

UB00
Maryland Environmental Service

Capital Budget Summary

State-owned Capital Improvement Program
(\$ in Millions)

Description	2017 Approp.	2018 Approp.	2019 Request	2020 Estimate	2021 Estimate	2022 Estimate	2023 Estimate
State Water and Sewer Infrastructure Improvement Fund	\$24.825	\$19.732	\$9.590	\$19.953	\$15.367	\$20.171	\$17.844
Total	\$24.825	\$19.732	\$9.590	\$19.953	\$15.367	\$20.171	\$17.844

Description	2017 Approp.	2018 Approp.	2019 Request	2020 Estimate	2021 Estimate	2022 Estimate	2023 Estimate
PAYGO SF	\$0.000	\$0.000	\$0.000	\$3.441	\$12.454	\$11.350	\$11.950
GO Bonds	24.825	19.732	9.590	16.512	2.913	8.821	5.894
Total	\$24.825	\$19.732	\$9.590	\$19.953	\$15.367	\$20.171	\$17.844

GO: general obligation
SF: special funds

Note: The addition of special funds starting in fiscal 2020 reflects the use of transfer tax special funds to fund the Maryland Environmental Service projects at the Department of Natural Resources facilities.

Summary of Updates

Department of Juvenile Services New Female Detention Center – Water and Sewer Utilities Project Delayed: The delay in the procurement of the utility easements for the Department of Juvenile Services (DJS) New Female Detention Center – Water and Sewer Utilities Project is ongoing. A meeting between Carroll County officials, the Department of General Services (DGS), and the property owners is planned for March 2018 in order to amicably resolve the issue. DGS would then need up to an additional six months for the easement acquisition process, including appraisal ordering, review, negotiation of terms, document preparation, and Board of Public Works (BPW) approval. The goal is to complete the process by September 2018. The Maryland Environmental Service (MES) notes that any other alternative to the acquisition of the utility easements could take a substantial amount of additional time.

Coordination with the Maryland Department of the Environment Going Well: MES’ work on water and wastewater treatment plants (WWTP) is regulated by permits issued by the Maryland Department of the Environment (MDE). Therefore, a close working relationship is essential to MES’ mission. While not always true in the past, MES notes that the permitting staff at MDE have been responsive to its requests for planning limits as MES starts the design of upgrades to its WWTPs. In addition, MES notes that it continues to work with MDE on the Bay Restoration Fund funding for upgrading WWTPs to enhanced nutrient removal technology. However, MES’ projects are held to the same criteria as every other WWTP, which in many cases is difficult to meet since MES operates WWTPs that are relatively small.

Master Plan Updated: In February 2016, MES provided the Department of Budget and Management (DBM) with an update to its 2014 Facilities Master Plan. DBM has completed its review and is awaiting MES’s response to questions and comments before finalization and approval of the plan can take place.

Summary of Recommended Bond Actions

1. Infrastructure Improvement Fund

Approve the authorization for the State Water and Sewer Infrastructure Improvement Fund.

2. SECTION 12, Maryland Environmental Service, Infrastructure Improvement Fund

Approve the pre-authorization for the State Water and Sewer Infrastructure Improvement Fund funding in fiscal 2020.

3. SECTION 13, Maryland Environmental Service, Infrastructure Improvement Fund

Approve the pre-authorization of fiscal 2021 funding for the State Water and Sewer Infrastructure Improvement Fund.

Program Description

MES was created by statute (Chapter 240 of 1970) as an independent agency. Executive Order 01.01.1971.11 stipulated that MES has responsibility for the operation and maintenance of all State-owned sewage treatment and solid waste disposal facilities. MES then was incorporated into the Department of Natural Resources (DNR) in 1972. During the 1993 session, the General Assembly adopted legislation (Chapter 196) that created MES as an instrumentality of the State and a public corporation independent of DNR. MES provides technical services, including engineering, design, financing, construction, and operation of water supply and wastewater treatment facilities, among other activities.

The State Water and Sewer Infrastructure Improvement Fund was established to provide for capital improvements of State-owned and operated water treatment and WWTPs, water distribution and sewer collection systems, and water towers. Since fiscal 1992, funding for capital maintenance projects relating to water and WWTPs has been budgeted under MES. Prior to this, the State budgeted capital maintenance funds for these projects in the DGS Facilities Renewal Program. Facilities renewal funds pay for major rehabilitation activities at State-owned facilities. This change was made in order to more clearly display the capital cost of MES-operated State facilities. MES operates 235 water and wastewater facilities in Maryland, of which 92 are State-owned. The remaining 143 are operated by MES under contract with a local government or corporate owner.

Performance Measures and Outputs

One of MES's goals is to reduce the number of discharge permit violations. MES's annual capital budget planning process prioritizes projects that reduce the incidence of discharge violations at MES operated facilities.

State National Pollutant Discharge Elimination System Violations

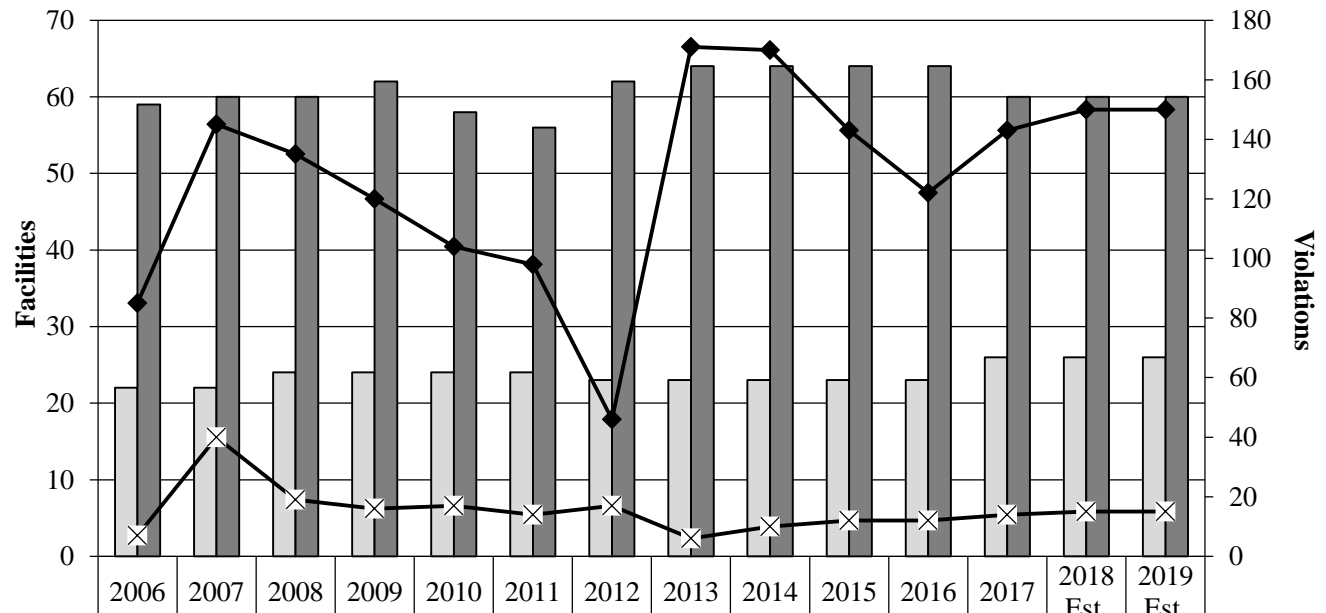
Exhibit 1 shows that MES has a greater number of local/corporate clients than State clients and that the incidence of local/corporate discharge permit violations is greater as a percentage of total overall violations. The number of local/corporate facility violations increased substantially from fiscal 2012 (46) to 2013 (171) after having declined in each of the previous five years. The increase in the number of local/corporate facility violations is attributable to two facilities that were issued multiple violations for several years. After operating essentially in continued violation for a couple of years, the client completed upgrades at one facility, and the other was closed. As a result, the incidence of

