

Florida Department of Environmental Protection



Upper Wakulla River and Wakulla Springs BMAP Monitoring Plan

May 16, 2013





Criteria

- The TMDL will be achieved when the Upper Wakulla River meets the nitrate concentration of 0.35 mg/l and shows healthy vegetation.
- This is consistent with the springs numeric nutrient criteria, which will be applied to the water quality of the Wakulla Springs boil during the next 5 year assessment cycle.



Purpose of the Monitoring Plan

- A monitoring plan is a required component in a BMAP to meet the requirements of Subparagraph 403.067(7)(a)5:
 - “The basin management action plan must include milestones for implementation and water quality improvement, and an associated water quality monitoring component sufficient to evaluate whether reasonable progress in pollutant load reductions is being achieved over time.”
- The main purpose of the monitoring plan is to track trends in water quality to assess progress towards achieving the TMDL.



Monitoring Plan Objectives

- Focused objectives are critical for a monitoring strategy to provide the information needed to evaluate the implementation success.
- Primary objectives are necessary to evaluate success of the BMAP.



Draft Monitoring Plan Objectives

The following objectives were drafted for discussion.

- **Primary Objectives:**
 - Track trends in nitrate concentrations and loads in the Upper Wakulla River and Wakulla Springs.
 - Determined through water quality sampling.
 - Track trends in the biological communities in the Upper Wakulla River.
 - Determined through rapid periphyton survey (RPS) and linear vegetation survey (LVS).



Water Quality Parameters

Core Parameters	Supplemental Parameters	Field Parameters
Nitrate + Nitrite (as N)	Sucralose (spring vent and conduits)	Water Temperature
Ammonia (as N)	Nitrogen Isotopes (spring vent and conduits)	pH
Kjeldahl Nitrogen	Oxygen Isotopes (spring vent and conduits)	Specific Conductance
-	Total Phosphorous	Dissolved Oxygen
-	Ortho-Phosphate (as P)	Sample Depth
-	Organic Carbon	Secchi Depth (river sites only)
-	Dissolved Solids	-
-	Suspended Solids	-
-	Turbidity	-
-	Color (true)	-
-	Corrected Chlorophyll-a (river sites only)	-
-	Total Organic Carbon	-
-	Boron	-
-	Calcium	-
-	Magnesium	-
-	Sodium	-
-	Potassium	-
-	Chloride	-
-	Sulfate	-
-	Fluoride	-
-	Alkalinity as CaCO ₃	-

Note: Certain parameters will only be collected at the spring vent and conduit sites while other parameters will only be collected at the river sites.



Biological Monitoring

- Rapid Periphyton Survey (RPS)
 - Assessment of algae in river, both abundance and variety.
- Linear Vegetation Survey (LVS)
 - Assessment of plants in river, presence of native versus non-native species.

