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October 17, 2016

Chief, Environmental Enforcement Section
Environmental and Natural Resources Division
U.S. Department of Justice
Post Office Box 7611
Washington DC 20044-7611

Jeff Cummins, Director
Division of Enforcement
Department for Environmental Protection
300 Sower Blvd., 3rd Floor
Frankfort, KY 40601

Chief, NPDES Permitting and Enforcement Branch
Water Protection Division
US EPA Region 4
Atlanta Federal Center
61 Forsyth Street SW
Atlanta, GA 30303

Subject: Administrative Correction to the September 27, 2016, Minor Project Modification Letter

DOJ Case No. 90-5-1-1-08254

Attention Chiefs and Director:

It has come to our attention that the recently submitted Minor Project Modification Letter dated September 27, 2016, inadvertently contained an incorrect IOAP project number associated with the Lexington Road and Payne Street Storage Basin. The letter requested approval of a proposed minor project modification to consolidate the following three projects into a single Ohio River Tunnel solution:

13th Street and Rowan Street CSO Storage Basin (L_OR_MF_155_M_09B_B_B_4)
Story Avenue and Main Street Storage Basin (L_OR_MF_020_S_09B_B_A_8)
Lexington Road and Payne Street Storage Basin (L_SO_MF_083_M_09B_B_A_8)

The correct IOAP project number associated with the Lexington Road and Payne Street Storage Basin is listed above, not L_OR_MF_105_M_13_B_A_0, which is the project identification number for the Southwestern Parkway Storage Basin. To correct this oversight, and avoid confusion in the future, we have enclosed a revised submittal, dated October 17, 2016, with the correct IOAP project number reflected in the letter. The Ohio River Tunnel fact sheet (Attachment B) has been revised as well to show the appropriate IOAP project numbers and corresponding CSOs. No other changes were made regarding this submittal.

If you have questions or need additional information, please contact me at (502) 540-6136.

Sincerely,

Angela Akridge, P.E.
Chief Engineer

cc: T. Parrot P. Purifoy

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Subject: Minor Project Modifications
13th Street and Rowan Street CSO Storage Basin
Story Avenue and Main Street CSO Storage Basin
Lexington Road and Payne Street Storage Basin

DOJ Case No. 90-5-1-1-08254

Attention Chiefs and Director:

MSD is requesting approval of a proposed minor project modification to each of the following three projects:

13th Street and Rowan Street CSO Storage Basin (L_OR_MF_155_M_09B_B_B_4)
Story Avenue and Main Street Storage Basin (L_OR_MF_020_S_09B_B_A_8)
Lexington Road and Payne Street Storage Basin (L_OR_MF_083_M_09B_B_A_8)

Over the past decade, MSD has maintained its commitment to achieve full compliance with the Consent Decree mandate. A fundamental strategy adopted early on by MSD has been to continually evaluate results over the life of the 20-year program, explore new technologies, and refine proposed solutions where there are opportunities to achieve environmental benefits paired with cost-savings or other benefits to the community. This adaptive management approach has led MSD to propose numerous modifications in projects over the years based on sound science and cost-benefit analysis. These modifications were subsequently approved by EPA because MSD was able to demonstrate that they continue to meet the ultimate goal of water quality improvement while also honoring the responsibility MSD has to consider community concerns such as affordability and construction impacts.

MSD is currently proposing a project modification that brings significant advantages to the community, and will continue to meet previously committed levels of control, residential Average Annual Overflow Volume (AAOV) and project sizing within the final completion date of December 31, 2020, for the entire suite of Long-Term Control Plan projects. The request to EPA and KDEP involves combining the volume of three individual basin projects into a single deep rock tunnel.

The advantages of the requested modification are significant for the impacted neighborhoods. Concern has been expressed by residents and business owners in the proposed storage basin project areas about the impacts they will experience throughout the multi-year construction duration and the lasting impact these basin facilities would have on their neighborhoods thereafter. Eliminating the storage basins and

replacing them with a deep rock tunnel minimizes the surface structures and surface disturbance durations in the affected neighborhoods. An added benefit of the tunnel is it provides enhanced operational redundancy for the Starkey Pump Station, one of the community's most critical facilities.

This request is part of the ongoing adaptive management review of the approved Integrated Overflow Abatement Plan (IOAP) dated May 2014. None of the proposed modifications impacts previously committed levels of control, residual Average Annual Overflow Volume (AAOV) or project sizing. Similarly, the final completion date of December 31, 2020, for the entire suite of Long Term Control Plan projects is not affected by this request. The unique details of each of the project modification requests are discussed below.

