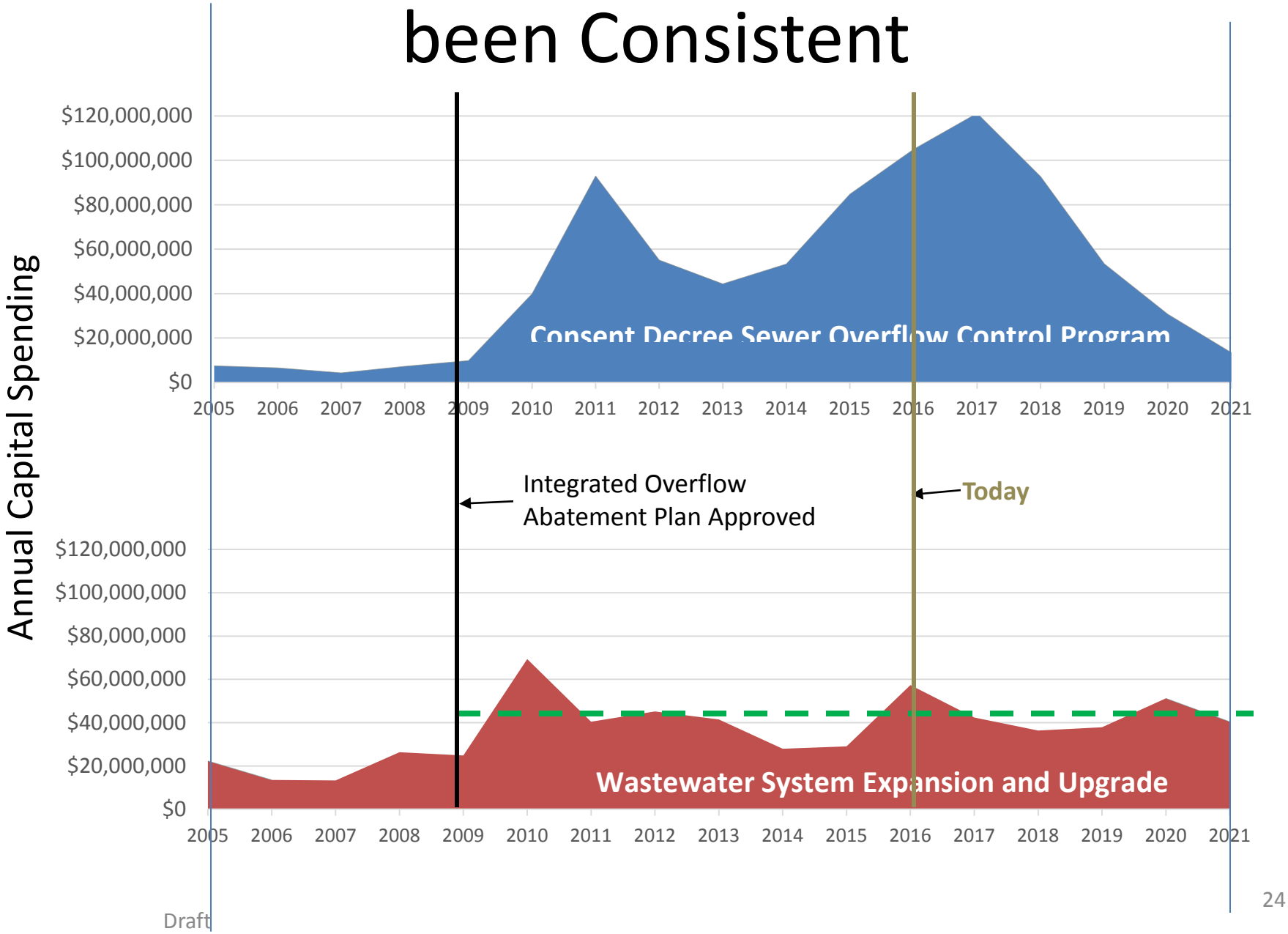
20-Year Comprehensive Facility Plan Wastewater Service Area

Wet Weather Team

Stakeholder Group

March 22, 2016

Non-IOAP Wastewater Spending has been Consistent



What is Included in Proposed Funding?

