

Summary of Results

Walk the WBID Exercise for Philippi Creek
(WBID1937)



FINAL DRAFT

September 27, 2017

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Purpose and Contents

This report summarizes the results of the Walk the WBID exercise for the Phillippi Creek watershed, located in the northwestern part of Sarasota County, conducted in the months of September 2016 through March 2017. This field reconnaissance and source identification effort was conducted to gain a better understanding of conditions within the watershed, including the hydrology of the creek and its contributing ditches and branches, flood-prone areas, the locations of sewer and stormwater infrastructure, and potential sources that are contributing fecal coliform bacteria to the creek.

Basin Management Action Plans (BMAPs) to address sources are appropriate for some watersheds; however, they are both time and resource intensive. The Walk the WBID exercise is a low-cost, effective alternative to help with identification of potential sources of fecal coliform pollution in Phillippi Creek, as well as outline measures to address identified sources, to help it meet state water quality standards.

This common-sense first step allows stakeholders to: identify the location of suspected sources; establish a sampling plan to fill in knowledge gaps; carry out easy-to-implement management actions for the creek using existing programs and ongoing activities; and follow up on those actions to assess the degree of success and the additional effort needed. The exercise may also allow stakeholders to identify uncertainties and future options for more effective adaptive management. The Walk the WBID exercise also contributes to improved communication between and within agencies, and provides opportunities to increase public awareness of these conditions in Phillippi Creek.

The lead entity for the Walk the WBID exercise is the Sarasota County Stormwater Division; other participants include the City of Sarasota Utilities Department, Sarasota County Health Department, and the Sarasota County Utilities Department.

This report includes the following information:

1. *Identification of the WBID;*
2. *Results of any preliminary investigation or issues identified;*
3. *List of entities and staff participating in the field efforts or other operations;*

Sources and potential sources observed;

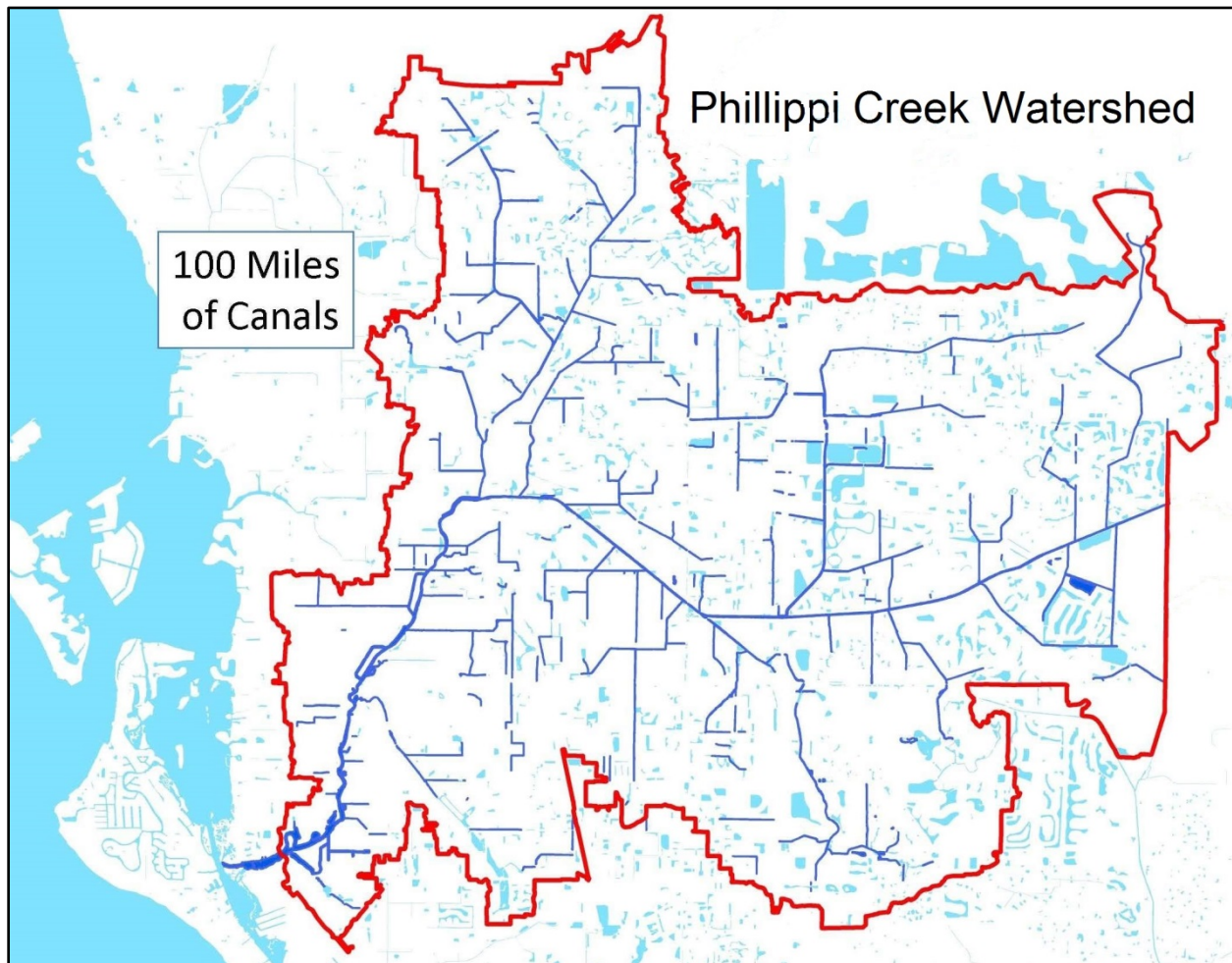
4. *Immediate next steps and follow-up actions taken;*
5. *Follow-up actions still needed;*
6. *Sources eliminated or investigated;*
7. *Water quality results from samples taken in the field;*
8. *Monitoring sites identified or proposed; and*
9. *Any other pertinent information.*

Background

Description of the Phillippi Creek Watershed

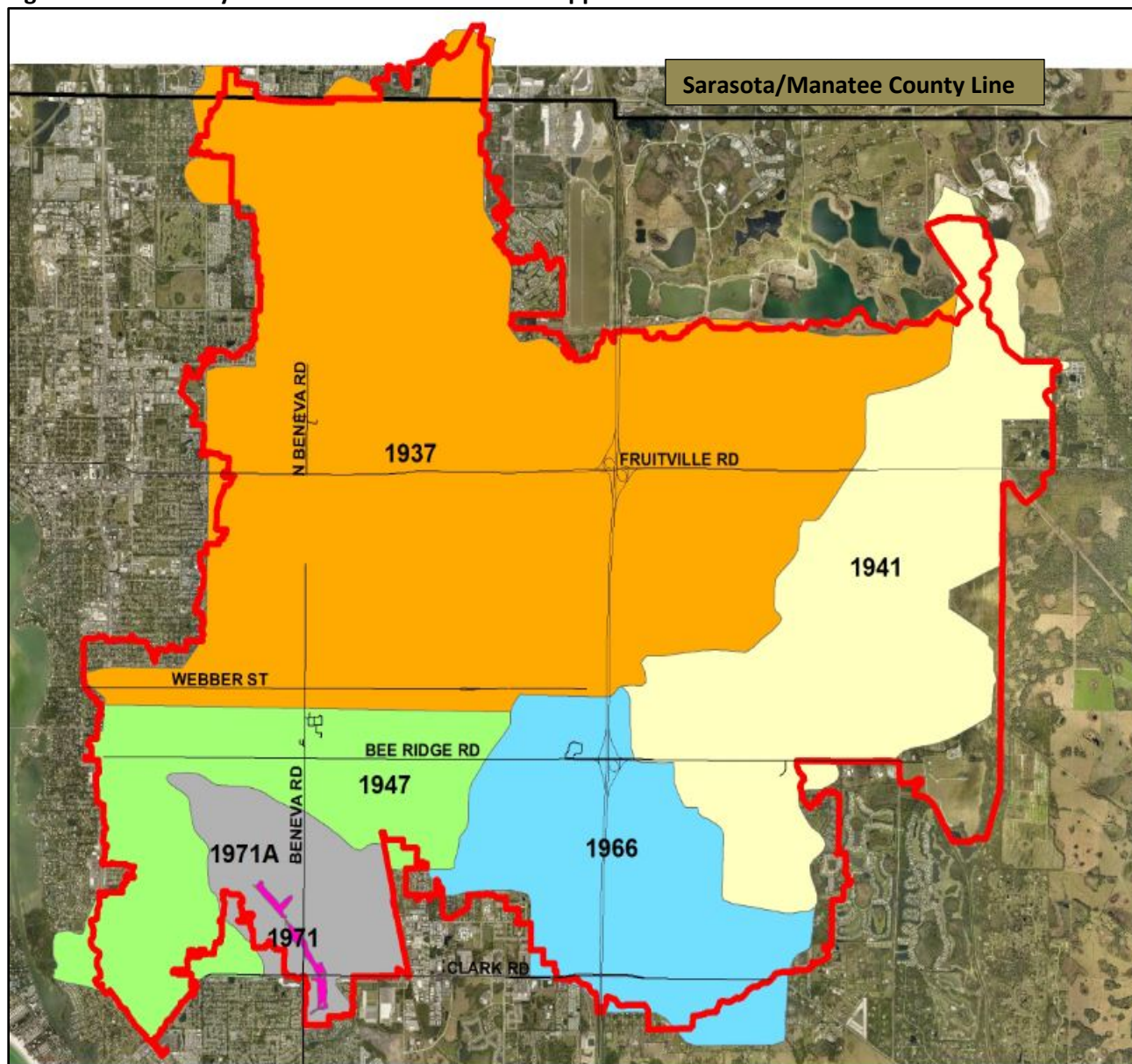
Phillippi Creek is located in the northwestern part of Sarasota County, within the Phillippi Creek Basin (**Figure 1**). Today, Phillippi Creek drains nearly 56 square miles of watershed that includes such land uses as residential (both high and low density) hobby farms, golf courses, and mixed industrial use. As early as 1948, there is evidence Phillippi Creek was channelized to accommodate widespread agricultural use. By 1974, the watershed saw additional alterations with the conversion of some agricultural land to residential/industrial use, and the construction of canals for drainage and creation of water front property and access to the bays. Since 1974 the majority of historic floodplain along the creek has been converted to residential and commercial use.

Figure 1. Boundary of the Phillippi Creek Watershed and Major Hydrologic Features in the Area



Phillippi Creek watershed has been divided into six major basins, with separate Water Body Identification Numbers: 1937, 1941, 1947, 1966, 1971 and 1971A (**Figure 2**). Each water body roughly coincides to topographic contributing basins. The largest basin, WBID 1937 is currently the only water body impaired for bacteria, and is the focus of this investigation.

Figure 2. Water Body Identification Numbers in Phillippi Creek



Fecal Coliform Impairment of Phillippi Creek

Phillippi Creek (WBID 1937) was verified impaired for fecal coliform bacteria as approved by the FDEP in November 1998, and is included on the 1998 303(d) list, based on the state's Impaired Surface Waters Rule (IWR) (see box at right), and an EPA Total Maximum Daily Load (TMDL) was adopted for Fecal Coliform in 2010.

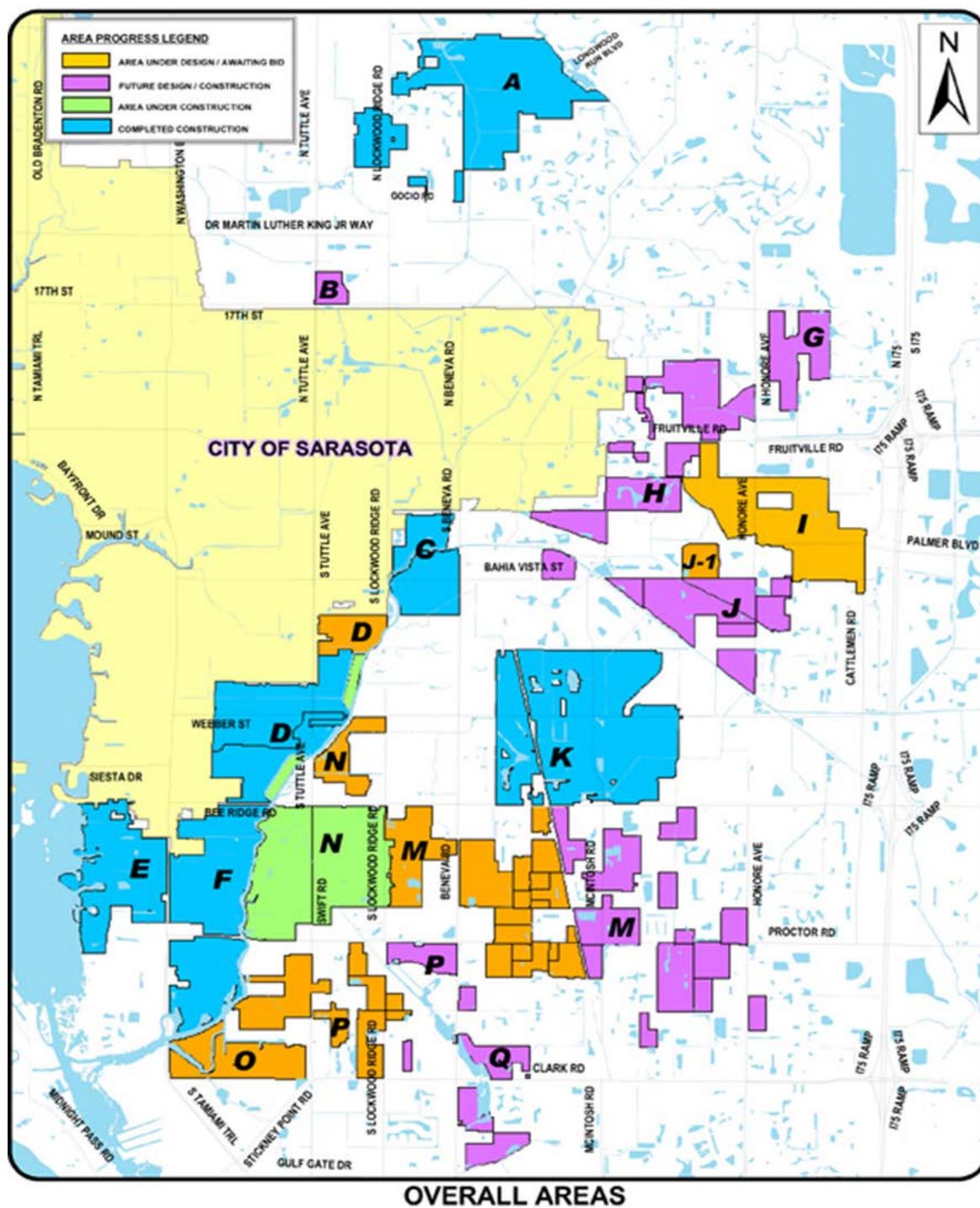
A TMDL represents the maximum amount of a given pollutant that a water body can assimilate and still meet water quality standards, including its applicable water quality criteria and its designated uses. TMDLs are developed for water bodies that are verified as not meeting their water quality standards. They are a critical step in the watershed restoration process because they provide the targets for measuring progress in subsequent water quality restoration efforts.

As a result of the impairment, and in an effort to begin overall load reductions (the fecal coliform TMDL calls for 98 percent reduction in in-stream concentrations for Phillippi Creek to meet state water quality standards), Sarasota County began a septic tank replacement program in the Phillippi Creek Basin in 2001. Neighborhoods in close proximity to the creek or large tributaries which fit pre-determined criteria such as: history of septic tank repairs, age of neighborhood, and relationship to known bacterial hotspots, were prioritized for replacement. A map of those neighborhoods is included as **Figure 3**. The anticipated completion of the replacement program is 2020. Additionally, efforts have been made to incorporate independent wastewater treatment facilities into the municipal sewer system. To date, 49 wastewater facilities in the Phillippi Creek area have been taken offline. Currently, there are 9 active facilities in the Phillippi Creek watershed, 5 in WDIB 1937; however no point sources are permitted to discharge into the creek.

Florida's Water Quality Standard for Fecal Coliform

For determining impairment for fecal coliform bacteria, the IWR states that the most probable number (MPN) or membrane filter (MF) counts per 100 milliliters (mL) of fecal coliform bacteria shall not exceed a monthly average of 200, nor exceed 400 in 10 percent of the samples, nor exceed 800 on any one day. The criteria state that monthly averages shall be expressed as geometric means based on a minimum of 10 samples taken over a 30-day period. However, there were insufficient data (fewer than 10 samples in a given month) available to evaluate the geometric mean criterion for fecal coliform bacteria. Therefore, the criterion selected for the TMDL was not to exceed 400.

Figure 3. Phillippi Creek Septic System Replacement Program



Sarasota County shares responsibility for bacteria reductions with other local and State entities. Waste load allocations have been assigned to a total of five municipal separate storm sewer system (MS4) permittees; however only three are Phillippi Creek Stakeholders: the City of Sarasota, Sarasota County and the Florida Department of Transportation (FDOT) District 1. FDOT conducted their own Walk the WBID exercise, and documented their findings in a Phillippi Creek Bacterial Pollution Control Plan, completed in February 2015. Through an inter-local agreement, Sarasota County is the responsible maintenance entity for the stormwater infrastructure in the boundaries of the City of Sarasota.

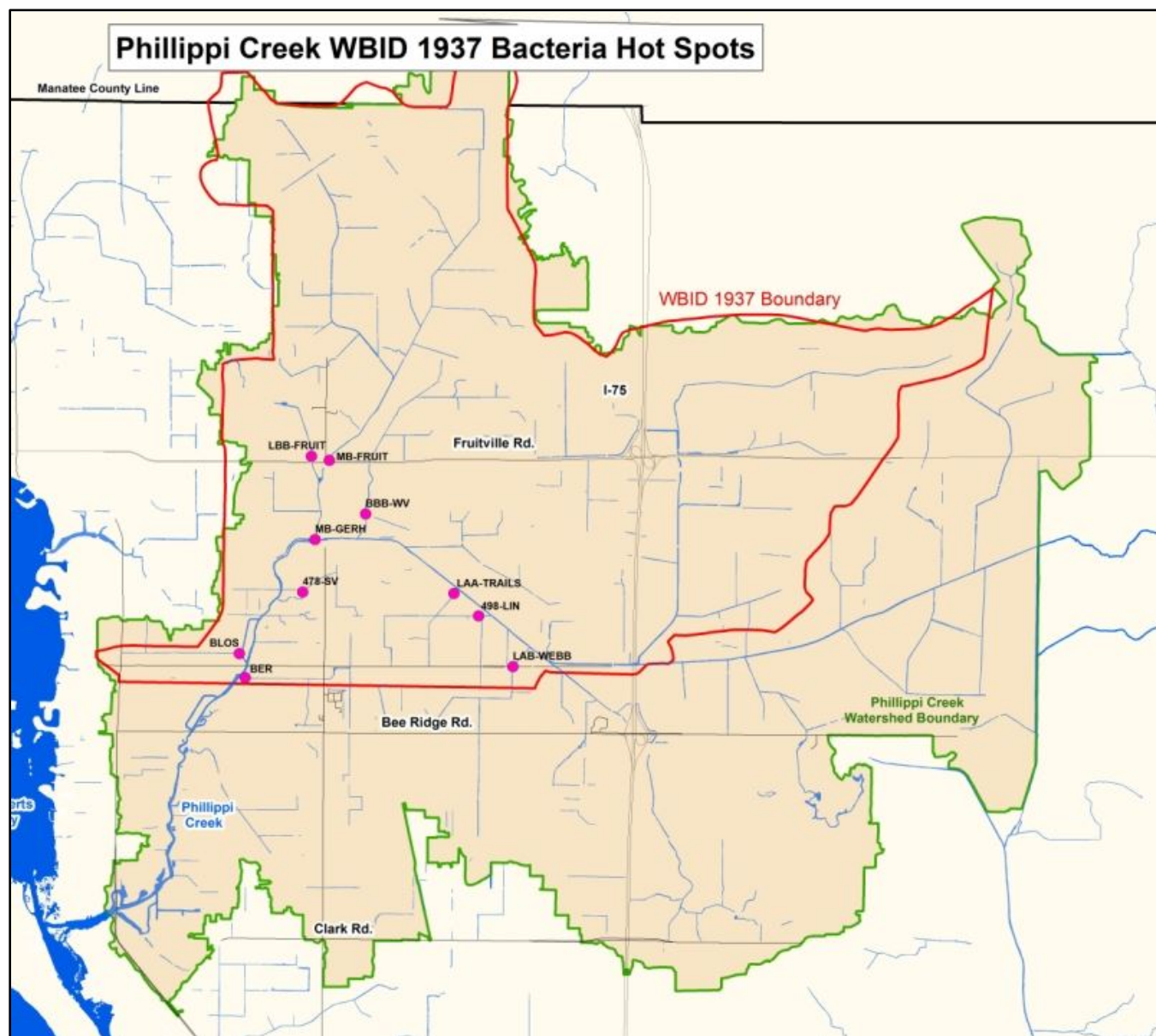
Sarasota County has been monitoring 36 sample locations along the creek and its tributaries for F. coliform since 2001, and E. coli since 2006. There are ten sites in which bacterial levels have consistently exceeded water quality standards, known as “hot spots”, and are listed in **Table 1** (currently, F. coliform is the standard for impairment). For each analyte, the percentile values were calculated from data throughout the basin. At each sample location median values were calculated and compared to the basin-wide percentiles. Sample locations with a median value greater than the 90th percentile for the basin were designated as “hot spots”. In the case of fecal coliform data, consideration was also given to the percentage of samples at each station that were greater than 5,000 (the Florida Department of Environmental Protection uses 5,000 as a rule of thumb.) Recognizing that the Phillippi Creek WBID contains miles of canals, Sarasota County Staff used the location of the “hot spots” as targets to begin the investigation (**Figure 4**). Areas upstream of the known hot spots were inspected, with samples taken in an attempt to isolate the canals or inflows that may contain the elevated bacterial counts.

Table 1.

F. coliform Bacteria Levels for Known Hot Spots 2001-2016

Station	Station Name	Longitude DD	Latitude DD	FC MEDIAN	FC AVERAGE
478-SV	Canal 4-78 at Seaview near Beneva	-82.50101	27.31887	4,050	19,217
498-LIN	Canal 4-98 at Linwood near Vinson	-82.47291	27.31553	4,200	7,781
BBB-WV	Branch BB Canal at Woodview	-82.490997	27.33005	2,100	6,081
BER	Bermuda Brook North at Tanglewood near Rose	-82.510147	27.306629	3,000	3,479
BLOS	Blossom Brook at Brink near Grove	-82.511078	27.31003	2,650	6,813
LAA-TRAILS	Lateral AA Canal at Trails Dr.	-82.47683	27.31875	1,800	2,979
LAB-WEBB	Lateral AB Canal at Webber near Mapleloft	-82.467361	27.30831	3,200	9,760
LBB-FRUIT	Lateral BB Canal at Fruitville near Serena	-82.49968	27.33826	3,700	7,623
MB-FRUIT	Main B Canal at Fruitville near Beneva	-82.49681	27.33768	1,200	5,066
MB-GERH	Main B at Gerhardt St., Sarasota	-82.49905	27.32635	1,300	4,073

Figure 4. Phillippi Creek Bacterial Hot Spots



Walk the WBID Exercise

Participants

All agencies with jurisdictional authority collaborated before, during, and after the event. Depending on locations of the identified “hot spots” and upstream contributing areas, field team members included representatives from the City of Sarasota Utilities Department, City of Sarasota Code Enforcement, Sarasota County Public Utilities - Stormwater Department, Sarasota County Department of Health, Sarasota County Health and Human Services and Sarasota County Utilities Department.

Initial Steps

Before going into the field, the stakeholders met and exchanged information through meetings organized by Sarasota County; these included: the City of Sarasota Utilities Department, City of Sarasota Code Enforcement, Sarasota County Public Utilities - Stormwater Department, Sarasota County Department of Health, Sarasota County Health and Human Services, and Sarasota County Utilities Department. In these meetings, each entity provided information about Phillippi Creek and contributing streams, ditches and canals to better acquaint themselves with the conditions in the watershed. The information was provided in advance to FDEP. Sarasota County then created multiple copies of large-format maps for use in the maps on the table exercise and the field event. The information that was collected and assimilated included the following:

- *Geographic information system (GIS) data;*
- *Stormwater infrastructure maps showing the locations of inlets and outfalls, ponds, ditches, and underground conveyances;*
- *Stormwater best management practices (BMPs) being implemented;*
- *Maps of private and public sewer infrastructure showing the locations of pump stations and force and gravity mains, as well as the location and number of sanitary sewer overflows (SSOs);*
- *Locations of septic tank replacement areas;*
- *Locations of specialty farms, kennels, dog parks and other animal operations;*
- *Water quality sampling information - sampling stations, and results;*
- *Hydrology, including wetlands, streams, and ponds; and*
- *Locations of known issues or areas of special concern such as homeless populations, dog parks, landfills, and transfer stations.*

Maps on the Table Session

With a representative present from each participating agency, team members held the Maps on the Table session to identify areas of concern to visit during the Walk the WBID event, based on field knowledge from staff and a synthesis of the available information. The team members marked areas of concern on their maps and elected field representatives with infrastructure knowledge and access to

facilities, and who were familiar with sampling equipment and standard operating procedures (SOPs). **Table 2** includes the list of attendees from the public sector.

Table 2.

Attendees - Agency Maps on Table Meeting - July 14, 2016

Table Number	Name	Title	Agency	Email
1	Robert Wright	N/A	Sarasota Co.	N/A
	Georges Nicolas	Environmental Services	City of Sarasota	georges.nicolas@sarasotagov.com
	Rich Wells	Acting Reliability Manager	City of Sarasota	richard.well@sarasotagov.com
	Scott Woodard	Wastewater Collections Supervisor	City of Sarasota	wesley.woodard@sarasotagov.com
2	Bruce Maloney	Environmental Specialist	Sarasota Co.	bmaloney@scgov.net
	Rene A. Janneman	Environmental Specialist	Sarasota Co	rjanneman@scgov.net
	Mollie Holland	Environmental Specialist	Sarasota Co	mkholland@scgov.net
3	Chris Cole	Public Utilities/Utility planner	Sarasota Co	cbcole@scgov.net
	Brian Fagan	Public Utilities/Utility planner	Sarasota Co	bpfagan@scgov.net
	Kate O'Hara	PCSSRP Coordinator	Sarasota Co	kohara@scgov.net
	Virginia Bess	Environmental Manager	Sarasota Co	virginia.bess@flhealth.gov

In addition to the Maps on the Table Session for other Agencies, Sarasota County hosted one additional Maps on the Table Meeting for the general public. Property owners in the Phillippi Creek Watershed were notified via flyers, door hangers and social media – Facebook, Twitter, Eventbrite , and email about the Maps on the Table Meeting. Examples of the outreach are given in Appendices B and C. Information identical to what was shared at the Agency Maps on the Table Meeting regarding infrastructure, hotspot areas, known potential contributors, etc., was provided to the citizens, and they were encouraged to provide information regarding any incidences that may contribute to the elevated bacteria counts in the Phillippi Creek. A list of citizens that attended the meeting is included in **Table 3**.

