MS4 Permit No. FLS000018-004
Part V. – Monitoring Requirements
Sub-Part A. – Assessment Program

Assessment Program Objective

The purpose of this assessment program is to provide information for the Town of Jupiter (Town) to determine the overall effectiveness of its Stormwater Management Program (SWMP) in reducing stormwater pollutant loadings, to the Maximum Extent Practicable (MEP), from its Municipal Separate Storm Sewer System (MS4) to receiving water bodies.

Phase I MS4 Monitoring Plans must meet the following goals:

1. Identify potential water quality problem areas related to stormwater runoff that can be targeted for corrective action. Corrective action(s) include but are not limited to retrofits, structural BMPs, and non-structural BMPs (e.g., public education, street sweeping).
2. Measure the effectiveness of stormwater pollution reduction measures (i.e., BMPs) that have been or will be implemented; and
3. Document pollutant loadings and/or trends in pollutant loadings for specific watershed or outfalls

Assessment Program Components

As required by the MS4 Permit, the following parts make up this Assessment Program:

A. A Water Quality Monitoring Plan – The water quality monitoring plan is intended to identify local sources where urban stormwater is adversely affecting surface water resources
B. A Pollutant Loading Estimate Plan – The pollutant loading exercise is to estimate the Pollutant Loading from the MS4 contributing area, based on land uses and BMPs
C. An Evaluation and Response Plan – The response plan is the plan of action to be taken based on the results from A. and B. and will be used to:
    1. Evaluate trends in pollutants loading from the MS4
    2. Evaluate trends in water quality (of discharge from the MS4)
    3. Identify portions of the MS4 to be targeted for loading reduction/corrective action

Part A – Water Quality Monitoring Plan

A variety of monitoring approaches can be used to evaluate the impacts of stormwater discharges or the effectiveness of a SWMP where a combination of approaches often makes for the most effective monitoring program. The Town of Jupiter seeks to use a combination of approaches when monitoring its stormwater discharges and the associated impacts on receiving water bodies, which includes the Southwest (SW) Fork of the Loxahatchee River. These include ambient water quality monitoring based

upon the joint program in place by the Palm Beach County MS4 permittees as well as visual observations, receiving water monitoring and short term extensive network monitoring to further evaluate the stormwater quality in its MS4 and assess the effectiveness of the SWMP.

The Town will primarily rely upon the ambient water quality data collectively obtained through a joint program by the Palm Beach County MS4 permittees (Permit No. FLS000018-003). Details related to the joint Water Quality Monitoring Program can be found in Section 5.0 of the Cycle 3 – Year 6 Joint Annual Report. A map illustrating the extents of the Palm Beach County MS4 is provided in the Joint Annual Report as Figure 5-1. The boundaries of watersheds are identified in Figure 5-1 along with the Joint MS4 water quality monitoring locations. Specific focus will be placed on the ambient water quality data collected from the sites that are within the vicinity of the major outfalls in the Town's MS4, which is located in the northern extent of the map primarily within the Loxahatchee watershed.

Additional receiving water quality monitoring will be conducted as a supplement to the Joint MS4 ambient water quality program. Monitoring locations have been placed in areas that represent centralized collection zones for major stormwater outfalls and thus characterize water quality conditions in the watershed. Figure 1 provides a detailed illustration of the Town's MS4 boundaries along with identified water quality monitoring locations – current locations monitored under the joint MS4 Water Quality Monitoring Program and new locations within the Town's MS4. Additional locations have been placed in Jones and Sims Creeks, which are primary tributaries of the Loxahatchee River. Major stormwater outfalls from both commercial and residential areas discharge into these tidal creeks, which ultimately flow into the SW Fork of the Loxahatchee River. Receiving water will also be monitored in the open water portion of the North Fork of the Loxahatchee River as this location also a representative receiving water body for major outfalls from the Town's MS4. The additional receiving water quality monitoring, used in conjunction with the existing ambient water quality monitoring, will assist with determining localized impacts from the discharge as well as evaluate subsequent effects on the Loxahatchee watershed.