- Keep system running
- Expand to meet community needs
- Address changing regulations
- Improve efficiency

Project Demographics

Project Type	Previously Planned	New	TOTAL
Collection	66	29	**95**
Pumping	11	42	**53**
CSO	32	25	**57**
Treatment	16	42	**58**
Solids	5	6	**11**
Odor	2	2	**4**
Controls	5	0	**5**
Power	5	4	**9**
Other	5	18	**23**
TOTAL	**147**	**168**	**315**

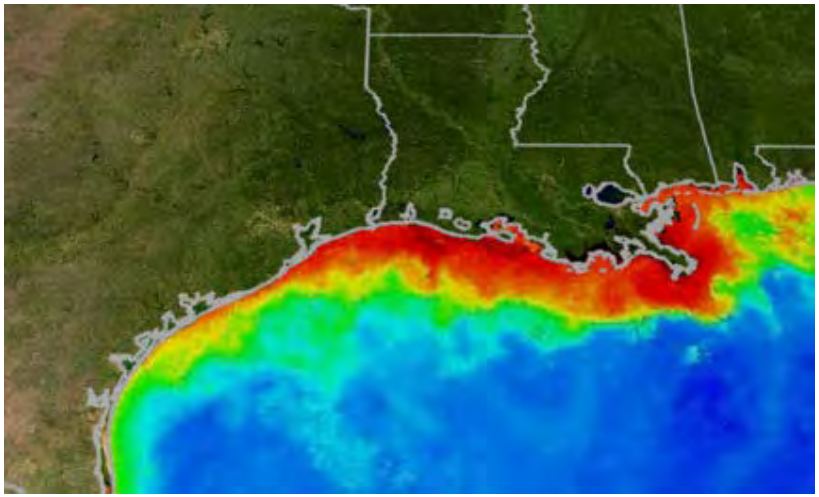
Primary Project Driver	Percent of Projects
Asset Performance	2%
Condition Assessment	**12%**
Consent Decree	**17%**
Flood Mitigation	4%
Future Regulatory Needs	5%
Growth	7%
Stormwater Intrusion	8%
Level of Service	3%
Maintenance	6%
Regulatory Compliance	**19%**
Regulatory/Other	8%
Reliability	2%
Utility Resiliency	7%

