| **Project Name** | **Project Descriptions**  | **Project Justification** | **Budgeted Cost** | **Funds** | **Start Date** | **Date of Completion & In Service** |
| --- | --- | --- | --- | --- | --- | --- |
| 2019 Utility Cost Shares  | Infrastructure replacement due to coordination with other agencies or utilities.  | Coordination with other utililties can reduce expenditures up to 75% of the total project cost and reduces the length of time that the public is inconvenienced due to construction efforts. | $3,000,000 | Borrowed | N/A | N/A |
| 2020 Utility Cost Shares  | Infrastructure replacement due to coordination with other agencies or utilities.  | Coordination with other utililties can reduce expenditures up to 75% of the total project cost and reduces the length of time that the public is inconvenienced due to construction efforts. | $3,000,000 | Borrowed | N/A | N/A |
| 2021 Utility Cost Shares  | Infrastructure replacement due to coordination with other agencies or utilities.  | Coordination with other utililties can reduce expenditures up to 75% of the total project cost and reduces the length of time that the public is inconvenienced due to construction efforts. | $3,000,000 | Borrowed | N/A | N/A |
| 2022 Utility Cost Shares  | Infrastructure replacement due to coordination with other agencies or utilities.  | Coordination with other utililties can reduce expenditures up to 75% of the total project cost and reduces the length of time that the public is inconvenienced due to construction efforts. | $3,000,000 | Borrowed | N/A | N/A |
| CMMS (Computerized Maintenance Management System) | Acquire, install, develop, and implement a Computerized Maintenance Management System, including training staff to assist with capital investment prioritization. | The CMMS will be used by field and engineering staff to record, house, track, and identify short-term and long-term asset investment needs. A properly developed CMMS can identify efficiency imp798528]rovements, increase levels of asset renewal, and reduce operation, maintenance, and capital costs. The CMMS will communicate with the GIS system and be able to coordinate with eBuilder as well as the Authority’s finance system. | $10,000,000 | Borrowed | July 2019 | December 2026 |
| 2018 Catch Basin and Inlet Replacement(Annual IDIQ Contract) | Strategic replacement of approximately 840 catch basins and storm inlets throughout the system to replace failed units, stormwater control reliability, and minimize disturbance to the community. | Provides increase in stormwater control reliability, minimizes disturbance to the community, and by maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost. | $10,392,500 | Borrowed | August 2018 | August 2019 |
| 2019 Catch Basin and Inlet Replacement(Annual IDIQ Contract) | Strategic replacement of approximately 840 catch basins and storm inlets throughout the system to replace failed units.  | Provides increase in stormwater control reliability, minimizes disturbance to the community, and by maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost. | $11,320,000 | Borrowed | August 2019 | August 2020 |
| 2020 Catch Basin and Inlet Replacement(Annual IDIQ Contract) | Strategic replacement of approximately 840 catch basins and storm inlets throughout the system to replace failed units.  | Provides increase in stormwater control reliability, minimizes disturbance to the community, and by maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost. | $11,660,000 | Borrowed | August 2020 | August 2021 |
| 2021 Catch Basin and Inlet Replacement(Annual IDIQ Contract) | Strategic replacement of approximately 840 catch basins and storm inlets throughout the system to replace failed units.  | Provides increase in stormwater control reliability, minimizes disturbance to the community, and by maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost. | $12,030,000 | Borrowed | August 2021 | August 2022 |
| 2022 Catch Basin and Inlet Replacement(Annual IDIQ Contract) | Strategic replacement of approximately 840 catch basins and storm inlets throughout the system to replace failed units.  | Provides increase in stormwater control reliability, minimizes disturbance to the community, and by maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost. | $12,380,000 | Borrowed | August 2022 | August 2023 |
| 2023 Catch Basin and Inlet Replacement(Annual IDIQ Contract) | Strategic replacement of approximately 840 catch basins and storm inlets throughout the system to replace failed units.  | Provides increase in stormwater control reliability, minimizes disturbance to the community, and by maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost. | $12,720,000 | Borrowed | August 2023 | August 2024 |
| MS4 Compliance Projects | Four stormwater BMP projects that will reduce pollutants to impaired waters, which include stream restoration and inlet inserts at various sites.  | These projects are required to comply with the MS4 NPDES permit application submitted to the Pennsylvania Department of Environmental Protection. | $1,955,000 | Borrowed | October 2018 | August 2020 |
| Saw Mill Run MS4 & CSO Compliance Projects | Multiple projects that will reduce pollutants to impaired waters and reduce CSO volume, which includes stream restoration, green stormwater infrastructure, and other BMPs at various sites.  | These projects are required to comply with the MS4 NPDES permit application submitted to the Pennsylvania Department of Environmental Protection and to meet the waste load reductions required in the EPA-approved Sediment TMDL in the Saw Mill Run watershed. Project also required to address PADEP Consent Order for CSO compliance. | $8,500,000 | Borrowed | June 2021 | December 2023 |
| Maytide Storm and Sanitary Sewer System Improvements | Reconstruction of storm infrastructure from Merritt Avenue to the storm interceptor on Ravilla Avenue, the realignment of the sanitary sewer on Maytide (Sanderson to Valline), and the rehabilitation and/or reconstruction of the sanitary sewer mains on the undeveloped right-of-ways in the vicinity. . | 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, inspections of the sanitary sewers in the vicinity revealed structural and construction defects | $6,520,000 | Borrowed | March 2018 | March 2020 |
| 2019 Storm System Improvements | Strategic replacement or rehabilitation of storm mains or structures to improve system reliability and minimize disturbance to the community, including reducing flooding. | By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost. | $3,580,000 | Borrowed | June 2019 | July 2020 |
| 2020 Storm System Improvements | Strategic replacement or rehabilitation of storm mains or structures to improve system reliability and minimize disturbance to the community, including reducing flooding. | By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost | $3,960,000 | Borrowed | August 2019 | July 2021 |
| 2021 Storm System Improvements | Strategic replacement or rehabilitation of storm mains or structures to improve system reliability and minimize disturbance to the community, including reducing flooding. | By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost | $4,045,000 | Borrowed | August 2020 | July 2022 |
| 2022 Storm System Improvements | Strategic replacement or rehabilitation of storm mains or structures to improve system reliability and minimize disturbance to the community, including reducing flooding. | By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost | $4,230,000 | Borrowed | August 2021 | July 2023 |
| 2023 Storm System Improvements | Strategic replacement or rehabilitation of storm mains or structures to improve system reliability and minimize disturbance to the community, including reducing flooding. | By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost | $4,375,000 | Borrowed | August 2022 | July 2024 |
| 2024 Storm System Improvements | Strategic replacement or rehabilitation of storm mains or structures to improve system reliability and minimize disturbance to the community, including reducing flooding. | By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost | $4,490,000 | Borrowed | August 2023 | July 2025 |
| Saw Mill Run Stream Bank Restoration | Stream restoration of approximately 1,500 linear feet of the Saw Mill Run Creeks to reduce pollutants in the impaired waterway.  | This project is required to comply with the MS4 NPDES permit application submitted to the Pennsylvania Department of Environmental Protection and to meet the waste load reductions required in the EPA-approved Sediment TMDL in the Saw Mill Run watershed. | $1,385,000 | Borrowed | October 2018 | December 2019 |
| Volunteer’s Field Storm Water Management | Installation of BMPs to reduce sediment, other pollutant loads, stormwater volume, and peak flows to the Saw Mill Run watershed.  | This project is required to comply with the MS4 NPDES permit application submitted to the Pennsylvania Department of Environmental Protection and to meet the waste load reductions required in the EPA-approved Sediment TMDL in the Saw Mill Run watershed. | $1,465,000 | Borrowed | October 2018 | December 2019 |
