



WET WEATHER STAKEHOLDER TEAM

2015 MEETINGS
VOLUME 1



Wet Weather Team
Stakeholder Group Agenda
December 1, 2015
5:30 p.m. – 8:15 p.m.

- 5:15 – 5:45 Dinner served
- 5:40 – 5:50 Welcome & Intro
Clay Kelly, Strand Associates
- 5:50 – 6:05 MSD Update
Tony Parrott, MSD Executive Director
Angela Akridge, MSD Chief Engineer
- 6:05 – 6:20 IOAP Update
John Loechle, MSD Engineering Director
- 6:20 – 6:35 Values and Aspects Wrap-up
Gary Swanson, CH2M
- 6:35 – 7:20 Facility Plan Update
SW Amendment - Evaluation of 10 hotspots
Morris Forman Amendment
Gary
- 7:20 – 8:05 Facility Plan - Service Area Updates
Flood Protection - *Chuck Anderson, Strand*
Wastewater - *Mark Sneve, Strand*
Facilities - *Mike Harris, JTL*
Stormwater - *Matt Newman, HDR*
- 8:05 – 8:15 Observer Comments, Wrap-up and Adjourn
Clay

Meeting Summary

Meeting Summary
Wet Weather Stakeholder Group Meeting
December 1, 2015
MSD Main Office, Louisville

The Wet Weather Team (WWT), chartered by the Louisville and Jefferson County Metropolitan Sewer District (MSD), met on December 1, 2015, at MSD's main office. The objectives of the meeting were to:

- Provide a Consent Decree program update.
- Finalize the Comprehensive Facility Plan Values and Metrics.
- Update Stakeholders on potential projects identified as part of the 20-Year Comprehensive Facility Plan.

Welcome

Clay Kelly of Strand Associates, opened the meeting by welcoming the members and reviewing the meeting objectives and agenda.

MSD Update

Tony Parrott, MSD Executive Director, provided an update on MSD, including:

- A new branding campaign has been rolled out to employees. It includes a new logo, slogan, and approach to how MSD sees itself. Staff was heavily engaged in developing the new branding. Ads will begin to be posted on buses, billboards, newspapers, etc. and will focus on MSD's role as an economic driver for the area.
- The Flood Mitigation Group is continuing its efforts. Short-term recommendations that include a "quick-buy" program have been issued and many have been implemented. The quick-buy program is now complete and was funded by a \$1.5 million contribution from MSD. The Group met the deadline to revise the floodplain ordinance. Revisions included a more specific definition of what "substantial damage" meant and provided more details on how processes would take place. The Group issued recommendations on how to continue the quick-buy program in a long-term sustainable way. The fundamental challenge will be getting enough money. Funding cannot just come from MSD, so other sources will be sought. Some federal money is available but it is not sufficient to meet the entire needs of the community. This has led to discussion about creating a Flood Mitigation Reserve that could be funded through a surcharge. Such a program would require public support to be successful.
- The OneWater initiative has saved approximately \$10 million in 2015. A OneWater board has been established with two members from MSD's board, two members from Louisville Water Company's board, and one member appointed by the mayor. An inter-local agreement has been approved by the Attorney General that, among other things, would allow staff to be hired under the OneWater board.
- A new interim supplier diversity policy has been issued that is based on good-faith efforts. This policy will be in place while MSD completes capacity and disparity studies on the availability of disadvantaged businesses in the area, and proof of a history of systematic bias in purchasing. Once the studies are completed in approximately 18 months, a new, more legally defensible policy will be put in place.

A stakeholder noted that one company in particular was mentioned in the press regarding the supplier diversity policy and asked whether other firms were audited also. Tony responded that many more have been examined but not all businesses have been audited yet.

A stakeholder asked how many properties were involved in the quick-buy program. Angela Akridge, MSD Chief Engineer, said that 21 properties in the Level A Priority and five in the Level B Priority participated.

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IOAP Update and Implementation Progress

John Loechle, MSD Engineering Director, gave an update on overall IOAP Implementation progress. Highlights from his presentation included the following:

- The Combined Sewer Overflow (CSO) 190 Green Infrastructure Project replaced a small basin with green infrastructure. The public was involved in selecting the types of features that will be installed and chose grass strips along roads with trees.
- The Logan Street CSO Basin is the largest basin currently under construction.
- The Muddy Fork Interceptor Sanitary Sewer Overflow (SSO) Storage Basin replaced a widespread sewer replacement and enlargement project that would have disturbed a large number of private properties with significant construction impact. Fortunately, MSD owned property in the area and was able to design a basin that would meet the same overflow reduction goals. The appearance of the facility was closely coordinated with the neighborhood.
- All the basins under design or construction right now are underground. The only aboveground facilities that can be seen are small control buildings that are the size of a one- or two-car garage.
- MSD is exploring ways to add to the adjacent park as part of the Portland CSO Basin.
- Noting the size and scale of the basins currently under design or construction, John said these were the smaller ones and that nine larger ones were planned to begin design and construction in the next five years.

A stakeholder commented that there was not much information on the Project WIN website about projects. Angela noted there is an item up for Board approval that would (among other things) allow MSD to post more and more recent information. Angela also suggested clicking on the “Public Input” tab of the website to find more information about projects that are in design or construction.

A stakeholder inquired how people will be notified about public meetings. Angela said that postcards would be mailed to the residents who are in the area approximately two weeks before the meeting. MSD also asks for the area Council member to put a notice in their newsletter.

A stakeholder asked for an update on the Southwestern Parkway Basin. Angela and Tony answered that the project will be complete by the end of 2018 and that they are continuing to coordinate with Olmsted Parks and Metro Parks.

Values and Aspects Wrap-up

Clay shared that approximately two-thirds of the stakeholders provided comments on the values and aspects. One comment noted that economic vitality cannot just be measured as new growth and that infill should be a measure as well. The project team has noted this and will consider it while doing the project prioritization. Another comment asked about efforts to improve litter in waterways. While there are not projects that are intended to specifically address this, MSD met with Brightside to coordinate ways that trash could be removed from and prevented from entering streams.

