

FIVE-YEAR ASSESSMENT REPORT

For the Long Branch Basin Management Action Plan



prepared by the
Division of Environmental Assessment and Restoration
Watershed Restoration Program
Florida Department of Environmental Protection
Tallahassee, Florida 32399

in cooperation with the
Long Branch BMAP stakeholders

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This five-year Long Branch BMAP assessment report was prepared as part of a statewide watershed management approach to restore and protect Florida's water quality. It was prepared by the Florida Department of Environmental Protection in cooperation with the Long Branch stakeholders, including:

- Florida Department of Agriculture and Consumer Services.
- Florida Department of Environmental Protection.
- Orange County Environmental Protection Department.
- Orange County Health Department.

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LIST OF ACRONYMS AND ABBREVIATIONS

BMAP	Basin Management Action Plan
BMP	Best Management Practice
BOD	Biochemical Oxygen Demand
Department	Florida Department of Environmental Protection
DO	Dissolved Oxygen
FDACS	Florida Department of Agriculture and Consumer Services
HA	Habitat Assessment
LVS	Linear Vegetation Survey
MS4	Municipal Separate Storm Sewer System
OAWP	Office of Agricultural Water Policy
OCEHD	Orange County Environmental Health Department
OCEPD	Orange County Environmental Protection Department
OCSMD	Orange County Stormwater Management Division
RPS	Rapid Periphyton Survey
RV	Recreational Vehicle
SCI	Stream Condition Index
SJRWMD	St. Johns River Water Management District
STORET	STOrage and RETrieval (Database)
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus

SUMMARY

TOTAL MAXIMUM DAILY LOADS

The Long Branch watershed is located within the Middle St. Johns River Basin and is a tributary to the Big Econlockhatchee River. The watershed is entirely within unincorporated Orange County and comprises approximately 4,511 acres, including a small portion of the unincorporated town of Bithlo. Streamflow in this system is intermittent, and there is typically only flow immediately after a storm event. Times of no flow or stagnant water in Long Branch are common.

In 2006, the Florida Department of Environmental Protection adopted total maximum daily loads (TMDLs) to address elevated fecal coliforms and low dissolved oxygen (DO) in Long Branch. For the DO TMDL, three different causative pollutants were found: (1) biochemical oxygen demand (BOD) in the tributaries, (2) total phosphorus (TP) in the tributaries, and (3) total nitrogen (TN) in the mainstem. The BMAP to implement the TMDLs was adopted by the Department in May 2008.

This is the five-year assessment report for the Long Branch BMAP, reflecting progress for the first five years of BMAP implementation. This report was prepared in accordance with Section 403.067(7)(a)(5), Florida Statutes, which requires that an assessment of progress toward the BMAP milestones be conducted every five years and revisions to the plan made, as appropriate. The information presented in this report includes updates on activities that occurred from June 1, 2012 through May 31, 2013.

STATUS OF BMAP MANAGEMENT ACTIONS

The stakeholders have continued the source assessment efforts in the Long Branch watershed. The Orange County Environmental Protection Division (OCEPD) has continued its follow up with Speed World to ensure that events held at this facility do not contribute loading to the stream. Staff have been unable to collect any samples from the ditches discharging from Speed World because of stagnant flow or dry conditions, which are inappropriate for sample collection. The Orange County Environmental Health Department (OCEHD) had several mobile home parks under enforcement for improperly connected washing machines and unsampled wells. There was a documented sewage overflow in May 2013 at the J&C Mobile Home Park, and OCEHD continues to monitor this facility to ensure compliance. The Florida Department of Agriculture and Consumer Services (FDACS) continued to assess the need to enroll any additional agricultural producers in applicable best management practices

(BMPs). In addition, OCEPD has continued the sampling program in the watershed, although low water and/or no flow conditions made it difficult to collect data. The Long Branch Basin is very flashy so there have been extended periods of time over the last five years where conditions were not conducive for monitoring. Therefore, a water quality trend evaluation could not be conducted for this assessment report.

