



# The Pittsburgh Water and Sewer Authority

## 2022 – 2026 Capital Improvement Plan

Approved on September 24, 2021



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## Table of Contents

<b>Introduction</b> .....	<b>1</b>
<b>Pennsylvania Public Utility Commission Oversight of the Authority</b> .....	<b>1</b>
<b>Capital Improvement Program</b> .....	<b>1-3</b>
<b>Historical and Forecasted Capital Expenditures</b> .....	<b>4</b>
<b>2022-2026 Capital Improvement Program</b> .....	<b>5</b>
<b>2022-2026 Project Summary</b> .....	<b>6-9</b>
Water Treatment Plant .....	10-29
Water Pumping and Storage.....	30-58
Water Distribution.....	59-82
Wastewater System .....	83-92
Stormwater .....	93-116
Miscellaneous.....	117-118

## Introduction

The Pittsburgh Water and Sewer Authority (“**the Authority**” or “**the PWSA**”) is a body corporate and politic organized and existing under the Act pursuant to Resolution No. 36 of the Council of the City of Pittsburgh (the “**City**”), duly enacted on February 6, 1984, approved by the Mayor on February 8, 1984, and effective February 16, 1984. The Secretary of the Commonwealth of Pennsylvania approved the Authority’s Articles of Incorporation and issued a Certificate of Incorporation on February 17, 1984. Articles of Amendment were approved and a Certificate of Amendment was issued by the Pennsylvania Department of State on December 11, 1989, to include, among authorized projects, low head dams and facilities for generating surplus electric power. Articles of Amendment were approved and a Certificate of Amendment was issued by the Pennsylvania Department of State on May 9, 2008, to extend the term of existence of the Authority to May 21, 2045. Articles of Amendment were approved and a Certificate of Amendment was issued by the Pennsylvania Department of State on March 19, 2020, to extend the term of existence of the Authority to March 13, 2070 and to include stormwater systems.

Under its Articles of Incorporation, the Authority is specifically authorized to acquire, hold, construct, finance, improve, maintain, operate, own and lease, either as lessor or lessee, projects of the following kinds and character: sewers, sewer systems or parts thereof, waterworks, water supply works, and water distribution systems, low head dams, facilities for generating surplus power, and stormwater systems.

The System provides water to approximately 81,000 customers or 84% of the total population in the geographic boundaries of the City. The Authority provides wastewater collection and transmission service to almost the entire City, estimated at 306,000 residents. The System does not include wastewater treatment facilities; such facilities are the responsibility of Allegheny County Sanitary Authority (“**ALCOSAN**”), a separate and distinct legal entity.

The Authority operates and maintains a 117 million gallon per day (MGD) rapid sand type water treatment plant, a 26 MGD microfiltration plant, approximately 964 miles of water mains, over 32,000 valves and fire hydrants, 1 raw water pump station, 10 finished water pump stations, 4 in-ground reservoirs, 10 storage tanks, approximately 1,220 miles of sanitary, storm and combined sewers, 29,000 manholes, 30,000 catch basins and inlets, 38 combined sewer overflow outfalls, 185 storm outfalls, and four wastewater pump stations.

## Pennsylvania Public Utility Commission Oversight of the Authority

On December 21, 2017, the Pennsylvania legislature enacted Act 65 of 2017 (“**Act 65**”), placing the Authority under the jurisdiction of the Pennsylvania Public Utility Commission (“**PUC**”) pursuant to the Pennsylvania Public Utility Code (the “**Public Utility Code**”). Act 65 applies most of the provisions of the Public Utility Code to the Authority in the same manner as a “public utility,” resulting in regulation of the Authority’s rate making, its operating effectiveness, debt issuances and other aspects of conducting its business similar to the way the PUC regulates investor-owned utilities. Act 65 includes provisions that allow the Authority to impose, charge or collect rates or charges as necessary to permit the Authority to comply with its covenants with the holders of any bonds or other financial obligations of the Authority, and prohibits the PUC from requiring the Authority to take any action that would cause the interest on the Authority’s financial obligations to be includible in gross income of the holders of such obligations for federal income tax purposes.

## Capital Improvement Program

### Overview

The PWSA's Capital Improvement Program (CIP) focuses on sustaining cost-effective operations, while optimizing the system's asset performance and life expectancy. The 2022-2026 Capital Improvement Program invests in programs which consider risk and consequence of asset failure and levels of service benefits.

### Development and Approval Process

The PWSA’s CIP process begins each year in May when project nominations are solicited from the entire organization. At the completion of the nomination period, the Finance Department screens and evaluates the nominated projects to determine the projects that should be included in the CIP. Further planning efforts consist of the preparation of a project sheet, which provides more detailed information on a project’s potential scope options, risks, schedule, and the cost

estimate. This process lasts several months and culminates with the presentation of the updated CIP to PWSA's Board of Directors. Projects that are not selected for execution at any stage will be re-assessed during the next year's CIP development process.

### **Capital Project Prioritization**

Due to funding limitations and the need to renew/replacing a significant amount of aging infrastructure, the following criteria are used to evaluate and prioritize capital projects:

- Capacity – Meets community health needs and growth, as needed
- Level of Service – Improvement to customer service
- Operations and Maintenance Efficiency – Potential for operating cost savings
- Regulatory Compliance – Regulatory compliance schedule and potential fines for non-compliance
- Regional Cooperation/Stewardship – Coordination with external stakeholders and local communities
- Reliability/Operational Flexibility – Location, age, and condition of infrastructure and risk if action is not taken
- Safety - Potential health and safety risks to personnel and the public if action is not taken
- Sustainability – Energy efficiency and “green” approach to improving water quality

### **Funding Sources**

The PWSA Capital Improvement Program is funded through several primary sources to which specific programs and projects are allocated. These funding sources include, but are not limited to, Debt (Revenue Bonds), Distribution System Improvement Charge (“**DSIC**”), Water Infrastructure Finance and Innovation Act (“**WIFIA**”), Pennsylvania Infrastructure Investment Authority (“**PENNVEST**”), and cost shares with other entities.

### **Capital Improvement Plan Organization**

The CIP is organized into six project classes (types):

- Water Treatment Plant
- Water Pumping and Storage
- Water Distribution
- Wastewater System
- Stormwater
- Miscellaneous

Each project class is then made up of individual projects. Projects are defined based upon current information, which range from annual allowances for asset renewal and/or replacement activities, to major, multiple phase facility renewal projects.

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## Project Information

The following information is provided for each project:

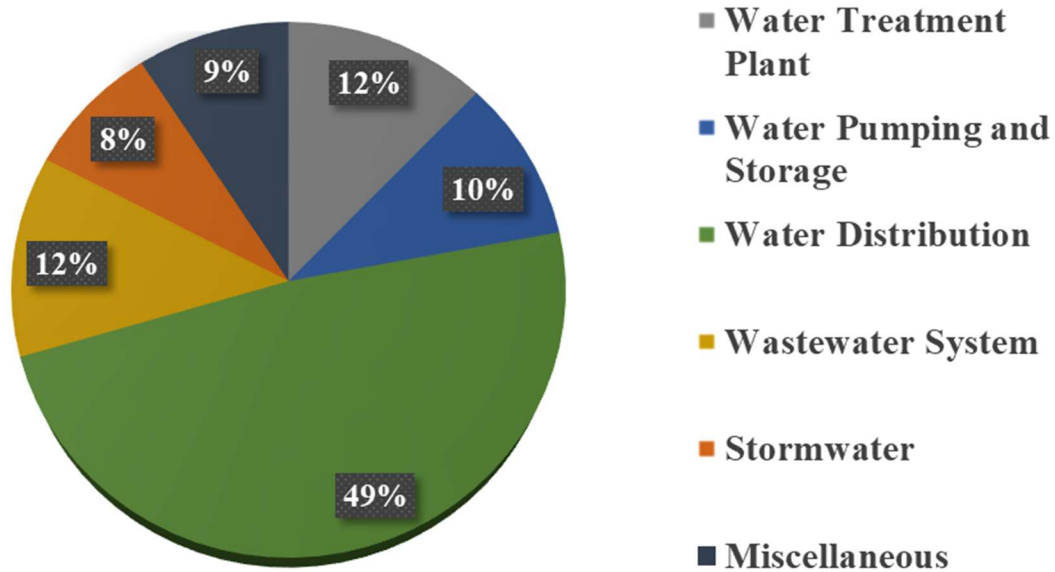
- **Alternatives to the Recommended Action** – Lists the alternatives that were considered or evaluated.
- **Cash Flow Summary** – Estimated five-year cash flow for the project.
- **Funding Source(s)** – Proposed funding source(s) for the project.
- **Impact on Operations** – Describes the anticipated impact to the PWSA’s operations when the project is completed.
- **Phase** – Phase in the project life-cycle (i.e. assessment/design/construction).
- **Priority** – Criteria utilized to prioritize the project.
- **Project Class** – Type of project.
- **Project Description** - A basic understanding of the project’s intent and scope of work.
- **Project Justification** - A detailed explanation to why the project is needed.
- **Project Name** – Descriptive name assigned to the project.
- **Project Number** – Unique number(s) assigned to track the project from inception to completion. This number is established once a project is approved.
- **Risk(s)** - Outlines the risk(s) to the PWSA if the project is delayed or is not selected.
- **Ward** – Project location(s) based within the City of Pittsburgh.

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# Historical and Forecasted Capital Expenditures

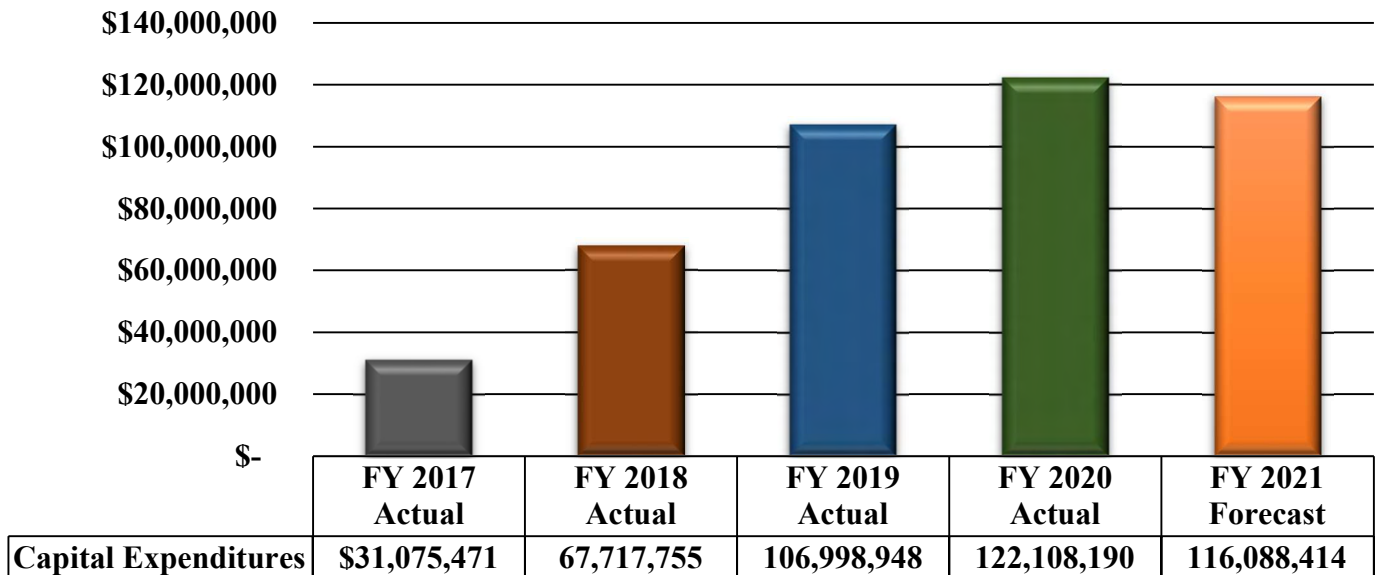
The figures below illustrate the historical capital expenditures by project class for FY 2017 – FY 2020 as well as the historical and forecasted capital expenditures for FY 2017 – FY 2020.

Figure 1. Historical Capital Expenditures by Project Class: FY 2017 – FY 2020



	FY 2017 - Actual	FY 2018 - Actual	FY 2019 - Actual	FY 2020 - Actual	Total
Water Treatment Plant	\$ 8,156,719	7,275,878	15,665,185	8,959,256	\$ 40,057,038
Water Pumping and Storage	3,562,479	11,732,850	9,667,165	7,304,722	32,267,216
Water Distribution	11,113,101	27,185,518	55,588,889	64,838,953	158,726,461
Wastewater System	6,768,668	9,225,987	15,152,656	8,767,047	39,914,357
Stormwater	953,003	3,156,175	6,901,255	15,791,622	26,802,056
Miscellaneous	521,500	9,141,347	4,023,798	16,446,590	30,133,235
<i>Total</i>	<b>\$ 31,075,471</b>	<b>67,717,755</b>	<b>106,998,948</b>	<b>122,108,190</b>	<b>\$ 327,900,363</b>

Figure 2. Historical and Forecasted Capital Expenditures: FY 2017 – FY 2021



## 2022-2026 Capital Improvement Program

The figures below illustrate the proposed breakdown of the project classes, funding sources, and yearly cash flows for the 2022 to 2026 CIP.

Figure 3. Proposed Yearly Capital Cash Flow by Project Class

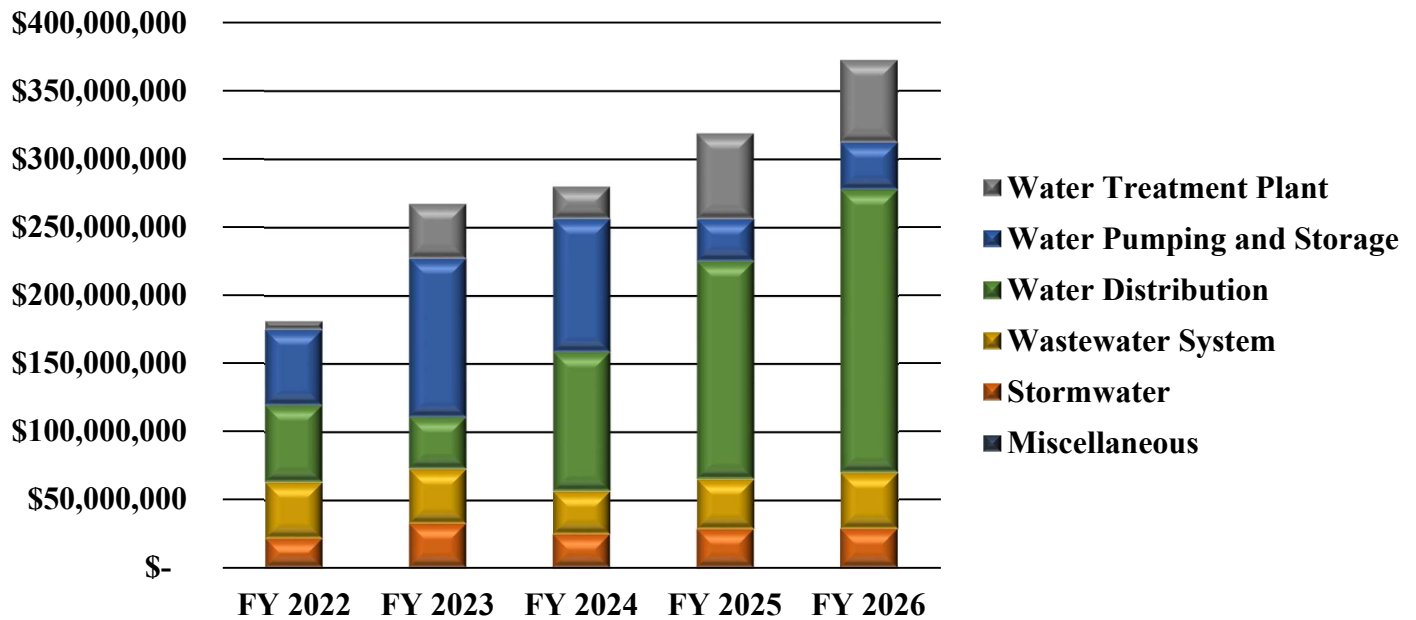


Figure 4. Capital Requirements

	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
Water Treatment Plant	\$ 6,253,411	40,203,269	23,635,598	63,090,666	60,553,378	\$ 193,736,322
Water Pumping and Storage	55,208,438	116,218,583	97,821,934	31,065,026	34,807,862	335,121,843
Water Distribution	56,341,652	38,235,780	101,841,026	159,347,537	192,324,062	548,090,057
Wastewater System	41,130,789	39,817,206	31,616,345	36,661,046	41,222,673	190,448,059
Stormwater	21,424,273	31,199,088	21,833,007	29,166,709	30,825,000	134,448,077
Miscellaneous	500,000	500,000	500,000	500,000	500,000	2,500,000
<b>Total Capital Requirements</b>	<b>\$ 180,858,563</b>	<b>266,173,926</b>	<b>277,247,910</b>	<b>319,830,984</b>	<b>360,232,975</b>	<b>\$ 1,404,344,358</b>

Figure 5. Funding Sources

	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
Debt (Revenue Bonds)	\$ 119,603,457	119,915,563	189,081,514	271,641,162	334,482,321	\$ 1,034,724,017
DSIC - Water	5,986,230	5,953,703	6,063,439	6,153,666	6,412,385	30,569,423
DSIC - Wastewater	2,630,630	2,656,936	2,666,963	2,666,963	2,666,963	13,288,455
PENNVEST	52,638,246	21,323,928	5,287,162	-	-	79,249,336
WIFIA	-	116,323,796	74,148,832	39,369,193	16,671,306	246,513,127
<b>Total Funding Sources</b>	<b>\$ 180,858,563</b>	<b>266,173,926</b>	<b>277,247,910</b>	<b>319,830,984</b>	<b>360,232,975</b>	<b>\$ 1,404,344,358</b>





