

Final Report
March 1, 2018 – October 31, 2019
Osprey Initiative, LLC
Mobile Bay National Estuary Program
EPA Gulf of Mexico Program
March 20, 2020

The Mobile Bay National Estuary Program, Implementing a Comprehensive Strategy to Create Trash-Free Waters in the Three Mile Creek Watershed, AL Project was initiated on March 1, 2018. The project was concluded on October 31, 2019. Osprey Initiative, LLC (Osprey) was given three (3) tasks. These three tasks were:

- Task 1 - Deploy and maintain 10 Litter Gitters in the Three Mile Creek (3MC) watershed
- Task 2 - Conduct first pass riparian litter removal in the 3MC watershed
- Task 3 - Develop web-based data result reporting system

Additionally, Osprey assisted with development of a protocol to categorize collected waste and recyclables through the utilization of the Escaped Trash Assessment Protocol (ETAP). Osprey also agreed to speak or present regarding the intent, implementation, and impact of this project at applicable events as part of effort to educate the local community and raise awareness about the issue of litter in our waterways. Accomplishments and objectives for each specific task are subsequently detailed below. Project collection totals from all litter removal activities for the grant period are show below in *Table 1*.

Project Task	Recycled		Disposed		Debris	Total Collected		Project Goal
	lbs.	ft ³	lbs.	ft ³	lbs.	lbs.	ft ³	
Litter Gitter Totals	783	708	1619	1091	62	2464	1798	4800 lbs - Achieved goal by <u>185%</u>
First Pass Totals	839	716	5157	2921	422	6418	3637	
Project Totals	1622	1424	6775	4012	484	8882	5435	

Table 1 - Project Collection Totals

Task 1 - Deploy and maintain 10 Litter Gitters in the 3MC watershed

Initial efforts predominantly consisted of working with the Mobile Bay National Estuary Program (MBNEP) along with the Cities of Mobile and Prichard, Alabama to select sites for Litter Gitter deployment, securing appropriate regulatory approvals for the locations, and deploying Litter Gitters at the selected sites. Site selection was based on a number of factors – anticipated volume of stormwater conveyed litter, permitting requirements/constraints, accessibility, visibility to local community – and effort was given to distribute Litter Gitters throughout the entire 3MC watershed. These sites were then serviced routinely (every two weeks at a minimum and around large rain events) to remove and catalogue any collected litter, monitor site functionality, and determine effectiveness of site to inform recommendations for each site. Collection totals for the duration of the project by site can be seen in *Table 2* below. Based on field observations and data analysis, some sites were re-located during the course of this project in an attempt to maximize the impact of Litter Gitters on the 3MC watershed as a whole, improve the effectiveness of the Litter Gitter, and ensure the safety of Osprey's field crews. The sites specifically associated with this project are outlined in *Table 3* below with timelines associated for their operation. A graphical depiction of site locations throughout the 3MC watershed can be seen in *Figure 5 of Appendix I*.

Location	Recycled		Disposed		Debris	Total Collected	
	Lbs.	ft ³	Lbs.	ft ³	Lbs.	Lbs.	ft ³
3MC - Maple St. Trib	104.49	114.20	276.38	180.55	15.00	395.87	294.75
3MC - 1MC @ Lawrence	195.25	166.50	310.83	226.00	40.40	546.48	392.50
3MC - TS @ Craft Hwy	265.86	221.00	549.07	353.75	0.00	814.93	574.75
3MC - TS @ Mobile St.	60.60	63.50	114.45	98.25	0.00	175.05	161.75
3MC - 3MC @ Langan Park	49.51	48.25	61.48	41.75	0.00	110.99	90.00
3MC - 12MC @ Langan Park	57.30	54.00	91.37	70.75	0.00	148.67	124.75
3MC - 3MC @ Infirmary	18.01	13.50	34.14	32.50	5.00	57.15	46.00
3MC - TS @ Sweeny	11.90	11.50	123.42	59.25	1.76	137.08	70.75
3MC - 3MC @ USA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3MC - TS @ Whitney	15.91	12.00	46.62	21.00	0.00	62.53	33.00
3MC - 12MC @ University	3.82	3.00	11.04	7.00	0.00	14.86	10.00

Table 2 – Collection totals by site

Location	Deployment Date	Removal Date
3MC - Maple Street Tributary	November 18, 2016	---
3MC - One Mile Creek @ Lawrence	April 27, 2018	---
3MC - Toulmins Spring @ Craft Hwy	April 27, 2018	November 22, 2019
3MC - Concrete Ditch @ Mobile St.	April 28, 2018	November 22, 2019
3MC - Three Mile Creek @ Langan #1	June 7, 2018	---
3MC - Twelve Mile Creek @ Langan #1	June 7, 2018	---
3MC - Three Mile Creek @ Infirmary	June 8, 2018	November 22, 2019
3MC - Toulmins Spring @ Sweeney	July 11, 2018	November 22, 2019
3MC - Three Mile Creek @ USA	March 21, 2019	July 29, 2019
3MC - Toulmins Spring @ Whitney	July 26, 2019	---
3MC - Twelve Mile Creek @ University	October 10, 2019	---

Table 3 - Litter Gitter Deployment and Removal Dates

ACTIVE SITES

3MC - Maple Street Tributary – The site is located on a tributary that begins at the end of Maple Street and flows into One Mile Creek that then flows into the original 3MC upstream of the convergence with the channelized portion of 3MC. This tributary predominantly drains a low-income residential area. This site has been the focus of several community-based water cleanups led by the Mobile Bay National Estuary Program and was the original test site for the initial prototype Litter Gitter. Throughout the project, we deployed a variety of trap setups ranging from a single trap to a tandem trap with tertiary boom. However, it was determined that for this site the single trap setup proved to be sufficient. This site has continued to perform well from a litter collection standpoint and as a focal point for community education and awareness related to litter prevention. We recommend continued operation of this site.

3MC – One Mile Creek (1MC) at Lawrence – The site is located on the main branch of 1MC at the end of Lawrence Street. 1MC flows into the original 3MC upstream of the convergence with the channelized portion of 3MC. 1MC drains the highly urbanized areas of downtown Mobile. Based on the anticipated volume of stormwater conveyed litter, we deployed a tandem trap with tertiary boom setup. We selected this site to conduct an internal analysis of Litter Gitter effectiveness at capturing floating litter. Following several months of field observations and data collection, we determined that the system was operating at 95%+ effectiveness, where the primary device was capturing 90%+ of the litter, the secondary device was capturing another 5%+ and with less than 5% of material captured by the tertiary boom. While this evaluation was performed for internal purposes, we can provide the detailed data if requested / required. Additionally, 1MC was the focus of the “Litter Free Mardi Gras” NOAA grant executed by Mobile Baykeeper where multiple community-based

cleanups were performed downstream of the site. The Litter Gitter proved to be a key tool in intercepting stormwater conveyed litter; thus, improving the efficiency of these downstream community-based cleanups. We recommend continued operation of this site and if funding permits, the addition of signage to promote education and awareness.

3MC – Three Mile Creek at Langan Park – The site is located at the convergence of 3MC with the Upper Lake of Langan Park immediately downstream of Gaillard Drive. 3MC drains the middle-income residential area and campus of the University of South Alabama (USA) upstream of this location. Initially, we deployed a tandem system but after several months of field observations, we removed the secondary trap and continued operating with a single trap setup. While this site has not generated a large amount of litter, it has performed as a critical tool in preserving the aesthetics of Langan Park as well as a focal point for community awareness of the anti-litter efforts happening in Mobile, AL and what our parks can look like with committed maintenance and litter removal. These sites have received significant attention from the local community due to their proximity to the Mobile Tennis Center (a large sports complex that routinely hosts international tournaments) and Langan Park. Our crews are constantly stopped and asked about these sites in Langan Park and we are always given a positive response related to the work. Due to the high visibility of this site, we recommend continued operation of this site and if funding permits, the addition of signage to promote education and awareness.

3MC – Twelve Mile Creek (12MC) at Langan Park – The site is located at the convergence of 12MC with the Upper Lake of Langan Park immediately downstream of Museum Drive. There is a sheet pile dam on the upstream side of Museum Drive which helps control the flow of water into the Upper Lake. 12MC predominantly drains the middle income residential and commercial / retail development areas upstream of this location. Initially, we deployed a tandem system but after several months of field observations, we removed the secondary trap and continued operating with a single trap setup. While this site has generated more litter than the other Langan Park site, it still has not resulting in a tremendous amount. However, as with the other Langan Park site, it has performed as a critical tool in preserving the aesthetics of Langan Park as well as a focal point for community awareness of the anti-litter efforts happening in Mobile, AL. We recommend continued operation of this site and if funding permits, the addition of signage to promote education and awareness.

