

**Lancaster County, SC
Stormwater Management**

8451 Charlotte Highway
Indian Land, SC 20707
Phone: 803.286.3607
www.lancastercountysc.org
stormwater@lancastercountysc.net



July 13, 2021

Arturo R. Ovalles
SCDHEC, Bureau of Water
2600 Bull Street
Columbia, SC 29201

Re: SC NPDES Permit #SCR030000
Certificate # SCR035701

Dear Mr. Ovalles:

Enclosed for your review, please find the following documents:

1. Annual Report for the period 7/1/2020 – 6/30/21
2. LCSW Sampling Plan
3. LCSW Sampling Results
4. SMS4 System Map

Please let us know if you require any additional information.

Sincerely,

A handwritten signature in blue ink, appearing to read "T. Edgar", followed by a long horizontal line extending to the right.

T. Scott Edgar, P.E., CFM, County Engineer

Attachments

South Carolina NPDES Permit # SCR030000
Small Municipal Separate Storm Sewer System (SMS4)
Annual Report Template

Permit Coverage #SCR 035701 Reporting Period: 7/01/2020 – 6/30/21

Permittee: Lancaster County

Program Name: Lancaster County MS4

Reporting for more than one Program: ☐

(Prepare copies of this page for each Program and attach to this report.)

Responsible Official Information

(Enter the information of the principal executive officer, mayor, or other duly authorized employee/elected official.)

Name: Kimberly Belk Title: Interim Deputy County Administrator

Telephone Number: 803-416-9485 E-mail Address: kbelk@lancastersc.net

Mailing Address: PO Box 1809 Lancaster SC 29721

Program Manager Information

(Enter the information of the person who is responsible for daily implementation of the program.)

Name: Scott Edgar Title: County Engineer

Telephone Number: 803-286-3610 E-mail Address: sedgar@lancastersc.net

Mailing Address: 8451 Charlotte Hwy, Indian Land SC 29707

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Responsible Official Signature: Kimberly Belk Date: 7-14-2021

(The responsible official may authorize another person or person occupying a specific position to certify this report if this authorization is made in writing and submitted to the Department. Please attach a copy of the authorization with this report, if applicable)

Submit the annual report to:

South Carolina Department of Health and Environmental Control
Bureau of Water, Water Pollution Compliance Section
2600 Bull Street
Columbia, SC 29201-1708

Questions? Contact (803) 898-4300

I. Special Conditions Applicable to Stormwater Discharges to Sensitive Waters

A. General (3.1)

1. Has an assessment been conducted to determine if the MS4 discharges to sensitive waters as described in the Permit Part 3? ☒ Yes ☐ No (what is the target date of completion of the assessment?) _____
2. Does the SWMP specifically address these sensitive waters through BMP, system design, etc.? ☒ Yes ☐ No
3. Does the MS4 discharge to waters classified as Outstanding Resource, Trout, or Shellfish Harvesting? If so, list the waters (3.5): ☒ No ☐ Yes _____

B. TMDL Monitoring and Assessment Plan (3.2)

1. Does the MS4 discharge to receiving waters within a TMDL watershed? If yes, list the water body and the pollutant(s) of concern. ☐ No ☒ Yes (Watershed) Waxhaw Creek (Cause) Fecal Coliform, (Watershed) Six Mile Creek (Cause) Fecal Coliform, (Watershed) Twelve Mile Creek- Fecal Coliform _____
2. Which of the TMDL pollutant(s) of concern listed above have the potential to occur within the MS4? _____
Fecal Coliform
3. Report the current stage of development of a monitoring and assessment plan. Mark one or more that most accurately reflects the current status of the program as a whole:
☐ Not started ☐ Research/Development ☒ Implementation
4. Has the plan been submitted to the Department?
☒ Yes No, target date for submission: _____
5. Has monitoring been conducted for the pollutant(s) of concern in the past reporting year?
☒ Yes (summary of data attached) No, target date to begin monitoring: _____
6. Are there any updates to the plan for this reporting year?
☒ Yes (updates attached) Water sampling/testing report attached
7. Provide a brief description of the progress made on the plan in this reporting year and evaluate its effectiveness. Monitoring and Assessments started during the 2018-2019 reporting cycle. Development and research began in February 2019.