# 2022-2026 Project Summary



Page	Project Name	2022 Budget	2023 Budget	2024 Budget	2025 Budget	2026 Budget	Total
<b>Project Class: Water Treatment Plant</b>							
11	Aspinwall Treatment Plant Pretreatment Chemical System and Clarification Improvements	\$ 30,000	-	-	-	-	\$ 30,000
12	Aspinwall Utility Water Improvements - Electrical/General/Mechanical	521,923	-	-	-	-	521,923
13	Aspinwall Water Treatment Plant Electrical and Backup Power Improvements	168,365	1,010,185	689,410	10,210,480	11,135,000	23,213,440
14	Aspinwall Water Treatment Plant Filter Improvements	168,582	1,369,732	1,211,686	-	-	2,750,000
15	Aspinwall Water Treatment Plant Filter Building Sodium Hypochlorite Improvements	2,233,047	1,558,561	-	-	-	3,791,608
16	Aspinwall Water Treatment Plant Raw Water Intakes	-	357,996	1,974,899	71,053	17,171,053	19,575,001
17	Aspinwall Water Treatment Plant Raw Water Intakes - East Intake	-	-	887,019	1,436,538	2,103,923	4,427,480
18	Clearwell Emergency Response Project	264,633	24,892,208	2,260,923	-	-	27,417,764
19	Clearwell Improvements	-	4,371,917	2,552,815	33,413,454	16,671,306	57,009,492
20	Chemical Feed Modernization Project	817,860	1,387,333	10,039,689	6,255,118	-	18,500,000
21	Corrosion Control Chemical Storage & Feed Systems	90,618	-	-	-	-	90,618
22	Highland Park Microfiltration Plant Improvements Project	444,500	-	-	-	-	444,500
23	Hydraulic Valve Replacement Program	-	179,885	216,092	2,854,023	-	3,250,000
24	Instrumentation Upgrade	693,333	346,667	-	-	-	1,040,000
25	Lime Slurry System Improvements	514,036	1,588,364	-	-	-	2,102,400
26	Phase 1 Sedimentation Basin Rehabilitation and Water Treatment Plant Gate Valve and 84-inch Coupling Project	306,513	2,490,421	2,203,065	-	-	4,999,999
27	Phase 2 Sedimentation Basin Rehabilitation Project	-	-	-	-	790,230	790,230
28	Post-Filter Chemical System Improvements	-	-	-	-	827,586	827,586
29	Rapid Mix and Clarifier Improvements Project	-	650,000	1,600,000	8,850,000	11,854,280	22,954,280
<b>Total: Water Treatment Plant</b>		<b>\$ 6,253,411</b>	<b>40,203,269</b>	<b>23,635,598</b>	<b>63,090,666</b>	<b>60,553,378</b>	<b>\$ 193,736,322</b>

<b>Project Class: Water Pumping and Storage</b>							
31	Aspinwall Pump Station Improvements	\$ 207,410	10,981,236	14,572,511	3,643,128	-	\$ 29,404,285
32	Aspinwall Pump Station to Lanpher Reservoir Rising Main	19,516,813	46,342,177	27,011,250	-	-	92,870,240
33	Aspinwall Water Treatment Plant Chemical Unloading Improvements	134,466	556,503	-	-	-	690,969
34	Bruecken Pump Station Improvements	351,519	25,468,015	27,751,333	2,312,611	-	55,883,478
35	Facility Underground Storage Tank Removal and Replacement	134,466	556,503	-	-	-	690,969
36	Chlorine Booster Station Improvements	584,615	5,051,280	3,544,992	-	-	9,180,887
37	Disinfection By-Products Mitigation	1,293,960	969,835	189,092	-	-	2,452,887
38	Garfield Tank Improvements	-	122,198	244,397	128,017	1,916,678	2,411,290
39	Herron Hill Pump Station Improvements	-	602,429	720,330	4,829,119	4,808,123	10,960,001
40	Herron Hill Reservoir Improvements	36,846	-	-	-	-	36,846
41	Herron Hill Reservoir Improvements - Sodium Hypochlorite Building	2,423,993	-	-	-	-	2,423,993
42	Herron Hill Tank Pump Station Improvements	-	61,012	72,953	489,080	486,954	1,109,999
43	Highland 1 Reservoir Liner	-	-	-	-	704,981	704,981
44	Highland No. 2 Reservoir Improvements	22,052,489	2,661,400	-	-	-	24,713,889
45	Highland Reservoir Pump Station and Rising Main	4,890,823	13,598,197	13,598,197	1,133,183	-	33,220,400
46	Howard Pump Station Improvements	-	-	1,025,118	1,225,744	8,217,433	10,468,295
47	Inline Pump Station (Coral and Pacific) Improvements	-	-	70,443	90,312	439,245	600,000
48	Lanpher Reservoir Improvements	2,416,588	6,572,044	2,738,352	-	-	11,726,984
49	Lincoln Pump Station: Bypass Pump Station Project	433,867	295,661	-	-	-	729,528
50	Lincoln Pump Station Improvements	-	60,577	506,374	738,049	-	1,305,000
51	Lincoln Tank Improvements	230,583	275,710	1,848,372	1,840,335	-	4,195,000
52	Mission Pump Station Improvements	-	927,003	1,108,428	7,430,939	7,398,630	16,865,000
53	Pump Station Architectural	-	-	-	-	2,500,000	2,500,000
54	Pump Station Security	-	-	500,990	1,348,081	1,332,435	3,181,506
55	Ross Pump Station	-	-	416,260	2,497,561	2,121,575	5,035,396
56	Saline Pump Station Improvements	-	-	109,343	71,674	874,594	1,055,611
57	Spring Hill Tank Improvements	-	116,803	139,663	936,303	932,232	2,125,001
58	Tank Reservoir Security	500,000	1,000,000	1,653,536	2,350,890	3,074,982	8,579,408
<b>Total: Water Pumping and Storage</b>		<b>\$ 55,208,438</b>	<b>116,218,583</b>	<b>97,821,934</b>	<b>31,065,026</b>	<b>34,807,862</b>	<b>\$ 335,121,843</b>

Page	Project Name	2022 Budget	2023 Budget	2024 Budget	2025 Budget	2026 Budget	Total
<b>Project Class: Water Distribution</b>							
60	Bus Rapid Transit Water Distribution	\$ 4,299,135	-	-	-	-	\$ 4,299,135
61	District Metering Program	-	-	-	2,600,000	1,536,923	4,136,923
62	Duck Hollow Main Replacement	326,289	2,418,432	219,737	-	-	2,964,458
63	Herron Hill - Squirrel Hill Boundary Adjustments	-	-	-	52,929	355,187	408,116
64	Inoperable Curb Stop Repair and Replacement Program	500,000	500,000	500,000	500,000	500,000	2,500,000
65	Intermediate Diameter Water Main Replacement Program	-	-	1,283,549	2,825,448	21,906,451	26,015,448
66	Intermediate Meter Replacement Program	122,296	81,666	84,500	86,667	87,000	462,129
67	Large Diameter Water Main Replacement Program	15,030,564	15,066,385	26,402,678	8,560,476	18,803,966	83,864,069
68	Large Meter Replacement Program	1,571,313	1,362,979	507,996	337,000	337,000	4,116,288
69	Lead Service Identification Program	500,000	-	-	-	-	500,000
70	Low Pressure Area Remediation	-	-	-	1,393,833	-	1,393,833
71	Neighborhood Lead Service Line Replacement Program	-	-	27,792,500	55,585,000	27,792,500	111,170,000
72	North Side Boundary Adjustments	-	-	-	79,393	532,780	612,173
73	Private Lead Service Line Reimbursement Program	1,274,537	1,000,000	1,000,000	1,000,000	1,000,000	5,274,537
74	Regulator Valve and Vault Replacement Program	232,420	1,321,957	1,557,942	2,567,270	3,879,940	9,559,529
75	Small Diameter Water Main Replacement Program	23,802,324	9,235,175	35,157,679	77,481,962	109,063,535	254,740,675
76	Small Meter Replacement Program	2,114,155	1,713,417	1,323,009	416,666	250,000	5,817,247
77	South Side Slopes Boundary Adjustments	-	-	-	79,393	532,780	612,173
78	Unmetered and Flat Rate Properties	462,500	500,000	-	-	-	962,500
79	Urgent Lead Service Line Replacement	1,399,500	1,170,000	1,079,000	1,046,500	1,011,000	5,706,000
80	Valve Replacement Program	1,228,536	1,930,769	2,997,436	2,800,000	2,800,000	11,756,741
81	Water Relay Program	1,978,083	1,935,000	1,935,000	1,935,000	1,935,000	9,718,083
82	Water and Wastewater Safety and Security Improvements	1,500,000	-	-	-	-	1,500,000
<b>Total: Water Distribution</b>		<b>\$ 56,341,652</b>	<b>38,235,780</b>	<b>101,841,026</b>	<b>159,347,537</b>	<b>192,324,062</b>	<b>\$ 548,090,057</b>
<b>Project Class: Wastewater System</b>							
84	31st Ward Pump Station and Appurtenances - Phase 2	\$ 110,521	1,090,000	999,167	4,412,750	7,447,000	\$ 14,059,438
85	Browns Hill Road Sewer Pump Station Replacement	248,000	370,100	1,081,900	-	-	1,700,000
86	Large Diameter Sewer Rehabilitation Program	5,700,224	4,993,711	3,824,429	4,660,000	4,900,000	24,078,364
87	Maytide Storm and Sanitary Sewer System Improvements	82,584	3,921,723	1,072,559	-	-	5,076,866
88	M-29 Outfall Improvements	1,804,376	-	-	-	-	1,804,376
89	Queenston Sewer Improvements	1,931,853	213,197	-	-	-	2,145,050
90	Sewer Reconstruction Program	3,201,777	1,999,781	1,810,000	1,810,000	1,886,458	10,708,016
91	Sewers Under Structures Program	3,253,531	7,551,477	2,679,036	3,297,524	3,428,125	20,209,693
92	Small Diameter Sewer Rehabilitation Program	24,797,923	19,677,217	20,149,254	22,480,772	23,561,090	110,666,256
<b>Total: Wastewater System</b>		<b>\$ 41,130,789</b>	<b>39,817,206</b>	<b>31,616,345</b>	<b>36,661,046</b>	<b>41,222,673</b>	<b>\$ 190,448,059</b>
<b>Project Class: Stormwater</b>							
94	Braywood Stormwater Improvements	\$ 105,000	804,000	-	-	-	\$ 909,000
95	Bus Rapid Transit Stormwater Infrastructure Improvements	1,039,288	480,771	-	-	-	1,520,059
96	Catch Basin and Inlet Replacement Program	4,238,472	7,113,750	8,034,541	8,166,709	8,325,000	35,878,472
97	Dragoon Way Stormwater Improvements	135,000	1,028,000	-	-	-	1,163,000
98	Fleury Way Stormwater Infrastructure Improvements	601,468	-	-	-	-	601,468
99	Four Mile Run Stormwater Infrastructure Improvements	3,333,541	7,272,993	5,750,510	-	-	16,357,044
100	Haverhill Street Improvements Project	115,000	585,000	-	-	-	700,000
101	Lawn and Ophelia	756,249	-	-	-	-	756,249
102	Martin Luther King Field Stormwater Infrastructure Improvements	539,936	3,812,297	-	-	-	4,352,233
103	Maryland Avenue Stormwater Infrastructure Improvements	1,795,488	-	-	-	-	1,795,488

Page	Project Name	2022 Budget	2023 Budget	2024 Budget	2025 Budget	2026 Budget	Total
<b>Project Class: Stormwater (Continued)</b>							
104	Nobles Lane Stormsystems Improvements	\$ 158,916	-	-	-	-	\$ 158,916
105	Saw Mill Run Municipal Separate Storm Sewer System Compliance	-	-	-	1,000,000	2,500,000	3,500,000
106	Saw Mill Run Watershed Improvements	200,000	500,000	300,000	-	-	1,000,000
107	Southside Flats Sewer Separation	513,000	2,383,194	630,806	-	-	3,527,000
108	Southside Stormwater Infrastructure Improvements	1,114,451	2,842,000	403,500	-	-	4,359,951
109	Stewart Avenue Stormwater Infrastructure Project	299,400	1,910,156	894,444	-	-	3,104,000
110	Thomas and McPherson Stormwater Infrastructure Improvements	4,060,230	462,800	-	-	-	4,523,030
111	Volunteer's Field Stormwater Infrastructure Improvements	853,776	83,333	-	-	-	937,109
112	Wet Weather Program Projects	-	-	5,000,000	20,000,000	20,000,000	45,000,000
113	Wightman Park Stormwater Infrastructure Improvements (Phase 1 & 2)	424,789	-	-	-	-	424,789
114	Winchester Drive at Grovemount Stormsystem Improvements	201,597	-	-	-	-	201,597
115	Woodland Road Stormwater Infrastructure Improvements	577,528	-	-	-	-	577,528
116	Woods Run Stream Removal Stormwater Infrastructure Improvements	361,144	1,920,794	819,206	-	-	3,101,144
<b>Total: Stormwater</b>		<b>\$ 21,424,273</b>	<b>31,199,088</b>	<b>21,833,007</b>	<b>29,166,709</b>	<b>30,825,000</b>	<b>\$ 134,448,077</b>
<b>Project Class: Miscellaneous</b>							
118	Utility Cost Shares	500,000	500,000	500,000	500,000	500,000	2,500,000
<b>Total: Miscellaneous</b>		<b>\$ 500,000</b>	<b>500,000</b>	<b>500,000</b>	<b>500,000</b>	<b>500,000</b>	<b>\$ 2,500,000</b>



# Water Treatment Plant



# Water Treatment Plant

## Aspinwall Treatment Plant Pretreatment Chemical System and Clarification Improvements

PROJECT NUMBER: 2017-322-101-0

WARD: Systemwide

<b>PHASE:</b> Design
<b>PRIORITY:</b> Safety, Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintenance Efficiency
<b>PROJECT DESCRIPTION:</b> Improvements to pretreatment chemical and clarification systems to provide improved water treatment capabilities. This project is the parent project for all of the clarification and pre-treatment related projects.
<b>PROJECT JUSTIFICATION:</b> Chemical treatment systems are critical to producing safe drinking water. The storage and pumping component of the systems have reached the end of their useful life and need to be replaced.
<b>RISK(S):</b> Inefficient operation of chemical systems results in increased operating costs, including chemical consumption, labor, solids generation and disposal, and wear on equipment.
<b>IMPACT ON OPERATIONS:</b> Increased operating efficiency, flexibility, reliability, and life expectancy and improved safety conditions for staff.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$16,340,928</b>	<b>30,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$30,000</b>	

# Water Treatment Plant

## Aspinwall Utility Water Improvements - Electrical/General/Mechanical

**PROJECT NUMBER:** 2017-322-101-4 / 5

**WARD:** Systemwide

<b>PHASE:</b> Construction
<b>PRIORITY:</b> Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency
<b>PROJECT DESCRIPTION:</b> This project includes electrical work related to installation of heaters and SCADA as well as pipe demolition, pipe and appurtenance installation for the Water Treatment Plant's potable and non-potable water line system.
<b>PROJECT JUSTIFICATION:</b> Electrical systems at the Water Treatment Plant have reached the end of their useful life and need to be replaced. Water piping throughout the Water Treatment Plant has come to the end of it's service life. Failure of this piping would result in interruptions to the ability to feed treatment chemicals.
<b>RISK(S):</b> Failure of critical electrical systems at the Water Treatment Plant. Potable and non-potable water piping throughout the plant has come to the end of it's service life. This piping system is critical to the operations at the Water Treatment Plant.
<b>IMPACT ON OPERATIONS:</b> Increased operating efficiency, flexibility, reliability, and life expectancy and improved safety conditions for staff.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$901,899</b>	<b>521,923</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$521,923</b>	

# Water Treatment Plant

## Aspinwall Water Treatment Plant Electrical and Backup Power Improvements

PROJECT NUMBER: 2017-322-100-0

WARD: Systemwide

**PHASE:**

Design

**PRIORITY:**

Safety, Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**

Improvements to electrical systems at the Water Treatment Plant, including provisions for stand-by or backup power systems, upgrades to existing electrical distribution system, replacement of motor control centers, and associated panels, conduit, wiring, and systems.

**PROJECT JUSTIFICATION:**

Electrical systems at the Water Treatment Plant have generally met the end of their useful lives and spare/replacement parts are unavailable.

**RISK(S):**

Electrical power is critical to maintain pumping and treatment of water. Failure of these systems will result in the inability to produce water to meet demand and/or quality requirements.

**IMPACT ON OPERATIONS:**

Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$49,051,440</b>	<b>168,365</b>	<b>1,010,185</b>	<b>689,410</b>	<b>10,210,480</b>	<b>11,135,000</b>	<b>\$23,213,440</b>	



# Water Treatment Plant

## Aspinwall Water Treatment Plant Filter Improvements

PROJECT NUMBER: Unidentified

WARD: Systemwide

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance, Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**  
Improvements for filters at the Water Treatment Plant to address various recommendations from regulatory agencies including safety issues, improve process control, and monitoring. Project components including providing hand railing around filter basins to facilitate operator inspections, adding components to allow safer performance of required quarterly monitoring and cell entry, moving IFE turbidimeters to locate them within 10 feet of sample points, addressing structural issues, and other electrical and safety updates.

**PROJECT JUSTIFICATION:**  
To meet industry standards and regulatory recommendations, turbidimeters should be located not more than 10 feet away from the sample taps. Currently, meters are located up to 30 feet away, reducing meter response time and data accuracy. Structural deficiencies in the floor and beams of the filter building have been observed as evidenced by cracks and water leakage.

**RISK(S):**  
Violations of permit conditions as a result of turbidimeter locations and sample travel time. Safety and compliance issues with not accessing filter cells for observation during backwash and quarterly/annual inspections. Not properly assessing and repairing areas of structural deficiencies could lead to catastrophic failure. Foundation sagging in the filter building could result in excessive leakage or inability to produce filtered water.

**IMPACT ON OPERATIONS:**  
Relocation of turbidimeters will shorten tubing distance between meter and sample point. Tubing is an annual replacement item, so less distance results in less time and material for replacement. Repair of structure deficiencies will result in less water leakage and maintain the integrity of the facility to reduce operational repairs and water in storage areas.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$2,750,000</b>	<b>168,582</b>	<b>1,369,732</b>	<b>1,211,686</b>	<b>0</b>	<b>0</b>	<b>\$2,750,000</b>	

# Water Treatment Plant

## Aspinwall Water Treatment Plant Filter Building Sodium Hypochlorite Improvements

PROJECT NUMBER: 2017-322-101-8 / 9 / 10 / 11

WARD: Systemwide

**PHASE:**  
Construction

**PRIORITY:**  
Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**  
General and mechanical work will include demolition, new filling station, new storage and pumping room, furnishing and installing new storage tanks, feed pumps and piping. HVAC work will include furnishing and installing new HVAC system including air handling unit, condensing unit, exhaust system and ductwork. Plumbing work will include new water service lines inside building, furnishing and installing eyewash stations, hot water units, sanitary drain modifications and installation of a wet sprinkler fire suppression system and fire alarm system. Electrical work will include furnishing and installing power wiring and conduit to new equipment, control wiring to instrumentation and program system integration services to operate the new treatment process.

**PROJECT JUSTIFICATION:**  
To increase storage of sodium hypochlorite solution as required by PADEP and enhance the operational safety and efficiency of the system.

**RISK(S):**  
Not meeting requirements of PADEP if project not completed.

**IMPACT ON OPERATIONS:**  
Operating budget will likely decrease due to efficiencies.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$3,791,608</b>	<b>2,233,047</b>	<b>1,558,561</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$3,791,608</b>	

# Water Treatment Plant

## Aspinwall Water Treatment Plant Raw Water Intakes

PROJECT NUMBER: 2018-322-100-0

WARD: Systemwide

<b>PHASE:</b> Design
<b>PRIORITY:</b> Water Quality/Regulatory
<b>PROJECT DESCRIPTION:</b> Project will include condition assessment, renewing or replacing the existing West and East Raw Water Intake Gate House buildings and associated systems, including gates, screens, and associated mechanical equipment as well as the addition of SCADA. Influent piping through the Ross Pump Station will also be addressed.
<b>PROJECT JUSTIFICATION:</b> The West Gate is 90% closed and inoperable. Both gate houses are in need of rehabilitation or replacement. The West Gatehouse is 100 years old, and the East Gate is almost 90 years old.
<b>RISK(S):</b> Both gates have reach the end of their useful life and need replaced. Failure of the East Gate would cause a disruption to the supply of water.
<b>IMPACT ON OPERATIONS:</b> Modernization of systems will require less time spent in operations and maintenance of these facilities.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	\$63,346,501	0	357,996	1,974,899	71,053	17,171,053	\$19,575,001	

# Water Treatment Plant

## Aspinwall Water Treatment Plant Raw Water Intakes - East Intake

PROJECT NUMBER: Unidentified

WARD: Systemwide

**PHASE:**

Design

**PRIORITY:**

Water Quality/Regulatory

**PROJECT DESCRIPTION:**

Project will include condition assessment, renewing or replacing the existing West and East Raw Water Intake Gate House buildings and associated systems, including gates, screens, and associated mechanical equipment as well as the addition of SCADA. Influent piping through the Ross Pump Station will also be addressed.