Table 3.***Attendees - Public Maps on Table Meeting - August 31, 2016***

Table Number	Name	Email
1	Mary Hasselbring	maryhasselbring@hotmail.com
	Lee Hasselbring	lhasselbring@hotmail.com
	Jay Leverone	jay@sarasotabay.org
2	Nicole Mytyk	nicole.mytyk@watermatters.org
	Darcy Young	darcy@sarasotabay.org
	Marian Pomeroy	Marian@sarasotabay.org
	Barbara Owen	mamafish@yahoo.com
	Rob Wright	rdwright1953@gmail.com
	Scott Simon	scottsimon35@hotmail.com
3	David Campbell	jcampbell100@verizon.net
	Jill Campbell	
	Abbey Tyrna	atyrna@scgov.net
	Jennifer Schafer	jennifer@shafer-consulting.org
4	James Maloney	jmz16@hotmail.com
	Mike Scarborough	wmmikes@gmail.com
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	TJ Venning	tvenning@vhb.com

Following both Maps on Table Events, Sarasota County staff combined the results, which are listed in **Table 4** below. This comprehensive list was compared with current hotspot data to determine potential impacts, if any, these observed activities could have on bacterial pollution in the creek. If there was a positive correlation with a hot spot, the areas were included in the investigation. As a visual aid to the investigation and analysis, Staff created GIS layer files (included in the submittal) combining results for the outreach, city/county utility infrastructure, known bacterial hotspots, as well as other key information. This final product was used to narrow the investigation to more likely causes of bacterial pollution (**Figures 5-9**).

Table 4.**Summary of Results of Comments from Agency and Public Maps on Table Event**

Map 1		
Note #	Activity	Closest Address
1	Dog walking, illicit discharge	Ed Smith Stadium
2	Suspected flooding	<i>Outside Phillippi Creek Basin</i>
3	Dog Park	17th Street paw park
4	Ranching	4117 Chestnut Ave.
5	Wildlife (ducks)	1000 Circus Blvd.
6	Mobile Home park - rating not certain	<i>Outside Phillippi Creek Basin</i>
7	Lower Income Neighborhood	Kensington Woods 1706 Andrea PL.
8	Lower Income Neighborhood	1221 Pompano Ave. Sarasota
9	The Meadows (old neighborhood but well maintained)	North Honor Ave.
10	Restaurant, Bad septic	3436 17th Street
11	The Meadows - birds on the golf course	North Honor Ave.
12	Livestock	5858 Sacramento Drive

Map 2		
Note #	Activity	Closest Address
1	Dog Walking	Along streets, neighborhoods
2	Dog Park 17th street	
3	Dog Walking	Along streets, neighborhoods
4	Septic System - Low rating; overflows	Circus Blvd. area
5	Lockwood Park - dog walking	Lockwood Ridge Rd.
6	Mobile Home Park - good condition	4041 Bahia Vista Street (Church next door)
7	Oakwood Manor Trailer Park - good rating; cast iron pipes	5 White Oak Terrace
8	Mobile Home Park - good rating	3184 Bahia Vista Street (home next to entrance of the trailer park)
9	Bobby Jones Clubhouse Rest. - poor rating (reclaim break history)	Bobby Jones Golf Club
10	Restaurants – McDonald's, Wendy's	Fruitville Rd. west of Beneva
11	Restaurants	Bahia Vista and Beneva
12	Restaurants	Beneva and Webber St.
13	Rest./bar/Hotel - run down; grease traps	Fruitville West of Beneva
14	Homeless Activity	Various Locations

Map 3

Note #	Activity	Closest Address
1	Big Cat Habitat	7101 Palmer Blvd.
2	Sanitary Sewer issues historically	2020 Misty Sunrise Trl.
3	Flood Prone	1565 Shadow Ridge Cir.
4	Hobby farming	801 East Road
5	Mobile Home Park - good rating	Sun N Fun
6	Waste Water Treatment Park	7839 Fruitville Rd.
7	Hobby farming	1030 Wagon Wheel Dr. (Fox Creek and Racimo Ranches)
8	Lift Station	155 Cattlemen Rd.

Map 4

Note #	Activity	Closest Address
1	Dog Walk	Red Bug Slough/varies along roads
2	Restaurants	Stickney Point and Gateway Ave. (Gulf Gate area)
3	Mobile Home Park - Poor rating	Roselawn Park/Roselawn Circle and Bee Ridge Rd.
4	Dog Walk	Red Bug Slough/varies along roads
5	Flooding (US 41)	<i>Outside sampling area (saltwater)</i>
6	Animals (ranching, dog walk)	Urfer Park (Intersection of Bee Ridge and McIntosh Rds.)
7	Dog Walk	Red Bug Slough/varies along roads
8	Homeless Activity	Various Locations
9	Apartment Building - poor rating	La Caya Apts. on West side of Swift on Wilkinson

Map 5

Note #	Activity	Closest Address
1	Old Land fill	Rothenbach Park
2	Older Residential community - run down	Mauna Loa Blvd area
3	Restaurant	Cattleman and Bee Ridge, SE corner
4	Mobile Home Park - good rating	Camelot Lakes Gantt and Clark Rd.
5	Flooding	Clark and Ibis Street (east of interstate)
6	Old land fill	Between Clark and Procter - Foxfire Golf Course

Note: Mobile home parks and restaurants were rated as Excellent, Good and Poor. This rating relates to overall condition of the park in general and the residences. Excellent and Good parks are deemed less likely to have sanitary sewer problems as those rated as Poor. Same rating for restaurants for grease traps and dumpster issues.

Subsequently, Sarasota County carried out a preliminary field reconnaissance to identify areas of focus, determine appropriate routes for the participants, and identify any access issues and safety concerns requiring coordination with local law enforcement.

Field Event

The Walk the WBID team used the large-format maps (**Figures 3 - 7**) while conducting the field investigations. When possible, members of the team were assigned tasks such as: documentation and field notes (including GPS coordinates of potential sources), water quality sampling, and photo documentation. Water quality sampling equipment was used to collect water quality information about potential sources identified in the field, and a Tablet with a field data collection program was used in addition to field sampling sheets.

Phillippi Creek is a large watershed, containing a tidal creek, one hundred miles of canals plus many more miles of ditches and swales. In order to make the Walk the Watershed effort more manageable, field inspections focused on the bacterial “hotspots”, and worked upstream from those areas. The team explored these areas of the waterbody while in the field, referring to the maps to follow the creek above and below ground (stormwater infrastructure). Team members looked at contributing ditches, swales and canal banks and in the vicinity of the waterbody for potential sources. Care was taken to ensure that only appropriate entity representatives accessed private property, unless the property owner had granted access to the entire team. Potential sources that were investigated included the following:

- *Potential illicit connections (PICs) or discharges;*
- *Public and private sanitary sewer infrastructure (such as manholes and pump stations);*
- *Package plants;*
- *Signs of recent SSOs, or areas with multiple SSOs;*
- *Wastewater infrastructure located close to surface waters and/or stormwater inlets, including pump stations, manholes, and air release valves (ARVs);*
- *Septic tanks located close to surface waters and/or stormwater inlets;*
- *Failing septic tanks (as indicated by ponding and a strong smell of sewage);*
- *Evidence of homeless populations;*
- *Accumulated trash and debris on streets and parking lots;*
- *Accumulated trash and debris near to or inside stormwater drains and catch basins;*
- *Clogged or broken stormwater grates;*
- *Stormwater outfalls discharging from underground conveyances or into ponds;*
- *Sewage smell from stormwater drains, indicating possible cross-connections;*
- *Unusual odors;*

- *Evidence of illegal dumping or discharge of liquids;*
- *Signs of oil and grease;*
- *Excessive sediments and signs of erosion or wash out;*
- *Stagnant water;*
- *Debris in inlets, or inlets located near wastewater infrastructure;*
- *Exposed pipes of unknown origin;*
- *Flood-prone areas;*
- *Pet waste or evidence of high-traffic pet areas;*
- *Presence of horses, cattle, or other ruminants in the water or close to the water;*
- *Evidence of wildlife such as raccoons and waterfowl;*
- *Evidence of chickens or other hobby animals;*
- *Areas with heavy tree cover and vegetated ditches preventing ultraviolet (UV) light penetration.*

Any discharges that were observed were sampled both downstream and upstream. Potential sources or other issues identified while in the field were reported to the proper jurisdiction and cataloged while in the field. A record was kept of major findings, including observations about the water body, potential sources, follow-up items and the responsible entity, and any areas that should be added to the monitoring plan or that required additional investigation.

Results

Table 4 (referenced above) and **Figures 5-9** summarize the results of both the WTW Maps on the Table exercises. These results were used in the site investigation planning for the field events. **Figures A.1 through A.15 in Appendix A** are field investigation sheets from the actual Walk the Watershed events and describe the water quality issues and potential fecal coliform sources that the team observed during the exercise, from September 2016 through March 2017, as well as briefly produce the results of the water quality sampling that was carried out on those dates. Official results from the laboratory analysis of the samples taken during the investigation area included as **Figures A.16 to A.19 in Appendix A**. There were several areas where evidence of wildlife presence (tracks, feces) was noted (**Figures A.2, A.6, A.7, A.8 and A.13**) and pet waste (**Figure A.5**) could be contributing to elevated bacteria counts. Additionally, conditions which can contribute to the proliferation of bacteria such as shade, vegetation, and organic sediment were found at each site.

Conclusion

Results of the investigation were inconclusive. While there were subtle hints of potential sources (wildlife, pets, homeless encampments), there was no evidence of point source bacterial pollution such as failing septic tanks or failing sewer infrastructure. Data indicates while there are some instances of elevated bacteria counts (30,000cfu/ml) periodically, the counts associated with sewage spills - in the

hundreds of thousands or millions – are non-existent. With few general spikes in bacterial count, the population of bacterial appears relatively stable. Recent research suggests that it is possible for conditions in the natural and stormwater environment to mimic the conditions found the gut of mammals, thus allowing for *E. coli* to proliferate in that environment. Lack of direct evidence for a strong contributing source and a relatively consistent bacterial count seems to indicate the stormwater system has a naturalized “bacterial background”, meaning that there is a permanent population that exists in the stormwater management system.

Next Steps and Follow-up Actions

Intractable Contributions and Natural Conditions

- Figures A.2, A.6, A.7, A.8 and A.13 show evidence of wildlife in close proximity to a Phillippi Creek watercourse, including: raccoon prints, waterfowl, and feces.
- *Citrobacter* grows on rotting fruit and can cause false positives for fecal coliform tests. Citrus grows wild and in residential yards throughout the watershed. At the time of site visits, no evidence of rotting fruit was seen along the waterways or in the infrastructure.
- Bacterial re-growth can occur in moist soils containing deposits of decaying organic matter. This re-growth is probable in ditches and natural watercourses given the sediments observed most all investigations.
- Natural canopy cover is not a contributor, but does prevent UV rays from reaching the water column. UV rays kill pathogens and fecal coliforms. All sites investigated had a mixture of sun and shade.
- Natural tannins from decomposing plant material in the water also shade out UV rays. All sites investigated with flowing water appeared tannic in nature.

Follow-Up Actions, Results, and Plans for Future Proactive Prevention Actions

Sarasota County has an established pet waste program. After reviewing results of the feedback, it was determined that further expansion, not only in parks, but along neighborhood streets was necessary. County Staff is reaching out to neighborhoods encouraging pet waste pickup, and coordinating with volunteers from those neighborhoods to install pet waste bags dispensers and signage to motivate proper pet waste disposal. An example of outreach materials for pet waste pick up is included in **Appendix C**.

Additional recommended next steps and follow-up actions in the Phillippi Creek watershed are shown in **Table 5**.

Table 5.

Follow-up actions for reducing fecal coliforms in Phillippi Creek

Related Figure(s)	Action Item	Entity	Date Completed/Initiated	Outcome
Figure A.9	Homeless Encampments	City of Sarasota	Ongoing	
Figure A.13	Garbage Disposal	Sarasota Co	Initiated June 2017	
Figure A.14	Wildlife Feeding	Sarasota Co	Initiated June 2017	
N/A	Microbial Source Testing	Sarasota Co	Initiated July 2017	

Based on testing results from the exercise, additional testing (F. coliform/E. coli) is recommended to try to narrow down potential sources for contamination. Once the field had been narrowed, Sarasota County may seek advanced methods to help determine the source.

Additional questions on this event should be directed toward:

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List of Acronyms and Abbreviations

List the acronyms used in the table of follow up actions and in text, especially those that pertain to departments within a county or city. Delete those below which do not apply to this document and add as appropriate.

ARV	Air Release Valve
AWTF	Advanced Wastewater Treatment Facility
BMP	Best Management Practice
CFU	Colony Forming Units
DOH	County Department of Health
FDACS	Florida Department of Agricultural and Consumer Services
GIS	Geographic Information System
GPS	Global Positioning System
IWR	Impaired Waters Rule
MHP	Mobile Home Park
MPN	Most Probable Number
MS4	Municipal Separate Storm Sewer System
OSTDS	Onsite Sewage Treatment and Disposal System
PIC	Potential Illicit Connection
ROW	Right of Way
SOP	Standard Operating Procedure
SR	State Road
SSO	Sanitary Sewer Overflow
TMDL	Total Maximum Daily Load
UV	Ultra-Violet
WBID	Waterbody Identification
WWTP	Wastewater Treatment Plant

Appendices

Appendix A. Investigation Photo Documentation and Results

- Figure A.1. Circus Blvd. Site Visit
- Figure A.2. Fruitville and Circus Blvd. Site Visit
- Figure A.3. Davis Blvd. Site Visit
- Figure A.4. Beneva Shopping Center Site Visit
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- Figure A.11. Red Bug Slough at Swift and Wilkinson Site Visit
- Figure A.12. Tuttle Ave. south of Sunnyside Drive
- Figure A.13. Vinson Ave. Site Visit
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- Figure A.16. Phillippi Creek TMDL Test Results – TMDL 1 to 4 (11/10/2016)
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Appendix B. Public Outreach for the Public Walk the Watershed Meeting August 31, 2016

- Figure B.1 Door Hanger
- Figure B.2 Walk the Watershed Public Meeting Invitation on Eventbrite

Appendix C. General Outreach Material for Bacterial Pollution – Pet Waste

- Figure C.1 Public Outreach on bacterial pollution: “There is no Poop Fairy”

Appendix A.

Investigation Photo

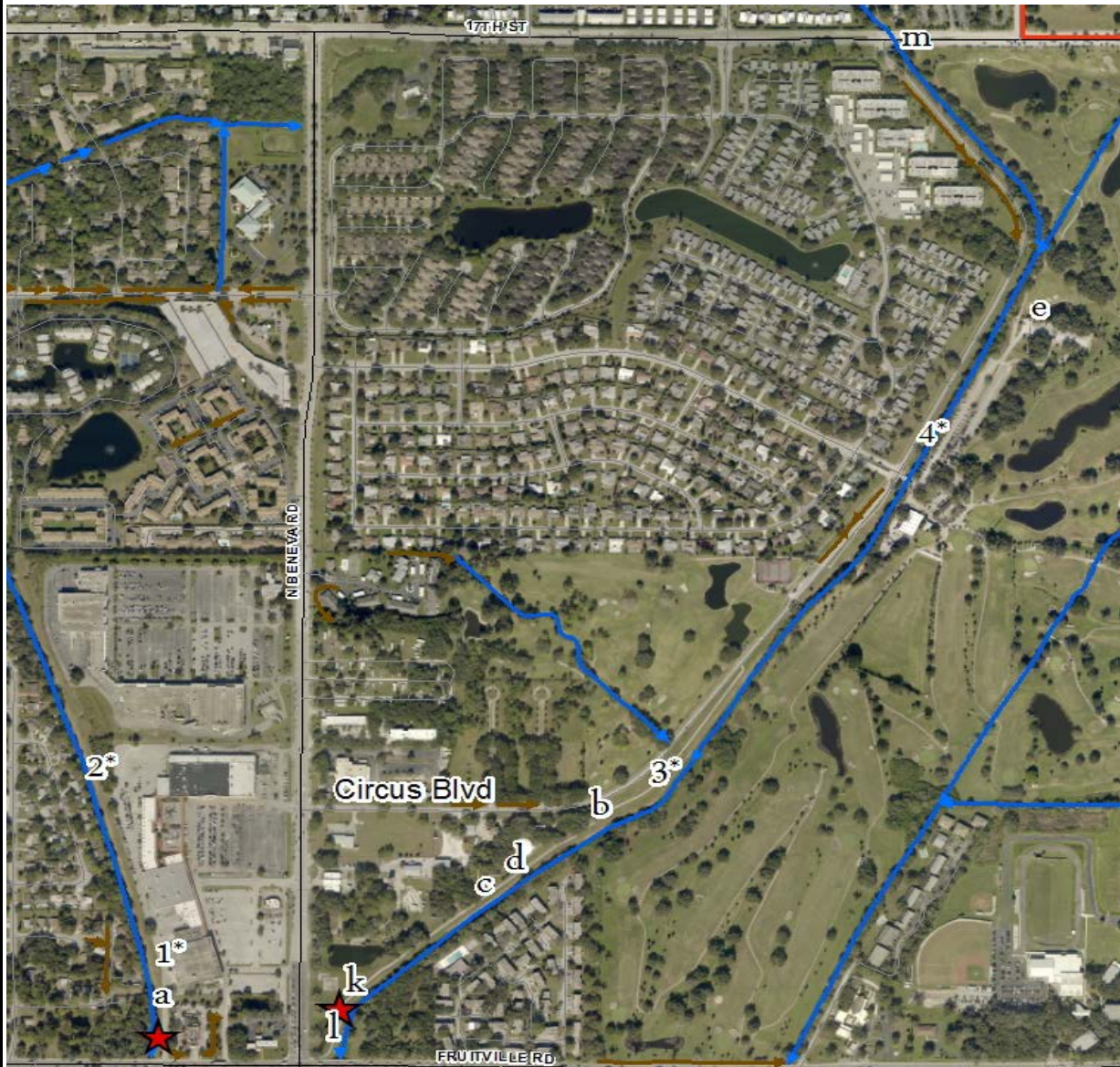
Documentation and

Results

Figure A.1.
Circus Blvd.
Site Visit

Figure A.1. Circus " Site Visit
Overall Map and Narrative

The WTW site visit occurred on 8/26/2016. The areas visited are known hotspots for bacteria: north of Fruitville and just west of Beneva; as well as one just east of Beneva, north of Fruitville (shown as red stars on the map). Residential areas upstream of the known hotspots have transitioned from on site septic to sewer (in this case, City of Sarasota). Slightly upstream of the hotspots are neighborhoods that still remain on septic systems. The site visit yielded no conclusive evidence of septic failure in these neighborhoods. The map of the investigated area is below.





Inspector(s):	Date:	Photo Location	Photo Direction
M.Holland/R.Wells/J. Pate	8/26/2016	McDonalds on Fruitville	West
Comments: (a)Appears to be a homeless camp on vacant property west of McDonalds and directly adjacent to the creek. This encampment is upstream from the established sampling site.			



Inspector(s):	Date:	Photo Location	Photo Direction
M.Holland/R.Wells/J. Pate	8/26/2016	Phillippi Creek at Circus Blvd	NW
Comments: (b)Phillippi Creek at Circus Blvd, just east of the fire dept training area. The creek here is heavily vegetated. There is also areas of bank erosion and sloughing in of the banks. No evidence of dog walkers along this linear "park".			



Inspector(s):	Date:	Photo Location	Photo Direction
M.Holland/R.Wells/J. Pate	8/26/2016	Phillippi Creek	NE
Comments: (c)Outfall from Amherst Street (the southern one) . Runoff comes from a apartment complex, which is on City Sewer. Lat/long is 27.3398/82.4948 of this pipe. There is no on site treatment for the stormwater for this apartment complex.			



Inspector(s):	Date:	Photo Location	Photo Direction
M.Holland/R.Wells/J. Pate	8/26/2016	Phillippi Creek	NE
Comments: The second outfall on Amherst Street (the one to the north). Stormwater runoff from the same apartment complex. Lat/Long is 27.3401/82.4944. The piping system in to the creek is failing, as the pipe is now in 2 sections. There is erosion under these pipes from stormwater flow, which stirs up sediment from the ditch bottom and moves it down stream.			



Inspector(s):	Date:	Photo Location	Photo Direction
M.Holland/R.Wells/J. Pate	8/26/2016	N end of Azinger Way	South
Comments: (e)City Lift station. The maintenance entity for this lift station is the contractor that maintains the golf course. The site was secure at the time of the investigation. There is a history of problems at this station, but no issues recently.			



Inspector(s):	Date:	Photo Location	Photo Direction
M.Holland/R.Wells/J. Pate	8/26/2016	End of Bearded Oaks Drive	South
Comments: (f)Residential community South of Fruitville Rd and adjacent to 4-37 canal and north of BBB-WV hotspot for Fecal Coliform. This subdivision is not on City sewer.			



Inspector(s):	Date:	Photo Location	Photo Direction
M.Holland/R.Wells/J. Pate	8/26/2016	Same as Above	North
Comments: (f)Same as above, but looking towards Fruitville Rd. There are no obvious signs of septic failure in the front yards. Houses and lots are large and well taken care of. The lots of the left (west of this road - Bearded Oaks Drive) back up to the canal shown later, Canal 4-37.3. This is the last sight visited with Rich and John from the City due to time constraints on their end. The site investigations continued in the adjacent neighborhood and a linear park in the same vicinity as Phillipp Creek and Circus Blvd without them.			



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	8/26/2016	Midwest south of Fruitville	East
Comments: (g)4-37.3 Canal just south of Fruitville Rd. Water was clear but tannic, flowing south (left to right). The canal is heavily vegetated and the bottom was sandy. There were not odors coming from the canal or water.			



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	8/26/2016	Same as Above	North

Comments:(g) Looking towards Fruitville Rd. 4-37.3 is to the right.



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	8/26/2016	Same as Above	South
Comments: (g)Looking south along 4-37.3. The side banks on the west side of the canal (same side as the fire hydrant) are very steep and are eroding in some areas. The east side is heavily vegetated.			



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	8/26/2016	Canal 4-37	SE
Comments: (h)Stormwater pipe that collects from Wolverine and Midwest Pkwy. Pipe was discharging minimally at the time of the site visit in to Canal 4-37.3.			



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	8/26/2016	Same as Above	SW
Comments: (h) Showing the intersection of Midwest Pkwy and Wolverine as mentioned above. This neighborhood is on City Sewer. Homes in this area are moderate income type homes and vary in condition.			

Sarasota County Inspection/Investigation Report - Circus " Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	8/26/2016	Midwest Pkwy and Davis	South
Comments: (i) Showing the City Lift station at the corner. Site was secure. This station has no history of overflows.			



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	8/26/2016	Bridge over Canal 4-37 @ Davis	North
Comments: (j)Showing canal 4-37.3 at the bridge. Bottom is mostly sandy with some shell. Banks are heavily vegetation, water is still clear, but cloudier than upstream. Since this is residential, there are dogs throughout (could hear barking), but there was no obvious signs of pet waste in the neighborhood.			



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	8/26/2016	Same as Above	North
Comments: (j)Showing the water before it passes under the bridge. Water is a bit cloudier than upstream. Aquatic vegetation is present. Banks are heavily vegetated as well.			



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	8/26/2016	Same as Above	South
Comments: (j) Looking at 4-37 on the south side of the bridge. Banks are heavily vegetated, aquatic vegetation present as well. Bottom is sandy.			



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	8/26/2016	Linear Park north of Fruitville	North
Comments: (k)Following the linear park north of Fruitville and to the west of Fruitville Park. Canal is known as 4-14 in this area. Shoreline is very steep, with some areas of major erosion (older and now vegetated). Entire length is heavily vegetated.			



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	8/26/2016	Same as Above	South
Comments: (k)Showing the canal looking south towards Fruitville Rd. No evidence of dog walking along this linear park. There are no heavily traveled critter trails along the creek.			



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	8/26/2016	At Fruitville and 4-14	North
Comments: (I) Showing water as it flows south. Water is somewhat cloudy, flowing. It appears the bottom is sandy throughout.			



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	8/26/2016	Same as above	SW
Comments: (I) Showing the discharge point of a stormwater pipe that collects water along Beneva Road north of Fruitville. The regularly sampled point is upstream of this.			



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	8/26/2016	4-14 South of 17th Street	NE
Comments: (m)Showing the canal just south of 17th Street. Sandy bottom, no aquatic vegetation, shoreline is heavily vegetated and mostly shaded.			



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	8/26/2016	Circus Blvd and 17th Street	NE
Comments: (m)Showing Sewer and Reclaimed water lines for the City. Pipes appeared in good condition with no leaks. This pipe passes over the canal just south of 17th Street and East of Circus Blvd.			



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	8/26/2016	Same as Above	East
Comments: (m)Showing the lines as the cross 4-14. No apparent issues. 17th Street is to the left.			

Figure A.2.