Project Costs

Infrastructure renewal and expansion = $1.2B

Potential new nutrient regulations = $200M

Potential new micro-constituents regs = $1.1B



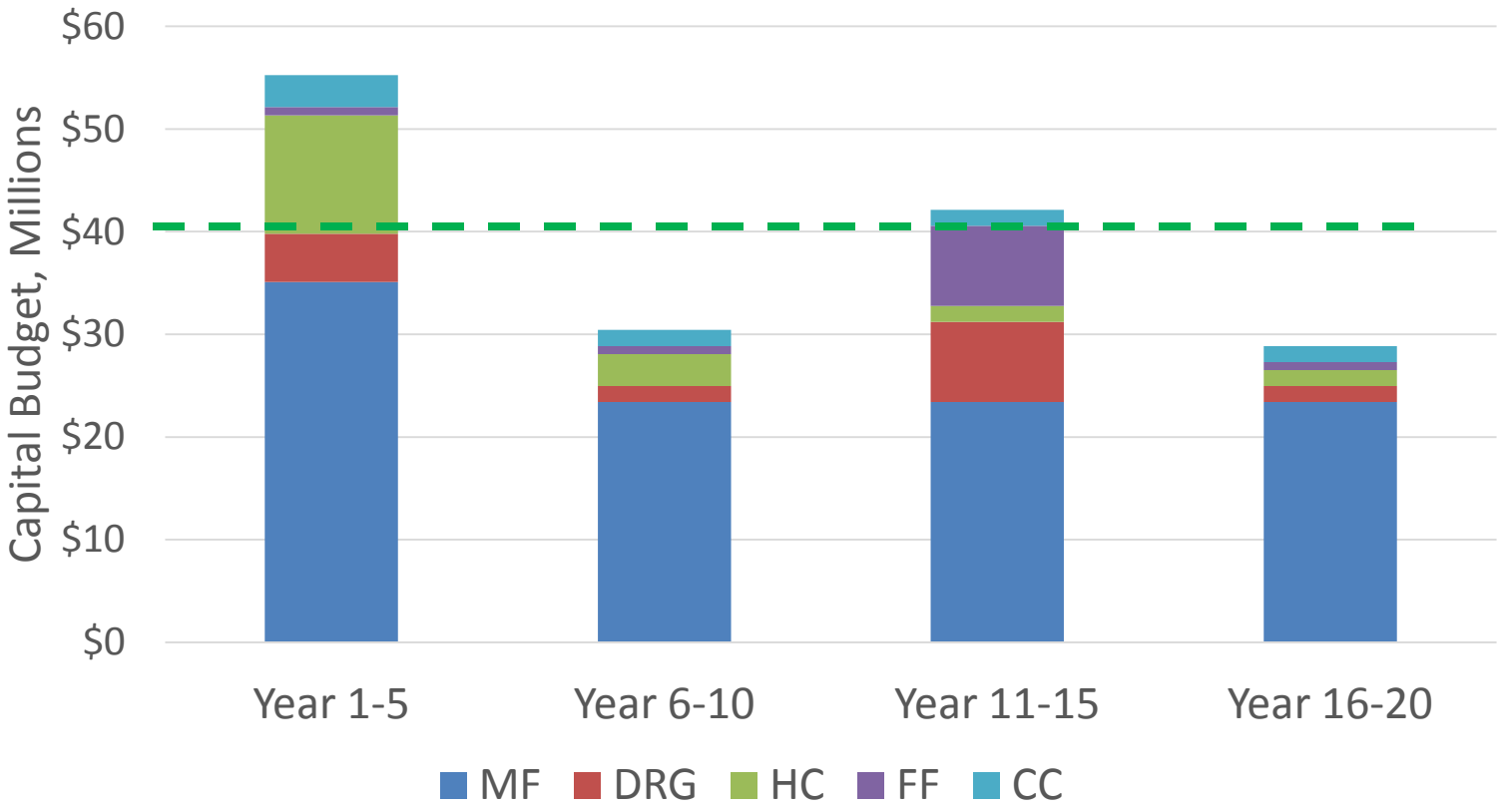
Sample Wastewater Projects Identified

- WQTC equipment repair/replacement budgets
- Floyd's Fork area sanitary sewer expansion
- Back-up power for critical pump station

WQTC Equipment Repair/ Replacements

- Future equipment replacements and/or repairs
- Projects every five years at each plant to be more efficient and less disruptive
- Plan appropriate allocation of resources (manpower, supplies, budget, etc.)

WQTC Equipment Repair/ Replacements



Floyds Fork Area Sanitary Sewer Expansion

- Previously planned projects were refined for latest development plans
- Orderly expansion creates efficient and effective infrastructure

Back-up Power for Critical Pump Stations

- Pump stations with little or no margin for error were identified for secondary power source

Service Area	Total PS Count	Critical PS Count	Recommend Back—up Power	Budget
Morris Forman	97	38	24	$1,952,000
Derek R. Guthrie	65	14	9	$780,000
Hite Creek	61	21	16	$1,248,000
Floyds Fork	32	15	6	$468,000
Cedar Creek	30	14	8	$624,000
			TOTAL	**$5,072,000**