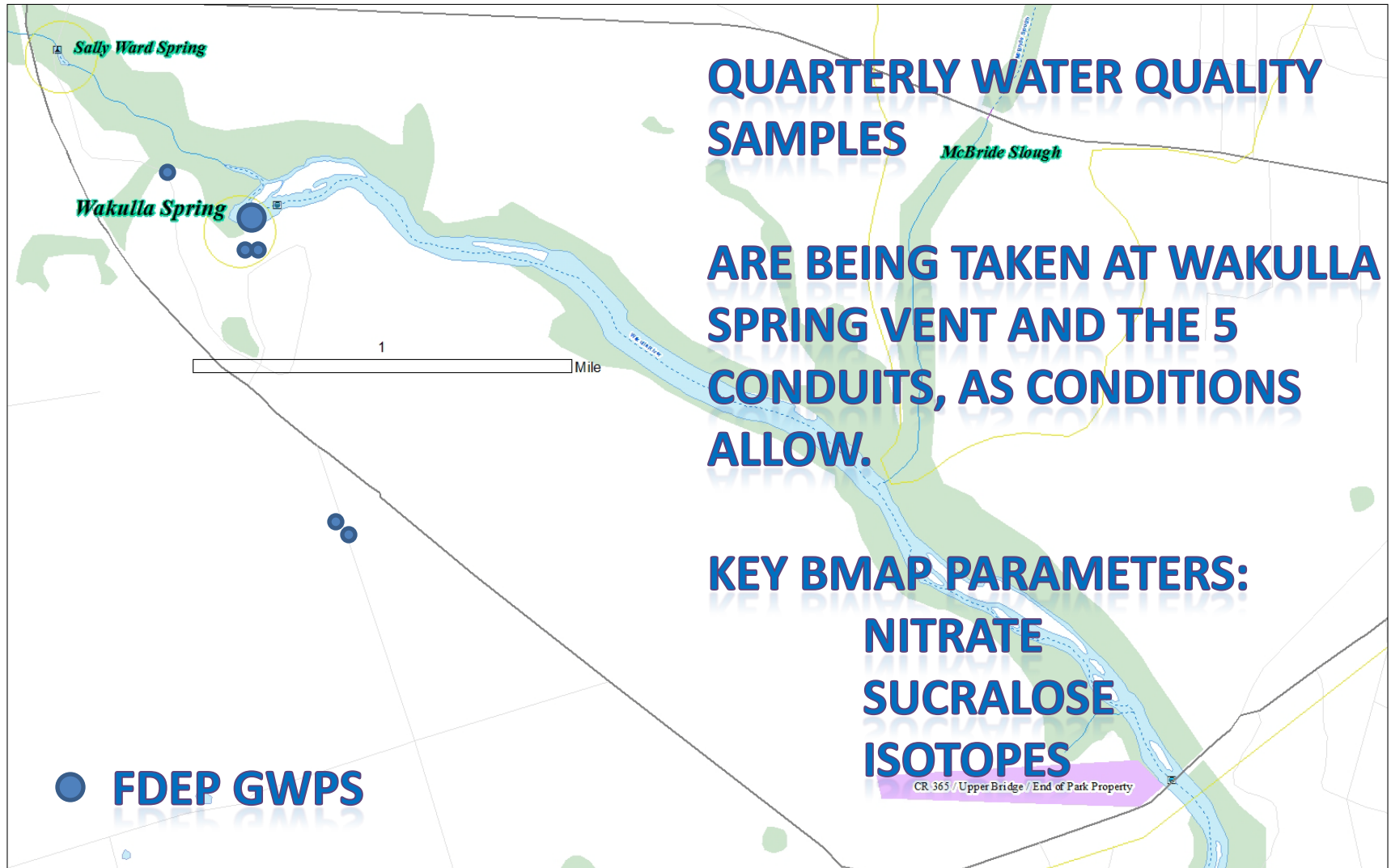


QA/QC and Data Storage

- Monitoring data collection will be conducted in a manner consistent with FDEP's standard operating procedures (SOPs) for quality assurance/quality control (QA/QC).
- The SOPs can be found at:
<http://www.dep.state.fl.us/water/sas/sop/sops.htm>.
- Water quality results will be stored in FL STORET
- Biological results will be stored in SBIO, an FDEP database.