**PROJECT JUSTIFICATION:**

The West Gate is 90% closed and inoperable. Both gate houses are in need of rehabilitation or replacement. The West Gatehouse is 100 years old, and the East Gate is almost 90 years old.

**RISK(S):**

Only one gate is operational. Failure of the East Gate would result in a major disruption to the supply of water for the City of Pittsburgh.

**IMPACT ON OPERATIONS:**

Modernization of systems will require less time spent in operations and maintenance of these facilities.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$4,427,480</b>	<b>0</b>	<b>0</b>	<b>887,019</b>	<b>1,436,538</b>	<b>2,103,923</b>	<b>\$4,427,480</b>	

# Water Treatment Plant

## Clearwell Emergency Response Project

PROJECT NUMBER: 2017-323-100-0

WARD: Systemwide

**PHASE:**

Design

**PRIORITY:**

Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

**PROJECT DESCRIPTION:**

Long-term bypass of the existing 100 + year old clearwell (finished water structure) including the construction of pump wetwells at the Aspinwall and Bruecken Pump Stations, modifications to the clearwell inlet and outlet gate house, and the construction of a bypass line around the clearwell to the outlet gate house.

**PROJECT JUSTIFICATION:**

The clearwell was constructed in 1908 and has not undergone any major modifications or upgrades since. The clearwell has two main functions: providing equalization storage that allows the filters to operate independently of potential fluctuations in system demands and providing sufficient contact time for disinfection agents to meet the requirements of the Surface Water Treatment Rule and Long-Term 2 Enhanced Surface Water Treatment Rule. In order to replace the clearwell, a long-term bypass is required in order to provide adequate suction pressure for the pump stations.

**RISK(S):**

Failure of the Clearwell would cause a disruption to the supply of water.

**IMPACT ON OPERATIONS:**

Ability to meet system reliability and water quality regulations.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$54,864,020</b>	<b>264,633</b>	<b>24,892,208</b>	<b>2,260,923</b>	<b>0</b>	<b>0</b>	<b>\$27,417,764</b>	

# Water Treatment Plant

## Clearwell Improvements

PROJECT NUMBER: Unidentified

WARD: Systemwide

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

**PROJECT DESCRIPTION:**  
Replacement of the existing 100 + year old clearwell (finished water structure) with multi-celled clearwell to allow for maintenance.

**PROJECT JUSTIFICATION:**  
The clearwell was constructed in 1908 and has not undergone any major modifications or upgrades since. It has two main functions: providing equalization storage that allows the filters to operate independently of potential fluctuations in system demands, and providing sufficient retention contact time for disinfection agents to meet the requirements of the Surface Water Treatment Rule and Long-Term 2 Enhanced Surface Water Treatment Rule. Considering the age and condition of the clearwell, it is the water system's weakest link as there are no practical means to deliver water by bypassing the clearwell, while maintaining the required volume, quality, and contact time.

**RISK(S):**  
Failure of the Clearwell would cause a disruption to the supply of water.

**IMPACT ON OPERATIONS:**  
Ability to meet system reliability and water quality regulations.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds) / WIFIA</u>
<b>Total</b>	<b>\$57,009,491</b>	<b>0</b>	<b>4,371,917</b>	<b>2,552,815</b>	<b>33,413,454</b>	<b>16,671,306</b>	<b>\$57,009,492</b>	

# Water Treatment Plant

## Chemical Feed Modernization Project

PROJECT NUMBER: Unidentified

WARD: Systemwide

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**  
Upgrade of chemical feed systems (equipment, storage, instrumentation, and injection points) to meet current regulatory requirements, improve chemical application, and optimize the water treatment process. Upgrades include ferric chloride, potassium permanganate, and other chemical systems located in the chemical building and possible construction of a new chemical building or repurposing of existing facilities. Assess, design, and construct repairs to structural defects associated with settlement with the pipe bridge between the Chemical Building and Screen Room.

**PROJECT JUSTIFICATION:**  
Chemical feed improvements will address recommendations from both consultants and regulatory agencies. The lack of attention to the pretreatment chemical feed systems could cause over/under dosing of chemicals leading to permit violations or the loss of a chemical system resulting in an emergency project.

**RISK(S):**  
Not addressing these recommendations will put the PWSA at risk for permit violations and failures at the Water Treatment Plant.

**IMPACT ON OPERATIONS:**  
Optimization and flow/residual pacing of chemicals can result in reduced chemical consumption. New storage and chemical feed equipment will result in reduced maintenance costs associated with repairs on the existing pumps, maintaining storage bins and feeders. Improvements to SCADA system and flow/residual pacing will reduce manual adjustments to chemical feed systems.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

<u>CASH FLOW SUMMARY</u>								<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$18,500,000</b>	<b>817,860</b>	<b>1,387,333</b>	<b>10,039,689</b>	<b>6,255,118</b>	<b>0</b>	<b>\$18,500,000</b>	

# Water Treatment Plant

## Corrosion Control Chemical Storage & Feed Systems

**PROJECT NUMBER:** 2017-322-107-0

**WARD:** Systemwide

<b>PHASE:</b> Construction
<b>PRIORITY:</b> Water Quality/Regulatory
<b>PROJECT DESCRIPTION:</b> Installation of three phosphoric acid storage and feed systems located at Aspinwall Pump Station, Bruecken Pump Station, and the Membrane Filtration Plant to provide corrosion control in the distribution system.
<b>PROJECT JUSTIFICATION:</b> Required in order to lower lead levels in water.
<b>RISK(S):</b> Not completing this project will increase the risk of not maintaining lead levels below the PADEP action level.
<b>IMPACT ON OPERATIONS:</b> In order to prevent algae growth in the open Highland No. 1 Reservoir, treatment must occur at three major locations with 6 injection points. This requires additional maintenance of treatment facilities at satellite locations.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$10,461,653</b>	<b>90,618</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$90,618</b>	



# Water Treatment Plant

## Highland Park Microfiltration Plant Improvements Project

**PROJECT NUMBER:** 2021-322-100-0

**WARD:** Systemwide

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Operation and Maintenance Efficiency

**PROJECT DESCRIPTION:**  
Repair damage caused by almost 20 years of process water leakage from second floor membrane racks to composite floor deck system and structural steel framing above main floor of Microfiltration Plant (MFP). Construction joints in floor were sealed during the MFP UV Project. This project will repair deterioration to composite deck system and structural steel support system and apply protective coatings. This project will also repair damage to the surface of concrete floor and sump pump in acid storage room caused by leakage from acid storage tanks, piping connections and acid mixing operations.

**PROJECT JUSTIFICATION:**  
This project will increase the safety and security of operations in addition to maintaining the integrity of chemical containment in the event of future failure.

**RISK(S):**  
The risk of delaying the project could cause potential damage to equipment on the first floor of the MFP from falling concrete or steel deck fragments. With respect to repair of the acid storage room floor, the risk of delaying the project is the lack of integrity in the provisions for chemical containment in the event of tank failure. Acid is able to leak through the damaged sump pump into the subfloor where it could damage underground cast iron plumbing and ductile iron process piping.

**IMPACT ON OPERATIONS:**  
This project will mitigate the potential for future emergency repairs to the first floor ceiling components or to the acid room floor that would likely be funded from the Operating Budget.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$491,595</b>	<b>444,500</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$444,500</b>	

# Water Treatment Plant

## Hydraulic Valve Replacement Program

PROJECT NUMBER: Unidentified

WARD: Systemwide

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Operations and Maintenance Efficiency
<b>PROJECT DESCRIPTION:</b> This project is retrofitting the various hydraulic valve actuators primarily in the filters to electric valve actuators.
<b>PROJECT JUSTIFICATION:</b> The intent is to improve operational control while modernizing the facility to better align with industry standard practices.
<b>RISK(S):</b> Inefficient operations resulting from an aged facility that do not align with industry standard practices.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	Debt (Revenue Bonds)
Total	\$3,250,000	0	179,885	216,092	2,854,023	0	\$3,250,000	

# Water Treatment Plant

## Instrumentation Upgrade

PROJECT NUMBER: 2021-322-101-0

WARD: Systemwide

**PHASE:**

Planning

**PRIORITY:**

Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**

This project standardizes the key instrumentation at the remote sites. This project provides a methodical approach to replacement. It includes a study to document all equipment by tag number, location, condition, make and model number. The study would include recommendations for standardization by device type (pressure sensor, flowmeter, etc.) along with replacement costs for work done by a contractor. This project does not include any upgrades to water quality analyzers.

**PROJECT JUSTIFICATION:**

At present, devices were added under various projects with no standardization. This has resulted in increased maintenance cost as each brand requires different spare parts, different training, and in most cases different tools for maintenance purposes. Most of the equipment is beyond useful life and due for replacement.

**RISK(S):**

Failure to upgrade systems will cause loss of signal and possible loss of control of systems.

**IMPACT ON OPERATIONS:**

Increased system reliability and improved system management.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
Total	\$1,040,000	693,333	346,667	0	0	0	\$1,040,000	

# Water Treatment Plant

## Lime Slurry System Improvements

**PROJECT NUMBER:** 2017-322-101-7 / 12 / 13

**WARD:** Systemwide

**PHASE:**

Design

**PRIORITY:**

Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**

Lime slurry system capacity expansion improvements to include demolition, installation of additional tanks, chemical feed equipment, minor revisions to the existing lime slurry system, and SCADA communications equipment and SCADA interface.

**PROJECT JUSTIFICATION:**

Adequate lime storage is mandated by PADEP. New system will be more efficient/require less labor to operate and maintain.

**RISK(S):**

The extra storage for liquid lime is critical to the reliable operation of the Water Treatment Plant.

**IMPACT ON OPERATIONS:**

Adequate storage, increased reliability and efficiency, less housekeeping labor.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$4,574,536</b>	<b>514,036</b>	<b>1,588,364</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$2,102,400</b>	

# Water Treatment Plant

## Phase 1 Sedimentation Basin Rehabilitation and Water Treatment Plant Gate Valve and 84-inch Coupling Project

PROJECT NUMBER: Unidentified  
WARD: Systemwide

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**  
Phase 1 of the rehabilitation of the existing sedimentation Basins as recommended by the 2019 WTP CIP (Arcadis 2019) and EPA CEP (2017). Projects including regrading around existing sedimentation Basins to keep stormwater infiltration, rehabilitation or replacement of existing sluice gates including drain gates, disconnect existing stormwater outfall including related permitting, repair of existing vaults. The WTP portion of the project will include replacement of various isolation valves at the plant and the encasement of an existing 84-inch diameter pipe coupling.

**PROJECT JUSTIFICATION:**  
The sedimentation basins are the only system in the Water Treatment Plant process that is open to the environment. As such, care must be taken to prevent infiltration of contaminants via surface runoff. These repairs and valve replacements were recommended by regulating agencies. Working isolation valves are required in order to properly isolate and maintain treatment. Proactive repair/maintenance will reduce the chance of complete failure of the asset.

**RISK(S):**  
Inability to isolate the sedimentation basins in the event of an emergency and/or uncontrolled runoff into the Basins could cause violations regulatory violations.

**IMPACT ON OPERATIONS:**  
Ability for staff to quickly isolate the sedimentation basins as part of routine or emergency maintenance.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$4,999,999</b>	<b>306,513</b>	<b>2,490,421</b>	<b>2,203,065</b>	<b>0</b>	<b>0</b>	<b>\$4,999,999</b>	

# Water Treatment Plant

## Phase 2 Sedimentation Basin Rehabilitation Project

PROJECT NUMBER: Unidentified

WARD: Systemwide

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**  
Phase 2 of this project includes cleaning the sedimentation basins, rehabilitation of weirs, intakes, and associated structures.

**PROJECT JUSTIFICATION:**  
The sedimentation basins serve a role in secondary clarification of water after the clarifiers. This clarification combined with the fact that the basins are uncovered has led to accumulation of sediment in the basins. Secondly, structural defects in the existing concrete structure cannot be detected due to the presence of this sediment. Once the sediment is removed, each basin will be removed from service for a structural inspection and concrete repair. If moderate/major structural defects are not proactively addressed, complete failure will eventually occur and excavation will be required. Any complete failure that occurs will result in dramatically increased expenditures for repair.

**RISK(S):**  
Possible regulatory violations due to sediment, possible failure of structure due to lack of maintenance.

**IMPACT ON OPERATIONS:**  
Ability for staff to quickly isolate the sedimentation basins as part of routine or emergency maintenance.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$790,230</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>790,230</b>	<b>\$790,230</b>	

# Water Treatment Plant

## Post-Filter Chemical System Improvements

PROJECT NUMBER: Unidentified

WARD: Systemwide

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**  
Construction of new building for soda ash, fluoride, and phosphoric acid system closer to the feed point providing updated equipment, storage, instrumentation, and injection points. This will result in meeting current regulatory requirements, improve chemical application, and optimize the water treatment process. Portions of this project may be combined with the Clearwell Improvements Project or Aspinwall Pump Station Project.

**PROJECT JUSTIFICATION:**  
The improvements from this project will address the recommendations from various regulatory agencies. In addition, the lack of attention to the post-filter chemical feed systems could cause over/under dosing of chemicals leading to permit violations or the loss of a chemical system resulting in an emergency project.

**RISK(S):**  
Potential violations of permit conditions as a result of improper dosing of chemicals or failure of a chemical system resulting in emergency action.

**IMPACT ON OPERATIONS:**  
Optimization and flow/residual pacing of chemicals can result in reduced chemical consumption. New storage and chemical feed equipment will result in reduced maintenance costs associated with repairs on the existing pumps, maintaining storage bins and feeders. Moving soda ash closer to the point of injection will reduce issues with feeding the chemical from the other end of the plant. Improvements to SCADA system and flow/residual pacing will reduce manual adjustments to chemical feed systems.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

<u>CASH FLOW SUMMARY</u>								<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$827,586</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>827,586</b>	<b>\$827,586</b>	

# Water Treatment Plant

## Rapid Mix and Clarifier Improvements Project

PROJECT NUMBER: Unidentified

WARD: Systemwide

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**  
Improvements to the mechanical mixing equipment (rapid mixer and flocculators), basin overflow rates and capacity, and water quality monitoring systems to comply with current design standards, reduce energy usage, enhance the water treatment process, and better monitor the clarified water quality. This project includes the evaluation and design of new equipment and modifications to the clarifier basins which may include trough modifications or plate/tube settlers.

**PROJECT JUSTIFICATION:**  
Various regulatory agencies have recommended improvements to the clarifiers in order to meet current PADEP design requirements. This project will also address areas of improvement for the associated flocculators and floc mixing. Improvements to rapid mixers and flocculators can aid in the formation of floc and turbidity removal in the clarifiers in conjunction with chemical optimization.

**RISK(S):**  
Inefficient operation of the clarifiers results in more solids being conveyed to the sedimentation basin. To support removal of the sedimentation basin for maintenance or emergency clarified water may need to be applied directly to the filters, if the clarifiers are producing water with high turbidity this will impact the ability to directly filter clarified water and could result in water quality or volume issues.

**IMPACT ON OPERATIONS:**  
Reduction in mixing energy will translate to lower electrical usage. Improved formation and removal of floc will allow more sludge to be handled at the clarifiers instead of being deposited in the sedimentation basin. Updated equipment will reduce operating and maintenance costs. Improved process control will aid in chemical optimization reducing chemical overfeed and associated costs.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	\$22,954,280	0	650,000	1,600,000	8,850,000	11,854,280	\$22,954,280	





# Water Pumping and Storage



# Water Pumping and Storage

## Aspinwall Pump Station Improvements

**PROJECT NUMBER:** 2017-323-104-0

**WARD:** Systemwide

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

**PROJECT DESCRIPTION:**  
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems at the Bruecken and Aspinwall Pump Stations or replacement with a single high service pump station at the Water Treatment Plant.

**PROJECT JUSTIFICATION:**  
The pump Station is in need of renovations and upgrades to maintain service, restore a 20 to 25 year useful life expectancy, and to provide safer conditions for staff. Additionally, installation of variable frequency drives will reduce water pressure surges during start-up, and allow the pumps to operate over a wide range of flow, allow the pumps to operate while the clearwell is being replaced. Alternately, a new high service pump station to replace the existing pump stations is also being investigated.

**RISK(S):**  
Exposes the Authority to higher capital costs to address emergency failures and customers to a potentially deficient water supply.

**IMPACT ON OPERATIONS:**  
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds) / WIFIA</u>
<b>Total</b>	<b>\$57,976,096</b>	<b>207,410</b>	<b>10,981,236</b>	<b>14,572,511</b>	<b>3,643,128</b>	<b>0</b>	<b>\$29,404,285</b>	

# Water Pumping and Storage

## Aspinwall Pump Station to Lanpher Reservoir Rising Main

PROJECT NUMBER: 2018-323-100-0

WARD: Systemwide

**PHASE:**

Design

**PRIORITY:**

Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

**PROJECT DESCRIPTION:**

Construction of a new, redundant rising main from Aspinwall Pump Station to Lanpher Reservoir.

**PROJECT JUSTIFICATION:**

The existing 60" rising main that supplies the Lanpher Reservoir is a 150 year old riveted steel pipe, has several tap connections to critical and bulk customers, and has experienced recent pipe failures. The proposed rising main would serve as a primary supply source for the Lanpher Reservoir during the Clearwell Replacement Project and a redundant supply line in case of a failure or planned cleaning and rehabilitation of the existing 60" supply main.

**RISK(S):**

Failure of the rising main could impact up to half of PWSA's customers.

**IMPACT ON OPERATIONS:**

Increased operating flexibility and reliability.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

Rehabilitation of the existing 60-inch supply main and construction of a parallel main in sections that cannot currently be isolated to clean, inspect, or rehabilitate.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$142,324,240</b>	<b>19,516,813</b>	<b>46,342,177</b>	<b>27,011,250</b>	<b>0</b>	<b>0</b>	<b>\$92,870,240</b>	

# Water Pumping and Storage

## Aspinwall Water Treatment Plant Chemical Unloading Improvements

PROJECT NUMBER: Unidentified

WARD: Systemwide

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance, Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**  
Design and construction of secondary spill containment around railcar and truck chemical unloading areas. A nearby tunnel underdrain must also be disconnected from the combined sewers, and will be completed as part of the work in the area.