3MC – Toulmins Spring (TS) at Whitney – The site is located on TS due east of the end of Whitney Street. TS flows in to 3MC just upstream of the Conception Street Bridge. TS is the primary drainage for the city of Prichard, AL. TS flows through a large area of low-income housing and commercial / retail development. These areas are highly urbanized and impervious. We deployed a single trap setup which has proved sufficient for this site. While this site was not an original site, it was added during the project based on field results from the other two TS sites (discussed below). Based on those field results, we wanted to find a location on TS with reduced flows and improved access. This site was identified, and site access was granted by Mobile Area Water and Sewer Service (MAWSS). This site has generating a significant amount of litter in a short time period and has aided in maintaining the downstream conditions of TS in conjunction with our other cleanup efforts. We recommend continued operation of this site.

3MC – Twelve Mile Creek (12MC) at University – The site is located just upstream of the University Blvd intersection with 12MC. 12MC primarily drains the middle income residential and commercial / retail development areas upstream of this site. We deployed a single trap setup which has proved sufficient for this site. Following the removal of the trap at USA due to the lack of captured litter (discussed below), this site was selected based on the stormwater drainage from both residential and commercial / retail. Even though this site was installed late in the project, initial results indicate that this location will be an effective site. We recommend continued operation of this site for the time being while we continue to evaluate its effectiveness.

REMOVED SITES

3MC – Toulmins Spring (TS) at Craft Highway – The site was located directly on TS on the downstream side of the Craft Hwy Bridge. The banks on either side of the Craft Hwy Bridge have been augmented and reinforced with concrete blocks and large rocks to prevent erosion. There is a sharp 10' drop in elevation just upstream of the trap. TS flows through a large area of low-income housing and commercial / retail development of Prichard, AL. These areas are highly urbanized and impervious. These combined features result in an increased flow rate that is highly turbulent at this site. We deployed a tandem trap with tertiary boom setup in an effort to address the predictably turbulent flows and anticipated volume of stormwater conveyed litter. The site was also a historic dumping ground for debris and litter largely due to the fact that an empty lot abutted the stream and was easily accessible from Craft Hwy. While there was a large amount of litter collected at this site, we noticed that our traps were routinely being damaged and operating with reduced effectiveness at litter capture due to the flashy and turbulent flows. Furthermore, from a safety perspective, the location presented challenges for our crews with elevated levels of crime and difficulties with site accessibility, particularly when towing a trailer with required maintenance equipment. As a result of these issues, the decision was made to remove the traps from this site and relocate to the TS at Whitney site. We do not recommend continued operation at this site; however, our new design and configuration would likely handle the flashy and turbulent flows better and we would be open for re-deployment at this site if required.

3MC – Concrete Ditch at Mobile Street – The site was located in a concrete drainage ditch approximately 100 yds upstream of the convergence of the ditch and 3MC. This concrete drainage ditch serves as the stormwater outflow for a middle- to low-income residential area. Due to the relatively low levels of anticipated stormwater conveyed litter, we deployed a single trap setup. While this site performed better than we anticipated from a litter collection standpoint, it did not capture an amount comparative with some of the other sites (namely Lawrence, Maple, and Craft). Additionally, our trap was being periodically damaged or destroyed due to the flashy flows at this site. Finally, the relative obscurity of its location limits the potential for this site to serve as a tool/platform to raise awareness and educate the local communities. These factors collectively influenced the decision to remove the trap from this site. With limited funding for the near term and the less than ideal conditions, we felt other sites warranted continued operation over this site. Therefore, we do not recommend continued operation at this site at this time; however, if funding permitted, we would be open for re-deployment at this site if required.

3MC – Three Mile Creek (3MC) at Infirmary – The site was located in a drainage tributary that flows directly into 3MC adjacent to Mobile Infirmary hospital. The banks along both 3MC and the drainage ditch at this site are augmented and reinforced with concrete blocks and large rocks to prevent erosion. This drainage ditch serves as the stormwater outflow for the commercial / retail and residential areas as well as the medical centers just upstream. We deployed a single trap setup which proved to be sufficient at this site. Based on initial assessments of the site, we had anticipated intercepting a significant amount of stormwater conveyed litter from the streets and parking lots that drain into this ditch; however, once the trap was deployed and actual conditions were observed under flow, we discovered that the anticipated drainages had been redirected to a culvert system that entered the main branch of 3MC upstream of the site. As a result of this diversion, minimal litter was captured at this site and the decision was made to remove the trap from this site. Therefore, we do not recommend continued operation at this site; however, the outflow of the upstream culvert system may be a site to consider in the future.

3MC – Toulmins Spring (TS) at Sweeney – The site was located on TS downstream of the Sweeney's Ln Bridge. The upper portion of TS, to include this site, has been converted to a trapezoidal open channel concrete drainage ditch. The upper portion of TS flows through a large area of low-income housing and commercial / retail development of Prichard, AL. These areas are highly urbanized and impervious. We deployed a single trap setup. Based on initial assessments, we anticipated intercepting a significant amount of stormwater

conveyed litter. However, there were a number of issues with the site that made it less than ideal. Due to the flashy flows during large rain events, we noticed that our trap was routinely being damaged or destroyed. There was also evidence that our device had been vandalized on multiple occasions. The site also presented safety concerns for our crew as there appeared to be some questionable individuals and activities in the area. Finally, while the site was highly visible to the surrounding community, it was located within a residential neighborhood that was not highly trafficked; thus, the location provided limited potential to serve as a tool/platform to raise awareness and educate the local community. In spite of the amount of litter captured, the issues highlighted above lead us to the decision to remove the trap. We do not recommend continued operation at this site.

3MC – Three Mile Creek (3MC) at USA – The site was located on 3MC within the campus of the USA downstream of Aubrey Green Dr. At this location, 3MC flows into and forms a small pond and wetland. There is a sheet pile dam on the upstream side of Aubrey Green Dr. which controls the flow of water to the site. 3MC continues westward until its headwaters near Cody Rd where it predominantly drains the suburban residential area that comprises the land use upstream. While this site was acceptable from a functional standpoint, the sheet pile dam as well as the dense aquatic vegetation of the wetlands prevented the downstream migration of litter. We do not recommend continued operation at this site.

Summary

The collection totals for each site over the duration of this project are shown below in *Figure 1*. Collection totals for each site by quarter for the grant period are included in *Tables 3, 4, & 5 of Appendix I*. Daily Litter Gitter service forms and ETAP Data Cards can be made available upon request.

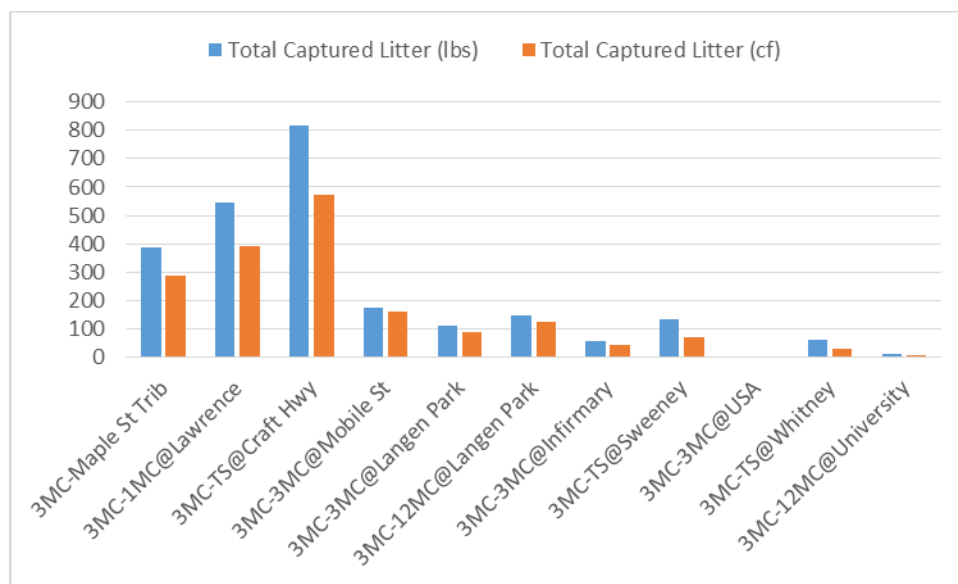


Figure 1 - Total captured litter in pounds and cubic feet for each site

****It is important to note not all traps were in the water for the same duration of time during the grant period.**

Task 2 - Conduct first pass riparian litter removal in the 3MC watershed

Osprey began work on the first pass riparian cleanup in October 2018 starting at the convergence of 3MC with the Upper Lake of Langan Park. We systematically cleaned both the Upper Lake and Lower Lake at Langan Park, the main branch of 3MC from Langan Park to Telegraph Rd Bridge to include both the channelized and original segments, the TS from the Craft Hwy Bridge to the convergence with 3MC, and 1MC from the headwaters at Beauregard St to the convergence with 3MC. The first pass riparian cleanup was completed in June 2019. Individual daily cleanup and ETAP forms are available upon request. A zone map was also created by MBNEP to allow for better tracking of first pass cleanup efforts and to assist with the development of a waste profile for the watershed as a whole. This zone map also allowed us to identify and track litter

accumulation areas, termed “hot spots.” By tracking these hot spots, we will be able monitor the health of the watershed from a litter abatement perspective as well as gauge the rate at which litter returns. A summary sheet of the first pass data by date as well as the 3MC Zone Map can be found in *Table 6* and *Figure 6* respectively of *Appendix II*.