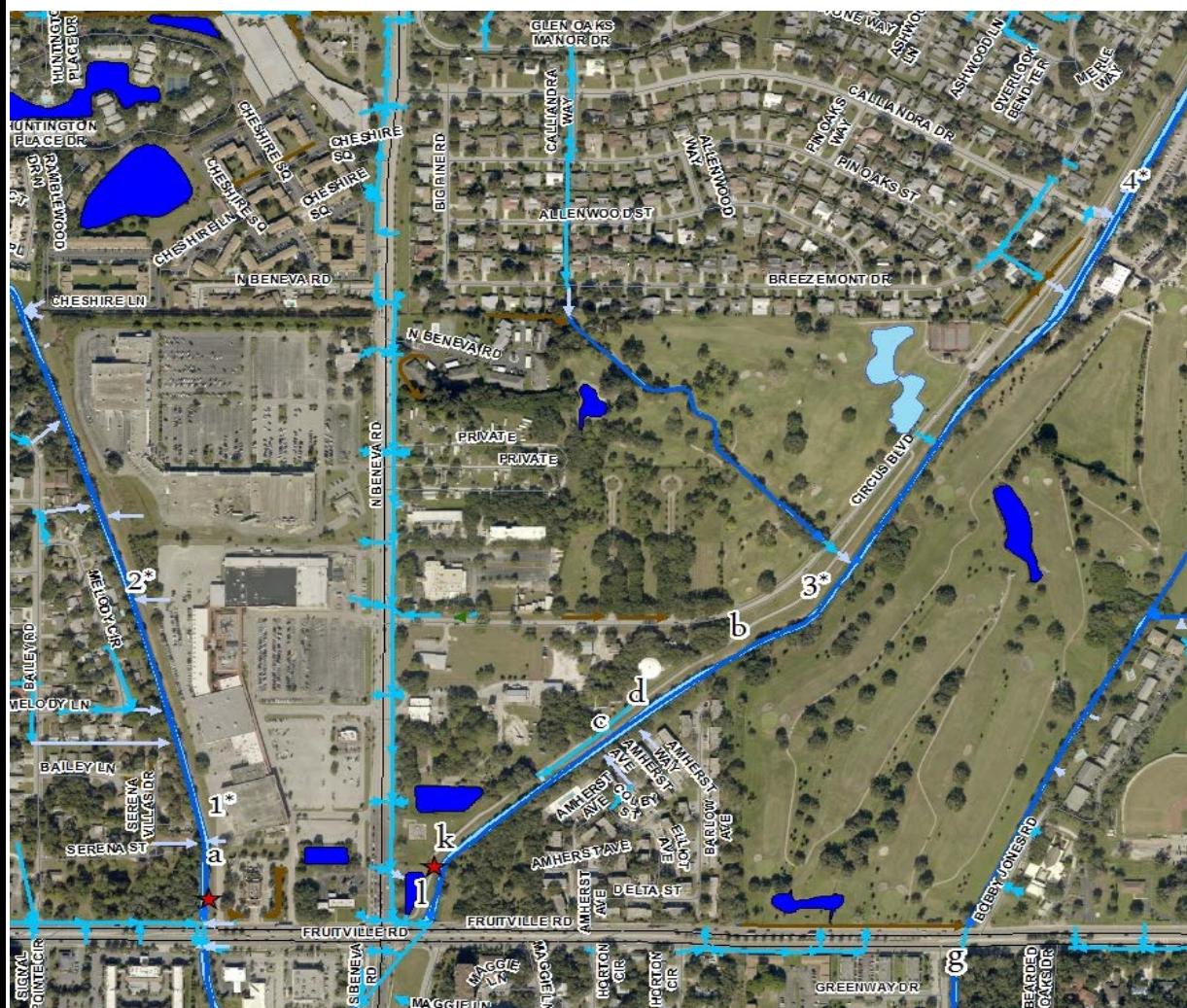
Fruitville and Circus Blvd.

Site Visit

Figure A.2. Fruitville Rd and Circus Blvd Site Visit

Overall Map and Narrative

The areas visited were upstream of known data hotspots for bacteria. Regularly scheduled testing sites are indicated by the red stars. Photo stations are numbered, with the (*) symbol for areas where additional sampling took place. Results are: **TMDL 1(#1)** F. coliform - 6200/100mL; E. coli - 6131/100mL **TMDL 2(#2)** F. coliform - 6300/100mL; E. coli - 7270/100mL **TMDL 3(#3)** F. coliform - 2700/100mL; E. coli - 3448/100mL **TMDL 4(#4)** F.coliform - 2600/100mL; E.coli - 3255/100mL. There were no obvious sources of discharge - illegal connections, abundant pet waste, homeless encampments. There were signs of wildlife utilization in the form of game trails and potential nesting/denning areas. Additionally, the canal is mostly shaded, cutting down the UV penetration.



Sarasota County Inspection/Investigation Report - Fruitville Rd and Circus Blvd.



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, J. Talbott, M. Holland	11/10/2016	West of Fruitville and Beneva	NW
Comments: (#1) Sample site is upstream of the regularly sampled site (noted by the red star in the narrative), about 100 yards. This site has the highest bacteria count on average for 2006-2016. There are homeless emcampments along the creek in a couple locations.			

Sarasota County Inspection/Investigation Report - Fruitville Rd and Circus Blvd.



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, J. Talbott, M. Holland	11/10/2016	Same as above	NW
Comments: (#1)Showing overall site conditions. Banks were heavily vegetated on the West side, right side had been recently maintained. Water depths varied from just a couple inches to 10 or 12 inches. Bottom sediment was sandy, ditch was flowing. Wildlife tracks in the bottom of the ditch (raccoon and bird).			

Sarasota County Inspection/Investigation Report - Fruitville Rd and Circus Blvd.



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, J. Talbott, M. Holland	11/10/2016	Same as above	South
Comments: (#1)Showing the upstream of the sample site. The east side had been recently maintained, but not to the water's edge. Land use is commercial on the east side of the ditch, residential on the west side.			

Sarasota County Inspection/Investigation Report - Fruitville Rd and Circus Blvd.



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, J. Talbott, M. Holland	11/10/2016	Same as above	North
Comments: (#1) Showing the upstream side of the sample location. Commercial use is to the right, residential to the left. No signs of homeless encampments in this particular area.			

Sarasota County Inspection/Investigation Report - Fruitville Rd and Circus Blvd.



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, J. Talbott, M. Holland	11/10/2016	Upstream of Sample site	NW
Comments: (#2)At the outfall of one of the retention ponds for the shopping center. The pond is heavily wooded and appears to be used intermittently as a homeless encampment. The bottom sediment was sand, there was wildlife tracks as well.			

Sarasota County Inspection/Investigation Report - Fruitville Rd and Circus Blvd.



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, J. Talbott, M. Holland	11/10/2016	Same as Above	NW
Comments:(#2) Showing the bottom sediment and the wildlife tracks. Flow was present, but not from the outfall pipe.			

Sarasota County Inspection/Investigation Report - Fruitville Rd and Circus Blvd.



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, J. Talbott, M. Holland	11/10/2016	Same as above	North

Comments: (#2) Showing the outfall pipe from the detention area.

Sarasota County Inspection/Investigation Report - Fruitville Rd and Circus Blvd.



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, J. Talbott, M. Holland	11/10/2016	N of Main B - Fruitville	South
Comments: (#3)Showing general conditions downstream of the sample site. Vegetation is present, but minimal. Lots of erosion and sediment depostion in the canal bottom during larger storm events. Water flows south (left to right). Area is adjacent to Circus Blvd.			

Sarasota County Inspection/Investigation Report - Fruitville Rd and Circus Blvd.



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, J. Talbott, M. Holland	11/10/2016	Same as above	SE
Comments: (#3). Showing the bottom sediments. Sandy with little organic matter. Large(ish) fish seen upstream. Additional sampling done here today. Also adjacent to Circus Blvd.			

Sarasota County Inspection/Investigation Report - Fruitville Rd and Circus Blvd.



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, J. Talbott, M. Holland	11/10/2016	Same as Above	NW

Showing conditions upstream of the sampling site. Overall canal has canopy cover and steeply eroding sides in most areas. Evidence of wildlife in the ditch - tracks but no scat seen. Adjacent to Circus Blvd.

Sarasota County Inspection/Investigation Report - Fruitville Rd and Circus Blvd.



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, J. Talbott, M. Holland	11/10/2016	Pipe for Lift Station	SE

Comments: (#4) Bobby Jones Golf Course (owned by the City of Sarasota) has its own lift station. Showing the connection between the lift station at Bobby Jones Golf Course to the rest of the City of Sarasota's sewer system. The Lift station was inspected previously with City Staff. No obvious signs of leaks in the pipe. The pipe is covered with a concrete sleeve on the top, but the bottom is exposed.

Sarasota County Inspection/Investigation Report - Fruitville Rd and Circus Blvd.



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, J. Talbott, M. Holland	11/10/2016	N of Main B - Fruitville	South

Comments: (#4) Showing the entrance to Bobby Jones Golf Course, which is about 50 yds downstream.

Sarasota County Inspection/Investigation Report - Fruitville Rd and Circus Blvd.



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, J. Talbott, M. Holland	11/10/2016	Same as above	SE

Comments: (#4). Showing the sample area. A sample was taken just to the right of the outfall pipe. The bottom sediment was sand, the canal was flowing south (left to right). No flow from the outfall pipe, which accepts stormwater from the adjacent Circus Blvd. Some erosion in the canal bottom from discharge from the pipe, but rip-rap has been added for energy dissipation.

Sarasota County Inspection/Investigation Report - Fruitville Rd and Circus Blvd.



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, J. Talbott, M. Holland	11/10/2016	N of Bobby Jones Entrance	North

Comments: (#4) Showing the overall condition upstream of the sample site. Canopy coverage is nearly 100%. Vegetation on the shore appears maintained. There was no aquatic vegetation. Water is a little cloudy, light brown in color.

Sarasota County Inspection/Investigation Report - Fruitville Rd and Circus Blvd.



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, J. Talbott, M. Holland	11/10/2016	Same as above	SE

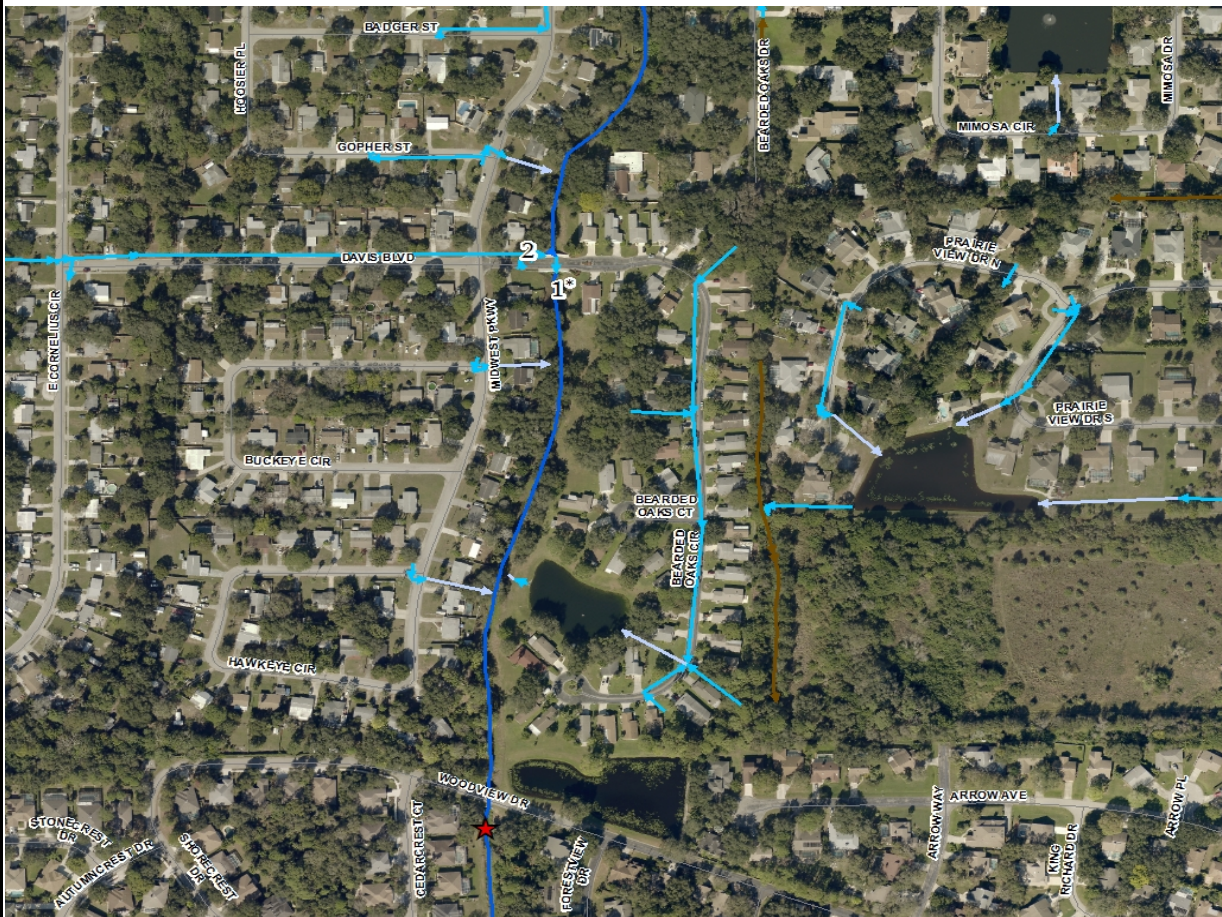
Comments: (#4). Showing the concrete cover of the pipe and the surrounding conditions. No obvious signs of leaking from the pipe (smell, overgrown vegetation, stains on the pipe). Appears to be a good location for nesting/denning for animals under the pipe and a bit upstream under a palmetto.

Figure A.3.
Davis Blvd
Site Visit

Figure A.3. Davis Blvd Site Visit

Overall Map and Narrative

This WTW even was conducted on 11/16/2016. The area visited is upstream of a known hotspot for bacteria located at Woodview Drive, which is about 1,400ft to the south (indicated by the red star). The residential area around today's sampling event has been transitioned from on site septic to central sewer - belonging to the City of Sarasota. Further east and slightly upstream of the hotspot are neighborhoods that still remain on septic systems. Homes in this area were generally well kept, but typically not totally manicured. The site visit yielded no conclusive evidence of septic failure in these neighborhoods. The canal upstream is very heavily shaded, allowing little UV penetration. The map of the investigated area is below. Bacterial water quality results for this site (**TMDL -5**) are as follows: (1*)F. coliform - 2900/100mL; E. coli - 2755/100mL.



Sarasota County Inspection/Investigation Report - Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A.Melton/M.Holland	11/16/2016	Davis Blvd.	South
Comments: (*1)Showing canal bottom about 20ft down from the bottom of the bridge at Davis Blvd. Water was flowing, bottom was rocky. Sample was taken here, at the downstream (south) side of the bridge. We are about 1,400 ft upstream from Woodview Dr, a documented hot spot for bacteria.			

Sarasota County Inspection/Investigation Report - Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A.Melton/M.Holland	11/16/2016	Same as above	South
Comments: (#1*) Showing downstream conditions. Slopes are very steep and covered in vegetation. Areas further downstream are eroded and somewhat unstable, with evidence of sloughing in.			

Sarasota County Inspection/Investigation Report - Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A.Melton/M.Holland	11/16/2016	Davis Blvd.	West
Comment(s): (#2)Showing residential on east of the canal. It appears there is no direct discharge, at least from this residence, as there is a berm between the lot and the canal. Unsure of what occurs in the back of the residence in the rear of the picture.			

Sarasota County Inspection/Investigation Report - Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A.Melton/M.Holland	11/16/2016	East side of Davis Blvd.	East
Comment: (#1*)Showing residence on the East side of the canal, south side of the bridge. Once again, there does not appear to be direct discharge to the canal, at least from the visible portion of the lot.			

Sarasota County Inspection/Investigation Report - Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A.Melton/M.Holland	11/16/2016	N of Davis Blvd	North
Comments:(#1*)Looking upstream of the sample site. Slopes are steep and heavily vegetated. Canal upstream is mostly shaded. Residential and roadway runoff are conveyed to this canal both upstream and downstream of the sample site. Canal bottom is a mix of sand and decaying matter (mucky). There was a feral cat in the area at the time of sampling. This area is serviced by the City of Sarasota sewer system.			

Figure A.4.

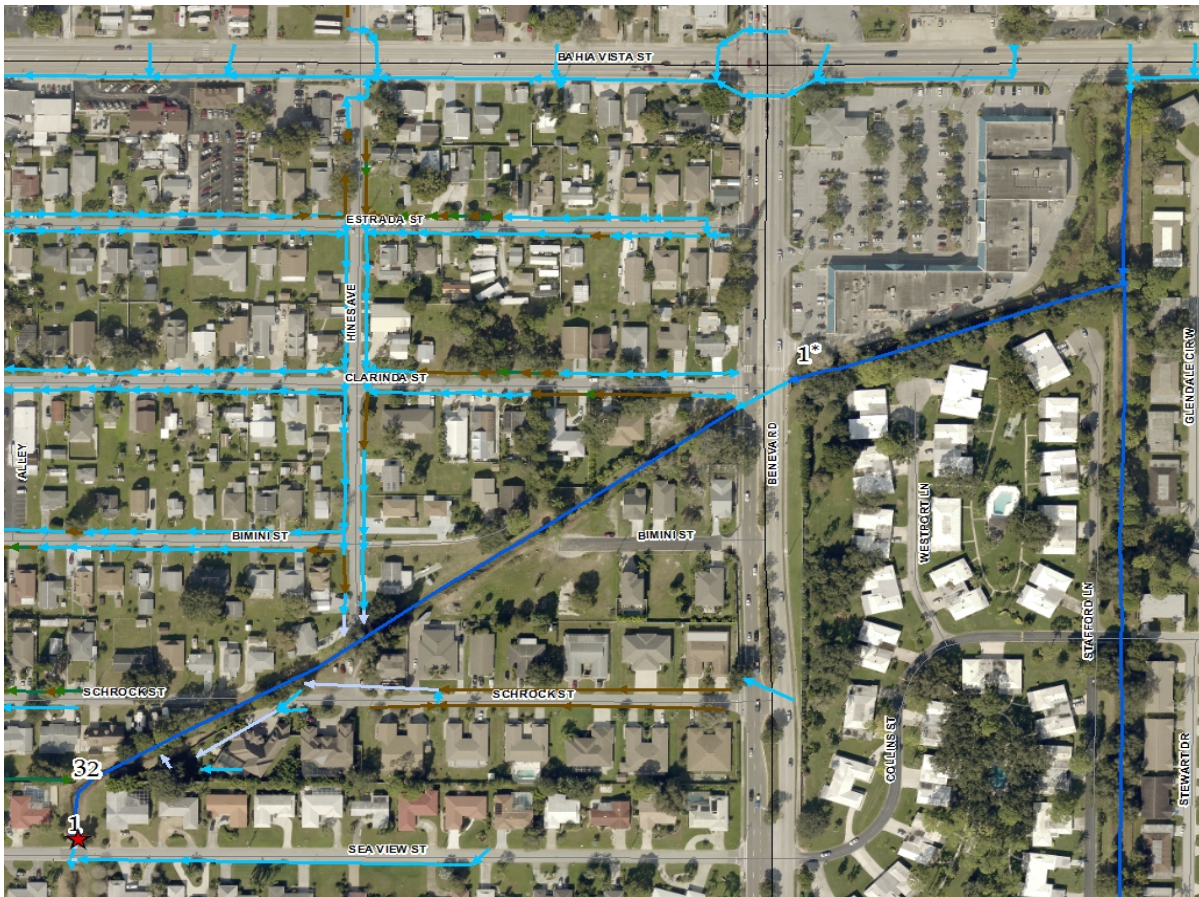
Beneva Shopping Center

Site Visit

Figure A.4. Beneva Shopping Center

Overall Map and Narrative

WTW site visit conducted on 11/16/2016. The area visited is east of a known hotspot for bacteria located at Seaview Drive (indicated by red star). Land uses in this area consist of residential and commercial. Additional sampling was conducted at this time. The map of the investigated area is below. This site is about 1,500 ft upstream from the known bacterial hot spot. Water quality testing results for this site (**TMDL - 6**) are: (1*)Fecal coliform - 180cfu/100mL; and E. coli - 241/100mL. Results indicate that this site currently meets water quality standards of 800/100mL on any one day of sampling (because of the limited number of sampling events). Bacterial levels here were just slightly lower than levels for testing area at Schrock Street (F. coliform - 240/100mL; E.coli - 295/100mL) done the same day.



Sarasota County Inspection/Investigation Report - Beneva Shopping Center



Inspector(s):	Date:	Photo Location	Photo Direction
A.Melton/M.Holland	11/16/2016	Beneva south of Bahia Vista	East
Comments: (#1*) South of Beneva Square Shopping Center. Looking east at the canal that passes under Beneva and flows west towards Phillippi Creek. Canal appears heavily shaded along this section. Heavy detritus in the bottom of the canal, bottom appears mucky. Turtles were seen upstream. This area is about 1,500 ft upstream of a known hot spot for bacteria at Seaview Drive.			

Sarasota County Inspection/Investigation Report - Beneva Shopping Center



Inspector(s):	Date:	Photo Location	Photo Direction
A.Melton/M.Holland	11/16/2016	Same as above	NE
Comments: Showing a composite of the north and south banks of the canal. Slopes are relatively shallow and heavily vegetated. Beneva Shopping Center is on the left (north) of the canal, residential is on the right (south) of the canal. Stormwater from the shopping center discharges via stormwater pond to the canal. Dumpsters for this center were in good shape.			

Sarasota County Inspection/Investigation Report - Beneva Shopping Center



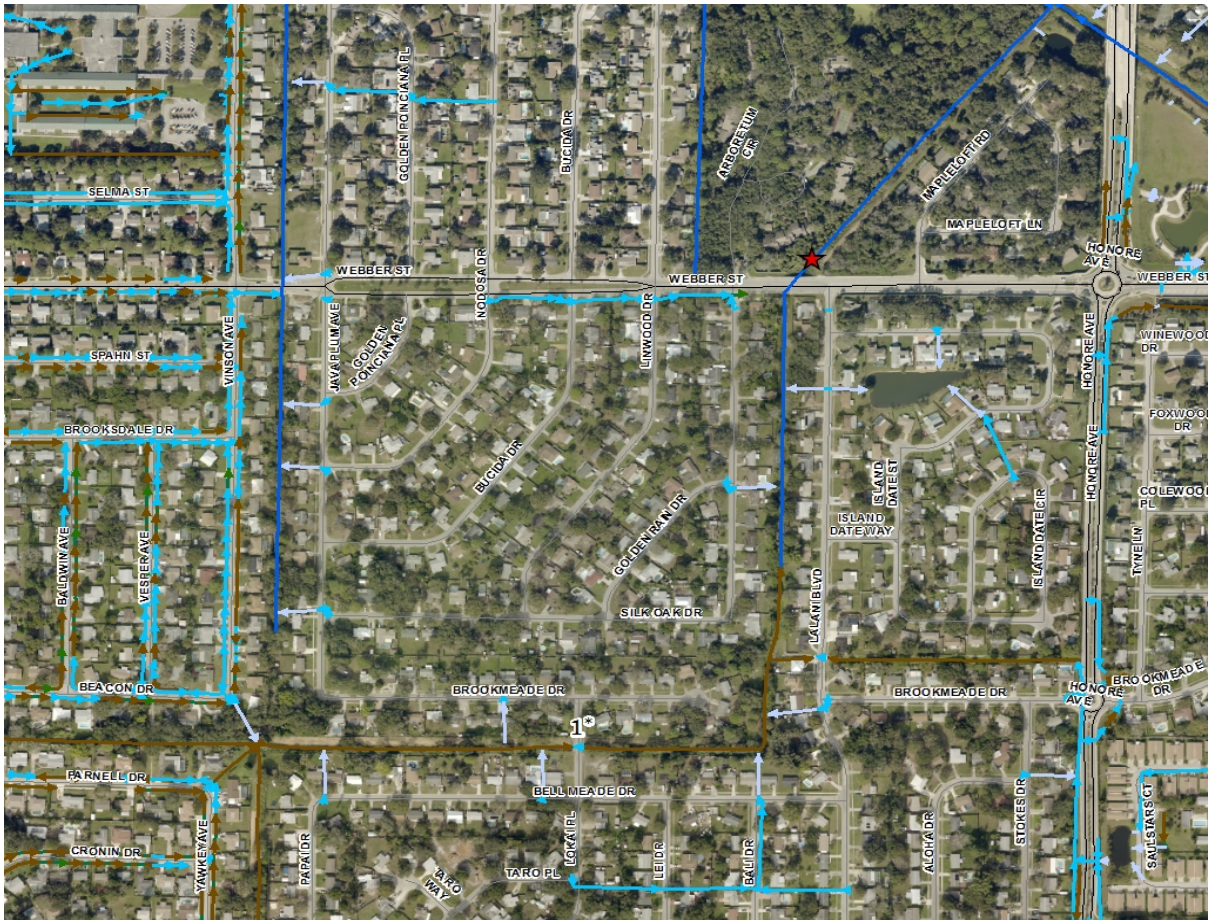
Inspector(s):	Date:	Photo Location	Photo Direction
A.Melton/M.Holland	11/16/2016	Same as above	NE
Comments: Showing water clarity in the canal.			

Figure A.5.
Webber Rd.
Site Visit

Figure A.5. Webber Road Site Visit

Overall Map and Narrative

This WTW site visit occurred on 11/16/2016. The area visited is upstream a known hotspot for bacteria, located on Webber slightly west of Honore Ave. The residential area directly upstream to the hotspot has not been transitioned from on site septic to central sewer. Further west and slightly upstream of the hotspot are neighborhoods that have received sewer hookups. This site was investigated and sampled in an effort to narrow down the potential contributing area. The site visit yielded no conclusive evidence of septic failure in these neighborhoods. The map of the investigated area is below. Additional sampling was taken today, results are **TMDL - 8***: F. coliform 2700/100mL; E. coli 3873/100mL.



Sarasota County Inspection/Investigation Report - Webber Road Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A.Melton/M.Holland	11/16/2016	Brookmead and Lokai	West
Comments: (#1*)Showing canal as it flows under Lokai Pl. Water is running east (coming towards the bridge). Slopes are steep and vegetated, but showing evidence of erosion/sloughing.			

Sarasota County Inspection/Investigation Report - Webber Road Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A.Melton/M.Holland	11/16/2016	Same as above	West
Comments:(#1*) Showing the canal as it flows under Lokai. Water was light brown (a bit tannic) and somewhat cloudy. Bottom was mucky. Evidence of wildlife in the area (tracks in the mud). A sample was taken here for further testing. Shallow muddy areas such as these can promote the growth of bacteria.			

Sarasota County Inspection/Investigation Report - Webber Road Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A.Melton/M.Holland	11/16/2016	Same as above	SW
Comments: (#1*)Showing typical residential land use upstream of the sample sight. Potential for sheet flow from the homes to the canal. This home is at the NW corner of Bell Meade Drive and Lokai Place.			

