

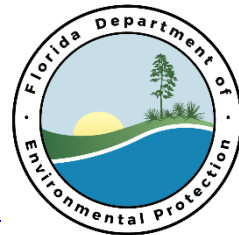
*Final*  
*2016 Progress Report*  
*for the Bayou Chico*  
*Basin Management Action Plan*

**Division of Environmental Assessment and Restoration**  
**Florida Department of Environmental Protection**

**April 2017**

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Tallahassee, FL 32399

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## Acknowledgments

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This progress 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 with participation from the Bayou Chico Basin stakeholders identified in **Table 1** below.

**Table 1. Bayou Chico Basin stakeholders**

Type of Entity or Governmental Agency	Name
<b>Responsible Stakeholders</b>	Bay Area Resource Council City of Pensacola Emerald Coast Utilities Authority Escambia County Naval Air Station Pensacola University of West Florida
<b>Responsible Agencies</b>	Florida Department of Environmental Protection Florida Department of Health Florida Department of Transportation Florida Fish and Wildlife Conservation Commission Northwest Florida Water Management District
<b>Other Interested Stakeholders</b>	Citizens Bayou Chico Association

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## List of Acronyms and Abbreviations

µg/L	Micrograms per Liter
BARC	Bay Area Resource Council
BCA	Bayou Chico Association
BMAP	Basin Management Action Plan
BMP	Best Management Practice
CDBG	Community Development Business Grant
cfu	Colony-Forming Unit
COP	City of Pensacola
DBPR	Department of Business and Professional Regulation
DCF	Florida Department of Children and Families
DEP	Florida Department of Environmental Protection
DNA	Deoxyribose Nucleic Acid
<i>E. coli</i>	<i>Escherichia coli</i> (bacteria)
ECUA	Emerald Coast Utilities Authority
EHD	Environmental Health Database
EPA	U.S. Environmental Protection Agency
ERC	Environmental Regulation Commission
F.A.C.	Florida Administrative Code
FCT	Florida Communities Trust
FDACS	Florida Department of Agriculture and Consumer Services
FDOH	Florida Department of Health
FDOT	Florida Department of Transportation
FIB	Fecal Indicator Bacteria
FLWMI	Florida Water Management Inventory
FOG	Fats, Oils, and Grease
F.S.	Florida Statutes
FWC	Florida Fish and Wildlife Conservation Commission
GEU	Genomic Equivalent Unit
GIS	Geographic Information System
gpd	Gallons Per Day
HUD	U.S. Department of Housing and Urban Development
IDDE	Illicit Discharge Detection and Elimination
I/I	Inflow and Infiltration
IWR	Impaired Surface Waters Rule
MGM	Monthly Geometric Mean
mL	Milliliter
MS4	Municipal Separate Storm Sewer System
MSD	Marine Sanitation Device
MST	Microbial Source Tracking
NA	Not Applicable
NAS	Naval Air Station
ND	Not Detected
NFWF	National Fish and Wildlife Foundation
NNC	Numeric Nutrient Criteria
NPDES	National Pollutant Discharge Elimination System

NS	Not Sampled
OSTDS	Onsite Sewage Treatment and Disposal System
PVC	Polyvinyl Chloride
RESTORE	Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States (Act)
SSO	Sanitary Sewer Overflow
STORET	Storage and Retrieval (Database)
TBD	To Be Determined
TMDL	Total Maximum Daily Load
TPTV	Ten Percent Threshold Value
TSC	Target Sequence Copies
USN	U.S. Navy
UWF	University of West Florida
WBID	Waterbody Identification
WQLM	Water Quality and Land Management (Escambia County)
WTW	Walk the WBID
WWTF	Wastewater Treatment Facility

## Section 1. Introduction and Background

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This annual progress report summarizes the activities associated with the fifth year of the [Bayou Chico Basin Management Action Plan](#) (BMAP) adopted in August 2011. **Section 2** describes the projects and activities implemented by stakeholders during the reporting period (November 1, 2015, through October 31, 2016) as well as planned projects for the next reporting period (November 1, 2016, through October 31, 2017). **Section 3** contains an evaluation of water quality data for the monitoring period (July 1, 2015, to June 30, 2016). **Appendix A** contains important web addresses embedded throughout the report. **Appendix B** contains a comprehensive list of stakeholder projects and activities that have been completed, continued (i.e., ongoing), or planned since BMAP adoption. **Appendix C** contains a Florida Department of Health (FDOH) septic system summary for the Bayou Chico BMAP area. **Appendix D** contains a list and a map of the BMAP monitoring stations. **Appendix E** contains the list of Walk the WBID<sup>1</sup> (WTW) field observations.

In 2009, the Florida Department of Environmental Protection (DEP) adopted fecal coliform total maximum daily loads (TMDLs)<sup>2</sup> for the following six impaired waterbodies: Bayou Chico (WBID 846), Jones Creek (WBID 846A), Jackson Creek (WBID 846B), Bayou Chico Drain (WBID 846C), Bayou Chico Beach (WBID 846CB), and Sanders Beach (WBID 848DA). The [TMDLs](#) that define the required fecal coliform reductions for each segment or tributary are available online. DEP adopted the Bayou Chico BMAP to implement the fecal coliform TMDLs. **Figure 1** shows the BMAP geographic boundaries.

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<sup>1</sup> DEP uses the acronym "WBID," or "waterbody identification," to identify the watersheds of tributaries, lakes, estuaries, beaches, and segments of large rivers. The state is divided into approximately 6,600 WBIDs for the purpose of watershed management.

<sup>2</sup> TMDLs are water quality targets for specific pollutants established for impaired waterbodies that do not meet their designated uses based on Florida water quality standards. In portions of the Bayou Chico Basin, fecal coliform bacteria were identified as the primary pollutant causing impairment.

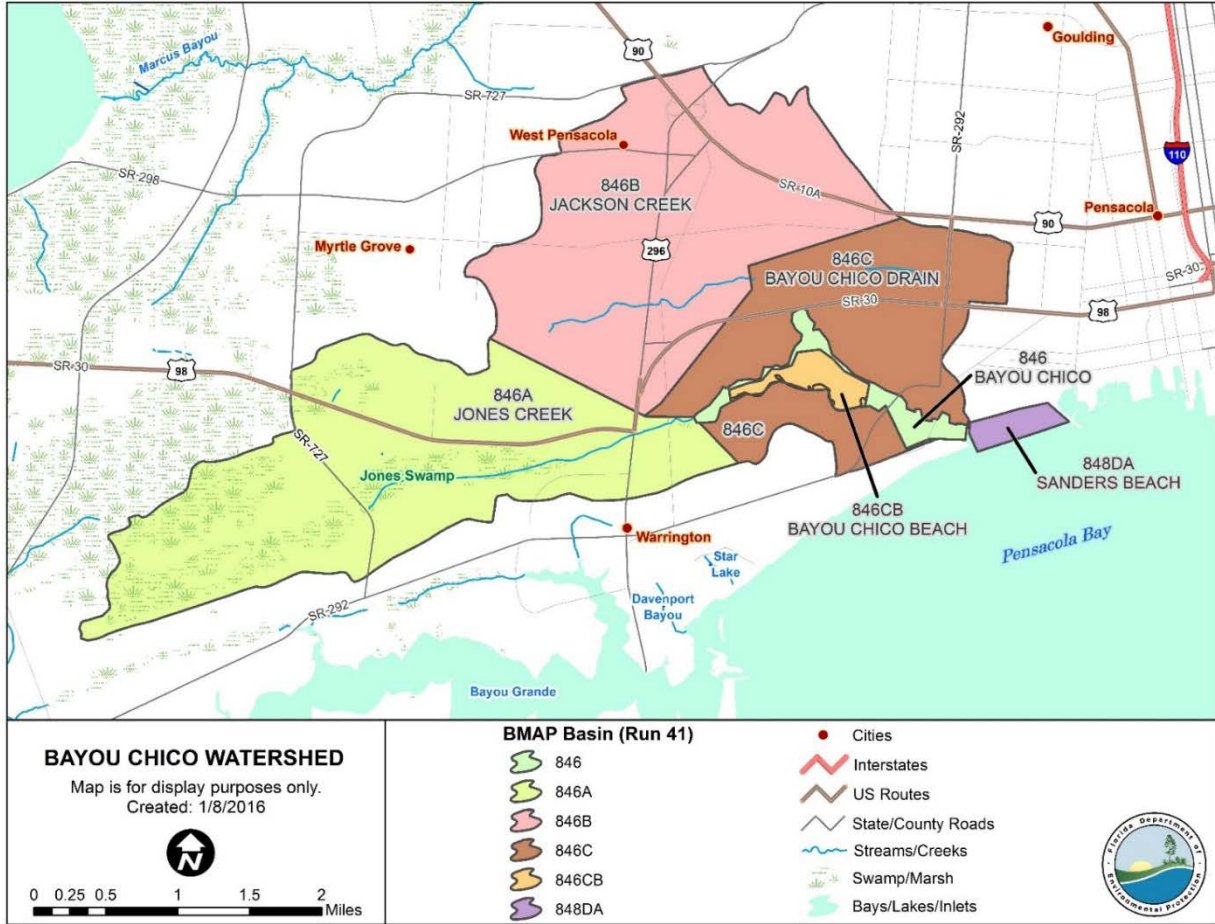


Figure 1. Bayou Chico BMAP WBID boundaries



## **Section 2: Activities During the Reporting Period**

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### **2.1 Activities by Stakeholder**

Stakeholders are implementing ongoing maintenance programs and planned projects. DEP and stakeholders continue to work together to identify the sources of fecal indicator bacteria (FIB) through field investigations and monitoring of source indicator parameters.

Detailed tables of stakeholder projects and activities that have been completed, continued, or planned since BMAP adoption are located at **Appendix B**. Highlights of activities during the reporting period are below.

#### **2.1.1 Bayou Chico Association (BCA) Activities**

BCA has been active during the reporting period by supporting (at various levels) the initiation, development, and completion of projects focused on restoration of the bayou.

The dredging of the old train trestle bridge area in the north of the bayou was completed in November 2015. The area is now 30 feet wide by 6 to 8 feet deep (4.5 feet deep at low tide). The old train trestle pilings on the west side of the dredged area could not be removed. The old pilings do not prevent the passage of deep-draft vessels, and will be marked. The permit holder, Rick Higdon, paid for the project. It is expected to help flushing in the upper bayou, decreasing the potential for FIB regrowth attributed to stagnation.

BCA partnered with Marine Max and participated in a Bayou Chico Trash Round-Up on Saturday, June 25, 2016. Approximately 45 volunteers collected nearly 4,000 pounds of debris. The event was covered on the radio and in the press.

BCA's Bayou Chico Restoration Project is Escambia County's nomination for \$12 million of the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States (RESTORE) Gulf Consortium (Pot 3) funding. The Gulf Consortium hired a consultant to assist Florida's Gulf Coast counties with project development. On October 3, 2016, BCA attended a meeting with the new Gulf Consortium consultants, Commissioner Doug Underhill, other county representatives, Keith Wilkins from the City of Pensacola (COP), and representatives from the Emerald Coast Utility Authority (ECUA). The meeting was held to discuss funding strategies for the restoration project. The project will be presented before the Gulf Consortium, the Governor, and the RESTORE Gulf Coast Ecosystem Restoration Council for funding consideration.

BCA contracted with a consulting group to help review groundwater and sediment data and to conduct research to determine the feasibility of using the Clark Sand Pit to store dredged sediments from Bayou Chico. The consulting group is also researching the feasibility of the Jackson Lakes Diversion and Wakeboard Park Project, since this project proposes using the sand pit for recreational purposes.

BCA finalized a permit strategy document associated with the Bayou Chico Dredge Project. BCA will have a pre-application, engineering, and design meeting with the entities involved to discuss a path forward. In addition to the already-funded \$357,000 for the permitting, design, and engineering of this project, an additional \$240,000 in funding from the RESTORE Gulf Consortium (Pot 3) monies has been nominated by Escambia County. This would provide \$600,000 for the permitting, design, and engineering of this project, which BCA estimates is a more appropriate amount considering the scope of the project.

### **2.1.2 ECUA**

ECUA has an active Fats, Oils, and Grease (FOG) Program. During the first three quarters of 2016, ECUA staff conducted 1,262 inspections at food service establishments. They documented 75 violations, all of which were corrected after a notice of deficiency was issued. ECUA logged 342 grease manifests at the central water reclamation septage/grease processing facility, which documents maintenance on the grease traps. ECUA has 9 grease disposal stations located throughout the greater Pensacola area where residents can obtain free grease recycle containers and deposit used cooking oil, which is recycled into biodiesel fuel. ECUA public information office staff participated in over 100 speaking engagements to share information related to sanitary sewer overflows (SSOs), the FOG Program, and problems caused by flushable wipes. The [ECUA website](#) contains general information on the Flushable Wipes Program as well as the residential and commercial FOG Programs.