20-Year Comprehensive Facility Plan Update

Gary Swanson of CH2M-Hill stated that since the initial scoping of the Plan, two significant events have happened that required changes in the project. The first was the flooding of the Morris Forman Water Quality Treatment Center (WQTC) in April 2015 caused by a power outage. While the plant is operational, many of its components’ useful life have been compromised. A more detailed condition assessment of the facility and a

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long-term (50-year) vision for the plant must be completed in order to adequately plan for this critical facility. The vision will look at options for expanding, replacing and/or relocating the WQTC.

The second item was widespread feedback from the public and elected officials after the heavy rains that occurred in 2015. To address these concerns, areas that are outside of the floodplain that were heavily impacted by localized storms are being modeled to develop information that will allow a dialogue with the public on level of service and cost of service.

A stakeholder asked why Morris Forman was not equipped with backup generators. Brian Bingham, MSD Chief of Operations, answered that generators are prohibitively expensive for the power needs of a WQTC of this size so the professional standard is to have two independent electrical feeds. Unfortunately the force of the lightning strike that caused the outage was so large, it knocked out both feeds. Brian noted that MSD had asked USEPA for permission to use part of the money designated for Special Environmental Projects to purchase generators but were denied.

A stakeholder asked how the substantial cost of replacing Morris Forman WQTC would be paid for by the community. Brian noted that some of the costs are being address through insurance. Whatever is not covered by insurance would be paid for through MSD's user fees. Gary said that the costs would capitalized to reflect the long-term service life of the repairs/replacements and would therefore be spread out over a long period. Brian added that the facility has undergone major upgrades about every 20 years since the 1950s and the last major projects were in the 1990s so the WQTC is due for upgrades anyway. Tony noted that this is not just a Louisville issue. Across the country, communities are struggling to fund the replacement of aging infrastructure.

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) leads would be sharing their early indications of what they have found and what they foresee as the future projects.

Ohio River Flood Protection System

Chuck Anderson of Strand Associates presented the Ohio River Flood Protection service area. He shared that the system of flood pump stations, floodwalls, and levees met the United States Army Corps of Engineers (USACE) standards which use a statistical analysis to calculate that the chance of failure is less than 1 percent. He noted that the average age of the pump stations is over 50 years and that in many cases replacement parts are not readily available. Of the 16 flood pump stations in MSD's system, preliminary findings indicate that four will need no action or minor upgrades, five will need to be rehabbed with no capacity upgrades, and seven will need to be rehabbed with a capacity expansion. Projected projects for the floodwall and levee are expected to be smaller and more generally defined as maintenance or routine replacement as well as some additional documentation of inspections.

A stakeholder asked why welds on steel structures would fail. Chuck and Brian responded that the steel welds are old and MSD does a good job of keeping up with them. The USACE is merely asking for more documentation of what MSD is already doing as a response to lessons learned from Hurricane Katrina.

Another stakeholder asked whether the flood pump stations had redundant pumps. Chuck and Brian answered that they all did but that the contributing areas to the stations have changed, which is causing higher flows. Gary added that the system capacity is not currently deficient as defined by the USACE coincident frequency analysis, but more could be done as a local decision.

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A stakeholder asked where the gate closures for the floodwall are stored when not in use. Brian said that some are swing or roller gates attached to the floodwall, but that most are stored in vaults in the floodwall near the openings. Gary added that the USACE requires MSD to practice closing the gates once a year to make certain they work and all components can be found.

A stakeholder wondered how is it that the pump stations could be sized for 2- or 5-year storms and yet there have not been any reports of failures or flooding. Chuck responded that it is because there is a very low statistical chance that a storm larger than that size will occur while the Ohio River is at flood stage.

Wastewater

Mark Sneve of Strand Associates presented on the Wastewater service area. He explained the factors that were being considered in the planning process, how previously planned projects would be evaluated, and how new projects would be identified. There are currently about 150 previously planned projects and around 50 new projects. The proposed projects were generally described within WQTC, pump station, and collection system categories.

A stakeholder noted that sump pumps and other sources of non-wastewater intrusion were discussed early in the process and was wondering how they fit into the current planning. Mark agreed they were still a critical component. He explained that they are illegal by ordinance and that the team was looking at strategies to address them. Future actions will likely require a Board-level decision. John added that as MSD has been inspecting its system, MSD has been noting the locations of these illegal connections so that it can remove them if/when there is an effort to do so. He also shared that MSD has a program to pay for the disconnection but that it is voluntary and has not been very widely used.

Another stakeholder added that they believed that residents should be forced to remove these illegal connections. They cost the whole community and they should be the ones that have to pay. A question was asked about what the "Lateral Maintenance" project would be. Mark responded that we were examining the costs and benefits of MSD potentially taking responsibility for more of the service lateral to the home.

A stakeholder shared that Metro is in the process of developing its own Comprehensive Plan for the city and was glad to hear that MSD was engaged in the process and sharing data between the two agencies. This statement was followed up by a question about how conflicting policies between MSD and Metro would be resolved. For example, Metro is considering policies to encourage growth in the urban core, and if MSD did not adopt similar policies, there could be friction. Additionally, who should pay for growth and expansion? Gary answered that MSD has more than sufficient infrastructure in place to support growth in the urban core. If market pressures lead to requests for sewers in outlying areas, however, MSD cannot deny service to areas zoned to allow development (this is required by statute). MSD's policies have, for many years, provided that growth should support itself, without putting additional burdens on existing customers.

Property

Mike Harris of Jacobi, Toombs, and Lanz presented on the Property service area, which also includes facilities and mowing. Mike noted that MSD owns over 400 parcels of land and that MSD had discovered conflicting information between MSD and PVA that they are working to resolve. Over 50 percent of MSD facilities have had a condition assessment and the most common issues found are roofs in poor condition, unmarked exits, and insufficient emergency lighting. None of this should be surprising since these are not core functions of MSD. The mowing contracts and parcels were reviewed to document what MSD mows and why. The properties are being examined to determine whether there could be some cost savings by reorganizing the mowing contracts and whether there are potential no-mow zones that could be established.

