

CAPITAL IMPROVEMENT PROGRAM

Background

Kimley-Horn prepared this Capital Improvement Program (CIP) for stormwater improvements to prioritize and set budgets required to plan, construct, operate, and maintain the Village's Stormwater Management Program. The CIP is a budgetary tool and is intended to provide an order of magnitude for the Village's yearly funding for the implementation of the Stormwater Program.

The proposed CIP is based on the findings from the assessment of existing drainage conditions within the Village and the detailed analysis of the eight priority sub-basins in this 2020 Stormwater Master Plan Update. In the Village's previous stormwater master plans, the two primary components of the CIP include operation/maintenance and capital improvements. For this 2020 update, a third element is being added to budget for localized stormwater improvement projects.

The operation and maintenance component is based on a general assessment of the existing drainage conditions within the Village limits. Recommended operation and maintenance procedures were identified as part of the previous Stormwater Master Plans and preliminary budgets were established at that time. With the operation and maintenance program implemented, the Village has current cost data for the various components, and the condition of the existing stormwater system indicates the program has been effective. The operation and maintenance line items and the associated costs have been reviewed with Village staff and updated for this report.

The capital improvement component is based on the findings of the hydraulic evaluations. Recommended improvements to achieve the stated performance goals including anticipated sea level rise were developed for each sub-basin. The recommended improvements were quantified based on available data and preliminary opinions of probable costs (preliminary

budgets) were prepared for each sub-basin. The preliminary project budgets and associated sub-basin prioritizations have been reviewed with Village staff and updated for this report.

As discussed above, planning for localized drainage improvement projects has not been a part of the previous Stormwater Master Plan Updates. These projects have been areas identified by the Village based on observed flooding, citizen complaints, and road conditions. Once identified, the Village has proceeded with design, permitting and construction to complete the improvements. The scopes of work associated with these localized drainage improvement projects have been much less than full capital improvement projects, but aside from the existing priority sub-basins that have not yet been completed, additional priority sub-basins or larger capital improvement projects are no longer required. As a result, this new CIP line item is being added to budget for smaller projects that have not yet been designed or constructed. The estimated line item cost for these projects is based on localized stormwater projects completed to date and is separate from the minor repairs and stormwater system improvements included under Operation and Maintenance.

The following sections provide additional information for each element of the 2020 CIP.

Operation and Maintenance Plan

The intent of the operation and maintenance plan is to maintain the integrity of the stormwater management system throughout the Village. This is accomplished by maintaining the existing stormwater system components to provide the level of service as originally designed. To achieve this goal, periodic observations, routine maintenance, and general improvements are required. This section of the overall report is not intended to provide a complete operation and maintenance manual, but to provide some of the key components and establish a proposed budget to implement these items.

Catch Basin Maintenance

Catch basin maintenance is a two-step process. This task includes cleaning the external grate to permit stormwater to enter the system and removing sand, silt, and debris from the sedimentation chamber of the intake structure.

The catch basins are cleaned using mechanical and manual methods. The Village is currently budgeting to clean 20% of all catch basins annually. However, the Village does monitor areas of heavy foliage and other debris to schedule catch basin maintenance more frequently if required.



Pipe Flushing and Exfiltration Trench Cleaning

Exfiltration trench is important in the storage, disposal, and water quality treatment of stormwater runoff. Maintenance of exfiltration trench includes removing the sediment, oil, and grease that accumulates in the bottom of the catch basins that are attached to the exfiltration trench piping. The catch basin cleaning reduces the amount of pollutants that enter the pipe system to improve exfiltration and outfall rates. Even with removal of sediment from the catch basins, over time sediment will build up in drainage pipes. Therefore, the pipes should be cleaned and flushed on a regular basis. Pipe flushing and exfiltration trench cleaning are typically performed in conjunction with catch basin and manhole cleaning and are usually contracted out on an as-needed basis. During these activities, a high-pressure water hose is inserted into the pipe network. This process flushes debris into the catch basin where it can then be removed. The Village is currently budgeting to flush 20% of all piping, 20% of all exfiltration trench, 50% of all manholes, 50% of all outfall pipes, and 100% of all French drain annually.

Canal Maintenance

Local canals play an important role in stormwater disposal. The Village has a five-year interlocal agreement with Miami-Dade County for canal maintenance. Miami-Dade County currently maintains the SW 160th Street Ditch. The Village owns the SW Maral Estates canal and the Bel Aire Section canal. The Village is currently budgeting for canal maintenance.



