9509 – STORMWATER PROJECTS

FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM

FISCAL YEARS 2017-2021

9509 STORMWATER PROJECTS - 01

STORMWATER IMPROVEMENTS PER MASTER PLAN

Total Project Cost	Outside Funding Source	City Share	Estimated Total Capital Costs						
			Prior Years	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Future
$0	$0	$0	$92,836	$0	$0	$0	$150,000	$150,000	$150,000

Project Description:
The 2012 Stormwater Master Plan update identified numerous stormwater-related projects that involve streams and public infrastructure. The City aims to address these issues over time as funding allows and using the master plan benefit rating as a guide. The scope of work for some of the projects listed in the master plan is greater than what this program can afford at the current funding level. These projects have been treated as separate items in the CIP, but funding for such projects typically replaces the annual funding in this account.

Existing Condition:
Issues under consideration typically exhibit erosion, deteriorated infrastructure, and/or flooding.

Justification: *Condition of Existing Facility; Public Safety; Citizen Demand, Coordination*
The Stormwater Committee reviewed the issues in the Stormwater Master Plan and agreed that the City's use of public funds should be limited to projects to resolve issues that involve public infrastructure and/or public conveyances of water. Such issues may never be adequately or correctly resolved without the City's initiative, funding and oversight.

Operating Budget Impact:
None.

Comments:
Prior years' funding includes $92,836 that was allocated in FY2014 toward the design of the dam replacement project.

*Funding for FY2017-FY2019 ($150,000/year) will be used to offset the expense of the Golf Course Dam Stabilization and Siltation Removal project (FY2017), the Middlebrook Culvert Improvements (FY2017), the Emerson Culvert and Headwall Replacement (FY2017), the Middlebrook Culvert Replacement Project (FY2018), and the Golf Course Siltation Control and Removal (FY2019).

Expenditure Type:		
Planning, Design & Engineering	$	50,000
Land Acquisition	$	
Construction	$	100,000
Equipment	$	
Other	$	
Annual Total (FY20 - FY21)*:	**$**	**150,000**

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MIDDLEBROOK DRIVE STORMWATER IMPROVEMENTS

Total Project Cost	Outside Funding Source	City Share	Estimated Total Capital Costs						
			Prior Years	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Future
$291,075	$0	$291,075	$36,075	$5,000	$250,000	$0	$0	$0	$0

Project Description:
This project involves replacing a deteriorated and failing culvert pipe beneath Middlebrook Drive and making associated repairs to the impacted area of the roadway and the stream. The project will include decorative elements, similar to those included in the Chilton Lane culvert replacement project in 2013. Easements will be required from the adjacent properties in order to complete the project. Trees and bushes will be included in the restoration of disturbed area to replace some of the creekside vegetation that will be removed.

Existing Condition:
The culvert pipe is both undersized and failing, with increasing impact to the pavement of Middlebrook Drive above. In a heavy rain event, the creek flow exceeds the culvert capacity, and the creek overtops the street. The voids around the culvert were addressed in 2014 following a partial collapse of the roadway, but this repair is expected to last only a few years.

Justification: *Public Safety; Condition of Existing Facility; Beautification; Coordination*
Analysis of the stream found that the existing culvert pipe does not meet current size requirements, so lining the pipe or in-kind replacement would not be permissible. The Stormwater Committee identified the replacement of this culvert as a high priority, because the failure of this culvert would limit access to or isolate several homes along Middlebrook Drive. This issue rated highest among reviewed stormwater issues with 175 points, and the project has a benefit-to-cost ratio is 0.6, according to the metrics used in the Stormwater Master Plan.

Operating Budget Impact:
City staff has repeatedly patched the roadway pavement above this culvert, with a significant repair in 2014. This project will eliminate this problem and future needs for such maintenance.