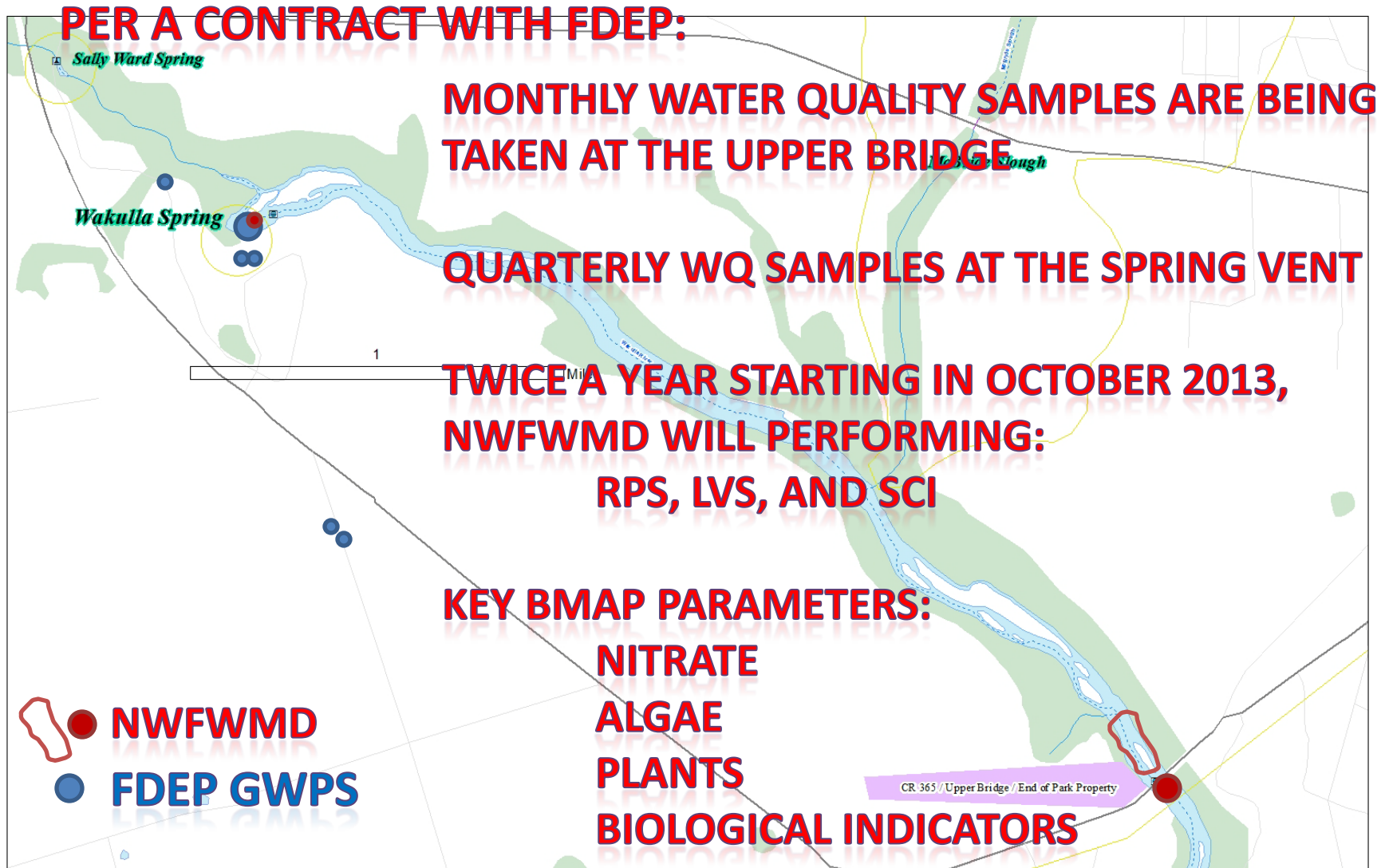


FDEP Ground Water Protection Section Existing Water Quality Monitoring Network