13th Street and Rowan Street Storage Basin

2009 IOAP Project Description

The original 13th and Rowan Storage Basin project involved the construction of a 14.44 MG storage basin to be completed by December 31, 2020, with a level of control of eight overflows per Typical Year. The original project also included 11 Central Relief Drain (CRD) CSOs.

2012 IOAP Modification

After the system-wide recalibration of the hydraulic model completed in 2010, the benefit cost analysis to justify project sizing and LOC was repeated. Additionally, a separate Green Infrastructure, In-line Storage, and Distribution project was created for the 11 CRD CSOs. The level of control analysis based on the benefit cost evaluation determined that the project level of control should be eight overflows per Typical Year. As a result of all of these changes, the basin size decreased from 14.4 MG to 4.4 MG. This was the basin size included in the approved 2012 IOAP Modification dated May 2014. The completion date remained December 31, 2020.

2015 Basin Balancing Project Modification Request

As part of the adaptive management approach outlined in the IOAP, MSD submitted a programmatic justification for proposed modifications to five IOAP projects. While the benefit cost methodology indicated that one basin (Southwestern Parkway Storage Basin) should be designed for eight overflows per Typical Year (compared to the existing level of control of zero overflows per Typical Year), optimization of basin sizes for four other projects offset the resulting higher AAOV at the Southwestern Parkway Storage Basin. Affected projects included the Portland Wharf, 13th Street and Rowan Street, Story Avenue and Main Street, and Lexington Road and Payne Street Storage Basins. The combined suite of five proposed modifications achieved a slightly lower programmatic residual AAOV with greater benefit to the community and environment. The table below presents the basin sizes that resulted from the AAOV optimization analysis. The suite of minor modifications corresponded to a residual AAOV of 340 MG per Typical Year, which was less than the 343 MG residual AAOV calculated for the 2012 IOAP Modification, and over 200 MG less than the residual AAOV calculated in the approved IOAP dated September 2009.

Project Optimization Analysis – Storage Basin Resizing

Project Name	2012 IOAP Modification		2015 Minor Modification	
	Basin Volume (MG)	Overflows in Typical Year	Basin Volume (MG)	Overflows in Typical Year
Portland Wharf Storage Basin	6.4	8	6.7	8
13 th Street and Rowan Street Storage Basin	4.4	8	9.8	8
Story Avenue and Main Street Storage Basin	5.4	8	8.3	8
Lexington Road and Payne Street Storage Basin	8.2	0	13.7	0
Southwestern Parkway Storage Basin	11.1	0	20.0	8

2016 Project Modification Request

Replacement of underground storage basin with a tunnel along the Ohio River. See Ohio River Tunnel project description below for additional information.

Story Avenue and Main Street Storage Basin

2009 IOAP Project Description

The original Story Avenue and Main Street Storage Basin project involved the construction of a 0.13 MG storage basin to be completed by December 31, 2013, with a level of control of eight overflows per Typical Year.

2012 IOAP Modification

After the system-wide recalibration of the hydraulic model completed in 2010, the benefit cost analysis to justify project sizing and LOC was repeated. As a result of all of these changes, the basin size increased from 0.13 MG to 5.4 MG. Given the significant increase in proposed size, moving the scheduled completion to 2020 was proposed, and accepted in the approved IOAP dated May 2014. This was the basin size included in the approved 2012 IOAP Modification dated May 2014.

2015 Basin Balancing Project Modification Request

See summary above for 13th Street and Rowan Street Storage Basin

2016 Project Modification Request

Replacement of underground storage basin with a tunnel along the Ohio River. See Ohio River Tunnel project description below for additional information.

Lexington Road and Payne Street Storage Basin

2009 IOAP Project Description

The original Lexington Road and Payne Street Storage Basin project involved the construction of a 7.31 MG storage basin to be completed by December 31, 2020, with a level of control of zero overflows per Typical Year.

2012 IOAP Modification

After the system-wide recalibration of the hydraulic model completed in 2010, the benefit cost analysis to justify project sizing and LOC was repeated. The level of control analysis based on the benefit cost evaluation determined that the project level of control should be zero overflows per Typical Year. As a result of all of these changes, the basin size increased from 7.3 MG to 8.2 MG. This was the basin size included in the approved 2012 IOAP Modification dated May 2014. The completion date remained December 31, 2020.

2015 Basin Balancing Project Modification Request

See summary above for 13th Street and Rowan Street Storage Basin

2016 Project Modification Request

Replacement of underground storage basin with a tunnel along the Ohio River. See Ohio River Tunnel project description below for additional information.

Ohio River Tunnel Project

This project modification request involves combining the volume of three CSO abatement projects (13th Street and Rowan Street, Story Avenue and Main Street, and Lexington Road and Payne Street Storage Basins) and modifying the design method from individual basins to a single deep rock tunnel consolidated solution. The proposed tunnel will be a minimum of 20 feet in diameter and extend approximately 13,200 feet east along the Ohio River from the intersection of 12th Street and Rowan Street.