C. Discharges to Impaired Water Bodies (3.4)

1. Does the MS4 discharge to receiving waters on the 303(d) list of impaired waters? If yes, list the water body and the pollutant(s) of concern. ☒ Yes ☐ No

Water Body	Station	Pollutant of Concern
Sugar Creek at SC160	CW013	BIO
Sugar Creek at S-46-36	CW036	E.coli/CU

McAlpine Creek at S-29-64	CW064	BIO/E.coli
Sugar Creek at McAlpine Creek	CW246	BIO
Catawba River at SC 5	CW041	E coli
Catawba River	Entire Watershed	Nutrients (Nitrogen & Phosphorus)

2. Which of the 303(d) pollutant(s) of concern listed above have the potential to occur within the MS4? _____
 BIO/E.coli/CU

II. Storm Water Management Program

A. Ordinance Information (4.1)

(Insert your website address if the ordinance is posted online. If your ordinance is not posted online, please submit a hard copy with this report.)

Website: https://www.mylancastersc.org/index.asp?SEC=0A38956E-6884-4B15-8938-19603B7879D6&Type=B_BASIC

B. Storm Water Management Plan (SWMP) (4.1, 4.5)

(Answer the questions below about the SWMP for the current reporting year.)

1. Have there been any changes to the area covered by the MS4? If yes, is this reflected by updates to the SWMP?

☒ No ☐ Yes (explain): _____

2. Are there any proposed changes to the goals or BMP (best management practices) in the SWMP?

☐ No ☒ Yes (explain): We need to implement measures to reduce nutrients in Catawba River. There are nutrient loading limits which we are fast approaching.

3. Do you have adequate resources to implement your SWMP?

☐ Yes ☒ No (explain): Our first priority is concentrating on the most obvious potential environmental impacts, MCM #4 construction inspection. We have 72+ large on-going projects in the SMS4 service area which potentially release large volumes of sediment to waters of the state.

4. Provide information below about staffing levels for each Minimum Control Measure (MCM). This information should be presented as the amount of individuals performing duties directly related to each MCM and the estimated percentage of their time spent doing so. If you share responsibility for the MCM with another entity, indicate that in the corresponding spaces.

- MCM 1: Public Outreach: Manager 15%, Outreach 35%, (2) Staff Inspectors 20%
- MCM 2: Public Involvement: Manager 15%, Outreach 30%, Lead Inspector 10%, (2) Staff Inspectors 10%
- MCM 3: Illicit Discharge and Detection: Manager 10%, Outreach 10%, Lead Inspector 10%, (2) Staff Inspectors 10 %, Staff Engineer 10%

- MCM 4: Construction Inspection: Manager 20%, Lead Inspector 50%, (2) Staff Inspectors 60%, Staff Engineer 60%
- MCM 5: Post Construction: Manager 30%, Outreach 10%, Lead Inspector 20%, (2) Staff Inspectors 10%, Staff Engineer 20%
- MCM 6: Good House Keeping: Manager 10%, Outreach 10%, Lead Inspector 10%, (2) Staff Inspectors 10%

5. Has training been provided to staff as required by the permit in the last reporting year?

☒ **Yes** (fill in the table below) ☐ **No** (explain, and provide implementation dates): MSM4 staff has participated in online training during the reporting period as noted below. We have "Rain Check" MS4 training series and have customized the materials therein to Lancaster County specific requirements for field staff and shop personnel throughout the County. In-person training has resumed and is being scheduled.

Date	Topics Covered
8/19/2020	SCDNR – SC Stream Stats - 2 staff
9/3/2020	SCAHM Meeting – 2 staff 4 Webinars
11/17/2020	CSPR Course – Clemson University – Scott Edgar & Stephen Blackwelder (Certified Stormwater Plan Reviewer, Expires 6/2025)
12/11/2020	SCAHM – Technical Bulletin / Updates – 2 staff
3/4/2021	2021 SC Association of Stormwater Managers Virtual – Scott Edgar
3/18-19/2021	SCAHM – Virtual Conference – 2 staff
5/11-13/2021	ASFPM – Virtual Conference – 2 staff
5/13/2021	SESWA Webinar Integrated Stormwater Planning – Stormwater as a Resource – Elizabeth Evans

III. Minimum Control Measures (MCM)

A. Sharing Responsibility (4.4)

1. Is responsibility shared for any minimum measures through an agreement with another entity?

☒ **No** ☐ **Yes** (name the entity in the chart below)

MCM 1	
MCM 2	
MCM 3	
MCM 4	
MCM 5	
MCM 6	

If you have indicated that you are sharing responsibility above in any MCM, answer the questions below:

2. Have you submitted notice to the Department that you are relying on another entity?
☐ Yes ☐ No *(submit a copy of any agreements that have not previously been sent to the Department)*
3. If applicable, provide the date of submission of the agreement(s) to the Department: _____
4. Are all control measures as stringent as the permit requires?
☐ Yes ☐ No *(if no, provide an explanation)* _____
5. Did the other entity agree in writing to implement the measure on your behalf?
☐ Yes ☐ No *(if no, provide an explanation)* _____
6. Did the other entity implement the measure and agree to report on your behalf?
☐ Yes ☐ No *(if no, provide an explanation)* _____
7. Is the agreement maintained as part of the SWMP?
☐ Yes ☐ No *(if no, provide an explanation)* _____
8. Have you dissolved any agreements with entities this reporting year?
☐ Yes ☐ No *(if yes, who?)* _____

III. Minimum Control Measures (MCM)

B. Minimum Control Measure 1: Public Education and Outreach on Storm Water Impacts (4.2.1, 5.3)

1. Use the table below to summarize outreach strategies, goals, and progress for the current reporting year. In the "activities conducted and planned" section, focus on activities that were conducted in the last reporting year and those that are planned for the upcoming reporting year, providing implementation dates. Add rows where needed and attach additional sheets if necessary.

Pollutant of Concern	Outreach Strategy <i>(include target audiences)</i>	Measurable Goal(s)	Progress on Goal(s)	Activities Conducted and Planned <i>(specific implementation dates)</i>	Number of People Reached
Fecal Coliform	-Dog waste bags -Spoke with children and adults at festivals, hikes, and HOA meetings. -Holiday billboard messages regarding scooping. -Visiting schools, library and camp suspended due to COVID-19. Will resume in the Fall.	Distributed over 500 dog waste bag dispensers to the public	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Regularly distribute materials at schools, events, vet offices, dog grooming and boarding businesses and housing developments.	Approx. 1,500
Fertilizer and Pesticides	-Spoke with children and adults at festivals, hikes, and HOA meetings	Distributed over 200 informational brochures at various public gatherings	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation Yearly activity mostly in the Spring but	Will focus on developments not reached in 2020/2021 reporting year	200+

			information available throughout the year.		
General	Stormwater pollution prevention message on a local radio stations -Interstate 107.1 FM Rock Hill, SC -Power 98, WPEG FM Charlotte	Feedback from the public about the stormwater public service announcement.	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Added two additional stations to our PSA advertising lineup from last year.	Power 98 WPEG reaches 290,000 listeners per month. Also plays on Interstate 107.1.
Litter	-Participated in 6+ highway neighborhood cleanup events. -Designed an anti-cigarette butt billboard for Rt. 521	Teams collected 30+ bags of litter at each cleanup event. Received positive feedback from members of the public regarding the billboard.	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Both initiatives are ongoing. Minimum 4 cleanups per year and the billboard message will change bi-monthly	Traffic count from billboard 37,000 vehicles traveled that intersection.

C. Control Measure Evaluation (5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule: The primary MCM objective is to change behaviors. We focus on children and adults but feel that the greatest impact is on the children. We have had experiences where the children have participated in one or more of our activities and are excited to tell us that they remember us and the message we taught them.

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives: The program is somewhat new so we are working out the best practices in educating the public. We will begin encouraging environmental stewardship from individuals and organizations. We plan to help support these efforts with information and materials to promote success. This year has been challenging due to the COVID-19 pandemic.

III. Minimum Control Measures (MCM)

D. Minimum Control Measure 2: Public Involvement/Participation (4.2.2, 5.3)

1. How can the public find information about the SWMP? The SWMP is located on Lancaster County Stormwater page at <https://www.mylancastersc.org/vertical/Sites/%7BA02FC01E-6C41-44F4-BE02-9B73FC0206C5%7D/uploads/20170901SWMPupdateFINAL.pdf>

2. Use the table below to summarize public involvement opportunities, goals, and progress for the current reporting year. In the “activities conducted and planned” section, focus on activities that were conducted in the last reporting year and those that are planned for the upcoming reporting year, providing implementation dates. Add rows where needed and attach additional sheets if necessary.