A short-term extensive network monitoring approach will be used in the upstream reaches of the Jones Creek Watershed and will focus on bacteria monitoring. This area is particularly developed with multiple outfalls from residential and commercial areas. Historical testing of the watershed indicates bacteria impairment and warrants additional investigation. Additional data collection is expected to allow for greater spatial and temporal specificity of the pollutant sources and promote a more effective approach for reducing pollutant loads. Samples will be collected from storm drains and residential canals during wet and dry weather events. Specific locations are expected to evolve and change over time as the geographical distribution of pollutant sources is better understood.

Finally, the Town will include the "Visual Observations" approach in its Water Quality Monitoring Plan. Visual Observations are beneficial to a monitoring program as they are a simplistic and economic approach to evaluate controls, outfalls and receiving waters as well as assist with identification of illicit discharges. The visual observation program will consist of looking for signs of a sheen on the water and for signs of grease and oil while performing inspections of outfalls.

Monitoring Locations

Based on the location of the outfalls of our MS4, six (6) monitoring stations have been selected. Two (2) of the locations represent sites currently monitored under the Joint MS4 Program. The remaining four

(4) locations provide additional characterization of the receiving water in the vicinity of the Town's MS4. In addition to the fixed monitoring locations, the Jones Creek Watershed will be also be evaluated as described in the Water Quality Monitoring Plan. Table 1 identifies these monitoring stations, along with relevant information about each location.

Table 1. MS4 Monitoring Stations

Site	Location Description	Northing	Easting	Receiving Water Body	Verified Impaired?	Adopted TMDL?
30	ICW – S.R. 706	26.932576	-80.083153	ICWW Above Royal Palm Bridge WBID 3226W1	No	No
40	Loxahatchee River Alt A1A Bridge	26.947391	-80.092816	Loxahatchee North Fork WBID 3226D	Yes (fecal coliform)	No
71	SW Fork – Jones Cr.	26.941608	-80.118193	Loxahatchee SW Fork WBID 3226C	Yes (fecal coliform and nutrients – Chlorophyll α)	Yes (fecal coliform – 91% reduction goal)
72	SW Fork – Loxahatchee River Rd	26.943301	-80.121856	Loxahatchee SW Fork WBID 3226C	Yes (fecal coliform and nutrients – Chlorophyll α)	Yes (fecal coliform – 91% reduction goal)
74	SR 706 – Sims Creek	26.9338	-80.12624	Loxahatchee SW Fork WBID 3226C	Yes (fecal coliform and nutrients – Chlorophyll α)	Yes (fecal coliform – 91% reduction goal)
75	SR 706 – Jones Creek	26.933743	-80.113126	Loxahatchee SW Fork WBID 3226C	Yes (fecal coliform and nutrients – Chlorophyll α)	Yes (fecal coliform – 91% reduction goal)
JCWS	Jones Creek Watershed	NA	NA	Loxahatchee SW Fork WBID 3226C	Yes (fecal coliform and nutrients – Chlorophyll α)	Yes (fecal coliform – 91% reduction goal)

Monitoring locations have also been illustrated in Figure 1. The white squares represent sites currently monitored for under the existing Joint MS4 Ambient Water Quality Monitoring Program. White circles represent sites proposed for additional monitoring within the Town's MS4 watershed. The study area selected for the "short term extensive monitoring" program, Jones Creek Watershed (JCWS), has been identified with diagonal lines in Figure 1.

Sampling Method

The method of sample collection is consistent with the methods described in the Palm Beach County MS4 Joint Annual Report. Additionally, sites that are monitored by the Town of Jupiter are sampled and initially analyzed in-situ using a multi-parameter water quality monitoring instrument. Water samples are collected, preserved and stored according to Florida Department of Environmental Protection (FDEP) Standard Operating Procedures (SOPs). Analysis of laboratory samples is conducted by Loxahatchee River District's (LRD) Wild Pine Laboratory under a cooperative agreement between the Town and LRD. In the event that LRD's laboratory cannot provide analysis services, the Town will utilize a NELAC certified laboratory for analysis of the parameters of interest.