Task 3 - Develop web-based data result reporting system

For this task, we partnered with Water Rangers, a non-profit group that created a website and app for citizen scientists to record water quality data, report issues in their area and engage with their neighbors. Water Rangers was introduced to the project through Mobile Baykeeper. When the project started, Water Rangers did not have a trash reporting or collection section of their web tool. They were able to build a Trash issues page into their “report an issue” function of the web tool and app. This function allows users to geo-locate an area, classify how littered the area is, describe the area affected by trash, indicate the recent weather conditions and report it as an issue that will show up on the main Water Rangers map for all users to see. It also allows users to upload a picture of the issue and add contact information. Once the issue has been reported, Water Rangers built out an optional litter collection page for users to complete if they picked up the trash they found. In this section, the user is able to complete a full Escaped Trash Assessment Protocol (ETAP) via drop down categories. They are also able to report the number of bags collected, pounds collected of recyclables or debris, total time the cleanup took and how many people were involved. Once the collection data has been submitted, the web app directs the user to the issues summary page which provides a breakdown of all litter data collected at that site. An example of a summary page can be seen in *Figure 2* below.

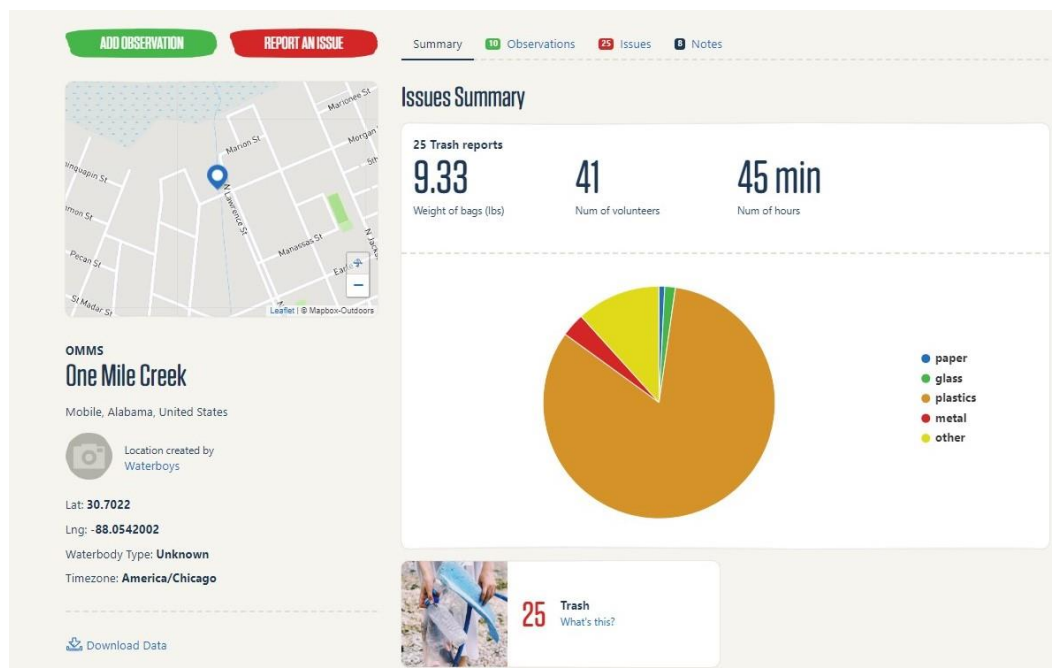


Figure 2 - Example Summary Page of Water Rangers platform

Water Rangers has a few bugs to work out still, but the Trash “issue” section of the website is performing well. To view the web tool please use the following web address - <https://waterrangers.ca/>. Instructions on how to report a littering issue and then perform a cleanup with associated ETAP can be found in *Appendix VI*. In Osprey’s opinion this web tool does not give the emphasis to trash that we were hoping for due to the nature, constraints, and mission of the Water Rangers website. However, the [ETAP build out](#) and the issues summary page by site are well executed.

Creating Litter Profiles through ETAP

Shortly after the project began, our team was asked to field test EPA’s Escaped Trash Assessment Protocol (ETAP) as part of this project. Based on the scope of this project, EPA’s ETAP Data Card Option 2 (see *Figure 7 in Appendix III*) was selected. ETAP Data Card Option 2 provides the user the ability to categorize collected litter across 3 major categories – Material, Condition, and Source. We were initially concerned that this would be unduly burdensome and would dramatically slow us down in the field. However, we quickly identified the utility of ETAP to help establish a baseline litter profile for a given site and provide data over time to observe changes in this litter profile. After just a few performances of the protocol in the field, our crews were able to perform the entire protocol in less than 15 minutes and we began to use ETAP on the litter collected every Litter Gitter cleanout and on a representative sampling of litter collected during each first pass cleanup event.

Nevertheless, the more we studied the data we were collecting using ETAP and became familiar with the protocol, the more we recognized that there could be improvements made to the data card and we began to consider making some slight modifications to the form. In August 2018, we made our initial modification to ETAP Data Card Option 2 with a focus on creating a general trash portfolio for the 3MC watershed and collecting specific data within the scope of this project. This modification primarily involved removal of the “Threat Assessment” section because it did not fit the bigger picture of creating a general trash portfolio. In April 2019, we further modified the ETAP Data Card to refine the “Items List” based on findings in the field – see *Figure 8 in Appendix III*. Based on the significant amount of Styrofoam collected in 3MC over the course of this project, we have broken Styrofoam as a separate major category out in the summary data presented below. The ETAP Data Cards along with a side by side comparison of all the changes made to the “Item List” can be found in *Figure 9 of Appendix III*.

The information gathered from the ETAP data provided critical delineation of the materials and aiding in drawing conclusions related to source. A representative sample of the ETAP data from the grant period was analyzed to create a litter profile for the 3MC watershed. Project results from this analysis are included in *Figure 3 and Figure 4*.

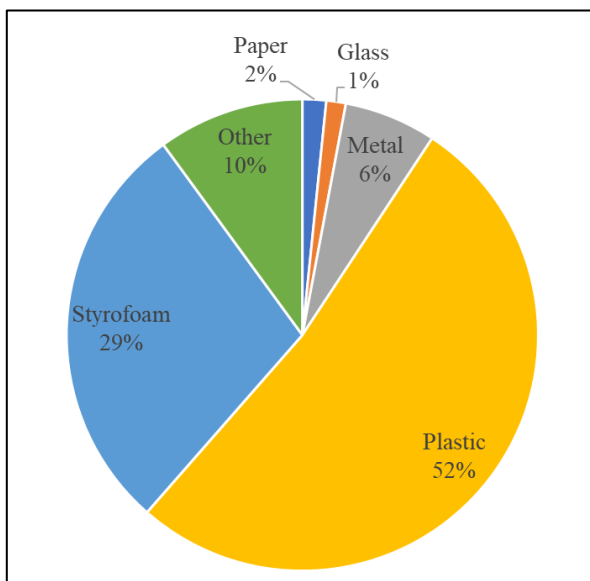


Figure 3 - 3MC ETAP Major Category Break Down

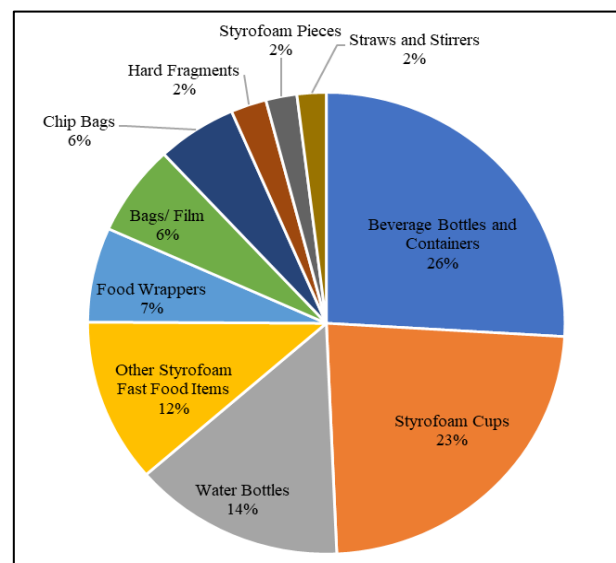


Figure 4 - 3MC Top 10 Plastic/Styrofoam Items

Figure 3 shows the percentage of each of the six major material categories indicated from ETAP: Paper, Glass, Metal, Plastic, Styrofoam, and Other. This highlights that the primary materials contributing to the litter issue in 3MC are Plastic and Styrofoam.