**PROJECT JUSTIFICATION:**  
Required as part of PADEP regulatory recommendations.

**RISK(S):**  
Not completing the work could lead to future environmental incidents and potential violations from regulatory agencies due to chemical spills.

**IMPACT ON OPERATIONS:**  
Increased flexibility and reliability, system compliance, and improved environmental conditions.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	\$690,969	134,466	556,503	0	0	0	\$690,969	

# Water Pumping and Storage

## Bruecken Pump Station Improvements

**PROJECT NUMBER:** 2017-323-106-0

**WARD:** Systemwide

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Reliability/Operational Flexibility, Capacity, Operations and Maintenance Efficiency, Level of Service

**PROJECT DESCRIPTION:**  
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems.

**PROJECT JUSTIFICATION:**  
The pump station was constructed in 1931. The pump station is in need of renovations and upgrades to maintain service, restore a 20 to 25 year useful life expectancy, and to provide safer conditions for staff. Additionally, installation of variable frequency drives will reduce water pressure surges during start-up, allow the pumps to operate more efficiently over a wide range of flow demands, and will reduce the required size of the new Clearwell.

**RISK(S):**  
Exposes PWSA to higher capital costs to address emergency facility failures and its customers to a potentially deficient water supply.

**IMPACT ON OPERATIONS:**  
Increased operating efficiency, flexibility, reliability, and improved safety conditions for staff.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
Construction of a new facility to replace the existing pump station.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$81,836,478</b>	<b>351,519</b>	<b>25,468,015</b>	<b>27,751,333</b>	<b>2,312,611</b>	<b>0</b>	<b>\$55,883,478</b>	

# Water Pumping and Storage

## Facility Underground Storage Tank Removal and Replacement

PROJECT NUMBER: Unidentified

WARD: Systemwide

**PHASE:**  
Not Started

**PRIORITY:**  
Regulatory Compliance, Reliability/Operational Flexibility

**PROJECT DESCRIPTION:**  
Replace underground storage tanks containing fuel with above ground storage tanks.

**PROJECT JUSTIFICATION:**  
Reduce risk of leaking underground storage tanks as well as the reduction in permitting and monitoring costs. The existing tanks are about 22 years old and are either nearing the end of their useful life, or nearing a point that will require substantial maintenance to keep them active.

**RISK(S):**  
Not completing this work could result in a leaking underground storage tank which could cost millions to remediate.

**IMPACT ON OPERATIONS:**  
Reduction in permitting and monitoring costs.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	Debt (Revenue Bonds)
<b>Total</b>	\$690,969	134,466	556,503	0	0	0	\$690,969	

# Water Pumping and Storage

## Chlorine Booster Station Improvements

PROJECT NUMBER: 2019-323-101-0

WARD: Systemwide

**PHASE:**

Design

**PRIORITY:**

Safety, Regulatory Compliance, Reliability

**PROJECT DESCRIPTION:**

Replacement of existing chlorine injection facilities at reservoirs and tanks for chlorine residual.

**PROJECT JUSTIFICATION:**

PWSA boosts chlorine residual at a majority of its storage facilities. Recent changes to PADEP regulations require an increase in minimum chlorine residual levels in the distribution system. All chlorine booster facilities need to be upgraded in order to meet these requirements.

**RISK(S):**

Exposes the Authority's customers to poor water quality.

**IMPACT ON OPERATIONS:**

Increased flexibility and reliability, system compliance, and improved safety conditions for staff.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$19,270,887</b>	<b>584,615</b>	<b>5,051,280</b>	<b>3,544,992</b>	<b>0</b>	<b>0</b>	<b>\$9,180,887</b>	

# Water Pumping and Storage

## Disinfection By-Products Mitigation

PROJECT NUMBER: 2020-323-101-0

WARD: Systemwide

**PHASE:**

Design

**PRIORITY:**

Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

**PROJECT DESCRIPTION:**

Replacement of existing trihalomethane (THM) removal systems at Allentown tanks, Squirrel Hill tank, and Brashears tanks.

**PROJECT JUSTIFICATION:**

Repair of the existing system to improve the level of service provided to customers.

**RISK(S):**

Delaying the replacement of the existing systems will result in increased downtime of the existing systems that need to be repaired. This will lead to possible regulatory violations for exceeding THM levels.

**IMPACT ON OPERATIONS:**

Decrease in yearly maintenance for the existing system.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

Continue to make costly repairs to existing DBP mitigation equipment. Failure of existing equipment can result in poor level of service and potential regulatory violations.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	Debt (Revenue Bonds)
Total	\$5,062,887	1,293,960	969,835	189,092	0	0	\$2,452,887	



# Water Pumping and Storage

## Garfield Tank Improvements

PROJECT NUMBER: Unidentified

WARD: 9

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance, Reliability, Capacity, Level of Service

**PROJECT DESCRIPTION:**  
Rehabilitation or replacement of the existing tank. Increase of tank capacity may be necessary.

**PROJECT JUSTIFICATION:**  
The Garfield Elevated Storage Tank was constructed in 1959 and last rehabilitated in 1992. The existing tank does not have sufficient capacity to meet PADEP's requirements for sizing, which states that a tank must have sufficient capacity to meet average day demand plus fire flow demand. This project will provide adequate storage through system redundancy to meet the pressure district's demand and fire flow conditions.

**RISK(S):**  
Exposes PWSA customers to poor water quality from coating problems or a potentially deficient water supply.

**IMPACT ON OPERATIONS:**  
Increased flexibility and reliability, system compliance, and improved safety conditions for staff.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
Do nothing and risk a failure of the tank. Postpone replacement or full rehabilitation until a later date through short-term rehabilitation.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$2,411,290</b>	<b>0</b>	<b>122,198</b>	<b>244,397</b>	<b>128,017</b>	<b>1,916,678</b>	<b>\$2,411,290</b>	

# Water Pumping and Storage

## Herron Hill Pump Station Improvements

PROJECT NUMBER: Unidentified

WARD: 14

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

**PROJECT DESCRIPTION:**  
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems as prioritized by the recommended Finished Water Pump Stations Condition Assessment Project.

**PROJECT JUSTIFICATION:**  
The pump station was originally constructed in the late 1890's. The pump station is in need of renovations and upgrades to maintain service, restore a 20 to 25 year useful life expectancy, and to provide safer conditions for staff.

**RISK(S):**  
Lack of facility planning exposes PWSA to higher capital costs to address emergency failures and customers to a potentially deficient water supply.

**IMPACT ON OPERATIONS:**  
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
Construction of a new facility to replace the existing pump station.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$10,960,001</b>	<b>0</b>	<b>602,429</b>	<b>720,330</b>	<b>4,829,119</b>	<b>4,808,123</b>	<b>\$10,960,001</b>	

# Water Pumping and Storage

## Herron Hill Reservoir Improvements

PROJECT NUMBER: 2019-323-100-0

WARD: 5

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Regulatory Compliance, Reliability, Capacity, Level of Service

**PROJECT DESCRIPTION:**  
Replacement of existing reservoir liner and cover and associated reservoir rehabilitation. Replacement of existing chlorine injection system.

**PROJECT JUSTIFICATION:**  
The existing cover has reached the end of its useful life and must be replaced. Existing chlorine feed systems are beyond their useful life and must be replaced.

**RISK(S):**  
Exposes the Authority's customers to poor water quality from reservoir failure and inadequate booster disinfection.

**IMPACT ON OPERATIONS:**  
Increased flexibility and reliability, system compliance, and improved safety conditions for staff.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	Debt (Revenue Bonds)
<b>Total</b>	<b>\$3,309,672</b>	<b>36,846</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$36,846</b>	

# Water Pumping and Storage

## Herron Hill Reservoir Improvements - Sodium Hypochlorite Building

PROJECT NUMBER: 2019-323-100-1 / 2 / 3 / 4

WARD: 5

<b>PHASE:</b> Construction
<b>PRIORITY:</b> Safety, Regulatory Compliance, Reliability, Capacity, Level of Service
<b>PROJECT DESCRIPTION:</b> Replacement of existing chlorine injection system.
<b>PROJECT JUSTIFICATION:</b> Existing chlorine feed systems are beyond their useful life and must be replaced.
<b>RISK(S):</b> Exposes the Authority's customers to poor water quality and possible PADEP violations due to inadequate booster disinfection.
<b>IMPACT ON OPERATIONS:</b> Increased flexibility and reliability, system compliance, and improved safety conditions for staff.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	Debt (Revenue Bonds)
<b>Total</b>	<b>\$5,431,248</b>	<b>2,423,993</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$2,423,993</b>	

# Water Pumping and Storage

## Herron Hill Tank Pump Station Improvements

PROJECT NUMBER: Unidentified

WARD: 5

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

**PROJECT DESCRIPTION:**  
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems as prioritized by the recommended Finished Water Pump Stations Condition Assessment Project.

**PROJECT JUSTIFICATION:**  
The pump station is in need of renovations and upgrades to maintain service, restore a 20 to 25 year useful life expectancy, and to provide safer conditions for staff.

**RISK(S):**  
Lack of facility planning exposes PWSA to higher capital costs to address emergency failures and customers to a potentially deficient water supply.

**IMPACT ON OPERATIONS:**  
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
Construction of a new facility to replace the existing pump station.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	\$1,109,999	0	61,012	72,953	489,080	486,954	\$1,109,999	

# Water Pumping and Storage

## Highland 1 Reservoir Liner

PROJECT NUMBER: Unidentified

WARD: Systemwide

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance, Reliability, Capacity, Level of Service

**PROJECT DESCRIPTION:**  
Replace existing Highland 1 Reservoir Liner

**PROJECT JUSTIFICATION:**  
Reservoir liner is past it's useful design life. Liner must be replaced periodically to avoid seeping from the reservoir into the surrounding park. Seepage could also cause slope instability issues.

**RISK(S):**  
Reservoir liner is past it's useful design life. Liner must be replaced periodically to avoid seeping from the reservoir into the surrounding park.

**IMPACT ON OPERATIONS:**  
Seepage could cause slope instability and could damage surrounding park features.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
Reduce operating costs of trying to find and repair seeps from the reservoir.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	Debt (Revenue Bonds)
Total	\$704,981	0	0	0	0	704,981	\$704,981	

# Water Pumping and Storage

## Highland No. 2 Reservoir Improvements

PROJECT NUMBER: 2019-323-102-0 / 1

WARD: Systemwide

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Regulatory Compliance, Reliability, Capacity, Level of Service

**PROJECT DESCRIPTION:**  
Replacement of existing reservoir liner and cover and associated reservoir rehabilitation. Replacement of existing chlorine injection system and an upgrade of the reservoir outlet structure.

**PROJECT JUSTIFICATION:**  
The Highland No. 2 Reservoir will be used as a temporary Clearwell while the new Clearwell is being constructed. Existing chlorine feed facilities must be upgraded to meet PADEP regulatory requirements for distribution chlorine residual. Existing reservoir outlet structure must be upgraded to accommodate new Highland Reservoir Pump Station.

**RISK(S):**  
Exposes PWSA customers to poor water quality from reservoir failure and inadequate booster disinfection.

**IMPACT ON OPERATIONS:**  
Increased flexibility and reliability, system compliance, and improved safety conditions for staff.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$52,141,389</b>	<b>22,052,489</b>	<b>2,661,400</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$24,713,889</b>	

# Water Pumping and Storage

## Highland Reservoir Pump Station and Rising Main

**PROJECT NUMBER:** 2017-323-101-0

**WARD:** Systemwide

**PHASE:**

Design

**PRIORITY:**

Regulatory Compliance, Reliability/Operational Flexibility, Capacity, Level of Service

**PROJECT DESCRIPTION:**

Construction of a new finished water pump station and transmission main to supply water to the Highland No. 1 Service Area from Highland No. 2 Reservoir.

**PROJECT JUSTIFICATION:**

All water supply for the Highland No. 1 Service Area currently flows through the Highland No. 1 Reservoir and the MFP. There is no other source water supply for the Highland No. 1 Service Area. In addition to providing alternate supply, this project is to temporarily provide finished water that meets the chlorine disinfection rules to the Highland No. 1 Service Area during the Clearwell Replacement Project. Additionally, this new facility could also be designed to service the Garfield pressure district, thus eliminating the rehabilitation of the Highland Pump Station.

**RISK(S):**

Failure of the two rising mains (No. 1 or No. 2), MFP, or Bruecken Pump Station would result in the loss of water supply to approximately 40% of PWSA's customer base.

**IMPACT ON OPERATIONS:**

Increased operation and maintenance labor and expenses. Increased operating flexibility in the future.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

Construction of a new clearwell at the site of the existing west sedimentation basin. However, a previous study still recommended the addition of these assets as part of the Clearwell Replacement project.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$50,051,043</b>	<b>4,890,823</b>	<b>13,598,197</b>	<b>13,598,197</b>	<b>1,133,183</b>	<b>0</b>	<b>\$33,220,400</b>	



# Water Pumping and Storage

## Howard Pump Station Improvements

**PROJECT NUMBER:** Unidentified  
**WARD:** 21, 24, 25, 26, 27

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service
<b>PROJECT DESCRIPTION:</b> Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems as prioritized by the recommended Finished Water Pump Stations Condition Assessment Project.
<b>PROJECT JUSTIFICATION:</b> The pump station was originally constructed between 1900 and 1904. The pump station is in need of renovations and upgrades to maintain service, restore a 20 to 25 year useful life expectancy, and to provide safer conditions for the staff.
<b>RISK(S):</b> Lack of facility planning exposes the Authority to higher capital costs to address emergency failures and its customers to a potentially deficient water supply.
<b>IMPACT ON OPERATIONS:</b> Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> Construction of a new facility to replace the existing pump station.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$10,468,295</b>	<b>0</b>	<b>0</b>	<b>1,025,118</b>	<b>1,225,744</b>	<b>8,217,433</b>	<b>\$10,468,295</b>	

# Water Pumping and Storage

## Inline Pump Station (Coral and Pacific) Improvements

PROJECT NUMBER: Unidentified

WARD: 8

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

**PROJECT DESCRIPTION:**  
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems as prioritized by the recommended Finished Water Pump Stations Condition Assessment Project.

**PROJECT JUSTIFICATION:**  
The pump station is in need of renovations and upgrades to maintain service, restore a 20 to 25 year useful life expectancy, and to provide safer conditions for staff.

**RISK(S):**  
Lack of facility planning exposes the Authority to higher capital costs to address emergency failures and its customers to a potentially deficient water supply.

**IMPACT ON OPERATIONS:**  
Increased operating efficiency, flexibility, reliability, and improved safety conditions for staff.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
Construction of a new facility to replace the existing pump station.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$600,000</b>	<b>0</b>	<b>0</b>	<b>70,443</b>	<b>90,312</b>	<b>439,245</b>	<b>\$600,000</b>	

# Water Pumping and Storage

## Lanpher Reservoir Improvements

PROJECT NUMBER: 2017-323-105-0 / 1 / 2 / 3

WARD: 25

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Regulatory Compliance, Reliability, Capacity, Level of Service

**PROJECT DESCRIPTION:**  
Replacement of existing reservoir liner and cover and associated reservoir rehabilitation. Replacement of existing chlorine injection system.

**PROJECT JUSTIFICATION:**  
The existing cover failed and had to be replaced on an emergency basis as part of the PADEP October 2017 Administrative Order. Existing chlorine feed systems are beyond their useful life and must be replaced.

**RISK(S):**  
Exposes the Authority's customers to poor water quality from reservoir failure and inadequate booster disinfection.

**IMPACT ON OPERATIONS:**  
Increased flexibility and reliability, system compliance, and improved safety conditions for staff.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$28,065,533</b>	<b>2,416,588</b>	<b>6,572,044</b>	<b>2,738,352</b>	<b>0</b>	<b>0</b>	<b>\$11,726,984</b>	

# Water Pumping and Storage

## Lincoln Pump Station: Bypass Pump Station Project

PROJECT NUMBER: 2020-323-100-0

WARD: 12

**PHASE:**

Design

**PRIORITY:**

Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

**PROJECT DESCRIPTION:**

Construction of a temporary bypass pump station that will be used at the Lincoln Pump Station and Saline Pump Station. This pump station will allow for the existing pump station to be taken off line completely for rehabilitation.

**PROJECT JUSTIFICATION:**

Repair of existing pump station while trying to keep it online increases the cost and construction time. This is a cost effective way to provide temporary pumping.

**RISK(S):**

Delaying the construction of this pump station will delay the renewal of existing pump stations that are in need of upgrades.

**IMPACT ON OPERATIONS:**

Decrease in yearly maintenance for the existing system.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

Attempt to rehabilitate/repair existing pump stations while they are in service.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	\$1,619,628	433,867	295,661	0	0	0	\$729,528	

# Water Pumping and Storage

## Lincoln Pump Station Improvements

PROJECT NUMBER: Unidentified

WARD: 12

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

**PROJECT DESCRIPTION:**  
Replacement of aged pump and valve equipment, electrical equipment, HVAC, and auxiliary systems, and rehabilitation of the building architectural and energy management systems as prioritized by the recommended Finished Water Pump Stations Condition Assessment Project.

**PROJECT JUSTIFICATION:**  
The pump station was originally constructed in 1952. The pump station is in need of renovations and upgrades to maintain service, restore a 20 to 25 year useful life expectancy, and to provide safer conditions for staff.

**RISK(S):**  
Lack of facility planning exposes the Authority to higher capital costs to address emergency failures and customers to a potentially deficient water supply.

**IMPACT ON OPERATIONS:**  
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
Construction of a new facility to replace the existing pump station.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$1,305,000</b>	<b>0</b>	<b>60,577</b>	<b>506,374</b>	<b>738,049</b>	<b>0</b>	<b>\$1,305,000</b>	

# Water Pumping and Storage

## Lincoln Tank Improvements

PROJECT NUMBER: Unidentified

WARD: 12

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance, Reliability, Capacity, Level of Service

**PROJECT DESCRIPTION:**  
Rehabilitation or replacement of the existing tank.

**PROJECT JUSTIFICATION:**  
Constructed in 1939, this tank is nearing the end of its useful life. The last inspection, which was performed in 2018, noted deficiencies that need to be addressed to ensure water quality standards are met.

**RISK(S):**  
Exposes the Authority's customers to poor water quality from coating problems or a potentially deficient water supply in the event of tank failure.