Swale Inspection, Maintenance, and Restoration

Grassed swales and landscaped medians also play an important role in stormwater disposal. Consistent mowing, inspection, and restoration of such features promote stormwater retention and efficient percolation. The Village maintains swales and medians within public roadways and parking lots. Individual business owners and residents are mandated through local codes to maintain their facilities. The Village is currently budgeting for swale inspection, maintenance, and restoration.

WASD Utility Fee Collection

All real properties within the jurisdictional boundaries of the Village are subject to Stormwater Utility Fee's unless specifically exempted. The Village has an agreement with the Miami Dade Water and Sewer Department (WASD) to include the Village's Stormwater Utility fee on bills for water and sewer service for properties within the Village. WASD bills customers on a monthly or quarterly basis on behalf of the Village and charges the Village a fee to collect the Village's Stormwater Utility Fee. Properties on well water within the Village are billed on an annual basis by the Village's Finance Department to collect their fair share of Stormwater Utility Fee.

Minor Repairs and Improvements

Maintaining the stormwater collection system requires routine improvements and repairs. This task covers a range of activities but is limited to minor repairs and improvements to address collapsed pipes, damaged manholes, damaged catch basins, catch basin grate replacement, and minor swale grading. These system repairs do not require design or permitting and are often performed in response to an immediate problem using the best methods available. As discussed earlier, the projects classified as localized drainage improvements typically do require some element of design, permitting, and bidding for the work to be performed by a general contractor.

MS4 Permit and CRS Program Activities

To comply with the Miami-Dade County Multiple Separate Storm Sewer System Permit (MS4) administered by the U.S. Environmental Protection Agency and Florida Department of Environmental Protection, the Village must perform certain activities on an annual basis. The preceding maintenance activities are all required by the MS4 Permit. In addition to these maintenance activities, the Village is required to monitor water quality in the canals and prepare a pollutant loading study as part of the MS4 Permit. The Village pays an annual fee to Miami-Dade County DERM for water quality monitoring in the canals. The MS4 Permit also requires annual public outreach activities on water quality and the dangers associated with flooding such as mailings to residents and workshops for the general public, pesticide applicators, and construction contractors. The permit is now entering Year 2 of the 5-year annual renewal process which covers the time period between January 2019 and December 2019.

In addition to the MS4 permit, the Village of Palmetto Bay was accepted into the National Flood Insurance Program (NFIP) in 2008 and submitted a request to join the Community Rating System (CRS) program in 2011. As part of the CRS program, the NFIP offers flood insurance at more affordable rates than are generally available from private insurers. A better rating with the CRS will provide additional savings to Village residents on their flood insurance. Since the

2014 Stormwater Master Plan Update, the Village has coordinated with the NFIP and has become a member of the CRS. The Village's CRS rating is determined by activities ranging from stormwater infrastructure maintenance to public outreach programs. Based on the number of activities currently implemented by the Village and the associated credits, the Village received a rating of 8. A rating of 8 represents reducing the cost of flood insurance by 10%. Each year the Village is required to submit an annual report certifying that they continue to implement the stormwater activities to maintain their current rating of 8. As part of the specific CRS Activity 510 - Floodplain Management Plan, the Village adopted the Miami-Dade Local Mitigation Strategy (LMS) as their floodplain management planning document. The Village is required to provide an annual evaluation report on the progress of implementing the LMS. The Village submitted their recertification and progress reports as required.

Administrative Expenses

There are two items noted in the budget to provide personnel to oversee the operation and maintenance of the stormwater system. These items are "Professional Services" and "Stormwater Utility Administration." The Professional Services item will include the engineering and legal services associated with developing contract documents and procuring services for drainage improvement projects. The Stormwater Utility Administration item includes general administration, clerical support, program planning, and public awareness.

Unit costs associated with the components discussed throughout the operation and maintenance plan section were provided by Village staff. Table 25 details the Stormwater Utility Annual Operation and Maintenance Budget.



Table 25: Stormwater Utility Annual Operation and Maintenance Budget

Item	Quantity	Units	Unit Price	Amount
Storm water Utility Administration	1	L.S.	\$68,400	\$68,400
Clean Catchbasins – 1/5 Annually	525	EA.	\$70	\$36,800
Clean Manholes – 1/2 Annually	120	EA.	\$120	\$14,400
Clean Outfalls – 1/2 Annually	30	EA.	\$175	\$5,300
Clean French Drain and Slab Covered Trench – Annually	75	EA.	\$90	\$6,800
Pipe Flushing – 1/5 Annually	19,000	L.F.	\$2.50	\$47,500
Exfiltration Trench Cleaning – 1/5 Annually	30,970	L.F.	\$2.50	\$77,400
Canal Maintenance	1	L.S.	\$39,000	\$39,000
NPDES MS4 Permit Monitoring Fee to DERM	1	L.S.	\$6,000	\$6,000
Swale Maintenance	1	L.S.	\$30,000	\$30,000
WASD Fee Collection	1	L.S.	\$26,000	\$26,000
Professional Services – Engineering and Legal	1	L.S.	\$105,000	\$105,000
Minor Repairs and Improvements	1	L.S.	\$100,000	\$100,000
Community Rating System – FEMA Program	1	L.S.	\$10,000	\$10,000
Public Outreach and Workshop for MS4 Permit	1	L.S.	\$5,000	\$5,000
QNIP Debt Service Payment	1	L.S.	\$126,000	\$126,000
Total				\$704,000