Sarasota County Inspection/Investigation Report - Webber Road Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A.Melton/M.Holland	11/16/2016	Same as above	West
Comments:(#1*) Showing residential on the north side of the canal upstream of the sample sight. Potential for sheet flow into the canal. We could hear dogs barking throughout the neighborhood. Strong smell of feces in the area, but none seen. This area is not a planned septic replacement area.			

Figure A.6.
South Shade
Site Visit

Overall Map and Narrative

Sarasota County Inspection/Investigation Report - South Shade Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, M. Holland	11/29/2016	West side of South Shade	NE
Comments: (#1)Showing the canal on the west side of South Shade. This area is several blocks upstream of the hotspot located on Brink.			

Sarasota County Inspection/Investigation Report - South Shade Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, M. Holland	11/29/2016	S. Shade	West
Comments: (#1)Showing the canal bottom. Sandy, mostly shade. This area is heavily travelled by animals. Game trails are evident, as well as tracks.			

Sarasota County Inspection/Investigation Report - South Shade Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, M. Holland	11/29/2016	Same as Above	West
Comments: (#1*) Showing upstream from the sampling location. Banks are mostly vegetated. Residential on both sides.			

Sarasota County Inspection/Investigation Report - South Shade Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, M. Holland	11/29/2016	West side of South Shade	North
Comments: (#1) Showing Ashley entering in information in the sampling tablet. Just to her left is a game trail that leads from the roadside down to the ditch.			

Sarasota County Inspection/Investigation Report - South Shade Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, M. Holland	11/29/2016	Same as Above	NW

Comments: Showing the north bank with the heavily traveled trail on the right side of the photo.

Sarasota County Inspection/Investigation Report - South Shade Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, M. Holland	11/29/2016	East side of S. Shade	West
Comments: Showing the area under the bridge. Lots of animal tracks here, and some human.			

Sarasota County Inspection/Investigation Report - South Shade Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, M. Holland	11/29/2016	Same as Above	SW

Comments: Showing the south shore of the canal under the bridge. Lots of animal tracks, some human.

Sarasota County Inspection/Investigation Report - South Shade Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, M. Holland	11/29/2016	West side of S. Shade	South
Comments: Showing a pipe currently discharging discolored water into the canal. Unsure the beginning of the pipe - where it is.			

Sarasota County Inspection/Investigation Report - South Shade Site Visit



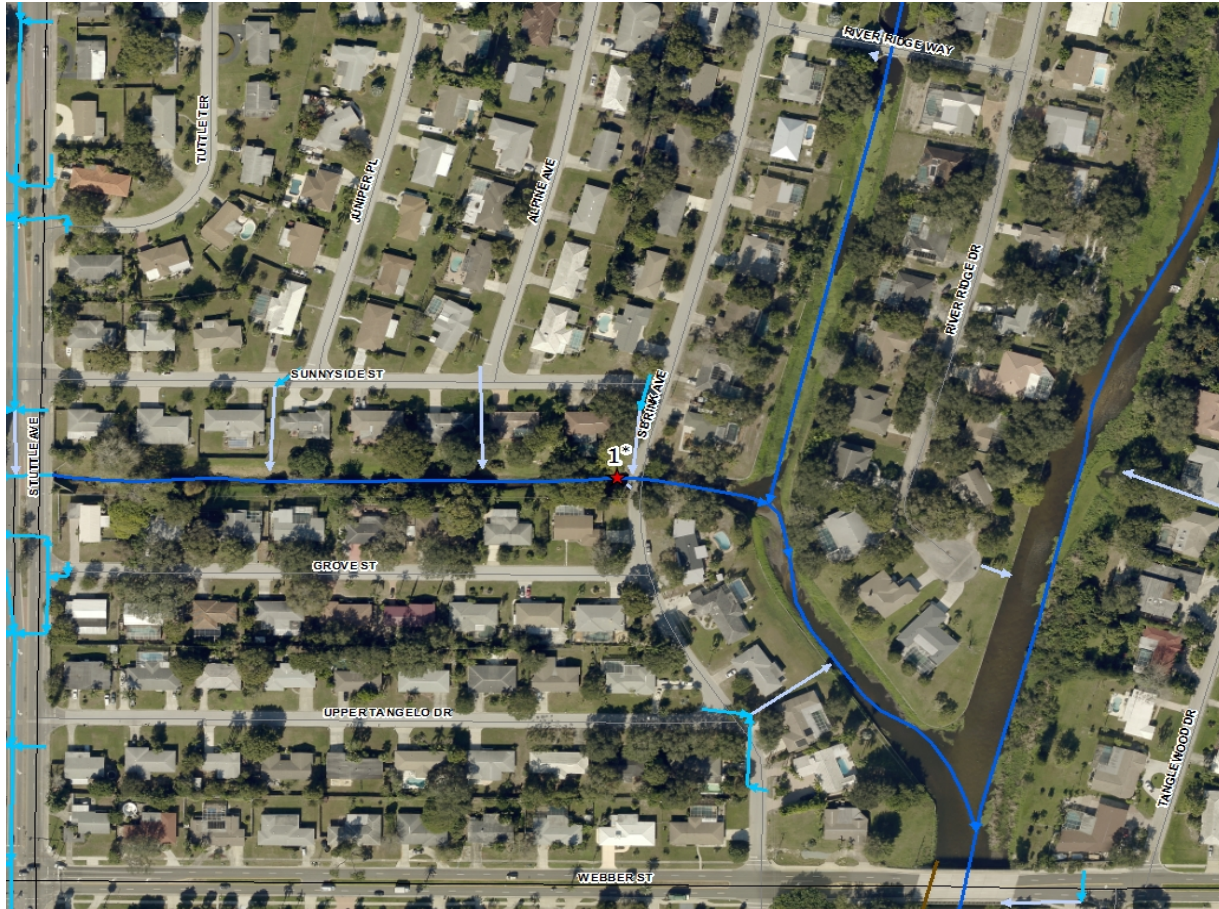
Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton, M. Holland	11/29/2016	West side of S. Shade	North
Comments: Showing the cloudy water as it comes out of the pipe. Water is coming in from the south. Film and bubbles on the surface, odor is that of rust. Sample was taken at this point.			

Figure A.7.
Brink Ave.
Site Visit

Figure A.7. Brink Avenue Site Visit

Overall Map and Narrative

Brink Ave is a known hotspot for bacteria due to consistently elevated testing results from routine samplings. It is also reported that a homeowner feeds wildlife just upstream of the hotspot. At the time of the site visit, there was no evidence of the feeding. This site is regularly sampled. Sample location is indicated by the red star. Additional sampling was done today as well, indicated by the (*). Results of the testing for TMDL 10: (1*)F. coliform - 13,000 /100mL; E. coli - 9,804 /100mL. The resident has been educated by staff from UF/IFAS on the potential consequences of feeding wildlife.



Sarasota County Inspection/Investigation Report - Brink Avenue Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton/M.Holland	11/29/2016	Brink Ave	West

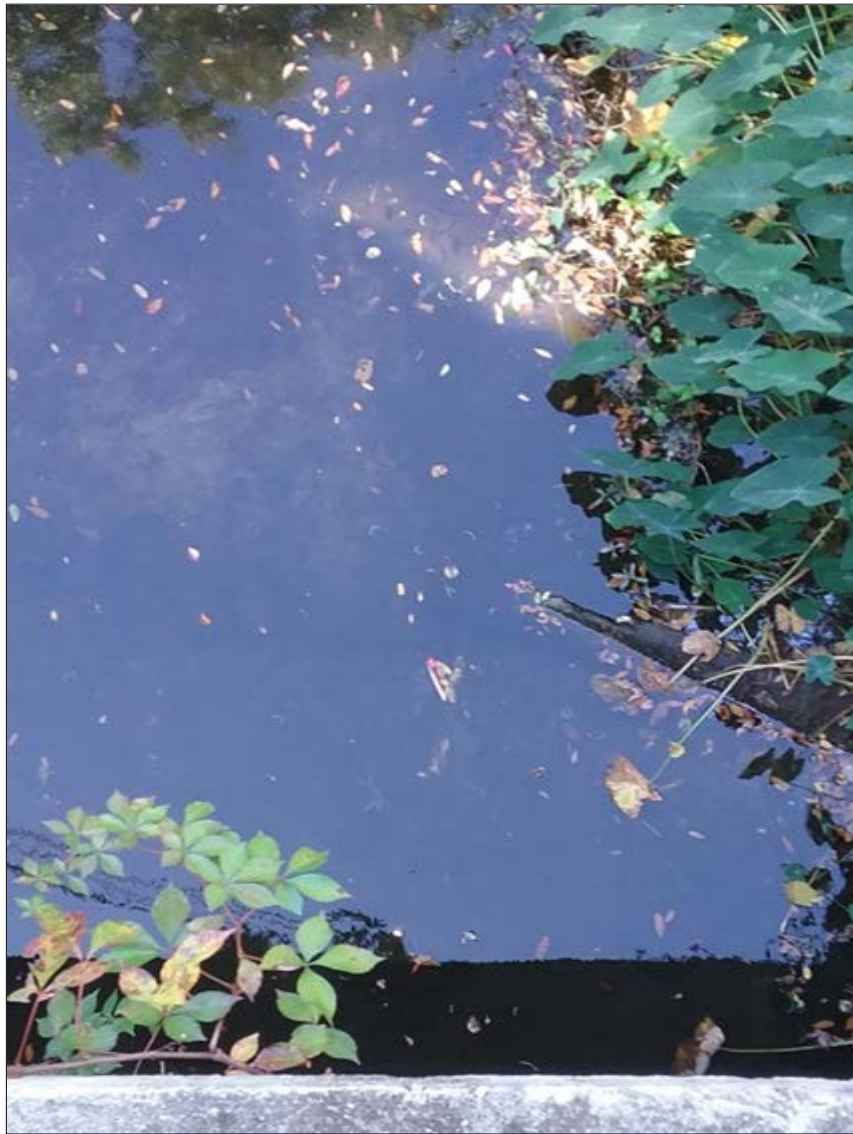
Comments: (#1) Looking west of the bridge on Brink . The canal is a mix of sun and shade, heavily vegetated on both sides. Sand bar in the background is typically the area where the neighbor to the south (on the left) that feeds birds with fish/meat scraps (reportedly). Wildlife tracks are everywhere.

Sarasota County Inspection/Investigation Report - Brink Avenue Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton and M. Holland	11/29/2016	Same as above	West
Comments: Showing the northern ditch. Residential land use on both sides, along the entire length. There was a strong smell of urine/musty animal smell in this area. The sand bar in the background was covered in animal tracks. The property on the right of the photo has fruit trees (bananas) adjacent to the creek.			

Sarasota County Inspection/Investigation Report - Brink Avenue Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton/M.Holland	11/29/2016	Same as above	West side of Bridge
Comments: Looking down from the bridge on the west side. The water was clear and flowing. Water depth was less than 7-8 inches deep. No odor to the water. The sample was taken here, about halfwater between the banks in the flow line.			

Sarasota County Inspection/Investigation Report - Brink Avenue Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton/M.Holland	11/29/2016	Same as Above	West

Comments: Showing the sand bar, where in the past, many birds have been seen foraging. There is a patch of bare ground below the palms that appears to be worn bare by frequent animal activities, and there is a worn path from the palm up the slope. Additionally, as seen in the photograph, there is a lot of leaf litter that collects in this area.

Sarasota County Inspection/Investigation Report - Brink Avenue Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A. Melton /M. Holland	11/29/2016	Same as above	West

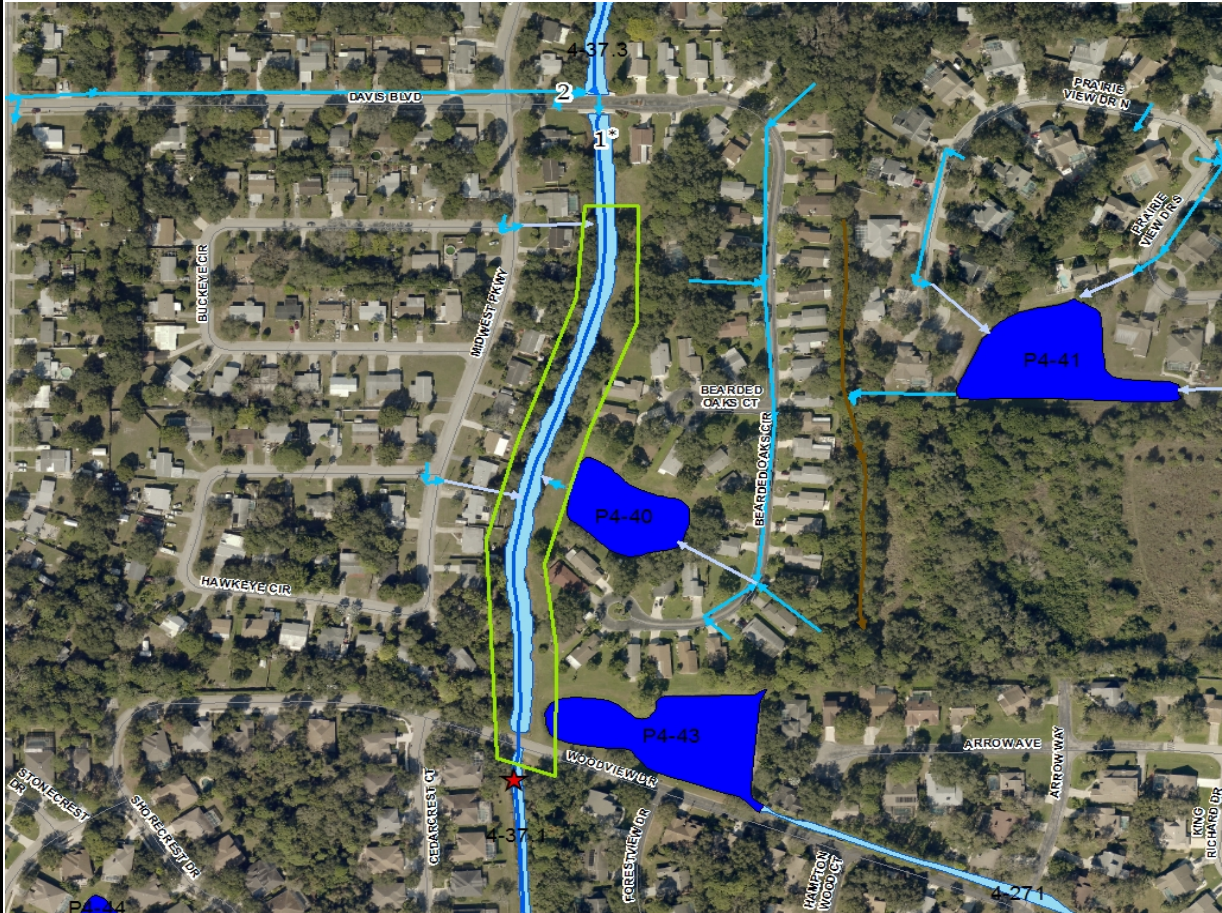
Comments: Showing the other side of the sand bar (above). You can see the canal is still flowing. The slope are gentle, and covered with vegetation. As previously mentioned, the sandy areas are covered with wildlife tracts.

Figure A.8.
Woodview Blvd. to
Davis Blvd.
Site Visit

Figure A.8. Woodview Drive to Davis Blvd Site Visit

Overall Map and Narrative

This WTW site visit occurred on 12/15/16. The area visited is north Woodview, a known hotspot for bacteria - shown by the red star. The residential area directly west of the hotspot is on City of Sarasota sewer service. Further east and slightly upstream of the hotspot are neighborhoods that still remain on septic systems. The site visit yielded no conclusive evidence of septic failure in these neighborhoods. The map of the investigated area is below, highlighted in green.



Sarasota County Inspection/Investigation Report - Woodview Drive to Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
K.O'Hara/M.Holland	12/15/2016	Under bridge at Woodview	SW
Comments: Looking at area under bridge downstream of the sample site. Sandy area is covered with animal tracks (raccoon). This is canal 4-27.			

Sarasota County Inspection/Investigation Report - Woodview Drive to Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
K.O'Hara/M.Holland	12/15/2016	Same as above	SW
Comments: Showing the many animal tracks in the sand at the sandy area.			

Sarasota County Inspection/Investigation Report - Woodview Drive to Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
K.O'Hara/M.Holland	12/15/2016	Same as above	N
Comments: Showing typical animal crossing under the bridge. Water here was clear and flowing. The water had a musty odor to it, similar to areas where there is low flow and decaying vegetation. There were a lot of opened bivalves on the sand bar.			

Sarasota County Inspection/Investigation Report - Woodview Drive to Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
K.O'Hara/M.Holland	12/15/2016	Same as above	N/A
Comments: Showing animal scat (just to the right of the white pole) on the sand bar, along with dozens of opened bivalves. This is upstream of the sample area.			

Sarasota County Inspection/Investigation Report - Woodview Drive to Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
K.O'Hara/M.Holland	12/15/2016	Upstream of the Bridge	NE
Comments: Showing Kate walking north along the Phillippi Lateral. She found no evidence of dog walking (pet waste) along the top of bank.			

Sarasota County Inspection/Investigation Report - Woodview Drive to Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
K.O'Hara/M.Holland	12/15/2016	Same as above	North
Comments: Showing the canal to be inspected. Banks on each side are usually heavily vegetated, but there was a recent maintenance event. Slopes are steep and heavily vegetated.			

Sarasota County Inspection/Investigation Report - Woodview Drive to Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
K.O'Hara/M.Holland	12/15/2016	outfall of upstream pond	NE
Comments: Outfall for privately maintained pond P4-43. Pond was not discharging at the time of the site visit. Pond P4-43 receives stormwater runoff from the adjacent subdivision, which may contain pet waste from dog walking and yards. There was also wildlife (turtles) seen in the pond - another potential contributor.			

Sarasota County Inspection/Investigation Report - Woodview Drive to Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
K.O'Hara/M.Holland	12/15/2016	Pond P4-43	NE
Comments: Showing pond P4-43 and the outfall . Pond is well maintained with some vegetation at the outfall. Turtles were the only wildlife seen at the time of the site visit.			

Sarasota County Inspection/Investigation Report - Woodview Drive to Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
K.O'Hara/M.Holland	12/15/2016	Same as above	West
Comments: Showing a well worn animal trail to the canal. On the west side of the canal, just upstream of the outfall for the above pond.			

Sarasota County Inspection/Investigation Report - Woodview Drive to Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
K.O'Hara/M.Holland	12/15/2016	North of sample area	N/A
<p>Comments: About a quarter of the way up the canal, areas of a white film on the sediment started to appear. In areas along the bank where vegetation was present, there was a film on the water. Film on the water can be a natural result of a microbial process of iron loving bacteria. Evidence of the presence of iron is shown in some following photographs.</p>			

Sarasota County Inspection/Investigation Report - Woodview Drive to Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
K.O'Hara/M.Holland	12/15/2016	Outfall of P4-40	N/A

Comment: Outfall of P4-40. Some discharge from the pipe. It is not stormwater but groundwater infiltration. No smell to the water or the pipe.

Sarasota County Inspection/Investigation Report - Woodview Drive to Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
K.O'Hara/M.Holland	12/15/2016	Upstream of P4-40 outfall	N/A

Comments: Showing a cottony precipitate at the edge of the water. PPT was orange, potentially indicative of iron falling out of solution from water leaching through the soil. Biofilm is evident in areas where vegetation is present. This situation was only present on the east bank of the canal.

Sarasota County Inspection/Investigation Report - Woodview Drive to Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
K.O'Hara/M.Holland	12/15/2016	Bridge at Davis Blvd	North
Comments: Showing east and west banks of the canal. Recently cleared of vegetation. No pipes or potential point discharges were noted along this portion of the canal. Additionally, it appears that properties on the east side (right) of the canal have been graded to drain to the streets, not to the canal. This is not the case for some properties on the west side (left).			

Sarasota County Inspection/Investigation Report - Woodview Drive to Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
K.O'Hara/M.Holland	12/15/2016	North of P4-40 Discharge	N/A
Comments: Once again, this white, stringy appearing substance was present. Similar situations have been seen in the presence of sulfur bacteria, however there was no odor of sulfur.			

Sarasota County Inspection/Investigation Report - Woodview Drive to Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
K.O'Hara/M.Holland	12/15/2016	Same as above	N/A
Comments: Plenty of animal tracks along the canal.			

Sarasota County Inspection/Investigation Report - Woodview Drive to Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
K.O'Hara/M.Holland	12/15/2016	Outfall off Midwest PKWY	West
Comments: Attempting to show no discharge from the road.			

Sarasota County Inspection/Investigation Report - Woodview Drive to Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
K.O'Hara/M.Holland	12/15/2016	Downstream of above pipe	N/A
Comments: Showing animal feces in the canal.			

Sarasota County Inspection/Investigation Report - Woodview Drive to Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
K.O'Hara/M.Holland	12/15/2016	At outfall by Hawkeye Cir	SW
Comments: Showing white material on the sediment, as well as a fine greyish sediment as well. This is found on areas of the canal south of the outfall.			

Sarasota County Inspection/Investigation Report - Woodview Drive to Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
K.O'Hara/M.Holland	12/15/2016	At the Hawkeye Cir outfall	SW
Comments: Not sure what function this pipe serves, if any. Pipes of this nature are usually attached to the washing machine and allows for greywater discharge. The pipe was reported to Air and Water Quality Staff for follow up.			

Sarasota County Inspection/Investigation Report - Woodview Drive to Davis Blvd Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
K.O'Hara/M.Holland	12/15/2016	Same as above	SW
Comments: Showing the sediment and the white material on the sediment. This is only present after this pipe enters the canal.			

Sarasota County Inspection/Investigation Report - Woodview Drive to Davis Blvd Site Visit



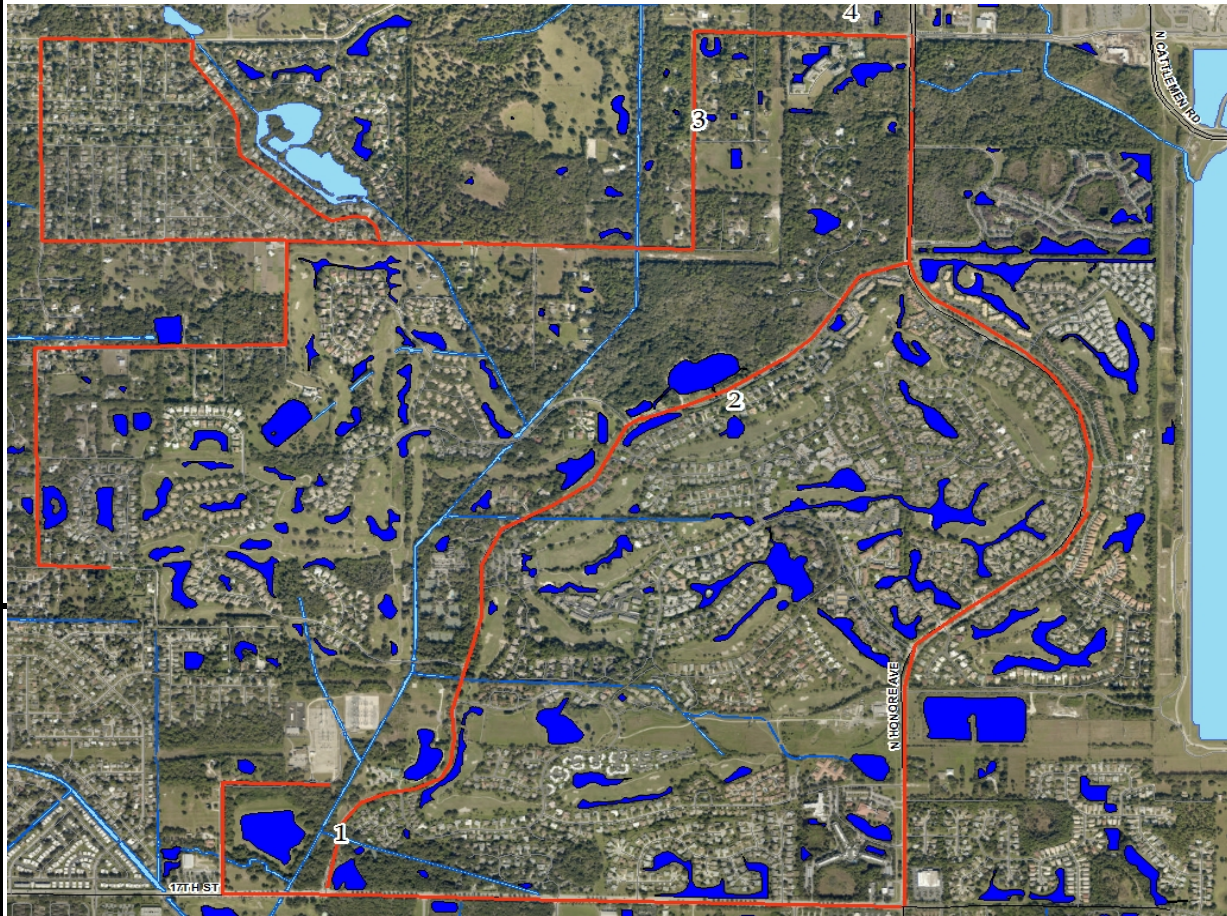
Inspector(s):	Date:	Photo Location	Photo Direction
K.O'Hara/M.Holland	12/15/2016	N of the Bridge at Woodview	South
Comments: Showing the bridge from the north. Monthly monitoring samples are taken on the south side of the bridge - in the foreground. Sand bar where the tracks and scat was visible under the bridge.			

Figure A.9.
17th Street North.
Site Visit

Figure A.9. 17th St North Site Visit

Overall Location Map and Narrative

This site was investigated primarily because of information that the ranchettes had livestock. Additionally, the golf course is a known habitat for birds. At the time of the site visit, it did not appear that there was not as much livestock as reported - only 2 horses and 1 pig were seen on the site visit. Photo stations are labeled below. There are no routinely monitored sampling stations in this area.



Sarasota County Inspection/Investigation Report - 17th St North Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M.Holland	1/31/2017	Pond at 17th & Longmeadow	SE

Comments: (#1)Showing a typical pond in the Meadows Subdivision. Ponds are usually well utilized by wildlife - birds and turtles. Water quality is fair, the pond is cloudy. All ponds are low from the lack of rain.

Sarasota County Inspection/Investigation Report - 17th St North Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	1/31/2017	Londmeadow Drive	NE
Comments: (#2)The Meadows is a large residential community of mostly retirees. Shown here is common for the area, walking the dogs. It is unclear if they have outreach for picking up pet waste, and there was no obvious signage about picking up pet waste. They will be contacted in the future to assist them if they need a program.			