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A stakeholder asked about public reaction to no-mow zones. Mike stressed that “no-mow” zones should not be interpreted as “no-maintenance” zones, but they have perceived that way in the past. He followed up by saying that it has been very site-specific depending on the neighborhood and property use.

Another stakeholder inquired whether MSD coordinated its mowing with Ozone Action Days. Metro delays mowing until later in the day on those days. Brian said that almost all mowing is contracted out and he was not sure if MSD included such coordination in those contracts. He said it was a good idea and that MSD would look into making that a requirement in the next contracts.

Stormwater and Drainage

Matt Newman of HDR presented on the Stormwater and Drainage service area. Matt began by saying that his area included both the quantity and quality aspects of stormwater. On the quantity side, the primary concern is about efficient drainage and preventing flooding. He noted that to compliment the modeling and study that Gary discussed earlier for the non-floodplain areas, the project team was coordinating with another firm that was studying the floodplain areas. Matt reviewed the identified gaps and the preliminary actions to address them. He also shared the impact on the number of homes that would be in the floodplain if it was expanded to account for more up-to-date rainfall definitions or weather projections. On the quality side, Matt explained that MSD’s existing permit required most watersheds to be at a Level 2 of EPA’s assessment pyramid but that recent EPA permits were pushing other communities to higher levels. In the most extreme circumstances (which are unlikely in Louisville), the costs could be in the millions (for a permit similar to Washington, D.C.) to billions of dollars (if Prince George’s County, MD was used as a template). To help understand the particular impacts to Louisville, a pilot study is being undertaken to look in depth at Jefferson County watersheds with total maximum daily loads (TMDLs).

A stakeholder observed that there had not been a lot of talk about taking advantage of infiltration as opposed to pumping, pipes, and basins. The project team was encouraged to incorporate these strategies in the Facility Plan. It was also noted that no plan will be successful without the community becoming involved and doing its part.

Another stakeholder suggested putting a special fund up for a vote to provide the money for projects. If the community supports the effort, they will approve it. Since these are community problems, we need to have community-based and -involved solutions with real benefits to residents. Planning decisions should not take away residents’ choices on how or where to live though and MSD should work with Metro to support options for everyone. MSD was encouraged to ask the public for input and suggestions and to be open-minded to their ideas.

A stakeholder agreed with the statements regarding the need for the community to be involved and support these efforts and reminded everyone of the many different groups that make up a “community.”

Another stakeholder stated that MSD should not be held responsible for what comes into the county from surrounding areas and that all decisions have to consider the economics and cost-effectiveness of the projects/solutions.

Observer Comments, Wrap-Up and Adjourn

There were no comments from the observers.

Clay reminded everyone that the next meeting would be March 22, 2016, and that we would be sending out appointments for the 2016 meetings.

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Meeting Materials

- Agenda for the December 1, 2015 WWT Stakeholder Group Meeting
- Copy of the presentation slides

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Meeting Participants

Wet Weather Team Stakeholders (Present)

Stuart Benson, Louisville Metro Council, District 20
Allan Dittmer, University of Louisville Provost Office
Arnita Gadson, Executive Director, Kentucky Environmental Quality Commission
Tom Herman, Zeon Chemicals
David James, Louisville Metro Council, District 6
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
Rocky Pusateri, Elite Built Homes
Lisa Santos, Irish Hill Neighborhood Association

Wet Weather Team Stakeholders (Not Present)

Steve Barger, Labor (Retired)
Susan Barto, Mayor of Lyndon
Mark French, University of Louisville Speed School of Engineering
Rick Johnstone, Deputy Mayor, Louisville Metro Mayor's Office (Retired)
Bruce Scott, Kentucky Waterways Alliance
David Tollerud, University of Louisville, School of Public Health and Information Sciences
Tina Ward-Pugh, WaterStep
David Wicks, Kentucky Conservation Committee, Jefferson County Public Schools Center for Environmental Education (retired)

Wet Weather Team MSD Personnel (Present)

Angela Akridge, MSD Chief Engineer
Brian Bingham, MSD Chief of Operations
John Loechle, MSD Infrastructure Manager

Technical Support

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

Meeting Observers

Chuck Anderson, Strand Associates
Billy Doelker, Key Homes
Jeff Eger, HDR
Mike Harris, JTL
Stephanie Laughlin, MSD
Matt Newman, HDR
Mark Sneve, Strand Associates
Marty Storch, Metro Parks
Wes Syndor, MSD

No Meeting Handouts



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

Wet Weather Team
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Assets Included in the ORFPS

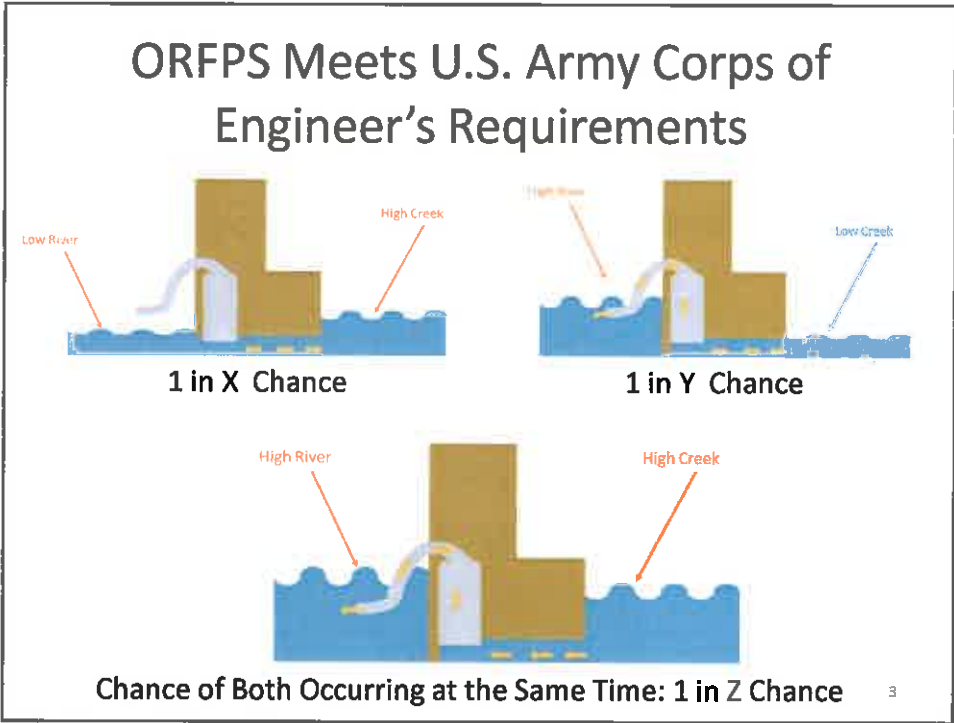
Floodwall/Levee

- 1947 to 1988
- ~29 Miles Floodwall and Levee from Beargrass Creek to Bullitt County

