



Spring Lake Park (Phase 1)

City of Omaha

City of Omaha CSO Program and Omaha Stormwater Program



SITE AND PROJECT SUMMARY

Spring Lake Park was established during the 1870's as an urban park. The dramatic topography of the park includes several forested steep slopes and valleys speckled with springs. The park originally contained three small ponds, but they were drained in the 1930's.

The City of Omaha CSO Program identified the opportunity to reintroduce the lake back into the park as part of phase one of a sewer separation project for the area (OPW 51997). The sewer separation project site is a 416-acre watershed which is approximately 50% residential and 50% within Spring Lake Park, which includes a nine-hole golf course. This project was a collaborative effort with members from the Spring Lake Neighborhood Association, Spring Lake Park Habitat Restoration and Preservation Team, CSO Program, Nebraska Environmental Trust, Papio-Missouri River NRD, and Keep Omaha Beautiful.

Green Infrastructure (GI) components within phase one of the project saved an estimated \$5,225,000 from the final project cost of \$10,400,000 by eliminating or reducing the extent and size of "gray" components. In addition, the City of Omaha received \$1.3 million in grants from Nebraska Environmental Trust for design and construction of GI infrastructure within the park.

The project is being built in two phases. Phase one commenced on May 2014 and was substantially completed in late 2016. Phase two of the project began in the spring of 2017.

Phase one of this project incorporates several significant GI components, including a fishing lake, constructed wetland, submerged gravel wetland, 750 linear feet of constructed stream, 7 dry detention basins, 1 infiltration basin, and 1 bioretention system. This project will provide many community benefits, recreational opportunities, and increased wildlife diversity and habitat, as well as improve GI utilization well into the future.



PROJECT DETAILS

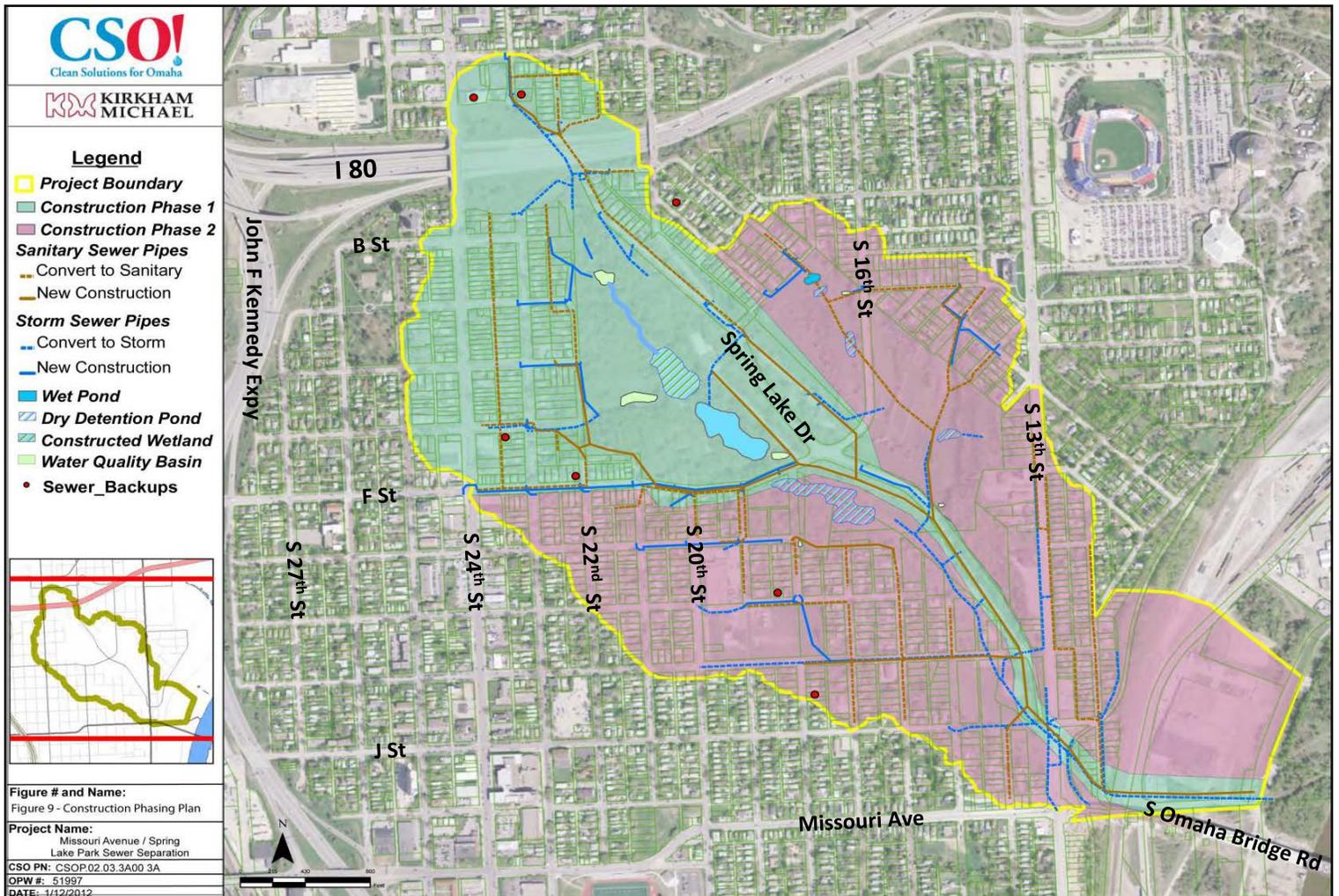
DESCRIPTION	LAKE	CONSTRUCTED WETLAND
System Footprint	1.55 acres	0.45 acres
Underdrain	None	None
Pre-Treatment System	5 pre-treatment basins, detention basin, constructed stream, plunge pool, submerged gravel wetland, bioretention, constructed wetland	2 pre-treatment basins, detention basin, constructed stream, plunge pool, submerged gravel wetland, bioretention
Outlet Control	Stop logs, gate at lake bottom, 10' diameter cone grated overflow	Stop logs
Contributing Area	134.61 acres	98.51 acres
Predominant Land Use	Residential/Park	Residential/Park
Percent Impervious (%)	37%	35%
Predominant Soil Types	Pohocco-Judson silt loams	Pohocco-Judson silt loams