Public Involvement Opportunity	Measurable Goal(s)	Progress on Goal(s)	Activities Conducted and Planned (specific implementation dates)	Number of Participants
Indian Land Fall Festival was held in Spring 2021	Distributed materials and information to the public – Clemson Cooperative Extension – Information on Rain Gardens, gave out seed packets to grow milkweed plants	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation Yearly event that draws 20,000+ visitors	Educational materials and environmental themed prizes distributed.	Approx. 8,000-10,000 attendees at festival
Partnered with Palmetto Pride, Catawba Riverkeeper and Keep Lancaster Beautiful on various public pollution prevention events.	Distributed pollution prevention tools, brochures and items with cleanlancaster.com messaging to the public at various events.	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	We will continue to participate and distribute pickup tools to local clean teams.	We anticipate 50+ volunteers will utilize tools.
Adopt-a-Highway Clean Up Events -Assisted with the establishment of a new Adopt-a-Highway location.	Participation with roadside cleanup events with local service organizations. -coordinated with SCDOT to est. new AAH.	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation At least 4 per year	Discussed the impact of litter on our local water quality.	At least 20 participants at each cleanup event.
Volunteered with HOPE in Lancaster Food Distribution events.	Gave out water pollution prevention information (brochures, dog waste bags, reusable water bottles, etc.) Able to reach over 150 families with outreach materials during the COVID-19 pandemic.	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation This is a new initiative. It will be ongoing.	This was a temporary initiative borne from the need to help families struggling during the pandemic. While distributing food at the drive up site, was able to include pollution prevention materials and give a brief overview of simple tips to prevent stormwater pollution.	At least 75 families at each distribution event.
Participated in the Carolinas Chili Championship held in the Spring.	Festival style event. The public visited our table to try our salsa and we informed them about preventing stormwater pollution.	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	This is an annual event where we plan on continued participation.	Approx. 4,000 attendees at event

E. Control Measure Evaluation (5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule: As we become more involved in the community, we feel that our message is resonating with our target audience. Consistency and visibility are important factors in our success in changing mindsets.

2. Provide evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives: As we develop the program, we will be adding the following initiatives: storm drain marking, rain garden classes, and rain barrel sales and decorating. These initiatives had been suspended due to the Covid 19 pandemic. We plan to proceed in the coming year.

III. Minimum Control Measures (MCM)

F. Minimum Control Measure 3: Illicit Discharge Detection and Elimination (IDDE) (4.2.3, 5.3)

1. How can the public notify the MS4 of suspected illicit discharges? Lancaster County Stormwater
Hotline number is (803) 286-3607 and email is stormwater@lancastercountysc.net.

2. Complete the list below for the last reporting year:

- Total number of suspected illicit discharges: Unknown
- Total number of illicit discharges found: 20+
- Number of illicit discharges with enforcement escalation (action taken beyond written warning): 14
- Total number of illicit discharges eliminated: 14

3. Use the table below to summarize priority areas (and associated rationale for selection) for screening. If these areas have changed since the last reporting year, provide a brief explanation. Add rows where needed and attach additional sheets if necessary.

Priority Areas	Rationale for Selection	Changed within last reporting year? (If so, provide an explanation.)
Construction Sites	The County has prioritized active construction sites due to increased development	

4. Use the table below to summarize IDDE action items, goals, and progress for the current reporting year. In the “activities conducted and planned” section, focus on activities that were conducted in the last reporting year and those that are planned for the upcoming reporting year, providing implementation dates. Add rows where needed and attach additional sheets if necessary.

IDDE Action Item	Measurable Goal(s)	Progress on Goal(s)	Activities Conducted and Planned (specific implementation dates)
Legal Authority	Develop and enact an ordinance with clear established authority	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Currently reviewing an independent IDDE Ordinance that is clear and easily accessible to the community.
Enforcement	Clearly identify and establish authority to inspect and enforce	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Currently reviewing best practice in SC for the development of a more comprehensive County Enforcement Response Plan to standardize procedures for enforcement actions.
Monitoring/Tracking	Create an inter departmental tracking system	<input checked="" type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Moving forward with implementation of new software specializing in stormwater protocols and specific needs of the department.

G. Control Measure Evaluation (5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule: Staff members have been very active in responding to IDDE calls and violations.

Staff have routinely educated the public and contractors on best management practices with regard to illicit discharges.

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives: A specific Illicit Discharge Ordinance is being reviewed and modified by Stormwater and legal staff. It is our hope that the ordinance will be approved and adopted by next year's annual reporting. A Enforcement Response Plan is also being discussed and best practices from other local governments are being reviewed in inclusion in our plan.

III. Minimum Control Measures (MCM)

H. Minimum Control Measure 4: Construction Site Storm Water Runoff Control (4.2.4, 5.3)

1. How can the public notify the MS4 of possible noncompliance at construction sites? Lancaster County Stormwater Hotline number is (803) 286-3607 and email is stormwater@lancastersc.net.

2. How does the MS4 communicate with construction operators to ensure understanding of requirements and improvements that may be needed? A preconstruction meeting is held for all new construction sites in the MS4 area. At this meeting contractors and Stormwater staff review expectations and go over approved stamped plans. Should there be any additional questions, comments or concerns throughout the life of the project Stormwater staff are typically available with responses within 24 business hours.