Flood Pumping Stations

- 14 constructed in 1950s
 - 60 years old
 - 2 Removed
- 5 Constructed in 1980s
 - 30 years old





Flood Pump Stations (FPS) are 50-Years Old on Average

Flood Pump Station	Date of Construction	General Condition
34th Street	1951	Original Equipment
Shawnee Park	1951	Replacement Parts UA
4th Street	1952	Replacement Parts UA
5th Street	1952	Original Equipment
10th Street	1952	Original Equipment
17th Street	1952	Original Equipment
27th Street	1952	Original Equipment
Beargrass Creek	1952	Replacement Parts UA
Western Parkway	1952	Recently Upgraded
Paddy's Run	1953	Replacement Parts UA
Riverport	1980	Original Equipment
Lower Mill Creek	1980	Original Equipment
Upper Mill Creek	1983	Original Equipment
Pond Creek	1989	Replacement Parts UA
Bingham Way*	1996	Original Equipment
Robert J. Starkey	2005	Recently Upgraded

*Non-USACE

Draft Capacities for FPS Change Based on the Level of Service

Flood Pump Station	Current Capacity (MGD)	10-Year, 24-Hour Storm (MGD)	Projected 2035 10-Year, 24-Hour Storm (MGD)
Beargrass Creek	3,555 / 4,155	4,155	4,700
Robert J. Starkey	108	108	108
Bingham Way	64	80	90
4th Street	137	137	170
5th Street	52	60	80
10th Street	88	88	88
17th Street	51	107	122
27th Street	239	280	320
34th Street	90	90	90
Shawnee Park	770	1,100	1,250
Western Parkway	1,150	1,400	1,600
Paddy's Run	925	1,625	1,900
Upper Mill Creek	750 / 910	910	1,370
Riverport	140	140	140
Lower Mill Creek	320	500	500
Pond Creek	2,650 / 3,375	3,375	3,375

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Possible FPS Projects

Flood Pump Station	No Action or Minor Upgrades	Rehab to Current Capacity	Rehab and Expand
Beargrass Creek			X
Robert J. Starkey	X		
Bingham Way	X		
4th Street	X		
5th Street		X	
10th Street		X	
17th Street			X
27th Street			X
34th Street		X	
Shawnee Park			X
Western Parkway	X		
Paddy's Run			X
Upper Mill Creek			X
Riverport		X	
Lower Mill Creek			X
Pond Creek		X	

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Possible Floodwall/Levee Projects

- Levee
 - General Maintenance and Upkeep (unwanted vegetation, erosion, monitoring equipment, etc.)

- Floodwall
 - Gate Closure Maintenance and Replacements
 - Continue to Inspect and Replace Steel Structures

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20-Year Comprehensive Facility Plan Wastewater Service Area Update

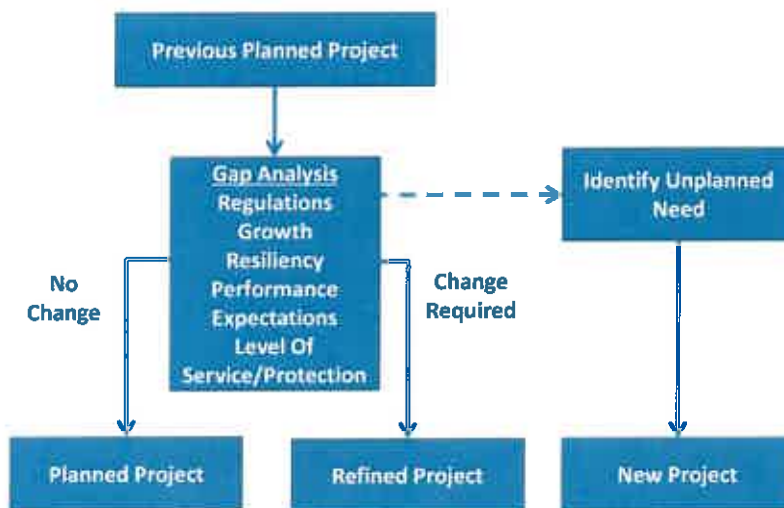
Wet Weather Team
Stakeholder Group
December 1, 2015

What Factors Are Being Considered in Current Planning?

- Future Regulations
- Growth
- Utility Resiliency
- Asset Condition & Performance
- Level of Service/Protection
- Space Needs

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How Will We Identify Future Needs?



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What Type of Projects Have Been Proposed in the Collection System?

New Project	Required for:
Manhole Flood Proofing	Utility Resiliency
Continue SSES Program	Asset Condition/ IOAP/Compliance
Critical Asset Proactive Replacement	Asset Condition
Address New Overflows	Compliance
Trunk Sewers in SE Jefferson County	Growth
Lateral Maintenance	Level of Service



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What Type of Projects Have Been Proposed at Pump Stations?



New Project	Required for:
Air Release Valve Flood Proofing	Utility Resiliency
Various Pump Station Flood Proofing	Utility Resiliency
Critical Asset Proactive Replacement	Asset Condition
Address New Overflows	Compliance
Pump Stations in SE Jefferson County	Growth

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What Type of Projects Have Been Proposed at WQTCs?