We then broke down Plastic and Styrofoam to show the top 10 items collected in these categories in *Figure 4*. It can be seen that Plastic Drink Bottles (Beverage Bottles and Containers/Water bottles) and Styrofoam Cups are the biggest contributors to the Plastic/Styrofoam found in 3MC comprising over 63% of the items found in these two major material categories. Furthermore, the data collected using ETAP can allow for some interesting and unique case studies of how litter moves across our cities and through our waterways. The data analysis and resulting conclusions for three site specific ETAP studies can be found in *Appendix V*.

Additionally, we conducted a comparative study to identify subjective variance in the application of ETAP. A summary of this study can be found in *Appendix IV*. This study provided two key takeaways regarding the application of ETAP – 1) ETAP is best suited to develop a general litter profile and identify trends over time at a given location and 2) clear and specific guidelines should be established and agreed upon early in a project to standardize the application of ETAP.

Education and Outreach

As part of this project, Osprey presented to 3 schools in the 3MC watershed. We spoke to the recycle team at Murphy High School and provided them with 4 large recycle bins that we made. We had several meetings with the recycle team at Vigor High School and provided them with 4 large recycle bins that we made and set them up with Earth Resources to haul their recycling. Along with Mobile Baykeeper, we met with St. Mary's Catholic School at the 3MC-1MC@Lawrence site and performed an ETAP presentation.

Additionally, Osprey presented on the 3MC project at the following conferences:

- 2019 Alabama Rivers Alliance conference in Baldwin County, Alabama.
- 2018 Bays and Bayous Symposium in Mobile, Alabama.
- 2018 Keep Louisiana Beautiful in Baton Rouge, Louisiana.

The 3MC project was also part of the “Water’s Miraculous Journey” exhibit at the Exploreum in Mobile, AL. A full-scale diorama of a working Litter Gitter was installed, suspended from the ceiling and three informational boards were placed on the walls beneath the display.

Conclusions and Recommendations

Overall, Osprey considers this project to have been incredibly successful due to the dual litter collection approach employed. When developing a litter abatement plan for any watershed, the project should include a systematic tactical cleanup (Task 2 – First Pass Riparian Litter Removal of this project) and thoughtful placement of interception devices (Task 1 - Litter Gitters of this project). This approach allows for legacy trash to be removed from the watershed and new trash to be collected before it can impact the waterways. As for data collection and analysis, we believe that EPA’s ETAP with some slight modifications provides a highly useful tool for data collection for developing an understanding of the general litter profile for a watershed and could inform decisions regarding solution development implementation aimed at addressing the issue of litter at the source. As noted in the case studies of *Appendix V*, ETAP data should be layered with other data inputs (stormwater runoff flow, surface makeup, demographics, etc.) to create a holistic analysis of the litter problem in a given watershed. Additionally, it is critical that the data requirements be identified prior to starting a project.

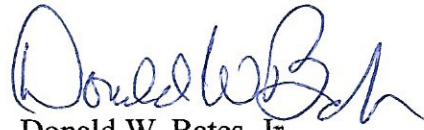
Moving forward, the City of Mobile has been awarded a grant from the EPA Trash Free Waters Program for continued Litter Gitter maintenance in the Three Mile Creek watershed for another year and a half. Furthermore, based on the success of the first pass riparian cleanup and the subsequent data collected, Osprey Initiative was contracted by the City of Mobile to conduct our litter boats cleanup operations at least one day

per week in the Three Mile Creek watershed using the same data collection protocols established for this project. We hope during this upcoming grant cycle to be able to test out different ideas related to litter entrapment on Three Mile Creek as time and funding permits with the City of Mobile.

A handwritten signature in blue ink that reads "Elinor B. Mallon". The signature is fluid and cursive, with the first name being the most prominent.

Elinor Mallon

Project Manager

A handwritten signature in blue ink that reads "Donald W. Bates, Jr.". The signature is cursive and somewhat stylized, with the last name being the most prominent.

Donald W. Bates, Jr.

