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;

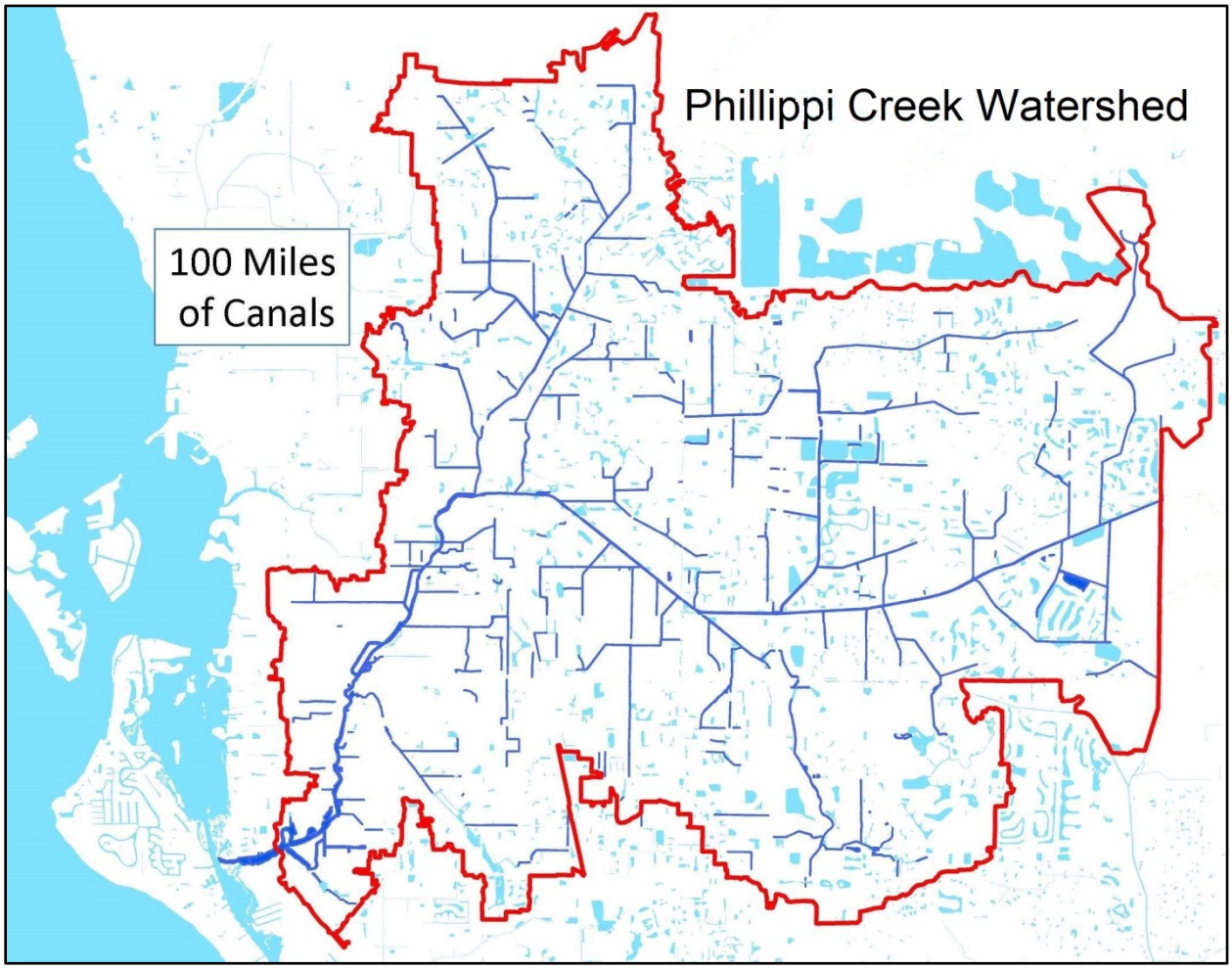
4. *Immediate next steps and follow-up actions taken;*
5. *Follow-up actions still needed;*
6. *Sources eliminated or investigated;*
7. *Water quality results from samples taken in the field;*
8. *Monitoring sites identified or proposed; and*
9. *Any other pertinent information.*