Sarasota County Inspection/Investigation Report - 17th St North Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M.Holland	1/31/2017	On Harold Ave S of Desoto	S
Comments: Showing a typical street in this neighborhood. Property sizes vary from high denisty residential to lots and larger tracts of land. With the exception of the higher density residential parcels, there is no treatment for the roadways or properties. Only 3 parcels in this area were seen to have livestock on site (horses 2-4 total; 1 pig - a very large pig).			

Sarasota County Inspection/Investigation Report - 17th St North Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M.Holland	1/31/2017	Intersection of above	North
Comments: (#3)Typical roadside swale in the neighborhood. All smaller swales throughout were dry. Only the large cross drains contained water. Swales and larger cross drains are well vegetated and were a mixture of sunny and shady exposure.			

Sarasota County Inspection/Investigation Report - 17th St North Site Visit



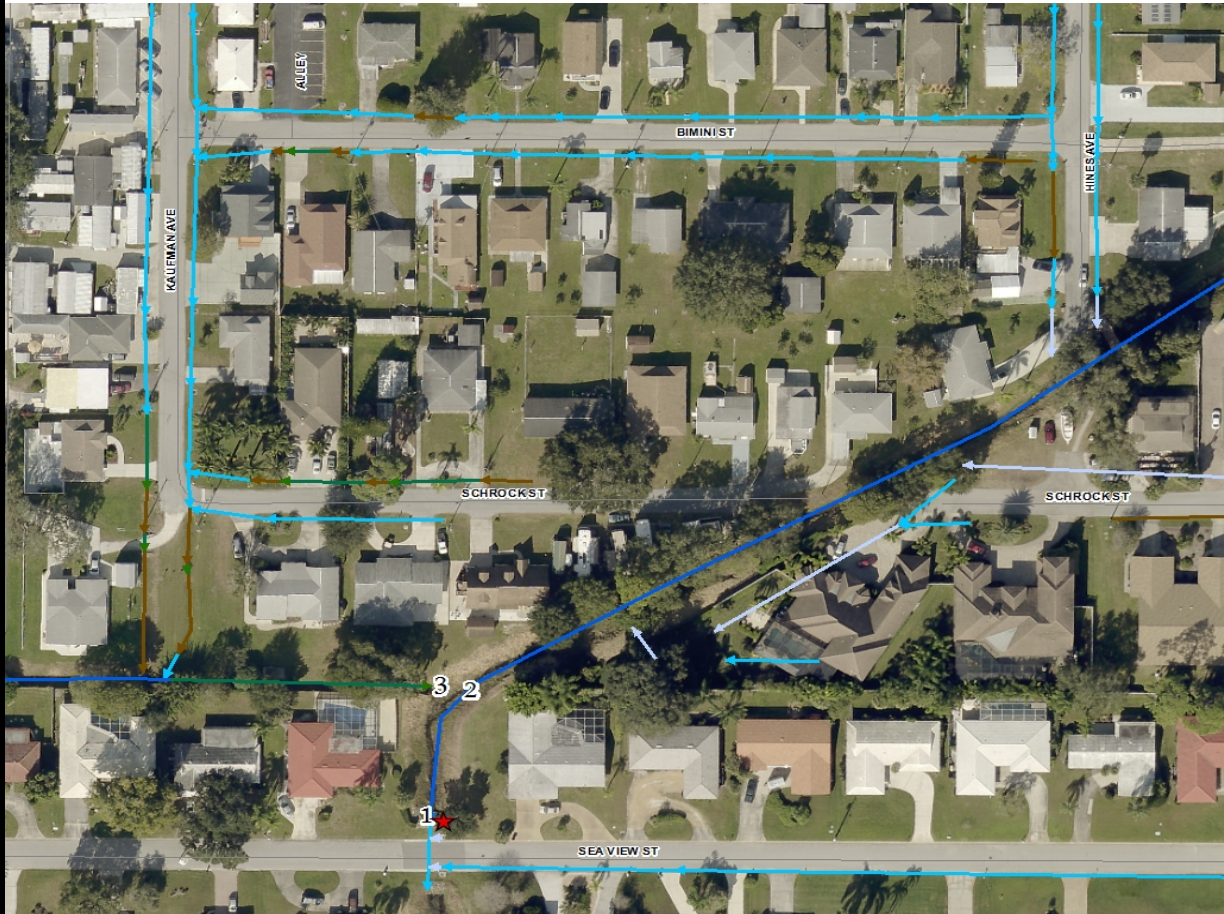
Inspector(s):	Date:	Photo Location	Photo Direction
M.Holland	1/31/2017	5167 Desoto Rd	North
Comments: (#4). Showing the second place where livestock was found. Owners have at least 2 horses on several acres. Unsure if there is a stable/paddock area where the animals congregate. There appears to be no direct connecton to major ditches and swales which convey to Phillippi Creek.			

Figure A.10.
Seaview Street
Site Visit

Figure A.10. Seaview Street Site Visit

Overall Map and Narrative

Photo stations are numbered. The site is regularly sampled, sample site is indicated by the red star. Residential neighborhoods around this site have been transferred to sewer systems. Most homes, especially along Seaview and Schrock streets, are very well manicured. On more than one occasion, grass clippings were seen in the street from recent yard maintenance. Decomposition of grass clippings has been linked to occurrences of extremely high F. coliform counts.



Sarasota County Inspection/Investigation Report - Seaview Street Site Visit



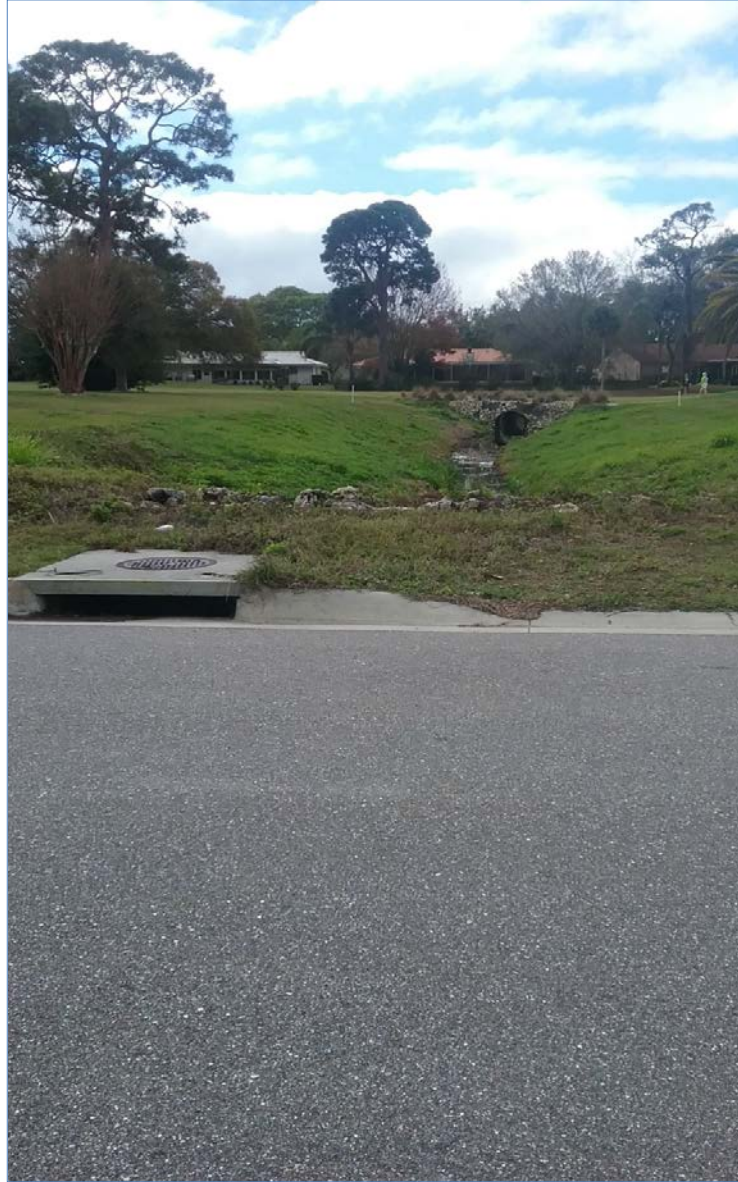
Inspector(s):	Date:	Photo Location	Photo Direction
M.Holland	2/23/2017	Seaview Street	North
Comments: (#1). Showing the ditch that flows to Phillippi Creek. Flow direction is to the south (coming towards us). Water was clear, light brown and odor free.			

Sarasota County Inspection/Investigation Report - Seaview Street Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M.Holland	2/23/2017	Seaview	West
Comments: (#1) Showing Seaview Drive. Landuse is residential, lower density. Landscapes are a varying degree of maintained. Some lawns are very lush, others not. There is evidence of the the lawn maintenance people mowing/blowing grass clippings in to the street.			

Sarasota County Inspection/Investigation Report - Seaview Street Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M.Holland	2/23/2017	Seaview	South
Comments: (#1) Showing ditch south of Seaview. Area in the background is a golfcourse. The ditch makes a right hand turn after the culvert and heads to the creek.			

Sarasota County Inspection/Investigation Report - Seaview Street Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M.Holland	2/23/2017	Seaview	North
Comments: (#2)Heading north in the ditch. Some trash in the ditch, decaying organic matter as well. There is a heavily travelled animal (probably raccoons) to the right of the flowing water. Water was still mostly clear, light brown in color. Bank to the left in the picture was recently re-sodded.			

Sarasota County Inspection/Investigation Report - Seaview Street Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M.Holland	2/23/2017	Bend in ditch at SV	West
Comments: (#3). Showing pipe that accepts runoff from road/property to the north (Kauffman Ave). Area in front and to the right of the pipe looks heavily travelled by animals.			

Sarasota County Inspection/Investigation Report - Seaview Street Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M.Holland	2/23/2017	Same as above	inside pipe
Comments: (#3). Showing mouth of the pipe mentioned above. Stainlines indicate it conveys water at less than one quarter capacity. No odor in the pipe that would indicate animal denning. Light could been seen at the other end. Green arrow on the map - Page 1 - denotes the pipe.			

Sarasota County Inspection/Investigation Report - Seaview Street Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M.Holland	2/23/2017	Mouth of the pipe	West
Comments: (#3). Showing well travelled area in from of the pipe - pipe collar begins at the concrete bag in the middle right of the picture. Plenty of raccoon tracks around this puddle.			

Sarasota County Inspection/Investigation Report - Seaview Street Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M.Holland	2/23/2017	Looking at Seaview Dr	South
Comments: (#3). Showing the condition of the ditch heading south to Seaview. Recently maintained. Lots of decaying vegetation in the ditch, but not in the water currently. Flowing at the time of the site visit.			

Figure A.11.

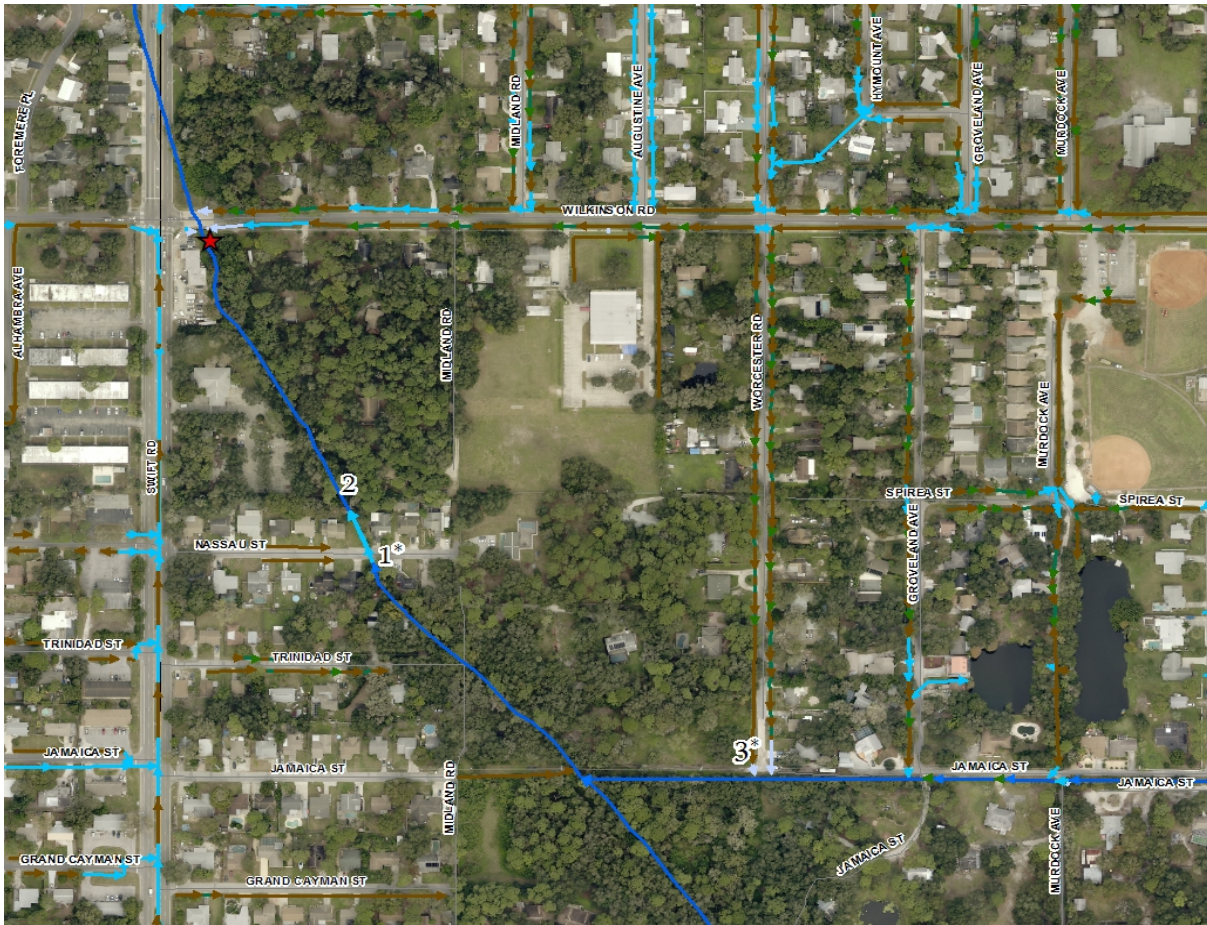
**Red Bug Slough at
Swift and Wilkinson
Site Visit**

Figure A.11. Red Bug Slough At Swift and Wilkinson Site Visit

Overall Map and Narrative

Overall map of the Swift/Wilkinson hotspot. The regularly sampled area is indicated by the red star, which is a hot spot for bacteria. Additional sampling was taken today as indicated by the (*). The area upstream and adjacent to the hot spot have transitioned from on site septic tanks to central sewer.

Results are as follows: **TMDL2017-1(1*)** F. coliform - 4700/100mL; E.coli - 3873/100mL **TMDL2017-2(3*)** F. coliform - 800; E.coli - 988/100mL.



Sarasota County Inspection/Investigation Report - Red Bug Slough At Swift and Wilkinson Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland/J. Talbott/N.ladavia	3/1/2017	Nassau Street	South
Comments: (#1). Looking upstream. Land use is mostly residential along Red Bug Slough. Water is clear and mostly colorless. Substrate is a mix of shelly and organic matter. Side banks are steep and vegetated with N/E species. Some minnows in the water, less than 10. No apparent wildlife activity in the visible area. Properties in this area have been transitioned to the County Sewer system.			

Sarasota County Inspection/Investigation Report - Red Bug Slough At Swift and Wilkinson Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland/J. Talbott/N.ladavia	3/1/2017	Nassau Street	North
Comments: (#1).Showing the slough as it passes under Nassau Street. The sample was taken here. Only one of the culverts was flowing, the other was blocked. Vegetation - intact and decaying - gets bottle necked in this area.			

Sarasota County Inspection/Investigation Report - Red Bug Slough At Swift and Wilkinson Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland/J. Talbott/N.ladavia	3/1/2017	Same as above	South
Comments: (#1) Showing the eastern culvert. It is almost completely blocked, allowing for detritus to stack up here.			

Sarasota County Inspection/Investigation Report - Red Bug Slough At Swift and Wilkinson Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland/J. Talbott/N.ladavia	3/1/2017	Nassau Street	South
Comments: (#2). Lookin at the downstream end of the box culverts at Nassau. Side slopes are mostly vegetated. Water is nearly completely shaded at this point of the Slough. Substrate is a mix of shell and decaying organic matter. Water is still clear, with a light brown color. Some emergent vegetation in this segment of the slough.			

Sarasota County Inspection/Investigation Report - Red Bug Slough At Swift and Wilkinson Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland/J. Talbott/N.ladavia	3/1/2017	Same as above	South
Comments: (#2) Same location as above, just closer.			

Sarasota County Inspection/Investigation Report - Red Bug Slough At Swift and Wilkinson Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland/J. Talbott/N.ladavia	3/1/2017	Same as above	North
Comments: (#2) Looking further up stream. Sampling spot where E.coli is elevated is just upstream from this point, about 700 ft. The slough is mostly shaded the entire way.			

Sarasota County Inspection/Investigation Report - Red Bug Slough At Swift and Wilkinson Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland/J. Talbott/N.ladavia	3/1/2017	S end of Worcester Rd	West
Comments: (#3). Showing the ditch that runs east/west at the end of Worcester. Water was low, but moving. The ditch was heavily vegetated. Substrated was a mix of sand and muck.			

Sarasota County Inspection/Investigation Report - Red Bug Slough At Swift and Wilkinson Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland/J. Talbott/N.ladavia	3/1/2017	Same as above	East
Comments: (#3). Just to the east of this location, you can see the ditch is a mix of sun and shade. The ditch is heavily vegetated on both slopes, as well as a bit in the flow way.			

Sarasota County Inspection/Investigation Report - Red Bug Slough At Swift and Wilkinson Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland/J. Talbott/N.ladavia	3/1/2017	Same as above	West
Comments: (#3). In the ditch bottom showing the conditions. Water was moving, barely. All but the flow way is vegetated. Flow way is sandy/mucky with quite a bit of decaying leaves.			

Figure A.12.

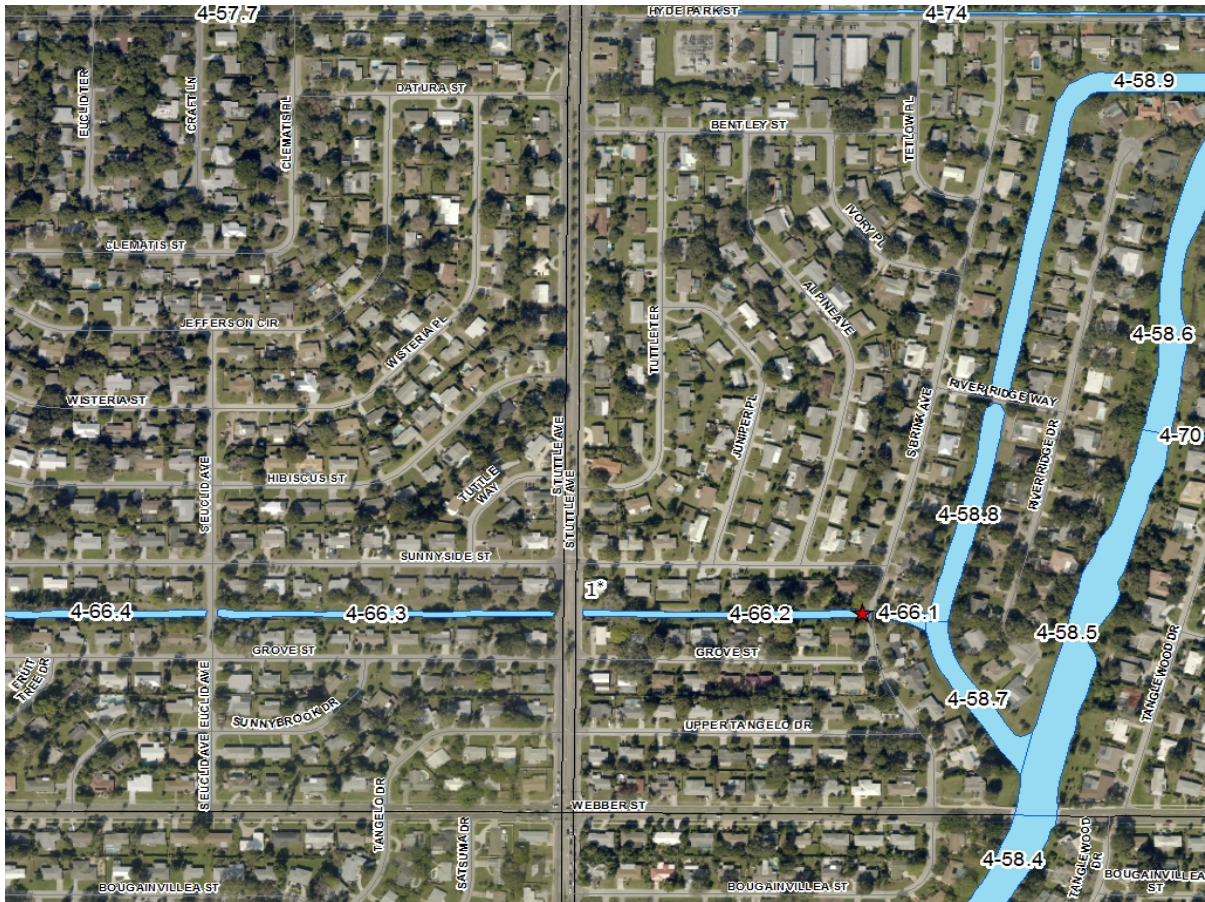
**Tuttle Avenue South of
Sunnyside Drive**

Site Visit

Figure A.12. Tuttle Avenue south of Sunnyside Drive

Overall Map and Narrative

This site visit occurred on 11/29/2016. This site is about 850ft upstream of a known hotspot for bacteria. the residential neighborhood has bee transitioned from on site septic to cental sewer. In the surrounding neighborhoods, houses are generally well kept, including the lawn/landscape areas. Results of the sample taken **(TMDL - 9)1*** were: F. coliform - 8700/100mL; E. coli - 5794/100mL. The map of the investigated area is below.

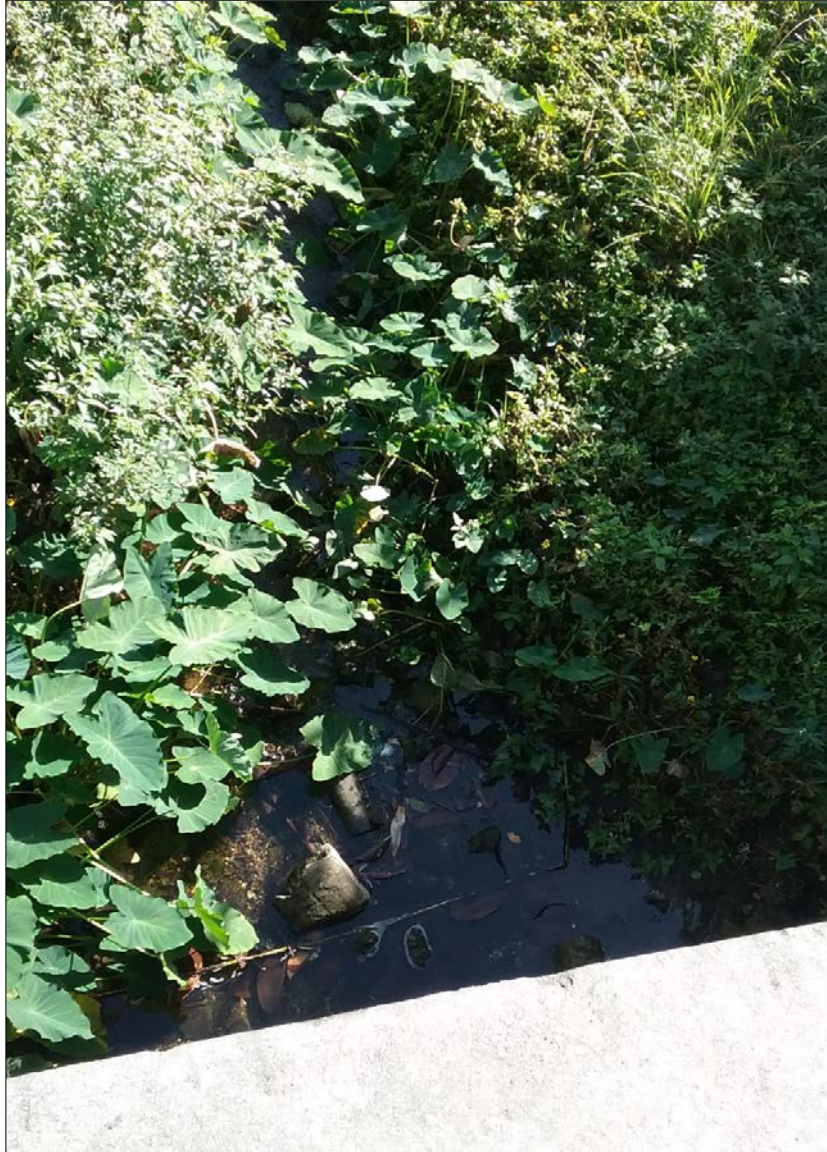


Sarasota County Inspection/Investigation Report - Tuttle Avenue south of Sunnyside Drive



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland/A. Melton	11/29/2016	Tuttle South of Sunnyside	East
Comment: Looking east along the drainage ditch. Ditch is pretty heavily vegetated and shaded about half the time. Homes along the ditch are pretty well maintained. Heavily travelled game trails were not seen.			

Sarasota County Inspection/Investigation Report - Tuttle Avenue south of Sunnyside Drive



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland/A. Melton	11/29/2016	Same as above	East
Comments: Showing the general appearance of the ditch bottom. Vegetation is mostly nuisance exotic species and emergent in nature. We were unable to determine if this area is heavily travelled by wildlife due to the vegetation. A sample was taken here.			

Sarasota County Inspection/Investigation Report - Tuttle Avenue south of Sunnyside Drive



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland/A. Melton	11/29/2016	Same as above	East
Comments: Showing the overall condition of the north bank of the ditch. It appears the the back yards of homes on both the north and south banks are graded to drain to the ditch. Pet waste from the yards will end up in the ditch.			