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discharge violations began to decline in fiscal 2015 (143) and again in fiscal 2016 (122). However, violations increased in fiscal 2017 and are projected to remain at a level of 150 through fiscal 2019. Of note, the compliance level is directly related to the large number of potential violations or permits and does not necessarily reflect the severity of any one violation.

Between fiscal 2006 and the fiscal 2019 estimate, State facilities have averaged 11.4% of the total violations, while accounting for 28.1% of the facilities handled by MES. MES has indicated in the past that the reason for this low percentage of violations at State facilities is MES' ability to use State funding to make improvements at State treatment facilities. In contrast, MES is dependent upon its corporate clients, including small municipalities, to fund improvements at other facilities, which they may not always have the resources to do.

**Exhibit 1
Local/Corporate and State Discharge Permit Violations
Fiscal 2006-2019 Est.**



State Facilities	22	22	24	24	24	24	23	23	23	23	23	26	26	26
Local/Corporate Facilities	59	60	60	62	58	56	62	64	64	64	64	60	60	60
Discharge Permit Violations for State Facilities	7	40	19	16	17	14	17	6	10	12	12	14	15	15
Discharge Permit Violations for Local/Corporate Facilities	85	145	135	120	104	98	46	171	170	143	122	143	150	150
Compliance Level							99.9%	99.8%	99.8%	99.8%	99.8%	99.8%	99.9%	99.9%

Source: Department of Budget and Management; Maryland Environmental Service; Governor’s Budget Books, Fiscal 2007-2016

Budget Overview

The 2018 *Capital Improvement Program* (CIP) changes how the State will fund MES projects. As shown in **Exhibit 2**, MES would start receiving special funds through an allocation of transfer tax revenue beginning in fiscal 2020, partially replacing general obligation (GO) bond funds. MES annually undertakes wastewater and drinking water projects at DNR facilities, and the change in funding patterns is intended to reflect and account MES' role in the maintenance of State Park facilities. An advantage of the revised funding plan is that it reduces MES' reliance on GO bond funds which frees up capacity within the programmed annual \$995 million GO bond limit for other State capital priorities. The disadvantage is the obvious diversion of resources away from other DNR State Park facility needs that could otherwise be undertaken were the funds distributed through the Program Open Space formula to the Natural Resources Development Fund. This comes at a time when the State is just starting a multi-year plan established in the transfer tax replacement plan (Chapter 10 of 2016) to increase the annual funding for DNR critical maintenance and natural resources development projects.

Exhibit 2
2017 and 2018 Capital Improvement Program Comparison
(\$ in Millions)

	<u>2019</u> <u>Request</u>	<u>2020</u> <u>Est.</u>	<u>2021</u> <u>Est.</u>	<u>2022</u> <u>Est.</u>	<u>2023</u> <u>Est.</u>
2018 CIP					
Special Funds	\$0.000	\$3.441	\$12.454	\$11.350	\$11.950
GO Bonds	9.590	16.512	2.913	8.821	5.894
Total	\$9.590	\$19.953	\$15.367	\$20.171	\$17.844
2017 CIP					
Special Funds	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
GO Bonds	21.229	19.890	15.360	11.250	0.000
Total	\$21.229	\$19.890	\$15.360	\$11.250	\$0.000
Difference					
Special Funds	\$0.000	\$3.441	\$12.454	\$11.350	\$11.950
GO Bonds	-11.639	-3.378	-12.447	-2.429	5.894
Total	-\$11.639	\$0.063	\$0.007	\$8.921	\$17.844

CIP: *Capital Improvement Program*

GO: general obligation

Note: The State Water and Sewer Infrastructure Improvement Fund is funded by GO bonds. No funding is reflected beyond the CIP because that is the five-year planning period used by the Administration. Estimates for programmed funding for fiscal 2023 for the 2017 CIP are outside the five-year planning period.

Source: *Capital Improvement Program*, 2017 and 2018

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Also illustrated in Exhibit 2 is the reduced level of funding in fiscal 2019 from what was programmed in the 2017 CIP; an \$11.6 million decrease. This primarily reflects the shifting by one year of three projects as follows: Victor Cullen –WWTP Upgrades (\$4,369,000), Woodstock – WWTP Upgrades (\$3,505,000), and Cheltenham Youth Center – WWTP (\$3,210,000). The overall reduction of \$2,648,000 across fiscal 2019 to 2022 is due to projects being shifted beyond fiscal 2022 or being removed from the CIP entirely due to the need to determine project scope and needs. **Appendix 1** shows changes in MES’ 2018 five-year plan relative to the agency’s 2017 plan. **Exhibit 3** reflects the overall cost changes for projects between the 2017 and 2018 CIPs.