Sr. Consultant

Appendix I – Litter Gitter Site Data Summary

Figure 3 - Litter Gitter locations in 3MC watershed

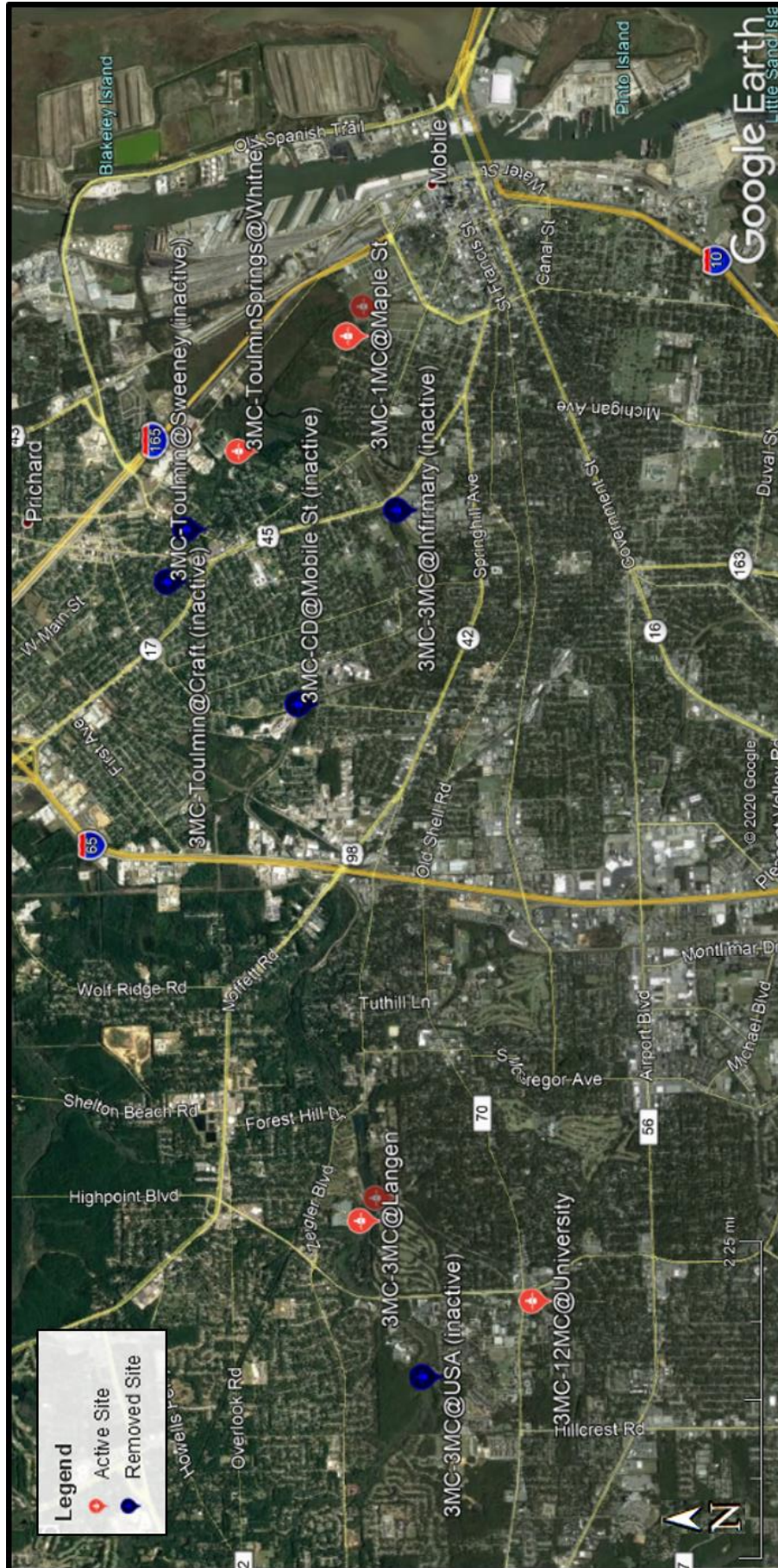


Table 4 - 2018 Quarterly Totals for each Litter Gitter site

	Recycled		Disposed		Debris (lbs)	Total Collected	
	lbs	cf	lbs	cf	lbs	lbs	cf
2018 / 1	3.10	4.50	9.50	5.50	0.00	7.00	2.50
3MC-Maple St Trib	3.10	4.50	9.50	5.50	0.00	7.00	2.50
3MC-1MC@Lawrence	---	---	---	---	---	---	---
3MC-TS@Craft Hwy	---	---	---	---	---	---	---
3MC-3MC@Mobile St	---	---	---	---	---	---	---
3MC-3MC@Langen Park	---	---	---	---	---	---	---
3MC-12MC@Langen Park	---	---	---	---	---	---	---
3MC-3MC@Infirmary	---	---	---	---	---	---	---
3MC-TS@Sweeney	---	---	---	---	---	---	---
3MC-3MC@USA	---	---	---	---	---	---	---
3MC-TS@Whitney	---	---	---	---	---	---	---
3MC-12MC@University	---	---	---	---	---	---	---
2018 / 2	78.49	93.55	243.84	158.00	0.00	322.33	251.55
3MC-Maple St Trib	24.01	25.00	72.41	36.50	0.00	96.42	61.50
3MC-1MC@Lawrence	6.06	5.50	18.27	14.00	0.00	24.33	19.50
3MC-TS@Craft Hwy	39.16	47.50	121.94	77.50	0.00	161.10	125.00
3MC-3MC@Mobile St	5.01	6.55	21.17	22.00	0.00	26.18	28.55
3MC-3MC@Langen Park	0.80	1.00	0.70	1.00	0.00	1.50	2.00
3MC-12MC@Langen Park	3.45	8.00	9.35	7.00	0.00	12.80	15.00
3MC-3MC@Infirmary	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3MC-TS@Sweeney	---	---	---	---	---	---	---
3MC-3MC@USA	---	---	---	---	---	---	---
3MC-TS@Whitney	---	---	---	---	---	---	---
3MC-12MC@University	---	---	---	---	---	---	---
2018 / 3	102.40	80.75	118.18	79.75	0.00	220.58	160.50
3MC-Maple St Trib	14.12	11.00	14.26	9.50	0.00	28.38	20.50
3MC-1MC@Lawrence	25.95	20.00	33.80	17.00	0.00	59.75	37.00
3MC-TS@Craft Hwy	46.40	34.50	57.07	41.00	0.00	103.47	75.50
3MC-3MC@Mobile St	10.58	10.00	12.05	10.00	0.00	22.63	20.00
3MC-3MC@Langen Park	0.25	0.50	0.05	0.25	0.00	0.30	0.75
3MC-12MC@Langen Park	4.50	4.00	0.75	1.00	0.00	5.25	5.00
3MC-3MC@Infirmary	0.60	0.75	0.20	1.00	0.00	0.80	1.75
3MC-TS@Sweeney	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3MC-3MC@USA	---	---	---	---	---	---	---
3MC-TS@Whitney	---	---	---	---	---	---	---
3MC-12MC@University	---	---	---	---	---	---	---
2018 / 4	140.50	106.35	159.91	134.00	0.00	300.41	240.35
3MC-Maple St Trib	11.14	11.50	19.94	17.00	0.00	31.08	28.50
3MC-1MC@Lawrence	44.54	27.00	29.58	27.00	0.00	74.12	54.00
3MC-TS@Craft Hwy	52.43	39.50	55.28	51.00	0.00	107.71	90.50
3MC-3MC@Mobile St	10.48	10.10	12.97	15.50	0.00	23.45	25.60
3MC-3MC@Langen Park	10.43	8.00	8.62	3.50	0.00	19.05	11.50
3MC-12MC@Langen Park	9.41	8.00	3.39	5.50	0.00	12.80	13.50
3MC-3MC@Infirmary	1.25	0.50	0.60	1.00	0.00	1.85	1.50
3MC-TS@Sweeney	0.82	1.75	29.53	13.50	0.00	30.35	15.25
3MC-3MC@USA	---	---	---	---	---	---	---
3MC-TS@Whitney	---	---	---	---	---	---	---
3MC-12MC@University	---	---	---	---	---	---	---

Table 4 Continued - 2019 Quarterly Totals for each Litter Gitter site

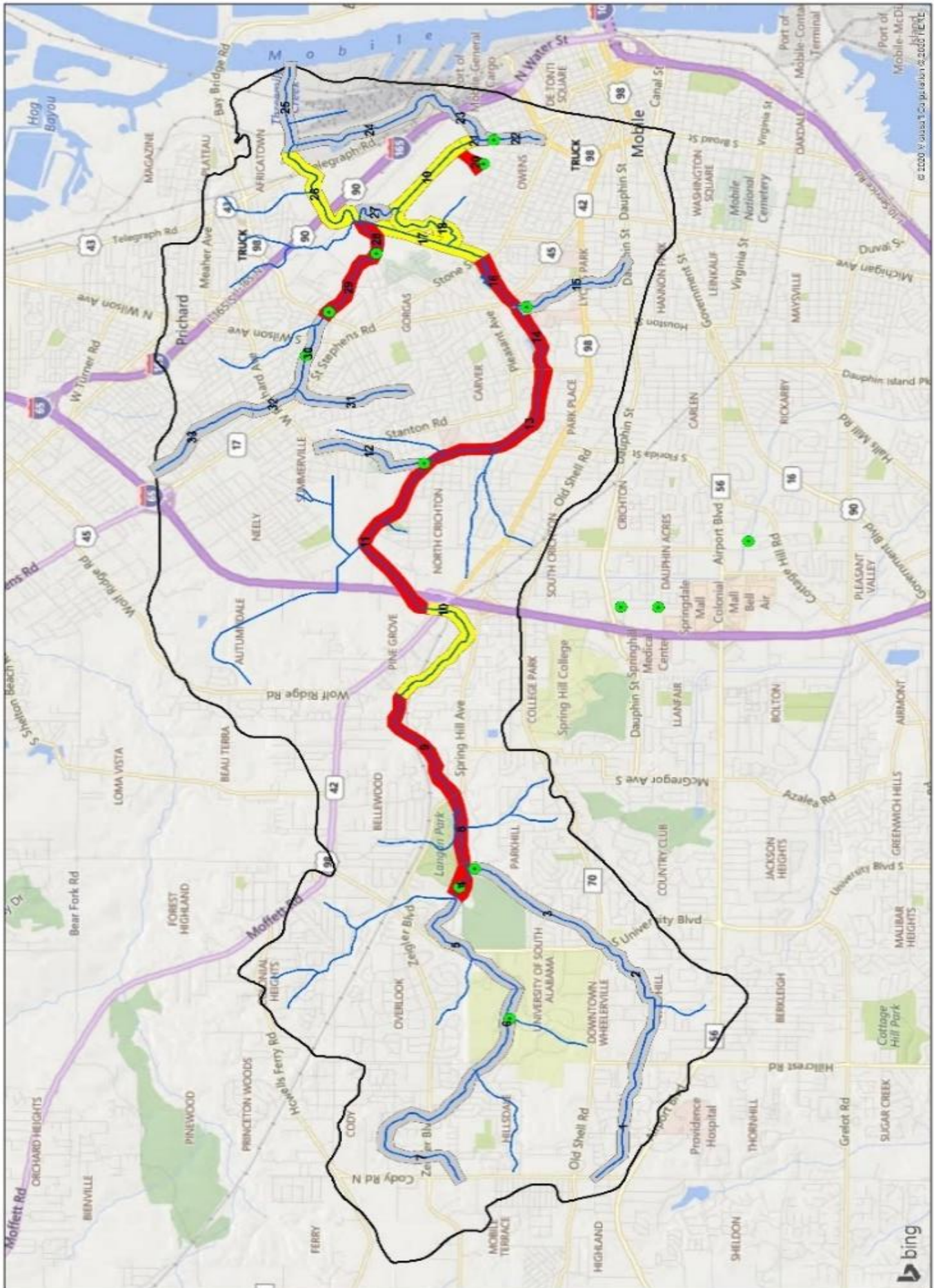
	Recycled		Disposed		Debris (lbs)	Total Collected	
	lbs	cf	lbs	cf	lbs	lbs	cf
2019 / 1	174.10	153.10	408.64	248.50	35.00	617.74	401.60
3MC-Maple St Trib	17.31	19.00	74.27	40.00	0.00	91.58	59.00
3MC-1MC@Lawrence	34.55	33.00	111.70	53.00	35.00	181.25	86.00
3MC-TS@Craft Hwy	56.71	41.50	105.72	81.00	0.00	162.43	122.50
3MC-3MC@Mobile St	9.23	10.10	32.44	20.50	0.00	41.67	30.60
3MC-3MC@Langen Park	23.14	25.00	19.33	14.00	0.00	42.47	39.00
3MC-12MC@Langen Park	22.28	17.00	22.15	16.50	0.00	44.43	33.50
3MC-3MC@Infirmary	6.82	4.50	14.51	10.50	0.00	21.33	15.00
3MC-TS@Sweeney	4.06	3.00	28.52	13.00	0.00	32.58	16.00
3MC-3MC@USA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3MC-TS@Whitney	---	---	---	---	---	---	---
3MC-12MC@University	---	---	---	---	---	---	---
2019 / 2	152.98	141.05	415.85	263.40	25.40	594.23	404.45
3MC-Maple St Trib	16.21	20.20	39.20	35.05	15.00	70.41	55.25
3MC-1MC@Lawrence	50.61	46.25	86.54	76.50	5.40	142.55	122.75
3MC-TS@Craft Hwy	48.76	37.75	168.41	71.75	0.00	217.17	109.50
3MC-3MC@Mobile St	13.25	14.00	17.05	17.25	0.00	30.30	31.25
3MC-3MC@Langen Park	6.84	5.75	21.26	12.00	0.00	28.10	17.75
3MC-12MC@Langen Park	10.10	10.50	49.56	33.25	0.00	59.66	43.75
3MC-3MC@Infirmary	4.07	3.25	5.49	6.00	5.00	14.56	9.25
3MC-TS@Sweeney	3.14	3.25	28.34	11.50	0.00	31.48	14.75
3MC-3MC@USA	0.00	0.10	0.00	0.10	0.00	0.00	0.20
3MC-TS@Whitney	---	---	---	---	---	---	---
3MC-12MC@University	---	---	---	---	---	---	---
2019 / 3	115.88	115.50	218.34	162.75	1.76	335.98	278.25
3MC-Maple St Trib	16.51	21.00	42.25	33.00	0.00	58.76	54.00
3MC-1MC@Lawrence	32.90	34.25	29.72	36.25	0.00	62.62	70.50
3MC-TS@Craft Hwy	19.61	18.00	29.60	22.00	0.00	49.21	40.00
3MC-3MC@Mobile St	11.76	12.25	17.73	11.00	0.00	29.49	23.25
3MC-3MC@Langen Park	7.13	7.00	9.86	9.00	0.00	16.99	16.00
3MC-12MC@Langen Park	7.56	6.50	6.17	7.50	0.00	13.73	14.00
3MC-3MC@Infirmary	5.27	4.50	11.42	11.00	0.00	16.69	15.50
3MC-TS@Sweeney	2.00	2.00	31.51	16.00	1.76	35.27	18.00
3MC-3MC@USA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3MC-TS@Whitney	13.14	10.00	40.08	17.00	0.00	53.22	27.00
3MC-12MC@University	---	---	---	---	---	---	---
2019 / 4	15.20	12.75	44.54	39.00	0.00	59.74	51.75
3MC-Maple St Trib	2.09	2.00	4.55	4.00	0.00	6.64	6.00
3MC-1MC@Lawrence	0.64	0.50	1.22	2.25	0.00	1.86	2.75
3MC-TS@Craft Hwy	2.79	2.25	11.05	9.50	0.00	13.84	11.75
3MC-3MC@Mobile St	0.29	0.50	1.04	2.00	0.00	1.33	2.50
3MC-3MC@Langen Park	0.92	1.00	1.66	2.00	0.00	2.58	3.00
3MC-12MC@Langen Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3MC-3MC@Infirmary	0.00	0.00	1.92	3.00	0.00	1.92	3.00
3MC-TS@Sweeney	1.88	1.50	5.52	5.25	0.00	7.40	6.75
3MC-3MC@USA	---	---	---	---	---	---	---
3MC-TS@Whitney	2.77	2.00	6.54	4.00	0.00	9.31	6.00
3MC-12MC@University	3.82	3.00	11.04	7.00	0.00	14.86	10.00