| Saw Mill Run Watershed Water Quality Improvement Project (formally known as Overbrook Pollution and Flood Reduction) | Implementation of stormwater treatment and reconnection of streams to vegetated floodplains to help mitigate stormwater peak flows, reduce flooding, reduce sediment, other pollutant loads, and reduce CSO volume | 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 MS4 NPDES permit and PADEP CO regulatory obligations. | $6,500,000 | Borrowed | May 2019 | June 2021 |
| Tide Gate Installations | Installation of tide gates at 44 combined sewer overflow diversion chamber locations to assist in preventing river water intrusion. Construction for this project is anticipated to occur in multiple phases. | This project is required to reduce CSO volume to address PADEP Consent Order for CSO compliance. Project to be completed in multiple phases and construction contracts. | $4,500,000 | Borrowed | May 2019 | June 2023 |
| EPA 308/City of Pittsburgh Source Reduction Response | Modeling of the remaining priority combined sewersheds within the City of Pittsburgh, as well as the separate sewersheds within the City in order to meet an EPA submission requirements. | This project is required to comply with regulatory obligations. | $750,000 | Borrowed | June 2017 | December 2019 |
| Wightman Park Green Infrastructure | Installation of stormwater management features to capture and detain impervious acres from the adjacent streets into the park in the Squirrel Hill neighborhood of the City of Pittsburgh, which is tributary to the M-29 combined sewer outfall. | This project area was identified in the PWSA Green First Plan as a high yield drainage area for capturing stormwater runoff to reduce CSO and mitigate flooding to comply with PADEP Consent Order regulatory obligations for CSO compliance. | $2,365,000 | Borrowed | March 2018 | September 2020 |
| Woods Run Stream Removal -Phase 1 | Installation of stormwater management features to detain and slow release the existing stream base and wet weather flow currently discharging directly into a 36-inch diameter combined sewer on Mairdale Avenue. | This project area was identified in the PWSA Green First Plan as a stream inflow point to the combined sewer system for capturing stormwater runoff to reduce CSO and mitigate flooding to comply with PADEP Consent Order regulatory obligations for CSO compliance. | $4,296,000 | Borrowed | October 2017 | June 2020 |
| Woods Run Stream Removal -Phase 2 |  | This project area was identified in the PWSA Green First Plan as a stream inflow point to the combined sewer system for capturing stormwater runoff to reduce CSO and mitigate flooding to comply with PADEP Consent Order regulatory obligations for CSO compliance. | $2,405,000 | Borrowed |  |  |
| Woods Run Stream Removal -Phase 3 |  | This project area was identified in the PWSA Green First Plan as a stream inflow point to the combined sewer system for capturing stormwater runoff to reduce CSO and mitigate flooding to comply with PADEP Consent Order regulatory obligations for CSO compliance. | $3,775,000 | Borrowed |  |  |
| Panther Hollow/Four Mile Green/Stormwater Infrastructure | 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. | This project area was identified in the PWSA Green First Plan as a stream inflow point to the combined sewer system for capturing stormwater runoff to reduce CSO and mitigate flooding to comply with PADEP Consent Order regulatory obligations for CSO compliance. | $41,100,000 | Borrowed | May 2018 | August 2021 |
| Spring Garden Stream Removal | Sewer separation, stream restoration, bioretention, and underground storage (if necessary) to remove the existing stream base and wet weather flow currently discharging into the combined sewer located in A-60. | This project area was identified in the PWSA Green First Plan as a stream inflow point to the combined sewer system for capturing stormwater runoff to reduce CSO and mitigate flooding to comply with PADEP Consent Order regulatory obligations for CSO compliance. | $10,710,000 | Borrowed | April 2019 | July 2021 |
| MLK Field Green Infrastructure | Installation of stormwater management features to capture and detain impervious acres from the adjacent streets into the park in the Hill District/Uptown area of the City of Pittsburgh, which is tributary to the M-19 combined sewer outfall. | This project area was identified in the PWSA Green First Plan as a high yield drainage area for capturing stormwater runoff to reduce CSO and mitigate flooding to comply with PADEP Consent Order regulatory obligations for CSO compliance. | $3,402,000 | Borrowed | March 2019 | September 2020 |
| Woodland Drive Green Infrastructure | Installation of stormwater management features to capture and detain impervious acres from the adjacent streets and steeply sloping hillside within Chatham University, which is Tributary to the A-22 combined sewer outfall. | This project area was identified in the PWSA Green First Plan as a high yield drainage area for capturing stormwater runoff to reduce CSO and mitigate flooding to comply with PADEP Consent Order regulatory obligations for CSO compliance. | $1,195,000 | Borrowed | October 2018 | November 2019 |
| Thomas and McPherson Green Infrastructure | 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 tributary to the A-42 combined sewer outfall. | This project area was identified in the PWSA Green First Plan as a high yield drainage area for capturing stormwater runoff to reduce CSO and mitigate flooding to comply with PADEP Consent Order regulatory obligations for CSO compliance. | $4,650,000 | Borrowed | October 2018 | September 2020 |
| Homewood Park Green/Stormwater Infrastructure | Installation of stormwater management features to capture and detain impervious acres from the adjacent streets into the park in the City of Pittsburgh, which is tributary to the M-29 combined sewer outfall. | This project area was identified in the PWSA Green First Plan as a high yield drainage area for capturing stormwater runoff to reduce CSO and mitigate flooding to comply with PADEP Consent Order regulatory obligations for CSO compliance. | $2,720,000 | Borrowed | April 2019 | October 2020 |
| Bus Rapid Transit (BRT) Green Stormwater Infrastructure | Installation of stormwater management features to capture and detain impervious acres from 5th Avenue and Forbes Ave in the City of Pittsburgh, which is tributary to multiple CSO outfalls. Project being coordinated with and constructed in phases with City road reconstruction project of 5th Avenue and Forbes Ave.  | This project area was identified in the PWSA Green First Plan as a high yield drainage area for capturing stormwater runoff to reduce CSO and mitigate flooding to comply with PADEP Consent Order regulatory obligations for CSO compliance. | $6,050,000 | Borrowed | January 2020 | December 2022 |
| Negley Run/Washington Boulevard Green Stormwater Infrastructure | Sewer separation, stream restoration, bioretention, and underground storage (if necessary) to remove the existing stream base and wet weather flow currently discharging into the combined sewer located in A-42. | This project area was identified in the PWSA Green First Plan as a high yield drainage area for capturing stormwater runoff to reduce CSO and mitigate flooding to comply with PADEP Consent Order regulatory obligations for CSO compliance. | $15,390,000 | Borrowed | January 2019 | January 2020 |
| Lawn and Ophelia Green Infrastructure | Installation of stormwater management features to capture and detain impervious acres from the adjacent streets into the park in the South Oakland neighborhood, which is tributary to the M-19B combined sewer outfall. | This project area was identified in the PWSA Green First Plan as a high yield drainage area for capturing stormwater runoff to reduce CSO and mitigate flooding to comply with PADEP Consent Order regulatory obligations for CSO compliance. | $785,000 | Borrowed | May 2018 | November 2019 |
| South Side Green/Stormwater Infrastructure | Installation of stormwater management features to detain and slow release the existing stream base and wet weather flow currently within the Park and downstream adjacent streets tributary to the M-16 combined sewer outfall. | This project area was identified in the PWSA Green First Plan as a high yield drainage area for capturing stormwater runoff to reduce CSO and mitigate flooding to comply with PADEP Consent Order regulatory obligations for CSO compliance. | $8,694,000 | Borrowed | December 2018 | July 2021 |
| Maryland Avenue Green Infrastructure | Installation of stormwater management features to capture and detain impervious acres from Maryland Ave and the adjacent streets which is tributary to the A-22 combined sewer outfall. Project being split into 3 primary phases. | This project area was identified in the PWSA Green First Plan as a high yield drainage area for capturing stormwater runoff to reduce CSO and mitigate flooding to comply with PADEP Consent Order regulatory obligations for CSO compliance. | $9,384,000 | Borrowed | January 2018 | September 2021 |