DESIGNED BY	CONSTRUCTED BY	MAINTENANCE BY
Big Muddy Workshop, SEH, Kirkham Michael	Roloff Construction Inc.	City of Omaha

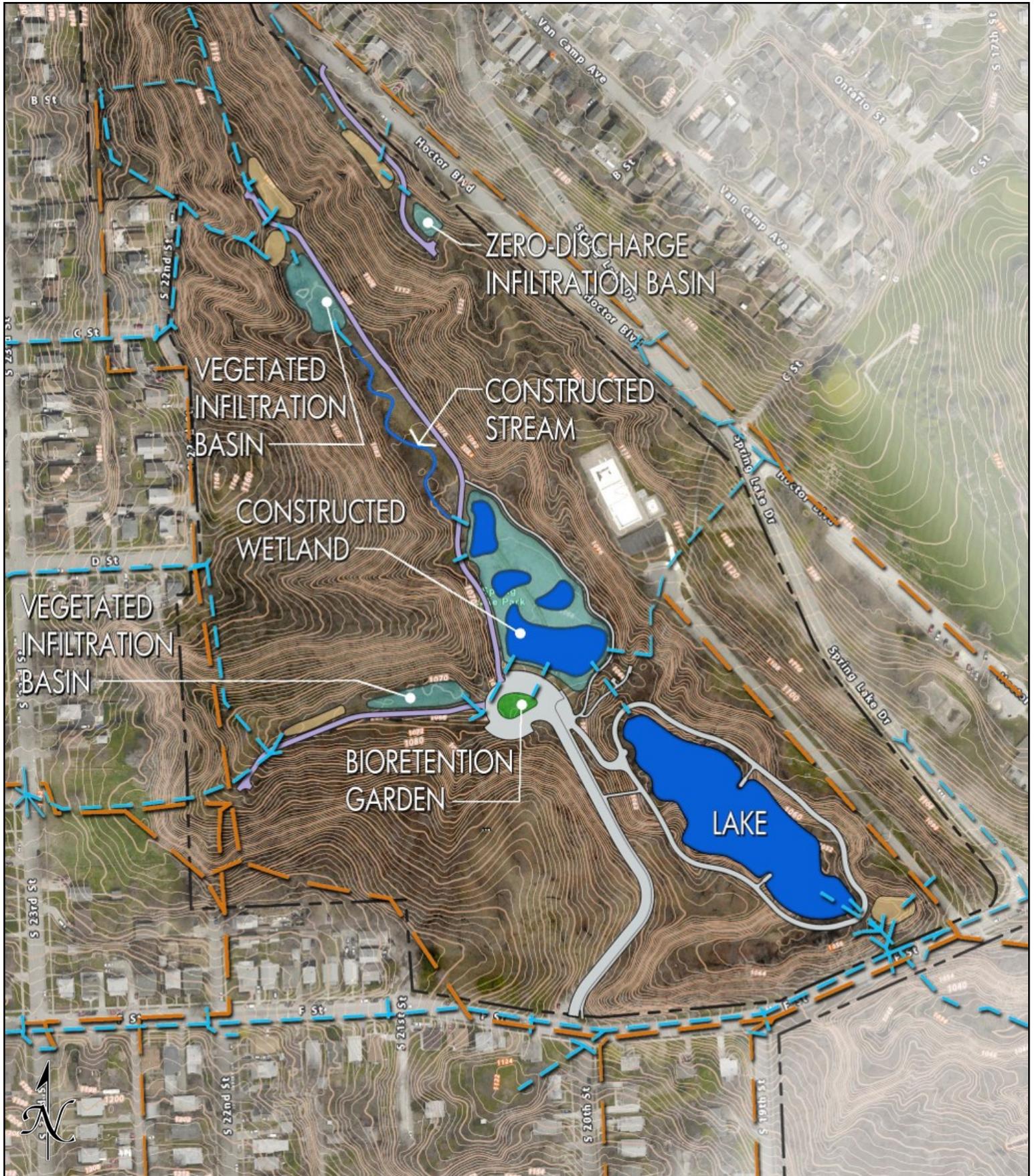
PROJECT DETAILS (continued)