Localized Drainage Improvement Projects

The Village's operation and maintenance program has been effective, capital improvement projects have addressed neighborhood flooding issues, and the Village has implemented a steady program of localized drainage improvements to further reduce and manage stormwater impacts to the community. As part of the 2020 evaluation, it was determined that current stormwater issues throughout the Village are smaller, more scattered, and better addressed as localized drainage improvements. Completed localized drainage improvement projects and current localized drainage issues are identified in this 2020 update, but based on the smaller scope of work, conceptual designs and associated opinions of probable cost are not developed for each location. Instead, an estimated cost for this type of project has been established based on the localized stormwater projects completed to date. The localized drainage improvement projects ranged from limited infrastructure projects along roadways and at intersections to swale grading at specific locations to address ponding. Since completion of the original 2004 Stormwater Master Plan, the Village has completed approximately 60 localized drainage improvement projects. Based on a sampling of 30 recent projects, the average localized drainage improvement cost is \$73,000.00. In addition, the Village has been budgeting \$100,000.00 for this type of work through recent years. As a result, an annual line item amount of \$100.00.00 has been incorporated into the 2020 CIP.



Stormwater Capital Improvement Projects

The Capital Improvement Projects are based on the findings from the analysis of the priority sub-basins. As part of the 2020 evaluation, it was determined that current stormwater issues throughout the Village are smaller and better addressed as localized drainage improvements. Aside from the existing priority sub-basins that have not yet been completed, addition priority sub-basins or larger capital improvement projects are no longer required. As a result, priority

sub-basins 11, 12, 39, 41, 42, 43, 44, and 57/96 from the 2014 Stormwater Master Plan that have not been completed will remain the priority sub-basins for the 2020 Stormwater Master Plan. Recommended improvements to achieve the stated performance goals were identified for each sub-basin including proposed impacts associated with estimated sea level rise. Rising groundwater will reduce efficiencies of the storm water systems and therefore additional infrastructure will be required to provide similar protections. New conceptual stormwater system modifications resulting from the revised analysis were developed and preliminary opinions of probable costs (preliminary budgets) were prepared for each sub-basin. Prior to each project being implemented, professional services such as surveying, engineering, and permitting will be required and estimates are included within the budgets. The scope of the proposed improvements is subject to change based on actual field survey data and resulting stormwater design calculations necessary to permit the projects.

The following assumptions have been made in developing the proposed budgets for the drainage improvements:

- The budgets include the recommended improvements identified as part of the updated hydraulic studies performed for each of the eight priority sub-basins. The hydraulic studies include assumed impacts associated with estimated sea level rise.
- The budgets include restoration of the roadway impacted by the proposed trenching and a final asphalt overlay or surface course. Costs do not include any additional roadway improvements.
- The budgets do not include any costs of obtaining drainage or construction easements.
- The budgets include a 10% allowance for mobilization and maintenance of traffic for each project.



- The budgets include an 10% allowance for stormwater pollution prevention, clearing and grubbing, utility adjustments, and swale restoration for each project.
- The budgets include a 15% allowance for surveying, engineering, permitting, and limited construction phase assistance (site observations).
- The budgets include a 20% contingency for each project.
- The budgets do not include any landscape costs for improvements or restoration.
- The line item budget for localized drainage improvement projects is based on typical localized stormwater projects completed to date.

The capital improvement budgets are a preliminary opinion of probable construction costs in the current marketplace. Unit pricing for similar projects constructed by the Village of Palmetto Bay, as well as other nearby municipalities, were used as the basis for the construction budgets. Kimley-Horn has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. The preliminary opinions of probable costs provided herein are based on the information known to Kimley-Horn at this time and represent only the engineer's judgment as a design professional familiar with the construction industry. Kimley-Horn cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its preliminary opinions of probable costs.

In addition to developing the proposed stormwater system improvements and associated preliminary budgets, additional criteria were applied to prioritize the capital improvement projects based on more than just cost. Table 27 shows the priority ranking for the proposed capital improvement projects.