**IMPACT ON OPERATIONS:**  
Increased flexibility and reliability and system compliance.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
Rehabilitation of the existing tank, which may be a larger investment than replacement.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$4,195,000</b>	<b>230,583</b>	<b>275,710</b>	<b>1,848,372</b>	<b>1,840,335</b>	<b>0</b>	<b>\$4,195,000</b>	

# Water Pumping and Storage

## Mission Pump Station Improvements

PROJECT NUMBER: Unidentified  
WARD: 16, 17, 18, 20

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service
<b>PROJECT DESCRIPTION:</b> Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems as prioritized by the recommended Finished Water Pump Stations Condition Assessment Project.
<b>PROJECT JUSTIFICATION:</b> The Mission Pump Station is the only pumping station located south of the Monongahela River and was originally constructed between 1910 and 1912. The pump station is in need of renovations and upgrades to maintain service, restore a 20 to 25 year useful life expectancy, and to provide safer conditions for staff.
<b>RISK(S):</b> Lack of facility planning exposes the Authority to higher capital costs to address emergency failures and its customers to a potentially deficient water supply.
<b>IMPACT ON OPERATIONS:</b> Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> Construction of a new facility to replace the existing pump station.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$16,865,000</b>	<b>0</b>	<b>927,003</b>	<b>1,108,428</b>	<b>7,430,939</b>	<b>7,398,630</b>	<b>\$16,865,000</b>	

# Water Pumping and Storage

## Pump Station Architectural

PROJECT NUMBER: Unidentified

WARD: Systemwide

**PHASE:**  
Not Started

**PRIORITY:**  
Reliability/Operational Flexibility

**PROJECT DESCRIPTION:**  
Rehabilitate exterior and interior masonry, glazing, and roof of existing pump stations

**PROJECT JUSTIFICATION:**  
Existing building façade, roof, and window systems are in need of upgrade to protect interior pumps and electrical equipment from the elements. Rehabilitation of these pump stations has not occurred within the past 40 years for most facilities.

**RISK(S):**  
Façade collapse, leaking roof and windows could lead to equipment failures

**IMPACT ON OPERATIONS:**  
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	\$2,500,000	0	0	0	0	2,500,000	\$2,500,000	



# Water Pumping and Storage

## Pump Station Security

PROJECT NUMBER: Unidentified

WARD: Systemwide

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance

**PROJECT DESCRIPTION:**  
Installation of new surveillance equipment, entrance gates, fencing, lighting, and general site safety and access improvements for Herron Hill, Howard, Inline, Mission, Lincoln and Saline Pump Station.

**PROJECT JUSTIFICATION:**  
The Department of Homeland Security deems water/wastewater facilities as "critical infrastructure." PWSA has an obligation to protect all critical assets from potential threats and malevolent acts. Under America's Water Infrastructure Act (AWIA), PWSA must continue to assess and mitigate risks while creating resiliency in the water system. The protection of our pump stations is paramount in achieving these objectives. Several of these sites are also manned facilities; these improvements will also protect the employees working within the facilities.

**RISK(S):**  
Intrusion into remote facilities and resulting damage, disruption, sabotage and/or contamination of water.

**IMPACT ON OPERATIONS:**  
Less maintenance required on newer facilities.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$3,181,506</b>	<b>0</b>	<b>0</b>	<b>500,990</b>	<b>1,348,081</b>	<b>1,332,435</b>	<b>\$3,181,506</b>	

# Water Pumping and Storage

## Ross Pump Station

PROJECT NUMBER: 2018-323-101-0

WARD: Systemwide

**PHASE:**

Design

**PRIORITY:**

Water Quality/Regulatory

**PROJECT DESCRIPTION:**

Replacement of aged pump and valve equipment, meters, SCADA, electrical equipment, HVAC, auxiliary systems, as well as the rehabilitation of the building architectural and energy management systems.

**PROJECT JUSTIFICATION:**

Pump station is in need of rehabilitation. Pumps and ancillary systems are beyond their design life.

**RISK(S):**

Exposes the Authority to higher capital costs to address emergency failures, and exposes customers to a potentially deficient water supply.

**IMPACT ON OPERATIONS:**

Increased operating efficiency, flexibility, reliability, life expectancy, and improved safety conditions for staff.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	\$46,717,388	0	0	416,260	2,497,561	2,121,575	\$5,035,396	

# Water Pumping and Storage

## Saline Pump Station Improvements

PROJECT NUMBER: Unidentified

WARD: 14 & 15

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

**PROJECT DESCRIPTION:**  
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems as prioritized by the recommended Finished Water Pump Stations Condition Assessment Project.

**PROJECT JUSTIFICATION:**  
The pump station was originally constructed in 1935. The pump station is in need of renovations and upgrades to maintain service, restore a 20 to 25 year useful life expectancy, and to provide safer conditions for staff.

**RISK(S):**  
Lack of facility planning exposes the Authority to higher capital costs to address emergency failures and its customers to a potentially deficient water supply.

**IMPACT ON OPERATIONS:**  
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
Construction of a new facility to replace the existing pump station.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	\$1,055,611	0	0	109,343	71,674	874,594	\$1,055,611	

# Water Pumping and Storage

## Spring Hill Tank Improvements

PROJECT NUMBER: Unidentified

WARD: 24 & 26

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance, Reliability, Capacity, Level of Service

**PROJECT DESCRIPTION:**  
Perform a comprehensive inspection of the existing storage tanks and rehabilitation or replacement of the existing tanks.

**PROJECT JUSTIFICATION:**  
Constructed in 1929 of riveted steel, the coatings and structure of these tanks need to be rehabilitated due to corrosion.

**RISK(S):**  
Exposes the Authority's customers to poor water quality from coating problems or a potentially deficient water supply in the event of tank failure.

**IMPACT ON OPERATIONS:**  
Increased flexibility and reliability and system compliance.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
Rehabilitation of the existing tank, which may be a larger investment than replacement.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	\$2,125,001	0	116,803	139,663	936,303	932,232	\$2,125,001	

# Water Pumping and Storage

## Tank Reservoir Security

PROJECT NUMBER: Unidentified

WARD: Systemwide

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance

**PROJECT DESCRIPTION:**  
Installation of new surveillance equipment, entrance gates, fencing, lighting, and general site safety and access improvements for remote water storage sites/facilities.

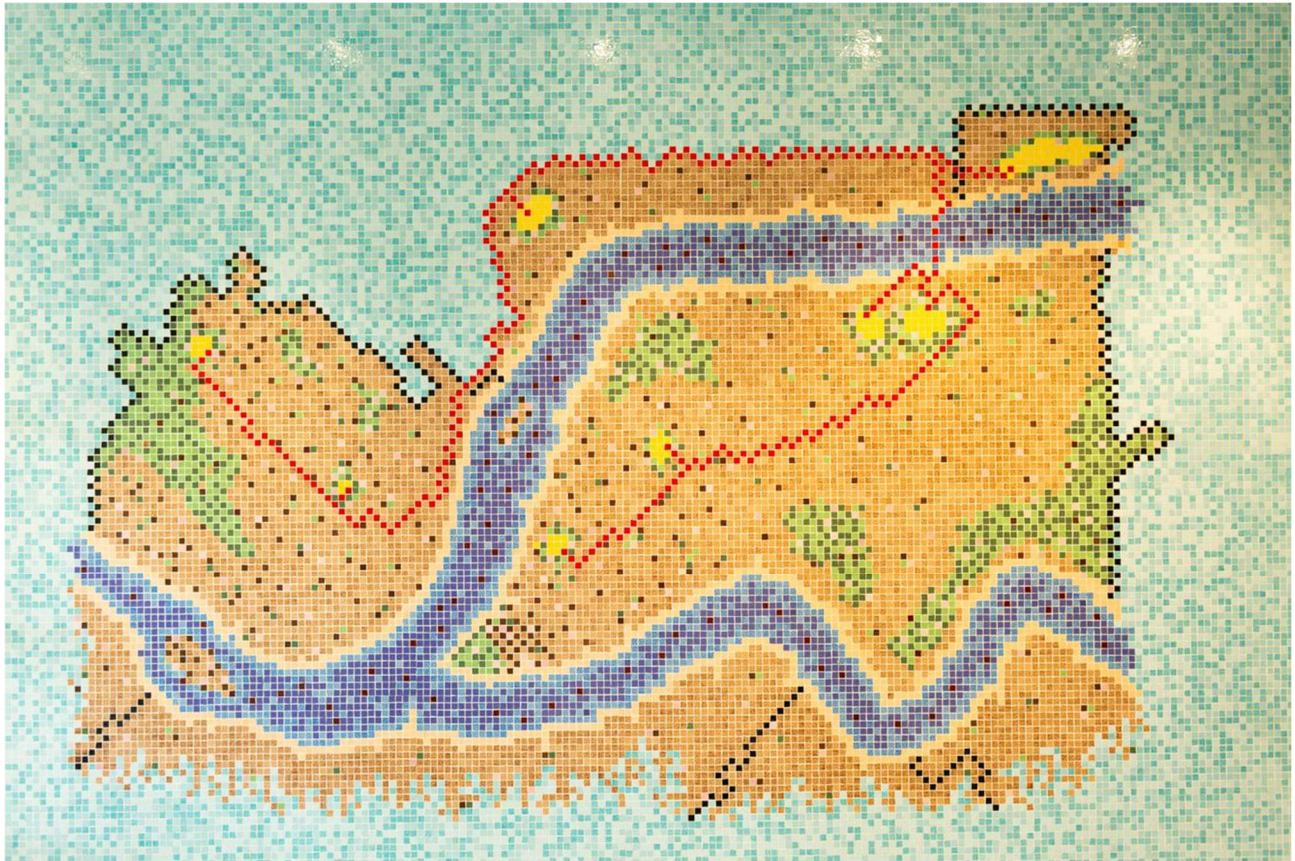
**PROJECT JUSTIFICATION:**  
The Department of Homeland Security deems water/wastewater facilities as "critical infrastructure." PWSA has an obligation to protect all critical assets from potential threats and malevolent acts. Under America's Water Infrastructure Act (AWIA), PWSA must continue to assess and mitigate risks while creating resiliency in the water system. The protection of our remote water storage facilities is paramount in achieving these objectives.

**RISK(S):**  
Intrusion into remote facilities and resulting damage and/or contamination of water.

**IMPACT ON OPERATIONS:**  
Less maintenance required on newer facilities.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$8,579,408</b>	<b>500,000</b>	<b>1,000,000</b>	<b>1,653,536</b>	<b>2,350,890</b>	<b>3,074,982</b>	<b>\$8,579,408</b>	



# Water Distribution



# Water Distribution System

## Bus Rapid Transit Water Distribution

PROJECT NUMBER: 2020-325-102-0

WARD: 1 & 4

**PHASE:**  
Construction

**PRIORITY:**  
Regional Cooperation/ Stewardship and Level of Service

**PROJECT DESCRIPTION:**  
The City of Pittsburgh is making roadway improvements on Fifth Ave and Forbes Ave from downtown through Oakland, with full depth reconstruction planned on Forbes from Crosstown Blvd to Craft Ave and on Fifth between Crosstown Blvd and the Birmingham Bridge. The City's work, in partnership with the Port Authority, will include signal pole upgrades, traffic redesign, sidewalk bumpouts, and new bus shelters. The full depth reconstruction portion of the project has the potential to affect existing 15-inch, 16-inch, 20-inch, and 6-inch mains that are 80-100+ years old. The full depth replacement of the roadway along with lowering of the roadway could result in damage to these mains. These mains should be replaced as part of this project.

**PROJECT JUSTIFICATION:**  
The full depth replacement of the roadway along with lowering of the roadway could result in damage to these mains.

**RISK(S):**  
Replacement of water mains along the Fifth and Forbes corridor reduces the risk of service outages due to breaks, reduces the potential for inadequate capacity for firefighting activities, and improves water quality.

**IMPACT ON OPERATIONS:**  
Increased system reliability, reliability, and improved system management.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
Delay the replacement of the required water mains and risk damage to the water system resulting from the project.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$18,575,643</b>	<b>4,299,135</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$4,299,135</b>	

# Water Distribution System

## District Metering Program

PROJECT NUMBER: Unidentified

WARD: Systemwide

**PHASE:**  
Not Started

**PRIORITY:**  
Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

**PROJECT DESCRIPTION:**  
Installation of system flow meters to track the flow of water and compare to area consumption to determine where leaks are the greatest.

**PROJECT JUSTIFICATION:**  
The district metering is intended to gather additional information on areas with suspected leakage and then prioritize areas for rehabilitation and replacement.

**RISK(S):**  
Failure to track water loss will result in loss of revenue.

**IMPACT ON OPERATIONS:**  
Decreased water loss.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	
<b>Total</b>	<b>\$4,136,923</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,600,000</b>	<b>1,536,923</b>	<b>\$4,136,923</b>	DSIC - Water
2024 District Metering		0	0	0	2,600,000	780,000	\$3,380,000	
2025 District Metering		0	0	0	0	756,923	\$756,923	



# Water Distribution System

## Duck Hollow Main Replacement

PROJECT NUMBER: Unidentified

WARD: 14

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service
<b>PROJECT DESCRIPTION:</b> Either repair the existing failed 16" main or abandon and provide interconnections with the Squirrel Hill system.
<b>PROJECT JUSTIFICATION:</b> The Duck Hollow 16" main failed as a result of a landslide in 2018. The main will need to either be abandoned and replaced with emergency interconnections. Rehabilitation of the failed slope may be required.
<b>RISK(S):</b> Existing failed 16" main does not provide any backup water supply leading to a loss of resiliency.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	Debt (Revenue Bonds)
Total	\$2,964,458	326,289	2,418,432	219,737	0	0	\$2,964,458	

# Water Distribution System

## Herron Hill - Squirrel Hill Boundary Adjustments

PROJECT NUMBER: Unidentified

WARD: 5

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service
<b>PROJECT DESCRIPTION:</b> Main and valve adjustments to move the boundary between the Herron Hill Reservoir and Squirrel Hill pressure districts.
<b>PROJECT JUSTIFICATION:</b> Herron Hill and Squirrel Hill operate on similar hydraulic gradients. There are areas where these two systems intertwine, which has resulted in long dead end lines as well as frequent opening and altering of dividing pressure valves. Moving the boundary of the two zones to incorporate more of the Herron Hill system into the Squirrel Hill system will alleviate these issues as well as alleviate demand on the Herron Hill Reservoir.
<b>RISK(S):</b> Existing long dead ends can cause water quality issues.
<b>IMPACT ON OPERATIONS:</b> Decreased leakage between pressure districts.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$408,116</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>52,929</b>	<b>355,187</b>	<b>\$408,116</b>	

# Water Distribution System

## Inoperable Curb Stop Repair and Replacement Program

**PROJECT NUMBER:** Unidentified

**WARD:** Systemwide

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

**PROJECT DESCRIPTION:**  
This project will address repair/replacement of inoperable curb stops identified through 1) AMI non-access process, 2) collections non-payment process, 3) customer disputes, informal, and formal complaints to the Pennsylvania Public Utility Commission.

**PROJECT JUSTIFICATION:**  
Inoperable curb stops prohibit meter upgrades, collection activities, and customer internal leak repairs. Having operable curb stops will ensure that PWSA 1) Achieves compliance with upgrading all age meters under the PUC Compliance Plan, 2) Collects delinquent water / wastewater conveyance charges for services rendered, 3) maintains compliance with PUC regulatory requirements, decreases legal claims for delayed terminations, and increases overall customer satisfaction.

**RISK(S):**  
If this project is delayed, PWSA is subject to continued infractions and / or violations for not adhering to PUC regulatory requirements regarding discontinuance of service.

**IMPACT ON OPERATIONS:**  
Operating budget impact would be budget for one project manager to monitor contract spend, contractors progress, manage related work orders and assets and SpryMobile, and provide weekly progress reports.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$2,500,000</b>	<b>500,000</b>	<b>500,000</b>	<b>500,000</b>	<b>500,000</b>	<b>500,000</b>	<b>\$2,500,000</b>	

# Water Distribution System

## Intermediate Diameter Water Main Replacement Program

PROJECT NUMBER: Unidentified  
WARD: Systemwide

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

**PROJECT DESCRIPTION:**  
Strategic replacement of water mains to improve system reliability as well as improve water pressure, maintain water quality, and minimize disturbance to the community. Program will focus on 16" to 36" diameter mains.

**PROJECT JUSTIFICATION:**  
By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving overall replacement cost. Additionally, projects will be coordinated with other utilities to minimize disturbance to the community and street surface restoration costs. Water quality will also improve by removing tuberculated mains.

**RISK(S):**  
Customers may be subject to service outages or the potential for inadequate pressure for firefighting activities.

**IMPACT ON OPERATIONS:**  
Increased operating flexibility and reliability, decrease in non-revenue water due to leaks.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	Debt (Revenue Bonds)
<b>Total</b>	<b>\$26,015,448</b>	<b>0</b>	<b>0</b>	<b>1,283,549</b>	<b>2,825,448</b>	<b>21,906,451</b>	<b>\$26,015,448</b>	
2025 Intermediate Main Replacement		0	0	1,283,549	1,541,899	20,364,552	\$23,190,000	
2026 Intermediate Main Replacement		0	0	0	1,283,549	1,541,899	\$2,825,448	

# Water Distribution System

## Intermediate Meter Replacement Program

**PROJECT NUMBER:** 2021-325-100-0

**WARD:** Systemwide

**PHASE:**  
Construction

**PRIORITY:**  
Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

**PROJECT DESCRIPTION:**  
Replacement of customer meters size 1.5" to 2".

**PROJECT JUSTIFICATION:**  
Ensure capture of all revenue. As meters age, they typically underestimate the amount of water consumed.

**RISK(S):**  
Failure to replace meters annually could result in lost revenue or violate regulatory requirements.

**IMPACT ON OPERATIONS:**  
Increased system reliability, reliability, and improved system management.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	
<b>Total</b>	<b>\$684,647</b>	<b>122,296</b>	<b>81,666</b>	<b>84,500</b>	<b>86,667</b>	<b>87,000</b>	<b>\$462,129</b>	
2021 Intermediate Meters		55,629	0	0	0	0	\$55,629	Debt (Revenue Bonds)
2022 Intermediate Meters		66,667	13,333	0	0	0	\$80,000	
2023 Intermediate Meters		0	68,333	13,667	0	0	\$82,000	
2024 Intermediate Meters		0	0	70,833	14,167	0	\$85,000	
2025 Intermediate Meters		0	0	0	72,500	14,500	\$87,000	
2026 Intermediate Meters		0	0	0	0	72,500	\$72,500	

# Water Distribution System

## Large Diameter Water Main Replacement Program

**PROJECT NUMBER:** 2019-325-103-0, 2020-325-109-0, 2020-424-101-0, 2020-424-107-0, 2021-424-105-0, Unidentified  
**WARD:** Systemwide

**PHASE:**  
Construction / Not Started

**PRIORITY:**  
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

**PROJECT DESCRIPTION:**  
Strategic replacement or rehabilitation of large diameter water mains (16" and larger) and appurtenances to improve system reliability and hydraulics, including internal and external inspections.

**PROJECT JUSTIFICATION:**  
The Authority's water system has approximately 122 miles of large diameter water mains. Maintaining a proactive approach to replacing large mains will ensure that large mains are replaced before the end of their useful life.

**RISK(S):**  
The consequences of failure for larger mains are much greater than for smaller distribution mains, which typically include significant service outages (larger area and longer time frame impacts), as well as property and roadway damage.