The CSOs associated with the tunnel are broken into three different project areas which under the initial IOAP were addressed by the 13th Street and Rowan Street, Story Avenue and Main Street, and Lexington Road and Payne Street Storage Basins. Each of the project areas below will discharge to this common tunnel. The Ohio River Tunnel Project replaces the previously mentioned basins and consolidates their individual approved storage volumes into a single tunnel solution.

A total CSO volume of 31.8 MG will be captured at 19 CSOs, each at the level of control approved following the 2015 Basin Balancing Project Modification Request. Three CSOs (022, 023, and 058) where level of control of eight overflows per Typical Year is met via weir modifications will remain unchanged. This modification request allows for a consolidated tunnel solution with a storage volume equivalent to the sum of the storage basin volumes listed below, which effectively eliminates the need for individual basin solutions. The completion date for the tunnel is planned for December 31, 2020, consistent with the approved 2012 IOAP Modification schedule for the three basins.

CSO Basin Consolidation – Ohio River Tunnel

Project Name	2012 IOAP Modification		2015 Minor Modification Request	
	Basin Volume (MG)	Overflows in Typical Year	Basin Volume (MG)	Overflows in Typical Year
13 th Street and Rowan Street Storage Basin	4.4	8	9.8	8
Story Avenue and Main Street Storage Basin	5.4	8	8.3	8
Lexington Road and Payne Street Storage Basin	8.2	0	13.7	0

Modification Drivers and Technical Justification

Many factors have influenced changing the design of three individual storage basin projects to in-line storage along Louisville's waterfront via a deep-rock tunnel. A primary driver has been public opposition to the above-ground storage tank under design for Story and Main. Following public meetings with adamant resistance and close coordination with the neighborhood stakeholder group, MSD evaluated the cost to burying the basin. Because it is on the wet side of the flood wall, structural improvements to keep the basin from floating under flood conditions would require approximately \$15 million in additional construction costs. Considering this amount in the total cost for the three basins, costs were comparable to those for the deep rock tunnel alternative.

The greatest benefit and technical justification identified is the operational redundancy that an Ohio River Tunnel alternative will provide for Starkey Pump Station where CSO 020 is located. As one of MSD's most critical facilities, maintaining and operating this station on a regular basis is a high priority. The tunnel alternative would allow storage capacity on dry weather days to divert flow if maintenance or critical repairs were necessary.

Justification as well as additional drivers that have contributed to the project modification are listed below.

- Operational benefits and redundancy at Starkey Pump Station
- Anticipated construction challenges for 13th and Rowan interceptor micro-tunnel including interference with utilities and building foundations along Main Street
- Potentially prohibitive economic losses associated with interceptor along Main Street
- Public opposition to above-grade CSO storage basins

Overall Summary

Below is a summary table summarizing the changes for each of the projects.

2016 Modification Request – Ohio River Tunnel Summary

Project Name	IOAP Project Number	Modification Request	Discussion
13 th Street and Rowan Street Storage Basin	L_OR_MF_155_M_09B_B_B_4	Revise design to tunnel solution that consolidates CSO controls for 13 th and Rowan, Lexington and Payne, and Story and Main Storage Basins	Tunnel capacity will allow a level of control of eight overflows per Typical Year for 9 CSOs. Weir raises (level of control of eight) at 3 CSOs will remain unchanged
Story Avenue and Main Street Storage Basin	L_OR_MF_020_S_09B_B_A_8	Eliminate Story Avenue and Main Street Storage Basin project	Tunnel capacity will allow a level of control of eight overflows per Typical Year for 1 CSO.
Lexington Road and Payne Street Storage Basin	L_OR_MF_083_M_09B_B_A_8	Eliminate Lexington Road and Payne Street Storage Basin project	Tunnel capacity will allow a level of control of zero overflows per Typical Year for 9 CSOs.

Both on an individual site level and on a system wide level, the proposed modifications will have no impact to the levels of control at each site or residual AAOV for the entire system at the target completion date of 2020. The cumulative suite of projects will still result in a residual AAOV of 340 MG or less during the Typical Year at the completion of the project.

For your reference, copies of project fact sheets and maps are provided. The project fact sheets and maps for 13th Street and Rowan Street, Story Avenue and Main Street, and Lexington Road and Payne Street Storage Basins from the recently approved 2015 Basin Balancing Minor Project Modification are included in Attachment A. A new project fact sheet and map addressing the Ohio River Tunnel project consistent with this new project modification request have been provided in Attachment B.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering such information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have questions or need additional information, please contact me at (502) 540-6136.