MSD
Metropolitan Sewer District

20-Year Comprehensive Facility Plan Property

Wet Weather Team

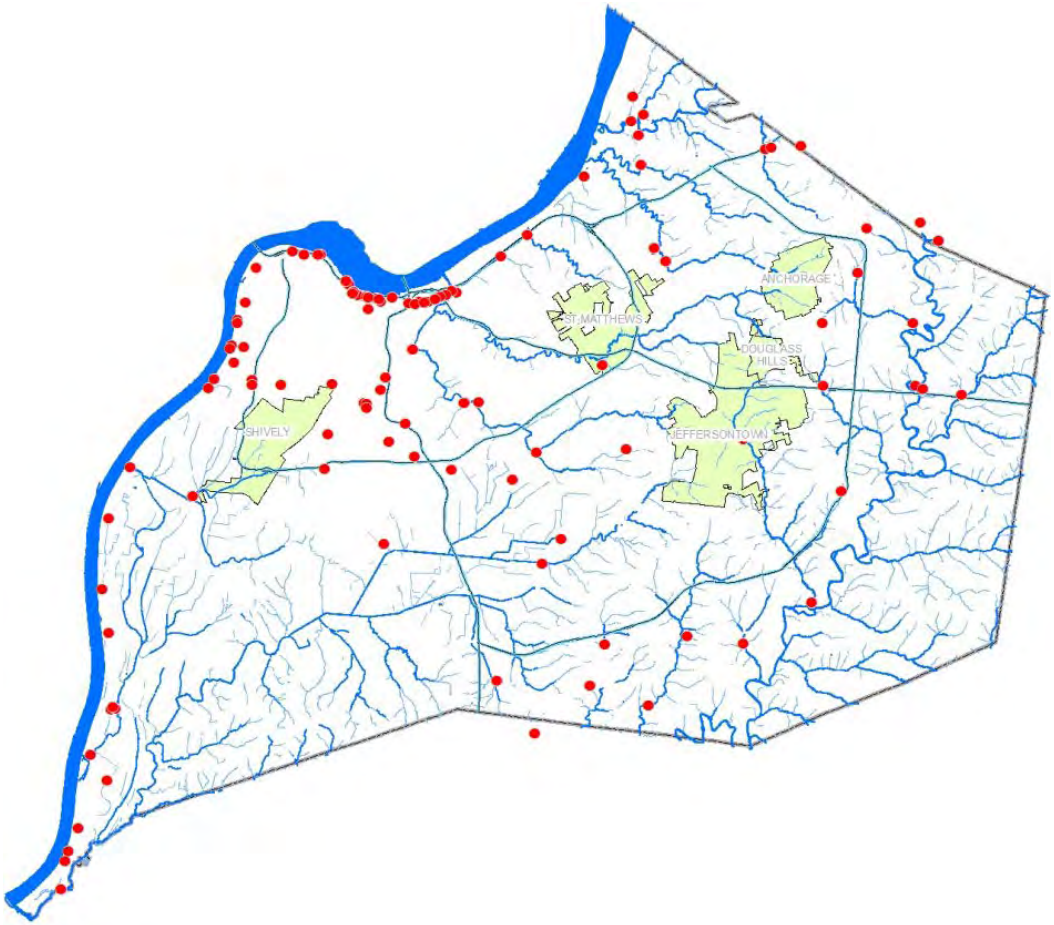
Stakeholder Group

March 22, 2016

Discussion Topics

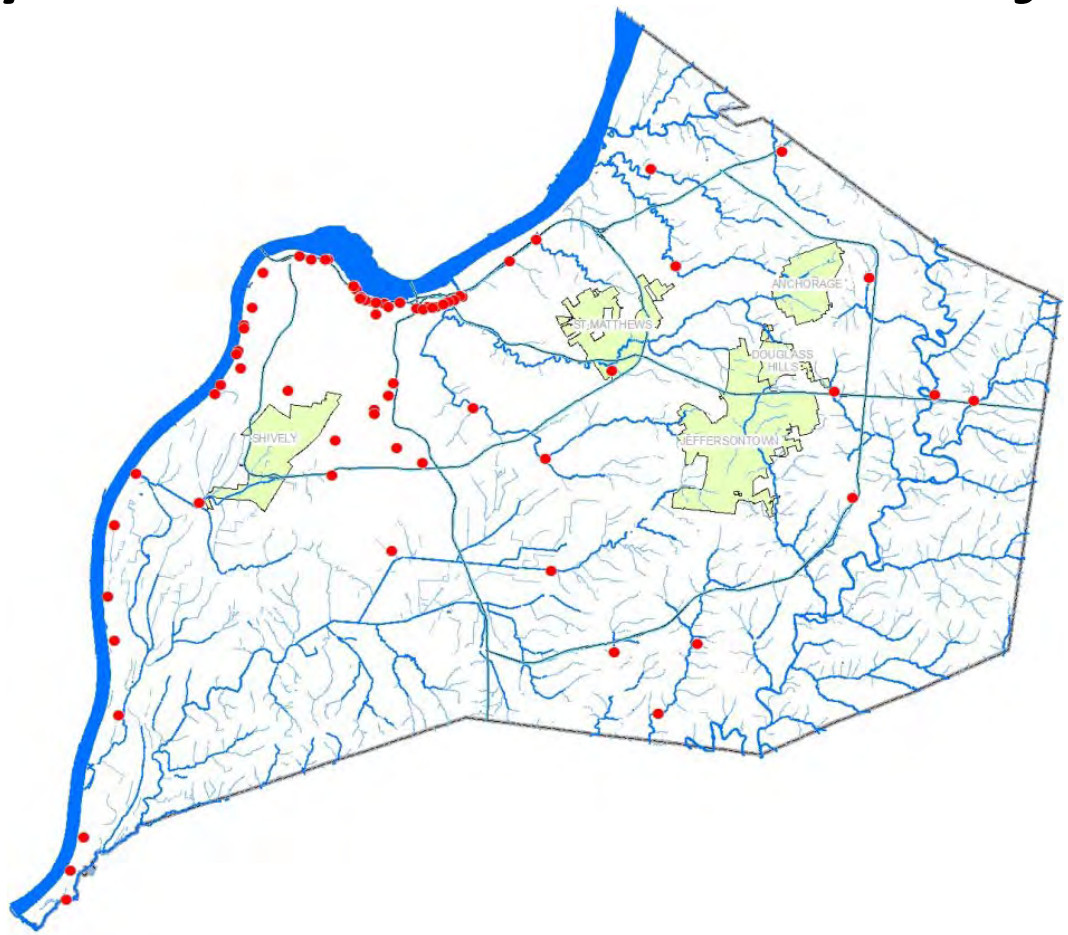
- Facilities inspected
- 20-yr projects / overall costs
- 5-yr projects / overall costs
- Example findings
- Project timing