Sarasota County Inspection/Investigation Report - Tuttle Avenue south of Sunnyside Drive



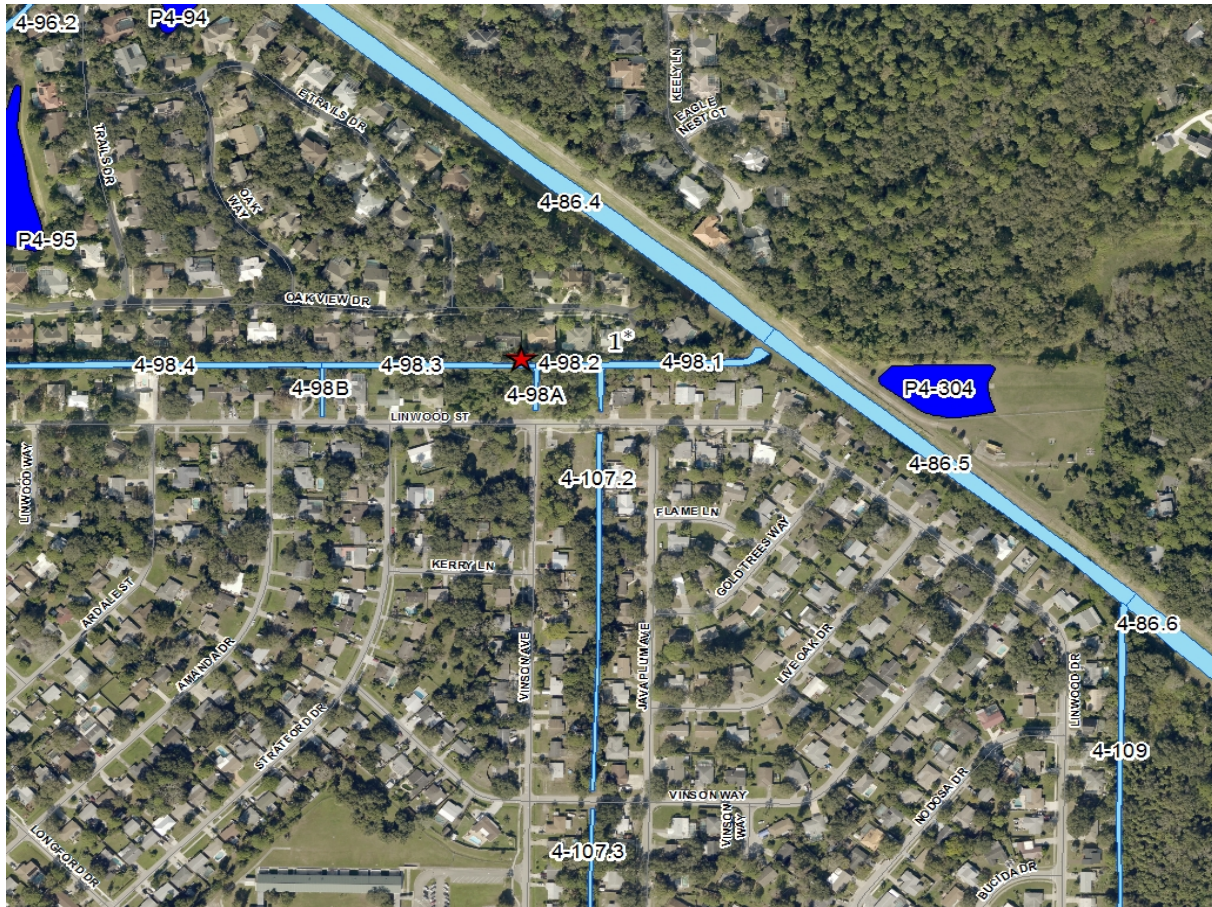
Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland/A. Melton	11/29/2016	Same as above	West
Comments: Showing the west side of the road. Because of the heavy vegetation at the rail, we were not able to determine the status of the ditch on the west side of Tuttle.			

Figure A.13.
Vinson Ave.
Site Visit

Figure A.13. Vinson Avenue Site Visit

Overall Map and Narrative

Site visit conducted on 11.29.2016. The site is just upstream from a known hotspot for bacteria, identified by the red star. Only half this neighborhood south of Ditch 4-98 was transitioned to central sewer, the neighborhood north of Ditch 4-98 is still using septic. The area adjacent to and upstream of this ditch is zoned residential. Properties south of Ditch 4-98 exhibit a wide range of appearances - from unkept to well maintained, while homes north of Ditch 4-98 are larger and well maintained. Many residents have dogs. Results of additional testing are: **TMDL 13:** F. coliform 6300/100mL; E. coli 5794/100mL.

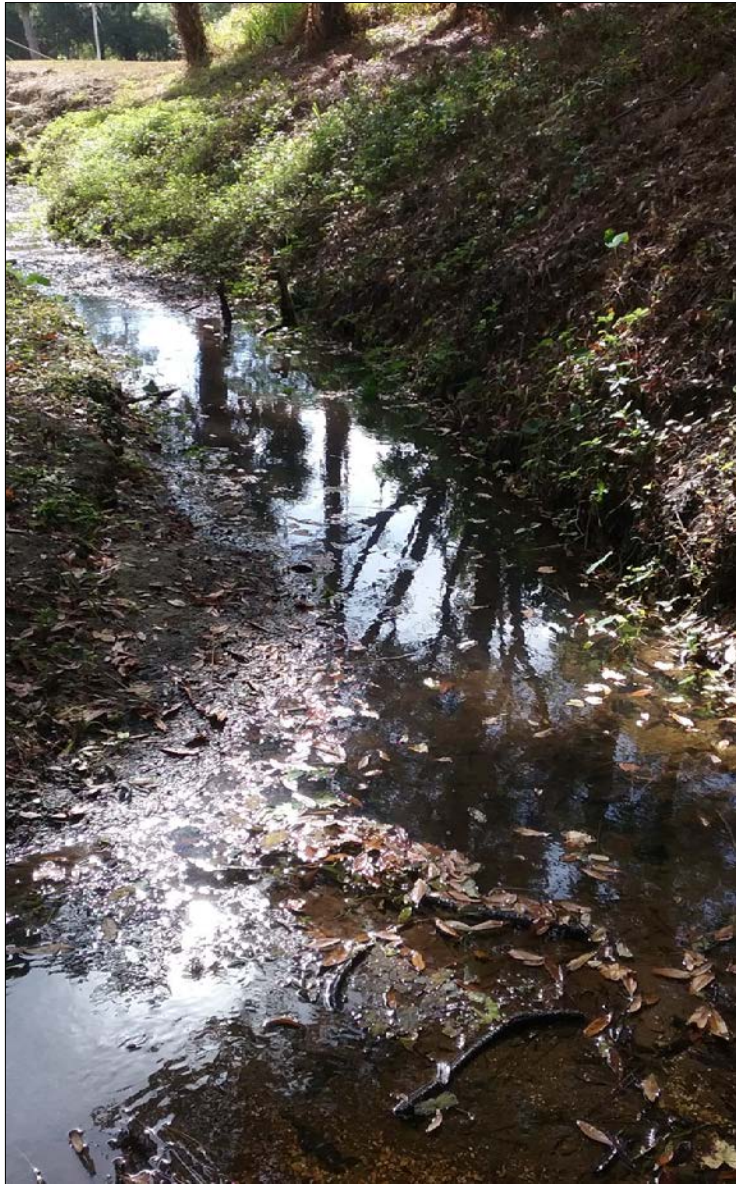


Sarasota County Inspection/Investigation Report - Vinson Avenue Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	11/29/2016	Ditch 4-98.2	West
Comments: Looking west along the ditch. The top of bank is mostly vegetated, shading the ditch. The water was barely flowing, just a few inches deep. The slopes were very steep the entire length.			

Sarasota County Inspection/Investigation Report - Vinson Avenue Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	11/29/2016	4-107.1	South

Comments: Looking at the conveyance ditch as it enters in to 4-98.2, 4-98.3. Residences 2 streets over - Stratford Dr - have been transitioned to sewer from on site septic. Residences from this ditch eastward still utilize on site septic systems.

Sarasota County Inspection/Investigation Report - Vinson Avenue Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	11/29/2016	Same as above	East

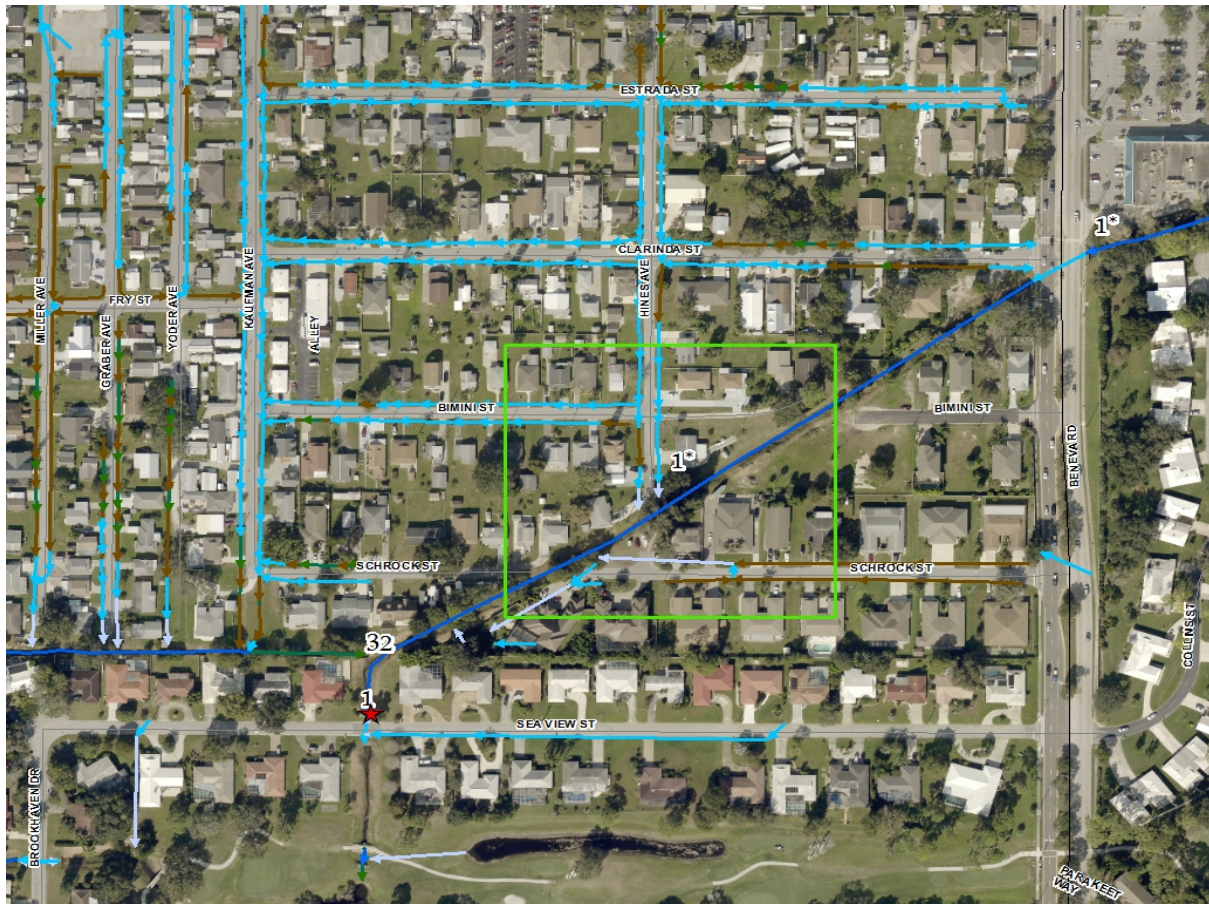
Comments: looking east along 4-98.1. Water is barely moving in the ditch. Lots of leaf litter in the bottom of the ditch. The ditch along most of the length is completely shaded. The ditch bottom is mostly sand, with occasional patches of muck deposited throughout. Some wildlife tracks (raccoon) were visible, but difficult to tell because of the leaf litter. There are a few instances where black, flexible piping comes in to the ditch. These pipes are most likely from roof drains, but it was difficult to tell.

Figure A.14.
Shrock Street
Site Visit

Figure A.14. Shrock Street Site Visit

Overall Map and Narrative

This WTW site visit occurred on 11/16/2016. The area visited is just upstream of the Seaview site, a known hotspot for bacteria (shown by the red star). The residential area directly to the hotspot has been transitioned from on site septic to central sewer. The residential areas directly adjacent to the site have transitioned from on site septic to sewer. Further east and slightly upstream of the hotspot (east side of Beneva) are neighborhoods that still remain on septic systems. The map of the investigated area is below. The area visit is highlighted in the green box, and shown in relationship to the other WTW site visits, Seaview and south of Beneva Shopping Center. Results from the testing were: **TMDL-7:** F. coliform - 240/100mL; E.coli - 295/100mL.



Sarasota County Inspection/Investigation Report - Shrock Street Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A.Melton/M.Holland	11/16/2016	End of Schrock St.	NE
Comments: (#1*)Showing the canal it flows west through residential areas. There is a foot bridge that crosses the canal at the end of Schrock Street and Hines Ave. Homes in this area are small but well maintained. There is no treatment for stormwater in this area, direct discharge to the canal, then to Phillippi Creek.			

Sarasota County Inspection/Investigation Report - Shrock Street Site Visit



Inspector(s):	Date:	Photo Location	Photo Direction
A.Melton/M.Holland	11/16/2016	End of Hines Ave	North
Comments: To the left and right of this footbridge there are pipes that accept roadway and yard runoff, then discharge stormwater from this area into the canal. Inlet location is shown by the yellow arrow.			

Sarasota County Inspection/Investigation Report - Shrock Street Site Visit



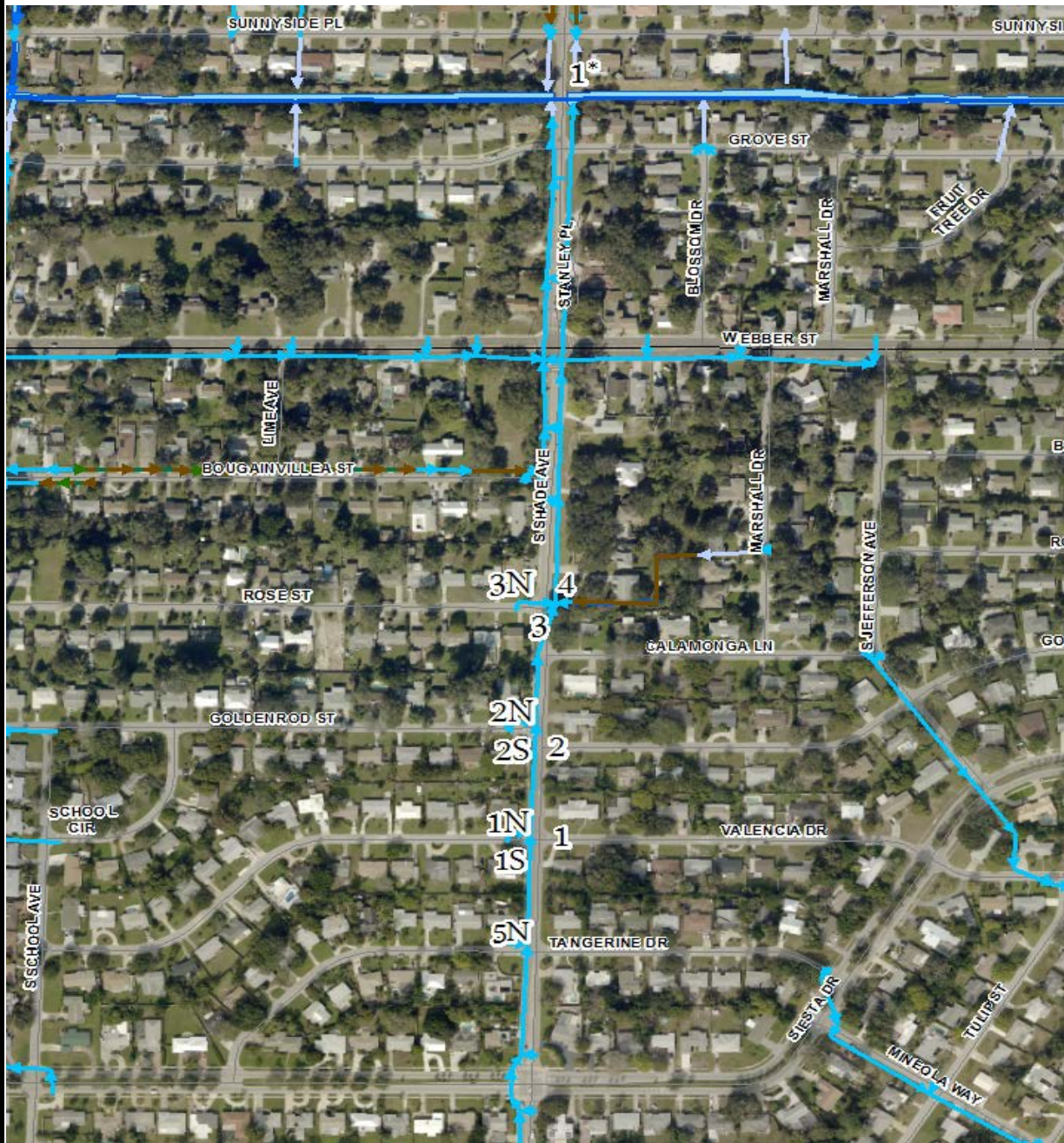
Inspector(s):	Date:	Photo Location	Photo Direction
A.Melton/M.Holland	11/16/2016	Same as above	East
Comments: Showing the overall appearance of the water in the canal. Bottom was sandy/shell with a slight layer of decaying organic matter. Water had a slight musty smell. There was a minimal flow in the ditch.			

Figure A.15.
Grove Street
Site Visit

Figure A.15. Grove Street Site Visit

Overall Map and Narrative

This follow up site visit occurred as a follow up to a documented discharge from a pipe in the ditch on the east side of South Shade Ave, between Grove Street and Sunnyside Street on 11/29/2016. Despite the fact that rain had been minimal, water was flowing from the pipe. Water discharging from the pipe had a biofilm, slightly elevated levels of bacteria, and a ferric precipitate. The area visited is residential and homes are well maintained. Residences in this area have been transitioned from on site septic systems to sewer systems. There was evidence of dog walking (not picking up pet waste) and improper placement of garbage cans (on top of the curb inlets). The map of the investigated area is below.



Sarasota County Inspection/Investigation Report - Grove Street Investigation



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	12/7/2016	South Curb Inlet at Valencia	N/A
Comments: (1S) Curb inlet west of Sough Shade on Valencia. Trash cans on this inlet awaiting pick up. Inlet was dry and free from trash, leaves and sediment. No musty/odd odor was detected.			

Sarasota County Inspection/Investigation Report - Grove Street Investigation



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	12/7/2016	North Curb Inlet on Valencia	N/A
Comments: (1N) Some water (likely from lawn irrigation) and some leaves, decomposing vegetation in this inlet. No musty/odd odor was detected in this inlet.			

Sarasota County Inspection/Investigation Report - Grove Street Investigation



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	12/7/2016	Valencia and S. Shade	West
Comments: (1) Showing the North and South Inlets on Valencia at South Shade. Homes in this area are generally well maintained. Large arrow indicates pipe location and flow direction.			

Sarasota County Inspection/Investigation Report - Grove Street Investigation



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	12/7/2016	South Goldenrod Street	N/A
Comments: (2S). Showing the south inlet on Goldenrod street west of South Shade. The inlet has accumulated sediment, leaves and trash (about 2 inches deep in a 15 inch pipe). Garbage cans present around the inlet. No unusual musty/odd odor however.			

Sarasota County Inspection/Investigation Report - Grove Street Investigation



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	12/7/2016	North side of Goldenrod St	N/A
Comments: (2N). Showing the north curb inlet on Goldenrod west of South Shade. Again and accumulation of sediment, leaves and trash (about 1-2 inches deep in a 15 inch round pipe). No musty/odd odors.			

Sarasota County Inspection/Investigation Report - Grove Street Investigation



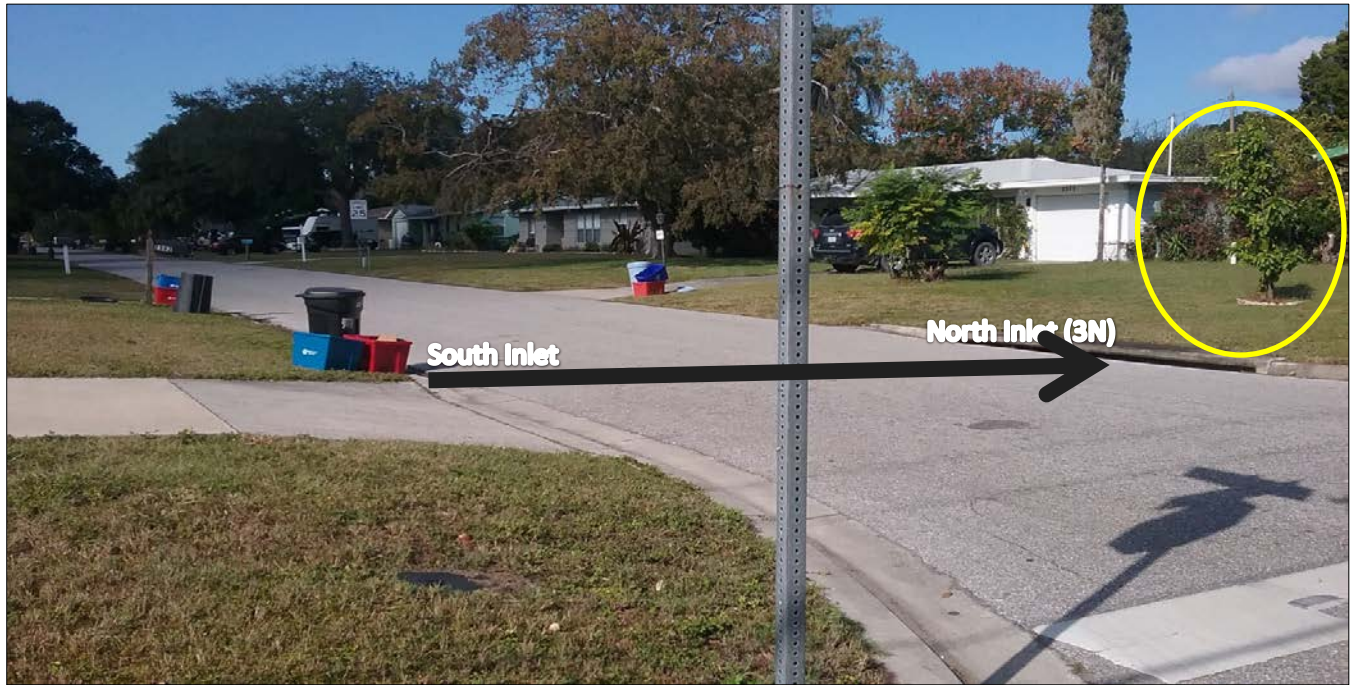
Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	12/7/2016	Goldenrod St and S. Shade	West
Comments: (2). Showing the north and south inlets on Goldenrod St. west of South Shade. Houses along this street are generally well maintained, but not overwhelmingly lush. Garbage cans present. Large arrow indicates pipe location and flow direction.			

Sarasota County Inspection/Investigation Report - Grove Street Investigation



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	12/7/2016	Rose Street West of S. Shade	N/A
Comments: (3N) Showing the north curb inlet on Rose Street West of South Shade. Inlet is relatively clear, with the exception of the pizza box. No musty/odd odors from the inlet.			

Sarasota County Inspection/Investigation Report - Grove Street Investigation



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	12/7/2016	Rose and South Shade	West
Comments: (3) Showing the inlets on Rose Street, west of South Shade. Garbage cans present. Fruit tree directly north of the inlet to the right (highlighted in yellow), and pipe and flow directions indicated by the large arrow. Curb inlet on the south side was clean and unremarkable. No strange/musty odors from the inlets. Yards reasonably well maintained, no extremely lush yards (indicative of heavily fertilized) in the immediate area.			

Sarasota County Inspection/Investigation Report - Grove Street Investigation



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	12/7/2016	S. Shade and Rose St	East
<p>Comments: (4) Location of a structure that receives flow from a curb and gutter system from the south and, a drainage ditch from the east. Approximate location of the located structure indicated by the star. It was several feet east of the road, hidden in the vegetation. There was several inches of decaying vegetation on the grate that had to be removed to look inside the structure.</p>			

Sarasota County Inspection/Investigation Report - Grove Street Investigation



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	12/7/2016	Rose and S. Shade	N/A
<p>Comments: (4). Found the structure. The grate was covered by a few inches of decaying vegetation. Water was discharging into this structure, but it was not determined if it was coming from the east drainage ditch or from the curb and gutter system from the west. The only way this structure was found was one could hear water spilling in to the bottom of the structure. Warm, moist air was coming up through the grate. This warm moist air could have been a result of water (warmed from the air or sun) coming from the ditch to the east, or irrigation/stormwater warmed from contact with the pavement, and exposure to the environment.</p>			

Sarasota County Inspection/Investigation Report - Grove Street Investigation



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	12/7/2016	N. of Tangerine W of Shade	West

Comments: Showing the curb inlet on the north side of the road. Trash cans stacked for trash day right above the inlet. Homes on this street are maintained but not overly so. The inlet was clean and dry, with no strange/musty odors coming from the inlet.

Sarasota County Inspection/Investigation Report - Grove Street Investigation



Inspector(s):	Date:	Photo Location	Photo Direction
M. Holland	12/7/2016	Discharge at Grove St	North
Comments: (1*)Water still discharging at the pipe, despite minimal rain. Water could be from irrigation runoff from the yards, but no standing water in gutter along the roads were seen. Access to the stormwater pipes was not available. The manhole covers were in the road, so traffic would have to be maintained to view those access points.			

Figure A.16.

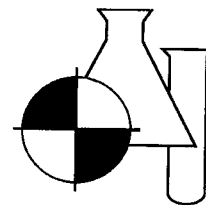
Phillipi Creek TMDL

Test Results – TMDL 1 to 4

(11/10/2016)

BENCHMARK

EnviroAnalytical Inc.