Exhibit 3
Project Cost Estimate Differences for Fiscal 2019 Projects
2017 and 2018 CIP

<u>Subdivision</u>	<u>Title</u>	<u>2017</u>	<u>2018</u>	<u>Difference</u>
Baltimore County	Woodstock – WWTP Upgrades	\$4,077,000	\$5,576,000	\$1,499,000
Cecil	Fair Hill Natural Resources Management Area – Water Treatment Plant and Distribution System Upgrade	2,763,000	4,198,000	1,435,000
Garrett	State Well Upgrades – Backbone Mountain Youth Center	1,660,000	1,411,000	-249,000
Garrett	Swallow Falls State Park – Water and WWTP Improvements	7,700,000	7,700,000	0
Queen Anne’s	Eastern Pre-Release Unit – WWTP	4,582,000	5,463,000	881,000
Somerset	Eastern Correctional Institution – Cogeneration Plant Upgrades	4,321,000	5,144,000	823,000
Somerset	Eastern Correctional Institution – WWTP Upgrade	36,730,000	37,732,000	1,002,000
Somerset	State Water Towers – Eastern Correctional Institution Front Tank	430,000	320,000	-110,000
St. Mary’s	St. Mary’s College – Water Distribution and Treatment Facilities Improvements	636,000	1,547,000	911,000
Total		\$62,899,000	\$69,091,000	\$5,391,000

CIP: *Capital Improvement Program*

WWTP: wastewater treatment plant

Source: Maryland Environmental Service; Department of Legislative Services

Fiscal 2019 Funding and Projects

The fiscal 2019 capital budget provides \$9,590,000 in GO bonds for nine projects in six jurisdictions, including State well upgrades. Several projects span multiple years, so the 2018 session capital budget bill includes pre-authorizations for fiscal 2020 and 2021 to provide the funding authority for BPW to approve construction contracts without all of the funds authorized in fiscal 2019. The projects included in the fiscal 2019 allowance are shown in **Exhibit 4**.

Projects

Woodstock – WWTP Upgrades

The Woodstock WWTP serves the Woodstock Job Corps Training Center. The current plant is in need of replacement due to age: the steel tanks are corroding, and the sewage treatment process is outdated, occasionally causing discharge permit violations. Fiscal 2019 funding of \$216,000 completes design of the project and includes the engineering services during the construction phase.

The overall project cost has increased from \$4.1 million to \$5.6 million. Some of the cost drivers include the use of a 20% project funding contingency resulting in part from having to work in a constrained project site and project scope changes including the replacement of the plant's driveway and upgraded treatment components. The proposal replaces the existing plant with a new compact treatment facility that will fit within the limited available space and meet more stringent permit discharge requirements assumed to be in place when the current permit expires in September 2019. In addition, the project scope includes the installation of a security fence to prevent vandalism. MES has submitted an application to MDE for enhanced nutrient removal grant funding and will be required to meet enhanced nutrient removal limits if the grant is received. Due to the inaccessible location and confined nature of the plant, it may need to be shut down and a temporary mobile treatment system used during construction. If this is deemed necessary the project cost estimates are likely to increase.

Fair Hill Natural Resources Management Area – Water Treatment Plant and Distribution System Upgrades

The water treatment system at Fair Hill Natural Resources Management Area has deficiencies as follows: the water treatment plant lacks a heating and ventilation system, the water storage tank is corroded and must be drained every year or it will freeze, and the water distribution system is in poor condition and does not have an adequate amount of control/isolation valves or fire hydrants. The project scope includes the following: a new water treatment building with a laboratory area, a heating and ventilation system, and room for chemical storage; new water lines throughout the complex and fire hydrants for water distribution; and an elevated water storage tank. A portion of the \$1,000,000 in prior authorization for construction has been used to pay for a change order to the architect/engineer contract, which required additional meetings with DNR and the Maryland Stadium Authority's (MSA) architect/engineer. Fiscal 2019 funds in the amount of \$2,864,000 will be used to start construction now estimated to begin in November 2018 instead of September 2018. There is a pre-authorization of \$154,000 in GO bonds for fiscal 2020 to complete construction.

**Exhibit 4
Fiscal 2019 Project Funding**

<u>State Unit</u>	<u>Project</u>	<u>Jurisdiction</u>	<u>Est. Cost</u>	<u>Prior Approp.</u>	<u>2019 Request</u>	<u>Phase</u>	<u>Future Req.</u>
State Water Towers	Eastern Correctional Institution Front Tank	Somerset	\$320,000	\$0	\$320,000	Construction	\$0
Fair Hill Natural Resources Management Area	WTP and Distribution System Upgrade	Cecil	4,198,000	1,180,000	2,864,000	Construction	154,000
Eastern Pre-Release Unit	WWTP	Queen Anne's	5,463,000	4,450,000	132,000	Construction	881,000
Eastern Correctional Institution	Cogeneration Plant Upgrades	Somerset	5,144,000	3,563,000	115,000	Planning	1,466,000
Woodstock	WWTP Upgrades	Baltimore County	5,576,000	356,000	216,000	Planning	5,004,000
State Well Upgrades	Backbone Mountain Youth Center	Garrett	1,411,000	560,000	301,000	Construction	550,000
Swallow Falls State Park	W&WWTP Improvements	Garrett	7,700,000	0	955,000	Planning and Construction	6,745,000
Eastern Correctional Institution	WWTP Upgrade	Somerset	37,732,000	26,730,000	4,587,000	Construction	6,415,000
St. Mary's College	Water Distribution and Treatment Facilities Improvements	St. Mary's	1,547,000	0	100,000	Planning	1,447,000
Total			\$69,091,000	\$36,839,000	\$9,590,000		\$22,662,000

WTP: water treatment plant
W&WWTP: water and wastewater treatment plants
WWTP: wastewater treatment plant

Source: Department of Budget and Management Capital Budget Worksheets

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The overall project cost has increased from \$2.8 million to \$4.2 million due to the relocation of the construction site across Maryland Route 275, which will involve boring and jacking, and the need to serve additional areas of the Fair Hill Natural Resources Management Area. In addition, it is possible that there will be the need to extend larger diameter water lines in order to address the capacity needs of the proposed four-star equestrian event at the site, although to date, MSA has not alerted MES of any visitor or water demand changes, and there is some question about the status of the four-star equestrian event.

State Well Upgrades – Backbone Mountain Youth Center

Fiscal 2019 funding of \$301,000 is programmed for the construction of a new well at DJS' Backbone Mountain Youth Center. The backup well is unreliable and only provides five gallons per minute. The Backbone Mountain Youth Center needs the water for the 48-youth facility. The funds will provide for an architect/engineer to review available hydrogeological data and perform hydrogeological surveys and the installation of one complete potable water well. The architect/engineer cost estimate is higher than MES's cost estimate because of the difficult geology (rock formation), the very stringent erosion/sediment control requirements; the depth of the water table, requiring deeper drilling; and the fact that the proposed well location may be further from the water treatment plant to which the new well will need to be connected.