Sincerely,



Angela Akridge, P.E.
 Chief Engineer

cc: T. Parrot P. Purifoy

sbl. X:\Data\IOAP\2014 IOAP\2014 Modification\Mod Letters\ Tunnel Minor Mod Letter – 2016_10_17.docx

Attachments

Attachment A



CSO Project Fact Sheet 2015 IOAP Project Modification



Project Name: 13th Street and Rowan Street Storage Basin

Project Number: L_OR_MF_155_M_09B_B_B_4

Project Type: Off-Line Storage

Rec Stream: Ohio River

Project Description: This project includes a large conveyance line from multiple CSOs and 9.8 MG underground covered concrete basin to reduce overflows to 8 overflows per typical year. This project also includes weir modifications to CSO 023 and 058. Two routes and costs for the conveyance line have been identified. The first route involves micro-tunnelling along Main Street, and the alternate route involves traditional open cut sewer installation along River Road. A right-sizing analysis may be used to potentially reduce the size of the basins or eliminate some of the conveyance lines.

Design Assumption: Conveyance line along Main Street will be able to stay under existing utilities and over existing stormwater outfall lines. All CSOs are connected to the conveyance line near the weir, and no overflow pipes are used for conveyance due to the potential of additional direct stormwater runoff.

Capital Cost: \$30,863,000

Capital Benefit/Cost: 40.71

Present Worth Benefit Cost: 51.31

CSO	CSO Name	Existing May 2012 ¹		Baseline May 2012 ²	
		Avg. Annual Overflow Volume	Avg. Annual Frequency	Avg. Annual Overflow Volume	Avg. Annual Frequency
CSO022	FOURTH ST PS	3.13	7	3.13	7
CSO023	ORI @ 4th ST PS	3.95	6	16.15	15
CSO050	12th STREET	8.58	30	15.13	32
CSO051	11th STREET	1.18	13	1.89	15
CSO052	10th STREET	2.51	18	4.31	25
CSO053	8th STREET	4.62	38	4.62	38
CSO054	7th STREET	0.72	12	1.54	18
CSO055	6th STREET	2.66	14	6.53	21
CSO056	5th STREET	1.41	11	1.96	13
CSO058	PRESTON ST OVFL WEIR	1.29	13	69.55	51
CSO150	8th ST @ COMMON PLACE	0.86	14	1.88	21
CSO155	ROWAN ST @ 12th ST	2.36	38	2.36	38

1. Existing May 2012 conditions reflect existing system operating conditions as of that date.

2. Baseline May 2012 assumes all SSDP projects are complete and critical combined sewer facilities (e.g. Morris Forman WQTC Southwestern Pump Station, Starkey Pump Station) are operating at optimal, sustainable levels.

Monday, August 24, 2015

Integrated Overflow Abatement Plan Vol. 2 - Final CSO Long Term Control Plan

Ohio River

N 13th St and Rowan St Storage Basin

Preliminary - For Budget Development Only

- Active CSO
- Eliminated CSO
- PS Proposed Pump Station Solution
- PS Pump Stations
- Proposed Pipe Solution
- Combined Sewer Pipe
- Force Main
- Collector < 12"
- Interceptor >= 12"
- Drainage Mains
- Proposed Storage Solution
- Streams
- Floodway
- Jefferson County Boundary

General representation of overflow abatement solutions are for preliminary planning purposes. Alignments and locations may be altered during design.