| Shamrock Way Green/Stormwater Infrastructure | Preliminary design of stormwater management features to capture and detain impervious acres from Shamrock Way and the adjacent streets which is tributary to the A-22 combined sewer outfall. Design and construction will be through a future project to be developed after preliminary design is complete. | This project area was identified in the PWSA Green First Plan as a high yield drainage area for capturing stormwater runoff to reduce CSO and mitigate flooding to comply with PADEP Consent Order regulatory obligations for CSO compliance. | $40,000 | Borrowed |  |  |
| St. Johns Green/Stormwater Infrastructure | Preliminary design of stormwater management features to capture and detain impervious acres tributary to the former St. John’s hospital site now scheduled to be green space, which is tributary to the O-27 combined sewer outfall. Design and construction will be through a future project to be developed after preliminary design is complete. | This project area was identified in the PWSA Green First Plan as a high yield drainage area for capturing stormwater runoff to reduce CSO and mitigate flooding to comply with PADEP Consent Order regulatory obligations for CSO compliance. | $75,000 | Borrowed | December 2018 | September 2020 |
| Heth’s Run/A-41 Green/Stormwater Infrastructure | Preliminary design of stormwater management features to capture and detain impervious acres within the identified high yield stormwater capture areas of the A-41 CSO sewershed. Design and construction will be through multiple future projects to be developed after preliminary design is complete. | This project area was identified in the PWSA Green First Plan as a high yield drainage area for capturing stormwater runoff to reduce CSO and mitigate flooding to comply with PADEP Consent Order regulatory obligations for CSO compliance. | $600.000 | Borrowed | May 2019 | January 2020 |
| M-29 Green/Stormwater Infrastructure | Preliminary design of stormwater management features to capture and detain impervious acres within the identified high yield stormwater capture areas of the M-29 CSO sewershed. Design and construction will be through multiple future projects to be developed after preliminary design is complete. | This project area was identified in the PWSA Green First Plan as a high yield drainage area for capturing stormwater runoff to reduce CSO and mitigate flooding to comply with PADEP Consent Order regulatory obligations for CSO compliance. | $1,700,000 | Borrowed | April 2019 | December 2019 |
| A-42 Green/Stormwater Infrastructure | Preliminary design of stormwater management features to capture and detain impervious acres within the identified high yield stormwater capture areas of the A-42 CSO sewershed. Design and construction will be through multiple future projects to be developed after preliminary design is complete. | This project area was identified in the PWSA Green First Plan as a high yield drainage area for capturing stormwater runoff to reduce CSO and mitigate flooding to comply with PADEP Consent Order regulatory obligations for CSO compliance. | $1,700,000 | Borrowed | April 2019 | December 2019 |
| Smallman Street Reconstruction | The installation of approximately 2,500 linear feet of new storm sewer piping ranging in size from 24-inch to 54-inch, 2,000 linear feet of new sanitary sewer piping ranging in size from 18-inch to 48-inch, 2,000 linear feet of new 12-inch water main, and 1,500 linear feet of new 36-inch water transmission main. | Sewer separation and water main replacement due to the redevelopment of the Produce Terminal Building, realignment of the streetscape, and the location of the existing combined sewer infrastructure, which is located under the existing building.  | $16,867,000 | Borrowed | September 2017 | May 2019 |
| Sewer Master Plan | Comprehensive plan of the sewer system, including risked based prioritization for internal inspection purposes and assessment of the four pump stations. | The existing sewer system is aging and immediate repairs are required to address failures that could be significant public safety hazards. | $500,000 | Borrowed | March 2019 | September 2019 |
| 2018 Sewer Reconstruction (Annual IDIQ Contract) | Reconstruction of existing sewers, manholes, catch basins, and inlets due to emergency situations or pipe failures. | The existing sewer system is aging and immediate repairs are required to address failures that could be significant public safety hazards. | $1,470,000 | Borrowed | January 2018 | March 2019 |
| 2019 Sewer Reconstruction (Annual IDIQ Contract) | Reconstruction of existing sewers, manholes, catch basins, and inlets due to emergency situations or pipe failures. | The existing sewer system is aging and immediate repairs are required to address failures that could be significant public safety hazards. | $1,620,000 | Borrowed | March 2019 | March 2020 |
| 2020 Sewer Reconstruction (Annual IDIQ Contract) | Reconstruction of existing sewers, manholes, catch basins, and inlets due to emergency situations or pipe failures. | The existing sewer system is aging and immediate repairs are required to address failures that could be significant public safety hazards. | $1,750,000 | Borrowed | March 2020 | March 2021 |
| 2021 Sewer Reconstruction (Annual IDIQ Contract) | Reconstruction of existing sewers, manholes, catch basins, and inlets due to emergency situations or pipe failures. | The existing sewer system is aging and immediate repairs are required to address failures that could be significant public safety hazards. | $1,750,000 | Borrowed | March 2021 | March 2022 |
| 2022 Sewer Reconstruction (Annual IDIQ Contract) | Reconstruction of existing sewers, manholes, catch basins, and inlets due to emergency situations or pipe failures. | The existing sewer system is aging and immediate repairs are required to address failures that could be significant public safety hazards. | $1,750,000 | Borrowed | March 2022 | March 2023 |
| 2023 Sewer Reconstruction (Annual IDIQ Contract) | Reconstruction of existing sewers, manholes, catch basins, and inlets due to emergency situations or pipe failures. | The existing sewer system is aging and immediate repairs are required to address failures that could be significant public safety hazards. | $1,880,000 | Borrowed | March 2023 | March 2024 |
| 2018 Sewers Under Structures | Rehabilitation, relocation, and abandonment, if applicable, of existing sewer infrastructure located under or adjacent to buildings, bridges, or railroads or located on steep slopes. The following four sites have been identified: Ellsworth Avenue (695 linear feet of 20-inch vitrified clay, combined sewer main located 5135 Ellsworth Avenue), Oakwood Bridge (215 linear feet of 24-inch vitrified clay, combined sewer main located adjacent to the Oakwood Road Bridge), South 16th Street (700 linear feet of 20 and 24-inch vitrified clay, combined sewer main located under the Union Supply Company building, CSX railroad tracks, and the Three Rivers Heritage Trail), and Centre Avenue (575 linear feet of 15-inch vitrified clay, combined sewer main located under a 20-inch water main that serves UPMC Shadyside and a telecommunications duct bank. | 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. | $6,680,000 | Borrowed | March 2018 | December 2020 |
| 2019 Sewers Under Structures | Rehabilitation, relocation, and abandonment, if applicable, of existing sewer infrastructure located under or adjacent to buildings, bridges, or railroads or located on steep slopes. The following three sites have been identified: Flemington Street (740 linear feet of 15-inch and 20-inch vitrified clay, combined sewer main. located under 1075 Flemington Street and on an inaccesible steep slope (>35 percent) to Beechwood Boulevard), Washington Landing River Crossing (282 linear feet of 8-inch ductile iron, sanitary sewer main located under the Allegheny River), an Seaton Avenue (402 linear feet of 8-inch vitrified clay, sanitary sewer main. located under a building addition and swimming pool). | 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. | $7,120,000 | Borrowed | April 2019 | June 2021 |
| 2020 Sewers Under Structures | Rehabilitation, relocation, and abandonment, if applicable, of existing sewer infrastructure located under or adjacent to buildings, bridges, or railroads or located on steep slopes. | 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. | $7,400,000 | Borrowed | August 2019 | February 2022 |
| 2021 Sewers Under Structures | Rehabilitation, relocation, and abandonment, if applicable, of existing sewer infrastructure located under or adjacent to buildings, bridges, or railroads or located on steep slopes. | 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. | $7,415,000 | Borrowed | August 2020 | February 2023 |
| 2022 Sewers Under Structures | Rehabilitation, relocation, and abandonment, if applicable, of existing sewer infrastructure located under or adjacent to buildings, bridges, or railroads or located on steep slopes. | 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. | $7,795,000 | Borrowed | August 2021 | February 2024 |
| 2023 Sewers Under Structures | Rehabilitation, relocation, and abandonment, if applicable, of existing sewer infrastructure located under or adjacent to buildings, bridges, or railroads or located on steep slopes. | 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. | $8,055,000 | Borrowed | August 2022 | February 2025 |