### **2.1.3 Escambia County**

During the reporting period, the county completed many phases of major projects. It completed best management practice (BMP) effectiveness monitoring for the Lexington Terrace Stormwater Retrofit Project and completed the construction of Phase I of the Southwest Greenway 3rd Extension Project. In addition, the county completed the design of Phase II of the Southwest Greenway 3rd Extension Project. It also finalized the design of the Beach Haven Phase I Project and awarded the construction contract. Additionally, the county awarded the design contract for the Jones Swamp Floodplain Restoration Project. Finally, the county finalized design and awarded the construction contract for the Jones Swamp Floodplain and Sewer Lift Station Relocation Project. The county secured funding for 9 water quality improvement projects totaling over \$30 million. In addition to structural projects, the county continued assisting DEP with the collection of monthly surface water samples and samples specifically used for bacteria source tracking.

### **2.1.4 FDOH – Escambia County**

FDOH participated in Escambia County's Bay Day on May 6, 2016, at the University of West Florida (UWF). An interactive septic tank model demonstrated, to over 300 local 5th grade students, the impacts a septic tank has on water quality if not maintained properly. Color sheets with information on "what not to flush down the drain" were given to the students. FDOH also participated in *Florida Health Cleans Up!* Employees collected trash and debris from Sanders Beach on October 11, 2016, to contribute to a healthier, litter-free environment.

FDOH issued a "Notice to Abate a Sanitary Nuisance" to two businesses on New Warrington Road that were unknowingly discharging raw sewage due to a broken force main into a creek that leads into the upper arm of Bayou Chico. FDOH worked with Escambia County and DEP to help the businesses remedy the issue. A local plumber was called to repair the issue. FDOH also issued a "Notice to Abate a Sanitary Nuisance" to a business on New Warrington Road to fix a private lift station. Sewage was flowing near Tyson Street into the ditch that runs parallel to New Warrington Road into a creek that leads into the upper arm of Bayou Chico. The lift station was fixed and the sanitary nuisance was abated.

FDOH continues to receive funding from ECUA to aid with indigent sewer connections.

### **2.1.5 Florida Fish and Wildlife Commission (FWC)**

FWC had two patrol details with six local officers who concentrated their efforts on marine sanitation devices (MSD) enforcement. Although no violations were detected, FWC is using these details as a deterrent.

## Section 3. Water Quality Evaluation

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### 3.1 Revised FIB Criteria

In December 2015, the Environmental Regulation Commission (ERC) approved proposed revisions to Florida's water quality standards that included revised bacteria criteria. DEP adopted the U.S. Environmental Protection Agency (EPA) recent criteria for *Escherichia coli* (*E. coli*) bacteria (Class I and III fresh water) in waters and *Enterococci* bacteria (Class III marine water) to replace the existing criteria for fecal coliform bacteria. These new FIB are based on the same recreational bather illness rate as the fecal coliform criteria, but they correlate better with bather illness than fecal coliforms and are thus more protective. Class II fecal coliform criteria are retained, since the federal and state shellfish harvesting programs continue to use this indicator.

The new criteria include a monthly geometric mean (MGM) and a ten percent threshold value (TPTV). The MGM is based on a minimum of either 5 samples (Class I) or 10 samples (Class III) taken over a 30-day period. Because of sample size, the criteria applicable to the BMAP are the TPTV. A TPTV is an upper value not to be exceeded in 10 % or more of the samples during an assessment period. *E. coli* will be used to assess fresh waters and the MGM is 126 colony-forming units/100 milliliters (cfu/100mL) and the TPTV is 410 cfu/100 mL. *Enterococci* will be used to assess Class III marine waters and the MGM is 35 cfu/100 mL and the TPTV is 130 cfu/100 mL. These criteria changes apply to Jones Creek and Jackson Creek (Class III fresh waterbodies), and Bayou Chico and Bayou Chico Drain (Class III marine waterbodies).

While Sanders Beach and Bayou Chico Beach are also Class III marine waterbodies, bathing beaches such as these are assessed differently for public health reasons. WBIDs with bathing beaches are monitored by the county FDOH, such as FDOH – Escambia County. These WBIDs are assessed using the DEP advisory criteria, which did not change when the DEP FIB criteria were revised. Advisories are based on the FDOH *Enterococci* threshold value, which is lower (more protective) than the DEP threshold value discussed above for nonbathing Class III marine waters.

While the new DEP criteria were approved for adoption by the ERC in December 2015 and went into effect for state purposes on February 17, 2016, the criteria will need EPA approval before they go into effect for Clean Water Act purposes (Impaired Surface Waters Rule [IWR]) assessments and National Pollutant Discharge Elimination System [NPDES] permits). For more information about the criteria, contact [Ken Weaver](#) of the DEP Standards Development Section.

To transition to the new state FIB criteria, the BMAP efforts will continue to implement the fecal coliform TMDLs while integrating sampling for *E. coli* and *Enterococci*, so that the waterbodies can be assessed using the new water quality standard during the next assessment cycle. The *E. coli* and *Enterococci* data will be used to guide future restoration efforts. In the meantime, high-magnitude fecal coliform exceedances remain a good tool to direct field investigations and management strategies.

### 3.2 Water Quality Monitoring

The Bayou Chico monitoring plan supports the implementation of the BMAP by providing water quality data and other information that can be used to document status and track trends in fecal coliform levels and other microbial water quality conditions in the six BMAP WBIDs. The information collected through the monitoring plan is used to evaluate progress toward achieving BMAP objectives, to demonstrate progress toward meeting the TMDLs, to facilitate comparisons of water quality in the BMAP watershed before and after the implementation of BMPs, and to provide information to help guide the selection of future BMPs.

The monitoring plan consists of monthly ambient water quality sampling at seven stations in the watershed. These stations are monitored by Escambia County, and the fecal coliform samples are analyzed by the UWF Wetlands Research Laboratory. The DEP Northwest District works with Escambia County, as needed, to follow up on high fecal coliform counts. The Northwest District also uploads BMAP monitoring data collected by Escambia County to the state's [Storage and Retrieval \(STORET\) Database](#) quarterly. FDOH monitors the WBIDs with bathing beaches and provides the closure data to DEP annually.

**Appendix D** lists the current stations in the monitoring network and provides a map of the station locations. Escambia County samples the seven stations monthly for fecal coliform, *Enterococci*, nutrients, and field parameters. In addition, FDOH – Escambia County samples biweekly at Bayou Chico at Lakewood Park (near Station 33020JD4 in WBID 846CB), and samples weekly at Sanders Beach (near Station 33020J10 in WBID 848DA) year-round for determining swimming area closures. All county data are uploaded into STORET.

### 3.3 Fecal Coliform Reductions Since BMAP Adoption

For the BMAP, DEP determines progress towards meeting the FIB criterion for 4 of the BMAP waterbodies (Jones Creek, Jackson Creek, Bayou Chico, and Bayou Chico Drain) by assessing the frequency with which the criterion for each tributary is exceeded. This approach mirrors the IWR methodology in Chapter 62-303, Florida Administrative Code (F.A.C.). The prior Class III IWR criterion was set so that if more than 10 % of the data exceeded 400 cfu/100mL during each verified period, the water would be verified as impaired. As *E. coli* and *Enterococci* data become available, the frequency of exceedance of the new state criteria will be used in conjunction with the frequency of exceedance of the old state criterion for BMAP progress assessments. This approach will allow a smooth transition and provide DEP with the ability to assess progress as datasets of the new FIB parameters grow.

For determining impairment, the IWR assessments evaluate data from the BMAP monitoring stations and additional monitoring sites in the watershed, if available. This section includes data from the BMAP monitoring network and other key stations that together make up the IWR monitoring network. **Table 2** lists each WBID's total number of fecal coliform samples, the total number of exceedances, and the percent exceedance for Cycle 3. To continue comparing progress each year until the next assessment (Cycle 4), a rolling 7.5-year data period will be

evaluated. Each year, the oldest 12 months of data will be dropped off the data period reviewed the previous year, and the most recent 12 months of data will be added to the dataset.

Column 5 in **Table 2** lists the minimum number of exceedances needed to place a waterbody on the Verified List with at least a 90 % confidence level. The minimum number of exceedances is compared with the number of exceedances to determine if the IWR criterion is being met. The last column in the table lists each WBID's percent exceedance, which is based on the number of exceedances (Column 4) relative to the total number of data points (Column 3) for the most recent 7.5-year dataset.

**Table 3** compares the percent exceedance from the IWR data periods analyzed prior to BMAP adoption (Cycles 1 and 2) and the current IWR data period (Cycle 3). A comparison of the data periods shows that the frequency of exceedance increased in 3 of the 4 waterbodies during the 2009–16 period. The one exception was Bayou Chico, which decreased and showed improvement toward the TMDL target during this same period. When reviewing these percent-change values, consider the great variability of bacteria in water samples at concentrations above and below the criterion threshold. Therefore, plus or minus less than a 10 % change is considered very little or no significant change from Cycle 2 to Cycle 3 data periods. Future monitoring and investigation are planned so that any remaining anthropogenic sources of FIB can be identified and eliminated.

**Table 2. Fecal coliform exceedances by tributary**

<sup>1</sup> The Cycle 3 verified period is January 1, 2009, through June 30, 2016.

<sup>2</sup> Subsection 62-303.420(2), F.A.C., Tables 1 and 3.

WBID Number	Waterbody Name	Total Number of Fecal Coliform Data Points for Cycle 3 <sup>1</sup>	Number of Exceedances	Minimum Number of Exceedances To Be Considered Impaired <sup>2</sup>	% Exceedance (Cycle 3)
846	Bayou Chico	188	30	25	16
846A	Jones Creek	62	17	10	27
846B	Jackson Creek	95	36	14	38
846C	Bayou Chico Drain	56	14	10	25

**Table 3. Exceedance frequency progress toward the state criterion based on IWR data periods**

<sup>1</sup> The Cycle 1 verified period is January 1, 1998, to June 30, 2005; the Cycle 2 verified period is January 1, 2003, to June 30, 2010; and the Cycle 3 verified period is January 1, 2009, to June 30, 2016.

<sup>2</sup> Subsection 62-303.420(2), F.A.C., Table 3.

WBID Number	Waterbody Name	Cycle <sup>1</sup>	Total Number of Fecal Coliform Data Points	Number of Exceedances	Minimum Number of Exceedances To Be Considered Impaired <sup>2</sup>	% Exceedance
846	Bayou Chico	1	62	15	10	24.2
846	Bayou Chico	2	468	89	56	19.0
846	Bayou Chico	3	188	30	25	15.9
846A	Jones Creek	1	39	13	7	33.3

WBID Number	Waterbody Name	Cycle <sup>1</sup>	Total Number of Fecal Coliform Data Points	Number of Exceedances	Minimum Number of Exceedances To Be Considered Impaired <sup>2</sup>	% Exceedance
846A	Jones Creek	2	43	10	8	23.3
846A	Jones Creek	3	62	17	10	27.4
846B	Jackson Creek	1	38	15	7	39.5
846B	Jackson Creek	2	37	12	7	32.4
846B	Jackson Creek	3	95	36	14	37.8
846C	Bayou Chico Drain	1	4	1	Need at least 10 samples	25.0
846C	Bayou Chico Drain	2	31	6	6	19.4
846C	Bayou Chico Drain	3	56	14	10	25.0

To assess and determine progress for the two beach WBIDs, Sanders Beach and Bayou Chico Beach, the number of days under advisories or warnings issued during a calendar year is used. In Cycle 1, both were waterbody type "coastal" and were assessed using fecal coliform data based on the criterion that no more than 10 % of the data could exceed 400 cfu/100mL in the 7.5-year dataset. In Cycle 2, these WBIDs were changed to waterbody type "beach."

Neither of these two WBIDs was assessed using the IWR fecal coliform methodology in Cycle 2 or Cycle 3. Both segments were assessed using the impairment methodology in Subsection 62-303.460(1), F.A.C., which refers to beach advisories that meet the Verified List impairment methodology in Paragraph 62-303.360(1)(c), F.A.C. This methodology states that a Class I, II, or III waterbody shall be placed on the Verified List if the water segment includes a bathing area for which a local health department or county government has issued closures, advisories, or warnings totaling 21 days or more during a calendar year (January through December), within the 7.5-year verified period, based on the bacteriological data.