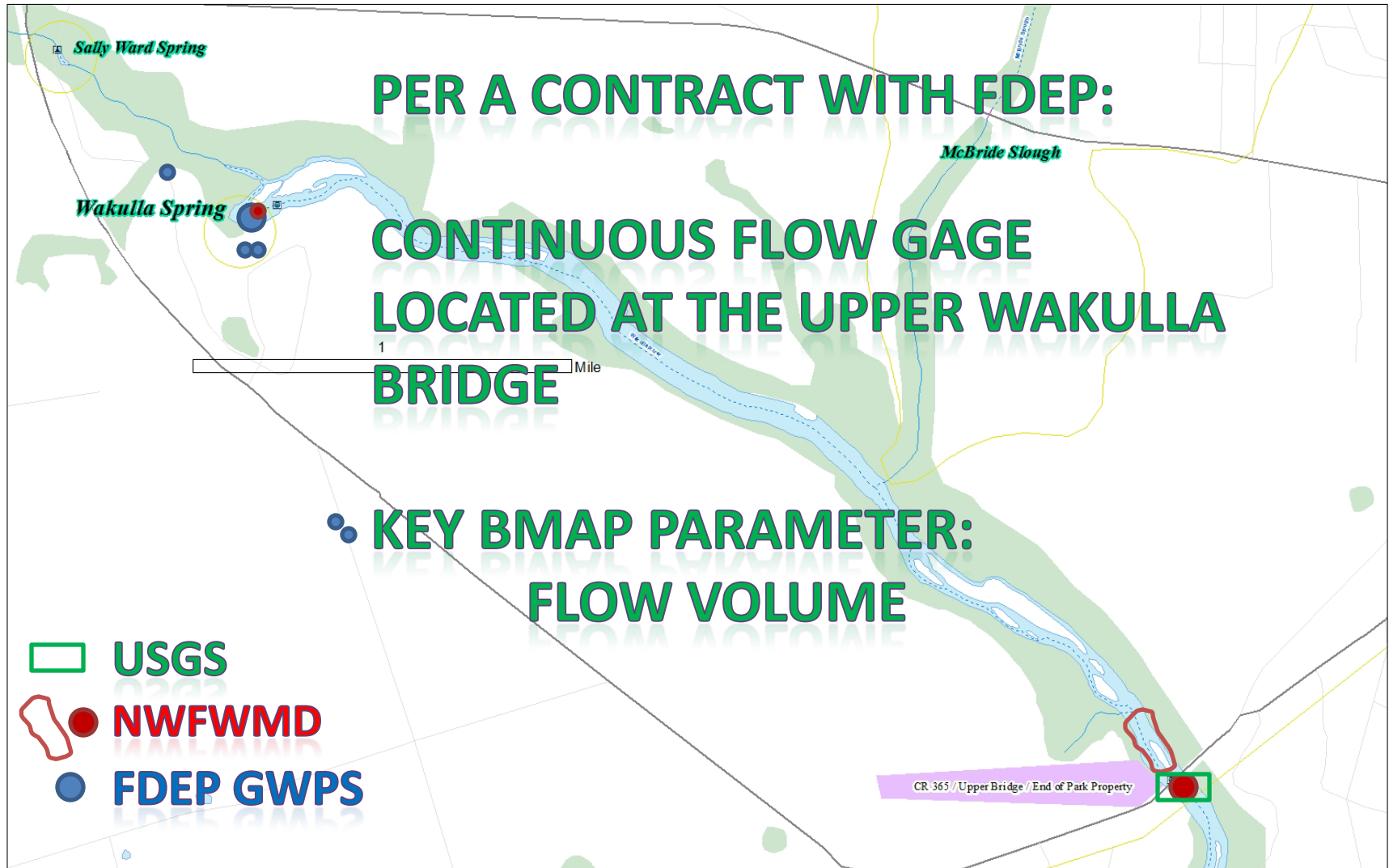


NFWFMD Existing Monitoring Network

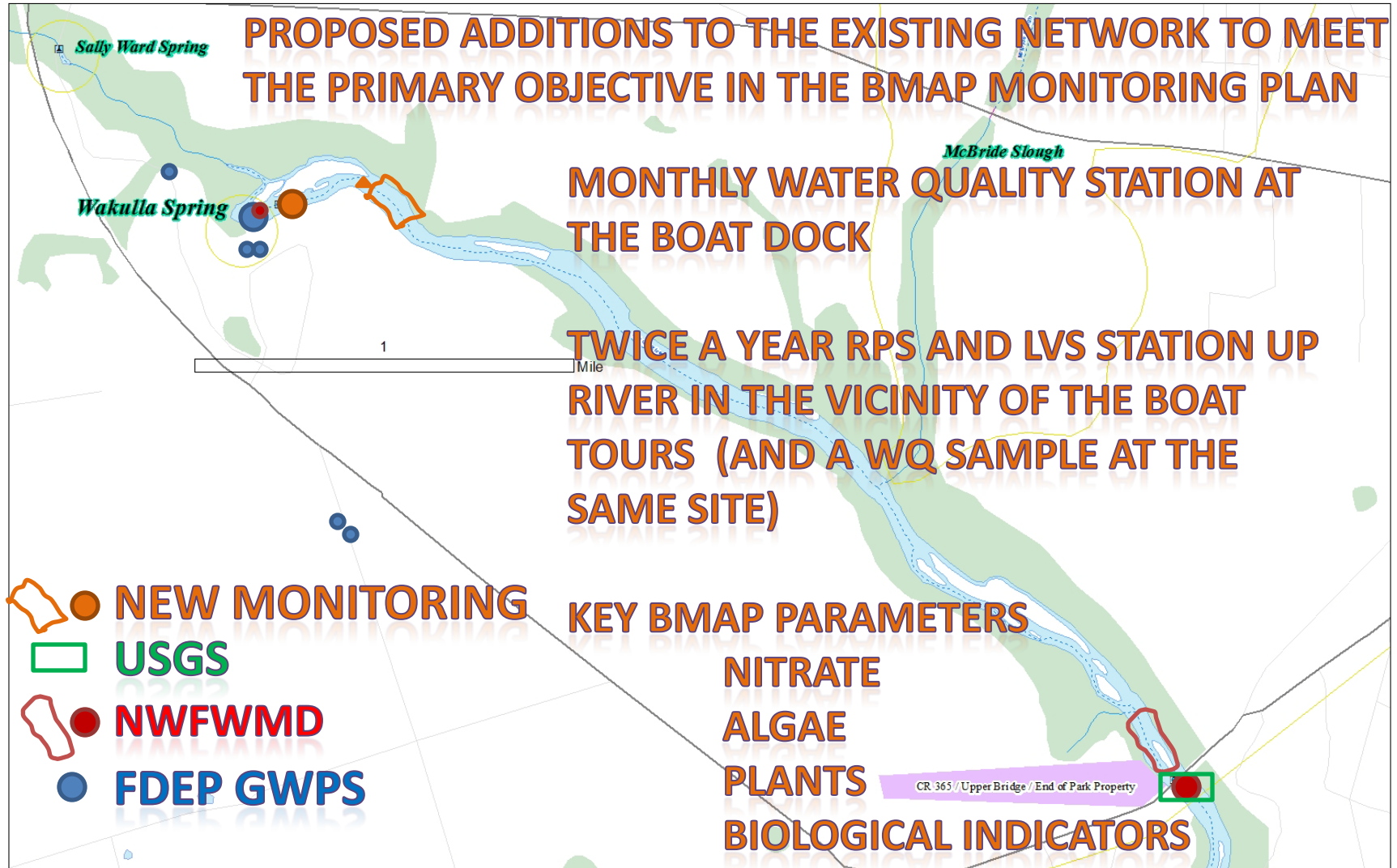