1 inch = 400 feet

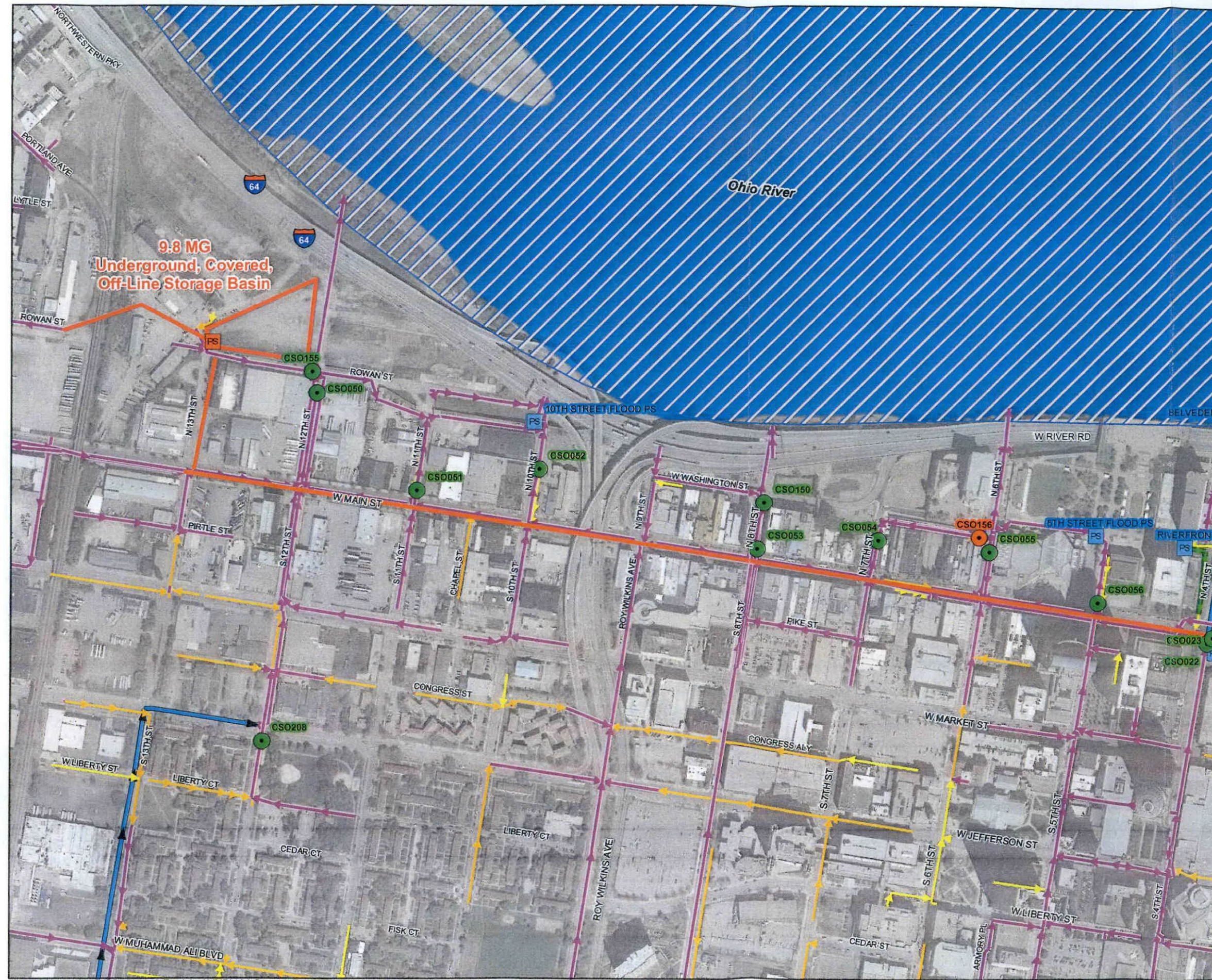


Aerial Date:
2012

Map Revision:
June 19, 2015



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CSO Project Fact Sheet

2015 IOAP Project Modification



Project Name: Story Avenue and Main Street Storage Basin

Project Number: L_OR_MF_020_S_09B_B_A_8

Project Type: Off-Line Storage

Rec Stream: Ohio River

Project Description: This project includes the construction of a 8.3 MG off-line underground covered storage basin for CSO020 to reduce overflows to 8 overflows per typical year. Project assumes that the Starkey Pump Station has a typical, minimum pumping rate of 108 MGD. Additional storage or a higher pump-out rate may be added if deemed advantageous to operational and maintenance flexibility as well as impacts to other downstream CSO control projects.

Design Assumption: Basins are designed to the 9th overflow event volume, resulting in 8 CSO overflows per typical year. Type of basin based on hydraulics and surroundings. Starkey PS must be able to maintain a minimum pumping rate of 108 MGD.

Capital Cost: \$17,570,000

Capital Benefit/Cost: 18.78

Present Worth Benefit Cost: 20.37

CSO	CSO Name	Existing May 2012 ¹		Baseline May 2012 ²	
		Avg. Annual Overflow Volume	Avg. Annual Frequency	Avg. Annual Overflow Volume	Avg. Annual Frequency
CSO020	BUCHANAN PS	436.87	51	143.94	37

1. Existing May 2012 conditions reflect existing system operating conditions as of that date.

2. Baseline May 2012 assumes all SSDP projects are complete and critical combined sewer facilities (e.g. Morris Forman WQTC Southwestern Pump Station, Starkey Pump Station) are operating at optimal, sustainable levels.

