

COMMISSION FILE NO: 25-163-12 **DATE INTRODUCED:** December 1, 2025

INTRODUCED BY: Executive Director (Signature on File in the Office of the Commission)

REFERRED BY COMMISSION CHAIRPERSON TO: Operations Committee

RELATING TO: Change Order Requests, Contract P01005C06, Pipeline Cleaning Phase 2 – Interplant Sludge System Improvements; Change Order Request, Contract P01005D01, Engineering Services – Interplant Sludge System Improvements Project; Restore the Executive Director’s Original Delegated Authority; and Approve Changes in Total Project Cost

SUMMARY:

The Commission is requested to authorize the Executive Director to execute a change order to Contract P01005C06, Pipeline Cleaning Phase 2 – Interplant Sludge (IPS) System Improvements, with Terra Engineering & Construction Corporation (Terra) to clean IPS pipeline 4 in an amount not to exceed \$3,450,000.

Further, the Commission is requested to authorize the Executive Director to execute a change order to Contract P01005D01, Engineering Services – Interplant Sludge System Improvements Project, with Donohue and Associates, Inc., (Donohue) in an amount not to exceed \$62,324 and to restore the Executive Director’s original delegated authority.

Further, the Commission is requested to increase the total project cost (TPC) for Project P01005, Interplant Pipeline Improvements – Phase II, by \$3,924,000 for an amended TPC of \$37,949,000 and to make a corresponding change to the TPC of Project M99001, Allowance for Cost and Schedule Changes.

Further, the Commission is requested to authorize the Executive Director to execute an additional change order to Contract P01005C06, Pipeline Cleaning Phase 2 – IPS System Improvements, with Terra to clean IPS pipeline 1 in an amount not to exceed \$4,750,000, and to increase the TPC for Project P01005, Interplant Pipeline Improvements – Phase II, by \$4,750,000 for an amended TPC of \$42,699,000 and to make a corresponding change to the TPC of Project M99001, Allowance for Cost and Schedule Changes. Both the change order authorization and TPC change are contingent on the Executive Director’s decision to proceed with cleaning IPS pipeline 1.

ATTACHMENTS: **BACKGROUND** ☐ **KEY ISSUES** ☐ **RESOLUTION** ☒
FISCAL NOTE ☒ **S/W/MBE** ☐ **OTHER** ☐ _____

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11-10-25

COMMITTEE ACTION: _____ **DATE:** _____

COMMISSION ACTION: _____ **DATE:** _____

SUMMARY (Cont'd)

Change Order Requests, Contract P01005C06, Pipeline Cleaning Phase 2 – Interplant Sludge System Improvements; Change Order Request, Contract P01005D01, Engineering Services – Interplant Sludge System Improvements Project; Restore the Executive Director's Original Delegated Authority; and Approve Changes in Total Project Cost

The IPS System allows for the transfer of sludge (or biosolids) between the Jones Island Water Reclamation Facility (JIWRF) and the South Shore Water Reclamation Facility (SSWRF). The IPS System is critical for processing biosolids and producing Milorganite®. An IPS System outage can result in operational challenges, lost opportunities to create digester gas, and significant increases in operating costs.

The IPS System consists of a pump station located at JIWRF, a pump station located at SSWRF, and four parallel ductile iron pipelines connecting the two facilities. Each pipeline is 12 miles long for a total length of 48 miles. Two pipelines are 12-inch diameter, and the other two are 14-inch diameter. There are 12 valve vaults located at the pipeline high points and low points. The IPS System has been in service for approximately 30 years. Prior to Project P01005, the pipeline was never fully cleaned because of restrictions at the valve vaults.

The transfer of biosolids between JIWRF and SSWRF has been reasonably reliable; however, there has been a reduction in pipeline flow capacity since the system began operation. The cause of the reduced flow capacity is the buildup of settled solids in the pipeline, primarily at low points. The decrease in flow capacity increases the amount of energy needed to transfer biosolids between facilities. The overall purpose of this project is to restore the reliability, operational capability, and energy efficiency of the IPS System.

In January 2022, the Commission awarded Contract P01005C06 to Terra in the amount of \$8,453,660. Under this contract, Terra is:

- Preparing each pipeline for cleaning by removing valves and fittings on various pipeline valve vaults and venting the pipeline.
- Draining and disposing liquid from each pipeline.
- Jet cleaning the pipeline low points with disposal of cleaning water and solids.
- Televising each pipeline.
- Performing final pipeline cleaning using a pipeline insertion gauge (PIG).
- Installing new PIG-compatible valves, piping, supports, and fittings in the vaults.
- Improving pipe bonding in each vault to maximize performance of the pipeline cathodic protection system.
- Abating existing lead-based paint coatings and recoat the existing piping and valves in each vault.
- Returning each pipeline back to service.