Swallow Falls State Park – Water and WWTP Improvements

The Swallow Falls State Park water and WWTP improvements project receives initial funding in the amount of \$955,000 in the fiscal 2019 capital budget comprised of \$370,000 for planning and \$585,000 for construction. This project scope includes improvements to the water distribution system and water treatment plant, which were last upgraded in the late 1980s/early 1990s. MES is using a design-build methodology because it provides for rapid replacement of the existing pipes, which are old and riddled with both leaks and tuberculation, and facilitates an expedited plan to address a number of safety issues. The need for the proposed upgrade was identified by MES in 2008 but was deferred to allow for the funding of higher priority projects. One component of the project is the 3.5 acre lagoon, which holds the discharge from the WWTP from May to November. Whether the lagoon will be decommissioned and replaced with a new system depends on the permit limits issued by MDE, but MES advises that it is likely that the permit limits can be met with commercially available technology. The program plan has not been approved by DBM, but MES anticipates that DBM will approve the program plan before the start of the fiscal year.

Eastern Pre-Release Unit – WWTP

The Eastern Pre-Release Unit WWTP is not capable of meeting its discharge permit limits, issued in November 2013. Construction components include decommissioning the existing lagoon; adding a new facility consisting of an equalization tank, wastewater screens, a new treatment process, and a new ultraviolet disinfection system; and expanding the treatment capacity from 20,000 gallons to 40,000 gallons per day. MES was required to submit a Wastewater Capacity Management Plan to MDE because flow at the WWTP has exceeded 80% of its capacity for more than three years. Subsequently, MDE required the proposed expansion of the plant to be included in the Queen Anne’s County Water and Sewer Master Plan. The upgrade of the capacity was approved by the county commissioners on November 22, 2016, and the county submitted its amended Water and Sewer Master Plan to MDE in December 2016. The plan was approved in March 2017. Construction, therefore, could not start in February 2017 as originally anticipated. The fiscal 2019 funding of \$132,000 is planned to be used to construct the paved access road to the facility. There is a pre-authorization of \$881,000 for fiscal 2020 in order to complete the decommissioning of the lagoon.

Eastern Correctional Institution – Cogeneration Plant Upgrades

The upgrade to cogeneration is necessitated by the wear and tear it has experienced and the frequent power lapses because the plant is only able to generate 78% of the Eastern Correctional Institution’s (ECI) electricity needs. The project’s four task cost was reduced from \$21,345,000 to \$4,321,000 in last year’s budget submission due to the elimination of a third boiler, three of the four planned boiler feed pump replacements, and other components. Since last year, the project cost estimate has increased to \$5,144,000 due to the cost of the utility yard. Originally, the estimated costs for the utility yard were \$200,000 for design of replacements for the existing oil-cooled circuit breakers and \$800,000 for installation of a new, redundant primary transformer for a total of \$1,000,000. After consulting with the architect/engineer, MES and the Department of Public Safety and Correctional Services decided to replace the substation to provide a more stable and redundant energy source for ECI. The award for construction of the substation was \$2,617,450 and thus reflects the majority of the cost increase for the project.

The fiscal 2019 authorization of \$115,000 provides for the design of upgrades to the truck scale and stormwater facilities, combustion air control and air flow distribution, and a fire suppression and lifting system. There is a pre-authorization of \$1,193,000 for fiscal 2020 and an additional \$273,000 pre-authorized for fiscal 2021 in order to implement the design upgrades tasked in fiscal 2019 and to complete the remaining project tasks, which include valve work, boiler insulation and repair/replace condensate tank, retube dump condenser, pressure-reducing valve control stations, and retube the high-temperature hot-water converter.

MES issued a request for information on November 20, 2017, to determine industry interest in developing a natural gas pipeline to service the lower Eastern Shore along Route 13 to the ECI cogeneration facility in Westover. **The Department of Legislative Services recommends that MES comment on how the cogeneration plant fits into a possible future of natural gas being made available to ECI.**

ECI – WWTP Upgrade

Funding is needed for the ECI – WWTP upgrade project in order to meet a discharge permit issued on March 1, 2012, that became effective on January 1, 2018. The decision was made to reduce the proposed expansion from 1.14 million gallons per day to 0.9 million gallons per day, based on the lack of use by the Somerset County Sanitary District. The water treatment plant is the source of the reverse osmosis reject water that has to be treated before it can be discharged. The overall project has been divided into four phases. To date, the project has received funding as follows: \$269,000 in fiscal 2008, \$6,961,000 in fiscal 2009, \$1,514,000 in fiscal 2013, \$6,271,000 in fiscal 2016, \$8,943,000 in fiscal 2017, and \$2,772,000 in fiscal 2018. The overall project cost has increased from \$36.7 million to \$37.7 million.

Fiscal 2019 funding of \$4,587,000, which was pre-authorized in the fiscal 2018 capital budget bill, includes funds to construct the third phase of the project. The third phase includes construction of a new membrane bioreactor WWTP, construction of postmembrane bioreactor denitrification/effluent filtration phosphorus removal, the conversion of the existing Carrousel system with membrane bioreactor refurbishment of the ultraviolet disinfection system, and the upgrade of laboratory and office spaces. MES hired a value-engineering contractor to help reduce the project's cost. As part of this process, the decision was made to procure a construction manager-at-risk in order to minimize cost increases. American Contracting and Environmental Services, Inc. was selected to be construction manager-at-risk, and an agenda item for the contract award will be submitted for BPW approval in March 2018, although initially, procurement was scheduled in November 2017, but only one proposal was submitted.

MES and MDE will negotiate a consent decree to address the performance issues at the WWTP. The two agencies have agreed that a new construction schedule should be prepared and submitted to MDE as soon as the construction manager-at-risk is awarded the contract. MES intends to submit a construction schedule to MDE in April 2018. The plan is to finish Phase 4, which addresses the solids stream of the facility by December 2023. The timing of completion will not impact compliance with the effluent discharge, but when Phase 4 is completed, it will help reduce the cost of sludge treatment and disposal.

State Water Towers – ECI Front Tank

The State Water Towers – ECI Front Tank project involves the reconditioning of the front tank: strip the existing coating, provide a new protective coating, and install Occupational Safety and Health Administration-compliant features – safety cables, safety rails, padlocks on the roof hatch, an extra 24-inch diameter to access the hatch, and an anti-climb guard on the ground-to-roof access ladder. The repairs are intended to extend the water storage tank's life another 15 to 20 years. The fiscal 2019 authorization of \$320,000 would provide for construction of the project.