ACTIVITIES FOR THE UPCOMING YEAR

The adopted BMAP has been in place for five years, despite numerous assessments and water quality sampling events, the source(s) of the low DO and fecal coliforms are still unknown. The majority of the basin is undeveloped with large areas of forest, open lands, and wetlands. Therefore, it appears that the low DO concentrations may be a natural condition for the waterbody and that the majority of fecal coliform loading is from wildlife. To verify these assumptions, the Department and OCEPD have identified a new monitoring plan to gather additional data in Long Branch.

The updated monitoring plan will be implemented starting in August 2013 and data collection must be finalized by May 15, 2014 so that the data can be submitted to the Department for use in the next assessment of the waterbody. The draft assessment will be available in summer 2014 and will guide further implementation of actions in the watershed. If the conditions in the Long Branch watershed are determined to be natural, the waterbody may be removed from the impaired list for DO and nutrients. If the conditions in the watershed cannot be classified as natural, the Department will work with the stakeholders to determine what additional actions will be needed.

Section 1: INTRODUCTION

1.1 PURPOSE OF THE REPORT

This is the five-year assessment report for the Long Branch Basin Management Action Plan (BMAP), reflecting progress for the first five years of BMAP implementation. This report was prepared in accordance with Section 403.067(7)(a)(5), Florida Statutes, which requires that an assessment of progress toward the BMAP milestones be conducted every five years and revisions to the plan made, as appropriate. The information presented in this report includes updates on activities that occurred from June 1, 2012 through May 31, 2013 (see **Section 2**). In addition, a summary of upcoming efforts for the period of June 1, 2013 through May 31, 2014 is included in **Section 3**.

1.2 TOTAL MAXIMUM DAILY LOAD FOR THE LONG BRANCH BASIN

The Long Branch watershed is located within the Middle St. Johns River Basin. Long Branch is a tributary to the Big Econlockhatchee River and is located in east central Orange County as shown on **Figure 1**. The watershed is generally bounded on the west by the Big Econlockhatchee River, to the south by the Wedgefield Subdivision, to the east by State Road 520, and to the north by Madison Avenue. The area of the watershed is entirely within unincorporated Orange County and comprises approximately 4,511 acres, including a small portion of the unincorporated town of Bithlo. Long Branch consists of a northern tributary that drains the southeastern portion of Bithlo, a southern tributary that drains a conservation area, and the mainstem flanked primarily by wetlands. Streamflow in this system is intermittent, and there is typically only flow immediately after a storm event. Times of no flow or stagnant water in Long Branch are common.

In 2006, the Florida Department of Environmental Protection adopted total maximum daily loads (TMDLs) to address elevated fecal coliforms and low dissolved oxygen (DO) in Long Branch. For the DO TMDL, three different causative pollutants were found: (1) biochemical oxygen demand (BOD) in the tributaries, (2) total phosphorus (TP) in the tributaries, and (3) total nitrogen (TN) in the mainstem. Thus, the DO TMDL is expressed in terms of these three parameters. **Table 1** lists the TMDLs adopted for Long Branch. The BMAP to implement the TMDLs was adopted by the Department in May 2008.

TABLE 1: LONG BRANCH TMDLS AND REDUCTION REQUIREMENTS

PARAMETER	TMDL	ORANGE COUNTY PERMITTED STORMWATER (PERCENT REDUCTION)	OTHER NONPOINT (PERCENT REDUCTION)
Fecal Coliform	4.64 x 10 ¹⁰ counts/day	32%	32%
BOD (tributaries)	14.96 tons/year	10%	10%
TP (tributaries)	0.74 tons/year	30%	30%
TN (mainstem)	5.20 tons/year	17%	17%

1.3 RESPONSIBLE PARTIES AND KEY STAKEHOLDERS

The Long Branch BMAP identified the Orange County municipal separate storm sewer system (MS4), other urban stormwater, and agriculture as potential sources of the BOD, TN, TP, and fecal coliform impairments in the basin. Orange County is responsible for the reductions and investigations in the BMAP. Several county departments are involved in these efforts including the Orange County Environmental Protection Division (OCEPD), Orange County Environmental Health Department (OCEHD), and Orange County Stormwater Management Division (OCSMD). In addition to these entities, the Florida Department of Agriculture and Consumer Services (FDACS), the Department, and St. Johns River Water Management District (SJRWMD) are key to the implementation of the BMAP activities.