SUMMARY (Cont'd)

Change Order Requests, Contract P01005C06, Pipeline Cleaning Phase 2 – Interplant Sludge System Improvements; Change Order Request, Contract P01005D01, Engineering Services – Interplant Sludge System Improvements Project; Restore the Executive Director's Original Delegated Authority; and Approve Changes in Total Project Cost

Terra successfully cleaned pipeline 3 without significant issues. Cleaning pipeline 2 required nearly \$1,200,000 in change orders for specialized jet cleaning to remove highly solidified material and remove two PIG's that were stuck in the highly solidified material. Work on pipeline 2 is complete, and Terra is now cleaning pipeline 4. Cleaning pipeline 1 will follow pipeline 4.

Pipeline 4 has a significant buildup of vivianite inside the circumference of the pipe. Vivianite is a mineral formation of iron and phosphorus that can occur in sludge pipelines under certain conditions. Vivianite buildup was unknown or not suspected when the bid and contract documents were developed and executed. It is necessary to remove the vivianite prior to final cleaning using the PIG.

In July 2025, the Commission authorized the Executive Director to execute a \$1,200,000 change order to remove the vivianite. At the time of Commission authorization, staff were evaluating two primary ways to remove the vivianite: chemical treatment and jet cleaning. The cost to remove the vivianite was unknown, and the total amount requested was based on the additional cleaning costs needed for pipeline 2 (which did not have vivianite).

Using field data, the District compared the costs of vivianite removal using chemical treatment versus jet cleaning and determined that jet cleaning is less costly than chemical treatment; however, jet cleaning to remove vivianite is more expensive than jet cleaning the highly solidified material that was in pipeline 2, because it takes more time to remove vivianite than the highly solidified material. Thus, the estimated costs to complete jet cleaning pipeline 4 are higher than the \$1.2 Million change order staff originally estimated. Jet cleaning must occur prior to final cleaning using the PIG.

Staff recommends additional funding to complete jet cleaning of pipeline 4 to remove vivianite and other accumulated material before final PIG cleaning. The requested change order to Contract P01005C06 reflects the estimated cost of the remaining work. Cleaning of pipeline 4 is expected to continue through spring 2026.

In October 2025, a visual inspection of pipeline 1 confirmed that it also has a significant buildup of vivianite. The decision to proceed with jet cleaning pipeline 1 primarily depends on the District's financial capacity to pay for the additional cleaning to remove the vivianite. The requested change order represents staff's estimate of the additional work required to remove the vivianite from pipeline 1. If approved, cleaning pipeline 1 would continue into 2027.

SUMMARY (Cont'd)

Change Order Requests, Contract P01005C06, Pipeline Cleaning Phase 2 – Interplant Sludge System Improvements; Change Order Request, Contract P01005D01, Engineering Services – Interplant Sludge System Improvements Project; Restore the Executive Director's Original Delegated Authority; and Approve Changes in Total Project Cost

The requested change order amounts include increased contractor labor and equipment rates due to the extended contract duration for the additional pipeline cleaning. The work to clean all pipelines was originally scheduled for completion in 2025.

Following is a summary of the Contract P01005C06 change orders executed under the Executive Director's authority:

- Providing 148 additional pipe spool pieces in pipeline valve vaults.
- Cleaning and removing existing debris from the bottom of four valve vaults.
- Replacing existing isolation valves in one valve vault.
- Modifying the existing valve vault pipe supports.
- Adjusting pipeline cleaning unit quantity.
- Providing flushing connections on existing valves.
- Providing new snubbers at the PIG receiving stations at JIWRP and SSWRF.
- Providing handwheel operators on two pipeline drain valves.
- Filling pits on the exterior of pipes in one valve vault.
- Bonding the joints in valve vaults on pipeline 1 to improve cathodic protection during construction.
- Additional jet cleaning to remove a stuck PIG in pipeline 2.
- Additional PIG cleaning runs in pipeline 2.
- One additional PIG cleaning of pipeline 3.
- Providing temporary sound barriers at select valve vaults during jet cleaning.
- Removal of additional PIG cleaning debris from the IPS pump station wet well at SSWRF.
- Disposal of debris from the additional jet and PIG cleaning.
- Field testing to remove vivianite from pipeline 4 using chemical treatment.
- Additional 10 days of jet cleaning and disposal of materials from pipeline 4 to remove vivianite.

Following is a summary of Contract P01005C06 change orders authorized under Commission action:

- Providing 20 additional pipe spool pieces in pipeline valve vaults.
- Additional jet cleaning to remove a second stuck PIG in pipeline 2.
- Providing up to five additional PIG cleanings of pipelines.
- Additional 80 days of jet cleaning and disposal of materials from pipeline 4.