DESCRIPTION	INFILTRATION BASIN	SUBMERGED GRAVEL WETLAND	BIORETENTION SYSTEM
System Footprint	1,325 ft ²	5,200 ft ²	2,000 ft ²
Underdrain	None	6" Perforated PVC	4" Perforated PVC
Pre-Treatment System	Pre-treatment basin	2 pre-treatment basins, detention basin, constructed stream, plunge pool	Off-line system
Outlet Control	Concrete overflow ribbon	Underdrain with elbow	Beehive grate
Contributing Area	3.85 acres	45.27 acres	2.67 acres
Predominant Land Use	Residential	Residential/Park	Park
Percent Impervious (%)	30%	35%	30%
Predominant Soil Types	Contrary silty clay loam	Pohocco-Judson silt loams	Contrary silty clay loam

PROJECT LAYOUT



PROJECT LAYOUT (Continued)



LAKE



SUBMERGED GRAVEL WETLAND



CONSTRUCTED STREAM



HOCTOR INFILTRATION BASIN

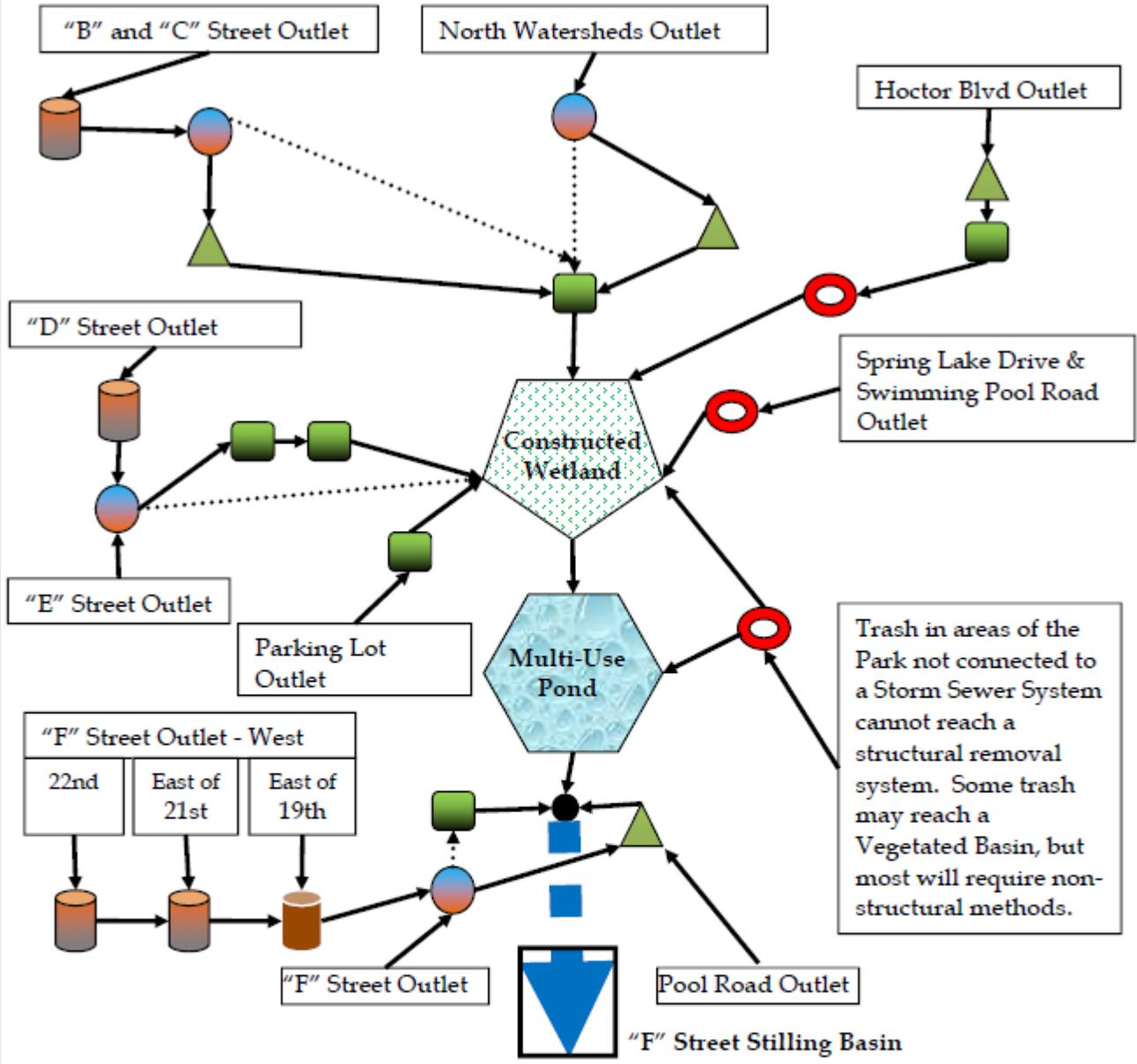


SAND SEAM AND SEEPS



SPRING LAKE FLOW DIAGRAM

Trash and debris removal plan for Missouri Avenue/Spring Lake Park North of "F" Street