Integrated Overflow Abatement Plan Vol. 2 - Final CSO Long Term Control Plan

Ohio River

Story Ave & Main St Storage Basin

Preliminary - For Budget Development Only

- Active CSO
- Eliminated CSO
- PS Proposed Pump Station Solution
- PS Pump Stations
- Proposed Pipe Solution
- Combined Sewer Pipe
- Force Main
- Collector < 12"
- Interceptor >= 12"
- Drainage Mains
- Proposed Storage Solution
- Streams
- Floodway
- Jefferson County Boundary

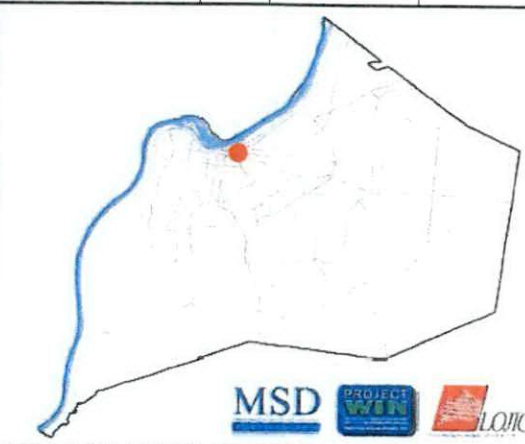
General representation of overflow abatement solutions are for preliminary planning purposes. Alignments and locations may be altered during design.

1 inch = 100 feet



Aerial Date:
2012

Map Revision:
June 19, 2015



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CSO Project Fact Sheet

2015 IOAP Project Modification



Project Name: Lexington Road and Payne Street Storage Basin

Project Number: L_SO_MF_083_M_09B_B_A_8

Project Type: Off-Line Storage

Rec Stream: South Fork Beargrass Creek

Project Description: This project includes an 13.7 MG off-line covered storage basin for CSO083, 84, 118, 119, 120, 121, 141, 153 & 082 to reduce overflows to zero overflows per typical year. The basin will require an 13.7 MGD PS to return the stored flow to the interceptor.

Design Assumption: Basins are designed to the largest overflow event volume, resulting in zero CSO overflows in a typical year. The peak flowrate is evaluated to compare gravity vs. pumped conveyance. Design for pump-back is 24 hours. Type of basin based on hydraulics and surroundings.

Capital Cost: \$30,090,000

Capital Benefit/Cost: 67.61

Present Worth Benefit Cost: 75.16

CSO	CSO Name	Existing May 2012 ¹		Baseline May 2012 ²	
		Avg. Annual Overflow Volume	Avg. Annual Frequency	Avg. Annual Overflow Volume	Avg. Annual Frequency
CSO082	BGI AT BGC	25.31	39	7.11	31
CSO083	BRENT ST & BROADWAY CONNECT	0.00	0	0.00	0
CSO084	BRENT ST @ BGC	3.27	18	3.26	18
CSO118	REG NO 15 - E BRDWY	41.27	33	38.88	33
CSO119	BRENT STREET SEWER	4.24	29	4.02	29
CSO120	PHOENIX HILL SEWER	15.51	51	15.36	52
CSO121	REG NO 18 - GREEN ST	1.06	6	0.92	6
CSO141	BAXTER AVE @ BGC	0.36	38	0.36	38
CSO153	COOPER STREET	9.72	47	8.63	46

1. Existing May 2012 conditions reflect existing system operating conditions as of that date.

2. Baseline May 2012 assumes all SSDP projects are complete and critical combined sewer facilities (e.g. Morris Forman WQTC Southwestern Pump Station, Starkey Pump Station) are operating at optimal, sustainable levels.

Monday, August 24, 2015

Integrated Overflow Abatement Plan Vol. 2 - Final CSO Long Term Control Plan

South Fork Beargrass Creek
Lexington Rd and Payne St Storage Basin

Preliminary - For Budget Development Only

- Active CSO
- Eliminated CSO
- PS Proposed Pump Station Solution
- PS Pump Stations
- Proposed Pipe Solution
- Combined Sewer Pipe
- Force Main
- Collector < 12"
- Interceptor ≥ 12"
- Drainage Mains
- Proposed Storage Solution
- Streams
- ▨ Floodway
- Jefferson County Boundary

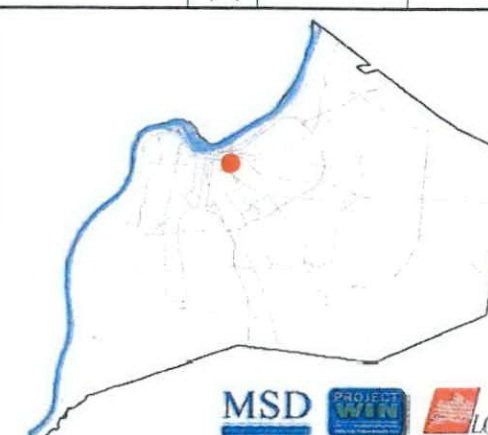
General representation of overflow abatement solutions are for preliminary planning purposes. Alignments and locations may be altered during design.