MSD Owned Facilities



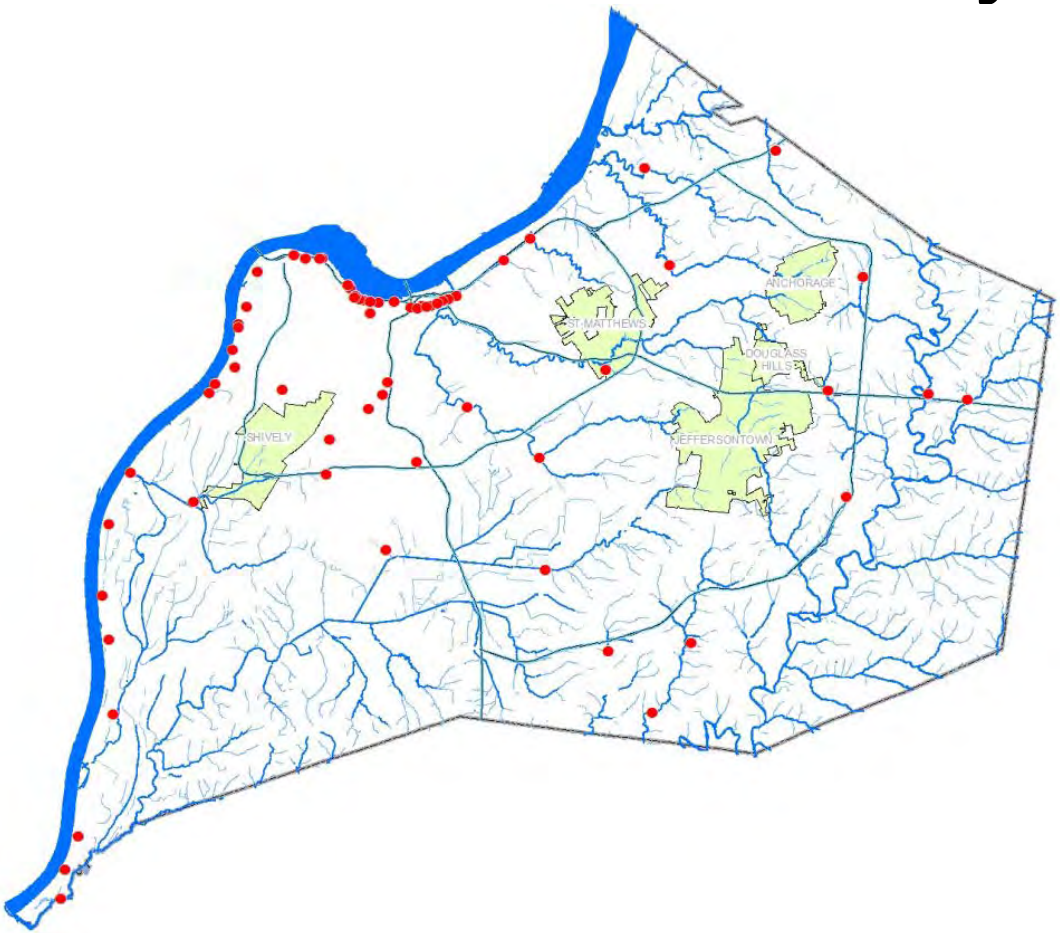
Completed inspections of 178 facilities, including sanitary and storm pump stations, flood pump stations, WQTCs, flood closure storage vaults, CMF, and Main Office Building.