1.4 BMAP ALLOCATIONS

With only one permitted source in the watershed, the Orange County MS4, there was no need to divide the initial DO TMDL allocation beyond permitted nonpoint and non-permitted nonpoint sources. In addition, fecal coliform counts in the natural environment are variable. Given the unknowns about fecal coliform behavior in Long Branch (such as the potential for regrowth in the sediments, frequency of extremely low flow, effect of sampling day selection relative to flow), division of the fecal coliform allocation could not be made. Thus, detailed allocations were not developed in the Long Branch BMAP.

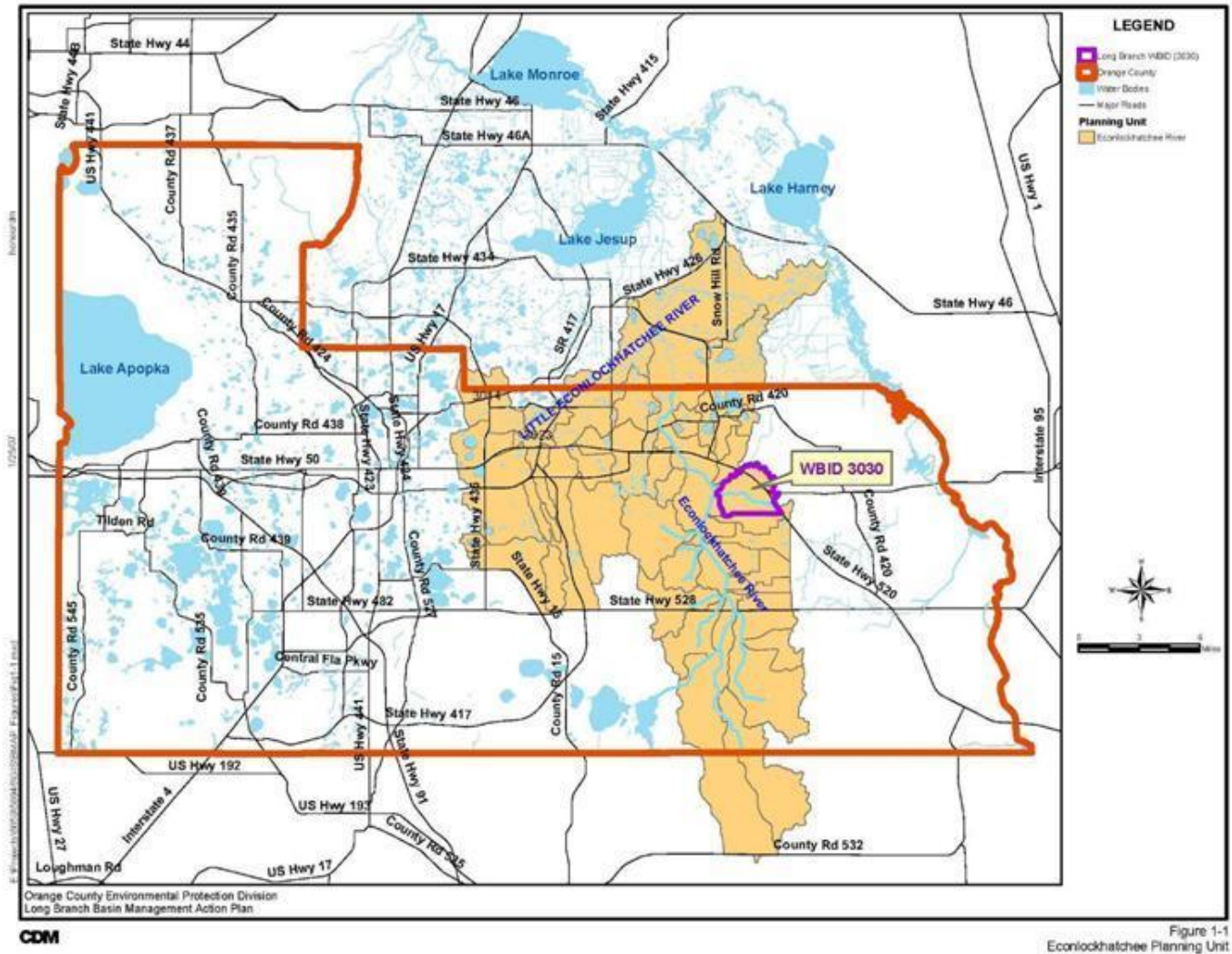


FIGURE 1: LOCATION OF THE LONG BRANCH WATERSHED

Section 2: STATUS OF BMAP MANAGEMENT ACTIONS

2.1 SPEED WORLD ASSESSMENT

The existing bathroom facility at Speed World is adequate for small events; however, for larger multi-day events Speed World provides portable toilets. In addition, pump-out access is provided to recreational vehicle (RV) owners by a private company. OCEPD has made signs stating that onsite discharge of waste is illegal and the signs are posted with the owner’s permission in the area where RVs park, which is adjacent to a drainage canal. The signs are visible to Speed World attendees as well as the adjacent property owners. Water quality sampling following large events at Speed World has been attempted; however, staff have been unable to collect any samples from the ditches discharging from Speed World because of stagnant flow or dry conditions, which are inappropriate for sample collection.

2.2 MOBILE HOME PARK ISSUES

During the year, there were several mobile home parks in the upstream area of the watershed that were under enforcement by OCEHD for improperly connected washing machines and unsampled wells. In addition, there is a documented incident that occurred on May 10, 2013 in which the J&C Mobile Home Park had a sewage overflow because the pump tank on the septic tank system was not working. This mobile home park has had several sewer overflows over the last few years. OCEHD continues to monitor this facility to ensure compliance.