St. Mary’s College of Maryland – Water Distribution and Treatment Facilities Improvements

The water distribution and treatment facilities improvements project at St. Mary’s College of Maryland (SMCM) will address ongoing concerns about the capacity of the system. These concerns were first identified in a July 2000 assessment by Entech Engineering. Funding for improvements to the sewer collection system and portions of the water distribution system was provided in fiscal 2005 to address the concerns in the assessment including the construction of looped areas of the distribution system to increase system reliability. MES subsequently completed 80% of the design to handle the increased demand that had occurred on the campus but was told to put the project on hold while SMCM finished design documents to allow for electrical work and the siting of new buildings. In September 2017, MES met with SMCM about addressing the demand projections for the new construction proposed on the campus, which informs the fiscal 2019 funding. The fiscal 2019 funding of \$100,000 would be used to begin design of improvements to the water distribution and treatment facilities, including the looping of the water distribution system, installation of a telemetry control system on well number 5, and the replacement of the existing chlorine gas-based disinfection systems on well numbers 1 and 5 with hypochlorite-based disinfection systems. The revised program is awaiting approval.

Updates

1. Department of Juvenile Services New Female Detention Center – Water and Sewer Utilities Project Delayed

DJS is constructing a new detention center on the site of the former Thomas O’Farrell Youth Center in Carroll County. New water and sewer utilities are needed because the previous service deteriorated to the point that it needed to be abandoned. The project design was evaluated by Brudis and Associates, which reflected five scenarios with a preferred alternative of running water and sewer lines along a roadway to the nearest water and sewer connections. Initial estimates put the cost at \$2.5 million, but subsequent updated estimates performed by George, Miles and Buhr, LLC put the cost at \$4.0 million. Last year at this time, MES advised that the design was 95% complete, but there were complications with the utility easements needed for the project, and negotiations to obtain easements were taking longer than expected. In recognition of the delay, the General Assembly reduced the \$4,038,000 allowance by \$1,600,000 and pre-authorized \$1,600,000 for fiscal 2019. The \$1,600,000 authorization is not included in the fiscal 2019 capital budget because the funding for construction of the raw sewage pump station is included in the new detention center construction project instead of the MES-funded water and sewer project.

The delay in the procurement of the utility easements is ongoing. A meeting between Carroll County officials, DGS, and the property owners is planned for March 2018 in order to resolve the issues surrounding the easements. DGS would then need up to an additional six months for the easement acquisition process, including appraisal ordering, review, negotiation of terms, document preparation, and BPW approval. The goal is to complete the process by September 2018.

Initial program evaluation included the consideration of several alternatives including the chosen option of running water and sewer lines to the new facility. At this point, reconsideration of the other alternatives examined would prove even more time consuming and costly. Moreover, permits would need to be provided by MDE, but the department has already indicated that it will not grant any nutrient allocation for a WWTP discharge from the site.

2. Coordination with the Maryland Department of the Environment Going Well

MES's work on water and WWTPs is regulated by permits issued by MDE. Therefore, a close working relationship with MDE is essential to MES' mission. While not always true in the past, MES notes that the permitting staff at MDE have been responsive to its requests for planning limits as MES starts the design of upgrades to its WWTPs.

In addition, MES notes that it continues to work with MDE on Bay Restoration Fund funding for upgrading WWTPs to enhanced nutrient removal technology. However, MES's projects are held to the same criteria as every other WWTP, which in many cases is difficult to meet since MES operates WWTPs that are relatively small.

3. Master Plan Updated

In February 2016, MES provided DBM with an update to its 2014 facilities master plan. DBM has completed its review and is awaiting MES response to questions and comments before finalization and approval of the plan can take place.

Operating Budget Impact Statement

Consolidated Administrative Expenses – All Programs (\$ in Millions)

	FY 2017 Actual	FY 2018 Estimated	FY 2019 Estimated
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Sources:			
Special Funds			
DNR – Maryland Park Service	\$0.177	\$0.200	\$0.235
<i>Subtotal – Special Funds</i>	<i>\$0.177</i>	<i>\$0.200</i>	<i>\$0.235</i>
General Funds (Other State Reimbursable Projects)	0.625	0.708	0.806
Total Funds	\$0.802	\$0.908	\$1.041

Uses:			
Direct Expenses	\$0.769	\$0.889	\$1.019
Indirect Expenses (Legal, Marketing, Asset Management)	0.033	\$0.019	\$0.022
Total Direct and Indirect Expenses	\$0.802	\$1.041	\$1.041

DNR: Department of Natural Resources

MES' administrative expenses are divided into (1) work on capital improvement projects that have been funded; and (2) work developing capital programs and budgets, including master plans. The main reason for the increase in administrative expenses between fiscal 2017 and 2018 is increased labor for work on capital improvement projects. Total direct and indirect expenses for fiscal 2017 have increased from an estimated \$0.746 million to an actual of \$0.802 million.

**Executive’s Operating Budget Impact Statement – State-owned Projects
(\$ in Millions)**

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Woodstock – Wastewater Treatment Plant Upgrades					
Estimated Operating Cost	\$0.000	\$0.010	\$0.010	\$0.010	\$0.010
Estimated Staffing	0.00	0.00	0.00	0.00	0.00
Explanation: Additional operating costs include fuel and utilities increases due to an increase in power use (\$5,000), supplies and materials – including spare parts (\$3,500), and the requirement for a new communication system (\$1,000).					
Eastern Pre-Release – Wastewater Treatment Plant					
Estimated Operating Cost	\$0.000	\$0.010	\$0.010	\$0.010	\$0.010
Estimated Staffing	0.00	0.00	0.00	0.00	0.00
Explanation: Additional operating costs include increased power use (\$5,000 to \$5,300 over the time period), use of more chemicals (\$4,000), and a new communication system that supports the supervisory control and data acquisition control system architecture (\$1,000).					
Eastern Correctional Institution – Wastewater Treatment Plant Upgrade					
Estimated Operating Cost	\$0.000	\$0.000	\$0.000	\$0.000	-\$0.010
Estimated Staffing	0.00	0.00	0.00	0.00	0.00
Explanation: The operating impact statement reflects offsetting costs and savings for fiscal 2021 to 2023. For fiscal 2021, an increase of \$5,000 for chemicals for membrane bioreactor cleaning and biosolids stabilization is completely offset by \$5,000 in savings for sludge disposal. For fiscal 2022, there is a net \$150 cost increase due to the cost for the chemicals (\$5,150) exceeding the savings for sludge disposal (\$5,000). For fiscal 2023, the sludge disposal savings increase to \$15,400, which completely offsets the \$5,150 cost for chemicals and thus, there is \$10,250 in savings.					