| 2024 Sewers Under Structures | Rehabilitation, relocation, and abandonment, if applicable, of existing sewer infrastructure located under or adjacent to buildings, bridges, or railroads or located on steep slopes. | 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. | $8,325,000 | Borrowed | August 2023 | February 2026 |
| 2019 Wastewater System Improvements  | Reconstruction of existing structurally deficient sewer mains on Wiese Street, Wilbur Street, Creedmoor Avenue, Ornament Way, Cooperfield Avenue, N. Sheridan Avenue, Port Way, and Swimburne Street. | Repairs were issued on previous annual contracts; however, were not performed due to utility conflicts and limited site access. | $5,350,000 | Borrowed | August 2018 | January 2021 |
| 2018 Sewer Rehabilitation (Annual IDIQ Contract) | Trenchless rehabilitation of less than 24-inch diameter sewer mains to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow, includes cleaning and pre and post construction CCTV inspections.  | Provides the Authority a means to address several moderate/major structural defects in a pipe segment prior to complete failure. This trenchless pipe renewal method eliminates disruptive digging and restoration and is cost effective. | $1,910,000 | Borrowed | September 2018 | September 2019 |
| 2019 Small Diameter Sewer Rehabilitation | Proactive, trenchless rehabilitation of approximately 6 miles of less than 36-inch diameter sewer mains to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow, includes cleaning, pre and post construction CCTV inspections, and if necessary, excavated point repairs and manhole rehabilitation.  | Provides the Authority a means to address inflow and infiltration and several moderate/major structural defects in a pipe segment prior to complete failure. This trenchless pipe renewal method eliminates disruptive digging and restoration and is cost effective. | $9,260,000 | Borrowed | January 2019 | April 2020 |
| 2020 Small Diameter Sewer Rehabilitation | Proactive, trenchless rehabilitation of approximately 6 miles of less than 36-inch diameter sewer mains to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow, includes cleaning, pre and post construction CCTV inspections, and if necessary, excavated point repairs and manhole rehabilitation.  | Provides the Authority a means to address inflow and infiltration and several moderate/major structural defects in a pipe segment prior to complete failure. This trenchless pipe renewal method eliminates disruptive digging and restoration and is cost effective. | $9,500,000 | Borrowed | June 2019 | December 2020 |
| 2021 Small Diameter Sewer Rehabilitation | Proactive, trenchless rehabilitation of approximately 6 miles of less than 36-inch diameter sewer mains to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow, includes cleaning, pre and post construction CCTV inspections, and if necessary, excavated point repairs and manhole rehabilitation.  | Provides the Authority a means to address inflow and infiltration and several moderate/major structural defects in a pipe segment prior to complete failure. This trenchless pipe renewal method eliminates disruptive digging and restoration and is cost effective. | $14,690,000 | Borrowed | March 2020 | September 2021 |
| 2022 Small Diameter Sewer Rehabilitation | Proactive, trenchless rehabilitation of approximately 6 miles of less than 36-inch diameter sewer mains to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow, includes cleaning, pre and post construction CCTV inspections, and if necessary, excavated point repairs and manhole rehabilitation.  | Provides the Authority a means to address inflow and infiltration and several moderate/major structural defects in a pipe segment prior to complete failure. This trenchless pipe renewal method eliminates disruptive digging and restoration and is cost effective. | $17,090,000 | Borrowed | March 2021 | September 2022 |
| 2023 Small Diameter Sewer Rehabilitation | Proactive, trenchless rehabilitation of approximately 6 miles of less than 36-inch diameter sewer mains to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow, includes cleaning, pre and post construction CCTV inspections, and if necessary, excavated point repairs and manhole rehabilitation.  | Provides the Authority a means to address inflow and infiltration and several moderate/major structural defects in a pipe segment prior to complete failure. This trenchless pipe renewal method eliminates disruptive digging and restoration and is cost effective. | $17,600,000 | Borrowed | March 2022 | September 2023 |
| 2024 Small Diameter Sewer Rehabilitation | Proactive, trenchless rehabilitation of approximately 6 miles of less than 36-inch diameter sewer mains to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow, includes cleaning, pre and post construction CCTV inspections, and if necessary, excavated point repairs and manhole rehabilitation.  | Provides the Authority a means to address inflow and infiltration and several moderate/major structural defects in a pipe segment prior to complete failure. This trenchless pipe renewal method eliminates disruptive digging and restoration and is cost effective. | $17,820,000 | Borrowed | March 2023 | September 2024 |
| 2020 Large Diameter Sewer Rehabilitation | Proactive, trenchless rehabilitation of approximately 0.5 mile of 36-inch diameter or greater sewer mains to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow, includes cleaning and pre and post construction CCTV inspections.  | Provides the Authority a means to address several moderate/major structural defects in a pipe segment prior to complete failure. This trenchless pipe renewal method eliminates disruptive digging and restoration and is cost effective. | $3,800,000 | Borrowed | February 2019 | May 2020 |
| 2021 Large Diameter Sewer Rehabilitation | Proactive, trenchless rehabilitation of approximately 0.5 mile of 36-inch diameter or greater sewer mains to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow, includes cleaning and pre and post construction CCTV inspections.  | Provides the Authority a means to address several moderate/major structural defects in a pipe segment prior to complete failure. This trenchless pipe renewal method eliminates disruptive digging and restoration and is cost effective. | $4,200,000 | Borrowed | January 2020 | April 2021 |
| 2022 Large Diameter Sewer Rehabilitation | Proactive, trenchless rehabilitation of approximately 0.5 mile of 36-inch diameter or greater sewer mains to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow, includes cleaning and pre and post construction CCTV inspections.  | Provides the Authority a means to address several moderate/major structural defects in a pipe segment prior to complete failure. This trenchless pipe renewal method eliminates disruptive digging and restoration and is cost effective. | $4,310,000 | Borrowed | January 2021 | April 2022 |
| 2023 Large Diameter Sewer Rehabilitation | Proactive, trenchless rehabilitation of approximately 0.5 mile of 36-inch diameter or greater sewer mains to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow, includes cleaning and pre and post construction CCTV inspections.  | Provides the Authority a means to address several moderate/major structural defects in a pipe segment prior to complete failure. This trenchless pipe renewal method eliminates disruptive digging and restoration and is cost effective. | $4,440,000 | Borrowed | January 2022 | April 2023 |
| 2024 Large Diameter Sewer Rehabilitation | Proactive, trenchless rehabilitation of approximately 0.5 mile of 36-inch diameter or greater sewer mains to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow, includes cleaning and pre and post construction CCTV inspections.  | Provides the Authority a means to address several moderate/major structural defects in a pipe segment prior to complete failure. This trenchless pipe renewal method eliminates disruptive digging and restoration and is cost effective. | $4,570,000 | Borrowed | January 2023 | April 2024 |
| 31st Ward Sewer System Improvements | 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 will be designed and constructed in a minimum of two phases to ensure the pump stations are properly sized and the flow conveyed will not negatively impact the downstream sewer subshed. | 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, studies suggest this sewershed is significantly impacted by high levels of infiltration/inflow. | $13,700,000 | Borrowed | March 2017 | February 2021 |
| Larimer Avenue Sewer and 28th Street Stabilization | Evaluation of rerouting storm laterals, sewer televising, geotechnical investigations, and slope stabalization to address a structurally deficient 18-inch combined sewer that has severely eroded the ground surface on the slope below Brereton Street and above the Port Authority of Allegheny County’s East Busway. | Repairs were issued on previous annual contracts; however, were not performed due to utility conflicts and limited site access. | $695,901 | Borrowed | January 2018 | October 2019 |