Background

Description of the Phillippi Creek Watershed

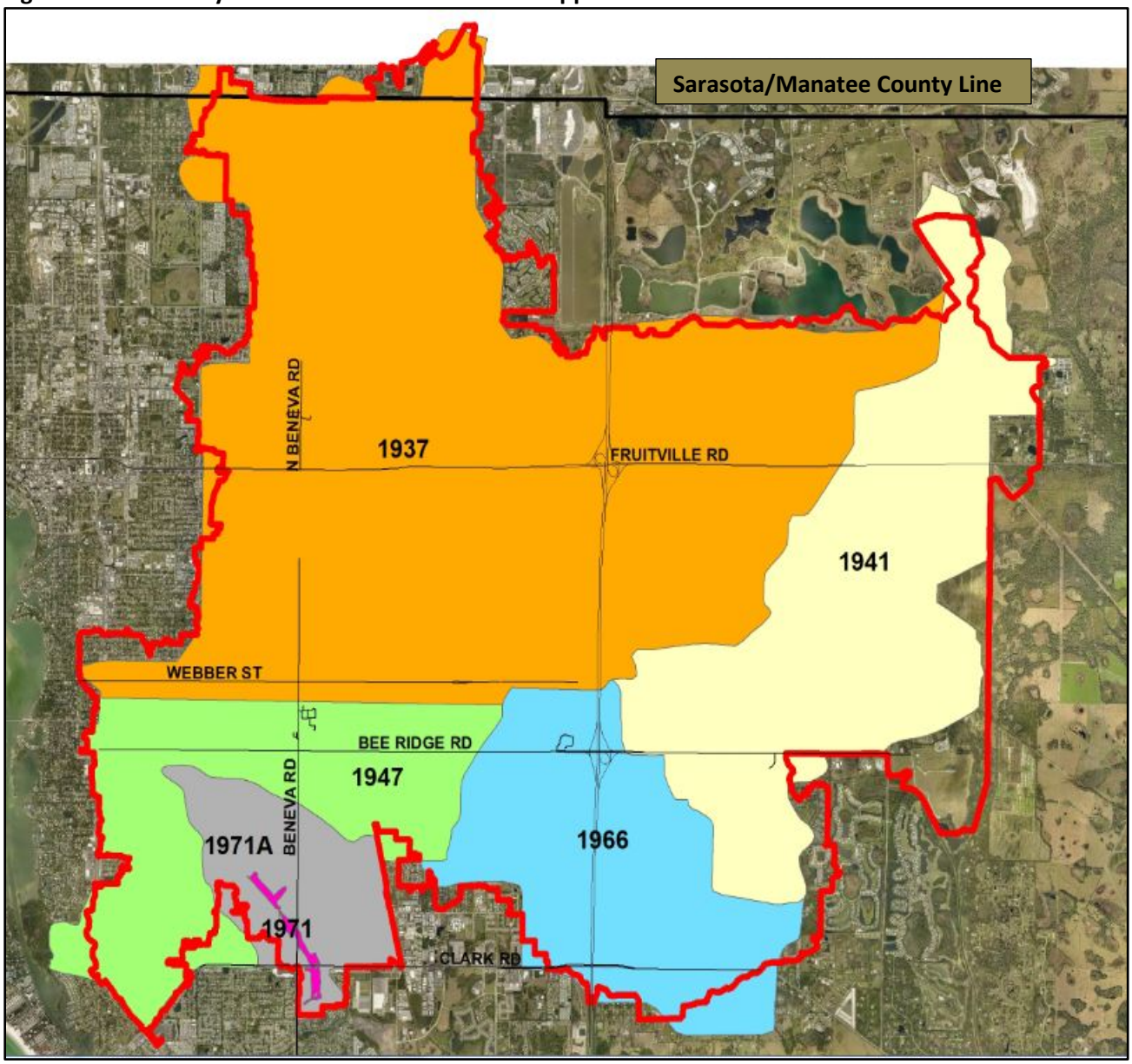
Phillippi Creek is located in the northwestern part of Sarasota County, within the Phillippi Creek Basin (**Figure 1**). Today, Phillippi Creek drains nearly 56 square miles of watershed that includes such land uses as residential (both high and low density) hobby farms, golf courses, and mixed industrial 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.