New Project	Required for
DRG WQTC High River Alternate Outfall	Utility Resiliency
Hite Creek WQTC Flood Proofing	Utility Resiliency
Hite Creek WQTC Expansion	Growth
Equipment Upgrades at WQTCs	Asset Condition
Land purchases for WQTCs	Expansion/Upgrade
Upgrade WQTCs for Nutrient Removal	Future Regulations
Upgrade WQTCs for Microconstituents	Future Regulations
MF WQTC Replacement	Future Regulations/ Condition/ Space
Salt River WQTC	Regional Planning



20-Year Comprehensive Facility Plan Property

Wet Weather Team
Stakeholder Group
December 1, 2015

Discussion Topics

- What have we found to date?
 - Property – Ownership vs records
 - Facilities – Common items, life cycle costs
 - Mowing – Potential mowing reduction
- What's next?

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Property

- Completed research on over 400 parcels of property
 - Property owned by MSD (per deed book grantee search) not in PVA records
 - Property owned by MSD not in MSD records (LOJIC)
 - MSD owned property with record errors in LOJIC and/or PVA data sets
- Completed draft Property Fact Sheets, with separate files for “eratta”
- Next step is to identify surplus property



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Facilities

- Over 50% complete with Facility Condition Assessments (FCA)
- Most common items found so far:
 - Roofs
 - Many roofs in poor condition, especially Flood Pump Stations and WQTCs
 - Roofs generally not well maintained
 - May be able to significantly reduce life cycle costs with standardization of materials, preventive maintenance, and better tracking and enforcement of warranties
 - Lack of exit signage and emergency lighting
 - Update to current code
- In the process of:
 - Finishing FCAs by end of the year
 - Developing costs for projects



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Mowing

- Reviewed mowing contracts and specifications, Hansen assets, GIS data and mapping
 - Opportunity for reduced cost based on geographic groupings
- Reviewed mowed vs. MSD owned
 - Multiple properties found that are being mowed that MSD no longer owns.
 - Need to track down why
- Developed data base of mowing assets with justification for service
- Coordinate with MS4 on existing and potential no-mow zones for water quality improvements



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20-Year Comprehensive Facility Plan Stormwater & Drainage

Wet Weather Team
Stakeholder Group
December 1, 2015

Discussion Topics

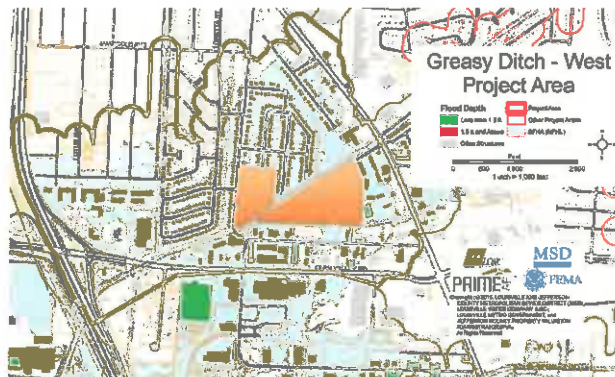
- **Stormwater Quantity**
– Potential Projects
- **Stormwater Quality**
– Possible Future MS4 requirements



Floodplain Area Projects

(Supplied by others)

- Flood Mitigation & Prioritization Project
- Identified 110 of the highest priority areas
- Possible mitigation projects, including buyouts
- Project List to be supplied to FP team when completed



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Non-Floodplain Areas

- Identification of 6-10 potential project areas
- Areas selected based on historical storms, high customer request and repetitive maintenance areas
- Purpose is evaluation of modeled level of protection analysis and protection from real-life extreme storms
- Will provide basis for community input on level of protection and cost



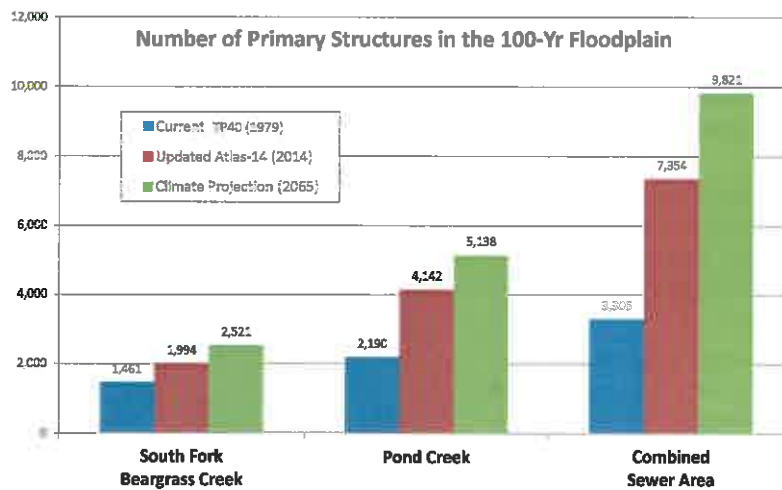
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Gaps Areas

GAPS	CORRECTIVE ACTIONS
Piecemeal Planning / Lack of Consistent Stormwater Capital Program	Need County Wide Comprehensive Stormwater Master Plan
Lack of Comprehensive Approach to Proactive Floodplain Corrective Actions	Potential Projects (Buy-outs, flood proofing, storage, conveyance); Revised Floodplain Regulations
Frequent Viaduct Flooding	Pump Station and/or Conveyance Upgrades / Storage Basins / Green
Preventative Maintenance	Proactive preventative projects / major system rehabs.
FEMA Community Rating System Rating >1	Achieve higher rating / reduce insurance premiums