2.3 HYDROLOGIC MEASUREMENTS AND WATER QUALITY SAMPLING

The sample sites for Long Branch include one site (BELB) that is part of the overall long-term OCEPD sampling program. However, due to low water and/or no flow, no data were collected at this site. OCEPD did collect samples at several upstream sites listed in **Table 2**. The Long Branch Basin is very flashy so there have been extended periods of time over the last five years where conditions were not conducive for monitoring. Therefore, a water quality trend evaluation could not be done for this report.

TABLE 2: WATER QUALITY DATA

STATION	STATION NAME	SAMPLE DATE	FECAL COLIFORMS (COUNTS/100 mL)	DO (MG/L)
XLONGBRD	Long Branch Site D	10/18/2012	2,000	5.7
XLONGBRO	Long Branch Site O	04/08/2013	640	4.8
XLONGBRG	Long Branch Site G	04/08/2013	7,800	4.9
XLONGBRSD	Long Branch Site SD	04/08/2013	160	8.8

2.4 AGRICULTURE

The largest agricultural operation in the Long Branch basin, a 600-acre cow/calf operation (see **Figure 2**), enrolled in the BMP program in spring 2010. About half of the operation resides inside the basin. Based on aerial photos and SJRWMD 2009 land use data, there appears to be little other agriculture in the basin. The updated land use indicates that there are approximately 50 acres of field crops in the basin. However, 48 acres, located in the southern half of the basin, appear to be residential equestrian facilities and associated pasture. The remaining two acres are improved pasture that appears to be vacant. In the northern portion of the basin, there are approximately 77 acres of improved pasture that was historically used for cattle grazing, but an Office of Agricultural Water Policy (OAWP) contractor contacted the current landowner and determined that the land is now vacant and awaiting development.