**IMPACT ON OPERATIONS:**  
Increased system reliability and improved system management.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
Continue to extend utility component life until a high failure rate justifies replacement.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	
<b>Total</b>	<b>\$109,643,216</b>	<b>15,030,564</b>	<b>15,066,385</b>	<b>26,402,678</b>	<b>8,560,476</b>	<b>18,803,966</b>	<b>\$83,864,069</b>	
2019 Large Diameter Water Main Improvements – Rising Main 3		10,300,000	1,655,732	0	0	0	\$11,955,732	Debt (Revenue Bonds) / WIFIA
2019 Large Diameter Water Main Improvements – Rising Main 4		0	7,944,444	6,355,556	0	0	\$14,300,000	
2020 Large Diameter Main Replacement – Four Mile Run		2,928,596	3,574,065	0	0	0	\$6,502,661	
2023 Large Diameter Main Replacement		1,801,968	605,863	17,152,169	0	0	\$19,560,000	
2024 Large Diameter Main Replacement		0	1,286,281	1,530,121	6,936,912	10,370,015	\$20,123,329	
2025 Large Diameter Main Replacement		0	0	1,364,832	1,623,564	7,069,119	\$10,057,515	
2026 Large Diameter Main Replacement		0	0	0	0	1,364,832	\$1,364,832	

# Water Distribution System

## Large Meter Replacement Program

**PROJECT NUMBER:** 2020-325-101-0, Unidentified

**WARD:** Systemwide

**PHASE:**  
Construction / Not Started

**PRIORITY:**  
Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

**PROJECT DESCRIPTION:**  
Annual replacement of water meters larger than 1".

**PROJECT JUSTIFICATION:**  
Ensure capture of all revenue. As meters age, they typically underestimate the amount of water consumed.

**RISK(S):**  
Failure to replace meters annually could result in lost revenue.

**IMPACT ON OPERATIONS:**  
Increased system reliability, reliability, and improved system management.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	
<b>Total</b>	<b>\$7,050,629</b>	<b>1,571,313</b>	<b>1,362,979</b>	<b>507,996</b>	<b>337,000</b>	<b>337,000</b>	<b>\$4,116,288</b>	
2021 Large Meter Replacement		435,497	0	0	0	0	\$435,497	DSIC - Water
2022 Large Meter Replacement		1,135,816	227,163	0	0	0	\$1,362,979	
2023 Large Meter Replacement		0	1,135,816	227,163	0	0	\$1,362,979	
2024 Large Meter Replacement		0	0	280,833	56,167	0	\$337,000	
2025 Large Meter Replacement		0	0	0	280,833	56,167	\$337,000	
2026 Large Meter Replacement		0	0	0	0	280,833	\$280,833	

# Water Distribution System

## Lead Service Identification Program

PROJECT NUMBER: Unidentified  
WARD: Systemwide

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Safety, Regulatory Compliance
<b>PROJECT DESCRIPTION:</b> Locating lead service lines allows the Authority to identify both individual service lines to replace and waterlines that have a particularly high amount of lead service lines that can be replaced to facilitate the lead service line replacements.
<b>PROJECT JUSTIFICATION:</b> Understanding where the lead service lines are within the water system will allow the Authority to more efficiently replace all lead service lines.
<b>RISK(S):</b> Failure to indentify all lead service lines could slow the rate in which they are replaced.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$500,000</b>	<b>500,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$500,000</b>	



# Water Distribution System

## Low Pressure Area Remediation

**PROJECT NUMBER:** 2021-325-101-0

**WARD:** Systemwide

<b>PHASE:</b> Planning
<b>PRIORITY:</b> Regulatory Compliance, Reliability/Operational Flexibility, Level of Service
<b>PROJECT DESCRIPTION:</b> Fix chronically low pressure areas by either extending neighboring higher pressure districts into the area, booster pump stations, or household booster pumps.
<b>PROJECT JUSTIFICATION:</b> This project is in response to the low pressure monitors required by the October 2017 Administrative Order.
<b>RISK(S):</b> Customers may experience temporary service outages as a result of the work on this project.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$1,393,833</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,393,833</b>	<b>0</b>	<b>\$1,393,833</b>	

# Water Distribution System

## Neighborhood Lead Service Line Replacement Program

PROJECT NUMBER: Unidentified

WARD: Systemwide

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Safety, Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service
<b>PROJECT DESCRIPTION:</b> Neighborhood Lead Service Line Replacement (LSLR) program to replace all remaining public and private lead service lines within the PWSA water service area. Program will be developed once 2023-2026 Small Diameter Water Main Replacement program is fully planned.
<b>PROJECT JUSTIFICATION:</b> Comply with PWSA goals in the Lead Infrastructure Plan approved by PUC.
<b>RISK(S):</b> Compliance with PWSA goals and regulatory recommendations.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability and water quality.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$111,170,000</b>	<b>0</b>	<b>0</b>	<b>27,792,500</b>	<b>55,585,000</b>	<b>27,792,500</b>	<b>\$111,170,000</b>	

# Water Distribution System

## North Side Boundary Adjustments

**PROJECT NUMBER:** Unidentified  
**WARD:** 21, 22, 23, 24, 25, 26, 27

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Safety, Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service
<b>PROJECT DESCRIPTION:</b> Main and valve installation to move some low pressure areas from the McNaugher Pressure District to the Brashears Pressure District.
<b>PROJECT JUSTIFICATION:</b> Areas within the McNaugher Pressure District that are near the Brashears Pressure District could have increased pressure by moving the pressure zone boundary through main improvements and valve adjustments.
<b>RISK(S):</b> Existing services are near or below minimum standards (20 psi).
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$612,173</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>79,393</b>	<b>532,780</b>	<b>\$612,173</b>	

# Water Distribution System

## Private Lead Service Line Reimbursement Program

**PROJECT NUMBER:** Unidentified

**WARD:** Systemwide

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Safety, Regulatory Compliance
<b>PROJECT DESCRIPTION:</b> Reimbursement of private line lead service line costs.
<b>PROJECT JUSTIFICATION:</b> Replacing both private and public lead service lines is required to eliminate lead in the water system.
<b>RISK(S):</b> Failure to replace private lead service lines poses a public health risk.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<b>Total Budget (Prior Years Included)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Total</b>	
<b>Total</b>	<b>\$5,274,537</b>	<b>1,274,537</b>	<b>1,000,000</b>	<b>1,000,000</b>	<b>1,000,000</b>	<b>1,000,000</b>	<b>\$5,274,537</b>	<b>Debt (Revenue Bonds)</b>
2021 Private Lead Service Line Reimbursement	274,537	0	0	0	0	0	\$274,537	
2022 Private Lead Service Line Reimbursement	1,000,000	0	0	0	0	0	\$1,000,000	
2023 Private Lead Service Line Reimbursement	0	1,000,000	0	0	0	0	\$1,000,000	
2024 Private Lead Service Line Reimbursement	0	0	1,000,000	0	0	0	\$1,000,000	
2025 Private Lead Service Line Reimbursement	0	0	0	1,000,000	0	0	\$1,000,000	
2026 Private Lead Service Line Reimbursement	0	0	0	0	0	1,000,000	\$1,000,000	

# Water Distribution System

## Regulator Valve and Vault Replacement Program

**PROJECT NUMBER:** 2021-325-102-0, Unidentified

**WARD:** Systemwide

**PHASE:**

Planning

**PRIORITY:**

Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

**PROJECT DESCRIPTION:**

Replacement of pressure zone interconnection vaults including new pressure regulators, flow meters, pressure transmitters, and SCADA communications.

**PROJECT JUSTIFICATION:**

Existing regulator stations are in need of replacement. This will also aid in identification of non-revenue water.

**RISK(S):**

Failure to fix could result in catastrophic failure of the vault.

**IMPACT ON OPERATIONS:**

Decreased leakage will result in decrease of pumping energy.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	
<b>Total</b>	<b>\$9,559,529</b>	<b>232,420</b>	<b>1,321,957</b>	<b>1,557,942</b>	<b>2,567,270</b>	<b>3,879,940</b>	<b>\$9,559,529</b>	
2021 Regulator Valve and Vault Replacement		232,420	1,266,608	582,375	0	0	\$2,081,403	Debt (Revenue Bonds)
2022 Regulator Valve and Vault Replacement		0	55,2349	586,973	292,720	0	\$935,042	
2023 Regulator Valve and Vault Replacement		0	0	305,570	1,760,920	878,161	\$2,944,651	
2024 Regulator Valve and Vault Replacement		0	0	83,024	458,355	2,641,279	\$3,182,758	
2025 Regulator Valve and Vault Replacement		0	0	0	55,275	305,125	\$360,400	
2026 Regulator Valve and Vault Replacement		0	0	0	0	55,275	\$55,275	

# Water Distribution System

## Small Diameter Water Main Replacement Program

**PROJECT NUMBER:** 2019-325-101-0 / 1, 2019-325-102-0 / 1 / 2, 2020-325-106-0 / 1 / 2, 2021-325-104-0, Unidentified

**WARD:** Systemwide

<b>PHASE:</b> Construction / Design / Not Started
<b>PRIORITY:</b> Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service
<b>PROJECT DESCRIPTION:</b> Strategic replacement of water mains to improve system reliability as well as improve water pressure, maintain water quality, and minimize disturbance to the community. Program will initially focus on replacing existing 4" and 6" unlined cast iron mains and mains with a history of frequent breaks.
<b>PROJECT JUSTIFICATION:</b> By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving overall replacement cost. Additionally, projects will be coordinated with other utilities to minimize disturbance to the community and street surface restoration costs. Water quality will also improve by removing tuberculated mains.
<b>RISK(S):</b> Customers may be subject to service outages or the potential for inadequate pressure for firefighting activities.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> Continue to extend utility component life until a high failure rate justifies replacement.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	
<b>Total</b>	<b>\$358,602,256</b>	<b>23,802,324</b>	<b>9,235,175</b>	<b>35,157,679</b>	<b>77,481,962</b>	<b>109,063,535</b>	<b>\$254,740,675</b>	
2021 Small Main Replacement		22,392,039	0	0	0	0	\$22,392,039	Debt (Revenue Bonds) / PENNVEST
2022 Small Main Replacement		806,000	0	0	0	0	\$806,000	
2023 Small Main Replacement		604,285	6,385,175	11,006,000	0	0	\$17,995,460	
2024 Small Main Replacement		0	2,850,000	18,000,000	30,000,000	67,063,535	\$117,913,535	
2025 Small Main Replacement		0	0	6,151,679	41,281,962	0	\$47,433,641	
2026 Small Main Replacement		0	0	0	6,200,000	42,000,000	\$48,200,000	

# Water Distribution System

## Small Meter Replacement Program

**PROJECT NUMBER:** 2020-325-107-0, 2021-325-106-0, Unidentified  
**WARD:** Systemwide

<b>PHASE:</b> Construction / Not Started
<b>PRIORITY:</b> Regulatory Compliance, Reliability/Operational Flexibility, Level of Service
<b>PROJECT DESCRIPTION:</b> Annual replacement of water meters 1" or less.
<b>PROJECT JUSTIFICATION:</b> Ensure capture of all revenue. As meters age, they typically underestimate the amount of water consumed.
<b>RISK(S):</b> Failure to replace meters annually could result in lost revenue or violate regulatory requirements.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability, reliability, and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	
<b>Total</b>	<b>\$8,169,503</b>	<b>2,114,155</b>	<b>1,713,417</b>	<b>1,323,009</b>	<b>416,666</b>	<b>250,000</b>	<b>\$5,817,247</b>	
2021 Small Meter Replacement		580,630	0	0	0	0	\$580,630	DSIC - Water
2022 Small Meter Replacement		1,533,525	306,700	0	0	0	\$1,840,230	
2023 Small Meter Replacement		0	1,406,712	281,342	0	0	\$1,688,054	
2024 Small Meter Replacement		0	0	1,041,667	208,333	0	\$1,250,000	
2025 Small Meter Replacement		0	0	0	208,333	41,667	\$250,000	
2026 Small Meter Replacement		0	0	0	0	208,333	\$208,333	

# Water Distribution System

## South Side Slopes Boundary Adjustments

**PROJECT NUMBER:** Unidentified

**WARD:** 16, 17

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service
<b>PROJECT DESCRIPTION:</b> Main and valve adjustments to move the boundary between the Highland No. 2 and Allentown Pressure Districts.
<b>PROJECT JUSTIFICATION:</b> Areas within the Highland No. 2 pressure district that are near the Allentown pressure district could have increased pressure by moving the pressure zone boundary through main improvements and valve adjustments.
<b>RISK(S):</b> Existing services are near or below minimum standards (20 psi).
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$612,173</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>79,393</b>	<b>532,780</b>	<b>\$612,173</b>	



# Water Distribution System

## Unmetered and Flat Rate Properties

PROJECT NUMBER: 2021-325-103-0

WARD: Systemwide

<b>PHASE:</b> Planning
<b>PRIORITY:</b> Regulatory Compliance, Reliability/Operational Flexibility, Level of Service
<b>PROJECT DESCRIPTION:</b> Metering unmetered and flat rate properties as required by regulations.
<b>PROJECT JUSTIFICATION:</b> Required per the PUC regulations. The impact of not installing meters is the loss of revenue and lack of ability to accurately estimate water loss in the system.
<b>RISK(S):</b> Failure to comply with PUC regulations and the potential of lost revenue.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability, reliability, and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	DSIC - Water
Total	\$962,500	462,500	500,000	0	0	0	\$962,500	

# Water Distribution System

## Urgent Lead Service Line Replacement

**PROJECT NUMBER:** Unidentified

**WARD:** Systemwide

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Safety, Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service
<b>PROJECT DESCRIPTION:</b> This project involves the private side Lead Service Line Replacements (LSLR) associated with operations public side replacements. It includes provisions for some full line replacements when operations requests both sides be completed due to their workload or other factors.
<b>PROJECT JUSTIFICATION:</b> Compliance with the Lead Infrastructure Plan approved by the PUC. PUC requires termination if a private side lead service line is not replaced the same time the public service line is replaced. Not completing this project would lead to water service terminations.
<b>RISK(S):</b> Required to terminate service if property owners do not replace their private side lead service lines after operations replaces a public side service line.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability and water quality.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	
<b>Total</b>	<b>\$5,706,000</b>	<b>1,399,500</b>	<b>1,170,000</b>	<b>1,079,000</b>	<b>1,046,500</b>	<b>1,011,000</b>	<b>\$5,706,000</b>	
2022 Urgent Lead Service Line Replacement		1,399,500	0	0	0	0	\$1,399,500	DSIC - Water
2023 Urgent Lead Service Line Replacement		0	1,170,000	0	0	0	\$1,170,000	
2024 Urgent Lead Service Line Replacement		0	0	1,079,000	0	0	\$1,079,000	
2025 Urgent Lead Service Line Replacement		0	0	0	1,046,500	0	\$1,046,500	
2026 Urgent Lead Service Line Replacement		0	0	0	0	1,011,000	\$1,011,000	

# Water Distribution System

## Valve Replacement Program

**PROJECT NUMBER:** 2020-325-111-0, Unidentified

**WARD:** Systemwide

<b>PHASE:</b> Construction / Not Started
<b>PRIORITY:</b> Safety, Reliability/Operational Flexibility, Level of Service
<b>PROJECT DESCRIPTION:</b> Replacement of defective or non-operational valves on transmission and distribution mains throughout the water distribution system, excluding valves replaced during waterline relays.
<b>PROJECT JUSTIFICATION:</b> Increasing the number of operable valves in the system will reduce the number of valves that would need to be closed during emergency conditions, and therefore the number of customers that may be impacted.
<b>RISK(S):</b> A larger number of customers may be subject to service outages.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> Utilize Authority staff and equipment to perform all repairs. This would require an increase in operation expenses for both personnel and equipment.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	
<b>Total</b>	<b>\$17,082,594</b>	<b>1,228,536</b>	<b>1,930,769</b>	<b>2,997,436</b>	<b>2,800,000</b>	<b>2,800,000</b>	<b>\$11,756,741</b>	
2021 Valve Replacement		228,536	0	0	0	0	\$228,536	DSIC - Water
2022 Valve Replacement		1,000,000	430,769	0	0	0	\$1,430,769	
2023 Valve Replacement		0	1,500,000	430,769	0	0	\$1,930,769	
2024 Valve Replacement		0	0	2,566,667	2,800,000	233,333	\$5,600,000	
2025 Valve Replacement		0	0	0	0	2,566,667	\$2,566,667	

# Water Distribution System

## Water Relay Program

**PROJECT NUMBER:** 2020-325-110-0, Unidentified

**WARD:** Systemwide

<b>PHASE:</b> Construction
<b>PRIORITY:</b> Safety, Reliability/Operational Flexibility, Level of Service
<b>PROJECT DESCRIPTION:</b> Replacement of existing water mains, valves, fittings, service connections, and hydrants due to emergency situations.
<b>PROJECT JUSTIFICATION:</b> The existing water distribution system is aging and updates are required to address failures that could be significant public safety hazards.
<b>RISK(S):</b> Customers will be subject to service outages or inadequate pressure for firefighting activities until break is addressed.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> Utilize Authority staff and equipment to perform all upgrades. This would require an increase in operations expenses for both personnel and equipment.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	
<b>Total</b>	<b>\$9,718,083</b>	<b>1,978,083</b>	<b>1,935,000</b>	<b>1,935,000</b>	<b>1,935,000</b>	<b>1,935,000</b>	<b>\$9,718,083</b>	
2020 Water Relay		489,621	0	0	0	0	\$489,621	Debt (Revenue Bonds) / DSIC - Water
2022 Water Relay		1,488,462	466,538	0	0	0	\$1,935,000	
2023 Water Relay		0	1,488,462	446,538	0	0	\$1,935,000	
2024 Water Relay		0	0	1,488,462	446,538	0	\$1,935,000	
2025 Water Relay		0	0	0	1,488,462	446,538	\$1,935,000	
2026 Water Relay		0	0	0	0	1,488,462	\$1,488,462	

# Water Distribution System

## Water and Wastewater Safety and Security Improvements

PROJECT NUMBER: Unidentified

WARD: Systemwide

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Safety
<b>PROJECT DESCRIPTION:</b> Safety and security improvements throughout PWSA facilities.
<b>PROJECT JUSTIFICATION:</b> Failure to implement safety and security measures will increase the likelihood of a security breach causing harm to PWSA employees and customers.
<b>RISK(S):</b> Security breaches.
<b>IMPACT ON OPERATIONS:</b> Increased safety and security at all PWSA facilities.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	Debt (Revenue Bonds)
Total	\$1,500,000	1,500,000	0	0	0	0	\$1,500,000	



# Wastewater System



# Wastewater System

## 31st Ward Pump Station and Appurtenances - Phase 2

PROJECT NUMBER: Unidentified

WARD: 31

**PHASE:**

Not Started

**PRIORITY:**

Regulatory Compliance, Reliability/Operational Flexibility, Regional Cooperation/ Stewardship, Level of Service

**PROJECT DESCRIPTION:**

Evaluation to identify and locate the source(s) of the infiltration and inflow (I/I), removal of public I/I sources, and rehabilitation/replacement of the Rogers Street and Mifflin Road Pump Station and force main.

**PROJECT JUSTIFICATION:**

Both sewage pump stations and the force main that convey flow to the Streets Run Sanitary Trunk Sewer were constructed in the late 1940's and are reaching the end of their useful life. Additionally, past studies suggest this sewershed may be significantly impacted by high levels of infiltration/inflow.

**RISK(S):**

Increased combined sewer overflows and pump station system failures.