SUMMARY (Cont'd)

Change Order Requests, Contract P01005C06, Pipeline Cleaning Phase 2 – Interplant Sludge System Improvements; Change Order Request, Contract P01005D01, Engineering Services – Interplant Sludge System Improvements Project; Restore the Executive Director's Original Delegated Authority; and Approve Changes in Total Project Cost

- Removing and reinstalling piping on pipeline 1 at valve vault 5 to see if vivianite is present.
- Additional rental fees for temporary sound barriers at select valve vaults during jet cleaning to remove vivianite due to the extended contract duration.

CONTRACT P01005C06 COST CHANGES

	AMOUNT	PERCENTAGE INCREASE OVER ORIGINAL CONTRACT	AUTHORIZED BY	SWMBE
Original Contract	\$8,453,660		Commission	21.1%
Previous Authorized Change Orders	\$3,470,688	41%	Executive Director and Commission	3.5%
Requested Change Order Pipeline No. 4	\$3,450,000	41%	Request of Commission	5.0%
Requested Change Order Pipeline No. 1	\$4,750,000	56%	Request of Commission	5.0%
Total Change Orders	\$11,670,688	138%		4.6%
TOTAL	\$20,124,348			11.5%

In April 2016, the Commission authorized the Executive Director to enter into Contract P01005D01 with Donohue in an amount not to exceed \$1,434,659. The general scope of work under this contract includes:

- Designing replacements and upgrades for pump station and pipeline components that have reached the end of their useful service lives.
- Evaluating alternatives and developing a bid package to remove solids from the pipelines.
- Evaluating alternatives and design a solution to upgrade the pipeline cathodic protection and corrosion monitoring system.

SUMMARY (Cont'd)

Change Order Requests, Contract P01005C06, Pipeline Cleaning Phase 2 – Interplant Sludge System Improvements; Change Order Request, Contract P01005D01, Engineering Services – Interplant Sludge System Improvements Project; Restore the Executive Director's Original Delegated Authority; and Approve Changes in Total Project Cost

- Evaluating and recommending a construction implementation strategy.
- Developing construction sequences and constraints to minimize operational disruptions.
- Providing multiple construction bid documents.
- Providing engineering services during construction.

The interior of each pipeline is lined with cement mortar to protect the ductile iron pipe from interior corrosion. Televising pipelines 2 and 3 after jet cleaning revealed small areas with failed cement mortar lining.

Due to the vivianite found in pipeline 4 and 1 and the discovery of failed cement mortar lining in pipelines 2 and 3, the scope of the proposed Contract P01005D01 change order includes the following items:

- Further investigating potential locations for additional vaults to improve access for future cleaning and rehabilitation.
- Evaluating alternatives to address cement mortar lining failure, including relining options.
- Assessing process improvements to minimize vivianite formation, prevent corrosion where lining has failed, and enhance long-term pipeline durability.
- Evaluating methods for visual or nondestructive condition assessment.
- Reviewing required capacity and future IPS pipeline operation based on recommendations from the District's Advanced Biosolids Facilities Plan, Energy Plan, and High Strength Waste Study.

Following is a summary of the Contract P01005D01 change orders executed under the Executive Director's authority:

- Bid package to replace key valves at the JIWRP and SSWRF IPS Pump Stations during an annual Dewatering and Drying system shutdown to reduce the number of IPS system outages.
- Evaluations, plans, and specifications for improvements at JIWRP and SSWRF IPS Pump Stations to comply with NFPA 820, Standard for Fire Protection in Wastewater Treatment and Collection Facilities.
- Bid package to clean a segment of pipeline 3 as a pilot project. Information from the pilot was used to prepare bid and contract documents for contracts P01005C06.
- Bid package to provide test drilling at the six cathodic protection anode bed sites.

SUMMARY (Cont'd)

Change Order Requests, Contract P01005C06, Pipeline Cleaning Phase 2 – Interplant Sludge System Improvements; Change Order Request, Contract P01005D01, Engineering Services – Interplant Sludge System Improvements Project; Restore the Executive Director's Original Delegated Authority; and Approve Changes in Total Project Cost

- Bid package to prepurchase pumps and valves to reduce the number of IPS system outages.
- Train District field staff to identify endangered species and habitats during construction.
- Provide information for District staff to obtain temporary and permanent easements to renew the cathodic protection system.
- Additional testing to find points of discontinuity in the existing pipeline cathodic protection system.
- Bid package to address pump vibration issues at the JIWRP IPS station.
- Investigate options for an access easement to valve vault 6 due to constraints associated with the new Wisconsin Air National Guard entry gate.
- Plans and specifications to resolve water leaks and failing insulation at five valve vaults.
- Plans and specifications to install a density meter at the SSWRF IPS pump station to measure performance of pipeline PIG cleaning.
- Investigate potential locations for intermediate vaults between existing vaults to provide better access for pipeline cleaning.