20-yr Recommended Projects



847 projects at facilities require capital investment within the 20 year planning horizon with an estimated total cost of $19 million

5-yr Recommended Projects



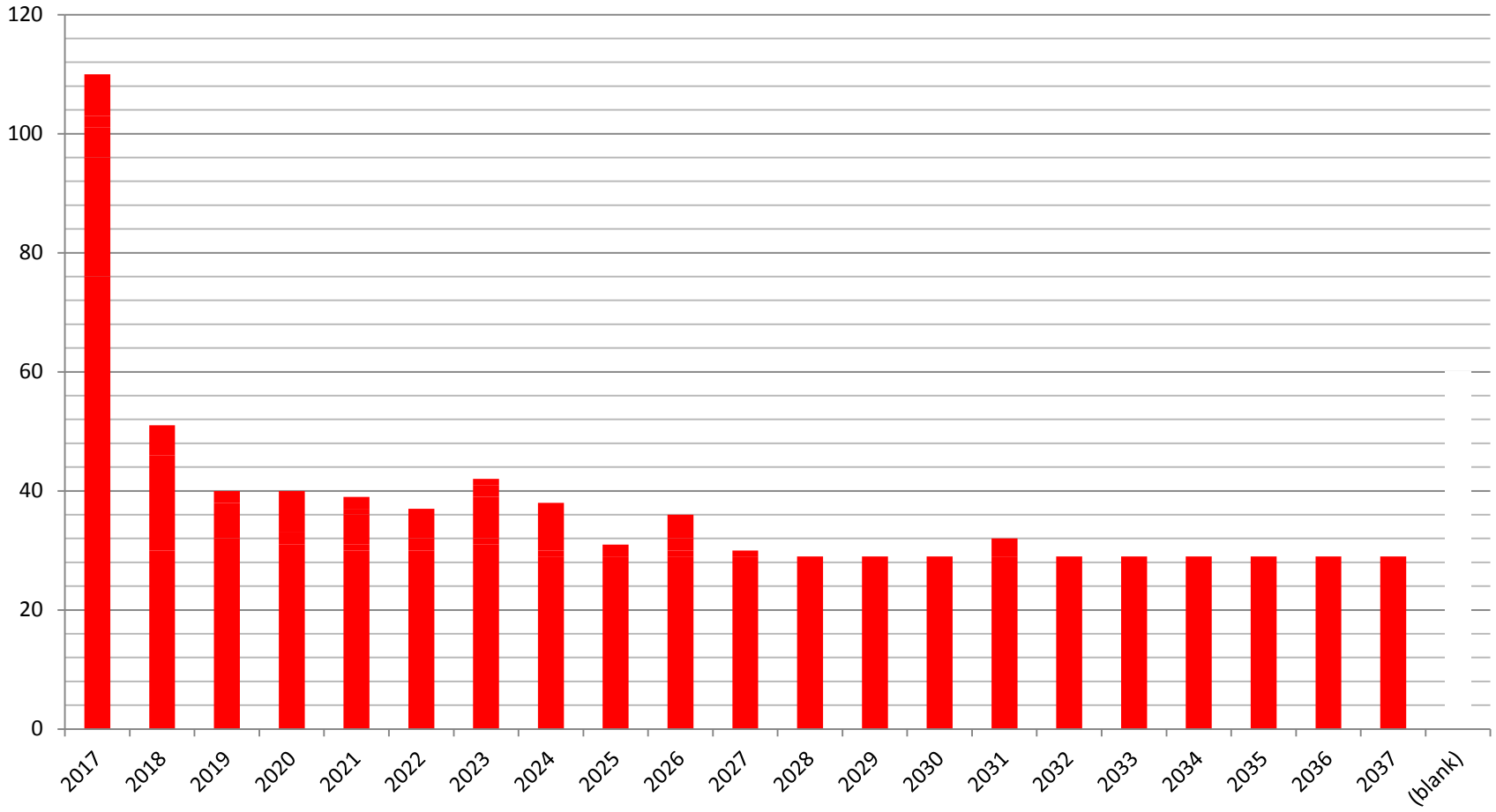
280 projects at facilities require capital investment within the first 5 years with an estimated total cost of $13 million