1 inch = 400 feet

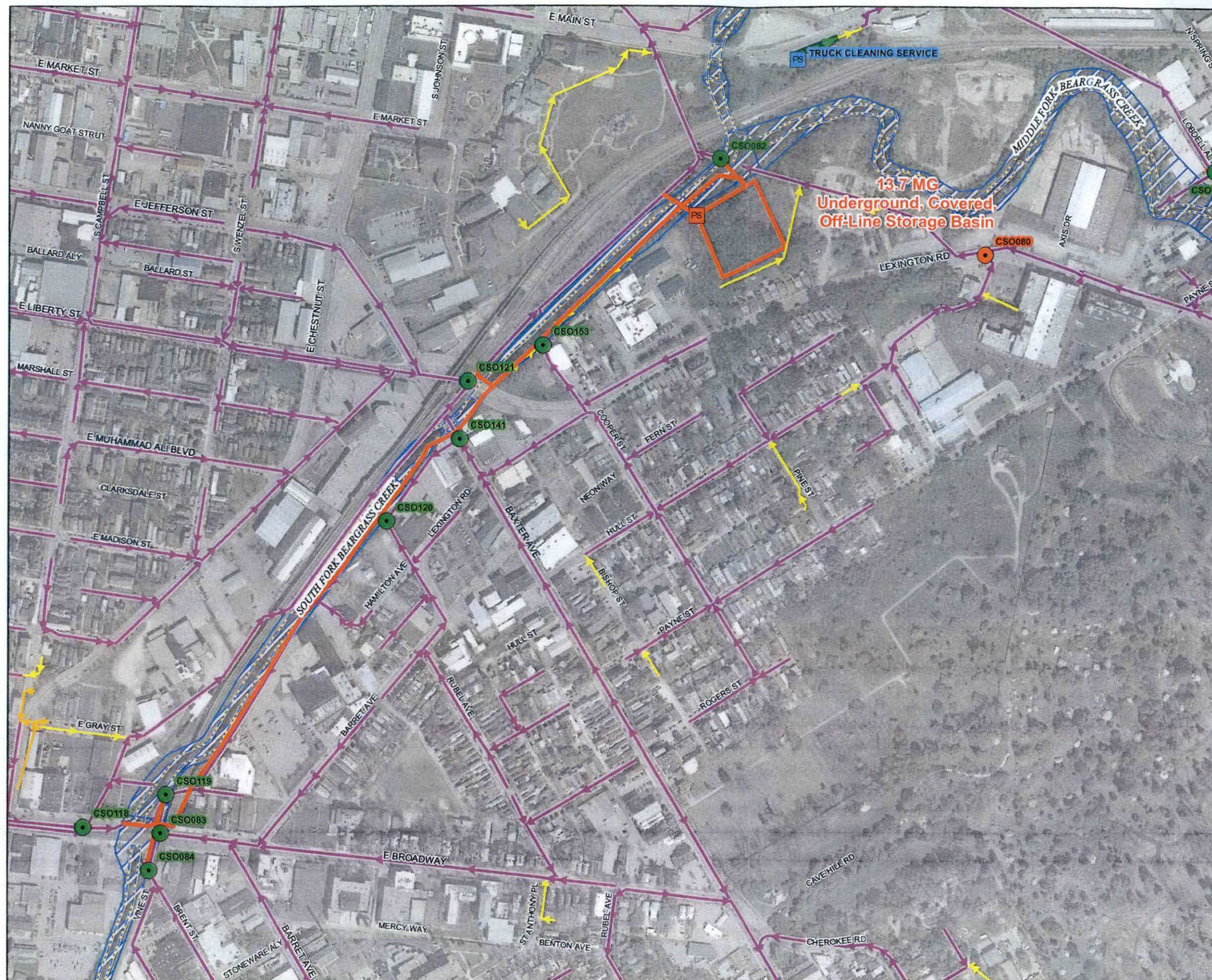


Aerial Date:
2012

Map Revision:
June 19, 2015



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Attachment B

Project Name: Ohio River Tunnel

Project Number: L_OR_MF_155_M_09B_B_B_4, L_OR_MF_020_S_09B_B_A_8, and
 L_SO_MF_083_M_09B_B_A_8

Project Type: Offline Storage

Rec Stream: Ohio River/Beargrass Creek

Project Description: An in-line storage tunnel along the Ohio River with a minimum storage volume of 31.8 million gallons. This will include the construction of approximately 13,200 LF of deep rock tunnel with a minimum diameter of 20 feet. The project will also require a pump station to return stored flows back to the Ohio River Interceptor. The CSOs associated with the tunnel are broken into three different project areas which under the initial IOAP were addressed by the 13th Street and Rowan Street, Story Avenue and Main Street, and Lexington Road and Payne Street Storage Basins. Each of the project areas below will discharge to this common tunnel. The Ohio River Tunnel Project replaces the previously mentioned basins and consolidates their individual approved storage volumes into a single tunnel solution.