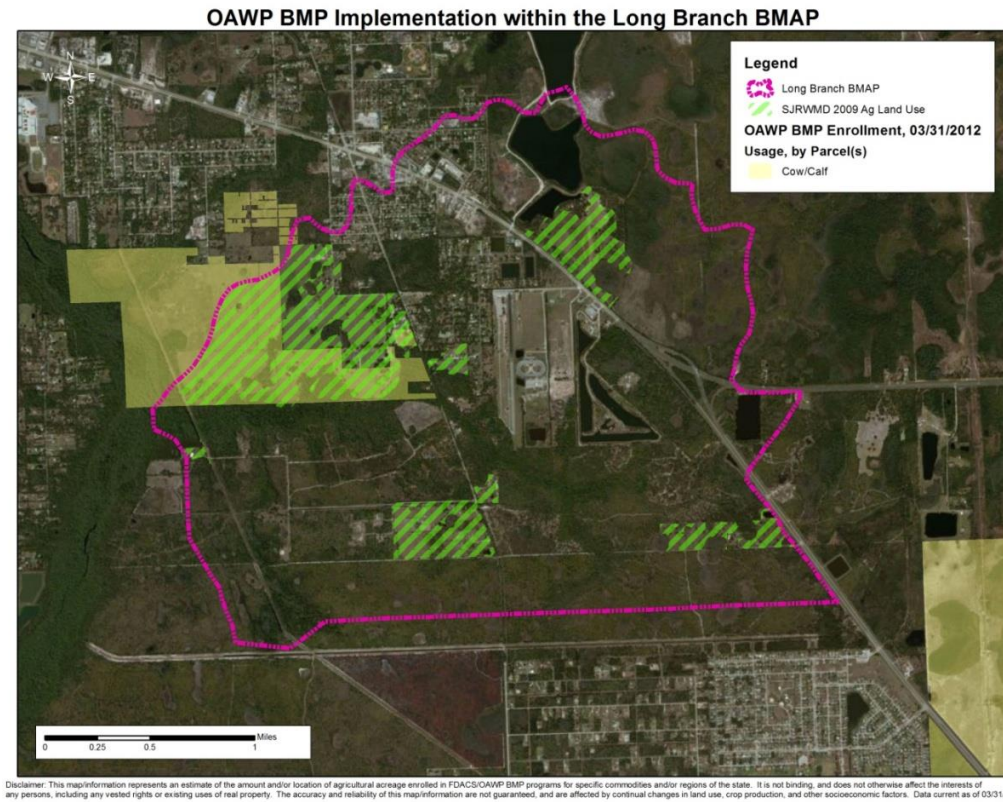


FIGURE 2: AGRICULTURAL BMP IMPLEMENTATION WITHIN THE LONG BRANCH BASIN

2.5 SUMMARY OF EFFORTS

Table 3 summarizes the management actions that were described above, as well as other broad-based actions, which should also contribute to water quality improvements in the Long Branch Basin.

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TABLE 3: MANAGEMENT ACTIONS SUMMARY