The Cycle 3 assessments have been completed since the last annual progress report. Both beach WBIDs were impaired in Cycle 3 for bacteria based on the number of advisories issued (see **Figure 2**). The horizontal line in the figure denotes the 21-day threshold.

FDOH tests for bacteria biweekly at Bayou Chico Beach at Lakewood Park (near Station 33020JD4 in WBID 846CB) from March to October and year-round on a weekly basis at Sanders Beach (near Station 33020J10 in WBID 848DA). From 2000 through 2011, FDOH tested both stations for fecal coliform and *Enterococci*. A beach advisory was issued if either the fecal coliform or *Enterococci* criteria were exceeded (400 and 104 cfu/100mL, respectively). FDOH discontinued sampling for fecal coliform in 2011, but continued sampling and issuing beach advisories for *Enterococci*. The [beaches water quality data and notice of advisories](#) are posted online. FDOH can remove the beach advisory once the sampling results fall below the FDOH *Enterococci* criterion of 104 cfu/100mL.

**Table 4** lists the number of days that Sanders Beach and Bayou Chico Beach were under advisories during each calendar year from 2009 to June 30, 2016. In the years preceding BMAP

adoption (2001–11), advisories for Sanders Beach averaged 49 days per year, with the maximum number of 183 days occurring in 2003 and the minimum number of 0 days in 2011. In the years during BMAP implementation (2012–16), the maximum occurred in 2012, with 21 days of advisories. During 2013 and the first half of 2016 there were 0 days of advisories. In 2014, there were 5 days of advisories, and in 2015 there were 18 days of advisories.

Bayou Chico Beach advisory days during the pre-BMAP adoption years (2001–11) averaged 190 days of advisories, with a maximum of 292 days in 2007. There were greater than 174 days of advisories in 8 of the 11 pre-BMAP years, and the minimum number of advisory days occurred in 2001, at 70 days. The number of days decreased greatly during the BMAP implementation years, with 63 advisory days in 2012, 71 days in 2013, 81 days in 2014, 86 in 2015, and 28 days in 2016.

**Table 4** lists the number of beach advisories during the Cycle 3 assessment period, which includes data from January 1, 2009, through June 30, 2016. Sanders Beach exceeded the number of advisory days allowed in 3 of the 7.5 years of available data, maintaining its impaired status during Cycle 3.

However, **Figure 2** shows that a reduction in the magnitude of advisory days occurred during the implementation of the BMAP (2012–present) in both basins. The reduction could be in part to the increased number of projects in the basin, but may also result from using *Enterococci* as a more specific FIB. Bayou Chico Beach exceeded the 21-day criterion every year from 2009 through 2016 and was therefore designated as impaired during the Cycle 3 assessments.

Significant reductions have been achieved in Bayou Chico Beach and substantial reductions in Sanders Beach. However, to achieve restoration, additional source identification and elimination projects are needed in both beach WBIDs and contributing watersheds. The BMAP goal for these beach WBIDs is to have fewer than 21 days of beach advisories each year.

**Table 4. Number of beach advisories per year, 2009–16**

<sup>1</sup> Data were only used through June 30, 2016, to match the Cycle 3 period.

WBID	Waterbody Name	2009	2010	2011	2012	2013	2014	2015	2016 <sup>1</sup>
848DA	Sanders Beach	29	38	0	21	0	5	18	0
846CB	Bayou Chico Beach	205	234	105	63	71	81	86	28



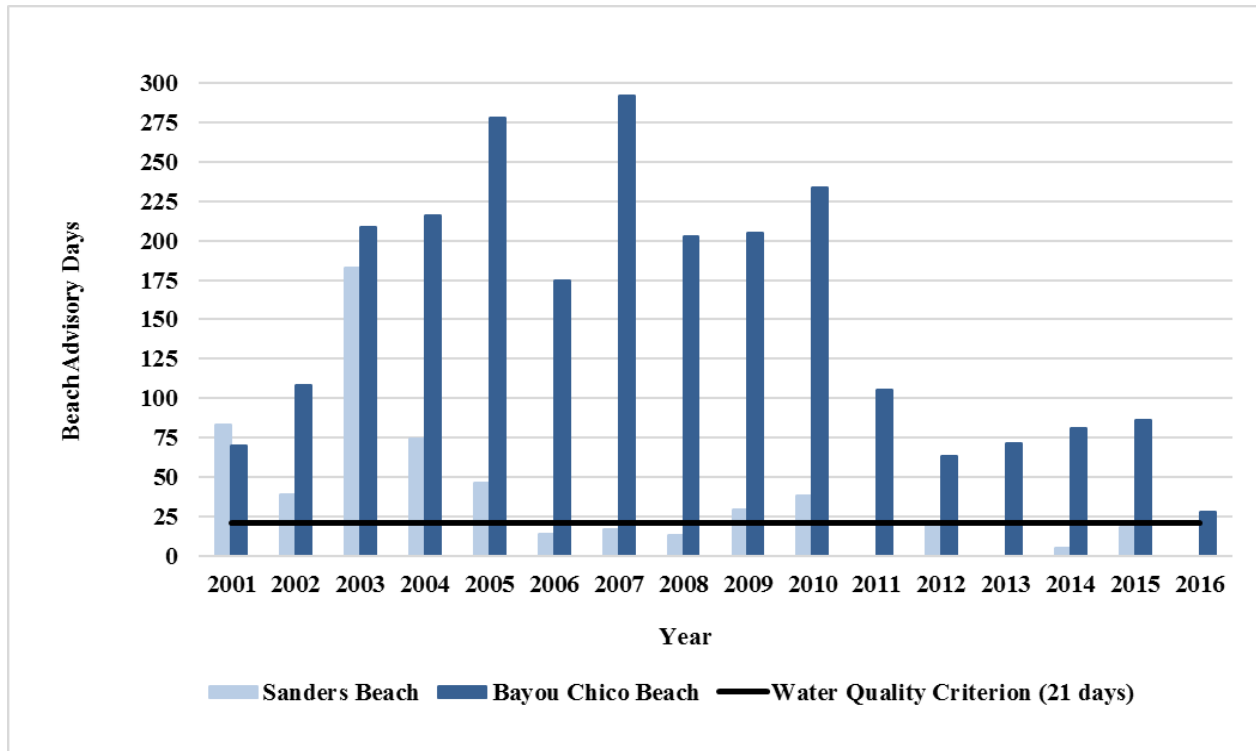
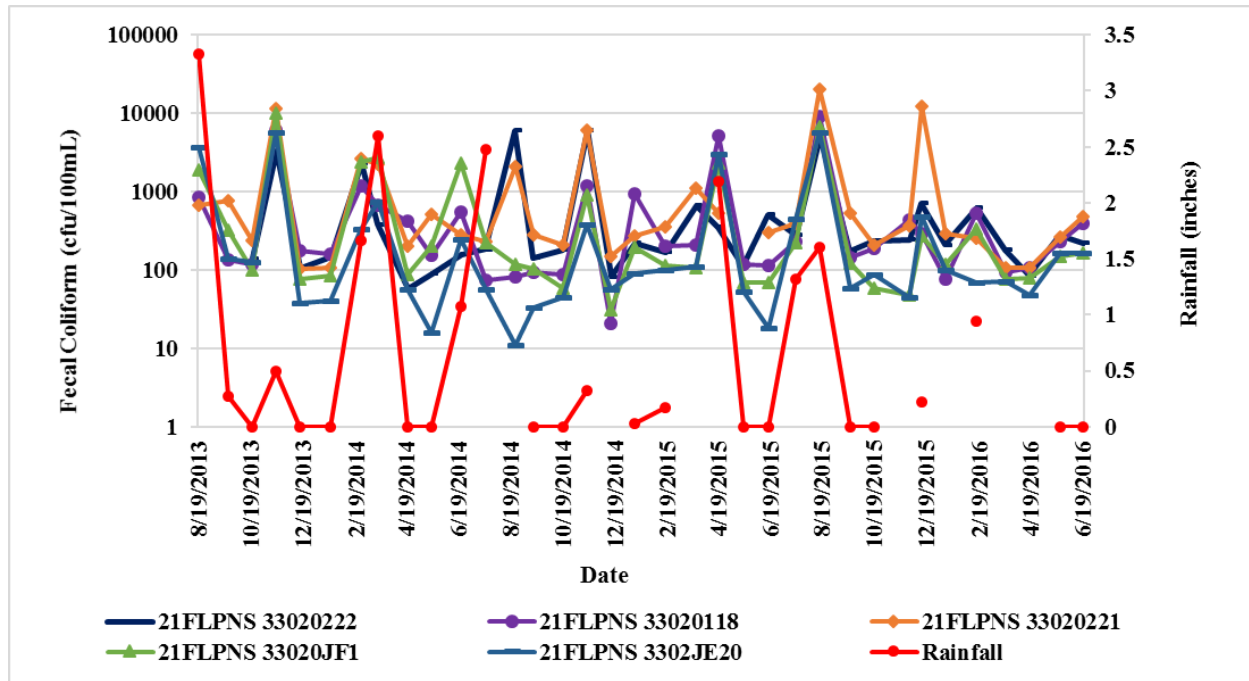


Figure 2. Beach advisory days per year, 2001–16

### 3.4 Water Quality Data Plots

Water quality data from August 2013 through June 2016 (Cycle 3 period) were assessed to determine bacterial counts in the basin. Rainfall data were retrieved from STORET for the BMAP stations for the same data period. The same rainfall data<sup>3</sup> were available for all of the BMAP stations shown in **Figure 3** and **Figure 4**. Spikes in both fecal coliform (**Figure 3**) and *Enterococci* (**Figure 4**) appear to be associated with a rain event in August 2015. *Enterococci* levels did not increase noticeably in response to a rain event in April 2015, while fecal coliform levels spiked considerably. Therefore, the levels of *Enterococci* appear to be related to rainfall some of the time, although fecal coliform increased due to rain events more consistently.



**Figure 3. Fecal coliform counts at each monitoring station compared with rainfall, January 1, 2013–June 30, 2016**

<sup>3</sup> Rainfall data in STORET were not from a single source but were compiled from various different sources such as Pensacola Naval Air Station (NAS), Weather Underground, and Pensacola Regional Airport.

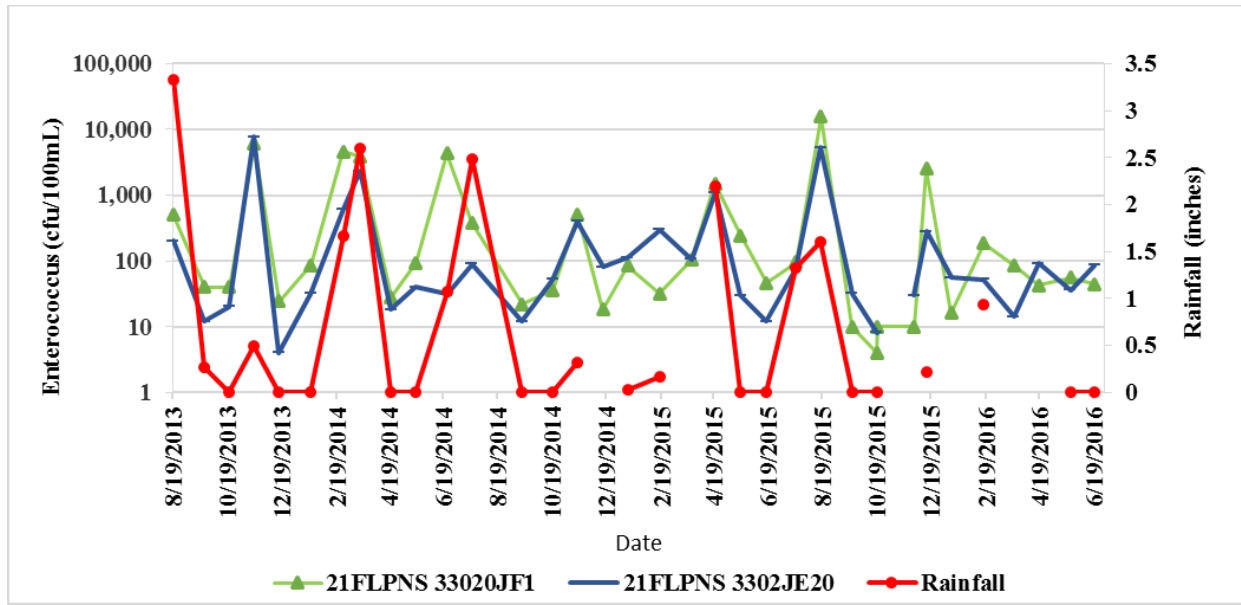


Figure 4. *Enterococci* counts at each marine monitoring station compared with rainfall, January 1, 2013–June 30, 2016

### 3.5 Summary of Results for the 2016 Human Waste Source Identification Monitoring

Escambia County and DEP monitoring staff worked together to take grab samples at each of the BMAP monitoring stations during three of the regular monthly monitoring events to determine if intensive human waste source identification monitoring should be performed. In addition to human waste tracers, DEP performed microbial source tracking (MST) analysis to determine if seagulls and wading birds are contributing to the fecal coliform impairments. The results of the analysis are as follows:

- Sucralose is found in treated and untreated human waste. It can be present in effluent leachate from both functioning and malfunctioning OSTDS. It is also common in the raw influent and treated effluent of sanitary sewers. Although no reuse irrigation with treated effluent is known to be occurring in the vicinity, sucralose was present in all of the samples.
- Acetaminophen, which almost always indicates untreated sewage, was found at two locations: Bayou Chico at Mandalay Park and Bayou Chico at Navy Blvd. Bridge.
- The human waste deoxyribose nucleic acid (DNA) marker, HF-183, was found at two stations: Jackson Creek at New Warrington Rd. and Jackson Creek at Old Corry Rd. Commonly, this marker is an indicator of raw sewage, with the exception of recently treated sewage effluent discharged from a wastewater treatment facility.