Appendix II - First Pass Riparian Data Summary

Table 5 - Summary of Daily Data Sheets for First Pass Cleanups

<div style="text-align: center;"> MBNEP-GOM First Pass Summary Collection Results </div>											
Date	Zone	Recycled			Disposed			Debris	Total Collected		
		Bags	lbs.	cf	Bags	lbs.	cf	lbs.	Bags	lbs.	cf
11/17/2018	4	4	31.46	20.0	16	192.65	125.0	0.00	20	224.11	145.0
12/15/2018	28	5	50.00	30.0	40	400.00	248.0	0.00	45	450.00	278.0
1/12/2019	28	5	50.00	30.0	55	550.00	330.0	0.00	60	600.00	360.0
1/26/2019	29	13	90.61	65.0	35	473.42	175.0	0.00	48	564.03	240.0
2/16/2019	29	3	14.05	18.0	43	394.34	258.0	0.00	46	408.39	276.0
3/6/2019	4	0	0.00	0.0	6	117.66	39.0	0.00	6	117.66	39.0
3/26/2019	4	0	0.00	0.0	19	207.56	135.0	5.62	19	213.18	135.0
3/28/2019	8	0	0.00	0.0	7	141.81	69.0	5.07	7	146.88	69.0
3/29/2019	8	0	0.00	0.0	9	111.95	59.0	4.62	9	116.57	59.0
4/1/2019	8	0	0.00	0.0	10	153.08	75.0	16.85	10	169.93	75.0
4/12/2019	9	1	12.56	13.0	11	237.97	88.0	60.98	12	311.51	101.0
4/19/2019	9	0	0.00	0.0	10	263.38	78.0	173.66	10	437.04	78.0
4/23/2019	9	0	0.00	0.0	5	92.56	43.0	9.17	5	101.73	43.0
4/29/2019	10	2	17.61	16.0	2	15.00	11.0	0.00	4	32.61	27.0
4/30/2019	10	1	5.04	4.0	2	8.32	9.0	0.00	3	13.36	13.0
5/1/2019	10	5	40.42	40.0	3	28.00	23.0	0.00	8	68.42	63.0
5/2/2019	11	2	20.31	20.0	5	59.81	45.0	9.23	7	89.35	65.0
5/7/2019	11	2	16.69	20.0	8	92.44	62.0	8.52	10	117.65	82.0
5/15/2019	11/13	2	17.40	24.0	9	61.37	77.0	0.00	11	78.77	101.0
5/16/2019	11	3	13.33	19.0	6	26.43	38.0	0.00	9	39.76	57.0
5/20/2019	13	5	19.75	25.0	11	105.44	101.0	5.00	16	130.19	126.0
5/21/2019	13/14	4	23.46	28.0	10	112.54	86.0	0.00	14	136.00	114.0
5/22/2019	16	3	30.62	30.0	5	69.86	50.0	0.00	8	100.48	80.0
5/28/2019	16	6	73.60	57.0	12	167.05	80.0	63.44	18	304.09	137.0
5/29/2019	16/17	7	65.67	61.0	14	176.30	117.0	1.89	21	243.86	178.0
5/30/2019	17	2	19.39	19.0	5	75.15	45.0	0.00	7	94.54	64.0
6/3/2019	26	1	10.00	5.0	9	90.00	70.0	0.00	10	100.00	75.0
6/11/2019	20	1	3.00	3.0	1	5.00	4.0	0.00	1	8.00	7.0
6/12/2019	29	4	44.62	22.0	12	172.63	70.0	10.63	16	227.88	92.0
6/17/2019	18	2	11.78	11.0	4	64.25	32.0	29.77	6	105.80	43.0
6/19/2019	27	5	43.73	32.0	6	63.60	38.0	4.85	11	112.18	70.0
6/24/2019	28	2	15.87	12.0	3	26.65	20.0	0.00	5	42.52	32.0
6/26/2019	20	7	59.53	49.0	15	214.94	106.0	0.00	22	274.47	155.0
6/27/2019	19	4	27.53	28.0	11	133.64	83.0	0.00	15	161.17	111.0
6/28/2019	21	2	11.35	15.0	4	51.80	32.0	12.23	6	75.38	47.0
Totals		103	839.4	716.0	423	5156.6	2921.0	421.5	525	6417.5	3637.0

Figure 4 - 3MC Zone Map



Appendix III – ETAP Field Data Cards

Figure 5 - Original ETAP Field Data Card Option 2

Escaped Trash Data Card: Option 2		Date	Initials	Site/Segment #				(In each column, please record the number of items found and add notes)			
Item List	Item condition			Threat assessment			Open Container	Identifying features: Product, Language, Event, etc.) <i>Please add more info on back of sheet</i>	Item Notes		
	Intact/ Un-fouled	Partially Intact/ Partially Fouled	Degraded/ Heavily Fouled	Shiny Floppy	Closed Loop/s	Sharp				Poison Label/s	
PAPER											
Cardboard											
Bags											
Newspaper, Junk Mail and Office Paper											
Cups											
Beverage and Food Cartons											
Other Fast-Food Service Items											
Other Food and Beverage Packaging											
Receipts											
Other Paper											
GLASS											
Beverage Bottles and Containers											
Food Packaging											
Other Glass											
METAL											
Beverage Cans and Containers											
Bottle Caps and Beverage Packaging											
Food Packaging											
Other Metal											
PLASTIC											
Beverage Bottles and Containers											
Water Bottles											
Straws and Stirrers											
Bottle Caps											
Other Beverage Packaging											
Food Wrappers											
Foam Fast Food Service Items											
Other Fast Food Service Items											
Food and Drink Pouches											
Other Food Packaging											
Bags											
Fragments											
Rope and Net Pieces											
Buoys and Floats											
Fishing Lures and Line											
Other Plastic											
OTHER											
Cigarettes/Cannabis and Packaging											
Entertainment Items											
Electronics											
Organic Matter											
Construction and Demolition Debris											
Textiles and Shoes											
Toiletries/Personal Hygiene Products											
Medical Waste											
Paint and Other Hazardous											
Bulky Items											
Vehicle Related											
Illegal Dumping - Whole Bags of Trash											
Write In											