| Ivyglen and Odette Sewer Reconstruction and Separation Project | The installation of a new sanitary sewer and storm sewer on Odette and Ivyglen, which will eliminate the combined sewer outfall and a sewer on an unstable slope. | During the weekend of June 23, 2018, PGH2O was informed of a landslide that occurred in the hillside in rear of 2604 Ivyglen, which collapsed a manhole and potentially compromised the 8-inch sanitary sewer that exists on the slope. Considering the current steepness of the slope, the presence of Saw Mill Run at the toe of the slope, and the unknown location of the sewer, it does not appear that there is an expeditious and safe way to readily repair the sewer and/or protect the sewer from damage due to additional slope movements. Further disturbance of the slope with construction equipment could cause additional movements that could impact both the residential structure(s) at the crest and Saw Mill Run below. Additionally, the Odette Street sewer main is single combined sewer segment that overflows into the creek during wet weather events. | $1,900,000 | Borrowed | July 2018 | June 2019 |
| M-29 Outfall Improvements | Structural improvements and rehabilitation of the the M-29 combined sewer outfall diversion structure. Repairs to the diversion structure include lowering of the weir wall height and safety improvements for maintenance of the structure. The outfall pipeline requires extensive repairs and installation of a new flap gate to the outfall on the Monongahela River.  | Provides the Authority a means to address several moderate/major structural defects in a pipe segment prior to complete failure. | $1,845,000 | Borrowed | November 2018 | November 2019 |
| 2019 Hydrant Replacement(Annual IDIQ Contract) | Replacement of approximately 100 broken or older model type hydrants throughout the water distribution system, excluding hydrants replaced during relays. | Increasing the number of operational hydrants provides better fire protection for the City of Pittsburgh. | $1,335,000 | Borrowed | January 2019 | April 2020 |
| 2020 Hydrant Replacement(Annual IDIQ Contract) | Replacement of approximately 100 broken or older model type hydrants throughout the water distribution system, excluding hydrants replaced during relays. | Increasing the number of operational hydrants provides better fire protection for the City of Pittsburgh. | $1,430,000 | Borrowed | September 2019 | April 2021 |
| 2021 Hydrant Replacement(Annual IDIQ Contract) | Replacement of approximately 100 broken or older model type hydrants throughout the water distribution system, excluding hydrants replaced during relays. | Increasing the number of operational hydrants provides better fire protection for the City of Pittsburgh. | $1,450,000 | Borrowed | September 2020 | April 2022 |
| 2022 Hydrant Replacement(Annual IDIQ Contract) | Replacement of approximately 100 broken or older model type hydrants throughout the water distribution system, excluding hydrants replaced during relays. | Increasing the number of operational hydrants provides better fire protection for the City of Pittsburgh. | $1,450,000 | Borrowed | September 2021 | April 2023 |
| 2023 Hydrant Replacement(Annual IDIQ Contract) | Replacement of approximately 100 broken or older model type hydrants throughout the water distribution system, excluding hydrants replaced during relays. | Increasing the number of operational hydrants provides better fire protection for the City of Pittsburgh. | $1,575,000 | Borrowed | September 2022 | April 2024 |
| 2019 Valve Replacement(Annual IDIQ Contract) | Replacement of defective or non-operational valves on transmission and distribution mains throughout the water distribution system, excluding valves replaced during relays. Includes locating, assessing and documenting the operability, raising to grade, and/or cleaning existing buried or obstructed valves.  | Increasing the number of operable valves in the system will reduce the number of customers that may be impacted and the number of valves that would need to be closed during emergency conditions. | $6,565,000 | Borrowed | January 2019 | April 2020 |
| 2020 Valve Replacement(Annual IDIQ Contract) | Replacement of defective or non-operational valves on transmission and distribution mains throughout the water distribution system, excluding valves replaced during relays. Includes locating, assessing and documenting the operability, raising to grade, and/or cleaning existing buried or obstructed valves.  | Increasing the number of operable valves in the system will reduce the number of customers that may be impacted and the number of valves that would need to be closed during emergency conditions. | $6,805,000 | Borrowed | September 2019 | April 2021 |
| 2021 Valve Replacement(Annual IDIQ Contract) | Replacement of defective or non-operational valves on transmission and distribution mains throughout the water distribution system, excluding valves replaced during relays. Includes locating, assessing and documenting the operability, raising to grade, and/or cleaning existing buried or obstructed valves.  | Increasing the number of operable valves in the system will reduce the number of customers that may be impacted and the number of valves that would need to be closed during emergency conditions. | $6,920,000 | Borrowed | September 2020 | April 2022 |
| 2022 Valve Replacement(Annual IDIQ Contract) | Replacement of defective or non-operational valves on transmission and distribution mains throughout the water distribution system, excluding valves replaced during relays. Includes locating, assessing and documenting the operability, raising to grade, and/or cleaning existing buried or obstructed valves.  | Increasing the number of operable valves in the system will reduce the number of customers that may be impacted and the number of valves that would need to be closed during emergency conditions. | $7,150,000 | Borrowed | September 2021 | April 2023 |
| 2023 Valve Replacement(Annual IDIQ Contract) | Replacement of defective or non-operational valves on transmission and distribution mains throughout the water distribution system, excluding valves replaced during relays. Includes locating, assessing and documenting the operability, raising to grade, and/or cleaning existing buried or obstructed valves.  | Increasing the number of operable valves in the system will reduce the number of customers that may be impacted and the number of valves that would need to be closed during emergency conditions. | $7,400,000 | Borrowed | September 2022 | April 2024 |
| 2018 Water Relay(Annual IDIQ Contract) | Replacement of existing water mains, valves, fittings, service connections, and hydrants due to emergency situations. | The existing water distribution system is aging and immediate repairs are required to address failures that could be significant public safety hazards. | $1,620,000 | Borrowed | May 2018 | September 2019 |
| 2019 Water Relay(Annual IDIQ Contract) | Replacement of existing water mains, valves, fittings, service connections, and hydrants due to emergency situations. | The existing water distribution system is aging and immediate repairs are required to address failures that could be significant public safety hazards. | $1,750,000 | Borrowed | June 2019 | October 2020 |
| 2020 Water Relay(Annual IDIQ Contract) | Replacement of existing water mains, valves, fittings, service connections, and hydrants due to emergency situations. | The existing water distribution system is aging and immediate repairs are required to address failures that could be significant public safety hazards. | $1,720,000 | Borrowed | June 2020 | October 2021 |
| 2021 Water Relay(Annual IDIQ Contract) | Replacement of existing water mains, valves, fittings, service connections, and hydrants due to emergency situations. | The existing water distribution system is aging and immediate repairs are required to address failures that could be significant public safety hazards. | $1,750,000 | Borrowed | June 2021 | October 2022 |
| 2022 Water Relay(Annual IDIQ Contract) | Replacement of existing water mains, valves, fittings, service connections, and hydrants due to emergency situations. | The existing water distribution system is aging and immediate repairs are required to address failures that could be significant public safety hazards. | $1,880,000 | Borrowed | June 2022 | October 2023 |
| 2023 Water Relay(Annual IDIQ Contract) | Replacement of existing water mains, valves, fittings, service connections, and hydrants due to emergency situations. | The existing water distribution system is aging and immediate repairs are required to address failures that could be significant public safety hazards. | $1,880,000 | Borrowed | June 2023 | October 2024 |
| 2018 Small Water Main Replacement | Strategic replacement of water mains to improve system reliability as well as improve water pressure, maintain water quality, and minimize disturbance to the community. By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost. In 2018, the following mains have been selected for replacement: Hamilton Avenue from N. Dallas Avenue to N. Homewood Avenue; Railroad Street from 25th Street to 32nd Street; and S. Millvale Avenue from Liberty Avenue to Friendship Avenue. | By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in 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. | $10,680,000 | Borrowed | December 2017 | December 2019 |