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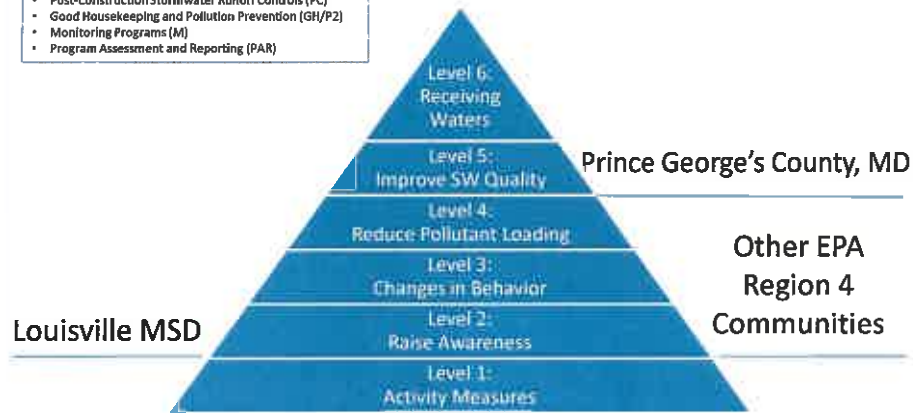
Impacts of Increasing Frequency of Extreme Storms



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Potential Future MS4 Permits Likely to Require Additional Actions from MSD

- 9 Measures of the Current Permit**
- Public Education
 - Outreach, Participation & Learning Experiences (PEOPLE)
 - Illicit Discharge Detection and Elimination (IDDE)
 - Industrial Program (IP)
 - Construction Site Stormwater Runoff Controls (CS)
 - Post-Construction Stormwater Runoff Controls (PC)
 - Good Housekeeping and Pollution Prevention (GH/P2)
 - Monitoring Programs (M)
 - Program Assessment and Reporting (PAR)



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Potential Impact of Future TMDL Requirements Comparison to Prince George's County, MD Based on TMDL Requirements

	Retrofit Acres	Estimated Cost
Prince George's County	15,000	\$1.2B
Louisville MSD	173,000	
@ 10%	17,300	\$1.4B
@ 25%	43,000	\$3.4B
@ 50%	86,500	\$6.9B
@ 75%	129,000	\$10B

\$1.4B to \$10B

Potential Post Construction Requirement Regulations

(Comparison to Washington D.C. MS4 Permit)



Jefferson County

254,720 acres

10% Impervious

Washington, D.C.

39,140 acres

39% Impervious



Potential Impact of Future MS4 Regulations

Comparison to Washington D.C. Permit

Washington, DC - Budget Information:

- FY 2015 MS4 Budget - \$19M (includes some retrofit and IA removal costs for both the combined and separate systems)

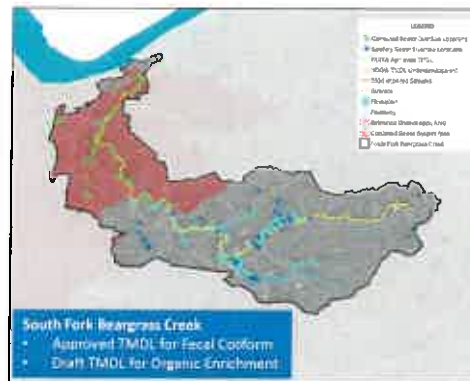
Louisville MSD Estimated Costs (extrapolated from Washington DC)


Cost based on population (\$29/person)	\$22M
Cost based on area (\$487/acre)	\$80M
Cost per impervious acre (\$1,245/acre)	\$46M

\$22M-\$80M per year

Pilot Study to Project Potential TMDL/MS4 Compliance Costs

- Select pilot watershed with TMDL (i.e. South Fork Beargrass Creek)
- Use literature values for pollutant removal and TMDL compliance cost information from other communities to generate projected program costs for MSD





**IOAP CAPITAL
PROJECT OVERVIEW**
December 1, 2015

Stakeholder Meeting



Significant Capital Project Overview | Project Spotlight

**CSO 190 GREEN INFRASTRUCTURE
PROJECT**



CSO 190 Green Infrastructure Project

Project Background

- 142 Acres
- 96 Acres Impervious
- Capture 63 Impervious Acres with Green Infrastructure
- 32.27 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



Logan Street CSO Basin & Interceptor

Project Location

- Metro Council
District 4 – David Tandy
- 935 Logan Street
- Addresses thirteen (13) CSO's:
 - overflow an average of 41 times per year, combined, approx. 470 MG per year



Logan Street CSO Basin & Interceptor

Project Background

- The original IOAP recommended an 11.8 MG Basin
- Revised project consists of 16.7 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



Nightingale Pump Station & Basin

Project Location

- Metro Council
District 10 – Pat Mulvihill
- Addresses one (1) CSO:
 - overflow an average of 28 times per year, combined, approx. 155 MG per year
 - Revised project consists of 7.7 MG Basin
 - Zero overflows
 - Completed 12/31/16



Nightingale Pump Station & Basin

Project Background

- The original IOAP recommended an 0.25 MG Basin
- Revised project consists of 7.7 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



Muddy Fork Interceptor SSO Storage Basin

Project Location

- Metro Council
District 7 – Angela Leet
- City of Riverwood
- 1910 Charbdin Place
- Addresses six (6) SSO's:
 - overflow an average of 21 times per year, combined, approx. 4.56 MG per year



Muddy Fork Interceptor SSO Storage Basin

Project Background

- The original IOAP recommended upsizing 1.6 miles of gravity sewer
- Revised project consists of 1.4 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

Grand Avenue Pump Station

Project Location

- Metro Council District 11 – Kevin Kramer
- City of Jeffersontown
- 10335 Grand Avenue



Grand Avenue Pump Station

Project Background

- A component of the Jeffersontown WQTC elimination.
- The project will divert two-thirds of the existing flow from the Jeffersontown WQTC to the Klondike Interceptor.
- 10 MGD pumping station
- 1.8 million gallon storage capacity in underground basins and wet well.