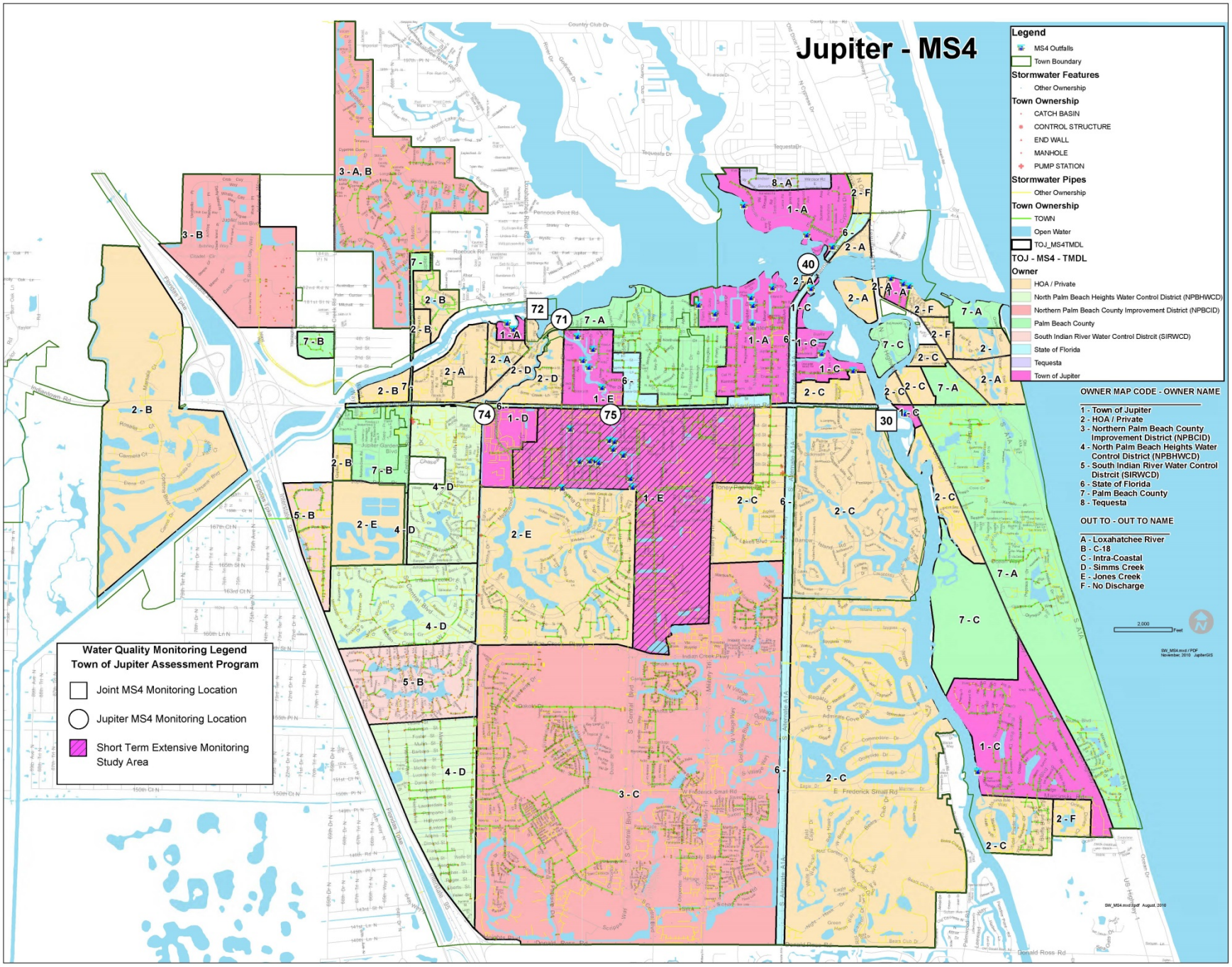

Figure 1. Town of Jupiter MS4 Boundaries and Water Quality Monitoring Stations

Monitoring Parameters

Table 2 provides a list of the parameters to be monitored for the Town's Assessment Program.