13th/Rowan Project Area (L_OR_MF_155_M_09B_B_B_4) – Conveyance lines and interceptors will be constructed, as necessary, to connect individual CSOs along the Main Street corridor to the tunnel. Additionally, the project also includes weir modifications to CSOs 022, 023, 058. CSOs in this area will maintain a level of control of 8 overflows per Typical Year.

Story/Main Project Area (L_OR_MF_020_S_09B_B_A_8) – A conveyance line to a drop shaft will be constructed to connect CSO0020 to the Ohio River Tunnel. The CSO in this area will maintain a level of control of 8 overflows per Typical Year.

Lexington/Payne Project Area (L_SO_MF_083_M_09B_B_A_8) – An interceptor and conveyance lines along Beargrass Creek will be constructed to connect the CSOs from the Lexington/Payne project area. The interceptor will terminate at a drop shaft into the Ohio River Tunnel. CSOs in this area will maintain a level of control of 0 overflows per Typical Year.

Design Assumption: The project assumes connections to the CSOs will be made in the vicinity downstream of existing CSO overflow structures. Overflow lines cannot be used for conveyance due to additional direct stormwater runoff and Ohio River Flooding. The design of the facilities must be coordinate with MSD flood protection needs. Real time control will be implemented in the 13th/Rowan and CSO020 conveyance lines to manage inflows into the tunnel.

Capital Cost: \$143,000,000

Capital Benefit/Cost:

Present Worth Benefit Cost:

CSO	CSO Name	Existing May 2012 ¹		Baseline May 2012 ²	
		Avg. Annual Overflow Volume	Avg. Annual Frequency	Avg. Annual Overflow Volume	Avg. Annual Frequency
CSO020	BUCHANAN PS	355.00	74	294.00	71
CSO022	FOURTH ST PS	4.50	16	4.50	16
CSO023	ORI @ 4th ST PS	1.80	8	4.70	9
CSO050	12th STREET	19.60	55	22.50	55
CSO051	11th STREET	0.30	8	0.70	10
CSO052	10th STREET	2.50	21	3.20	24

1. Existing May 2012 conditions reflect existing system operating conditions as of that date.

2. Baseline May 2012 assumes all SSDP projects are complete and critical combined sewer facilities (e.g. Morris Forman WQTC Southwestern Pump Station, Starkey Pump Station) are operating at optimal, sustainable levels.

CSO053	8th STREET	7.70	50	7.70	50
CSO054	7th STREET	1.80	35	2.30	35
CSO055	6th STREET	4.90	17	6.80	21
CSO056	5th STREET	4.30	24	4.70	24
CSO058	PRESTON ST OVFL WEIR	51.40	68	52.20	63
CSO082	BGI AT BGC	19.20	50	15.80	46
CSO083	BRENT ST & BROADWAY CONNECT	0.50	7	0.50	7
CSO084	BRENT ST @ BGC	19.20	46	19.10	44
CSO118	REG NO 15 - E BRDWY	117.50	60	116.30	60
CSO119	BRENT STREET SEWER	10.30	53	10.10	51
CSO120	PHOENIX HILL SEWER	7.50	52	7.40	52
CSO121	REG NO 18 - GREEN ST	5.50	23	5.40	22
CSO141	BAXTER AVE @ BGC	0.70	20	0.70	20
CSO150	8th ST @ COMMON PLACE	0.80	10	1.20	16
CSO153	COOPER STREET	18.70	71	18.40	71
CSO155	ROWAN ST @ 12th ST	0.60	18	0.60	18

1. Existing May 2012 conditions reflect existing system operating conditions as of that date.

2. Baseline May 2012 assumes all SSDP projects are complete and critical combined sewer facilities (e.g. Morris Forman WQTC Southwestern Pump Station, Starkey Pump Station) are operating at optimal, sustainable levels.

Tuesday, October 18, 2016

Integrated Overflow Abatement Plan Vol. 2 - Final CSO Long Term Control Plan

Ohio River

Ohio River Tunnel

Preliminary - For Budget Development Only

- ! Active CSO
- ! Eliminated CSO
- PS Proposed Pump Station Solution
- PS Pump Stations
- Proposed Pipe Solution
- Combined Sewer Pipe
- Force Main
- Collector < 12"
- Interceptor >= 12"
- Drainage Mains
- Proposed Storage Solution
- Streams
- Floodway
- Jefferson County Boundary

General representation of overflow abatement solutions are for preliminary planning purposes. Alignments and locations may be altered during design.

1 inch = 1,000 feet



Aerial Date:
2012

Map Revision:
August 15, 2016



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