Table 27: Sub-basin Prioritization Matrix

Priority Ranking	Area	Hydraulic Analysis	Observed Flooding	Complaints	Roadway Condition	Traffic Volumes	Total Score
1	Drainage Sub-basin #43	4.61	2	2	3	1	12.61
2	Drainage Sub-basin #57/96	2.70	2	2	3	1	10.70
3	Drainage Sub-basin #11	1.70	4	1	3	1	10.70
4	Drainage Sub-basin #41	4.37	3	1	1	1	10.37
5	Drainage Sub-basin #12	3.36	3	2	1	1	10.36
6	Drainage Sub-basin #39	5.23	2	1	1	1	10.23
7	Drainage Sub-basin #42	3.20	2	1	3	1	10.20
8	Drainage Sub-basin #44	3.90	2	1	1	1	8.9

Except for the hydraulic analysis score, each project was given a score between 1 and 5 in each of the four categories: observed flooding, complaints, roadway condition, and traffic volumes. The scores were then totaled, and the projects were ranked from highest to lowest. The basis for the category scores is detailed below.

Hydraulic Analysis

Based on the hydrologic and hydraulic analysis described in the Drainage Sub-basin Analysis section of this report, a number for “total flood stage above performance goal criteria” was determined for each of the sub-basins studied. This number was entered in the table above in the Hydraulic Analysis column.

Observed Flooding

- 1 = No flooding observed in sub-basin
- 2 = Roadway flooding observed in less than 1/3 of drainage areas within sub-basin
- 3 = Roadway flooding observed in 1/3 to 1/2 of drainage areas within sub-basin
- 4 = Roadway flooding observed in 1/2 to all but one of the drainage areas within sub-basin
- 5 = Roadway flooding observed in all of the drainage areas within sub-basin

Complaints

- 1 = No complaints recorded
- 2 = Complaints recorded for less than 1/3 of drainage areas within sub-basin

3 = Complaints recorded for 1/3 to 1/2 of drainage areas within sub-basin

4 = Complaints recorded for 1/2 to all but one of the drainage areas within sub-basin

5 = Complaints recorded for all drainage areas within the sub-basin

Roadway Condition

The ratings for this category are based on a percentage of roadway length in good, average, or poor pavement condition throughout the sub-basin according to the Village's Roadway Analysis Report.

1 = Majority of roadways in sub-basin in "good" condition

3 = Majority of roadways in sub-basin in "average" condition

5 = Majority of roadways in sub-basin in "poor" condition

Traffic Volumes

The ratings for this category are based on a percentage of roadway length classified as local, collector, or arterial roadways throughout the sub-basin according to the Village's Transportation Master Plan.

1 = Majority of roadways in sub-basin are local roadways

3 = Majority of roadways in sub-basin are collector roadways

5 = Majority of roadways in sub-basin are arterial roadways

The proposed Stormwater Capital Improvement Program Budget Summary is contained in Table 28. The proposed sequence of projects is based on the priority matrix and the proposed project budget details can be found in the Drainage Sub-basin Analysis section of this report. Budget details for the operations and maintenance component and the localized drainage improvement component and can be found above in this section. The projects are recommended to be coordinated with the roadway CIP project scheduling to ensure that drainage improvements are complete before or at the same time as any roadway improvements in the same area.

Table 28: Stormwater Capital Improvement Program (CIP) Budget Summary

Project	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Total
Drainage Sub-Basin #61	\$772,905										\$772,905
Drainage Sub-basin #11					\$1,015,000	\$435,000					\$1,450,000
Drainage Sub-basin #12							\$372,000	\$558,000			\$930,000
Drainage Sub-basin #39								\$612,000	\$408,000		\$1,020,000
Drainage Sub-basin #41						\$508,000	\$762,000				\$1,270,000
Drainage Sub-basin #42									\$558,000	\$372,000	\$930,000
Drainage Sub-basin #43		\$1,099,000	\$471,000								\$1,570,000
Drainage Sub-basin #57/96			\$864,000	\$1,296,000							\$2,160,000
Localized Drainage Improvement Projects	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$1,000,000
Annual O&M	\$704,000	\$704,000	\$704,000	\$704,000	\$704,000	\$704,000	\$704,000	\$704,000	\$704,000	\$704,000	\$7,040,000
Total	\$1,576,905	\$1,903,000	\$2,139,000	\$2,100,000	\$1,819,000	\$1,747,000	\$1,938,000	\$1,974,000	\$1,770,000	\$1,176,000	\$18,142,905

In the interest of distributing costs over a ten (10) year program, sub-basin 61 is shown in Fiscal Year 2021 as the first CIP project because it is designed and sub-basin 44 as the lowest ranked priority basin will be held for the next planning document.