Figure 6 – Osprey’s Modification to ETAP Field Data Card Option 2

Escaped Trash Data Card Date _____ Initials _____ Site ID _____

		Item condition			Item Notes
Item List		Intact/ Un-fouled	Partially Intact/ Partially Fouled	Degraded/ Heavily Fouled	Identifying features: Product, Language, Event, etc.) <i>Please add more info on back of sheet</i>
PAPER	Cardboard				
	Bags				
	Newspaper, Junk Mail and Office Paper				
	Cups				
	Beverage and Food Packaging				
	Receipts				
	Other Paper				
GLASS	Beverage Bottles and Containers				
	Food Packaging				
	Other Glass				
METAL	Beverage Cans and Containers				
	Bottle Caps				
	Food Packaging				
	Other Metal				
PLASTIC	Beverage Bottles and Containers				
	Water Bottles				
	Straws and Stirrers				
	Bottle Caps				
	Cup Lids				
	Food Wrappers				
	Chip Bags				
	Styrofoam Cups				
	Styrofoam Pieces				
	Other Styrofoam Fast Food Items				
	Other Fast Food Service Items				
	Food and Drink Pouches				
	Other Food Packaging				
	Bags/ Film				
	Hard Fragments				
	Other Plastic				
OTHER	Cigarettes/Tobacco and Packaging				
	Entertainment Items/ Electronics				
	Fishing Gear/ Rope				
	Textiles and Shoes				
	Toiletries/Personal Hygiene Products				
	Medical Waste				
	Paint and Other Hazardous				
	Bulky Items				
	Vehicle Related				
	Sports Equipment				
	Illegal Dumping - Whole Bags of Trash				
Write in					

Figure 7 - ETAP Field Data Card Item List Changes Comparison

	Original ETAP Field Data Card Option 2		Osprey Modified ETAP Field Data Card
	Item List		Item List
PAPER	Cardboard		Cardboard
	Bags		Bags
	Newspaper, Junk Mail and Office Paper		Newspaper, Junk Mail and Office Paper
	Cups		Cups
	Beverage and Food Cartons	→	Beverage and Food Packaging
	Other Fast-Food Service Items		Receipts
	Other Food and Beverage Packaging		Other Paper
	Receipts		
	Other Paper		
GLASS	Beverage Bottles and Containers		Beverage Bottles and Containers
	Food Packaging		Food Packaging
	Other Glass		Other Glass
METAL	Beverage Cans and Containers		Beverage Cans and Containers
	Bottle Caps and Beverage Packaging	→	Bottle Caps
	Food Packaging		Food Packaging
	Other Metal		Other Metal
PLASTIC	Beverage Bottles and Containers		Beverage Bottles and Containers
	Water Bottles		Water Bottles
	Straws and Stirrers		Straws and Stirrers
	Bottle Caps		Bottle Caps
	Other Beverage Packaging	→	Cup Lids
	Food Wrappers		Food Wrappers
	Foam Fast Food Service Items	+ →	Chip Bags
	Other Fast Food Service Items	→	Styrofoam Cups
	Food and Drink Pouches		Styrofoam Pieces
	Other Food Packaging		Other Styrofoam Fast Food Items
	Bags	→	Other Fast Food Service Items
	Fragments	→	Bags/ Film
	Rope and Net Pieces	→	Hard Fragments
	Buoys and Floats		Food and Drink Pouches
	Fishing Lures and Line	→	Other Food Packaging
	Other Plastic		Other Plastic
OTHER	Cigarettes/Cannabis and Packaging	→	Cigarettes/Tobacco and Packaging
	Entertainment Items	→	Fishing Gear/ Rope
	Electronics	→	Entertainment Items/ Electronics
	Organic Matter		Textiles and Shoes
	Construction and Demolition Debris		Toiletries/Personal Hygiene Products
	Textiles and Shoes		Medical Waste
	Toiletries/Personal Hygiene Products		Paint and Other Hazardous
	Medical Waste		Bulky Items
	Paint and Other Hazardous		Vehicle Related
	Bulky Items	+ →	Sports Equipment
	Vehicle Related		Illegal Dumping - Whole Bags of Trash
	Illegal Dumping - Whole Bags of Trash		Write in
	Write in		

Appendix IV - ETAP Case Studies

Case Study #1 – Toulmins Spring at Craft Hwy

Toulmins Spring at Craft Hwy is a strong example of how ETAP can be used to show how trash travels in a watershed. When looking at a sampling of the labeling collected from this site, specifically for fast food restaurants, four places showed up the most – Foosackly's, Zaxby's, Chic Fil A and Hart's Fried Chicken. The initial assumption would be all four of these fast food restaurants would be located relatively close upstream to the location of the trap due to the frequency they showed up in the ETAP labeling. As seen from *Figure 11*, this is actually not the case. Only Hart's Fried Chicken, which appeared the least of the four restaurants in the ETAP labeling, is located directly upstream to the trap. This shows how trash can not only be transported by wind and rain once it is littered, but also possibly come into the watershed from people littering from their cars while driving. This case study also shows how additional research may be required before using ETAP as a smoking gun when addressing individual restaurants about a possible littering issue.

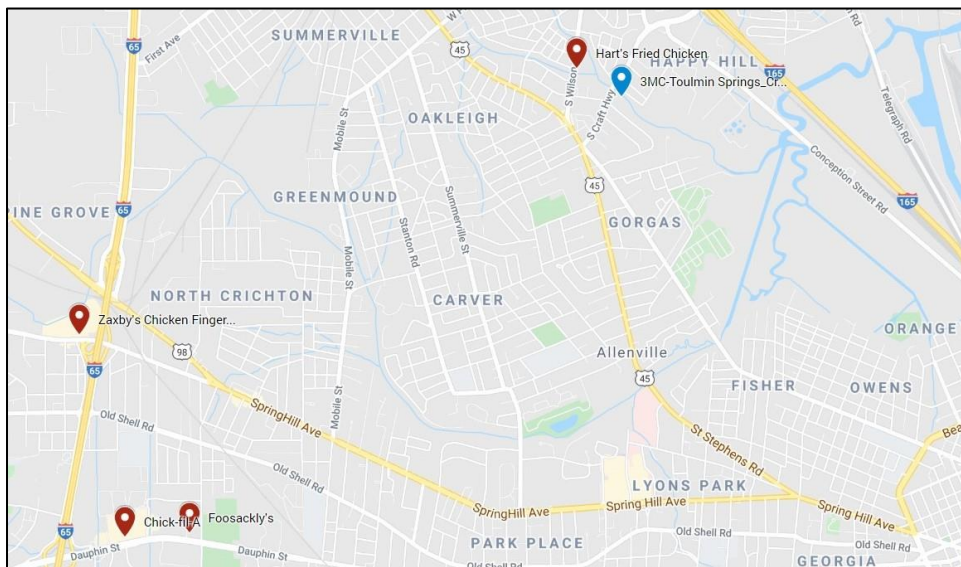


Figure 8 - Select restaurant locations relative to 3MC-TS@Craft HWY site

Case Study #2 – One Mile Creek at Lawrence St

One Mile creek drains the majority of Downtown Mobile, an urban area with primarily impervious surfaces and lots of activity (see *Figure 12* – site indicated by star). This site gives an interesting insight into how land use around a trap can affect the condition of the trash.

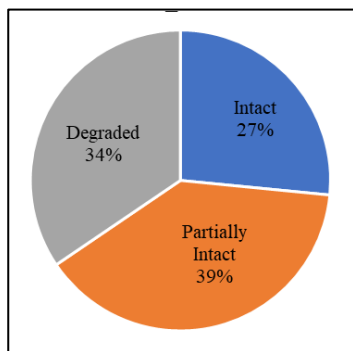


Figure 9 - Condition of captured litter

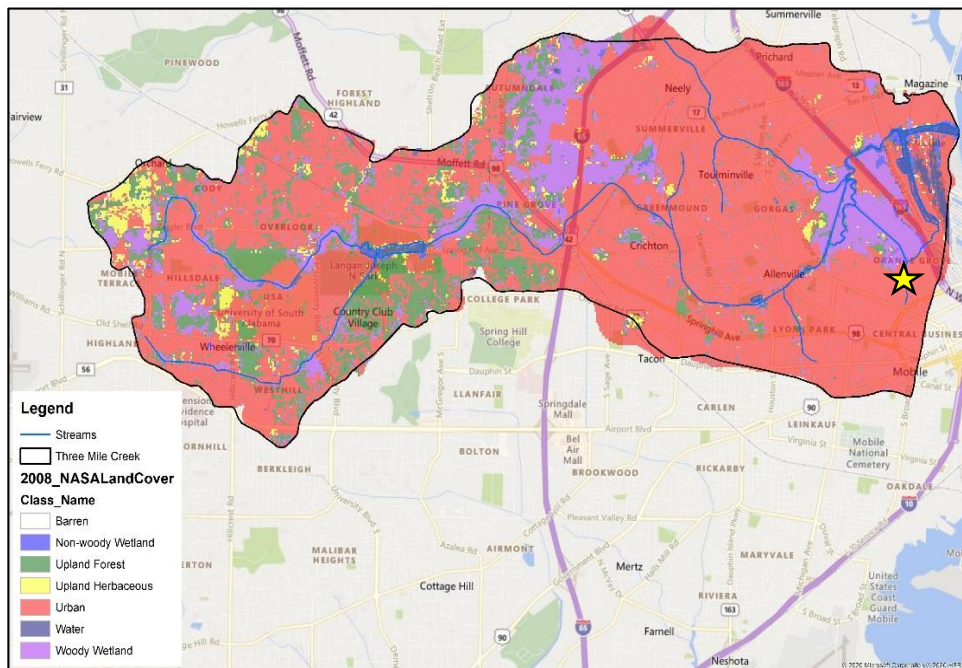


Figure 10 - Map of 3MC watershed land surface cover

Looking at the condition break down for 3MC-1MC@Lawrence in *Figure 11*, "27% was intact and roughly 40% of trash collected was partially intact. According to the EPA definition, an intact item is something that shows no sign of degradation i.e. preservation of the original color, no signs of abrasion or rusting, shiny, and texture intact. A partially intact item is an item that shows some evidence of weathering or degradation, particularly noted by signs of moderate abrasion, rusting, dull, worn, original text and color still visible, and texture worn. Knowing the definitions of these conditions, one would assume the trash collected from a trap downstream of a primarily impervious urban area would have a higher percentage of intact items because it would move through the system quicker. However, this is not the case for the 1MC at Lawrence trap. One possible reason for this could be the effect storm drains have on the condition of trash.