NELAC Certification #E84167

ANALYTICAL TEST REPORT

THESE RESULTS MEET NELAC STANDARDS

QUALITY
ASSURED

HB 11/22/16

Submission Number : 16110439 ✓

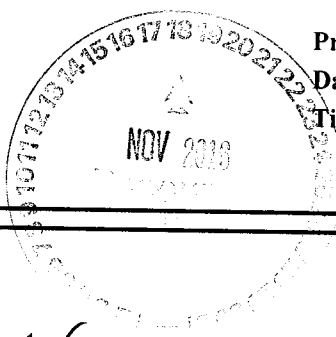
Sarasota County Utilities Oper
1255 T. Mabry Carlton Pkwy
Venice, FL 34293

Cesar Rodriguez

Project Name : IWR-PHILLIPPI CREEK BACT TMDL ✓

Date Received : 11/10/2016 ✓

Time Received : 1400 ✓



Submission Number: 16110439

Sample Number: 001

Sample Description: 111016-PC_TMDL - 1 ✓

Sample Date: 11/10/2016

Sample Time: 1000 ✓

Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
FECAL COLIFORM	6200 B ✓	#/100 ML	100 ✓	100	SM9222D	11/10/2016 14:49	OT ✓
E-COLI BY MPN	6131 ✓	#/100 ML	10 ✓	10	SM9223B	11/10/2016 14:32	KD ✓

Submission Number: 16110439

Sample Number: 002

Sample Description: 111016-PC_TMDL - 2 ✓

Sample Date: 11/10/2016

Sample Time: 1051 ✓

Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
FECAL COLIFORM	6300 B ✓	#/100 ML	100 ✓	100	SM9222D	11/10/2016 14:49	OT ✓
E-COLI BY MPN	7270 ✓	#/100 ML	10 ✓	10	SM9223B	11/10/2016 14:32	KD ✓

Submission Number: 16110439

Sample Number: 003

Sample Description: 111016-PC_TMDL - 3 ✓

Sample Date: 11/10/2016

Sample Time: 1122 ✓

Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
FECAL COLIFORM	2700 ✓	#/100 ML	100	100	SM9222D	11/10/2016 14:49	OT ✓
E-COLI BY MPN	3448 ✓	#/100 ML	10	10	SM9223B	11/10/2016 14:32	KD ✓

Submission Number: 16110439

Sample Number: 004

Sample Description: 111016-PC_TMDL - 4 ✓

Sample Date: 11/10/2016

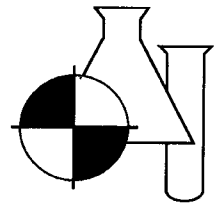
Sample Time: 1158 ✓

Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
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BENCHMARK

EnviroAnalytical Inc.



NELAC Certification #E84167

FECAL COLIFORM	2600 /	#/100 ML	100	100	SM9222D	11/10/2016 14:49	OT
E-COLI BY MPN	3255 /	#/100 ML	10	10	SM9223B	11/10/2016 14:32	KD

Submission Number: 16110439 Sample Date: 11/10/2016
 Sample Number: 005 Sample Time: 1316 /
 Sample Description: 111016-PC_TMDL - BLANK / Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
FECAL COLIFORM	10 U /	#/100 ML	10 /	10	SM9222D	11/10/2016 14:49	OT
E-COLI BY MPN	10 U /	#/100 ML	10 /	10	SM9223B	11/10/2016 14:32	KD

Submission Number: 16110439 Sample Date: 11/10/2016
 Sample Number: 006 Sample Time: 1131 /
 Sample Description: 111016-PC_TMDL - REP / TMDL-4 Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
FECAL COLIFORM	3600 /	#/100 ML	100	100	SM9222D	11/10/2016 14:49	OT
E-COLI BY MPN	3654 /	#/100 ML	10	10	SM9223B	11/10/2016 14:32	KD

Tülay Tanrisever / HB 11/16/2016
 Dale D. Dixon / Laboratory Director Date
 Tülay Tanrisever / QC Officer 11/22/16
 Deborah A. Murphy / Project Manager

DATA QUALIFIERS THAT MAY APPLY:

A = Value reported is an average of two or more determinations.
 B = Results based upon colony counts outside the ideal range.
 H = Value based on field kit determination. Results may not be accurate.
 I = Reported value is between the laboratory MDL and the PQL.
 J1 = Estimated value. Surrogate recovery limits exceeded.
 J2 = Estimated value. No quality control criteria exists for component.
 J3 = Estimated value. Quality control criteria for precision or accuracy not met.
 J4 = Estimated value. Sample matrix interference suspected.
 J5 = Estimated value. Data questionable due to improper lab or field protocols.
 K = Off-scale low. Value is known to be < the value reported.
 L = Off-scale high. Value is known to be > the value reported.
 N = Presumptive evidence of presence of material.
 O = Sampled, but analysis lost or not performed.

Q = Sample held beyond accepted hold time.
 T = Value reported is < MDL. Reported for informational purposes only and shall not be used in statistical analysis.
 U = Analyte analyzed but not detected at the value indicated.
 V = Analyte detected in sample and method blank. Results for this analyte in associated samples may be biased high. Standard, Duplicate and Spike values are within control limits. Reported data are usable.
 Y = Analysis performed on an improperly preserved sample. Data may be inaccurate.
 Z = Too many colonies were present (TNTC). The numeric value represents the filtration volume.
 ! = Data deviate from historically established concentration ranges.
 ? = Data rejected and should not be used. Some or all of QC data were outside criteria, and the presence or absence of the analyte cannot be determined from the data.
 * = Not reported due to interference.

NOTES:

MBAS calculated as LAS; molecular weight = 340.
 PQL = 4xMDL.
 ND = Not detected at or above the adjusted reporting limit.
 X = Value exceeds MCL.
 G1 = Accuracy standard does not meet method control limits, but does meet lab control limits that are in agreement with USEPA generated data. USEPA letter available upon request.

COMMENTS:

For questions or comments regarding these results, please contact us at (941) 723-9986.

Results relate only to the samples.

Stormwater

1001 Sarasota Center Blvd.
Sarasota, FL 34240
(941) 650-1112
(941) 480-3558 Fax
PO#171005

Benchmark EnviroAnalytical, Inc.

1711 Twelfth Street East
Palmetto, FL 34221
(941)723-9986
(941)723-6061 Fax
BenchmarkEA@earthlink.net

Chain of Custody Form: Phillippi Creek Bacterial TMDL Survey

Laboratory Submission #: 161108439

Samp_ID	Type	Fecal Coliform (SM 9222D, MF) E. coli (SM 9223B)		Lab Sample #
		(B)		
111016 -PC_TMDL - 1	Grab	NaThio 1 x 100mL Date: 11/10/2016 Time: 1000	1	1
111016 -PC_TMDL - 2	Grab	Date: 11/10/2016 Time: 1051	1	2
111016 -PC_TMDL - 3	Grab	Date: 11/10/2016 Time: 1122	1	3
111016 -PC_TMDL - 4	Grab	Date: 11/10/2016 Time: 1158	1	4
111016 -PC_TMDL - 5	Grab	Date: 11/10/2016 Time:	1	
111016 -PC_TMDL - 6	Grab	Date: 11/10/2016 Time:	1	
111016 -PC_TMDL - 7	Grab	Date: 11/10/2016 Time:	1	
111016 -PC_TMDL - 8	Grab	Date: 11/10/2016 Time:	1	
111016 -PC_TMDL - 9	Grab	Date: 11/10/2016 Time:	1	

1	Relinquished by Collector:	Date: 11/10/16	Time: 1320	Received By:	Date: 11/10/16	Time: 1320
2	Relinquished by:	Date: 11/10/16	Time: 1400	Received By:	Date: 11/10/16	Time: 1400
3	Relinquished by:	Date:	Time:	Received By:	Date:	Time:

Please use full sample ID on Analytical Test Report.

*Please use a BOD of 1.0 mg/L

**Please use a dilution of 200,000 cfu/100 for Fecal Coliform and E. Coli

Laboratory Sample Acceptability
Temp: 3.4°C
pH: 5.2

1711 Twelfth Street East
Palmetto, FL 34221
(941)723-9986
(941)723-6061 Fax
BenchmarkEA@earthlink

Chain of Custody Form: Phillippi Creek Bacterial TMDL Survey

Laboratory Submission #:

PO#171005

16110439

[illegible]

1	Relinquished by Collector:	Date: 11-10-16	Time: 1320	Received By:	Date: 11/10/16	Time: 1320
2	Relinquished by:	Date: 11/10/16	Time: 1400	Received By:	Date: 11/10/16	Time: 1400
3	Relinquished by:	Date:	Time:	Received By:	Date:	Time:

Please use full sample ID on Analytical Test Report.

*Please use a BOD of 1.0 mg/L

****Please use a dilution of 200,000 cfu/100 for Fecal Coliform and E. Coli**

Laboratory Sample Acceptability
Temp: 3.4°C
pH>2: ☒

Figure A.17.

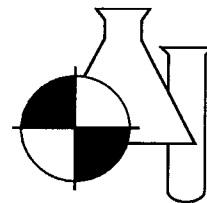
Phillipi Creek TMDL

Test Results – TMDL 5 to 8

(11/16/2016)

BENCHMARK

EnviroAnalytical Inc.



NELAC Certification #E84167

ANALYTICAL TEST REPORT

THESE RESULTS MEET NELAC STANDARDS

QUALITY
ASSURED
HB 11/30/16

Submission Number: 16110653 ✓

Sarasota County Utilities Oper
1255 T. Mabry Carlton Pkwy
Venice, FL 34293

Project Name: IWR-PHILLIPPI CREEK BAC-T TMDL ✓

Date Received: 11/16/2016 ✓

Time Received: 1423 ✓

Cesar Rodriguez

Submission Number: 16110653

Sample Number: 001

Sample Description: 111616-PC-TMDL-5 ✓

Sample Date: 11/16/2016

Sample Time: 0956 ✓

Sample Method: Grab ✓

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
FECAL COLIFORM	2900 /	#/100 ML	100 /	100	SM9222D	11/16/2016 14:59 /	KD
E-COLI BY MPN	2755 /	#/100 ML	10 /	10	SM9223B	11/16/2016 15:36 /	KD

Submission Number: 16110653

Sample Number: 002

Sample Description: 111616-PC-TMDL-6 ✓

Sample Date: 11/16/2016

Sample Time: 1041 ✓

Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
FECAL COLIFORM	180 B /	#/100 ML	10	10	SM9222D	11/16/2016 14:59 /	KD
E-COLI BY MPN	241 /	#/100 ML	10	10	SM9223B	11/16/2016 15:36 /	KD

Submission Number: 16110653

Sample Number: 003

Sample Description: 111616-PC-TMDL-7 ✓

Sample Date: 11/16/2016

Sample Time: 1119 ✓

Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
FECAL COLIFORM	240 /	#/100 ML	10	10	SM9222D	11/16/2016 14:59 /	KD
E-COLI BY MPN	295 /	#/100 ML	10	10	SM9223B	11/16/2016 15:36 /	KD

Submission Number: 16110653

Sample Number: 004

Sample Description: 111616-PC-TMDL-8 ✓

Sample Date: 11/16/2016

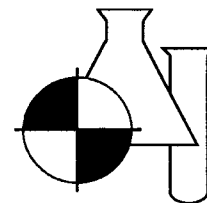
Sample Time: 1206 ✓

Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
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BENCHMARK

EnviroAnalytical Inc.



NELAC Certification #E84167

FECAL COLIFORM	2700	#/100 ML	100	100	SM9222D	11/16/2016 14:59	KD
E-COLI BY MPN	3873	#/100 ML	10	10	SM9223B	11/16/2016 15:36	KD

Submission Number: 16110653

Sample Date: 11/16/2016

Sample Number: 005

Sample Time: 1220

Sample Description: 111616-PC-TMDL-BLNK

Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
FECAL COLIFORM	10 U	#/100 ML	10	10	SM9222D	11/16/2016 14:59	KD
E-COLI BY MPN	10 U	#/100 ML	10	10	SM9223B	11/16/2016 15:36	KD

Dale D. Dixon
 Dale D. Dixon / Laboratory Director
 Tülay Tanrisever / QC Officer
 Deborah A. Murphy / Project Manager

11/22/2016

Date

DATA QUALIFIERS THAT MAY APPLY:

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 J2 = Estimated value. No quality control criteria exists for component.
 J3 = Estimated value. Quality control criteria for precision or accuracy not met.
 J4 = Estimated value. Sample matrix interference suspected.
 J5 = Estimated value. Data questionable due to improper lab or field protocols.
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 O = Sampled, but analysis lost or not performed.

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NOTES:

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 X = Value exceeds MCL.
 G1 = Accuracy standard does not meet method control limits, but does meet lab control limits that are in agreement with USEPA generated data. USEPA letter available upon request.

COMMENTS:

For questions or comments regarding these results, please contact us at (941) 723-9986.

Results relate only to the samples.

Benchmark EnviroAnalytical, Inc.
 1711 Twelfth Street East
 Palmetto, FL 34221
 (941)723-9986
 (941)723-6061 Fax
 BenchmarkEA@earthlink.net

Client: Sarasota County Public Utilities
Stormwater
 1001 Sarasota Center Blvd.
 Sarasota, FL 34240
 (941) 650-1112
 (941) 480-3558 Fax
 PO#171005

Chain of Custody Form: **Phillippi Creek Bacterial TMDL Survey**

Laboratory Submission #:

Cell 10653

Samp_ID	Type	Fecal Coliform (SM 9222D, MF)		Lab Sample #
		E. coli (SM 9223B)		
		(B)		
111616 -PC_TMDL - 5	Grab	NaThio 1 x 100mL Date: 11/16/2016 Time: 0956	1	1
111616 -PC_TMDL - 6	Grab	Date: 11/16/2016 Time: 1041	1	2
111616 -PC_TMDL - 7	Grab	Date: 11/16/2016 Time: 1119	1	3
111616 -PC_TMDL - 8	Grab	Date: 11/16/2016 Time: 1206	1	4
111616 -PC_TMDL - 9	Grab	Date: 11/16/2016 Time:	1	
111616 -PC_TMDL - 10	Grab	Date: 11/16/2016 Time:	1	
111616 -PC_TMDL - 11	Grab	Date: 11/16/2016 Time:	1	
111616 -PC_TMDL - 12	Grab	Date: 11/16/2016 Time:	1	
111616 -PC_TMDL - 13	Grab	Date: 11/16/2016 Time:	1	

1	Relinquished by Collector:	Date: 11-16-16	Time: 12:43	Received By:	Date: 11/16/16	Time: 1345
2	Relinquished by:	Date: 11/16/16	Time: 1423	Received By:	Date: 11/16/16	Time: 1423
3	Relinquished by:	Date:	Time:	Received By:	Date:	Time:

Please use full sample ID on Analytical Test Report.

*Please use a BOD of 1.0 mg/L

**Please use a dilution of 200,000 cfu/100 for Fecal Coliform and E. Coli

Laboratory Sample Acceptability
 Temp: 2.2°C
 pH=:

Benchmark EnviroAnalytical, Inc.
1711 Twelfth Street East
Palmetto, FL 34221
(941)723-9986
(941)723-6061 Fax
BenchmarkEA@earthlink.net

Chain of Custody Form: Phillippi Creek Bacterial TMDL Survey

Laboratory Submission #:

16110653

[illegible]

Please use full sample ID on Analytical Test Report.

*Please use a BOD of 1.0 mg/L

****Please use a dilution of 200,000 cfu/100 for Fecal Coliform and E. Coli**

Figure A.18.

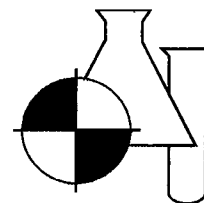
Phillipi Creek TMDL

Test Results – TMDL 9 to 13

(11/29/2016)

BENCHMARK

EnviroAnalytical Inc.



NELAC Certification #E84167

ANALYTICAL TEST REPORT

THESE RESULTS MEET NELAC STANDARDS

QUALITY
ASSURED

HB 12/2/16

Submission Number : 16111059 /

Sarasota County Utilities Oper
1255 T. Mabry Carlton Pkwy
Venice, FL 34293

Cesar Rodriguez

Project Name : IWR-PHILLIPPI CREEK BAC-T TMDL /

Date Received : 11/29/2016 /

Time Received : 1415 /

Submission Number: 16111059

Sample Number: 001

Sample Description: 112916-PC_TMDL-9 /

Sample Date: 11/29/2016

Sample Time: 0957 /

Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
FECAL COLIFORM	8500 B /	#/100 ML	100 /	100	SM9222D	11/29/2016 15:22 /	KD
E-COLI BY MPN	5794 /	#/100 ML	10 /	10	SM9223B	11/29/2016 14:44 /	KD

Submission Number: 16111059

Sample Number: 002

Sample Description: 112916-PC_TMDL-10 /

Sample Date: 11/29/2016

Sample Time: 1032 /

Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
FECAL COLIFORM	13000 B /	#/100 ML	1000 /	1000	SM9222D	11/29/2016 15:22 /	KD
E-COLI BY MPN	9804 /	#/100 ML	10 /	10	SM9223B	11/29/2016 14:44 /	KD

Submission Number: 16111059

Sample Number: 003

Sample Description: 112916-PC_TMDL-11 /

Sample Date: 11/29/2016

Sample Time: 1120 /

Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
FECAL COLIFORM	5000 /	#/100 ML	100 /	100	SM9222D	11/29/2016 15:22 /	KD
E-COLI BY MPN	2755 /	#/100 ML	10 /	10	SM9223B	11/29/2016 14:44 /	KD

Submission Number: 16111059

Sample Number: 004

Sample Description: 112916-PC_TMDL-12 /

Sample Date: 11/29/2016

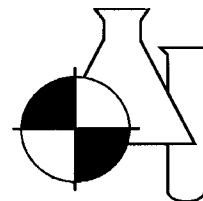
Sample Time: 1137 /

Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
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BENCHMARK

EnviroAnalytical Inc.



NELAC Certification #E84167

FECAL COLIFORM	9000 B /	#/100 ML	1000	1000	SM9222D	11/29/2016 15:22 /	KD
E-COLI BY MPN	10462 /	#/100 ML	10	10	SM9223B	11/29/2016 14:44 /	KD

Submission Number: 16111059

Sample Date: 11/29/2016

Sample Number: 005

Sample Time: 1252 /

Sample Description: 112916-PC_TMDL-13 /

Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
FECAL COLIFORM	6300 B /	#/100 ML	100	100	SM9222D	11/29/2016 15:22 /	KD
E-COLI BY MPN	5794 /	#/100 ML	10	10	SM9223B	11/29/2016 14:44 /	KD

Tülay Tanrisever
Dale D. Dixon / Laboratory Director

12/01/2016

Date

Tülay Tanrisever / QC Officer

Deborah A. Murphy / Project Manager

HB
12/01/16

DATA QUALIFIERS THAT MAY APPLY:

A = Value reported is an average of two or more determinations.
B = Results based upon colony counts outside the ideal range.
H = Value based on field kit determination. Results may not be accurate.
I = Reported value is between the laboratory MDL and the PQL.
J1 = Estimated value. Surrogate recovery limits exceeded.
J2 = Estimated value. No quality control criteria exists for component.
J3 = Estimated value. Quality control criteria for precision or accuracy not met.
J4 = Estimated value. Sample matrix interference suspected.
J5 = Estimated value. Data questionable due to improper lab or field protocols.
K = Off-scale low. Value is known to be < the value reported.
L = Off-scale high. Value is known to be > the value reported.
N = Presumptive evidence of presence of material.
O = Sampled, but analysis lost or not performed.

Q = Sample held beyond accepted hold time.
T = Value reported is < MDL. Reported for informational purposes only and shall not be used in statistical analysis.
U = Analyte analyzed but not detected at the value indicated.
V = Analyte detected in sample and method blank. Results for this analyte in associated samples may be biased high. Standard, Duplicate and Spike values are within control limits. Reported data are usable.
Y = Analysis performed on an improperly preserved sample. Data may be inaccurate.
Z = Too many colonies were present (TNTC). The numeric value represents the filtration volume.
! = Data deviate from historically established concentration ranges.
? = Data rejected and should not be used. Some or all of QC data were outside criteria, and the presence or absence of the analyte cannot be determined from the data.
* = Not reported due to interference.

NOTES:

MBAS calculated as LAS; molecular weight = 340.
PQL = 4xMDL.
ND = Not detected at or above the adjusted reporting limit.
X = Value exceeds MCL.
G1 = Accuracy standard does not meet method control limits, but does meet lab control limits that are in agreement with USEPA generated data. USEPA letter available upon request.

COMMENTS:

For questions or comments regarding these results, please contact us at (941) 723-9986.

Results relate only to the samples.

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1711 Twelfth Street East
Palmetto, FL 34221
(941)723-9986
(941)723-6061 Fax
BenchmarkEA@earthlink.net

Client: Sarasota County Public Utilities
Stormwater
1001 Sarasota Center Blvd.
Sarasota, FL 34240
(941) 650-1112
(941) 480-3558 Fax
PO#171005

Chain of Custody Form: Phillippi Creek Bacterial TMDL Survey

Laboratory Submission #: 11011059

Samp_ID	Type	Fecal Coliform (SM 9222D, MF) E. coli (SM 9223B)			Lab Sample #
		(B)	NaThio	1 x 100mL	
112916 -PC_TMDL - 9	Grab	Date: 11/29/2016 Time: 0957	1	1	1
112916 -PC_TMDL - 10	Grab	Date: 11/29/2016 Time: 1032	1	1	2
112916 -PC_TMDL - 11	Grab	Date: 11/29/2016 Time: 1120	1	1	3
112916 -PC_TMDL - 12	Grab	Date: 11/29/2016 Time: 1137	1	1	4
112916 -PC_TMDL - 13	Grab	Date: 11/29/2016 Time: 1252	1	1	5
112916 -PC_TMDL - 14	Grab	Date: 11/29/2016 Time:	1	1	
112916 -PC_TMDL - 15	Grab	Date: 11/29/2016 Time:	1	1	
112916 -PC_TMDL - 16	Grab	Date: 11/29/2016 Time:	1	1	
112916 -PC_TMDL - 17	Grab	Date: 11/29/2016 Time:	1	1	

1	Relinquished by Collector: [Signature]	Date: 11/29/2016 Time: 13:22	Received By: Steve Feldleit	Date: 11/29/16 Time: 1322
2	Relinquished by: Steve Feldleit	Date: 11/29/16 Time: 1415	Received By: [Signature]	Date: 11/29/16 Time: 1415
3	Relinquished by:	Date:	Received By:	Date:

Please use full sample ID on Analytical Test Report.

*Please use a BOD of 1.0 mg/L

**Please use a dilution of 200,000 cfu/100 for Fecal Coliform and E. Coli

Laboratory Sample Acceptability
Temp: 28.0
pH: 7

Figure A.19.

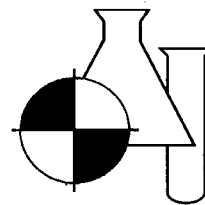
Phillipi Creek TMDL

Test Results – TMDL 1 to 2

(3/1/2017)

BENCHMARK

EnviroAnalytical Inc.



NELAC Certification #E84167

ANALYTICAL TEST REPORT

THESE RESULTS MEET NELAC STANDARDS

Submission Number : 17030032 ✓

Sarasota County Utilities Oper
1255 T. Mabry Carlton Pkwy
Venice, FL 34293

QUALITY
ASSURED

HB 3/10/17

Project Name : IWR-PHILLIPPI CREEK BAC-T TMDL ✓

Date Received : 03/01/2017 ✓

Time Received : 1410 ✓

Cesar Rodriguez

Submission Number: 17030032

Sample Number: 001

Sample Description: 031217-PC-TMDL-1 ✓

Sample Date: 03/01/2017

Sample Time: 1049 ✓

Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
FECAL COLIFORM	4700 ✓	#/100 ML	100	100	SM9222D	03/01/2017 16:01 ✓	CF
E-COLI BY MPN	3873 ✓	#/100 ML	10	10	SM9223B	03/01/2017 15:49 ✓	KD

Submission Number: 17030032

Sample Number: 002

Sample Description: 031217-PC-TMDL-2 ✓

Sample Date: 03/01/2017

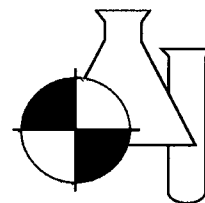
Sample Time: 1132 ✓

Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
FECAL COLIFORM	800 B ✓	#/100 ML	10	10	SM9222D	03/01/2017 16:01 ✓	CF
E-COLI BY MPN	988 ✓	#/100 ML	10	10	SM9223B	03/01/2017 15:49 ✓	KD

BENCHMARK

EnviroAnalytical Inc.



NELAC Certification #E84167

Tülay Tanrisever / *HA*
Dale D. Dixon / Laboratory Director
Tülay Tanrisever / QC Officer
Deborah A. Murphy / Project Manager
3/10/17

03/07/2017

Date

DATA QUALIFIERS THAT MAY APPLY:

A = Value reported is an average of two or more determinations.
B = Results based upon colony counts outside the ideal range.
H = Value based on field kit determination. Results may not be accurate.
I = Reported value is between the laboratory MDL and the PQL.
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J2 = Estimated value. No quality control criteria exists for component.
J3 = Estimated value. Quality control criteria for precision or accuracy not met.
J4 = Estimated value. Sample matrix interference suspected.
J5 = Estimated value. Data questionable due to improper lab or field protocols.
K = Off-scale low. Value is known to be < the value reported.
L = Off-scale high. Value is known to be > the value reported.
N = Presumptive evidence of presence of material.
O = Sampled, but analysis lost or not performed.

Q = Sample held beyond accepted hold time.

T = Value reported is < MDL. Reported for informational purposes only and shall not be used in statistical analysis.

U = Analyte analyzed but not detected at the value indicated.

V = Analyte detected in sample and method blank. Results for this analyte in associated samples may be biased high. Standard, Duplicate and Spike values are within control limits. Reported data are usable.

Y = Analysis performed on an improperly preserved sample. Data may be inaccurate.

Z = Too many colonies were present (TNTC). The numeric value represents the filtration volume.

! = Data deviate from historically established concentration ranges.

? = Data rejected and should not be used. Some or all of QC data were outside criteria, and the presence or absence of the analyte cannot be determined from the data.

* = Not reported due to interference.

NOTES:

MBAS calculated as LAS; molecular weight = 340.

PQL = 4xMDL.

ND = Not detected at or above the adjusted reporting limit.

X = Value exceeds MCL.

G1 = Accuracy standard does not meet method control limits, but does meet lab control limits that are in agreement with USEPA generated data. USEPA letter available upon request.

COMMENTS:

For questions or comments regarding these results, please contact us at (941) 723-9986.

Results relate only to the samples.