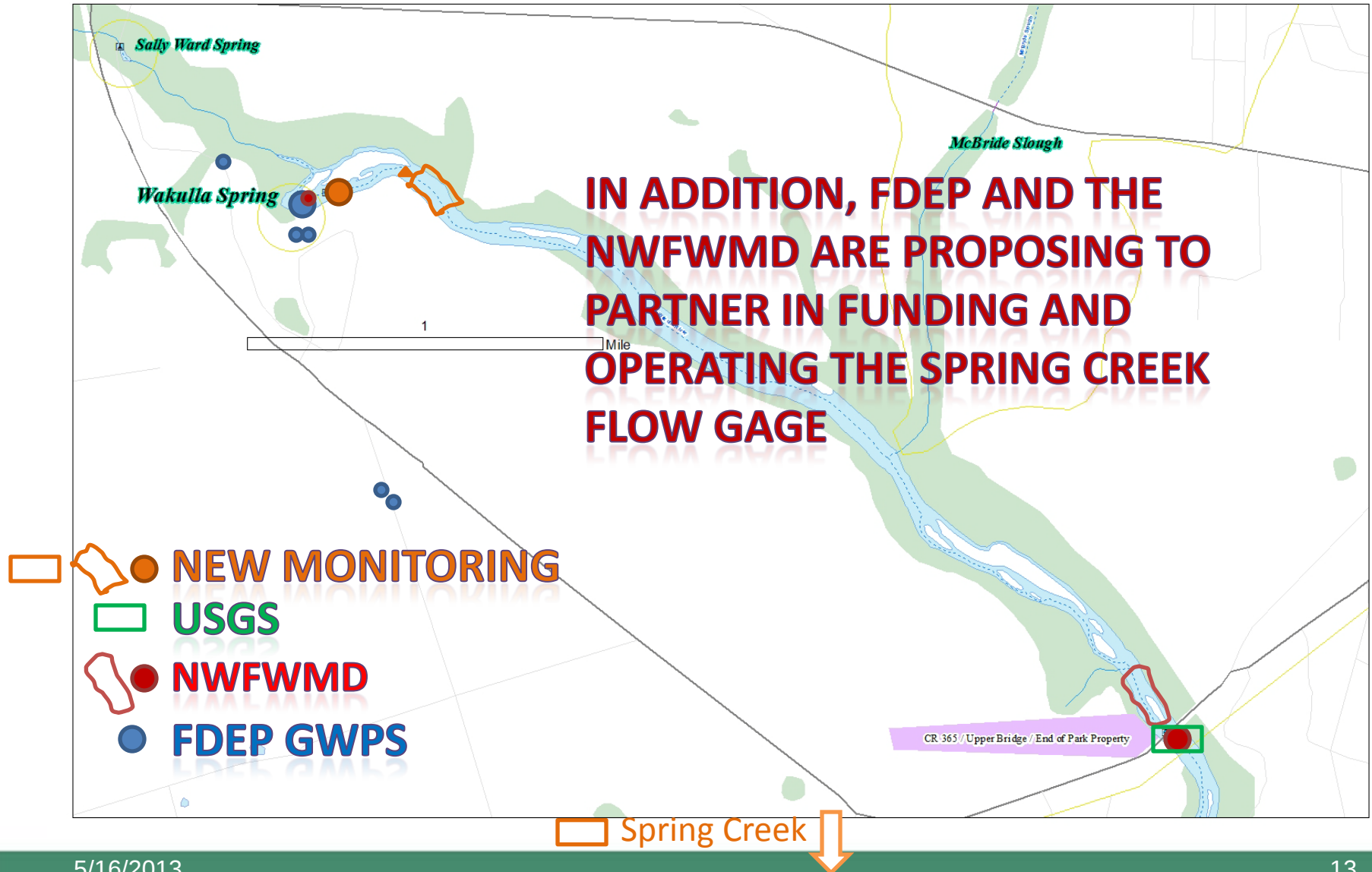
USGS Existing Monitoring Network



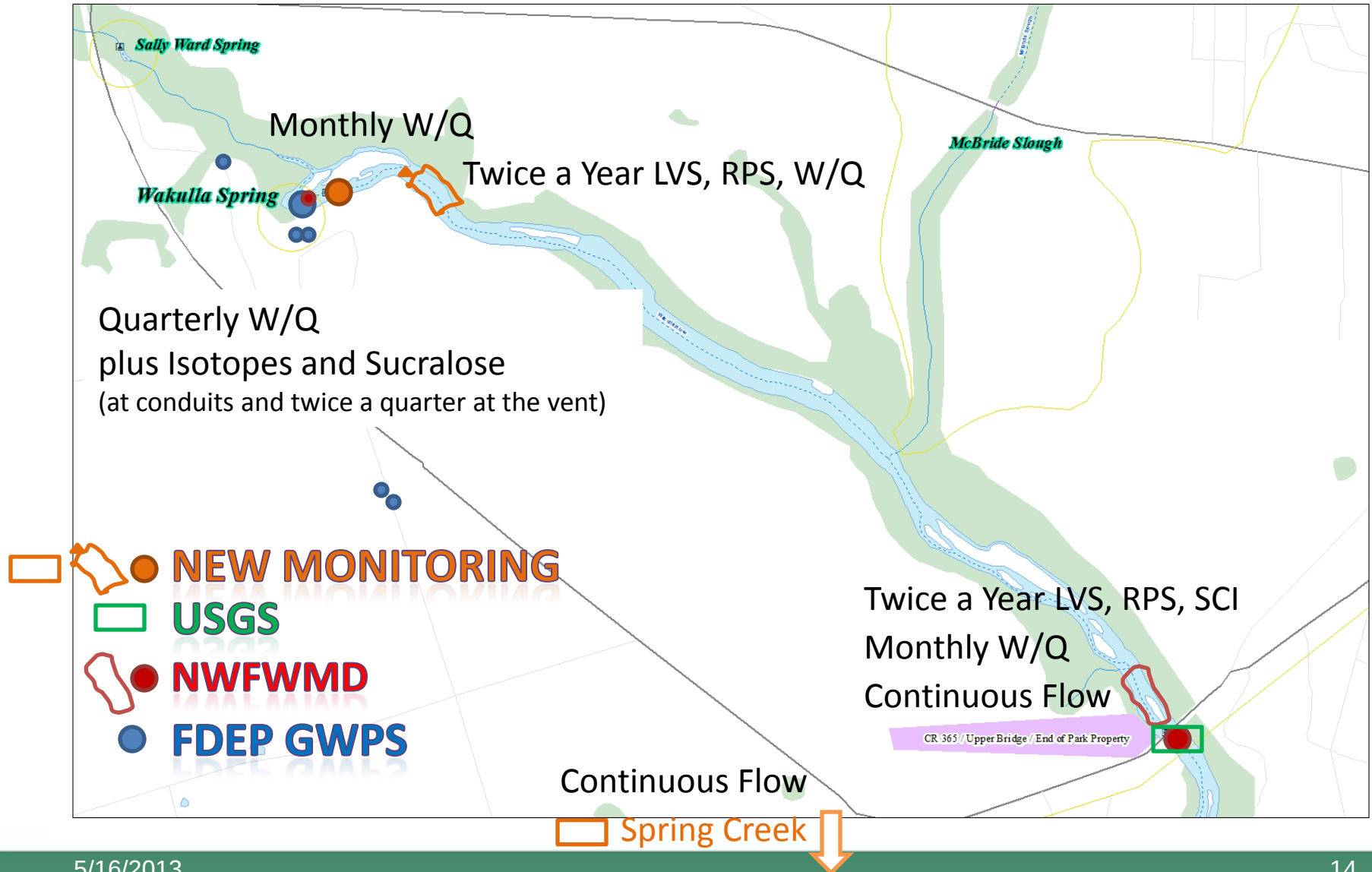
BMAP Monitoring Network



Spring Creek Gage



Proposed BMAP Monitoring Plan





Discussion on the Proposed BMAP Monitoring Plan



Questions

- For questions and comments on the monitoring plan, please contact:
 - Anita Nash
 - Anita.Nash@dep.state.fl.us
 - 850-245-8545