Case Study #3 - Three Mile Creek at Langan Park

This site is a great example of how ETAP data can be used to identify possible sources of trash in a stream. As shown in *Figure 14*, plastic was the largest category collected. In *Figure 15*, it can be seen that most of the plastic collected was water bottles and sports drinks (i.e. Gatorade or Powerade). Looking upstream from the Litter Gitter, it was noted that a large tennis complex was in the area that could be the source. One way to test this theory would be to add more trash cans and signage at the tennis center and see if the Litter Gitter begins to collect fewer plastic water bottles and sports drinks.

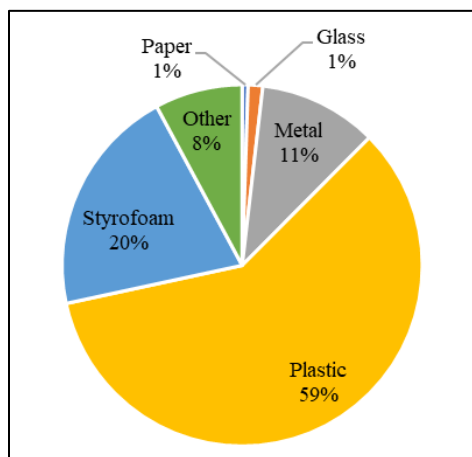


Figure 11 - ETAP Major Category Breakdown

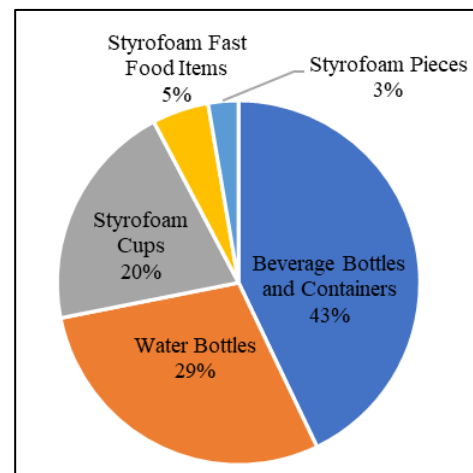


Figure 12 - Plastic Items Breakdown

The Three Mile Creek at Langan Park site also shows an interesting breakdown of item condition. As shown in *Figure 16*. Over 65% of the material collected at this trap was degraded. This shows how trash in primarily residential areas does not move through the watershed as quickly as trash in highly urban areas does.

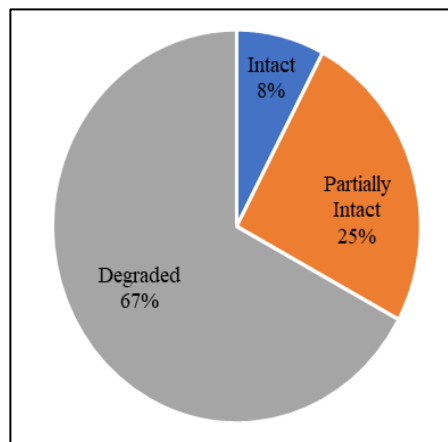


Figure 13 - Condition of captured litter

Appendix V - ETAP Application Comparison Study

In this comparison study, Osprey and Mobile Baykeeper sorted and catalogued materials collected from 10% of Litter Gitter cleanout events using ETAP. The purpose of this exercise was to identify areas of ETAP that could be prone to subjective variance that could then be addressed through guidance, training, and proper execution. Each bag of litter that was sorted by MBK staff was also sorted by Osprey Initiative field crews. The ETAP data sheets from each group were then compared to see how closely they matched one another in item type and condition. Below is a breakdown of the comparison between each groups ETAP forms for a particular parameter. The data sheets for this comparison were randomly chosen. It can be concluded from this brief study that ETAP can be highly subjective both in categorization of item condition and in item count. This is particularly true with smaller fragments or fragile items that may easily break such as brittle plastic and Styrofoam. Osprey recommends adding more detailed pictures to the ETAP training material to depict an item in each of its possible condition denotations. For example, "beverage bottles and containers" would have a written description of what the category includes and then three pictures, one to show the item in each condition (intact, partially intact and degraded). A more in-depth training guide would reduce some of the subjectivity to picking item condition. Another suggestion would be to strictly define when an item is too small to be counted. This would keep the overall totals from becoming skewed just because a Styrofoam cup broke into multiple pieces.

Overall count of items in a major category

Major Category	Site	Date	Osprey Count	MBK Count	Percent Difference
Plastic	3MC-Toulmin Springs_Whitney	9/16/2019	72	84	15.4
Glass	3MC-12MC_Langan Park	12/20/2018	2	2	0
Metal	3MC-1MC_Lawrence	12/21/2018	9	9	0

Overall count of items in a condition category

Plastic Water Bottles	Site	Date	Osprey Count	MBK Count	Percent Difference
Intact	3MC-Toulmin Springs_Craft Hwy	11/15/2018	10	42	123
Partially Intact			17	0	N/A
Degraded			10	0	N/A

Styrofoam Cups	Site	Date	Osprey Count	MBK Count	Percent Difference
Intact	3MC-3MC_Infirmiry	2/27/2019	1	11	166.7
Partially Intact			8	15	60.9
Degraded			8	1	155.6

Metal Beverage Can/Container	Site	Date	Osprey Count	MBK Count	Percent Difference
Intact	3MC-1MC_Lawrence	12/21/2018	6	9	40
Partially Intact			3	1	100
Degraded			0	0	0

Condition comparison for entire ETAP sheet

Condition	Site	Date	Osprey Count	MBK Count	Percent Difference
Intact	3MC-3MC_Maple	11/28/2018	26	61	80.5
Partially Intact			38	15	86.8
Degraded			25	16	43.9

Condition	Site	Date	Osprey Count	MBK Count	Percent Difference
Intact	3MC-12MC_University	10/28/2019	17	9	61.5
Partially Intact			15	35	80
Degraded			0	0	0

Appendix VI -Water Rangers Data Entry Instructions

1. Navigate to the Water Rangers website: <https://waterrangers.ca/>
 2. Select "Visit Data Platform" link in upper right-hand corner
 3. Click "Explore" in the upper left-hand side
 4. Use the search bar to find Location
 1. example: Mobile, Alabama
 2. this will populate a bunch of sites within Mobile - find the site you are looking for - Example: One Mile Creek
 5. Click "Report Issue"
 6. Select "Trash" as the issue
 7. The first section of the form will pop up – fill out relevant fields
 1. Observation date - date trash was observed or cleaned up
 2. Site Condition - based on the total number of items seen at a site or collected during the cleanup
 3. Area – the area that was cleaned up
 4. Weather – this is helpful if a group is interested in looking at weather in relation to trash accumulation in an area
 5. Contact Information – since Water Rangers functions as a citizen scientist tool, this contact section allows people to leave an email address or phone number to be used to get back in touch with the person who is reporting the litter issue.
 6. Click "Submit"
 8. Once you click the submit button it will take you to the summary page, scroll down until you see the blue box that says, "Would you like to perform a cleanup on this area?" - click "Conduct Cleanup"
 9. This will bring you to the digital ETAP form which is filled out following the ETAP procedure (you must click on the word (i.e. Paper) not the plus sign to expand the field) – As all other sections, this is optional but does include “what is this” information tabs to explain different portions of ETAP for someone who is not familiar with the format
 10. After the ETAP section is the "what's your trash" section
 1. Number of bags – number of bags filled in the clean up
 2. Weight - Total weight in lbs.
 3. Weight of Bags Units – Gives the option for lbs. and Kg.
 4. Number of Volunteers – number of people who assisted in the clean up
 5. Cleanup Time – Time it took to clean up the area
 6. Cleanup Notes - Anything additional the citizen would want to note about the clean up
- Click "Submit"