Grand Avenue Pump Station

Project Schedule

- Construction began December 2013
- Final completion expected January 2016



Significant Capital Project Overview | Projects In Construction

FAIRMOUNT ROAD PUMP STATION AND SANITARY SEWER OVERFLOW STORAGE BASIN

Fairmount Road PS and SSO Storage Basin

Project Location

- Metro Council
District 22 – Robin
Engle
- 10801 Fairmount Road
- Adjacent to the
Existing Fairmount
Road Pump Station



Fairmount Road PS and SSO Storage Basin

Project Background

- Component of the 2012 IOAP
- Project consist of 4.2 Million Gallon per day Pump Station with adjoining 4.5 Million Gallon Storage Basin



Fairmount Road PS and SSO Storage Basin

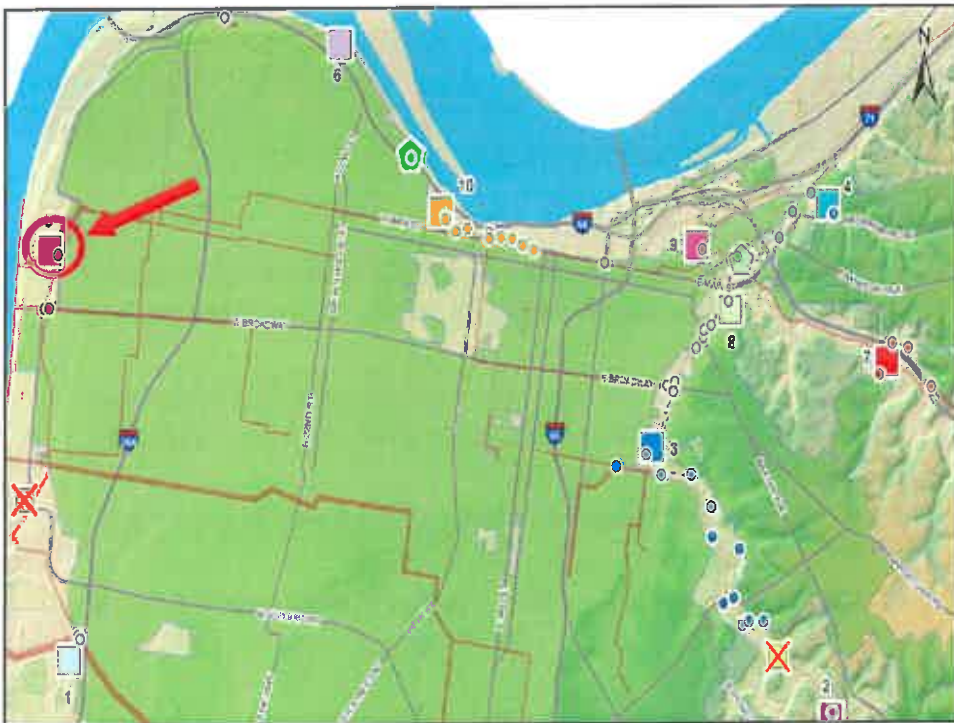
Construction Schedule

- Construction Started in July of 2014
- Construction to be completed by the end of 2015



Significant Capital Project Overview | Projects In Design

SOUTHWESTERN PARKWAY CSO BASIN



Southwestern Parkway CSO Basin

Project Location

- Metro Council District 5 – Cheri Bryant Hamilton
- The proposed basin is to be located within Shawnee Park.
- The three (3) CSO's addressed with this project currently overflow an average of 118 times per year, combined, producing approximately 510 MG per year.
 - CSO's 104, 105, and 189

Southwestern Parkway CSO Basin

Project Background

- The original IOAP recommended a 5.08 Million Gallon Storage Basin providing a level of control of zero (0) overflows during the typical year.
- Updated flow monitoring increased the size to a 17.50 Million Gallon Storage Basin providing a level of control of eight (8) overflows during the typical year.
 - Revised basin size and Level of Control pending approval from EPA.
- The IOAP project completion deadline is December 31, 2018.

Southwestern Parkway CSO Basin



Southwestern Parkway CSO Basin

Project & Public Meeting Schedule

- Currently, MSD is in the Preliminary Design Phase of this project with Gresham Smith & Partners.
- The Orientation (IOAP) Meeting for this project was held September 24, 2013.
- The Conceptual Design Public Input Meeting for this project was held March 23, 2015 at Shawnee Golf Course Clubhouse.
- The 2cd Conceptual Design Public Input Meeting was held on November 12, 2015.
- The Advanced Design Public Input Meeting for this project has not been scheduled, but is planned for Q1 2016.

Significant Capital Project Overview | Projects In Design

I-64 & GRINSTEAD DRIVE CSO BASIN



I-64 & Grinstead Drive CSO Basin

Project Location

- Metro Council District 9 – Bill Hollander
- The proposed basin is to be located on vacant, undeveloped, land behind near the intersection of Lexington Road and Grinstead Drive .
- The proposed basin will be sited within the 100-year floodplain of Beargrass Creek in the undeveloped area between Beargrass Creek and Jim Porters.
- The four (4) CSO's addressed with this project currently overflow an average of 149 times per year, combined, producing approximately 93 MG per year.
 - CSO's 125, 126, 127, and 166

I-64 & Grinstead Drive CSO Basin

Project Background

- The original IOAP recommended a 2.74 Million Gallon Storage Basin providing a level of control of eight (8) overflows during the typical year.
- Updated flow monitoring increased the size to a 15.33 Million Gallon Storage Basin providing a level of control of four (4) overflows during the typical year.
- Proposed stormwater separation projects along Grinstead Drive reduced the required basin volume to 8.5 Million Gallons.
- The IOAP project completion deadline is December 31, 2020.

I-64 & Grinstead Drive CSO Basin



I-64 & Grinstead Drive CSO Basin

Project & Public Meeting Schedule

- Currently, MSD is in the Preliminary Design Phase of this project with Qk4.
- The Orientation (IOAP) Meeting for this project was held January 24, 2012 at the Girl Scouts Headquarters.
- The Conceptual Design Public Input Meeting for this project was held September 16, 2014 at Collegiate School.
- The Advanced Design Public Input Meeting for this project has not been scheduled, but is planned for Q3 2016.

Significant Capital Project Overview | Projects In Design

LEXINGTON & PAYNE CSO BASIN



Lexington & Payne CSO Basin

Project Location

- Metro Council Districts 4 and 9 – David Tandy & Bill Hollander
- Proposed site is within the 100-year floodplain of Beargrass Creek in the vacant area formerly occupied by River Metals Recycling.
- The nine (9) CSO's addressed with this project currently overflow an average of 380 times per year, combined, producing approximately 211 MG per year.
 - CSO's 082, 083, 084, 118, 119, 120, 121, 141, and 153

Lexington & Payne CSO Basin

Project Background

- The original IOAP recommended a 8.18 Million Gallon Storage Basin providing a level of control of zero (0) overflows during the typical year.
- Updated flow monitoring increased the size to a 13.7 Million Gallon Storage Basin providing a level of control of zero (0) overflows during the typical year.
- The IOAP project completion deadline is December 31, 2020.