| 2019 Small Diameter Water Main Replacement | Strategic replacement of water mains to improve system reliability as well as improve water pressure, maintain water quality, and minimize disturbance to the community. By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost. Additionally, projects will be coordinated with other utilities to minimize disturbance to the community and street surface restoration costs. Water quality and available hydrant flows will also improve by removing tuberculated mains. | By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in 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. | $10,880,000 | Borrowed | FMarch 2019 | December 2020 |
| 2020 Small Diameter Water Main Replacement | Strategic replacement of water mains, including lead service lines, to improve system reliability as well as improve water pressure, maintain water quality, and minimize disturbance to the community. By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost. Additionally, projects will be coordinated with other utilities to minimize disturbance to the community and street surface restoration costs. Water quality and available hydrant flows will also improve by removing tuberculated mains. | By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in 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. | $54,340,000 | Borrowed | March 2019 | December 2020 |
| 2021 Small Diameter Water Main Replacement | Strategic replacement of water mains, including lead service lines, to improve system reliability as well as improve water pressure, maintain water quality, and minimize disturbance to the community. By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost. Additionally, projects will be coordinated with other utilities to minimize disturbance to the community and street surface restoration costs. Water quality and available hydrant flows will also improve by removing tuberculated mains. | By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in 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. | $114,770,000 | Borrowed | January 2020 | December 2021 |
| 2022 Small Diameter Water Main Replacement | Strategic replacement of water mains, including lead service lines, to improve system reliability as well as improve water pressure, maintain water quality, and minimize disturbance to the community. By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost. Additionally, projects will be coordinated with other utilities to minimize disturbance to the community and street surface restoration costs. Water quality and available hydrant flows will also improve by removing tuberculated mains. | By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in 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. | $120,060,000 | Borrowed | Janurary 2021 | December 2022 |
| 2023 Small Diameter Water Main Replacement | Strategic replacement of water mains, including lead service lines, to improve system reliability as well as improve water pressure, maintain water quality, and minimize disturbance to the community. By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost. Additionally, projects will be coordinated with other utilities to minimize disturbance to the community and street surface restoration costs. Water quality and available hydrant flows will also improve by removing tuberculated mains. | By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in 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. | $58,860,000 | Borrowed | January 2022 | December 2023 |
| 2024 Small Diameter Water Main Replacement | Strategic replacement of water mains, including lead service lines, to improve system reliability as well as improve water pressure, maintain water quality, and minimize disturbance to the community. By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost. Additionally, projects will be coordinated with other utilities to minimize disturbance to the community and street surface restoration costs. Water quality and available hydrant flows will also improve by removing tuberculated mains. | By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in 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. | $60,700,000 | Borrowed | January 2023 | December 2024 |
| District Water and Pressure Meters | Installation of water meters and pressure monitors in the distribution system to determine water usage and loss, and pressure loss. | Pressure Monitors are required per PUC. District Metering will be used for water auditing and leak detection. | $2,705,000 | Borrowed | January 2019 | October 2020 |
| Ft. Duquesne Bridge Water Air Release | Perform transient analysis along existing 30-inch water main that is suspended from the Fort Duquesne Bridge. Design and construct new pipe supports, couplings, and thrust restraint based on the results of the analysis. Includes the replacement of the existing air-release valve on the 30-inch water main, including insulation or heat tracing to reduce potential for freezing and cracking of the valve. | A recent PENNDOT inspection of the Fort Duquesne Bridge identified priority code 1 defects in the support of the existing 30-inch diameter water main. Additionally, the existing 2-inch diameter air-release valve located on the main has a history of failure. The water main is located below the lower deck of the Fort Duquesne Bridge and serves as an emergency interconnection between pressure gradients and is a vital component to the system operation. | $2,850,000 | Borrowed | January 2017 | December 2019 |
| Washout Disconnection | Investigation and, if necessary, disconnection of large water main washouts from the sewer system.  | A number of older washouts on larger mains were directly connected to sewers with a closed valve during construction. These washouts (cross connections) must be completely disconnected from the sewer. | $13,140,000 | Borrowed | October 2018 | September 2023 |
| 2019 Unmetered and Flat Rate Properties | Metering unmetered and flat rate properties as required by the PUC | Ensure capture of all revenue | $4,840,000 | Borrowed | March 2019 | March 2020 |
| 2020 Unmetered and Flat Rate Properties | Metering unmetered and flat rate properties as required by the PUC | Ensure capture of all revenue | $4,975,000 | Borrowed | March 2020 | March 2021 |
| 2021 Unmetered and Flat Rate Properties | Metering unmetered and flat rate properties as required by the PUC | Ensure capture of all revenue | $5,100,000 | Borrowed | March 2021 | March 2022 |
| 2022 Unmetered and Flat Rate Properties | Metering unmetered and flat rate properties as required by the PUC | Ensure capture of all revenue | $5,245,000 | Borrowed | March 2023 | March 2024 |
| 2023 Unmetered and Flat Rate Properties | Metering unmetered and flat rate properties as required by the PUC | Ensure capture of all revenue | $5,360,000 | Borrowed | March 2024 | March 2025 |
| 2019 Large Water Meters | Replacement of meters as required by the PUC | Ensure capture of all revenue | $2,100,000 | Pay Go | December 2018 | December 2019 |
| 2020 Large Water Meters | Replacement of meters as required by the PUC | Ensure capture of all revenue | $2,200,000 | Pay Go | December 2019 | December 2020 |
| 2021 Large Water Meters | Replacement of meters as required by the PUC | Ensure capture of all revenue | $2,200,000 | Pay Go | December 2020 | December 2021 |
| 2022 Large Water Meters | Replacement of meters as required by the PUC | Ensure capture of all revenue | $2,300,000 | Pay Go | December 2021 | December 2022 |
| 2023 Large Water Meters | Replacement of meters as required by the PUC | Ensure capture of all revenue | $2,400,000 | Pay Go | December 2022 | December 2023 |
| 2019 Small Water Meters | Replacement of meters as required by the PUC | Ensure capture of all revenue | $2,100,000 | Pay Go | December 2018 | December 2019 |
| 2020 Small Water Meters | Replacement of meters as required by the PUC | Ensure capture of all revenue | $2,200,000 | Pay Go | December 2019 | December 2020 |
| 2021 Small Water Meters | Replacement of meters as required by the PUC | Ensure capture of all revenue | $2,200,000 | Pay Go | December 2020 | December 2021 |
| 2022 Small Water Meters | Replacement of meters as required by the PUC | Ensure capture of all revenue | $2,300,000 | Pay Go | December 2021 | December 2022 |
| 2023 Small Water Meters | Replacement of meters as required by the PUC | Ensure capture of all revenue | $2,400,000 | Pay Go | December 2022 | December 2023 |
| 2018 Lead Service Line Replacement | Replacement of 7% of lead service lines, both public and private.  | Due to the exceedance of the action levels from compliance tests for lead and copper, the Pennsylvania Department of Environmental Protection required the Authority to perform additional distribution system water quality monitoring, optimization of corrosion control treatment, source water monitoring/treatment, public education, and lead service line replacement. | $43,300,000 | Borrowed | March 2018 | February 2019 |