3. Has an enforcement response plan (ERP) been developed and utilized?

☒ Yes ☐ No (*explain*): We currently rely on the enforcement plan contained in the Stormwater Management Ordinance. We are currently perfecting our Enforcement Action Plan with the assistance of our legal department.

4. Complete the list below for the last reporting year:

- Number of new construction sites: 48 (includes new commercial, new residential and individual lots)
- Total number of active construction sites: 73
- Total number of inspections performed: Biweekly inspections of all active sites plus site inspections that come up during the course of a day.
- Number of sites with unsatisfactory/noncompliant inspection results: Most had unsatisfactory inspections, the contractors had not been accustomed to erosion control measure inspections, many hours in relationship building and compliance education with contractors.
- Number of sites with enforcement escalation (action taken beyond written warning): 15 inspection holds were placed on projects.
- Number of sites inspected past the deadline specified in the permit: N/A

5. Use the table below to summarize construction site action items, goals, and progress for the current reporting year. In the "activities conducted and planned" section, focus on activities that were conducted in the last reporting year and those that are planned for the upcoming reporting year, providing implementation dates. Add rows where needed and attach additional sheets if necessary.

Construction Site Action Item	Measurable Goal(s)	Progress on Goal(s)	Activities Conducted and Planned (specific implementation dates)
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Communication Software	Acquisition of Centralized project management system	<input checked="" type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Obtaining centralized software so that inspectors are aware of approved site projects.
Plan Review	LC UDO contains plan review requirements. Requirements are reviewed and updated to assist applicants in the permitting process	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	The County has modified the plan review process to make it easier on applicants to effectively provide correct information for sediment and erosion control.
NPDES Permit/Land Disturbance Permit	Educate the community on Stormwater permitting process/procedures.	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	NOI's are sent by email to DHEC and from there an invoice generated and emailed to contact for credit payment.

I. Control Measure Evaluation (5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule: We are making headway with the development community in compliance with NPDES standards. As developers become familiar with our expectations, they are more likely to be in compliance.

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives: The inability to have a single mechanism to communicate effectively interdepartmentally has been a challenge for land disturbance activities and plan review. We are working on interdepartmental communication.

III. Minimum Control Measures (MCM)

J. Minimum Control Measure 5: Post-Construction Storm Water Management (4.2.5, 5.3)

1. Complete the list below for the last reporting year:

- Number of newly completed construction sites: N/A (often the NOT goes directly to SCDHEC)
- Number of inspections performed within 30 days of construction completion: We respond and meet with citizens at least weekly regarding stormwater concerns, some of these result in actions on adjacent development projects.
- Total number of inspections performed: 10 plus numerous unscheduled visits due to citizen concerns and encountering problems during the course of the day.
- Number of sites with unsatisfactory/noncompliant inspection results: Majority of sites are unsatisfactory but are making good progress.
- Number of sites with enforcement escalation (action taken beyond written warning): Verbal warnings have been effective so far.

2. Use the table below to summarize post-construction action items, goals, and progress for the current reporting year. In the "activities conducted and planned" section, focus on activities that were conducted in the last reporting year and those that are planned for the upcoming reporting year, providing implementation dates. Add rows where needed and attach additional sheets if necessary.

Post-Construction Action Item	Measurable Goal(s)	Progress on Goal(s)	Activities Conducted and Planned (specific implementation dates)
Stormwater Ordinance	Making modifications to existing UDO to effectively address post construction activities	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Ordinance is being sent through legal review for modifications.
Reporting & Inspections	Create a centralized database for inspections and requests.	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Researched surrounding MS4 programs software and reviewed how they tracked their sites. Moving forward with the implementation of specialized software.

K. Control Measure Evaluation (5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule: Stormwater staff collectively had meetings to adjust the current Stormwater Ordinance. Due to the current talents and experienced staff, most post-construction issues or concerns are being addressed quickly and within the SCDHEC standards.

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives: Not having a centralized communication software has proved to be a challenge for tracking and monitoring of post-construction activities. The County is continuing its review of current software system capabilities. If determined that the current system is not adequate for use with Stormwater inspections, alternative programs dedicated to stormwater needs will be assessed.

III. Minimum Control Measures (MCM)

L. Minimum Control Measure 6: Pollution Prevention/Good Housekeeping for Municipal Operations (4.2.6, 5.3)

1. Has a comprehensive assessment of the pollutant discharge potential for all municipally owned facilities been conducted? If not, indicate a status and planned completion date in the chart below.