Comments:
The design for this project was completed in FY2013. This project was originally scheduled to be constructed in FY2014; however, the Metropolitan St. Louis Sewer District (MSD) is planning a sanitary sewer replacement for this area in 2016. The City's project will be scheduled for 2017 (FY2018) to allow adequate time for MSD to complete its project. This project will replace the FY2018 Stormwater Master Plan project.

Expenditure Type:		
Planning, Design & Engineering	$	10,000
Land Acquisition	$	
Construction	$	250,000
Equipment	$	
Other (Design FY2013)	$	31,075
Total	**$**	**291,075**

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GOLF COURSE DAM STABILIZATION & POND SILTATION REMOVAL/CONTROL (PHASE 1 & 2)

Total Project Cost	Outside Funding Source	City Share	Estimated Total Capital Costs (Phases 1, 2 and Future)						
			Prior Years	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Future
$765,874	$0	$765,874	$20,874	$225,000	$70,000	$450,000	$0	$0	$1,200,000

Phase 1 Project Description:
Phase 1 involves the construction of an earthen dam along the face of the existing dam to stop current leaks and stabilize the situation on the pond. A stabilization repair is recommended because it will remove the emergency and give the City time to plan the future stormwater improvements at the golf course. The project will also remove the built-up silt in the lake adjacent to the dam and will introduce a bubbler system into the lake to promote a healthier lake system.

Existing Condition:
A hole in the dam became evident in June 2013. This hole has been temporarily stabilized, but the dam continues to leak, and new leaks have formed along the west side of the channel. The water level in the southern lake (adjacent to the dam) has been lowered to reduce the exposure of the patched area to the lake. Prior to being drained, the southern lake had accumulated too much silt for the fountain to function properly.

Justification: *Condition of Existing Facility; Beautification, Citizen Demand, Coordination*
The proposed repair has a high likelihood of stopping the leaks in the dam, which have multiplied since 2013. By stopping the leaks and the resulting erosion, this repair will also greatly reduce the risk of dam failure. This project was listed as a high priority of the Stormwater Committee.

Operating Budget Impact:
Improvements to the dam will reduce costs associated with ongoing temporary repairs and with removing algae from the southern pond.

Comments:
$92,836 was allocated from the FY2014 and FY2015 Stormwater Master Plan Projects fund for design plans for the replacement of the dam and for removing the silt from the lake. This design will serve as the basis for the stabilization repair. An additional amount of $5,874 was spent in FY2015 to evaluate ways to stabilize the dam, another $15,000 will be spent in FY2016 to prepare plans for the construction of this project in the fall of 2016, and $10,000 is anticipated for inspection of the dam construction. ***Continued – Phase 2 next page…***

Phase 1 Expenditure Type:		
Planning & Design (FY15-17)	$	30,874
Land Acquisition	$	
Construction (FY2017)	$	215,000
Equipment	$	
Other	$	
Total Phase 1 (FY2015-2017)	**$**	**245,874**

GOLF COURSE DAM STABILIZATION & POND SILTATION REMOVAL/CONTROL (PHASES 1 & 2) *CONTINUED…*

Total Project Cost	Outside Funding Source	City Share	Estimated Total Capital Costs (Phases 1, 2 and Future)						
			Prior Years	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Future
$765,874	$0	$765,874	$20,874	$225,000	$70,000	$450,000	$0	$0	$1,200,000

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Phase 2 Project Description:
Phase 2 involves design and construction for the removal of existing silt from the northern-most lake at the Creve Coeur Golf Course, repairs to the stone wall lining the lake, and for a built-in system to capture future silt so that it can be more easily maintained. This system could be the conversion of the north lake into a forebay, the introduction of a mechanical silt/water separator, or some other appropriate means.

Existing Condition:
All of the drainage from the Creve Coeur Executive Office Park flows through the lakes at the Creve Coeur Golf Course. Silt and other debris from this drainage area gradually deposits in the golf course lakes. The lakes are currently becoming too shallow to be considered healthy ponds. The result is a series of lakes with green algae during the summer when the course is at its peak use.