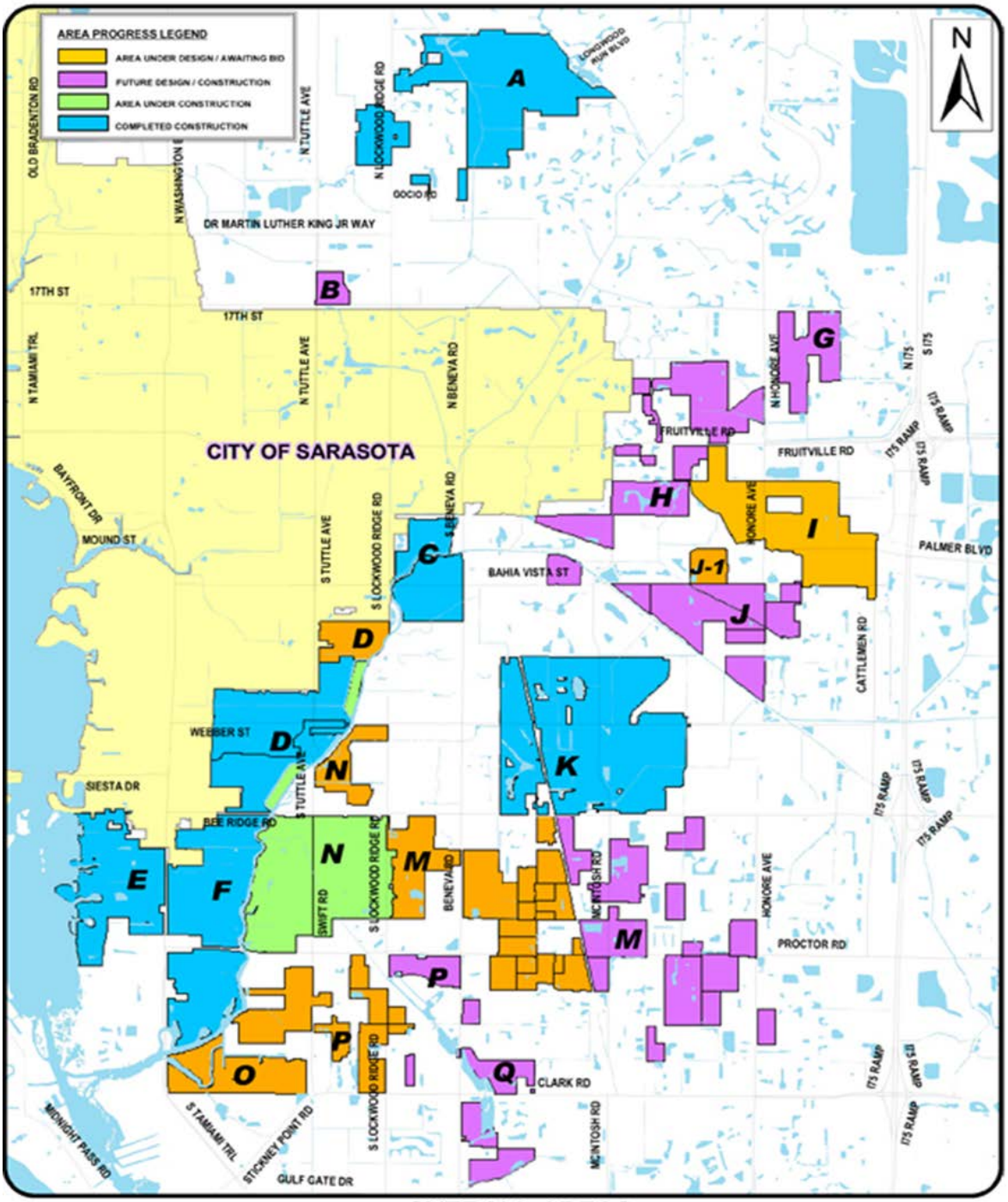
A TMDL represents the maximum amount of a given pollutant that a water body can assimilate and still meet water quality standards, including its applicable water quality criteria and its designated uses. TMDLs are developed for water bodies that are verified as not meeting their water quality standards. 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



OVERALL AREAS

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.