**IMPACT ON OPERATIONS:**

Increased operating flexibility and reliability.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

Abandonment of the existing pump stations and installation of a new gravity main to convey flows to the West Mifflin Sanitary Authority.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds) / DSIC - Sewer</u>
<b>Total</b>	<b>\$14,059,438</b>	<b>110,521</b>	<b>1,090,000</b>	<b>999,167</b>	<b>4,412,750</b>	<b>7,447,000</b>	<b>\$14,059,438</b>	

# Wastewater System

## Browns Hill Road Sewer Pump Station Replacement

PROJECT NUMBER: Unidentified

WARD: 15

**PHASE:**

Not Started

**PRIORITY:**

Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

**PROJECT DESCRIPTION:**

Construction of a replacement 160 GPM sanitary sewer pump station, including standby power, safer ingress and egress for routine maintenance, a water supply for equipment wash down and odor control facilities, if required. Additionally, perform a condition assessment of the 4" force main ( approx. 790 l.f.) constructed in 2007, but not utilized and confirm sanitary sewer separation occurred. Additional sewer separation may need to occur prior to modifying the existing diversion chamber.

**PROJECT JUSTIFICATION:**

The existing sanitary sewer pump station has reached the end of its useful life. The replacement station will provide increased operating efficiency and resiliency and improved safety conditions for staff.

**RISK(S):**

If the station is not replaced, pump or wet well failures could occur, which would result in sanitary sewer overflows. Sanitary sewer overflows could result in fines and notice of violations from regulating agencies.

**IMPACT ON OPERATIONS:**

Increased operating flexibility and reliability.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

Delay the construction and risk pump or wet well failures.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$1,700,000</b>	<b>248,000</b>	<b>370,100</b>	<b>1,081,900</b>	<b>0</b>	<b>0</b>	<b>\$1,700,000</b>	



# Wastewater System

## Large Diameter Sewer Rehabilitation Program

**PROJECT NUMBER:** 2020-424-101-0, 2020-424-107-0, 2021-424-105-0,  
Unidentified

**WARD:** Systemwide

<b>PHASE:</b> Design / Not Started
<b>PRIORITY:</b> Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service
<b>PROJECT DESCRIPTION:</b> Proactive, trenchless rehabilitation of 36" diameter or greater sewer mains to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow; including cleaning and pre and post construction CCTV inspections.
<b>PROJECT JUSTIFICATION:</b> Provides the Authority with a means to address several moderate/major structural defects in pipe segments prior to complete failure. This trenchless pipe renewal method renews the asset, eliminates disruptive excavation, and is more cost effective than replacement.
<b>RISK(S):</b> If moderate/major structural defects are not proactively addressed, complete failure will eventually occur and excavation will be required. Any complete failure that occurs will result in dramatically increased expenditures for repair.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> Perform excavated point repairs to address defective sections of pipe, replace segment in its entirety, or continue to extend asset life until failure.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	
<b>Total</b>	<b>\$32,008,364</b>	<b>5,700,224</b>	<b>4,993,711</b>	<b>3,824,429</b>	<b>4,660,000</b>	<b>4,900,000</b>	<b>\$24,078,364</b>	
2020 Large Diameter Sewer Rehabilitation		2,652,479	227,224	0	0	0	\$2,879,703	PENNVEST / Debt (Revenue Bonds)
2021 Large Diameter Sewer Rehabilitation		2,205,459	1,291,773	0	0	0	\$3,497,232	
2022 Large Diameter Sewer Rehabilitation		802,286	2,427,714	0	0	0	\$3,230,000	
2023 Large Diameter Sewer Rehabilitation		40,000	1,047,000	3,293,000	0	0	\$4,380,000	
2024 Large Diameter Sewer Rehabilitation		0	0	531,429	4,108,571	0	\$4,640,000	
2025 Large Diameter Sewer Rehabilitation		0	0	0	551,429	4,328,571	\$4,880,000	
2026 Large Diameter Sewer Rehabilitation		0	0	0	0	571,429	\$571,429	

# Wastewater System

## Maytide Storm and Sanitary Sewer System Improvements

PROJECT NUMBER: 2017-424-109-0

WARD: 29

**PHASE:**

Design

**PRIORITY:**

Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

**PROJECT DESCRIPTION:**

Reconstruction of storm infrastructure from Merritt Avenue to the storm interceptor on Ravilla Avenue and the realignment of the 10" sanitary sewer on Maytide (Sanderson to Valline).

**PROJECT JUSTIFICATION:**

Localized property and street flooding has been well-documented for several years at this location and the undeveloped right-of-way of Sanderson has significantly deteriorated. Additionally, an inspection of the 10" sanitary sewer on Maytide Street revealed structural and construction defects.

**RISK(S):**

Continual degradation to a steep slope could result in property damage and an increased cost to stabilize. Customers may be subject to basement backups, or overflows may occur due to collapsed pipes.

**IMPACT ON OPERATIONS:**

Increased operating reliability.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	Debt (Revenue Bonds) / DSIC - Sewer
<b>Total</b>	<b>\$11,596,866</b>	<b>82,584</b>	<b>3,921,723</b>	<b>1,072,559</b>	<b>0</b>	<b>0</b>	<b>\$5,076,866</b>	

# Wastewater System

## M-29 Outfall Improvements

PROJECT NUMBER: 2018-424-103-0

WARD: 15

**PHASE:**  
Construction

**PRIORITY:**  
Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

**PROJECT DESCRIPTION:**  
Modifying diversion chamber, rehabilitating culvert, constructing an endwall, and installing flapgate associated with the M-29 outfall structure.

**PROJECT JUSTIFICATION:**  
The M-29 outfall structure is critical infrastructure that has been in jeopardy of failing for several years due to significant structural defects in the existing culvert.

**RISK(S):**  
The M-29 outfall structure could fail prior to completion of the project.

**IMPACT ON OPERATIONS:**  
Increased operating flexibility and reliability.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	Debt (Revenue Bonds)
<b>Total</b>	<b>\$6,213,168</b>	<b>1,804,376</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$1,804,376</b>	

# Wastewater System

## Queenston Sewer Improvements

PROJECT NUMBER: 2019-424-103-2

WARD: 32

**PHASE:**

Design

**PRIORITY:**

Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

**PROJECT DESCRIPTION:**

Removal of a combined sewer diversion chamber and installation of new sewer infrastructure, which will result in the separation of the sewershed.

**PROJECT JUSTIFICATION:**

The existing sewer infrastructure (both storm and sanitary) have significant structural defects, which are located under a large structure in a paper street over 40 feet deep. Additionally, several customers experience sewer backups that are connected to the combined sewer in a mostly separated area.

**RISK(S):**

Customers may be subject to basement backups or overflows may occur due to collapsed pipes.

**IMPACT ON OPERATIONS:**

Increased operating flexibility and reliability.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

Reroute the infrastructure (laterals and catch basins) connected to the failed mains; however, this may result in additional basement backups for the customers and may not be feasible due to the existing depth of the existing infrastructure.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	Debt (Revenue Bonds)
<b>Total</b>	<b>\$4,267,892</b>	<b>1,931,853</b>	<b>213,197</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$2,145,050</b>	

# Wastewater System

## Sewer Reconstruction Program

**PROJECT NUMBER:** 2021-424-100-0, Unidentified

**WARD:** Systemwide

<b>PHASE:</b> Construction / Not Started
<b>PRIORITY:</b> Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service
<b>PROJECT DESCRIPTION:</b> Reconstruction of existing sewers, manholes, catch basins, and inlets due to emergency situations or pipe failures.
<b>PROJECT JUSTIFICATION:</b> The existing sewer system is aging and immediate repairs are required to address failures that could be significant public safety hazards.
<b>RISK(S):</b> Customers may be subject to basement backups or overflows may occur due to collapsed pipes. The Authority may be subject to related fines due to sewer overflows or for non-compliance as outlined in the Consent Order and Agreement.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> Utilize Authority staff and equipment to perform all repairs. This would result in an increase to labor, equipment, and related operating expenses.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	
<b>Total</b>	<b>\$11,908,016</b>	<b>3,201,777</b>	<b>1,999,781</b>	<b>1,810,000</b>	<b>1,810,000</b>	<b>1,886,458</b>	<b>\$10,708,016</b>	
2021 Sewer Reconstruction		931,638	0	0	0	0	\$931,638	Debt (Revenue Bonds) / DSIC - Wastewater
2022 Sewer Reconstruction		2,270,139	964,861	0	0	0	\$3,235,000	
2023 Sewer Reconstruction		0	1,034,920	775,080	0	0	\$1,810,000	
2024 Sewer Reconstruction		0	0	1,034,920	775,080	0	\$1,810,000	
2025 Sewer Reconstruction		0	0	0	1,034,920	775,080	\$1,810,000	
2026 Sewer Reconstruction		0	0	0	0	1,111,378	\$1,111,378	

# Wastewater System

## Sewers Under Structures Program

**PROJECT NUMBER:** 2017-424-110-0, 2020-424-104-0 / 1, Unidentified  
**WARD:** Systemwide

<b>PHASE:</b> Design / Not Started
<b>PRIORITY:</b> Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service
<b>PROJECT DESCRIPTION:</b> Rehabilitation, relocation, and abandonment, if applicable, of existing sewer infrastructure located under or adjacent to buildings, bridges, or railroads or located on steep slopes.
<b>PROJECT JUSTIFICATION:</b> In recent years, there has been an increasing rate of failure of this asset type due to limited accessibility and pipe age. By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost.
<b>RISK(S):</b> Failure of this asset type could result in significant property/structure damage, increased replacement cost, and increased service outages or bypass pumping.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> Continue to extend utility component life until a high failure rate justifies replacement.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<b>Total Budget (Prior Years Included)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Total</b>	
<b>Total</b>	<b>\$40,164,693</b>	<b>3,253,531</b>	<b>7,551,477</b>	<b>2,679,036</b>	<b>3,297,524</b>	<b>3,428,125</b>	<b>\$20,209,693</b>	
2018 Sewers Under Structures		2,079,051	1,747,266	0	0	0	\$3,826,317	Debt (Revenue Bonds) / DSIC – Wastewater
2020 Sewers Under Structures		1,127,605	5,477,336	1,018,655	0	0	\$7,623,596	
2022 Sewers Under Structures		46,875	278,125	1,158,095	1,751,905	0	\$3,235,000	
2023 Sewers Under Structures		0	48,750	289,250	1,207,619	1,824,381	\$3,370,000	
2024 Sewers Under Structures		0	0	48,750	289,250	1,207,619	\$1,545,619	
2025 Sewers Under Structures		0	0	0	48,750	289,250	\$338,000	
2026 Sewers Under Structures		0	0	0	0	106,875	\$106,875	

# Wastewater System

## Small Diameter Sewer Rehabilitation Program

**PROJECT NUMBER:** 2020-424-100-0 / 1 / 2, 2020-424-108-0, 2020-424-106-0 / 1 / 2, 2021-424-101-0 / 1, 2021-424-102, Unidentified

**WARD:** Systemwide

<b>PHASE:</b> Design/Construction/Not Started
<b>PRIORITY:</b> Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service
<b>PROJECT DESCRIPTION:</b> Proactive, trenchless rehabilitation of sewer mains (36" diameter and less) to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow; including cleaning and pre and post construction CCTV inspections.
<b>PROJECT JUSTIFICATION:</b> Provides the Authority with a means to address several moderate/major structural defects in pipe segments prior to complete failure. This trenchless pipe renewal method renews the asset, eliminates disruptive excavation, and is more cost effective than replacement.
<b>RISK(S):</b> If moderate/major structural defects are not proactively addressed, complete failure will eventually occur and excavation will be required. Any complete failure that occurs will result in dramatically increased expenditures for repair.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> Perform excavated point repairs to address defective sections of pipe, replace segment in its entirety, or continue to extend asset life until failure.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<b>Total Budget (Prior Years Included)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Total</b>	
<b>Total</b>	<b>\$173,365,671</b>	<b>24,797,923</b>	<b>19,677,217</b>	<b>20,149,254</b>	<b>22,480,772</b>	<b>23,561,090</b>	<b>\$110,666,256</b>	
2019 Small Diameter Rehabilitation		211,940	0	0	0	0	\$211,940	Debt (Revenue Bonds) / PENNVEST
2020 Small Diameter Rehabilitation		6,697,562	0	0	0	0	\$6,697,562	
2021 Small Diameter Rehabilitation		10,932,911	431,778	0	0	0	\$11,364,698	
2022 Small Diameter Rehabilitation		5,005,510	4,922,592	0	0	0	\$9,928,102	
2023 Small Diameter Rehabilitation		1,950,000	12,022,838	5,287,162	0	0	\$19,260,000	
2024 Small Diameter Rehabilitation		0	2,300,000	12,472,092	7,097,908	0	\$21,870,000	
2025 Small Diameter Rehabilitation		0	0	2,390,000	12,892,864	7,337,136	\$22,620,000	
2026 Small Diameter Rehabilitation		0	0	0	2,490,000	13,493,594	\$15,983,954	
2027 Small Diameter Rehabilitation		0	0	0	0	2,730,000	\$2,730,000	

\*\*\$638,800 ALCOSAN GROW grant funding secured.



# Stormwater





# Stormwater System

## Braywood Stormwater Improvements

PROJECT NUMBER: Unidentified

WARD: 15

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance, Regional Cooperation/Stewardship, Reliability/Operational Flexibility, Level of Service, Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**  
Stormwater detention system in the right-of-way in and around Braywood Way to increase stormwater control and mitigate flooding experienced by residents. Infrastructure could include permeable pavement, bioswales, subsurface detention, etc. depending on design determinations.

**PROJECT JUSTIFICATION:**  
There's a low point on Braywood Way that experiences persistent, severe flooding. This system is undersized and deteriorating, keeping up with minor precipitation events but the majority cause flooding.

**RISK(S):**  
Risks associated with not completing this project include poor level of service.

**IMPACT ON OPERATIONS:**  
This project would decrease the need for persistent catch basin cleaning in this location.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$909,000</b>	<b>105,000</b>	<b>804,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$909,000</b>	

# Stormwater System

## Bus Rapid Transit Stormwater Infrastructure Improvements

PROJECT NUMBER: 2020-GI-100-0

WARD: 1 & 4

**PHASE:**

Design

**PRIORITY:**

Safety, Regional Cooperation/Stewardship, Reliability/Operational Flexibility

**PROJECT DESCRIPTION:**

A cost share with the City of Pittsburgh's Department of Mobility and Infrastructure on the redesign of Forbes Avenue and Fifth Avenue to accommodate bus rapid transit from downtown to Birmingham Bridge. This project will include the installation of permeable paving, underground storage, and bioretention plantings and is tributary to the M-05 and M-19 outfall.

**PROJECT JUSTIFICATION:**

This project will help slow or reduce runoff into the the combined sewer system during wet weather events.

**RISK(S):**

Wet weather flow may continue to flow into the combined sewer system prior to the completion of the project, which could cause issues during wet weather events.

**IMPACT ON OPERATIONS:**

Increased system reliability and improved sytem management.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
Total	\$5,595,047	1,039,288	480,771	0	0	0	\$1,520,059	

# Stormwater System

## Catch Basin and Inlet Replacement Program

**PROJECT NUMBER:** 2020-424-105-0/1, Unidentified

**WARD:** Systemwide

<b>PHASE:</b> Construction / Not Started
<b>PRIORITY:</b> Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service
<b>PROJECT DESCRIPTION:</b> Strategic replacement of catch basins and storm inlets throughout the system to replace failed units, stormwater control reliability, and minimize disturbance to the community.
<b>PROJECT JUSTIFICATION:</b> By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost.
<b>RISK(S):</b> Overland and street flooding could occur due to a defective or undersized catch basin or storm inlet, creating a public health and safety hazard during wet weather events.
<b>IMPACT ON OPERATIONS:</b> Increased operating reliability.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> Continue to extend utility component life until a high failure rate justifies replacement.

<u>CASH FLOW SUMMARY</u>								<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	
<b>Total</b>	<b>\$47,465,365</b>	<b>4,238,472</b>	<b>7,113,750</b>	<b>8,034,541</b>	<b>8,166,709</b>	<b>8,325,000</b>	<b>\$35,878,472</b>	
2020 Catch Basin and Inlet Replacement		726,805	0	0	0	0	\$726,805	Debt (Revenue Bonds)
2022 Catch Basin and Inlet Replacement		3,511,667	968,333	0	0	0	\$4,480,000	
2023 Catch Basin and Inlet Replacement		0	6,145,417	1,694,583	0	0	\$7,840,000	
2024 Catch Basin and Inlet Replacement		0	0	6,339,958	1,750,042	0	\$8,090,000	
2025 Catch Basin and Inlet Replacement		0	0	0	6,416,667	1,733,333	\$8,150,000	
2026 Catch Basin and Inlet Replacement		0	0	0	0	6,591,667	\$6,591,667	

# Stormwater System

## Dragoon Way Stormwater Improvements

PROJECT NUMBER: Unidentified

WARD: 10

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance, Regional Cooperation/Stewardship, Reliability/Operational Flexibility, Level of Service, Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**  
This would involve upsizing stormwater infrastructure as well as road paving on Dragoon Way.

**PROJECT JUSTIFICATION:**  
This area experiences significant roadway and property flooding. Runoff flows down Dragoon Way and through multiple Adelpia Street properties, flooding Adelpia Street. PWSA currently owns stormwater infrastructure on Adelpia Street that is undersized and deteriorating.

**RISK(S):**  
Risks associated with not completing this project include poor level of service.

**IMPACT ON OPERATIONS:**  
Reduced need for catch basin cleaning after significant precipitation events.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$1,163,000</b>	<b>135,000</b>	<b>1,028,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$1,163,000</b>	

# Stormwater System

## Fleury Way Stormwater Infrastructure Improvements

**PROJECT NUMBER:** 2021-424-102-0

**WARD:** 12

**PHASE:**

Planning

**PRIORITY:**

Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**

Construction of storm sewer infrastructure to address persistent and severe street flooding and roadway damage. Project will include installing approximately 500 ft of 18" storm sewers and 4 new catch basins as well as inverting the crown of the road and adding proper curbing for optimal drainage.

**PROJECT JUSTIFICATION:**

After field assessment and review, the stormwater group ranked this issue as a "high priority" because of the severity of road degradation and persistent street flooding caused by lack of stormwater infrastructure and improper road design. This issue is located in the A-42 Green First sewershed. This project is also a good opportunity to coordinate and share costs with DOMI.

**RISK(S):**

Poor level of service and safety risks.

**IMPACT ON OPERATIONS:**

4 additional inlets, operations will need to be added to the cleaning schedule.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$601,468</b>	<b>601,468</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$601,468</b>	

\*\*\$564,709 will be reimbursed as part of a cost share agreement between the PWSA and the City of Pittsburgh.

# Stormwater System

## Four Mile Run Stormwater Infrastructure Improvements

PROJECT NUMBER: 2018-GI-102-0

WARD: 15

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Regulatory Compliance, Regional Cooperation/Stewardship

**PROJECT DESCRIPTION:**  
Sewer separation, stream restoration, stream daylighting, bioretention, and underground storage to remove the existing stream base and wet weather flow currently discharging into the combined sewer located in M-29.

**PROJECT JUSTIFICATION:**  
This project will separate wet weather flow being directly discharged into the Authority's combined sewer system.

**RISK(S):**  
Wet weather flow may continue to flow into the combined sewer system prior to the completion of the project, which could in issues during wet weather events.