Justification: *Condition of Existing Facility; Beautification*
Removal of silt from the lakes is disruptive and damaging to the golf course and is expensive to undertake. Providing a more convenient location for the silt to collect will make it easier to remove and will help keep the lakes deeper and healthier.

Operating Budget Impact:
Controlling siltation through regular maintenance will be expensive, perhaps as much as $10,000 per year. The alternative to this annual cost would be a silt-removal project every 10-20 years that would cost at least $100,000 per lake.

Comments:
Additional improvements not included in the five-year Capital Improvement Plan have been identified and are included in Future Projects for improvements to lakes and drainage channels at the Creve Coeur Golf Course (see specific project description for details).

Phase 2 Expenditure Type:		
Planning & Design (FY2018)	$	70,000
Land Acquisition	$	
Construction (FY2019)	$	450,000
Equipment	$	
Other	$	
Total Phase 2 (FY2018-2019)	**$**	**520,000**

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ALDEN LANE CULVERT IMPROVEMENTS

Total Project Cost	Outside Funding Source	City Share	Estimated Total Capital Costs						
			Prior Years	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Future
$230,000	TBD	$230,000	$20,000	$210,000	$0	$0	$0	$0	$0

Project Description:
This project involves the design and construction of an extension to an existing drainage culvert that carries Alden Lane over a creek.

Existing Condition:
This one-lane culvert crossing is the sole point of access for four homes on Alden Lane. One of the wingwalls of the existing culvert has begun to fall into the creek. The City has been advised against an attempt to push the wall back into place, as the fear is that the wall will break in the attempt. The guard rails along this culvert are also inadequate, and the City has placed temporary concrete barriers at one end of the culvert to protect motorists.

Justification: *Condition of Existing facility; Public Safety*
The wingwall has failed, but this is one of several issues at this creek crossing, including inadequate guard rail, one-lane access, and poor pavement conditions. The Stormwater Committee reviewed this site and recommended immediate repairs and improvements.

Operating Budget Impact:
City staff will install a temporary brace for the wall to stabilize the situation. Aside from this work, the future culvert should require little significant maintenance.

Comments:
None.

Expenditure Type:		
Planning, Design & Engineering	$	28,000
Land Acquisition	$	
Construction	$	202,000
Equipment	$	
Other	$	
Total	**$**	**230,000**

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EMERSON ROAD CULVERT AND HEADWALL IMPROVEMENTS

Total Project Cost	Outside Funding Source	City Share	Estimated Total Capital Costs						
			Prior Years	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Future
$70,000	TBD	$70,000	$0	$20,000	$50,000	$0	$0	$0	$0

Project Description:
The project involves the removal and replacement of a failing stone and concrete headwall along the west side of Emerson Road and the replacement of the 30" diameter drainage pipe that runs beneath Emerson Road.

Existing Condition:
The headwall supports Emerson Road. The stacked stone of the headwall is falling out, which has left about a 6" gap beneath the pavement of Emerson Road. The adjacent roadway continues to sink into this area and to need to be patched as a result. No guardrail exists along the edge of Emerson Road.

Justification: *Condition of Existing Facility; Public Safety*
Pavement patches to smooth out the depression in Emerson Road are temporary, as the pavement continues to sink into the void. Replacement of the headwall will fortify this area and will provide the street the structure it needs for support. The Stormwater Committee reviewed this site and determined that improvements to this site should be one of the City's top stormwater-related priorities.

Operating Budget Impact:
The City currently places asphalt patch material on the pavement depression on a regular basis. No significant maintenance costs are anticipated to be created by this project.

Comments:
Replacement of this headwall was one of the primary elements of the Emerson Road concept plan that was developed in 2011-2012, and this improvement has been part of multiple applications for federal grant assistance for roadway improvements along Emerson Road.

Expenditure Type:		
Planning, Design & Engineering	$	20,000
Land Acquisition	$	
Construction	$	50,000
Equipment	$	
Other	$	
Total	**$**	**70,000**