- Wading birds and gull tracers were found in samples from Sanders Beach and Bayou Chico at Mandalay Park.

These results indicate that more intensive monitoring should be pursued in 2017. DEP is in the planning stages for a 2017 project. **Table 5** lists the 2016 results.

**Table 5. 2016 human waste source identification monitoring results**

<sup>1</sup> GEU = Genomic equivalent units.

<sup>2</sup> TSC = Target sequence copies.

<sup>3</sup> None of the E. coli data was qualified.

<sup>4</sup> NS = Not sampled.

<sup>5</sup> ND = Not detected.

**Note:** Boldface type and grey highlighting indicate where a parameter was not sampled or not detected during analysis.

Station	2016 Sample Date	<i>E. coli</i> <sup>3</sup> (cfu/100mL)	Fecal Coliform (cfu/100mL)	Fecal Coliform Qualifiers	<i>Enterococci</i> (cfu/100mL)	<i>Enterococci</i> Data Qualifier	HF183 Typically Raw (GEU <sup>1</sup> /100mL)	HF183 Data Qualifiers	Gull2 (TSC <sup>2</sup> /100mL)	Gull2 Data Qualifiers	Sucralose Both Raw and Treated (micrograms per liter [ug/L])	Sucralose Data Qualifiers	Acetaminophen Raw (ug/L)	Acetaminophen Data Qualifier
Bayou Chico at Mandalay Park	7-18	NS	10	BV	2	BV	ND		ND		0.23		ND	
Bayou Chico at Mandalay Park	8-15	NS	106		6	B	ND		ND		0.024	IJ	0.0088	I
Bayou Chico at Mandalay Park	9-19	NS	325	B	104		ND		893	T	0.13		ND	
Bayou Chico at Navy Blvd. Bridge	7-18	NS	100		40		ND		ND		0.52		ND	
Bayou Chico at Navy Blvd. Bridge	8-15	NS	148	B	100	B	ND		ND		0.26		0.011	I
Bayou Chico at Navy Blvd. Bridge	9-19	NS	189	B	14	B	ND		ND		0.34		ND	
Bayou Chico at W Street	7-18	NS	580		76		ND		ND		0.37		ND	
Bayou Chico at W Street	8-15	NS	791	B	94		ND		ND		0.29		ND	
Bayou Chico at W Street	9-19	NS	260		200		ND		ND		0.38		ND	
Jackson Creek at New Warrington Road	7-18	450	500	B	1,300	B	594	T	ND		1.3		ND	
Jackson Creek at New Warrington Road	8-15	484	420				732	T	ND		0.91		ND	
Jackson Creek at New Warrington Road	9-19	404	490				9,490		ND		1.1		ND	
Jackson Creek at Old Corry Road	7-18	473	2,500		1,300	B	ND		ND		1.3		ND	
Jackson Creek at Old Corry Road	8-15	341	340				298	T	ND		1.2		ND	
Jackson Creek at Old Corry Road	9-19	933	1,464				39,600		ND		1.1		ND	

Station	2016 Sample Date	<i>E. coli</i> <sup>3</sup> (cfu/100mL)	Fecal Coliform (cfu/100mL)	Fecal Coliform Qualifiers	<i>Enterococci</i> (cfu/100mL)	<i>Enterococci</i> Data Qualifier	HF183 Typically Raw (GEU <sup>1</sup> /100mL)	HF183 Data Qualifiers	Gull2 (TSC <sup>2</sup> /100mL)	Gull2 Data Qualifiers	Sucralose Both Raw and Treated (micrograms per liter [ug/L])	Sucralose Data Qualifiers	Acetaminophen Raw (ug/L)	Acetaminophen Data Qualifier
Jones Creek at Old Corry Road	7-18	216	280		118		ND		ND		0.17		ND	
Jones Creek at Old Corry Road	8-15	272	210		230		ND		ND		0.025	IJ	ND	
Jones Creek at Old Corry Road	9-19	259	177	B	300		ND		ND		0.084		ND	
Pensacola Bat at Sanders Beach	7-18	NS	7	BV			ND		ND		0.073		ND	
Pensacola Bat at Sanders Beach	8-15	NS	128	B			ND		93,000	I	0.085		ND	
Pensacola Bat at Sanders Beach	9-19	NS	58				ND		1,490	T	0.062		ND	

## Appendices

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### Appendix A: Important Links

The following lists the complete addresses for websites in this document, in the order in which they appear in the text:

- **Cover page:** DEP website – <http://www.dep.state.fl.us>
- **Acknowledgments:** Anita Nash email address – [anita.nash@dep.state.fl.us](mailto:anita.nash@dep.state.fl.us)
- **Section 1:** Bayou Chico BMAP and annual reports – <http://www.dep.state.fl.us/water/watersheds/bmap.htm>
- **Section 1:** Bayou Chico Basin fecal coliform TMDLs – <http://www.dep.state.fl.us/water/tmdl/index.htm>
- **Section 2.1.2:** ECUA website – <http://www.ecua.fl.gov/green>
- **Section 3.1.1:** Ken Weaver email address – [ken.weaver@dep.state.fl.us](mailto:ken.weaver@dep.state.fl.us)
- **Section 3.1.2:** STORET public access database – <http://prodenv.dep.state.fl.us/DearSpa/public/welcome>
- **Section 3.1.3:** FDOH Beaches Water Quality Data and Notice of Advisories – <http://www.floridahealth.gov/environmental-health/beach-water-quality/index.html>
- **Appendix C:** Florida Water Management Inventory (FLWMI) – <http://www.floridahealth.gov/environmental-health/onsite-sewage/research/FLWMI/>
- **Appendix C:** EPA publication: A homeowner's guide to septic systems – [https://www3.epa.gov/npdes/pubs/homeowner\\_guide\\_long.pdf](https://www3.epa.gov/npdes/pubs/homeowner_guide_long.pdf)
- **Appendix E:** Bayou Chico WTW 2015 Observation Stations Location Map – [http://publicfiles.dep.state.fl.us/DEAR/BMAP/PensacolaBasin/BayouChico/Meetings/4thAnnualMtg\\_Jan\\_2016/05\\_Draft\\_Map\\_WTW2015\\_observation\\_locations.pdf](http://publicfiles.dep.state.fl.us/DEAR/BMAP/PensacolaBasin/BayouChico/Meetings/4thAnnualMtg_Jan_2016/05_Draft_Map_WTW2015_observation_locations.pdf)

## Appendix B. Stakeholder Projects

The BMAP project tables below show the implementation status of the BMAP projects as of October 31, 2016. Updated project information, including new projects, for the reporting period is identified by red highlighting and boldface italics (*example*). Projects with a project status of ongoing are thought to have occurred during the reporting period and should continue to occur in subsequent years, unless DEP is notified that the project has been discontinued.

**Table B-1. Bay Area Resource Council (BARC) projects**

Note: Updated project information, including new projects, for the reporting period is identified by the red italics font.

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Location
<b>BARC-60</b>		Neighborhood Clean Sweep Program (debris and garbage clean-ups throughout basin)	Public Outreach and Education	Ongoing	Unknown		All
<b>BARC-81</b>		Environmental Symposium 2012 – Public outreach and education on TMDLs, numeric nutrient criteria (NNC), and water quality	Public Outreach and Education	Completed	Unknown		All
<b>BARC-82</b>		Environmental Symposium 2013 – Held in fall with UWF	Public Outreach and Education	Completed	Unknown		All
<b>BARC-83</b>		Stormwater Drain Markings – BARC staff and UWF student volunteers placed 149 Duracast polyurethane curb markers on concrete casing above curbside inlets in areas where stormwater runoff feeds directly to bayou, and distributed stormwater fact sheets to over 1,200 households in area	Public Outreach and Education	Completed	Unknown		All
<b>BARC-99</b>		Environmental Symposium 2007 – Public outreach and education on water, air, and land use issues and concerns	Public Outreach and Education	Completed	\$2,400		All
<b>BARC-100</b>		BARC Watershed Tour 2007 – Public outreach and education on land use and water, point and nonpoint source pollution	Public Outreach and Education	Completed	\$1,200		All
<b>BARC-101</b>		Distribution of brochures on green building design, ecological research programs, low-impact development, sustainability, etc., at various events	Public Outreach and Education	Completed	\$31,000		All
<b>BARC-102</b>		Distribution of brochures at Bay Day 2007–09 and hands-on environmental education activities	Public Outreach and Education	Completed	\$0		All



**Table B-2. BCA projects**

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Location
BCA-42	Oyster Reef Project	Oyster reef project – Habitat restoration	Oyster Reef Restoration	Completed	Unknown	BCA/Escambia County and DEP	846 C-Bayou Chico Drain
BCA-43	Bayou Chico Channel Dredging	Bayou Chico Channel Dredging – Remove restrictive piling to open up channel and increase flushing in tributaries of bayou	Dredging	<i>Completed</i>	\$68,000	BCA/ permittee, owner	846 C-Bayou Chico Drain
BCA-44	Aeration Systems in Tributary (Jones Creek)	Install aeration systems to break down waste and allow aerobic activity and bacterial digestion	Aeration System	On hold	Unknown	BCA	846 C-Bayou Chico Drain
BCA-45	Floating Islands	Floating Islands – Promote use of BioHaven® to enhance wetland functions and improve water quality	Floating Islands	On hold	Unknown	BCA	846 C-Bayou Chico Drain
BCA-46	Clean Marina – Clean Boatyard	Clean Marina Clean Boatyard – Pensacola Ship Yard	Marina Waste Handling Improvements/ Clean Marina Program	Completed	Unknown	Marina owners	846 C-Bayou Chico Drain
BCA-47	Pump Out	Clean Marina – Bahia Mar Marina	Marina Waste Handling Improvements/ Clean Marina Program	Pending	Unknown	Marina owners	846 C-Bayou Chico Drain
BCA-48	Clean Marina	Clean Marina – Palm Harbor Marina	Marina Waste Handling Improvements/ Clean Marina Program	Completed	Unknown	Marina owners	846 C-Bayou Chico Drain
BCA-49	Clean Marina	Clean Marina – Island Cove Marina	Marina Waste Handling Improvements/ Clean Marina Program	Completed	Unknown	Marina owners	846 C-Bayou Chico Drain
BCA-50	Clean Marina	Clean Marina – Harbor View Marina	Marina Waste Handling Improvements/ Clean Marina Program	Completed	Unknown	Marina owners	846 C-Bayou Chico Drain
BCA-51	Clean Marina	Clean Marina Program – Pensacola Yacht Club	Marina Waste Handling Improvements/ Clean Marina Program	Planned	Unknown	Private marina	846 C-Bayou Chico Drain