**IMPACT ON OPERATIONS:**  
Increased operating flexibility and reliability.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$45,975,705</b>	<b>3,333,541</b>	<b>7,272,993</b>	<b>5,750,510</b>	<b>0</b>	<b>0</b>	<b>\$16,357,044</b>	

# Stormwater System

## Haverhill Street Improvements Project

PROJECT NUMBER: Unidentified

WARD: 13

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance, Regional Cooperation/Stewardship, Reliability/Operational Flexibility, Level of Service, Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**  
This project will capture and redirect an existing nuisance groundwater seep into retention/slow release subsurface infrastructure, either in the form of a perforated pipe and gravel bed or a retention tank. The project will also involve landslide stabilization to prevent current persistent sediment accumulation in the downstream sewer and green infrastructure as well as associated roadway restoration.

**PROJECT JUSTIFICATION:**  
There is currently an unmanaged groundwater seep flowing down Haverhill Street, flooding properties, depositing significant amounts of sediment into PWSA's sewer system and a PWSA green infrastructure site (Oakwood and Batavia), degrading the roadway, and causing dangerous driving conditions especially in the winter. This project would decrease private property flooding, reduce the amount of sediment entering the sewer system, save PWSA maintenance costs involved with removing sediment from nearby catch basins and green infrastructure, stop continued green infrastructure system degradation caused by this seep, and improve roadway conditions and safety in the area.

**RISK(S):**  
Street flooding will continue to occur creating a public health and safety hazard during wet weather events.

**IMPACT ON OPERATIONS:**  
This would decrease maintenance needs for both the green infrastructure maintenance contract as well as the catch basin cleaning contract.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$700,000</b>	<b>115,000</b>	<b>585,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$700,000</b>	

# Stormwater System

## Lawn and Ophelia

PROJECT NUMBER: 2017-424-104-0

WARD: 4

**PHASE:**

Design

**PRIORITY:**

Safety, Regulatory Compliance, Regional Cooperation/Stewardship

**PROJECT DESCRIPTION:**

Project is located in the South Oakland neighborhood in the City of Pittsburgh and is a tributary to the M-19B outfall. This project is intended to be a community gathering space combined with stormwater management features.

**PROJECT JUSTIFICATION:**

It is anticipated that 1.9 impervious acres from neighboring roads and roofs can be managed.

**RISK(S):**

Customers within the service area of this project may experience stormwater related issues prior to the completion of this project.

**IMPACT ON OPERATIONS:**

Increased system reliability and improved system management.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$1,631,109</b>	<b>756,249</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$756,249</b>	

\*\*\$313,900 ALCOSAN GROW grant funding secured.



# Stormwater System

## Martin Luther King Field Stormwater Infrastructure Improvements

PROJECT NUMBER: 2019-GI-104-0

WARD: 4 & 5

**PHASE:**

Design

**PRIORITY:**

Safety, Regulatory Compliance, Reliability/Operational Flexibility

**PROJECT DESCRIPTION:**

Installation of regenerative bioswale and underground detention facilities to capture and detain impervious acres from the adjacent streets and upstream separate storm sewers, which currently discharges into the combined sewer located in M-19.

**PROJECT JUSTIFICATION:**

This project will help slow or reduce runoff into the the combined sewer system during wet weather events.

**RISK(S):**

Wet weather flow may continue to flow into the combined sewer system prior to the completion of the project, which could cause issues during wet weather events.

**IMPACT ON OPERATIONS:**

Increased system reliability and improved sytem management.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$5,352,233</b>	<b>539,936</b>	<b>3,812,297</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$4,352,233</b>	

\*\*\$855,270 ALCOSAN GROW grant funding secured.

# Stormwater System

## Maryland Avenue Stormwater Infrastructure Improvements

PROJECT NUMBER: 2017-424-101-0

WARD: 7

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Regulatory Compliance, Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**  
Permeable paver based GSI project to manage approximately 5.3 acres of impervious acres for 1.5" runoff event.

**PROJECT JUSTIFICATION:**  
The project purpose is to reduce combined sewer overflows at the downstream A-22 outfall while also improving performance of the local combined sewer system that has experienced surcharge and flooding during intense rain events in downstream areas of Shadyside.

**RISK(S):**  
Continued flooding risk, which has contributed to frequent reports of basement backups in this area of the PWSA system.

**IMPACT ON OPERATIONS:**  
Increased system reliability and improved system management.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
Implementing stormwater management projects at less cost-effective locations.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	\$6,334,954	1,795,488	0	0	0	0	\$1,795,488	

\*\*\$733,000 ALCOSAN GROW grant funding secured.

# Stormwater System

## Nobles Lane Stormsystems Improvements

**PROJECT NUMBER:** 2021-424-104-0

**WARD:** 29

**PHASE:**

Planning

**PRIORITY:**

Safety, Regulatory Compliance, Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**

Construction of strategically placed catch basins and storm sewers to reduce or eliminate overland flooding from roadway onto private property.

**PROJECT JUSTIFICATION:**

After field assessment and review, the stormwater group ranked this issue as a "high priority" because of flooding severity and its location in the Saw Mill Run sewershed. This project seeks to install new catch basins and a new storm sewer to help appropriately manage runoff. This area of the Carrick neighborhood does not have any stormwater infrastructure.

**RISK(S):**

Poor level of service.

**IMPACT ON OPERATIONS:**

The proposed catch basins will include green filters to add water quality benefits to Saw Mill Run. These will need to be routinely cleaned via the green infrastructure maintenance contractor and will be a minimal impact to this particular operations budget.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$158,916</b>	<b>158,916</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$158,916</b>	

\*\*\$70,161 will be reimbursed as part of a cost share agreement between the PWSA and the City of Pittsburgh.

# Stormwater System

## Saw Mill Run Municipal Separate Storm Sewer System Compliance

PROJECT NUMBER: Unidentified

WARD: 32 & 29

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance

**PROJECT DESCRIPTION:**  
Identifying and completing projects related to Municipal Separate Storm Sewer System (MS4) compliance.

**PROJECT JUSTIFICATION:**  
This project is necessary to become compliant with MS4 regulatory requirements.

**RISK(S):**  
The timeline to complete the MS4 compliance projects could take longer than expected.

**IMPACT ON OPERATIONS:**  
Increased system reliability and improved system management.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$3,500,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,000,000</b>	<b>2,500,000</b>	<b>\$3,500,000</b>	

# Stormwater System

## Saw Mill Run Watershed Improvements

PROJECT NUMBER: 2020-424-109-0

WARD: 32

**PHASE:**

Planning

**PRIORITY:**

Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

**PROJECT DESCRIPTION:**

Implementation of stormwater treatment and reconnection of streams to vegetated floodplains to help mitigate stormwater peak flows and reduce sediment and other pollutant loads. This project will demonstrate the effectiveness of green infrastructure in reducing pollutants, controlling CSO/SSOs, and restoring the health of the aquatic ecosystems in the Saw Mill Run watershed to comply with regulatory obligations.

**PROJECT JUSTIFICATION:**

This project will help to comply with regulatory obligations by reducing pollutants and controlling CSO/SSOs.

**RISK(S):**

It may be difficult to comply with certain regulatory obligations prior to the completion of the project.

**IMPACT ON OPERATIONS:**

Increased system reliability and improved system management.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$1,000,000</b>	<b>200,000</b>	<b>500,000</b>	<b>300,000</b>	<b>0</b>	<b>0</b>	<b>\$1,000,000</b>	

\*\*Future cost share agreement will be negotiated with PennDOT.

# Stormwater System

## Southside Flats Sewer Separation

PROJECT NUMBER: Unidentified

WARD: 16 & 17

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regional Cooperation/Stewardship, Reliability/Operational Flexibility

**PROJECT DESCRIPTION:**  
Separation of 17 acres of combined sewer through the construction of storm drain along Wharton Street to 18th Street.

**PROJECT JUSTIFICATION:**  
This project will help slow or reduce runoff into the the combined sewer system during wet weather events.

**RISK(S):**  
Community members are concerned about disruptions during construction and potential rooftop disconnect costs.

**IMPACT ON OPERATIONS:**  
Increased system reliability and improved sytem management.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$3,527,000</b>	<b>513,000</b>	<b>2,383,194</b>	<b>630,806</b>	<b>0</b>	<b>0</b>	<b>\$3,527,000</b>	

# Stormwater System

## Southside Stormwater Infrastructure Improvements

PROJECT NUMBER: 2019-GI-100-0

WARD: 16 & 17

**PHASE:**

Design

**PRIORITY:**

Safety, Regulatory Compliance, Regional Cooperation/Stewardship

**PROJECT DESCRIPTION:**

The Southside Green / Stormwater project is located in the M-16 sewershed, which discharges approximately 103MG of CSOs in a typical year as it is defined in the current system model. Additionally, there are 15 known surface streams/seeps within the park that appear to connect into the combined sewer system. The project will focus on stormwater management source control opportunities within Southside Park. The project will look at separating the stormwater runoff from the park and road right-of-way areas. It will connect through a new storm sewer discharge to be built under South 21st Street to the Monongahela River. The project will detain and slowly return the stormwater runoff to the combined sewer system.

**PROJECT JUSTIFICATION:**

This project will help comply with regulatory requirements by reducing CSOs.

**RISK(S):**

It may be difficult to comply with certain regulatory obligations prior to the completion of the project.

**IMPACT ON OPERATIONS:**

Increased system reliability and improved system management.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$9,289,161</b>	<b>1,114,451</b>	<b>2,842,000</b>	<b>403,500</b>	<b>0</b>	<b>0</b>	<b>\$4,359,951</b>	

\*\*\$1,489,900 ALCOSAN GROW grant funding secured.

# Stormwater System

## Stewart Avenue Stormwater Infrastructure Project

PROJECT NUMBER: Unidentified

WARD: 29

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance, Regional Cooperation/Stewardship, Reliability/Operational Flexibility, Level of Service

**PROJECT DESCRIPTION:**  
Overland stormwater runoff during larger precipitation events in the Stewart Avenue area contribute to downstream flooding along Saw Mill Run Blvd, flooding of nearby private properties, street flooding, and roadway damage. Catch basins and storm inlets once discharged to an open drainage channel along Stewart Avenue, however this is no longer operational as the road was recently paved and widened, eliminating the channel. Recognizing that the Saw Mill Run stream corridor is overwhelmed during relatively small rainfall events, PWSA desires to evaluate alternatives with an emphasis toward source control measures and other green strategies where peak flows from the Stewart Avenue runoff area can be possibly detained and mitigated.

**PROJECT JUSTIFICATION:**  
This project is necessary to increase stormwater service and control in the area, which is currently lacking adequate stormwater infrastructure.

**RISK(S):**  
Failing to complete this project will lead to persistent private property and roadway flooding, chronic depreciation of roadway conditions, and continued worsening flooding and impairment of Saw Mill Run.

**IMPACT ON OPERATIONS:**  
Increased system reliability and improved system management.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$3,104,000</b>	<b>299,400</b>	<b>1,910,156</b>	<b>894,444</b>	<b>0</b>	<b>0</b>	<b>\$3,104,000</b>	



# Stormwater System

## Thomas and McPherson Stormwater Infrastructure Improvements

PROJECT NUMBER: 2018-GI-106-0

WARD: 7

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Regulatory Compliance, Reliability/Operational Flexibility

**PROJECT DESCRIPTION:**  
Installation of roadside bioretention features to capture and detain impervious road runoff in the North Point Breeze neighborhood of the City of Pittsburgh, which is a tributary to the A-42 combined sewer outfall.

**PROJECT JUSTIFICATION:**  
This project will help slow or reduce runoff into the the combined sewer system during wet weather events.

**RISK(S):**  
Wet weather flow may continue to flow into the combined sewer system prior to the completion of the project, which could in issues during wet weather events.

**IMPACT ON OPERATIONS:**  
Increased system reliability and improved system management.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$10,937,632</b>	<b>4,060,230</b>	<b>462,800</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$4,523,030</b>	

\*\*\$1,517,800 ALCOSAN GROW grant funding secured.

# Stormwater System

## Volunteer's Field Stormwater Infrastructure Improvements

PROJECT NUMBER: 2018-GI-104-0

WARD: 29

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Regulatory Compliance, Regional Cooperation/Stewardship

**PROJECT DESCRIPTION:**  
Project is located in the Carrick neighborhood of the City of Pittsburgh and is a tributary to Saw Mill Run. Installation of green infrastructure within the park to reduce sediment and other pollutant loads.

**PROJECT JUSTIFICATION:**  
Required for compliance with the MS4 permit and EPA TMDL requirements. Project will also detain stormwater to reduce downstream flooding in Saw Mill Run.

**RISK(S):**  
It may be difficult to comply with certain regulatory obligations prior to the completion of the project.

**IMPACT ON OPERATIONS:**  
Increased operating flexibility and reliability.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$1,736,009</b>	<b>853,776</b>	<b>83,333</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$937,109</b>	

# Stormwater System

## Wet Weather Program Projects

PROJECT NUMBER: Unidentified  
WARD: Systemwide

**PHASE:**  
Not Started

**PRIORITY:**  
Safety, Regulatory Compliance, Regional Cooperation/Stewardship, Reliability/Operational Flexibility, Level of Service, Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**  
This project is for improvements to the sewer system facilities to bring combined sewer overflows into compliance with the negotiated consent decree and to remediate SSOs.

**PROJECT JUSTIFICATION:**  
This project is required to ensure PWSA meets regulatory requirements related to wet weather flow being directly discharged into the PWSA's combined sewer system.

**RISK(S):**  
Failure to meet future regulatory requirements.

**IMPACT ON OPERATIONS:**  
Increased system reliability and improved system management.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$45,000,000</b>	<b>0</b>	<b>0</b>	<b>5,000,000</b>	<b>20,000,000</b>	<b>20,000,000</b>	<b>\$45,000,000</b>	

# Stormwater System

## Wightman Park Stormwater Infrastructure Improvements (Phase 1 & 2)

**PROJECT NUMBER:** 2017-424-105-0 / 1

**WARD:** 14

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Regulatory Compliance, Regional Cooperation/Stewardship

**PROJECT DESCRIPTION:**  
Project is located in the Squirrel Hill neighborhood of the City of Pittsburgh and is a tributary to the M-29 outfall. Stormwater management within the park itself as well as the necessary piping or inlet work to direct up to 3.25 impervious acres from the adjacent streets into the park. The Wightman Park project along with future street bioswale projects are expected to increase the impervious acres captured as well as alleviate reported sewer basement backups in the neighborhood around Wightman Park.

**PROJECT JUSTIFICATION:**  
2.24 million gallons of stormwater runoff will be managed through this project in a typical year, producing downstream CSO reduction. The project will also improve the performance of adjacent, downstream sewers through peak flow reduction.

**RISK(S):**  
Customers may be subject to basement backups or overflows may occur due to collapsed pipes. The Authority may be subject to related fines due to sewer overflows or for non-compliance as outlined in the Consent Order and Agreement.

**IMPACT ON OPERATIONS:**  
Increased operating flexibility and reliability.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
Delay construction which will increase the risk of sewer basement backups.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$6,706,789</b>	<b>424,789</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$424,789</b>	

\*\*\$2,992,427 ALCOSAN GROW grant funding secured.

# Stormwater System

## Winchester Drive at Grovemount Stormsystem Improvements

**PROJECT NUMBER:** 2021-424-103-0

**WARD:** 20

**PHASE:**

Planning

**PRIORITY:**

Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

**PROJECT DESCRIPTION:**

Construction of storm system and roadway improvements to address right of way flooding and damage (hillside erosion and road undercutting) caused by stormwater.

**PROJECT JUSTIFICATION:**

After field assessment and review, the stormwater group ranked this issue as a "high priority" because of the severity of safety issues caused by lack of inlets and curbing as well as a failing outlet structure. Due to improper catch basin placement as well as poor road design the intersection at Winchester Drive and Grovemount Road is being undercut by overland stormwater runoff, causing the road to start to fail and collapse. This project seeks to install new catch basins and a new storm sewer as well as stabilize the existing outfall to help appropriately manage runoff.

**RISK(S):**

Poor level of service, safety risks.

**IMPACT ON OPERATIONS:**

10 new catch basins that operations will have to add to the cleaning schedule.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$841,922</b>	<b>201,597</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$201,597</b>	

\*\*\$167,375 will be reimbursed as part of a cost share agreement between the PWSA and the City of Pittsburgh.

# Stormwater System

## Woodland Road Stormwater Infrastructure Improvements

PROJECT NUMBER: 2018-GI-108-0

WARD: 14

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Regulatory Compliance, Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**  
Bioretention based GSI project to manage approximately 7 acres of impervious acres for 1.5" runoff event. Project location is in A-22 sewershed on the campus of Chatham University adjacent to Woodland Road. Design activities include field investigations (site survey, geotech), development of design documents for construction and pre-construction flow monitoring.

**PROJECT JUSTIFICATION:**  
The project purpose is to reduce combined sewer overflows at the downstream A-22 outfall while also improving performance of the local combined sewer system that has experienced surcharge and flooding during intense rain events in downstream areas of Shadyside.

**RISK(S):**  
Continued flooding risk, which has contributed to frequent reports of basement backups in this area of the PWSA system.

**IMPACT ON OPERATIONS:**  
Increased system reliability and improved system management.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
Implementing stormwater management projects at less cost-effective locations.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$2,718,406</b>	<b>577,528</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$577,528</b>	

\*\*\$1,616,452 ALCOSAN GROW grant funding secured.

# Stormwater System

## Woods Run Stream Removal Stormwater Infrastructure Improvements

PROJECT NUMBER: 2017-424-108-0 / 1

WARD: 26

**PHASE:**

Design

**PRIORITY:**

Safety, Regulatory Compliance, Regional Cooperation/Stewardship

**PROJECT DESCRIPTION:**

This project will redirect an existing stream inflow location into a detain and slow release subsurface storage facility. The stream base and wet weather flow currently discharge directly into a 36" diameter combined sewer on Mairdale Avenue.

**PROJECT JUSTIFICATION:**

This project will separate wet weather flow being directly discharged into the PWSA's combined sewer system.

**RISK(S):**

Wet weather flow may continue to flow into the combined sewer system prior to the completion of the project, which could in issues during wet weather events.

**IMPACT ON OPERATIONS:**

Increased operating flexibility and reliability.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$10,215,669</b>	<b>361,144</b>	<b>1,920,794</b>	<b>819,206</b>	<b>0</b>	<b>0</b>	<b>\$3,101,144</b>	

\*\*\$1,224,300 ALCOSAN GROW grant funding secured.



# Miscellaneous





# Miscellaneous

## Utility Cost Shares

PROJECT NUMBER: Unidentified

WARD: Systemwide

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Regional Cooperation/ Stewardship
<b>PROJECT DESCRIPTION:</b> This project will fund future cost sharing projects.
<b>PROJECT JUSTIFICATION:</b> Cost sharing projects can provide a savings to the Authority.
<b>RISK(S):</b> Cost sharing projects have the potential to be delayed due to coordination issues.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> Complete projects without cost sharing agreements.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Total</u>	Debt (Revenue Bonds)
Total	\$2,500,000	500,000	500,000	500,000	500,000	500,000	\$2,500,000	