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 (941)723-6061 Fax
 BenchmarkEA@earthlink.net


Client: Sarasota County Public Utilities
Stormwater
 1001 Sarasota Center Blvd.
 Sarasota, FL 34240
 (941) 650-1112
 (941) 480-3558 Fax
 PO#171005

Chain of Custody Form: **Phillippi Creek Bacterial TMDL Survey**

Laboratory Submission #:

17030032

Samp_ID	Type	Fecal Coliform (SM 9222D, MF) E. coli (SM 9223B)		Lab Sample #	
		(B)			
		NaThio			
		1 x 100mL			
312017	-PC_TMDL - 1	Grab	Date: 3/1/2017 Time: 10:49	1	1 •
312017	-PC_TMDL - 2	Grab	Date: 3/1/2017 Time: 11:32	1	
312017	-PC_TMDL - 3	Grab	Date: 3/1/2017 Time:	1	2 •
312017	-PC_TMDL - 4	Grab	Date: 3/1/2017 Time:	1	
312017	-PC_TMDL - 5	Grab	Date: 3/1/2017 Time:	1	

1	Relinquished by Collector:	Date: 3/1/17	Time: 12:40	Received By:	Date:	Time:
2	Relinquished by:	Date: 03/01/17	Time: 1410	Received By: 	Date: 03/01/17	Time: 1410
3	Relinquished by:	Date:	Time:	Received By:	Date:	Time:

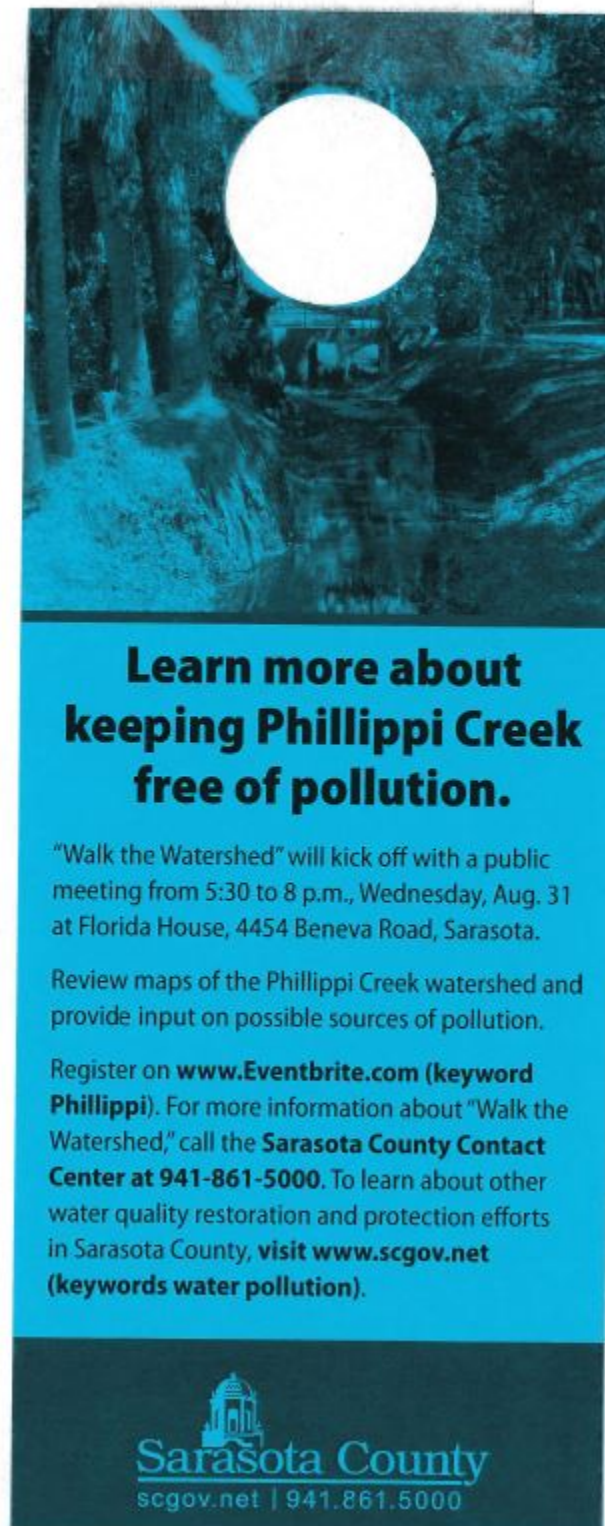
Please use full sample ID on Analytical Test Report.
 *Please use a BOD of 1.0 mg/L
 **Please use a dilution of 200,000 cfu/100 for Fecal Coliform and E. Coli

Laboratory Sample Acceptability
 Temp: 3.4°C
 pH>2: ☒

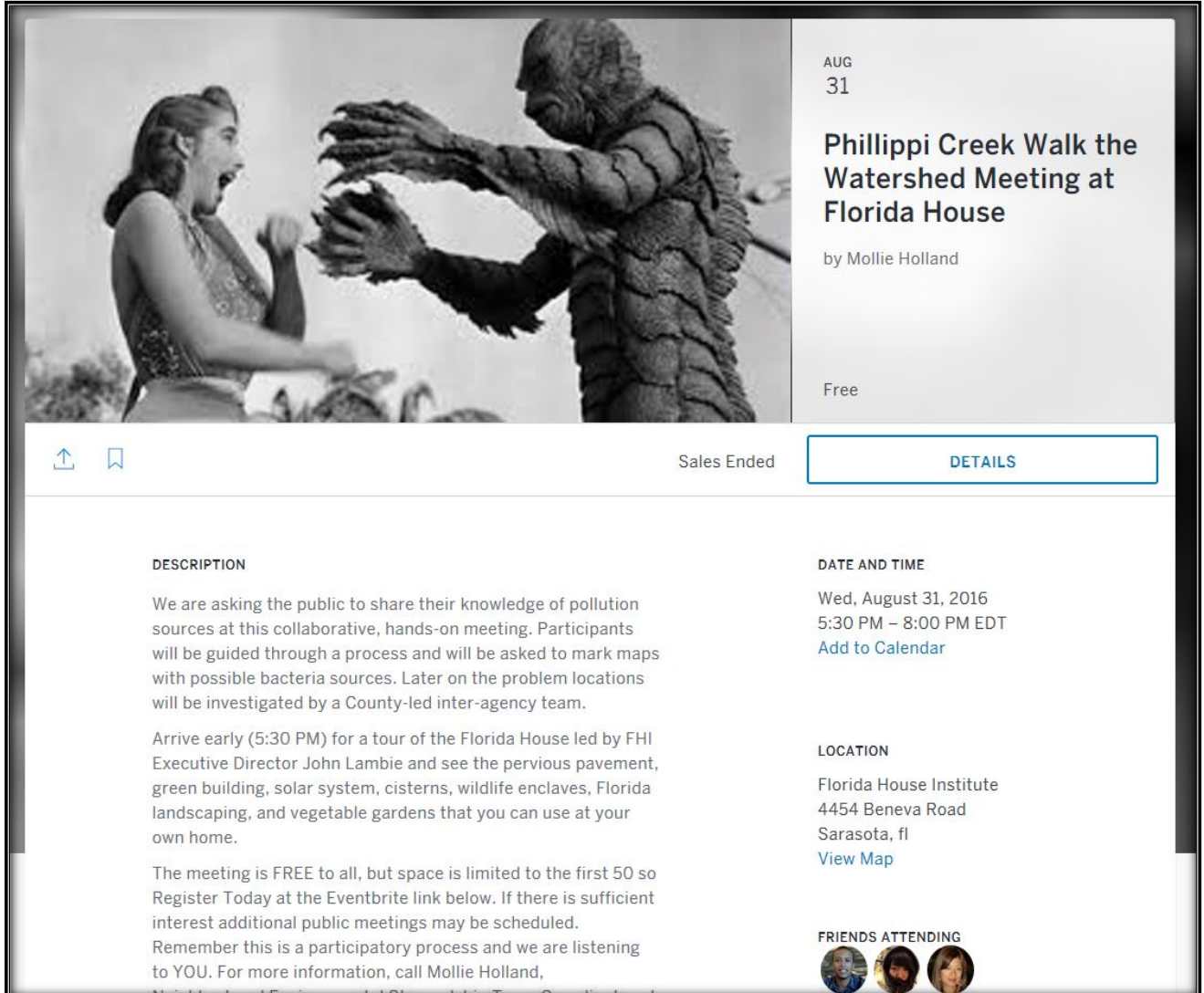
Appendix B.

Public Outreach for the
Public Walk the
Watershed Meeting
August 31, 2016

Appendix B. Figure B.1 Door Hanger



Appendix B. Figure B.2 Walk the Watershed Public Meeting Invitation on Eventbrite



The image shows a screenshot of an Eventbrite event page. At the top, there is a header image on the left showing a woman in a patterned top looking surprised or excited, and a large, textured, scaly creature (resembling a dragon or a large lizard) reaching out towards her. To the right of the image, the event title 'Phillippi Creek Walk the Watershed Meeting at Florida House' is displayed in a bold, dark font. Above the title, the date 'AUG 31' is shown. Below the title, it says 'by Mollie Holland' and 'Free'. Below the header image, there are icons for sharing and saving, a 'Sales Ended' status, and a 'DETAILS' button. The main content area is divided into two columns. The left column is titled 'DESCRIPTION' and contains three paragraphs of text. The right column is titled 'DATE AND TIME' and 'LOCATION', with a 'View Map' link. At the bottom right, there is a section titled 'FRIENDS ATTENDING' with three circular profile pictures of people.

DESCRIPTION

We are asking the public to share their knowledge of pollution sources at this collaborative, hands-on meeting. Participants will be guided through a process and will be asked to mark maps with possible bacteria sources. Later on the problem locations will be investigated by a County-led inter-agency team.

Arrive early (5:30 PM) for a tour of the Florida House led by FHI Executive Director John Lambie and see the pervious pavement, green building, solar system, cisterns, wildlife enclaves, Florida landscaping, and vegetable gardens that you can use at your own home.

The meeting is FREE to all, but space is limited to the first 50 so Register Today at the Eventbrite link below. If there is sufficient interest additional public meetings may be scheduled. Remember this is a participatory process and we are listening to YOU. For more information, call Mollie Holland,


DATE AND TIME

Wed, August 31, 2016
5:30 PM – 8:00 PM EDT
[Add to Calendar](#)

LOCATION

Florida House Institute
4454 Beneva Road
Sarasota, fl
[View Map](#)

FRIENDS ATTENDING



Appendix C.

General Outreach

Material for Bacterial

Pollution – Pet Waste

Appendix C Figure C.1 Public Outreach on bacterial pollution: “There is no Poop Fairy”



FIGURES

Figure 5. Map 1 – Northern Portion of Phillippi Creek Watershed

Figure 6. Map 2 – Western Portion of Phillippi Creek Watershed

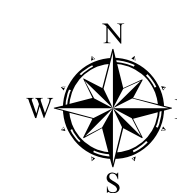
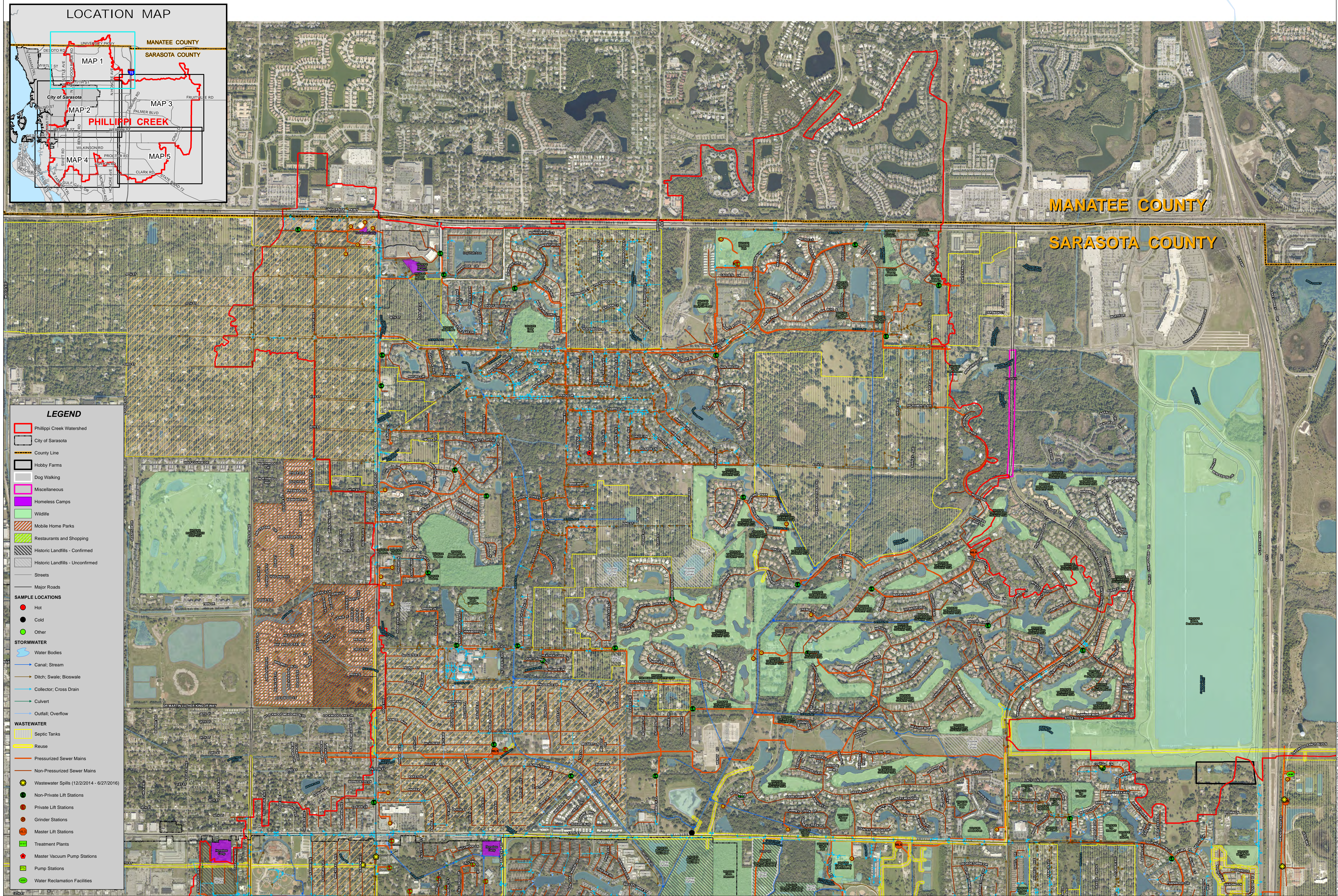
Figure 7. Map 3 – Eastern Portion of Phillippi Creek Watershed

Figure 8. Map 4 – Southern Portion of Phillippi Creek Watershed

Figure 9. Map 5 – Southeastern Portion of Phillippi Creek Watershed

Walk The Phillippi Creek Watershed

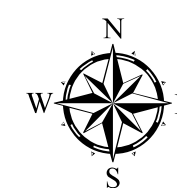
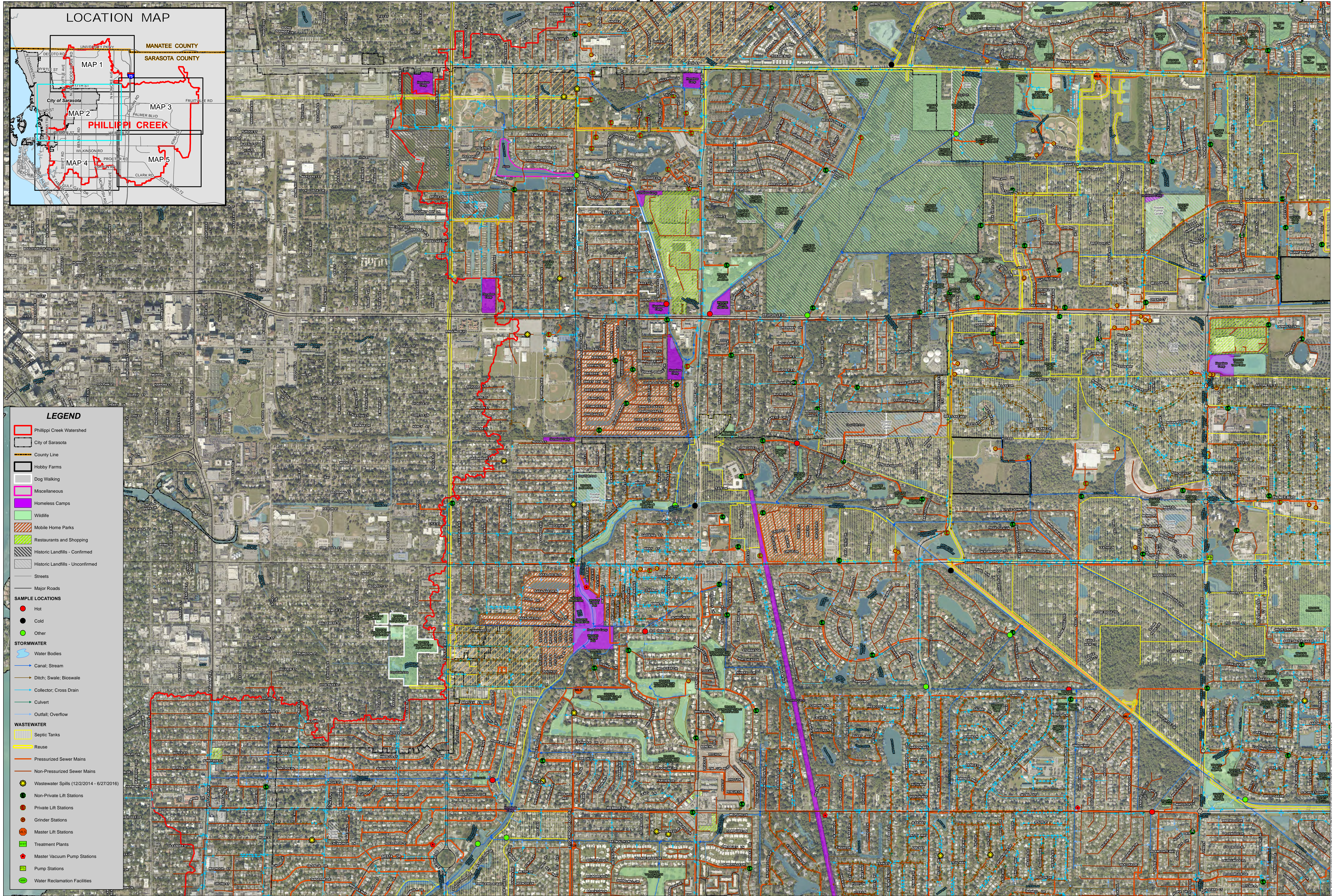
Figure 5. Map 1



Walk The Phillippi Creek Watershed

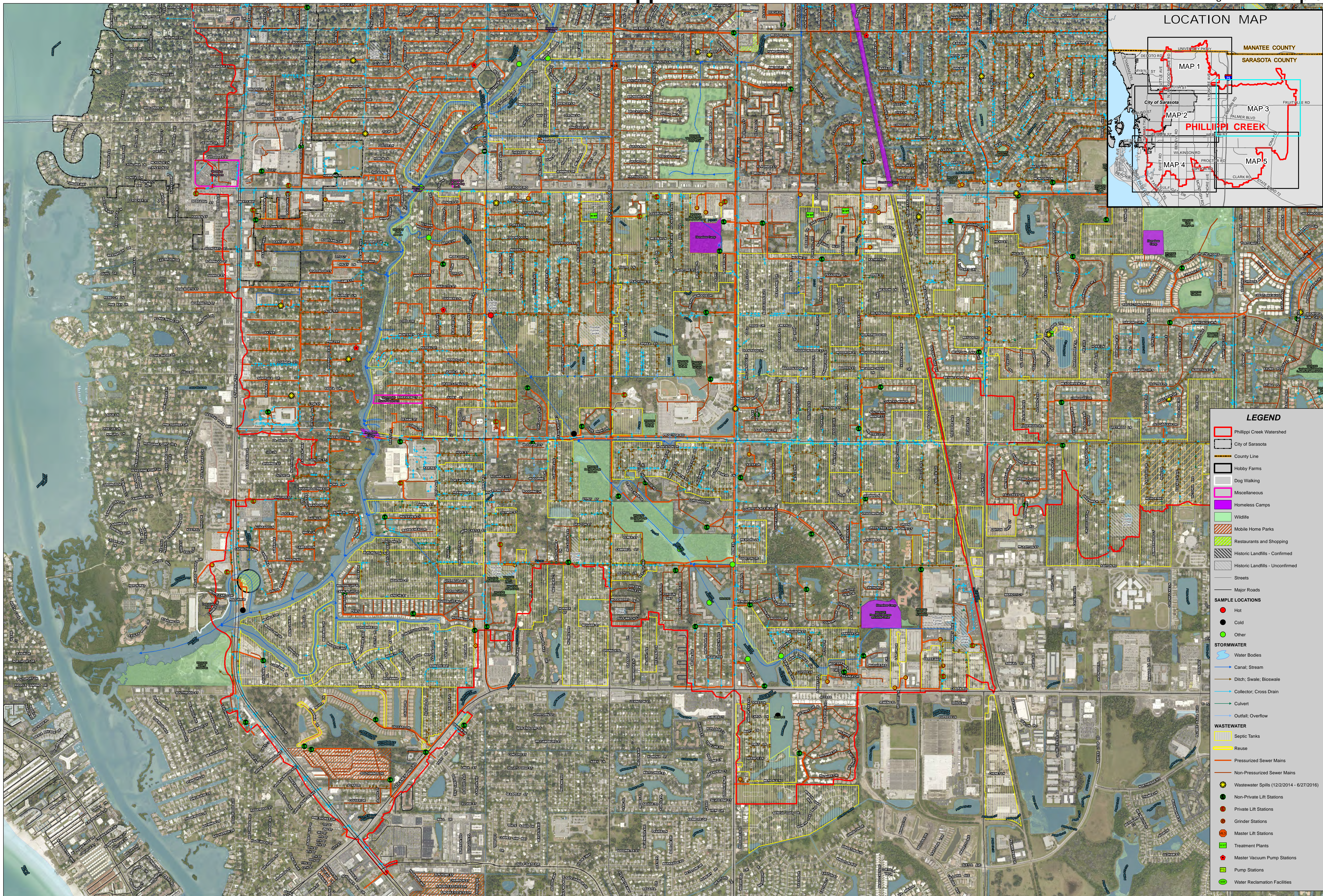
Figure 6

Map 2



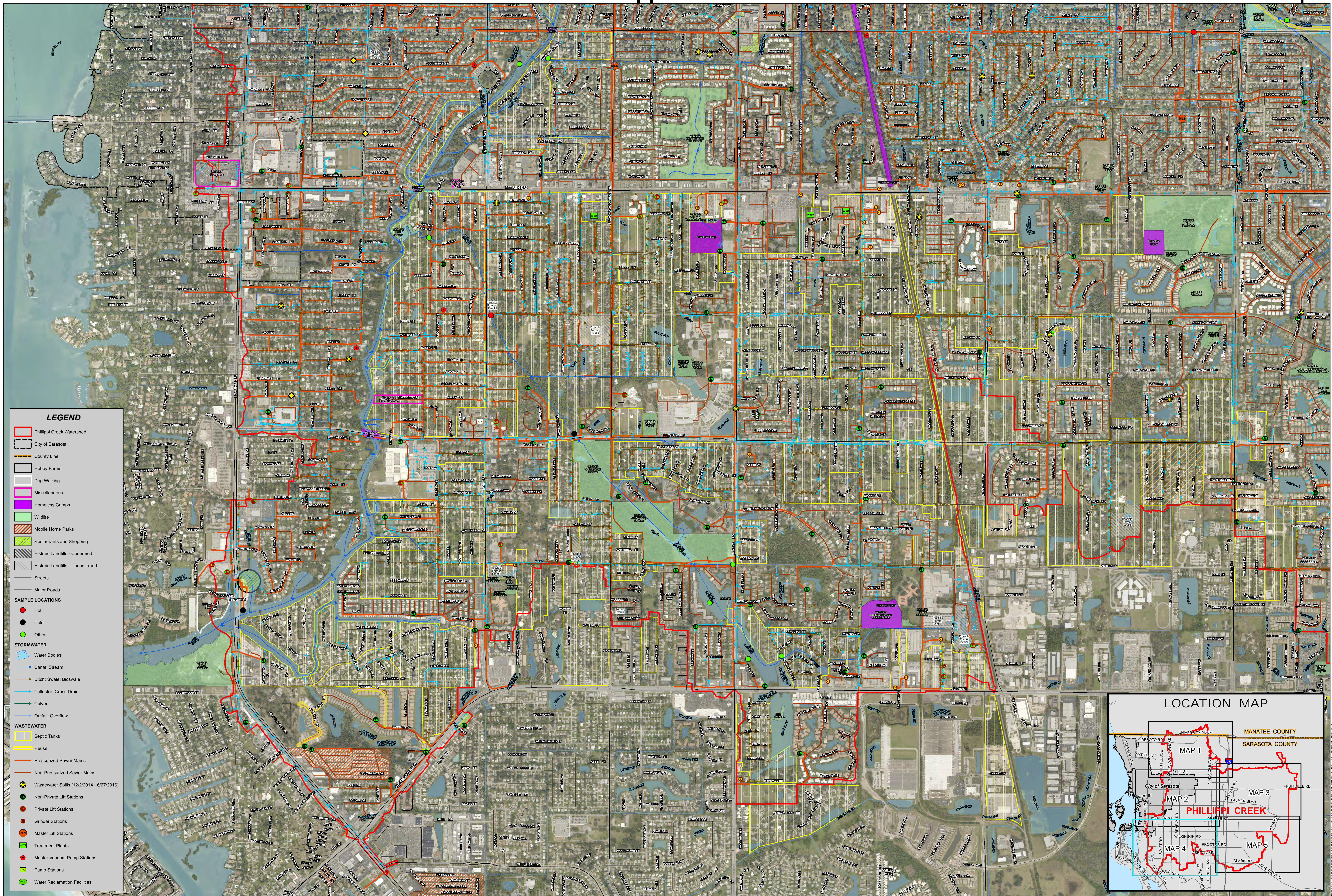
Walk The Phillippi Creek Watershed

Figure 7. Map 3



Walk The Phillippi Creek Watershed

Figure 8. Map 4



Walk The Phillippi Creek Watershed

Figure 9.

Map 5