<b>Project Number</b>	<b>Project Name</b>	<b>Project Description</b>	<b>Project Type</b>	<b>Project Status</b>	<b>Estimated Cost</b>	<b>Funding Source</b>	<b>Location</b>
<b>BCA-52</b>	Pump-Out Facilities	Pump-out facilities (three, including a mobile unit)	Marina Waste Handling Improvements/ Clean Marina Program	Completed	Unknown	Funding from local business sponsors and grants through state	846-Bayou Chico
<b>BCA-53</b>	Marine Industry Operations	Marine Industry Operations – Obtain NPDES stormwater permit	Marina Waste Handling Improvements/ Clean Marina Program	Completed	Unknown	Permittees consist of marine industry operations and ship or commercial boat operators	846-Bayou Chico)
<b>BCA-55</b>		Public awareness and outreach campaign (brochures/neighborhood outreach on pet waste, leaking oil, fertilizers, soaps and detergents)	Public Education and Outreach	Completed	Unknown		846 C-Bayou Chico Drain
<b>BCA-56</b>	Bayou Chico Dredging	Bayou Chico dredging	Dredging	Pending funding – submitted for RESTORE	\$10,000,000		846 C-Bayou Chico Drain
<b>BCA-79</b>		Annual Bayou Chico cleanup	Public Education and Outreach	Ongoing	Unknown		846 C-Bayou Chico Drain
<b>BCA-96</b>		Barge cleanup at residential location	Cleanup	Completed	Unknown		846 C-Bayou Chico Drain

**Table B-3. COP projects**

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Location
<b>COP-57</b>		L & Zarragossa Street drainage improvements – New stormwater treatment	Stormwater Upgrades/ Repairs	Construction pending	\$1,000,000		846C – BC Drain (N)
<b>COP-58</b>		Pace and Gregory Street, Magnet School baffle boxes	Stormwater Treatment Installation/ Maintenance	Completed	\$230,000		846C – BC Drain (N)
<b>COP-59</b>		Street sweeping program	Reduction of Pet and Animal Waste	Ongoing	\$745,000		846C – BC Drain (N)
<b>COP-80</b>		R and Wright Street baffle box	Stormwater Treatment Installation/ Maintenance	Construction pending	\$350,000		846C – BC Drain (N)
<b>COP-84</b>		Bayou Drive outfalls into Bayou Chico	Stormwater Treatment Installation/	In design	\$325,000		846C – BC Drain (N)
<b>COP-85</b>		Bill Gregory Park stormwater treatment enhancement	Stormwater Treatment Installation/	Construction pending	\$1,950,000		846C – BC Drain (N)
<b><i>COP-97</i></b>		Sanders Beach storm sewer reconstruction, also known as Pensacola Yacht Club ditch replacement – Reroute flow from contaminated (Superfund site) ditch	Storm Sewer Upgrades	Completed	\$1,250,000		848DA

**Table B-4. ECUA projects**

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Location
ECUA-1	Lakewood Phase I	Lakewood Phase I – 183 connections	Sewer Extensions	Completed	\$1,431,866	ECUA	Multiple
ECUA-2	Lakewood Phase II	Lakewood Phase II – 85 connections	Sewer Extensions	Completed	\$747,263	ECUA	846 C-BC Drain
ECUA-3	Lakewood Phase III	Lakewood Phase III – 112 connections	Sewer Extensions	Completed	\$723,964	ECUA	846 C-BC Drain
ECUA-4	Lakewood Phase IV	Lakewood Phase IV	Sewer Extensions	Completed	\$128,845	Community Development Business Grant (CDBG) (through U.S. Department of Housing and Urban Development [HUD]) and ECUA	846 C-BC Drain
ECUA-5	Lakewood Phase V	Lakewood Phase V – 256 connections	Sewer Extensions	Completed	\$3,390,897	CDBG (HUD)	846 C-BC Drain
ECUA-6	Lakewood Phase VI	Lakewood Phase VI	Sewer Extensions	Completed	Unknown	Partly funded through CDBG (HUD)	846 C-BC Drain
ECUA-7	Edgewater Phase I	Edgewater Phase I – 74 connections	Sewer Extensions	Completed	\$1,467,661	ECUA	846 C-BC Drain
ECUA-8	Edgewater Phase II	Edgewater Phase II – 295 connections	Sewer Extensions	Completed	Unknown	ECUA	846 C-BC Drain
ECUA-9	FOG Program	FOG Program	Sewer Upgrades/ Repairs	Ongoing	Unknown	ECUA	All
ECUA-10	I&I Program	Inflow and Infiltration (I/I) Program	Sewer Upgrades/ Repairs	Ongoing	Unknown	ECUA	All
ECUA-11	SSO Response Plan	SSO Response Program	Sewer Upgrades/ Repairs	Ongoing	Unknown	ECUA	All
ECUA-12	Emergency Power Generator Program	Emergency power generator	Sewer Upgrades/ Repairs	Ongoing	Unknown	ECUA	All

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Location
ECUA-13	Lift Station Upgrades	Main Street relocation to cantonment	Sewer Upgrades/ Repairs	Completed	Unknown	ECUA	All
ECUA-63		Beach Haven – 1,720 connections total (half in Bayou Chico)	Sewer Extensions	Planned	\$1,200,000		Unknown
ECUA-64		West Avery Street sewer upgrades	Sewer Upgrades/ Repairs	Completed	Unknown		846C-BC Drain

**Table B-5. Escambia County projects**

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Location
<b>Escambia County and USN-38</b>	Bayou Chico/ Jones Creek Stormwater Retrofit Project West Side of Corry Station U.S. Navy (USN)	Corry Station retrofit projects (Jones Creek West) – Construction of new stormwater infrastructure on Naval Air Station (NAS) property designed to provide treatment for more than 100 acres of previously developed areas, which include mixture of institutional, commercial, and residential land uses	Stormwater Treatment Installation/ Maintenance	Planned	\$500,000		846 A-Jones Creek
<b>Escambia County and Area Housing Commission-70</b>		Jones Creek East Stream restoration – Restoration of 1,200 linear feet of East Jones Creek between Navy Blvd. and Old Corry Field Road; includes stream enhancement, floodplain expansion, riparian wetland restoration, invasive exotic species eradication, and elevated educational boardwalk	Stream Restoration/ Public Education and Outreach	Completed	\$400,000		846A-Jones Creek
<b>Escambia County and COP-73</b>		Maggie's Ditch Wetland Enhancement Phase II – Expansion of riparian wetlands along 275-foot section of headwater of northeast arm of Bayou Chico in historical floodplain; also includes excavation and disposal of contaminated soils	Wetland Enhancement	Completed	\$175,000		846C-BC Drain
<b>Escambia County and ECUA-29</b>	West Avery St. Drainage Improvements	Avery Street Drainage Improvements Phase I (Kupfiran Park Area Improvements) – Construction of new stormwater infrastructure in Kupfiran Park area	Stormwater Upgrades/ Repairs	Completed	\$1,000,000		846C-BC Drain

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Location
<b>Escambia County and ECUA-69</b>		Lakeview Street Drainage Improvements Phase II (Kupfiran Park Area Improvements) – Construction of new stormwater infrastructure in Kupfiran Park area	Stormwater Upgrades/ Repairs	In design	\$400,000		846C-BC Drain
<b>Escambia County and Pensacola State College-75</b>		Southwest Greenway at Pensacola State College Warrington Campus – Construction of 3,000-foot elevated educational boardwalk	Public Education and Outreach	Completed	\$400,000		846A-Jones Creek
<b>Escambia County and USN-35</b>	Retrofit Projects (Planned) Corry Field	Corry Station retrofit projects (Jones Creek East) – Construction of new stormwater infrastructure on NAS property designed to provide treatment for more than 100 acres of previously developed areas, which include mixture of institutional, commercial, and residential land uses	Stormwater Treatment Installation/ Maintenance	Planned	\$500,000	USN and Escambia County	846 A-Jones Creek
<b>Escambia County and USN-36</b>	Corry Station Runway Surface Restoration	Corry Station Runway Surface Restoration – Logistics to remove five acres of impervious surface, provide new stormwater treatment for runoff; concrete material will be available as base substrate for offshore fishery habitat improvements, oyster reefs, and other shoreline stabilization and restoration projects	Stormwater Treatment Installation/ Maintenance	Cancelled; project nonviable – Funds to be redirected into other projects	\$80,000	Funded (Florida Communities Trust [FCT] Grant)	846 A-Jones Creek
<b>Escambia County and USN-37</b>	Jackson's Branch Headwater Restoration	Corry Station retrofit projects (Jackson Creek) – Construction of new stormwater infrastructure on NAS property designed to provide treatment for more than 200 acres of previously developed areas, which include mixture of institutional, commercial, and residential land uses	Stormwater Treatment Installation/ Maintenance	Planned	\$500,000		846B-Jackson Creek
<b>Escambia County, BARC, and BCA-32</b>	Public Education and Outreach	Public education and outreach	Public Education and Outreach	Ongoing	\$10,000		All
<b>Escambia County-22</b>	Glynn Key Stormwater, Wetland Education Park	Glynn Key – New stormwater BMP	Stormwater Treatment Installation/ Maintenance	Completed	\$500,000		846 A-Jones Creek

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Location
Escambia County-22		Glynn Key – Educational amphitheater and signage	Public Education and Outreach	Completed	Unknown		846 A-Jones Creek
Escambia County-23	Bayou Chico Restoration Projects: W St. Weir	W Street Weir replacement	Stormwater Upgrades/Repairs	Completed	Unknown		846 C-BC Drain
Escambia County-24	Jackson Lakes Stormwater	Jackson Lakes stormwater – New stormwater BMP	Stormwater Treatment Installation/Maintenance	Completed	\$500,000		846 C-BC Drain
Escambia County-24		Jackson Lakes – Educational amphitheater and signage	Public Education and Outreach	Completed	Unknown		846 C-BC Drain
Escambia County-25	Derelict Vessel Removal	Derelict vessel removal	Derelict Vessel Removal	Completed	\$50,000		Multiple
Escambia County-26	New stormwater ponds with new development – 11 new BMPs	New stormwater ponds with new development – 11 new BMPs	Stormwater Treatment Installation/Maintenance	Under construction	\$1,100,000		All
Escambia County-27	Illicit Discharge Detection	Illicit discharge detection, high-risk industries, small quantity generators, stormwater outfall monitoring	Sampling	Completed	\$50,000		All
Escambia County-28	Stormwater Pond Inspection and Maintenance Program	Stormwater Pond – Inspection and maintenance of more than 300 ponds	Stormwater Treatment Installation/Maintenance	Ongoing	\$300,000		All
Escambia County-30	Jones Swamp Wetland Preserve	Wetland preservation – Purchase of four parcels at Fairfield Drive and Albany Avenue	Wetland Preservation	Completed	\$300,000		846 A-Jones Creek
Escambia County-31	West Jones Creek Stream Restoration	West Jones Creek stream restoration – Wetland restoration and maintenance carried out west of Navy Blvd., east of Fairfield Drive; construct natural stream channel, restoration activities in floodplain	Wetland Restoration	Completed	\$250,000		846 A-Jones Creek
Escambia County-34	Stormwater Outfall Monitoring	Sample as part of ongoing monitoring efforts for stormwater facilities located in bayou	Monitoring	Completed	Unknown		All

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Location
<b>Escambia County-39</b>	Pet Waste Ordinance, Part 1, Article 1, Section 10-11(f)	Pass ordinance to define handling and removal of domestic pet waste countywide	Reduction of Pet and Animal Waste	Adopted	Unknown	Escambia County	All
<b>Escambia County-65</b>		Neighborhood Clean Sweeps/Cleanups	Public Education and Outreach	Ongoing	\$50,000		All
<b>Escambia County-66</b>		Monitoring Plan Implementation – Monitor water quality to identify additional sources and assess water quality trends	Monitoring	Ongoing	Unknown		All
<b>Escambia County-71</b>		Lexington Terrace stormwater retrofit – Construction of 4-acre stormwater treatment train system to capture and treat approximately 60 acres of existing residential development; includes concrete vaults, dry retention, wet detention elements, and BMP effectiveness monitoring to be conducted postconstruction	Stormwater Treatment Installation/Maintenance	Completed	\$650,000		846A-Jones Creek
<b>Escambia County-72</b>		Maggie's Ditch Wetland Enhancement Phase I – Expansion of riparian wetlands along 250-foot section of headwaters of northeast arm of Bayou Chico in historical floodplain	Wetland Enhancement	Completed	\$75,000		846C-BC Drain
<b>Escambia County-74</b>		"W" Street Sedimentation Basin repairs – Rehabilitation of failed sediment basin; includes dredging basin and installation of new composite weir	Stormwater Upgrades/Repairs	Completed	\$150,000		846C-BC Drain
<b>Escambia County-76</b>		Southwest Greenway 3rd Extension – Construction of 3,000-foot elevated educational boardwalk from Decatur Street west crossing Fairfield Drive; also includes improvements to 0.5 miles of existing on-grade trail system	Public Education and Outreach	Under construction	\$300,000		846 A-Jones Creek
<b>Escambia County-77</b>		Jackson Lakes Stormwater Improvements – Construction of improvements to existing Jackson Lakes Offline Retention System; includes installation of one-way valve system at stormwater inlet and further	Stormwater Treatment Installation/Maintenance	In design	\$250,000 – \$1,000,000		846B – Jackson Creek



Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Location
		expansion of littoral area. Repairs required to existing structure after April 2014 flood					
<b>Escambia County-78</b>		Beach Haven Stormwater Improvement Project Phase I – Construction of new stormwater infrastructure for 250 acres of existing residential development along Jones Creek	Stormwater Treatment Installation/Maintenance	Under construction	\$5,000,000		846 A-Jones Creek
<b>Escambia County-86</b>		Beach Haven Stormwater Improvement Project Phase II – Construction of new stormwater infrastructure for 250 acres of existing residential development along Jones Creek	Stormwater Treatment Installation/Maintenance	Planned (funding pending)	\$5,000,000		846 A-Jones Creek
<b>Escambia County-88</b>		Jones Creek Floodplain Restoration/Expansion Project – Reestablish connection to historical floodplain along Jones Creek	Floodplain Restoration/Expansion Project	In design (funding received from National Fish and Wildlife Foundation [NFWF] grant)	\$1,500,000		846 A-Jones Creek
<b>Escambia County-89</b>		Jackson Creek Floodplain Restoration/Expansion Project – Reestablish connection to historical floodplain along Jackson Creek	Floodplain Restoration/Expansion Project	In design (funding received from NFWF grant)	\$1,500,000		846B-Jackson Creek
<b>Escambia County-90</b>		East Jones Creek Stream Restoration – Restore 1,200 linear feet of East Jones Creek; stream enhancement and natural stream channel restoration project; floodplain restoration; wetlands restoration; elevated educational boardwalk	Stormwater Treatment Installation/Maintenance	Completed	\$250,000		846A-Jones Creek
<b>Escambia County-91</b>		Southwest Greenway 4th Extension – Construction of 1,800-foot elevated educational boardwalk west across Fairfield Drive	Public Education and Outreach	Project complete	\$250,000		846 A-Jones Creek
<b>Escambia County-92</b>		Corrydale – Restore 0.75 acres of wetland in Jones Swamp Wetland Preserve; project is associated with ECUA lift station relocation project	Floodplain Restoration/Expansion Project	Under construction	\$100,000		846 A-Jones Creek

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Location
<b>Escambia County-93</b>		Bayou Chico Dredging Phase I – Planning, design, and permitting of remediation of contaminated Bayou Chico sediments; future phases may include dredging, or other technology, to remove or otherwise mitigate impacts from contaminants in bayou sediments	Remediation	Planned (funding pending from Gulf Coast Restoration Council)	\$356,850		All
<b>Escambia County-94</b>		Jackson Lakes surface water quality monitoring – Surface water quality monitoring in three former borrow pits along Jackson Creek	Monitoring	Under way	\$27,000		846B – Jackson Creek
<i>Escambia County-95</i>		<i>Jones Swamp Wetland Preserve Management Plan Development and Implementation</i>	<i>Resource Management; Environmental Restoration; Public Education</i>	<i>Planned</i>	<i>\$400,000</i>		<i>846A – Jones Creek</i>

**Table B-6. FDOH in Escambia County projects**

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Location
<b>FDOH-14/EBCH-18</b>	Septic to Sewer Enforcement Program	Septic to Sewer Enforcement Program – Enforcement by notification and tracking of conversion compliance in Lakewood and Edgewater	Sewer Extensions	Completed	Unknown	FDOH	All
<b>FDOH-16</b>	OSTDS Permitting	OSTDS Permitting Program per Chapter 64E-6, F.A.C.	Permitting Program	Ongoing	Not applicable		All
<b>FDOH-17</b>	Industrial/Business Annual Operating Permits and Compliance Inspections	Industrial/business annual operating permits and compliance inspections per Chapter 64E-6, F.A.C.	Permitting Program	Completed	\$900		All

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Location
<b>ECHD-18</b>	Septic to Sewer Enforcement Program	Through notification and tracking, enforces conversion compliance for septic tank phase-out program done in concert with ECUA		Ongoing	Unknown	FDOH	
<b>FDOH-19</b>	ECHD Research Program	FDOH Research Program with UWF to develop method to distinguish human from nonhuman sources of pollution	Research	Completed	Unknown		All
<b>ECHD and Escambia County-20</b>	Escambia County Ordinance 99-36, referenced in Escambia County Ordinance, Chapter 98, Article III	Requires inspection by FDOH in Escambia County prior to sale or transfer of property with existing septic tank system. All required setbacks regarding system placement are also checked for compliance with Rule 64E-6, F.A.C., and Chapter 381, Florida Statutes (F.S.). Inspection results must be made available to seller as well as buyer before or at time of closing.	Ordinance	Ongoing	Unknown	FDOH in Escambia County, through FDOH	
<b>FDOH-21</b>	Healthy Beaches Program	Healthy Beaches Program – Biweekly sampling of specific sites for <i>Enterococci</i>	Sampling	Ongoing	\$5,676		846CB (Lakewood) and 848DA (Sanders Beach)
<b>FFDOH-98</b>	Environmental Analysis Program	Environmental Analysis Program – Inspect improperly installed and poorly maintained septic tank systems	Evaluation Program	Completed	Unknown		All

**Table B-7. Florida Department of Transportation (FDOT) projects**

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Location
<b>FDOT-40</b>	State Road (SR) 292 Barrancas Avenue Bridge	(SR 92) Barrancas Bridge replacement and stormwater treatment for bridge and roadway	Roadway Projects with Structural BMPs	Completed	Unknown	FDOT District 3	846C-BC Drain
<b>FDOT-41</b>	U.S. Highway 98 Navy Blvd. Bridge Replacement	Bayou Chico US 98 (Navy Blvd.) Bridge replacement and stormwater treatment for four-lane bridge where no treatment was provided previously	Roadway Projects with Structural BMPs	Completed	Unknown		846C-BC Drain
<b>FDOT-67</b>		Municipal separate storm sewer system (MS4) implementation		Ongoing	Unknown		All
<b>FDOT-68</b>		FDOT Drainage Connection Program to regulate and prescribe conditions for transfer of stormwater to FDOT rights-of-way	Drainage Connection Program	Ongoing	Unknown		All
<b>FDOT-87</b>		Illicit discharge detection and elimination (IDDE) Training	Training	Ongoing	Unknown		All

**Table B-8. FWC projects**

Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Cost	Funding Source	Location
<b>FWC-54</b>	Compliance and Inspection Sweeps	Compliance and inspection sweeps – For noncompliance on moored and live-aboard vessels	Inspection Program	Ongoing	Unknown	FWC	846-BC Drain

## Appendix C. FDOH Septic System Summary for the Bayou Chico BMAP Area

Nonpoint source pollutants from OSTDS can have significant impacts on surface water and groundwater quality. Approximately 30 % of Florida's population uses an OSTDS as their method of wastewater disposal. In Florida, OSTDS are regulated by FDOH and cover wastewater from establishments that generate domestic sewage up to 10,000 gallons per day (gpd) or commercial strength sewage waste up to 5,000 gpd. A typical OSTDS consists of a septic tank and drainfield (**Figure C-1**).

In the Bayou Chico BMAP there are an estimated 8,309 built parcels (**Figure C-2** and **Table C-1**). Of those built parcels, about 21 % (1,713) are connected to an OSTDS, 77 % (6,426) are connected to a DEP regulated wastewater treatment facility (WWTF), and 2 % (170) are unknown. Of those parcels with OSTDS, 1,086 are known and 627 are likely to exist. The known and likely data qualifiers were assigned based on factors related to the level of certainty for the source information. The information used comes from the FDOH FLWMI, which is a centralized geographic data map linking each built property in the state with a drinking water source (public water or private domestic well) and wastewater treatment method (central sewer or onsite septic). More information on this data source can be found [online](#).

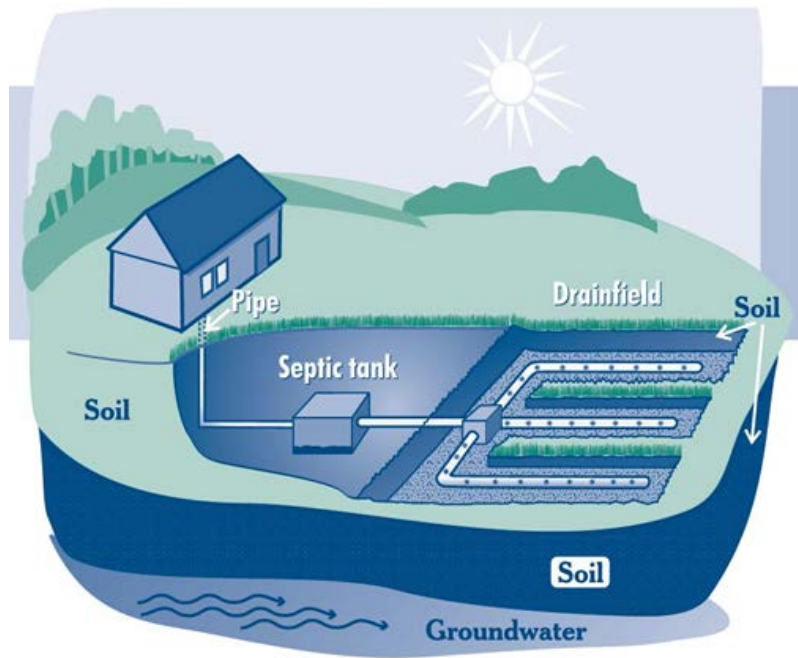
Further analysis was done by linking the data points with the FDOH Environmental Health Database (EHD). EHD is a statewide web-based permitting database that FDOH uses to keep track of Environmental Health program information (permits issued, facilities regulated, etc.) EHD has electronic permitting and inspection data for OSTDS covering a period from the mid-1990s onward. Information on the system installation date and type of system installed can be extracted and linked to the FLWMI map.

**Table C-2** shows the proportion of permitted OSTDS that were constructed prior to or after 1983. Construction and use standards for OSTDS in Florida began in 1921. A major revision to the standards occurred in 1982 when a separation of 24 inches was required between the bottom of a newly constructed drainfield and the estimated seasonal high groundwater table. Research in Florida and elsewhere has shown that OSTDS installed to the 1982 standards effectively reduce the concentration of pathogens found in normal wastewater and that nitrogen levels are reduced as well. Knowing how many OSTDS were installed prior to this rule, and where they are located, could provide information to assist with future BMAP efforts.

**Table C-2** also shows information on the estimated age of systems. This information was assigned to each parcel based on EHD data or from the Department of Revenue for the year the structure was built if EHD data were not available. The average age of all OSTDS in the Bayou Chico BMAP is 26 years, with those that are known having an average age of 13 years and those that are likely having an average age of 49 years.

**Table C-3** breaks out EHD information from 2011-2016 on the permit types such as new construction, system in need of repair, evaluated existing, or abandoned system. This information may be useful to see any trends in new construction and system failures over time. The red points

in **Figure C-2** indicate the total number of repairs that were permitted between 2011-2016 within the BMAP.