MANAGEMENT ACTION	DESCRIPTION	TIMELINE	RESPONSIBLE PARTY
Hydrologic Measurements	Flow-related measurements have occurred at Site G along County Road 13 since March 2008. An acoustic flow velocity meter and pressure transducer was installed that recorded velocity and stage, respectively. The County installed ISCO 2150 series flow modules on April 16, 2010 at the location of the Long Branch tributary and County Road 13 to capture smaller velocities in order to document the low to no flow conditions. The county removed the flow modules on March 9, 2011, and the data confirm that the water recedes quickly after an event unless the tributary is staged by the Econlockhatchee River, which results in stagnant to near stagnant conditions or no water. The equipment can be re-deployed if additional data are needed. Sampling conditions at the site have continued to be problematic, as the flashiness of the system does not allow for the collection of water samples on a routine basis. Due to low water and /or no flow, 2012 data consists of no samples for the STORET station that collects for this area, which is BELB. However, OCEPD did collect samples at several upstream sites listed in Table 2 .	Ongoing	OCEPD
Sanitary Survey	A field survey was conducted on April 2, 2010 and no visible illicit connections from septic systems to the creek were observed. OCEH followed up on one washing machine connection, past inspections for the mobile home parks, and septic tank repair records for Bithlo. Flooding does not appear to be an issue for septic tanks in the area.	Completed	OCEHD
Mobile Home Park Issues	The OCEHD will continue to monitor the J&C Mobile Home Park to ensure compliance after one documented sewage overflow during the reporting period, and three documented sewage overflows during the previous reporting period.	Ongoing	OCEHD
Optical Brightener Testing	Optical brightener tests have not been performed in the Long Branch basin. Use in other waterbodies provided inconclusive results. However, Methylene Blue Active Substances testing was conducted to determine whether detergents were present; the results were negative. Samples at Site D came back positive for human sewage indicators.	Completed	OCEPD
Speed World Wastewater Field Visits and Follow-up	Staff coordinated with the Speed World owner regarding onsite waste management during events. OCEPD has posted signs stating that onsite discharge of waste is illegal. Staff will attend future Speed World events to observe how waste is handled. Staff have been unable to collect any samples to date from the ditches discharging from Speed World following an event due to low or no flow conditions.	Ongoing	OCEPD
MS4 Permit Implementation	Orange County is a Phase I MS4 (Permit No. FLS000011) responsible for developing and implementing a stormwater management program that reduces pollutants in stormwater to the maximum extent practicable. This involves a broad range of activities from public education through erosion control, stormwater system and facility inspections, and system inventories.	Ongoing	OCEPD
Public Education and Outreach	To help citizens develop a commitment to the environment's health and well-being, the County conducts two types of public outreach efforts: those intended to change behavior and those intended to inform the public about water resources. These efforts include implementation of the Florida Yards and Neighborhoods Program, the Orange County Water Atlas www.orange.wateratlas.org , brochures, public presentations, school programs, Earth Day activities, and other outreach efforts.	Ongoing	Orange County

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MANAGEMENT ACTION	DESCRIPTION	TIMELINE	RESPONSIBLE PARTY
Econlockhatchee River Protection Program	Orange County has established special criteria for development within the Big Econlockhatchee River Basin, which are defined in Chapter 15 of the County’s Code of Ordinances. Within this basin, Orange County regulations require pollution abatement, recharge where possible, and flood protection.	Ongoing	OCEPD
Orange County Fertilizer Ordinance	Orange County has implemented a countywide fertilizer ordinance effective March 1, 2010, that is applicable to turf fertilization. The ordinance addresses nitrogen and phosphorus content, weather and seasonal application restrictions, a fertilizer-free zone around waterbodies, the requirement for a deflector shield on spreaders, the requirement for training for applicators, and enforcement options as necessary.	Ongoing	Orange County
Pollution Abatement Swale Design Criteria	The County has researched the possibility of developing more specific criteria for the design, construction, and maintenance of environmental berms and swales on properties abutting lakes and streams. The County has identified specific deficiencies in the current code that require modification. These modifications would apply to new development and redevelopment in the Land Development Code.	Program under development	OCSMD
Environmental Control Regulations (Ch. 15, Article X, Orange County Code)	Orange County has established environmental regulations for development within Orange County. These regulations require pollution abatement, flood protection, and wetland habitat preservation.	Ongoing	Orange County
Stormwater Regulations (Ch. 38, Zoning, Orange County Code)	In the zoning code, Orange County established stormwater regulations for development within Orange County. These regulations require pollution abatement, recharge criteria, and flood protection.	Ongoing	Orange County
Environmentally Sensitive Lands Ordinance (Chapter 15, Article XVIII)	Provides further protection of habitat, buffer areas of the Econlockhatchee River, and density requirements.	Ongoing	Orange County
Environmental Resource Permit	Activities that exceed SJRWMD permitting thresholds must be authorized by an Environmental Resource Permit from the District, which incorporates both stormwater treatment and mitigation of any wetland impacts.	Ongoing	SJRWMD
Agricultural BMPs	FDACS develops, adopts, and implements BMPs to reduce water quality impacts from agricultural discharges and enhance water conservation. FDACS has enrolled the largest agricultural operation in BMPs, and there appears to be no other agriculture in the basin that needs to be enrolled.	Ongoing	FDACS and Private Landowners

Section 3: UPCOMING ACTIVITIES

The following activities are planned in the Long Branch watershed for the upcoming period of June 1, 2013 through May 31, 2014.