Table 2. MS4 Monitoring Parameters Table

Parameters	Field Analysis	Laboratory Analysis
Alkalinity		X
Chlorophyll a		X
Color		X
Conductivity (salinity)	X	
Dissolved Oxygen	X	
Enterococci (marine only)		X
Fecal Coliform		X
Nitrate/Nitrite		X
Organic Nitrogen		X
Orthophosphorous		X
pH	X	
Temperature	X	
Total Kjeldahl Nitrogen (TKN)		X
Total Ammonia		X
Total Nitrogen		X
Total Phosphorous		X
Total Organic Carbon (TOC)		X
Total Suspended Solids (TSS)		X

The parameters to be sampled for each monitoring station, and that will be as part of the Town of Jupiter's Assessment Program, include those shown in the table below.

Table 3. Parameters and Sampling Table

Monitoring Station	Monitoring Parameters	Type of Monitoring	Collection By	Analysis By	Sampling Frequency
30, 40, 71, 72, 74, 75 & JCWS	Field Parameters Laboratory Parameters	In-situ Grab samples	Jupiter	LRD	Quarterly
JCWS	Field Parameters Enterococci & Fecal Coliform	In-situ Grab samples	Jupiter	LRD	Monthly

Part B – Pollutant Loading Estimate Plan

The Palm Beach County MS4 permittee group will be developing pollutant loading estimates during the 3rd year of this permit cycle, using the SIMPLE protocol. In order to provide each permittee with pollutant loading estimates that reflect their respective MS4 areas, the group effort will provide the loading estimates "by MS4" in addition to "by watershed" (as done in past permit cycles). Prior to Year 3, the Town of Jupiter will participate in this effort by reviewing its MS4 contributing areas to each receiving water and will provide updated information on the area extents and the land uses located

therein. In addition, any water quality best management practices (BMPs) that are in place within the MS4 area, will be identified, along with their geospatial extent.

In accordance with the MS4 Permit, pollutant load estimates for the following parameters must be developed once during each permit cycle: Biochemical Oxygen Demand (BOD_5), Copper (Cu), Total Nitrogen (TN), Total Phosphorous (TP), Total Suspended Solids (TSS), Zinc (Zn). The group's estimated pollutant loading results will be provided to each permittee for use in this assessment effort.

To determine a practical estimate of the current pollutant loading, the Town of Jupiter will use the land use based pollutant loading estimates provided by the group as the starting point from which pollutant load reductions will be subtracted. The pollutant load reductions will be estimated based on the BMPs that have been put in place within the MS4 contributing areas. In this way, when future estimates are done, and potentially additional reduction measures or BMPs are put in place, the estimated pollutant loading will reflect the reductions.

Part C – Evaluation and Response Plan

Once the Assessment Program is approved by FDEP, presumably sometime during Year 2 of the permit cycle, the Town will compile the information available for the selected monitoring locations. For new monitoring locations, the Town will begin sample collection and analysis at the frequency provided in the Assessment Program. The first annual report on the Assessment Program will be concurrent with the Year 3 Annual Report Form (March 2020).

Water quality monitoring results will be available annually, and the most recent year's data will be compared to past data with respect to the Town's MS4 discharge and affected receiving water bodies. A summary of the water quality monitoring data, with respect to the Town's MS4 will be developed and included in Assessment Program Annual Report.

The pollutant loading estimates developed during Year 3 of the permit cycle will be reviewed and adjusted based on the Town's Stormwater Management Programs (street sweeping, public education, etc.) as appropriate. Based on two assessments, the effectiveness of the Town's program will be made. A discussion of the comparison will be included in the Assessment Program Annual Report.

Receiving water trending reports/graphs for various parameters, as presented in the Joint Annual Report, will be reviewed and a discussion will be included in the Town's annual Assessment Report.

Based on the data from the water quality monitoring and the pollutant loading estimates, an effort will be made to determine if one portion of the MS4 should be targeted for additional loading reduction efforts or additional pollutant control measures.