**Figure C-1. Illustration of a typical OSTDS**

Source: EPA: [\*A Homeowner's Guide to Septic Systems\*](#)

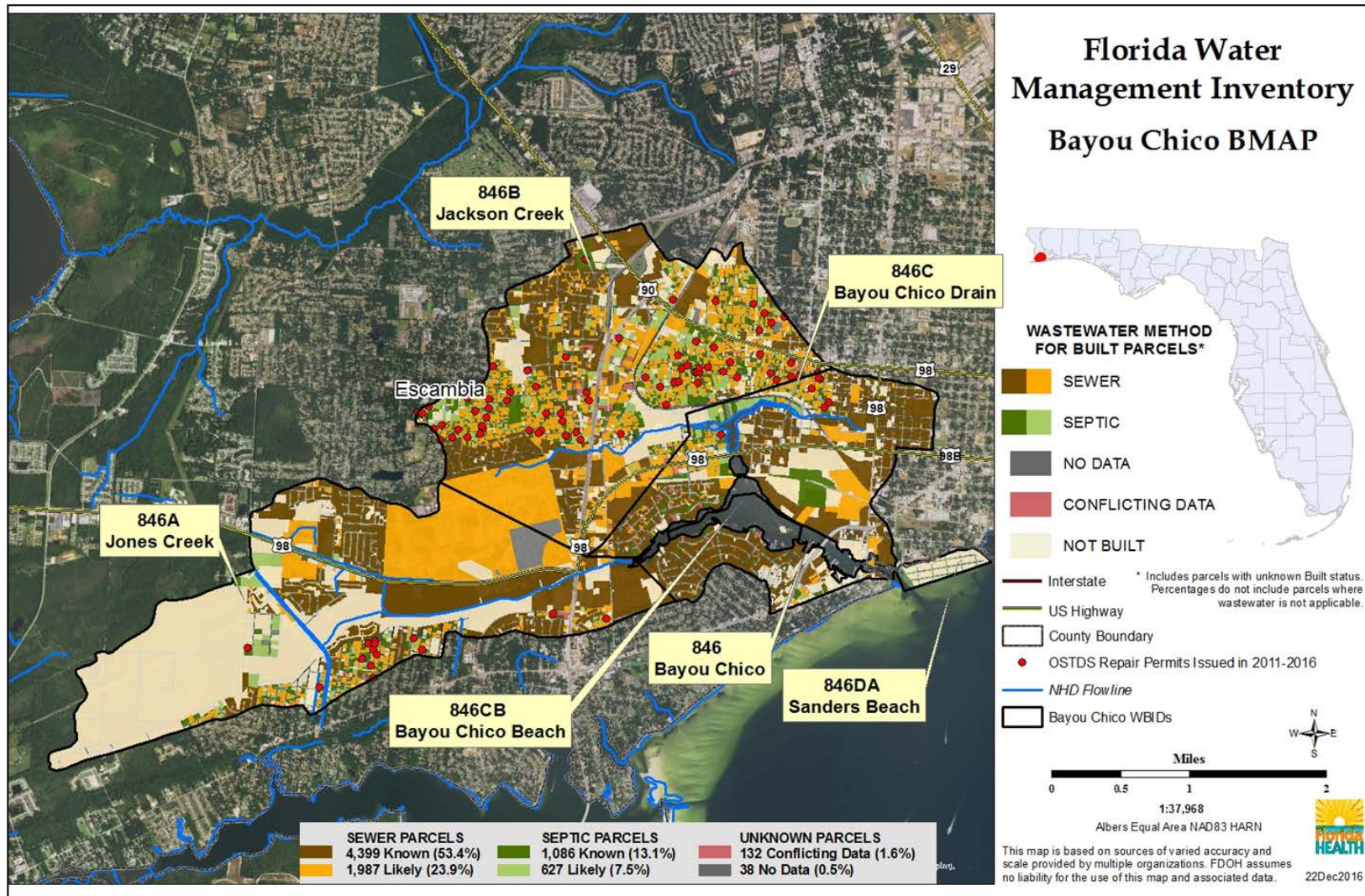


Figure C-2. Wastewater disposal method for parcels within Bayou Chico BMAP as of December 22, 2016

**Table C-1. Summary of number of parcels on different wastewater methods by WBID**

Note: 'Known' is assigned to parcels where the wastewater is confirmed from the permitting agency, 'Likely' is assigned to parcels where there is some indication of the wastewater disposal method, 'Undetermined' is assigned if two different data sources have equal opposing values, 'Unknown' is assigned for built parcels with no intersecting source information, 'Not Built' is assigned to parcels with no structure that could generate wastewater.

WBIDs	Known Septic	Likely Septic	Total Septic	Known Sewer	Likely Sewer	Total Sewer	Undetermined	Unknown	Not Built	Total
<b>846</b>	15	2	17	102	21	123	3	0	23	166
<b>846A</b>	147	109	256	1,253	302	1,555	20	12	338	2,181
<b>846B</b>	741	457	1,198	1,310	1,408	2,718	54	20	547	4,537
<b>846C</b>	176	59	235	1,748	253	2,001	54	6	450	2,746
<b>846CB</b>	5	0	5	19	0	19	1	0	3	28
<b>848DA</b>	2	0	2	7	3	10	0	0	27	39
<b>Total</b>	<b>1,086</b>	<b>627</b>	<b>1,713</b>	<b>4,439</b>	<b>1,987</b>	<b>6,426</b>	<b>132</b>	<b>38</b>	<b>1,388</b>	<b>9,697</b>

**Table C-2. Percent of OSTDS constructed before or after 1983 and average age of OSTDS from January 2017 by WBID**

Note: WBID 848DA is not shown because the values are not applicable. There are two parcels with known septic systems that did not have parcel identification numbers that matched between the EHD and the FWMI.

WBID	Percent of OSTDS Constructed Before 1983 (%)	Percent of OSTDS Constructed after 1983 (%)	Age of Known Septic (Year)	Age of Likely Septic (Year)
<b>846</b>	12	88	15	46
<b>846A</b>	25	75	12	36
<b>846B</b>	32	68	12	55
<b>846C</b>	22	78	14	50
<b>846CB</b>	0	100	15	N/A
<b>Average</b>	<b>29</b>	<b>71</b>	<b>13</b>	<b>49</b>



**Table C-3. New, repair, existing, and abandonment construction permits by year**

Note: The number of systems permits for new OSTDS, repair OSTDS, existing, OSTDS abandoned OSTDS, and total with permits were obtained from EHD, which stores permit dates. The total number of parcels with OSTDS in the WBID shown in the last column were obtained from FWMI, which indicates whether an OSTDS is present or absent on a parcel, but does not indicate the OSTDS permit date. Therefore, the values in the last column do not have associated date information and the systems constructed each year are designated as N/A – not applicable. The values in the rows are not intended to be summed across the columns.

WBID	Year	New OSTDS	Repair OSTDS	Existing OSTDS	Abandoned OSTDS	Total with Permits	Total parcels with OSTDS in WBID
<b>846</b>	<b>Subtotal</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>166</b>
846A	2011	1	2	0	0	3	N/A
846A	2012	0	5	0	0	5	N/A
846A	2013	0	2	0	0	2	N/A
846A	2014	0	2	0	0	2	N/A
846A	2015	0	2	0	0	2	N/A
846A	2016	0	1	0	0	1	N/A
846A	<b>Subtotal</b>	<b>1</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>2,181</b>
846B	2011	10	12	0	0	22	N/A
846B	2012	10	15	1	0	26	N/A
846B	2013	1	15	1	0	17	N/A
846B	2014	1	9	2	0	12	N/A
846B	2015	0	13	0	0	13	N/A
846B	2016	1	6	0	0	7	N/A
846B	<b>Subtotal</b>	<b>23</b>	<b>70</b>	<b>4</b>	<b>0</b>	<b>97</b>	<b>4,537</b>
846C	2011	1	0	0	0	1	N/A
846C	2012	1	0	0	0	1	N/A
846C	2013	1	2	0	0	3	N/A
846C	2014	0	2	0	0	2	N/A
846C	2015	0	1	0	0	1	N/A
846C	2016	0	3	0	0	3	N/A
846C	<b>Subtotal</b>	<b>3</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>2,746</b>
846CB	<b>Subtotal</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>28</b>
848DA	<b>Subtotal</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>39</b>
	<b>Total</b>	<b>27</b>	<b>92</b>	<b>4</b>	<b>0</b>	<b>123</b>	<b>9,697</b>

## Appendix D. BMAP Water Quality Monitoring Stations

**Table D-1. Water quality monitoring stations**

<b>Station Location</b>	<b>Station Number</b>	<b>Monitoring Entity</b>
<b>Bayou Chico at Navy Blvd. Bridge</b>	3302JE20	Escambia County
<b>Bayou Chico at "W" Street</b>	33020JF1	Escambia County
<b>Jackson Creek at Old Corry Road</b>	33020221	Escambia County
<b>Jackson Creek at North New Warrington Road</b>	33020222	Escambia County
<b>Jones Creek at Old Corry Road</b>	33020118	Escambia County
<b>Sanders Beach</b>	33020J10	Escambia County; FDOH in Escambia County
<b>Southwest Arm of Bayou Chico – North of Mandalay Drive (Lakewood)</b>	33020JD4	Escambia County; FDOH in Escambia County

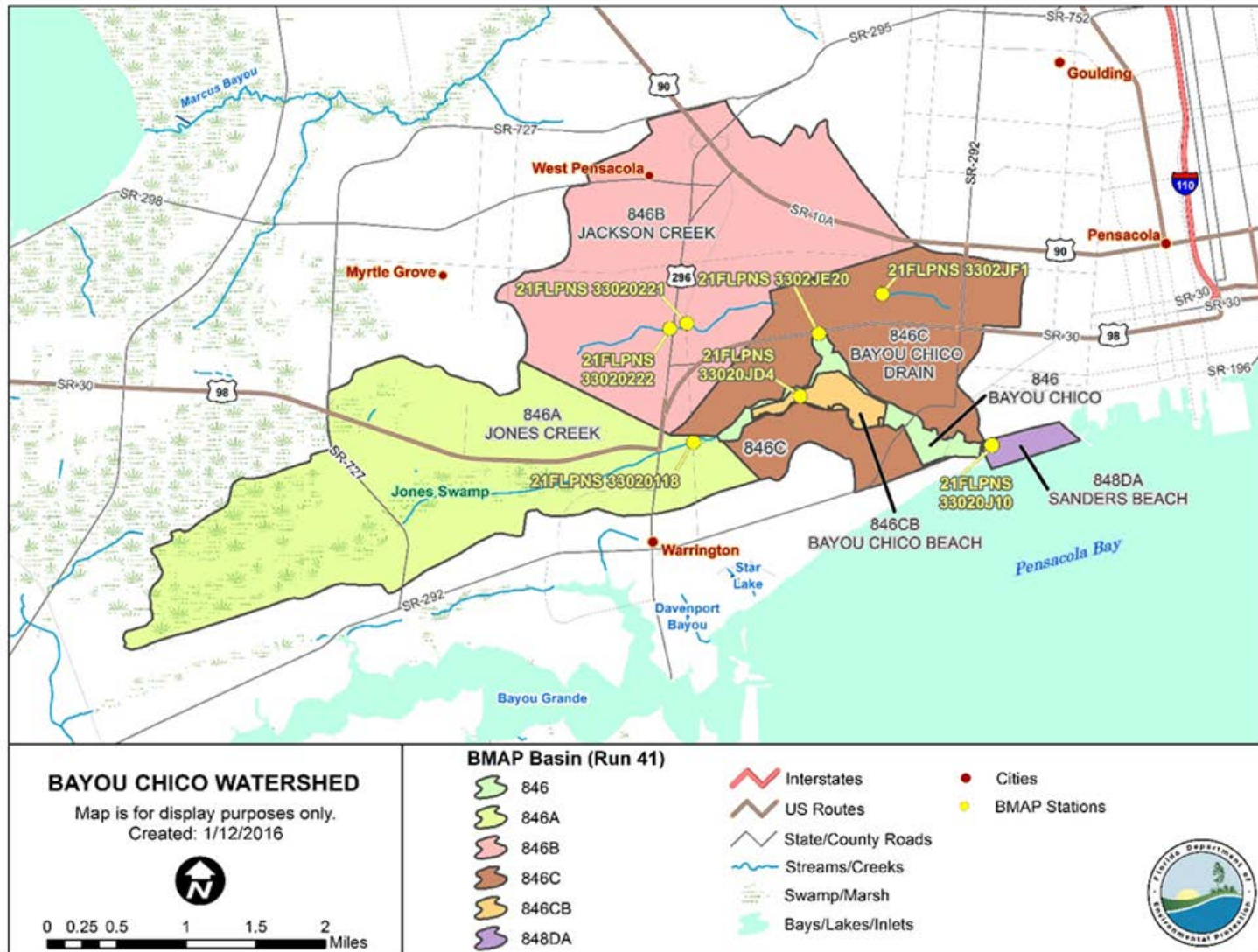


Figure D-1. Map of monitoring stations

## Appendix E. Bayou Chico WTW Field Observations List

The following list captures the observations made during the 2015 WTW field investigations from March 31 to April 2, 2015. No major sources of fecal coliform were identified. One illicit discharge of human waste was identified and eliminated. Minor grease spills at restaurants and minor trash problems were identified. Combined, these may contribute to bacteria proliferation when in contact with stormwater. These minor issues are relatively inexpensive to remediate using public education through existing programs. A [map of the site locations](#) is posted online.