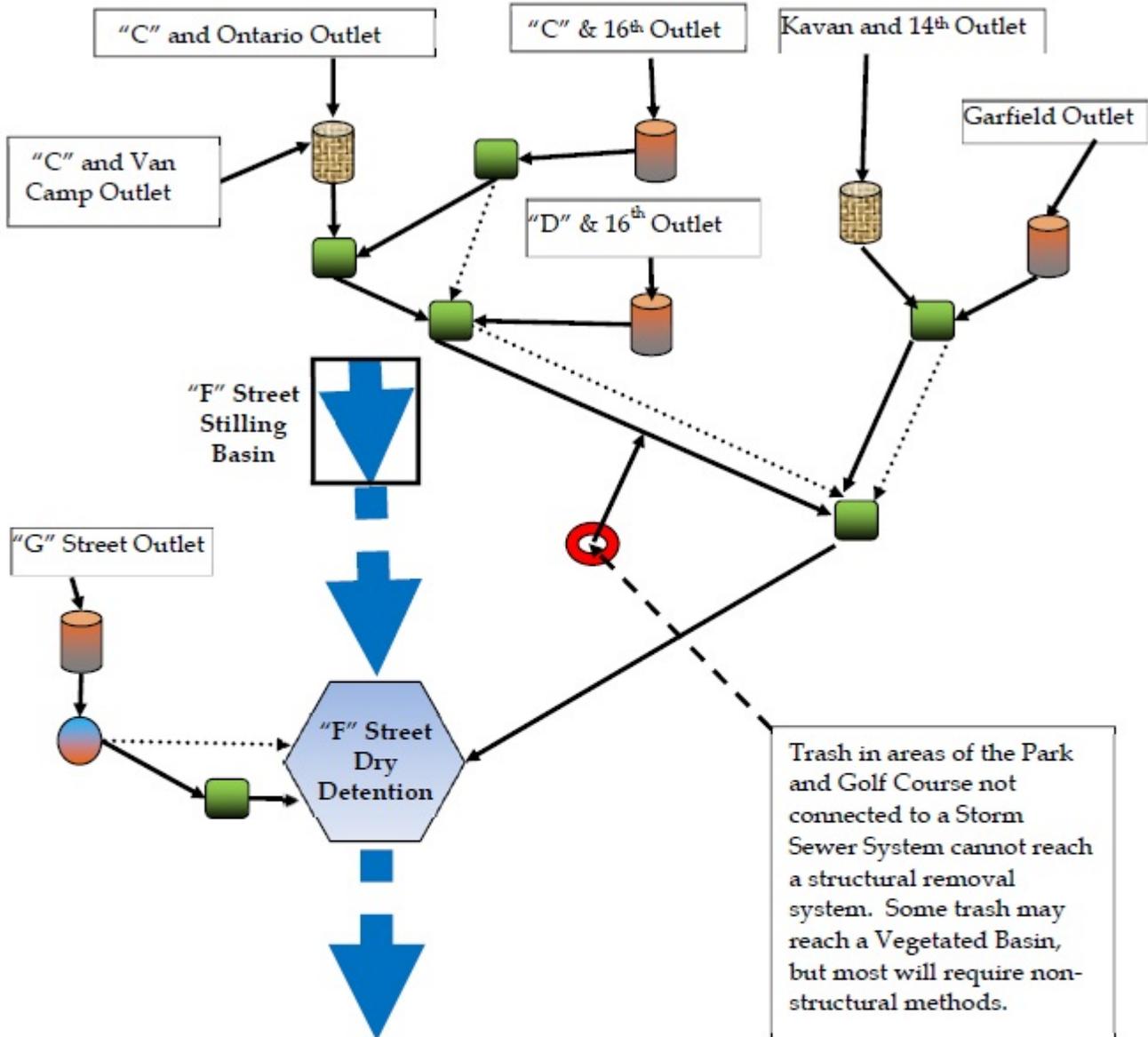


Key for Trash Removal System

- | | | |
|---|---|--|
|  SAFL Baffle with Snout.
Requires Vacuum Truck Cleaning |  Standpipe GI Basin.
Small orifice outlets prevent trash from migrating downstream.
Requires Manual Trash Removal. |  Non-structural.
Due to location, opportunity for structural trash removal is not practical. Only method for trash and debris removal is manual. |
|  SAFL Baffle.
Requires Vacuum Truck Cleaning |  Vegetated Basin.
Non-restricted outlet, but heavy vegetation in basin will trap trash and debris. Requires Manual Trash Removal. |  Flow Arrows
First Flush or main flow path |
|  First Flush Diversion Structure. No Maintenance. | |  Diverted high flow (greater than first flush) at diversion |

SPRING LAKE FLOW DIAGRAM

Trash and debris removal plan for Missouri Avenue/Spring Lake Park South of "F" Street



Key for Trash Removal System

- | | | |
|--|--|---|
|  SAFL Baffle with Snout.
Requires Vacuum Truck Cleaning |  Standpipe GI Basin.
Small orifice outlets prevent trash from migrating downstream. Requires Manual Trash Removal. |  Non-structural.
Due to location, opportunity for structural trash removal is not practical. Only method for trash and debris removal is manual. |
|  SAFL Baffle.
Requires Vacuum Truck Cleaning |  Vegetated Basin.
Non-restricted outlet, but heavy vegetation in basin will trap trash and debris. Requires Manual Trash Removal. |  Flow Arrows
← First Flush or main flow path
←..... Diverted high flow (greater than first flush) at diversion |
|  Stormceptor. Requires Vacuum Truck Cleaning | | |
|  First Flush Diversion Structure. No Maintenance. | | |