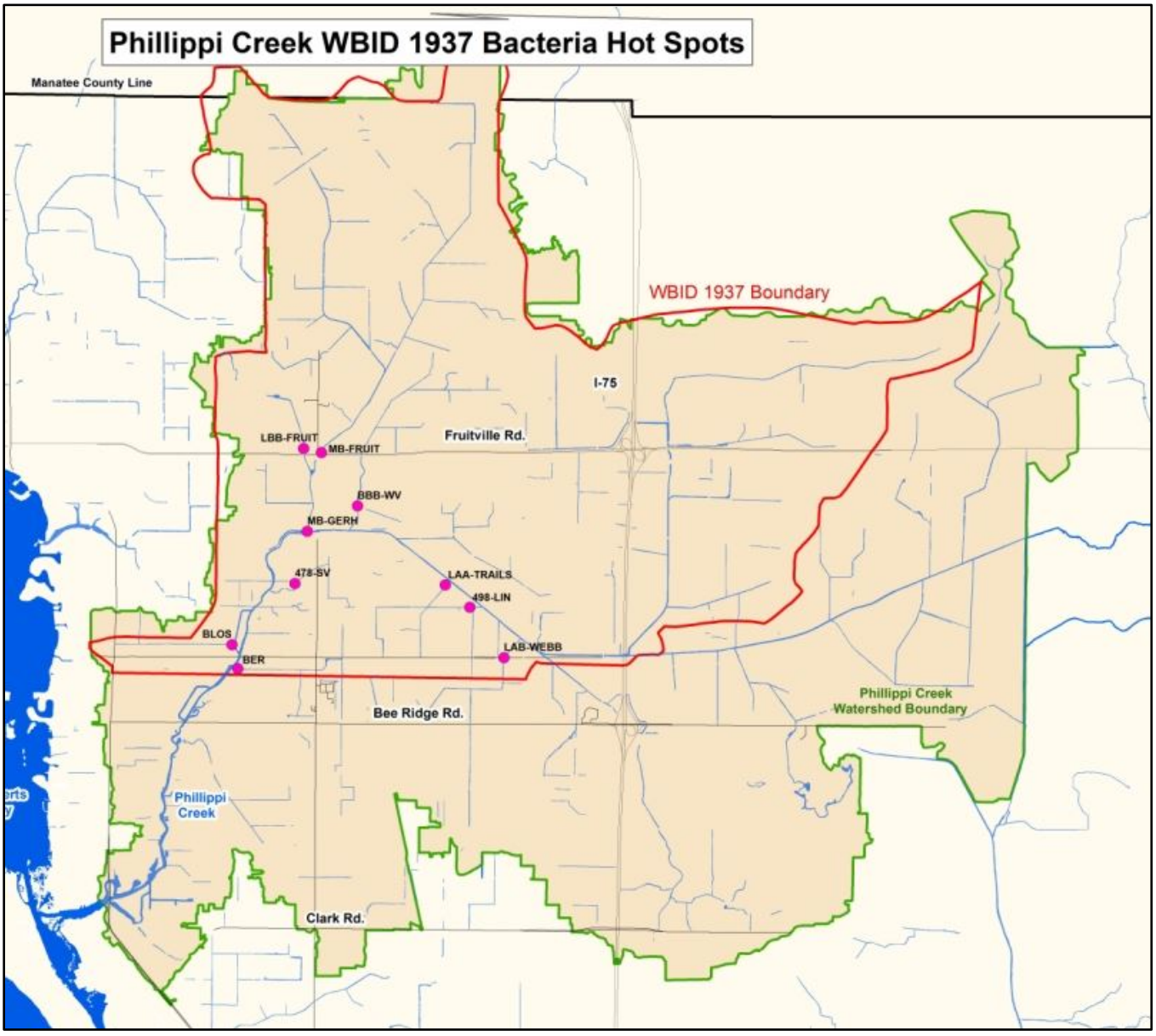
Sarasota County has been monitoring 36 sample locations along the creek and its tributaries for F. coliform since 2001, and E. coli since 2006. There are ten sites in which bacterial levels have consistently exceeded water quality standards, known as "hot spots", and are listed in **Table 1** (currently, 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.som
	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
	Libby Oskamp	myruby@verizon.net
	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	*Outside Phillippi Creek Basin*
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	*Outside Phillippi Creek Basin*
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 Honore Ave.
10	Restaurant, Bad septic	3436 17th Street
11	The Meadows - birds on the golf course	North Honore 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)	*Outside sampling area (saltwater*)
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