☐ Yes ☐ No ☒ In Progress (explain): We had begun meeting with department heads in the winter but suspended meetings due to the Covid 19 pandemic. We are scheduled to resume this fall.

2. Have yearly comprehensive inspections been conducted at high priority facilities? If not, indicate a status and planned completion date in the chart below.

☐ Yes ☒ No ☐ In Progress (explain): We plan to begin inspection of high priority facilities such as the public works department this fall.

3. Has training been conducted for employees? If not, indicate a status and planned completion date in the chart below.

☐ Yes ☐ No ☒ In Progress (explain): Trainings were in progress during the winter but were suspended due to the Covid 19 pandemic. We plan to resume this fall.

4. Use the table below to summarize municipal facility pollution prevention action items, goals, and progress for the current reporting year. In the “activities conducted and planned” section, focus on activities that were conducted in the last reporting year and those that are planned for the upcoming reporting year, providing implementation dates. Ensure that the maintenance and inspection of MS4 catch basins and structural storm water controls are addressed in the chart. Add rows where needed and attach additional sheets if necessary.

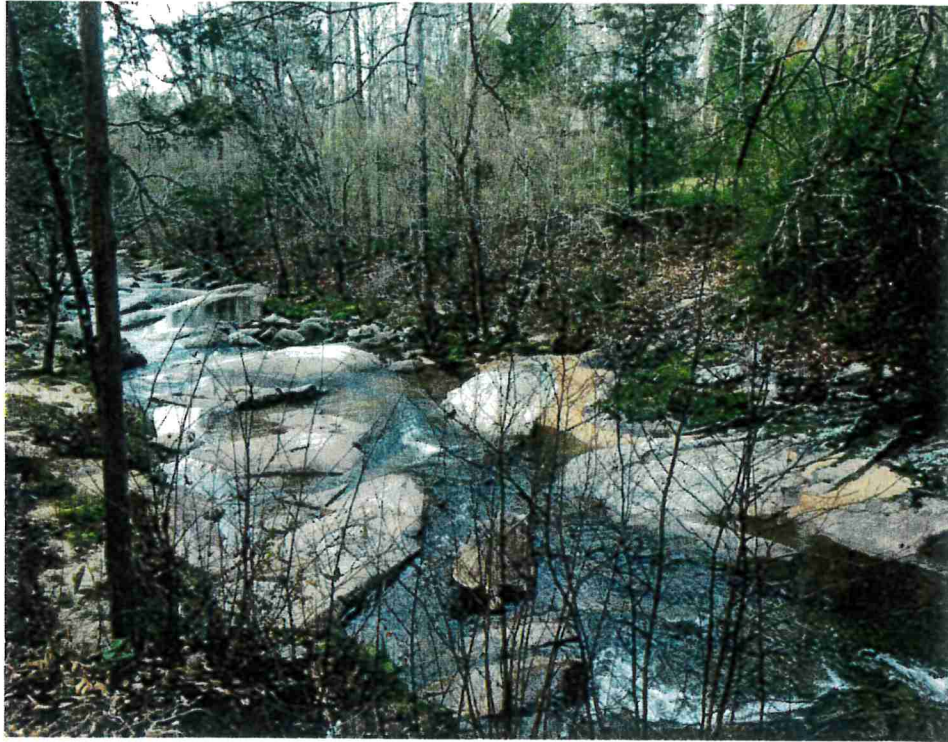
Pollution Prevention Action Item	Measurable Goal(s)	Progress on Goal(s)	Activities Conducted and Planned <i>(specific implementation dates)</i>
Assessment of pollutant discharge potential at municipal facilities.	Meet with individual department heads to assemble the comprehensive assessment of facilities.	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Began initial meetings with department heads on site to identify areas of concern. Will continue in the upcoming reporting term.
Conduct yearly comprehensive inspection of municipal facilities.	Completion of comprehensive inspection at all priority municipal facilities.	<input checked="" type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Will work with department heads to schedule the site inspections. Researching best practices for site inspections of municipal facilities. Will implement in the coming reporting term.
Good Housekeeping Training	All relevant departments trained in best management practices in pollution prevention and good housekeeping.	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Completed training of the EMS, Sheriff's Office, and Parks and Recreation employees. Will resume with remaining departments in the upcoming reporting term.

M. Control Measure Evaluation (5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule: We look forward to continuing working on this MCM with our colleagues in County government. Assessing the condition of municipal facilities will not only help us meet the conditions of the permit, it will assist us in our capital project planning. We have received positive feedback from the departments trained this term.