3.1 SPEED WORLD ASSESSMENT

OCEPD staff will attend future Speed World events to observe how waste is handled. If any issues are observed, staff will coordinate with the owner to ensure the problem is resolved.

3.2 MOBILE HOME PARK ISSUES

OCEHD will continue to monitor the J&C Mobile Home Park to ensure compliance after the documented sewage overflows.

3.3 AGRICULTURE

OAWP will determine whether there are other agricultural operations in the basin that would fall under adopted BMP programs and enroll those operations for the appropriate BMPs.

3.4 WATER QUALITY SAMPLING

The adopted BMAP has been in place for five years, despite numerous assessments and water quality sampling events, the source(s) of the low DO and fecal coliforms are still unknown. The majority of the basin is undeveloped with large areas of forest, open lands, and wetlands. Approximately 34% of the watershed is in public ownership or management. Based on these conditions, it appears that the low DO concentrations may be a natural condition for the waterbody and that the majority of fecal coliform loading is from wildlife. To verify these assumptions, the Department and Orange County have identified a new monitoring plan to gather additional data in Long Branch.

The objective of the new monitoring plan is to provide the necessary chemical and biological data to evaluate the status of the DO impairment as part of the Department's TMDL reassessment in June 2014. The Department's Central District Office will take the lead on collecting the additional data to supplement OCEPD's existing monitoring efforts (see **Section 2.3**). Data will be collected from the middle segment of Long Branch and will be a combination of water quality and biological sampling.

For the water quality monitoring, 20 grab samples will be collected at two sites to assess nutrients, fecal coliforms, metals, and field conditions. Twenty grab samples of sucralose will also be collected at the two sites to help determine if the fecal coliforms are coming from a human source. In addition, a DO sonde will be deployed at least two times for a period of one week each to provide a diel reading of DO. Biological sampling will be conducted these two sites during two different times. The biological sampling will include (1) stream condition index (SCI) to measure the number of different organisms present in the stream; (2) habitat assessments (HA) to evaluate the stream conditions and habitat present to support the SCI evaluation; (3) rapid periphyton survey (RPS) to assess the abundance and variety of algae in the stream; and (4) linear vegetation survey (LVS) to assess the types and density of vegetation present in the stream and to identify the native versus non-native species. The new monitoring that will occur during the upcoming reporting period (June 1, 2013 through May 1, 2014) is summarized in **Table 4**.

TABLE 4: NEW WATER QUALITY AND BIOLOGICAL MONITORING PLAN

TYPE	NUMBER OF SITES	NUMBER OF SAMPLES	PARAMETERS
Water Quality Grab Samples	2	20	Alkalinity, Ammonia, BOD-5 day, Chloride, Chlorophyll-a (corrected), Color (true), Fecal Coliforms, Fluoride, Nitrite-Nitrate, Orthophosphate-filtered, Pheophytin-a, Sulfate, Total Dissolved Solids, Total Kjehldahl Nitrogen, Total Organic Carbon, TP, Total Suspended Solids, Turbidity, Arsenic, Cadmium, Copper, Lead, Silver, Calcium, Chromium, Iron, Magnesium, Nickel, Potassium, Sodium, Zinc, Sucralose, DO, DO % Saturation, Temperature, Salinity
DO Sonde	1	2 independent events, 5-day deployments	DO Diel
Biological Sampling	2	2 independent events	SCI, HA, RPS, LVS, Velocity

The updated monitoring plan will be implemented starting in August 2013 and collection must be finalized by May 15, 2014 so that the data can be submitted to the Department for use in the next assessment of the waterbody. The draft assessment will be available in summer 2014 and will guide further implementation of actions in the watershed. If the conditions in the Long Branch watershed are determined to be natural, the waterbody may be removed from the impaired list for DO and nutrients. If the conditions in the watershed cannot be classified as natural, the Department will work with the stakeholders to determine what additional actions will be needed.