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	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Total Operating Impact					
Estimated Operating Cost	\$0.000	\$0.020	\$0.020	\$0.020	\$0.010
Estimated Staffing	0.00	0.00	0.00	0.00	0.00

Summary of Other Projects in the Capital Improvement Program

Projects Deferred in Fiscal 2019

As shown in **Exhibit 5**, the Cheltenham Youth Center – WWTP project is shifted out in the 2018 CIP. In the fiscal 2018 capital budget bill, \$3,210,000 was pre-authorized for fiscal 2019. This funding is not included in the fiscal 2019 capital budget bill. MES notes that construction of the Cheltenham WWTP upgrade is expected to start in January 2019 and end in July 2020. Therefore, the rest of the construction funding will not be needed until fiscal 2020.

Exhibit 5 Projects Deferred Fiscal 2019

<u>Project</u>	<u>Description</u>	<u>Reason for Deferral</u>
Cheltenham Youth Center – WWTP	\$3,210,000 was pre-authorized for fiscal 2019 but is not included in the fiscal 2019 capital budget bill.	Construction of the Cheltenham WWTP upgrade is expected to start in January 2019 and end in July 2020. Therefore, the rest of the construction funding will not be needed until fiscal 2020.

WWTP: wastewater treatment plants

Source: Department of Budget and Management, 2018 *Capital Improvement Program*

Pre-authorizations and De-authorizations

The fiscal 2019 capital budget bill includes the pre-authorization of \$2,228,000 for fiscal 2020 and \$273,000 for fiscal 2021, as reflected in **Exhibit 6**.

Exhibit 6 Pre-authorizations Fiscal 2020-2023

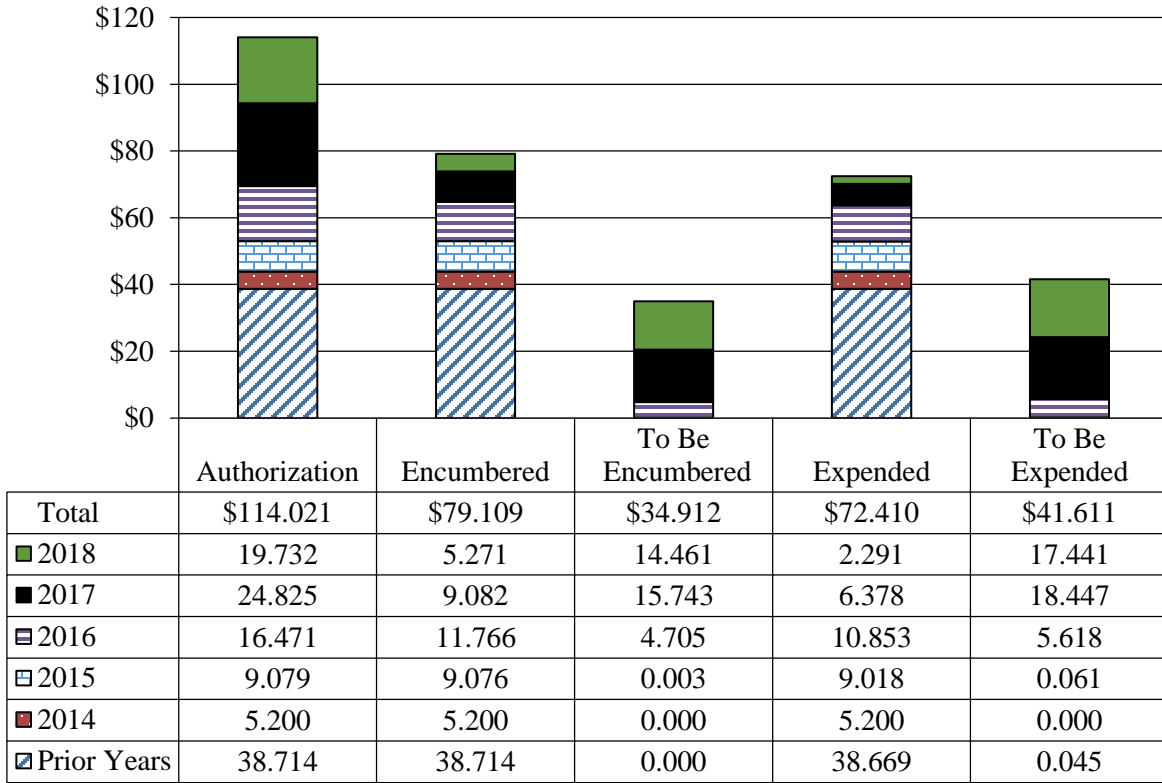
<u>Project</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>Reason</u>
Fair Hill Natural Resources Management Area – Water Treatment Plant and Distribution System Upgrade	\$154,000	\$0	\$0	\$0	Allow for split funding of construction over fiscal 2019 and 2020.
Eastern Pre-Release Unit – Wastewater Treatment Plant	881,000	0	0	0	Allow for split funding of construction over fiscal 2019 and 2020.
Eastern Correctional Institution – Cogeneration Plant Upgrades	1,193,000	273,000	0	0	Allow for split funding of construction over fiscal 2019, 2020, and 2021.
Total	\$2,228,000	\$273,000	\$0	\$0	

Source: Department of Budget and Management, 2018 *Capital Improvement Program*

Encumbrances and Expenditures

The MES encumbrance and expenditure history for the State Water and Sewer Infrastructure Improvement Fund is shown in **Exhibit 7**. Overall, \$114.0 million in GO bonds have been authorized. Of this amount, MES has encumbered \$79.1 million; \$34.9 million remains to be encumbered. The majority of the funding remaining to be encumbered was authorized in fiscal 2017 and 2018.

Exhibit 7
Infrastructure Improvement Fund Encumbrances and Expenditures
Program Inception through February 2018
(\$ in Millions)



Note: No funding was provided in either fiscal 2011 or 2012.

Source: Maryland Environmental Service

Fiscal 2018 Project Status

MES’s plan is to encumber \$40,852,801 in fiscal 2018, which is substantially more than the maximum of \$13,572,369 encumbered over the last five fiscal years. The current encumbrance status of fiscal 2018 funding is shown in **Exhibit 8**. MES’ ability to encumber this amount of funding relies on its estimates on the progress for several large projects, which appears to reflect that the funding for these large projects will be mostly encumbered in fiscal 2019.