**Table E-1. 2015 WTW field observation list**

<sup>1</sup> Recommendations by the team members about follow-up by responsible entities and actions are subject to change as information is gathered. The Follow-Up Action Recommended column is filled in with the "Entity name" if an action is recommended. "No" indicates no follow-up is recommended. To be determined (TBD) indicates more information is needed and follow-up actions are to be determined.

<sup>2</sup> Red, boldface, italic font indicates updated observations or follow-up actions completed during the reporting period.

Field Site ID	Observations	Follow-Up Action Recommended? <sup>1</sup>	Follow-up Action Completed?
300	Old Corry Station Navy Base is in good clean condition. Observed sanitary sewer system above and underground, dumpster outside mess hall, and stormwater conveyances. All looked clean. No dog waste found in yards in residential portion.	No	<i>None required</i>
67	CJ's Restaurant – Observed grease trap; no staining, but bad odor. Clean-out cover has hole in top; manhole cover needed.	ECUA	Unknown
201	Slips Restaurant. No staining; grease trap looked clean.	No	None required
69	Humane Society – Open trash lid, some flies, small amounts of trash outside dumpster. Very little pet waste accumulation. Looked good.	No	None required
202	Sanitary sewer is 6 to 8 feet and stormwater is 2 to 3 feet deep. Entities communicating about hydrology.	No	None required
203	Tom Thumb/Citgo gas station – Staining and waste seepage toward storm drain; lid shut, but rusting bottom causing seepage and loss of waste and strong odor.	Florida Department of Agriculture and Consumer Services (FDACS), Division of Food Safety	Unknown
57	Homeless camp at Bill Gregory Sports Complex – Pensacola volunteered to contact Florida Department of Children and Families (DCF) local lead agency to request assistance for homeless.	Pensacola	Unknown
204	Viewed end of Maggie's Ditch before crossing "W" Street and after wildlife sanctuary.	No	None required
63	Viewed Trundle Marine/Pensacola Shipyard, which has Clean Marina designation. There is private lift station and grinder onsite; not sure how it operates.	No	None required
205	Observed manhole to force main outside marina, where private marina lift station connects old manhole; looked clean.	No	None required
64	Oar house dumpsters look clean; lid needs to be closed; no follow-up.	No	None required
206	Viewed sanitary sewer manhole at Sonia St. and I St.; has rain guard; system appears to be in good condition.	No	None required

Field Site ID	Observations	Follow-Up Action Recommended? <sup>1</sup>	Follow-up Action Completed?
207	Stormwater manhole popped at intersection of Sonia St. and 1st St. Grabbed water quality sample here because of appearance of biological growth on wall from intersection of sanitary sewer and stormwater pipes. * Result >400 cfu/100mL	No	None required
208	Millwood Apartments – Popped manhole; looked good. Private lift station.	No	None required
79	Pensacola Kayak and Sail – Private lift station; needs lock; needs emergency contact to be posted. Neil McMillan (850) 982–8982.	TBD	Unknown
209	Viewed sanitary sewer manhole in front of 584 Wind Rose Circle. Map layer suggested no sewer bill but ECUA confirmed they are hooked up.	No	None required
210	Camper in yard hooked up to septic tank per owner communication. 3141 Old Barrancas.	FDOH	Unknown
66	House of Chong, 3820 Navy Blvd. – Grease on ground. Grease stains and strong odor. Unsealed; grease trap not watertight; septic tank lids ajar. Jessica (850) 455–0995.	FDOH/ Department of Business and Professional Regulation (DBPR)/ Escambia County	Unknown
70	Observed Navy Blvd. Animal Hospital. Very clean property.	No	None required
211	Vallarta Mexican Grill – Unlocked private lift station; no emergency contact information posted. Grease containers look okay.	FDOH	Unknown
212	At Edge Water Drive and Bill Place, popped manhole; it looked good.	No	None required
213	Allison's Antiques, 3940 West Navy Blvd. – Pulled manhole between antiques store and strip mall. Full of sewage debris and stagnant (full of bugs).	TBD	Unknown
214	Jackson Creek at Old Corry Rd. – Observed diaper in creek next to bridge. Team walked from Old Corry to New Warrington. Need to contact Peoples Water about boils to see if there is line break. Area has many campers and travel trailers being used as residence at residences or small mobile home parks. Team looked to see if any were losing sewage. Team observed that many were piped to home's septic system or other collection system. Some were not visible but had no obvious signs of sewage leaks. <b><i>"Boils" observed are thought to be natural groundwater flow. Jackson Creek in this location is service area boundary—Peoples Water to south, ECUA to north.</i></b>	Escambia County	Yes
20	Parape Gas Station, Ray's BBQ – Observed chicken stand at corner of New Warrington and Jackson.	No	None required
8	Grocery Advantage – Staining near dumpster. Observed homeless community nearby. Also observed stray cats and feeding station.	TBD	Unknown
5	Checked Chilies on Mobile Hwy.; grease trap needs to be pumped out. DBPR – Broken sewer cleanout access. * ECUA checking on it before team reaches out to DBPR.	ECUA	Unknown

Field Site ID	Observations	Follow-Up Action Recommended? <sup>1</sup>	Follow-up Action Completed?
215	Burger King – Water pooled under dumpster and spilling toward storm drain. Shauna to follow up. <i>County NPDES program coordinator followed up again this week. There was evidence of continued hosing of dumpster into storm drain. Owners were warned again. Further follow-up will continue.</i>	Escambia County	Ongoing
216	Sanitary sewer manhole at Fairfield and Matthew Ln. – Misaligned sewer manhole, top one foot broken, looks dry; likely terminal end of uphill start of sanitary sewer pipe.	ECUA	Unknown
302	Add Yamatos private lift station to ECUA geographic information system (GIS) layer.	ECUA	Unknown
301	Anita, send private lift station ordinance examples to Carl of Pensacola; reference Sarasota County, Manatee County, and Duval County if possible.	DEP	Yes
217	Private lift station at American Mini Storage – Panel and door need to be locked, new sticker for phone number (850) 457-001? Mini-storage contact.	TBD	Unknown
218	Pensacola Motor Sports – Observed private lift station; looked good.	No	None required
219	Circle K at Jackson and New Warrington – Observed private lift station. Lid not locked; panel door broken and unlocked. Sanitary waste near lid is evidence of overflow. Shauna ( <i>County NPDES program coordinator</i> ) to follow up (850) 937-2445. <i>Per Shauna, issue is resolved.</i>	Escambia County	Yes
220	Old car wash at 48th and West Jackson – Out of commission, but there are components here that are a mystery. No evidence of bacterial waste.	TBD	None required
221	Jackson St. Apartments, West Jackson and Blanton – Wet ditch with debris; need to inform community about keeping dumpster lid closed. Observed Lift Station 113 onsite. Looked to be in good working condition. Four-inch polyvinyl chloride (PVC) pipe pointing toward creek was confirmed to be French drain during visit using probe. Truckloads of trash need to be removed from creek. Public education about trash recommended. <i>No action at this time. County will attempt to reassess need before January 2017 meeting.</i>	Escambia County	No
222	Observed upper arm of Jackson Creek where West Jackson St. crosses creek. Recommend trash removal; large debris here. <i>No action at this time. County will attempt to reassess need before January 2017 meeting.</i>	Escambia County	No
223	At 610 Edge Cliff and 615 Edge Cliff – Stormwater drains need to be cleaned out. <i>Per county NPDES program coordinator, issue is resolved.</i>	Escambia County	Yes
224	Observed sanitary sewer manhole at Shofield and 57 – Old construction, but functioning. Unlined. System is at depth of about 10 feet.	No	None required
225	Near 5404 and 5502 Admiral Doyle Rd., team noticed faint sewer odor near stormwater drain and manhole. Sanitary sewer line is unlined. Escambia County stormwater structure has hole at 5407. <i>Per county NPDES program coordinator, issue is resolved.</i>	Escambia County	Yes
226	Jordan Valley Restaurant and Taco Bell at New Warrington and Commander St. – Looks good. Open dumpster lid.	TBD	Unknown

Field Site ID	Observations	Follow-Up Action Recommended? <sup>1</sup>	Follow-up Action Completed?
227	Woodshed Grill's grease container is covered in spilled grease, as is surrounding area. Open dumpster lid.	DBPR	Unknown
227	Hardees on New Warrington looked clean!	DBPR	Yes
83	Shrimp Basket on New Warrington – Some staining on asphalt.	DBPR	Unknown
228	Popeye's on New Warrington – Some staining near dumpster, but good otherwise.	DBPR	Unknown
229	Mobile home park near Popeye's looked clean.	No	None required
230	Ruby Tuesdays on New Warrington – Out of business; private lift station observed. Lid is needed for utilities.	TBD	Unknown
86	Walmart private lift station – Note: If lift station overflows, it will flow directly into Jones Creek. Historically this area has had homeless population behind Walmart near creek.	No	None required
91	Grape Garden's grease container for spent oil – Staining.	DBPR	Unknown
85	Sonny's BBQ – Staining on concrete; all leads to Glenn Key – picture of Jones Creek at New Warrington	DBPR	Unknown
231	Arby's at New Warrington – Staining near grease container leading to broken storm grate. <i>Per county NPDES program coordinator, issue is resolved.</i>	DBPR and Escambia County	Yes
232	Waffle House on New Warrington – Open and leaking grease container; grease collection on side of building; lots of staining. <i>Completed per county NPDES program coordinator. Repaired/replaced container.</i>	Escambia County	Yes
233	Firehouse Subs – Discolored water leaving building from pipe into retention area – determined onsite it is air conditioning condensate.	No	None required
234	McDonalds – Team could not locate grease recycling container.	No	None required
104	Forest Creek Apartments – Area prone to flooding per team member communications. Note sanitary sewer pipe crossing over storm drain.	No	None required
235	Observed Lift Station LS120 – Sewer lines cross creek. Receives waste from Forest Creek Apartments along Jones Creek. ECUA has planned project to move toward road and away from creek.	No	None required
236	Mills Ave. – Observed that ditch along road is full of cattails and leading toward Jones Creek.	No	None required
237	Tailpipe leaving home with food and soap debris; possible sewage leads directly to Jones Creek (illicit connection to stormwater ditch) FDOH call in 1400 Cairo. * FDOH educated homeowner; pipe was removed in a few days.	FDOH	Yes
238	1112 Wayne Ave. across from Dickson Park – Popped manhole; looked good.	No	None required
239	Manhole at end of Wayne Ave. opened; looked good.	No	None required

Field Site ID	Observations	Follow-Up Action Recommended? <sup>1</sup>	Follow-up Action Completed?
240	Just north of 1118 Wayne Ave, ditch runs along east side of road. Team noticed slight sewer odor near sanitary sewer manhole where sanitary sewer pipe crosses ditch, and is submerged partially in ditch water. Team noticed that water in ditch downstream of pipe crossing was two colors. East side of ditch was milky/cloudy in color, and west side of ditch was slightly humic/tannic in color and very clear. Three samples were taken, one upstream of pipe crossing, one downstream in milky colored water, and one downstream in clear humic/tannic-colored water. *Results were high in milky colored water, but low in other two samples. Tests were done on sanitary sewer system here; no leaks identified. Sample was taken each month in following two months; results were low.	No	None required
241	Barton Ave. running water (groundwater).	No	None required
242	Perforated black pipe; not connected.	No	None required
243	Decatur Ave. north of Cairo St. has new sewer lines. Lateral lines running toward houses are shallow. Escambia County maintenance should be careful.	ECUA – Stacy will contact homeowners to cover and protect laterals (18 inches deep)	Unknown
244	Cluster of private lift stations at Eliasberg St. and Fairfield to observe after this field event as follow-up activities. <b><i>No action as of December 2016. Water Quality and Land Management (WQLM)/Escambia County is following up on sample results over 5,000 cfu/100mL. Some of these may be private lift station related. Current resources have not allowed for special "private-lift station effort." However, NE Phase II Beach Haven Project has potential to eliminate private lift stations in project area. ECUA may have additional details.</i></b>	Escambia County	No
245	Dana and Mollie plan to follow up by visiting private lift stations here too. <b><i>No action as of this date. WQLM/Escambia County is following up on sample results over 5,000 cfu/100mL. Some of these may be private lift station related. Current resources have not allowed for special "private-lift station effort."</i></b>	Escambia County	No
304	Consider dumpster lid closure public education.	TBD	Unknown
303	Precision Tune Auto Care (Jones Creek) Hwy. 98/Navy Blvd. – Wash water observed entering storm drains. Escambia County spoke with manager onsite.	No	None required