Example Projects – Roofing

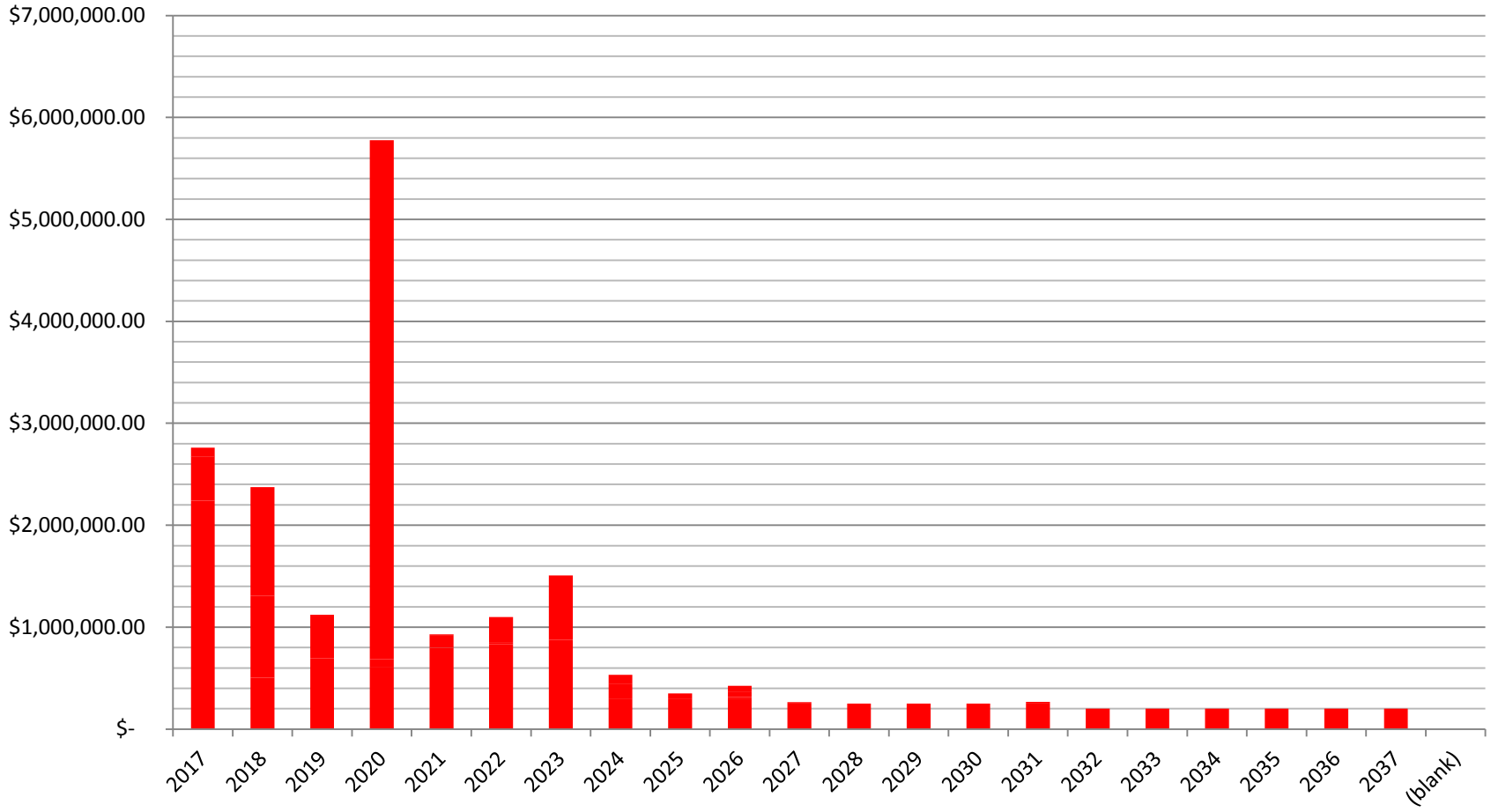
Example Projects – Lead & Mold

Example Projects - Structural

Recommended Projects by Year



Recommended Project Costs by Year



Discussion