**Exhibit 8
Status of Encumbering Project Funding
Fiscal 2018**

<u>Jurisdiction</u>	<u>State Unit</u>	<u>Project</u>	<u>Est. Cost</u>	<u>2018 (Planned)</u>	<u>Current Activity</u>	<u>Status</u>
Allegany	Rocky Gap State Park	WWTP Improvements	\$5,414,000	\$900,000	Construction	Construction is 90% complete.
Anne Arundel	State Water Tower	Crownsville Front Tank	430,000	430,000	Planning	Contract for rehabilitation work approved by BPW on February 21, 2018.
Baltimore County	Camp Fretterd	W&WWTP and Water Distribution System Upgrades	2,998,000	1,798,000	Planning and Construction	Construction of water system 80% complete and WW system 5% complete.
Carroll	Freedom	WWTP Upgrade	3,545,000	367,592	Construction	Construction 95% complete.
Carroll	New DJS Female Detention Center	Water and Sewer Utilities	4,538,000	2,482,000	Planning and Construction	Design 95% complete; waiting for DGS to obtain easements.
Cecil	Fair Hill Natural Resources Management Area	WTP and Distribution System Upgrade	3,644,000	1,000,000	Planning	Progress of design was slowed by scope revisions made by MSA and DNR, which required changes to design of the water storage and distribution systems. Design is approximately 85% complete.
Charles	Southern Maryland Pre-Release Unit	WWTP Upgrade	4,198,000	238,673	Construction	Construction completed.
Frederick	Cunningham Falls State Park	WW Collection and Water Distribution System	1,209,800	211,800	Construction	Construction completed.
Frederick	Cunningham Falls State Park	WTP Upgrade	3,988,730	1,095,000	Construction	Construction 80% complete; water plant should start up in March.

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<u>Jurisdiction</u>	<u>State Unit</u>	<u>Project</u>	<u>Est. Cost</u>	<u>2018 (Planned)</u>	<u>Current Activity</u>	<u>Status</u>
Garrett	State Well Upgrades	Backbone Mountain Youth Center	1,660,000	225,000	Construction	Design services being procured.
Garrett	State Well Upgrades	Savage Mountain Youth Center	1,660,000	285,000	Planning and Construction	Bid prices for Savage Mountain came in higher than estimated. Project being revised and rebid.
Prince George's	Cheltenham Youth Center	WWTP	8,315,000	4,705,000	Planning and Construction	Awaiting MDE determination on eligibility of WWTP for ENR grant, which will dictate permit requirements. Design contract for sewer collection system improvements approved by BPW on February 21, 2018.
Queen Anne's	Eastern Pre-Release Unit	WWTP Upgrade	4,582,000	4,169,000	Planning and Construction	Design of WWTP completed; construction permits from MDE pending. The access road and WWTP to be bid as one project upon receipt of permits.
Somerset	Eastern Correctional Institution	Cogeneration Plant Upgrade	5,144,000	744,000	Construction	Construction of switch gear 95% complete; transformer yard 75% complete, new boiler feed pumps installed, and other proposed improvements (valves, bucket elevators) in design.
Somerset	Eastern Correctional Institution	WWTP Upgrade	37,732,000	17,700,000	Planning and Construction	Selection of construction manager-at-risk completed. Pre-construction phase award on March 7, 2018 BPW agenda for approval.
St. Mary's	Charlotte Hall Veterans Home	WWTP Improvements	4,100,000	531,186	Planning and Construction	Construction of WWTP completed. Upgrade of spray field, rapid infiltration basins, and demolition of Biolac basin to be advertised for construction in March 2018.

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<u>Jurisdiction</u>	<u>State Unit</u>	<u>Project</u>	<u>Est. Cost</u>	<u>2018 (Planned)</u>	<u>Current Activity</u>	<u>Status</u>
Washington	Maryland Correctional Institution – Hagerstown	WWTP Upgrade	10,789,900	3,700,000	Planning and Construction	Construction 90% complete.
Washington	State Water Storage	Greenbrier State Park Tank	339,000	270,550	Construction	Construction completed.
Total			\$104,287,430	\$40,852,801		

BPW: Board of Public Works
DGS: Department of General Services
DJS: Department of Juvenile Services
DNR: Department of Natural Resources
ENR: enhanced nutrient removal
MDE: Maryland Department of the Environment
MSA: Maryland Stadium Authority
WTP: water treatment plant
WW: wastewater
W&WWTP: water and wastewater treatment plants
WWTP: wastewater treatment plant

Source: Department of Budget and Management; Maryland Environmental Service

- ***ECI – WWTP Upgrade (\$17,700,000):*** The construction manager-at-risk contract will be approved in March 2018, pre-construction efforts will take six months, and then the construction contract will be awarded shortly thereafter. This funding timeline appears to have construction occurring in fiscal 2019.
- ***Eastern Pre-Release Unit – WWTP Upgrade (\$4,169,000):*** The construction of the WWTP will be advertised in March 2018 and then awarded by the start of fiscal 2019.
- ***New DJS Female Detention Center – Water and Sewer Utilities (\$2,482,000):*** The water and sewer design has been 95% complete for over a year and is waiting for the easements to be finalized so the documents can be finalized, permits obtained, and advertising for construction completed. The status of this project is discussed as an update in this analysis.
- ***Cheltenham Youth Center – WWTP (\$4,705,000):*** Additional testing and flow analysis needed to be performed because the new facility is producing much reduced flows. The design is now underway and should be ready for construction award in the first half of fiscal 2019.

GO Bond Recommended Actions

1. Approve the \$9,590,000 general obligation bond authorization for the State Water and Sewer Infrastructure Improvement Fund to provide funds to design, construct, and equip water and wastewater facility improvements for State institutions.

2. Approve the pre-authorization of \$2,228,000 in general obligation bonds for the State Water and Sewer Infrastructure Improvement Fund funding in fiscal 2020 for Eastern Correctional Institution – Cogeneration Plant Upgrades (\$1,193,000), Eastern Pre-Release Unit – Wastewater Treatment Plant (\$881,000), and Fair Hill Natural Resources Management Area – Water Treatment Plant and Distribution System Upgrade (\$154,000).