Lexington & Payne CSO Basin



Lexington & Payne CSO Basin

Project & Public Meeting Schedule

- Currently, MSD is in the Preliminary Design Phase of this project with Hazen and Sawyer.
- The Orientation (IOAP) Meeting for this project has not been scheduled, but is planned for December 2015.
- The Conceptual Design Public Input Meeting for this project has not been scheduled, but is planned for Q1 2016.
- The Advanced Design Public Input Meeting for this project has not been scheduled, but is planned for Q3 2016.

Significant Capital Project Overview | Projects In Design

CLIFTON HEIGHTS CSO BASIN



Clifton Heights CSO Basin

Project Location

- Metro Council District 9 – Bill Hollander
- 1827 Drescher Bridge Avenue, near the intersection of Mellwood Avenue and Brownsboro Road.
- Site is within the 100-year floodplain of the Ohio River in the undeveloped area between Drescher Bridge Avenue and Mellwood Arts Center.
- The five (5) CSO's addressed with this project currently overflow an average of 195 times per year, combined, producing approximately 120 MG per year.
 - CSO's 088, 131, 132, 154, and 167.

Clifton Heights CSO Basin

Project Background

- The original IOAP recommended a 6.55 Million Gallon Storage Basin providing a level of control of four (4) overflows during the typical 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.
- The IOAP project completion deadline is December 31, 2018.

Clifton Heights CSO Basin



Clifton Heights CSO Basin

Project & Public Meeting Schedule

- Currently, MSD is in the 90% Design Phase of this project with GRW Engineering.
- The Orientation (IOAP) Meeting for this project was held March 25, 2014 at Lincoln Elementary.
- The Conceptual Design Public Input Meeting for this project was held May 19, 2015 at the American Printing House for the Blind.
- The Advanced Design Public Input Meeting for this project was held September 15, 2015 at the American Printing House for the Blind.

Significant Capital Project Overview | Projects In Design

PORTLAND CSO STORAGE BASIN



Portland CSO Basin

Project Location

- Metro Council District 5 – Cheri Bryant Hamilton
- Many potential locations for the basin (12 total) were evaluated.
- The recommended location is in the Lannan Park area.
- Proposed site is in the undeveloped area between I-64 and the floodwall (near 27th Street).
- CSO 019 is addressed with this project. This CSO currently overflows an average of 43 times per year, combined, producing approximately 57.8 MG per year.

Portland CSO Basin

Project Background

- The original IOAP recommended a 6.37 Million Gallon Storage Basin providing a level of control of eight (8) overflows during the typical year.
- Update flow monitoring information obtained in Feb 2015 increased the size to 6.7 Million Gallons. In addition to providing the required level of control, this volume also reduces the cumulative residual Average Annual Overflow Volume.
- The IOAP project completion deadline is December 31, 2019.

Portland CSO Basin



Portland CSO Basin

Project & Public Meeting Schedule

- The Orientation (IOAP) Meeting for this project was held February 9, 2015 at Western Middle School.
- MSD just completed the 10% Design Phase of this project with Heritage Engineers.
- The Conceptual Design (IOAP) Meeting for this project has not been scheduled, but is planned for January 2015.

Significant Capital Project Overview | Projects In Design

13TH & ROWAN CSO BASIN



13th & Rowan CSO Basin

Project Location

- Metro Council District 4 – David Tandy
- The proposed basin is to be located at near the intersection of 13th Street and Rowan Street.
- Proposed site is in the undeveloped area between I-64 and the floodwall.
- The twelve (12) CSO's addressed with this project currently overflow an average of 294 times per year, combined, producing approximately 129 MG per year.
 - CSO's 022, 023, 050, 051, 052, 053, 054, 055, 056, 058, 150 and 155.

13th & Rowan CSO Basin

Project Background

- The original IOAP recommended a 4.36 Million Gallon Storage Basin providing a level of control of eight (8) overflows during the typical year.
- Updated flow monitoring increased the size to a 9.8 Million Gallon Storage Basin providing a level of control of eight (8) overflows during the typical year.
- The IOAP project completion deadline is December 31, 2020.

13th & Rowan CSO Basin



13th & Rowan CSO Basin

Project & Public Meeting Schedule

- Currently, MSD is in the 5% Design Phase of this project with Black & Veatch Corporation.
- The Orientation (IOAP) Meeting for this project has not been scheduled, but is planned for Q1 2016.

Significant Capital Project Overview | Projects In Design

STORY AND MAIN CSO BASIN



Story and Main CSO Basin

Project Location

- Metro Council District 4 – David Tandy
- Proposed site is near the intersection of Buchanan Street and Franklin Street Near Starkey Flood Pump Station.
- The two (2) CSO's addressed with this project currently overflow an average of 51 times per year, combined, approximately 436 MG per year.
 - CSO's 020, 062.

Story and Main CSO Basin

Project Background

- The original IOAP recommended a 5.42 Million Gallon Storage Basin providing a level of control of eight (8) overflows during the typical year.
- Updated flow monitoring increased the size to a 8.3 Million Gallon Storage Basin providing a level of control of eight (8) overflows during the typical year.
- The IOAP project completion deadline is December 31, 2020.

Story and Main CSO Basin



Story and Main CSO Basin

Project & Public Meeting Schedule

- The Orientation (IOAP) Meeting for this project was held June 16, 2015 at at the American Printing House for the Blind.
- The Conceptual Design (IOAP) Meeting for this project has not been scheduled, but is planned for Q1 2016.
- Currently, MSD is in the 5% Design Phase of this project with HDR Engineering.

Significant Capital Project Overview

**9 Basin Projects
to be completed in the next 5 years:
approximately \$400 Million**

QUESTIONS?