| 2019 Lead Service Line Replacement | Replacement of 7% of lead service lines, both public and private.  | Due to the exceedance of the action levels from compliance tests for lead and copper, the Pennsylvania Department of Environmental Protection required the Authority to perform additional distribution system water quality monitoring, optimization of corrosion control treatment, source water monitoring/treatment, public education, and lead service line replacement. | $49,128,403 | Borrowed/Grant | October 2018 | February 2020 |
| 2018 Curb Box Inspections | Curb Box Inspections provide the Authority with a cost effective way to visually identify the material on both the public and private sides of the water service lines. Curb Boxes typically require moderate cleaning through a combination of vacuum extraction, high pressure air and high pressure water before a clear visual of the service line can be obtained. | 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. | $2,980,134 | Borrowed | December 2017 | March 2019 |
| 2019 Curb Box Inspections | Curb Box Inspections provide the Authority with a cost effective way to visually identify the material on both the public and private sides of the water service lines. Curb Boxes typically require moderate cleaning through a combination of vacuum extraction, high pressure air and high pressure water before a clear visual of the service line can be obtained. | 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. | $3,960,000 | Borrowed | April 2020 | March 2020 |
| 2020 Curb Box Inspections | Curb Box Inspections provide the Authority with a cost effective way to visually identify the material on both the public and private sides of the water service lines. Curb Boxes typically require moderate cleaning through a combination of vacuum extraction, high pressure air and high pressure water before a clear visual of the service line can be obtained. | 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. | $3,960,000 | Borrowed | February 2019 | March 2021 |
| 2019 Large Diameter Water Main Improvements | Strategic replacement or rehabilitation of large diameter water mains (16-inch and larger) and appurtenances to improve system reliability and hydraulics, including internal and external inspections. In 2019, Rising Mains 3 and 4 from the Bruecken Pump Station have been selected for improvements, which is approximatly 2.3 miles of main. | By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus resulting in a savings in the replacement cost as compared to emergency/reactive repair costs. Typically, large diameter pipe is not readily available and has a 6 to 8 week lead time for delivery. A large percentage of the Authority's large diameter mains are riveted steel, which cannot be easily repaired without the use of field fabricated specialty fittings. Rising Mains 3 and 4 from Bruecken Pump Station to Highland 2 Reservoir were chosen for the 2019 Large Diameter Water Main Improvements Program due to their criticality when the clearwell is being rebuilt. | $23,550,000 | Borrowed | February 2019 | March 2022 |
| 2020 Large Diameter Water Main Improvements | Strategic replacement or rehabilitation of large diameter water mains (16-inch and larger) and appurtenances to improve system reliability and hydraulics, including internal and external inspections. | By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus resulting in a savings in the replacement cost as compared to emergency/reactive repair costs. Typically, large diameter pipe is not readily available and has a 6 to 8 week lead time for delivery. A large percentage of the Authority's large diameter mains are riveted steel, which cannot be easily repaired without the use of field fabricated specialty fittings. Mains chosen for 2020 for renewal will be based on the outcome of the Water Distribution System Master Plan. | $11,940,000 | Borrowed | January 2019 | August 2022 |
| 2021 Large Diameter Water Main Improvements | Strategic replacement or rehabilitation of large diameter water mains (16-inch and larger) and appurtenances to improve system reliability and hydraulics, including internal and external inspections. | By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus resulting in a savings in the replacement cost as compared to emergency/reactive repair costs. Typically, large diameter pipe is not readily available and has a 6 to 8 week lead time for delivery. A large percentage of the Authority's large diameter mains are riveted steel, which cannot be easily repaired without the use of field fabricated specialty fittings. Mains chosen for 2020 for renewal will be based on the outcome of the Water Distribution System Master Plan. | $12,170,000 | Borrowed | January 2020 | August 2023 |
| 2022 Large Diameter Water Main Improvements | Strategic replacement or rehabilitation of large diameter water mains (16-inch and larger) and appurtenances to improve system reliability and hydraulics, including internal and external inspections. | By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus resulting in a savings in the replacement cost as compared to emergency/reactive repair costs. Typically, large diameter pipe is not readily available and has a 6 to 8 week lead time for delivery. A large percentage of the Authority's large diameter mains are riveted steel, which cannot be easily repaired without the use of field fabricated specialty fittings. Mains chosen for 2020 for renewal will be based on the outcome of the Water Distribution System Master Plan. | $12,430,000 | Borrowed | January 2021 | August 2024 |
| 2023 Large Diameter Water Main Improvements | Strategic replacement or rehabilitation of large diameter water mains (16-inch and larger) and appurtenances to improve system reliability and hydraulics, including internal and external inspections. | By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus resulting in a savings in the replacement cost as compared to emergency/reactive repair costs. Typically, large diameter pipe is not readily available and has a 6 to 8 week lead time for delivery. A large percentage of the Authority's large diameter mains are riveted steel, which cannot be easily repaired without the use of field fabricated specialty fittings. Mains chosen for 2020 for renewal will be based on the outcome of the Water Distribution System Master Plan. | $26,410,000 | Borrowed | January 2022 | August 2025 |
| Aspinwall Pump Station to Lanpher Reservoir Rising Main | Construction of a new, redundant rising main from Aspinwall Pump Station to Lanpher Reservoir.  | The existing 60-inch 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 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-inch supply main. | $49,454,000 | Borrowed | September 2018 | September 2022 |
| Aspinwall Pump Station Improvements | Replacement of aged pump and valve equipment, electrical equipment, HVAC, and auxiliary systems and rehabilitation of the building architectural and energy management systems. The current pump station was constructed in 1914 and many of the components were installed in 1958. | 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. | $29,690,000 | Borrowed | May 2019 | March 2023 |
| Bruecken Pump Station Improvements | Replacement of aged pump and valve equipment, electrical equipment, HVAC, and auxiliary systems and rehabilitation of the building architectural and energy management systems. 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 the staff. This project is a critical component of the clearwell replacement project. | $24,990,000 | Borrowed | April 2019 | February 2023 |
| Aspinwall Water Treatment Plant High Service Pump Station | In lieu of Aspinwall and Bruecken Pump Stations, a new high service pump station may be constructed to service Highland Reservoir 1, Highland Reservoir 2, Lanpher Reservoir, and Fox Chapel. | If this project moves forward, the Aspinwall Pump Station Imrpvements and Bruecken Pump Station Improvements Project would be reduced to only what is necessary to keep the stations operational until the new station is online. This project is a critical component of the clearwell replacement project. | $53,620,000 | Borrowed | October 2018 | February 2023 |
| Ross Pump Station Improvements | Replacement of aged pump and valve equipment, meters, SCADA, electrical equipment, HVAC, and auxiliary systems and the rehabilitation of the building architectural and energy management systems. | The Ross Pump Station is the only feed to the water treatment plant. This station is in need of renewal. | $43,000,000 | Borrowed | August 2018 | TBD |
| Chlorine Booster Station Improvements | Rehabilitation or replacement of the existing sodium hypochlorite booster stations in the distribution system, excluding Lanpher and Herron Hill. Includes installation of flow meters, if necessary. | Existing chlorine injections systems at satellite storage facilities are in need of renewal. Without upgrade of these facilities, the system would be in violation of residual chlorine levels required by PA DEP. | $10,090,000 | Borrowed | December 2018 | December 2021 |
| Garfield Tank Improvements | Perform a comprehensive inspection of the existing elevated storage tank, evaluate the system's need for additional storage for regulatory compliance, the need for an additional storage tank, and rehabilitation of the existing tank. Evaluation of storage capacity will be based on outcome of the Water Distribution System Master Plan. | Renewal of storage tanks is necessary to ensure a safe and reliable water supply. Garfield Tank has been identified based on the 40-year master plan as well as recent leaks for priority for renewal. Tank size may need to be increased based on outcome of Water Distribution System Master Plan. | $4,050,000 | Borrowed | September 2018 | April 2021 |