Following is a summary of Contract P01005D01 change orders authorized under Commission action:

- Bid package to abate asbestos containing materials at JIWRP and SSWRF IPS pump stations.
- Engineering services during bid and construction to clean one segment of pipeline 3 and test drilling at the six cathodic protection anode bed sites.
- Obtaining permits from the City of Milwaukee, City of St. Francis, City of Cudahy, Milwaukee County Parks, We Energies, Union Pacific Railroad, Wisconsin Department of Transportation, and Wisconsin Department of Natural Resources. These permits were necessary for installing the cathodic protection system.

SUMMARY (Cont'd)

Change Order Requests, Contract P01005C06, Pipeline Cleaning Phase 2 – Interplant Sludge System Improvements; Change Order Request, Contract P01005D01, Engineering Services – Interplant Sludge System Improvements Project; Restore the Executive Director's Original Delegated Authority; and Approve Changes in Total Project Cost

For engineering service contracts equal to or greater than \$500,000, the Commission has delegated to the Executive Director the authority to make changes up to \$200,000 or 10% of the original contract price, whichever is less. For contract P01005D01, a limit of \$143,465 prevails. To date, the Executive Director has utilized \$143,409 of this authority, leaving a balance of \$56. The request to restore the Executive Director's authority is in case any other additional services are needed.

CONTRACT P01005D01 COST CHANGES

	AMOUNT	PERCENTAGE INCREASE OVER ORIGINAL CONTRACT	AUTHORIZED BY	SWMBE
Original Contract	\$1,434,659		Commission	44.1%
Previous Authorized Change Orders	\$515,574	36%	Executive Director and Commission	21.5%
Requested Change Order	\$62,324	4%	Request of Commission	8.1%
Total Change Orders	\$577,898	40%		20.1%
TOTAL	\$2,012,557			37.2%

Staff requests the Commission increase the TPC by \$3,924,000 to account for the requested Contract P01005C06 change order to clean pipeline 4, the requested Contract P01005D01 change order, a \$42,855 change order to Contract P01005D01 authorized under Executive Director's delegated authority, and \$368,000 in additional District field staff and administrative labor.

If the Executive Director decides to proceed with cleaning pipeline 1, the TPC will increase by the requested Contract P01005C06 change order amount to clean pipeline 1.

RESOLUTION

Change Order Requests, Contract P01005C06, Pipeline Cleaning Phase 2 – Interplant Sludge System Improvements; Change Order Request, Contract P01005D01, Engineering Services – Interplant Sludge System Improvements Project; Restore the Executive Director’s Original Delegated Authority; and Approve Changes in Total Project Cost

RESOLVED, by the Milwaukee Metropolitan Sewerage Commission, that the Executive Director is authorized to execute a change order to Contract P01005C06, Pipeline Cleaning Phase 2 – Interplant Sludge System Improvements, with Terra Engineering & Construction Corporation to clean Interplant Sludge pipeline 4 in an amount not to exceed \$3,450,000.

FURTHER RESOLVED, by the Milwaukee Metropolitan Sewerage Commission, that the Executive Director is authorized to execute a change order to Contract P01005D01, Engineering Services – Interplant Sludge System Improvements Project, with Donohue and Associates, Inc., in an amount not to exceed to \$62,324 and to restore the Executive Director’s original delegated authority.

FURTHER RESOLVED, by the Milwaukee Metropolitan Sewerage Commission, that the total project cost for Project P01005, Interplant Pipeline Improvements – Phase II, is increased by \$3,924,000,000 for an amended total project cost of \$37,949,000, and that a corresponding change is made to the total project cost for Project M99001, Allowance for Cost and Schedule Changes.

FURTHER RESOLVED, by the Milwaukee Metropolitan Sewerage Commission, that the Executive Director is authorized to execute a change order to Contract P01005C06, Pipeline Cleaning Phase 2 – Interplant Sludge System Improvements, with Terra Engineering & Construction Corporation to clean Interplant Sludge pipeline 1 in an amount not to exceed \$4,750,000, that the total project cost for Project P01005, Interplant Pipeline Improvements – Phase II, is increased by \$4,750,000 for an amended total project cost of \$42,699,000, and that a corresponding change is made to the total project cost for Project M99001, Allowance for Cost and Schedule Changes, contingent on the Executive Director’s decision to proceed with cleaning Interplant Sludge Pipeline 1.