3. Approve the pre-authorization of \$273,000 in general obligation bonds for the fiscal 2021 funding of the State Water and Sewer Infrastructure Improvement Fund for the Eastern Correctional Institution – Cogeneration Plant Upgrades project.

Appendix 1
Project Cost Estimate and Timing Changes
2017 and 2018 Capital Improvement Program Change for Fiscal 2019-2022

<u>Subdivision</u>	<u>Project</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>Total</u>	<u>Explanation</u>
Baltimore County	Woodstock – WWTP Upgrades	-\$3,505,000	\$5,004,000	\$0	\$0	\$1,499,000	The increased cost is a result of the constrained site conditions that limit what can be fit within the existing footprint and allow room for necessary upgrades. It also anticipates future nutrient limits due to the sensitive nature of the Tier II stream, which justifies implementation of ENR. Application has been made to MDE for grant funding.
Baltimore County	Gunpowder (Maryland National Guard) – WTP	0	-150,000	300,000	0	150,000	The draft CIP is under review and will be submitted to DBM for the out-years.
Cecil	Fair Hill Natural Resources Management Area – WTP and Distribution System Upgrade	1,281,000	154,000	0	0	1,435,000	The cost increase is due to planned major equestrian events at Fair Hill, which required more robust water facilities, a larger elevated storage tank, and relocation of construction site across State Highway 275, which will involve boring and jacking.

<u>Subdivision</u>	<u>Project</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>Total</u>	<u>Explanation</u>
Cecil	Elk Neck State Park – WWTP Upgrades	-400,000	-1,900,000	300,000	2,000,000	0	MES has applied to MDE for a grant. At this time, funding has been provided by MDE for preparation of the preliminary engineering report. This report should provide estimated costs for design and construction of the new facility.
Frederick	Victor Cullen – WWTP Upgrades	-4,369,000	4,352,000	0	0	-17,000	Revised cost estimates reflect use of some of the existing facilities, resulting in a decrease.
Frederick	Cunningham Falls – Collection System and Septic System Upgrade	0	0	0	-100,000	-100,000	This project has been completed. MES will be utilizing ground penetrating radar to locate manholes along State Route 77; this sewer line belongs to the State, but it is unable to assess the condition until the State can locate manholes. MES is coordinating with the State Highway Administration so that these manholes can be raised during the upgrade of the road.
Garrett	Swallow Falls State Park – WWTP and WTP	255,000	-4,709,000	4,454,000	0	0	The request has been deferred until MES hears from MDE on its application for an ENR grant.

<u>Subdivision</u>	<u>Project</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>Total</u>	<u>Explanation</u>
Garrett	New Germany State Park – WWTP and Wastewater Collection System	0	-300,000	-1,200,000	0	-1,500,000	This project is being coordinated with DNR to refine scope and funding needs.
Harford	Susquehanna State Park Stepping Stone – WTP	0	0	0	-200,000	-200,000	This project has been completed by DNR.
Howard	University of Maryland Agriculture Center – WTP and Water Distribution	0	-800,000	800,000	0	0	n/a.
Prince George’s	Cheltenham Youth Center – WWTP	-3,210,000	3,005,000	0	0	-205,000	Design cost less than originally anticipated. The balance of the design funds will be used toward construction costs.
Queen Anne’s	Eastern Pre-Release Unit – WWTP	0	881,000	0	0	881,000	Earlier planning estimates were lower than that of the A/E. The A/E’s cost estimate included a 20% contingency, which is the primary cause of the increase. After the start of design, it became apparent that construction of the new WWTP would need to be constructed prior to the decommissioning of the lagoon; as a result, the A/E escalated the contingency and increased the estimated project cost. However, it is still MES’ intent to procure all the work as one contract.

<u>Subdivision</u>	<u>Project</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>Total</u>	<u>Explanation</u>
Somerset	Eastern Correctional Institution – Cogeneration Plant Upgrades	-643,000	1,193,000	273,000	0	823,000	The need for this additional funding was due to increases in the total cost of the utility yard project, which required the use of fiscal 2017 and 2018 funds. This required moving tasks scheduled for fiscal 2017 and 2018 to 2020 to be implemented with the additional funding.
Somerset	Eastern Correctional Institution – WWTP Upgrade	-413,000	-5,000,000	500,000	4,421,000	-492,000	This amount has been moved to fiscal 2023.
St. Mary's	St. Mary's College – Water Distribution System and WTP	-536,000	1,447,000	0	0	911,000	This cost difference is a result of the proposed looping of the water distribution system with new laterals to new buildings to provide adequate flow, including fire suppression.
St. Mary's	Charlotte Hall Veterans Administration Home – WTP	0	-400,000	-1,600,000	500,000	-1,500,000	The CIP for this project will be developed after completion of the ongoing water management plan by the institution.
St. Mary's	Point Lookout State Park – WTP, Water Storage System, Pump Station, Distribution System	0	-400,000	-1,600,000	0	-2,000,000	This project is being coordinated with DNR to refine scope and funding needs.

<u>Subdivision</u>	<u>Project</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>Total</u>	<u>Explanation</u>
Washington	Albert Powell – New Equalization Tank	-150,000	-1,350,000	1,500,000	0	0	This project has been deferred to fiscal 2020 for design and fiscal 2021 for construction.
Washington	Greenbrier State Park – Sewer System Rehabilitation, WWTP	0	-200,000	-1,800,000	2,000,000	0	Project has been moved to fiscal 2021 and 2022.
Wicomico	Poplar Hill WWTP	0	-350,000	-1,650,000	250,000	-1,750,000	Project has been moved to the out-years until the fate of the facility is determined. It is currently closed.
Statewide	State Water Towers	0	-230,000	0	50,000	-180,000	Work on the tank at Elk Neck State Park is deferred to the out-years.
Statewide	State Well Upgrades	51,000	-30,000	-270,000	0	-249,000	MES and DBM agreed on incorporating State wells into water treatment plant upgrade projects. This amount will not be requested for a well at Washington Monument State Park as originally scheduled, but will be added to the request for the water system improvements.
	Adjustment (for Fair Hill in fiscal 2020)	0	-154,000	0	0	-154,000	
Total		-\$11,639,000	\$63,000	\$7,000	\$8,921,000	-\$2,648,000	

A/E: architect/engineer
CIP: *Capital Improvement Program*
DBM: Department of Budget and Management
DNR: Department of Natural Resources
ENR: enhanced nutrient removal
MDE: Maryland Department of the Environment
MES: Maryland Environmental Service
WTP: water treatment plant
WWTP: wastewater treatment plant

Source: Maryland Environmental Service