| Lincoln Tank Improvements | Perform a comprehensive inspection of the existing storage tank, evaluate the system's need for additional storage for regulatory compliance, the need for an additional tank, and rehabilitation of the existing tank. Evaluation of storage capacity will be based on outcome of the Water Distribution System Master Plan. | Renewal of storage tanks is necessary to ensure a safe and reliable water supply. Garfield Tank has been identified based on the 40-year master plan as well as recent leaks for priority for renewal. Tank size may need to be increased based on outcome of Water Distribution System Master Plan. | $4,195,000 | Borrowed | September 2018 | April 2021 |
| Herron Hill Reservoir Improvements | Installation of new liner and cover and provide ancillary improvements to the entire facility, including Sodium Hypochlorite injection system, SCADA system improvements, site electrical improvements, sluice gate rehabilitation, dewatering pumps, concrete repairs and necessary site work. | Reservoir liner and cover is close to the end of its design life where patching and regular maintenance will no longer be effective. | $5,520,000 | Borrowed | October 2018 | December 2020 |
| Lanpher Reservoir Improvements | Installation of new liner and cover and provide ancillary improvements to the entire facility, including Sodium Hypochlorite injection system, SCADA system improvements, site electrical improvements, sluice gate rehabilitation, dewatering pumps, concrete repairs and necessary site work. | Work required as a result of a failure of the reservoir floating cover in September 2017. Sodium hypochlorite feed system is reaching the end of its design life. | $29,643,000 | Borrowed | September 2017 | June 2019 |
| Highland No. 2 Reservoir Improvements | Installation of new liner and cover and provide ancillary improvements to the entire facility, including new outlet piping for Highland Pump Station and Rising Main, Sodium Hypochlorite injection system, SCADA system improvements, site electrical improvements, sluice gate rehabilitation, dewatering pumps, concrete repairs and necessary site work. | Upgrade of outlet structure to allow increased capacity for the Highland Reservoir Pump Station. Replace liner and cover. | $27,510,000 | Borrowed | March 2019 | March 2022 |
| Highland Reservoir Pump Station and Rising Main | 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 | All compliant water supply for the Highland No. 1 Service Area currently flows through the Highland No. 1 Reservoir and the Membrane Filtration Plant (MFP) or directly into the system. There is no online storage for the system, and there is no other source water supply for the Highland No. 1 Service Area. In addition to providing alternate supply, this project will 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 will also be designed to service the Garfield pressure district, thus eliminating the need to rehabilitate the (New) Highland Pump Station. | $37,130,000 | Borrowed | March 2017 | June 2022 |
| Aspinwall and MFP Fiberglass Reinforced Plastic Chemical Tank Inspections and Repairs/Replacement | Inspection and rehabilitation and/or replacement of the fiberglass reinforced plastic chemical tanks. |  | $294,000 | Borrowed | April 2017 | June 2019 |
| Aspinwall Treatment Plant Pretreatment Chemical System and Clarification Improvements | Improvements to pretreatment chemical systems, clarifiers, sedimenation, and associated systems to provide enhanced water treatment. | Chemical treatment systems are a critical component to producing safe drinking water. Components of the chemical treatment systems can no longer be operated in a safe, effective, or reliable manner to meet water quality requirements. Many bulk water treatment chemicals present safety hazards to staff. The storage and pumping systems associated with these chemicals have reached the end of their useful life. Failures resulting in dust creation and chemical spills can place operators in unsafe working conditions and can cause physical damage to equipment and structures, as well as environmental contamination. | $27,310,000 | Borrowed | March 2017 | February 2023 |
| Aspinwall Water Treatment Plant Electrical and Backup Power Improvements | Improvements to electrical systems at Aspinwall Water Treatment Plant, including provisions for backup power systems, upgrades to existing electrical distribution system, and replacement of motor control centers. | Electrical systems at the Aspinwall Water Treatment Plant have generally met the end of their useful lives and spare/replacement parts are unavailable. Electrical panels do not meet current safety standards, including lack of arc flash protection. Additionally, the Aspinwall Water Treatment Plant does not have redundant power systems or a means for stand-by power for critical pumping and treatment systems. | $26,520,000 | Borrowed | March 2017 | February 2023 |
| Aspinwall Water Treatment Plant Raw Water Intakes | Project will include 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. | Only one intake is currently operable. Both intakes are in need of renewal. | $45,000,000 | Borrowed | August 2018 | TBD |
| Clearwell Emergency Response Project | Construction of piping, suction wells, if necessary, and appurtenances to bypass the existing clearwell. | This project will provide a means to bypass the existing clearwell. Note: Disinfection requirements will not be achieved while bypassing is occurring. Additionally, this infrastructure will be required to maintain water supply to PWSA’s customers for the rehabilitation or replacement of the existing clearwell. | $27,670,000 | Borrowed | March 2017 | April 2022 |
| Clearwell Improvements | Replacement of the existing 108 year old, single cell clearwell (finished water structure). 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 to meet the requirements of the Federal 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. | $67,810,000 | Borrowed | April 2019 | March 2024 |
| Corrosion Control Chemical Storage and Feed Systems | Installation of phosphoric acid storage and feed systems located at Aspinwall Pump Station, Bruecken Pump Station, and near the Membrane Filtration Plant to provide corrosion control in the distribution system. | Addition of a new corrosion control chemical was required per PA DEP Consent Order. | $3,960,000 | Borrowed | May 2018 | March 2019 |
| Highland Park Membrane Filtration Module Replacement Program | Replace membrane modules, which includes a total of 10 racks each with 80 modules. Note: Four racks were replaced in 2017. | Replacement necessary to maintain operation of the MFP. | $21,717,711 | Borrowed | May 2017 | January 2020 |
| Highland Park Membrane Filtration Plant UV System | Installation of a UV treatment system and appurtenances at the Highland Park Membrane Filtration Plant (MFP). | To comply with the 1 log inactivation of Giardia cysts and the PADEP Administrative Order dated October 25, 2017. | $5,855,000 | Borrowed | October 2017 | April 2019 |
| MFP Assessment and Critical Process Improvements | Complete a condition assessment of systems supporting the treatment process and perform critical improvements to maintain water treatment and allow full warranty of replacement modules. Improvements may include electrical, chemical feed, strainers, and other support systems. |  | $1,755,500 | Borrowed | March 2017 | December 2018 |
| Water System GIS Improvements | Rescan Water Record Books, Input material and pipe age into GIS. Update valve layer. | GIS upgrade required in order to prioritize mains for renewal. | $1,200,000 | Borrowed | May 2019 | May 2021 |
| Water Master Plan | Comprehensive plan, including analysis of demands, future demands, capacities, and pipe condition based assessment. | Master Plan required to prioritize water mains, pump stations, and storage for renewal, identify and refine future CIP projects.  | $500,000 | Borrowed | March 2019 | October 2019 |
| Low Pressure Area Remediation | Fix chronically low pressure areas by either extending neighboring higher pressure districts into the area, booster pump stations, or household booster pumps.  | This project is in response to the low pressure monitors required by the October 2017 Administrative Order. | $2,000,000 | Borrowed | January 2019 | January 2021 |

Notes:

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|  | Required per November 17, 2017 Consent Order and Agreement with PA DEP |
|  | Required per October 25, 2017 PA DEP Administrative Order |
|  | Projects noted in October 25, 2017 PA DEP Administrative Order |

1. Pressure Sensors, as required by October 25, 2017 PA DEP Administrative Order purchased under Highland Park Membrane Filtration Plant UV System.
2. Bruecken Pump Station improvements required per October 25, 2017 PA DEP Administrative Order covered under existing project, Bruecken Pump Station Improvements, not listed on this table.