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives: We are satisfied with how the program is progressing. We plan to move forward with the aspects of the program that we have not begun and we plan to complete the steps we had started this term. We will customize and adjust the aspects of the program as needs and conditions change.

TOTAL MAXIMUM DAILY LOAD & IMPAIRED WATERS MONITORING & ASSESSMENT PLAN



*To protect and promote the health, safety and welfare of Lancaster County citizens by
preventing the pollution, impairment or destruction of its natural resources.*

INTRODUCTION & STUDY OBJECTIVES

Lancaster County Stormwater Department has developed a Total Maximum Daily Load (TMDL) & Impaired Waters Monitoring and Assessment Plan to observe water quality within the listed water flow areas. Listed in this document are established TMDL's and Impaired Waters which are not meeting the designated water quality criteria use due to excess Fecal Coliform (FC) bacteria and Dissolved Oxygen (DO) levels. Also included in this document are a list of sites chosen by Lancaster County Stormwater staff to test and establish background data for future monitoring/reporting. These sites have been chosen in an effort to establish a baseline for potential illicit discharge entering and exiting Lancaster County's Small Municipal Separate Storm Sewer System (SMS4) district and the surrounding area. The sites listed below shall be sampled for Fecal Coliform/E. coli and field tested for pH, temperature, Total Dissolved Solids (TDS), Total Suspended Solids (TSS), and Dissolved Oxygen levels.

Water Classification

The impaired streams within the testing areas are all classified as freshwater. Waters of this class are typically suitable for primary and secondary contact recreation and as a source for drinking water supply after conventional treatment. Waters of this class are also suitable for fishing and survival and propagation of a balanced indigenous aquatic community of fauna and flora. In addition, waters of this class are also suitable for a variety of industrial and agricultural uses.

OVERALL WATER QUALITY & MONITORING PLAN

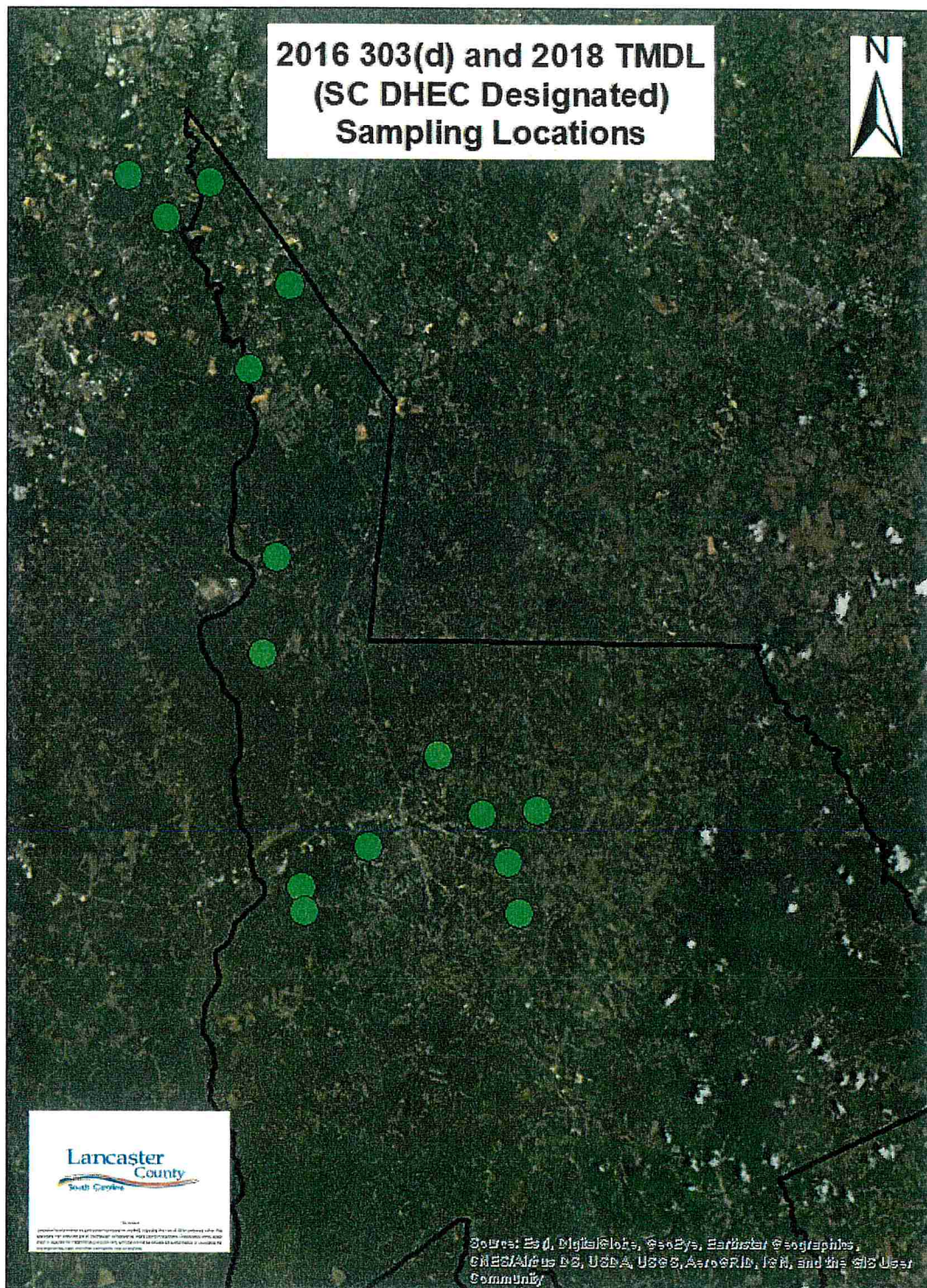
In order to best determine the source of any illicit discharges and determine if additional sampling locations are required, sampling/monitoring will be performed at the locations identified on the 2016 303(d) and 2018 TMDL lists for Dissolved Oxygen and Fecal Coliform. These locations are listed in Table 1 below:

Table 1:

<u>Basin</u>	<u>Description</u>	<u>Station</u>	<u>County</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Cause</u>
CATAWBA	MCALPINE CREEK AT S-29-64 (Harrisburg Rd)	CW-064	LANCASTER	35°02'27.4"N	80°53'31.0"W	ECOLI/BIO
CATAWBA	STEELE CREEK AT US BY-PASS 21 (Hwy 21 Bypass N above Coltharp Rd)	CW-681	YORK	35°02'41.2"N	80°56'28.1"W	PH
CATAWBA	STEELE CREEK AT S-46-270 (Springfield Parkway/Hwy 460) (Lower Bridge)	CW-011	YORK	35°01'25.5"N	80°55'05.3"W	FC
CATAWBA	SIXMILE CREEK AT S-29-54 (Marvin Rd)	CW-176	LANCASTER	34°59'29.7"N	80°50'41.4"W	FC

CATAWBA	TWELVE MILE CREEK AT S-29-55 0.3 MI NW OF VAN WYCK (Van Wyck Rd)	CW-083	LANCASTER	34°51'34.2"N	80°51'07.3"W	FC
CATAWBA	WAXHAW CREEK AT S-29-29 (Riverside Rd)	CW-145	LANCASTER	34°48'46.3"N	80°51'36.4"W	FC
CATAWBA	CANE CREEK AT S-29-50 (Grace Ave)	CW-017	LANCASTER	34°42'00.0"N	80°50'15.1"W	FC/DO
CATAWBA	RUM CREEK AT S-29-187 (Bethel Rd)	CW-232	LANCASTER	34°41'21.6"N	80°50'11.6"W	DO
CATAWBA	BEAR CREEK AT S-29-292 1.6 MI W OF LANCASTER (Plantation Rd)	CW-131	LANCASTER	34°43'10.2"N	80°47'50.0"W	FC
CATAWBA	CANE CREEK AT SC 200 5 MI NNE OF LANCASTER (Monroe Hwy)	CW-185	LANCASTER	34°45'49.5"N	80°45'20.6"W	FC/DO
CATAWBA	GILLS CREEK AT S-29-51 (Camp Creek Rd)	RS-14200	LANCASTER	34°44'06.1"N	80°43'43.5"W	FC
CATAWBA	HANNAHS CREEK AT S-29-376 3.4 MI E OF LANCASTER (Hilldale Dr)	RS-05403	LANCASTER	34°42'42.8"N	80°42'47.7"W	FC/DO
CATAWBA	BEAR CREEK AT S-29-362 3.5 MI SE OF LANCASTER (Community Ln)	CW-151	LANCASTER	34°41'14.6"N	80°42'22.5"W	FC
CATAWBA	GILLS CREEK AT S-29-36 4.5 MI ENE OF LANCASTER (Potter Rd)	RS-07043	LANCASTER	34°44'13.7"N	80°41'44.2"W	FC/DO
CATAWBA	SUGAR CREEK AT S-46-36 (Doby's Bridge Rd)	CW-036	LANCASTER	34°57'02.5"N	80°52'06.8"W	ECOLI

Map 1:



Grab Sampling

Sampling will be performed in accordance with the NPDES Stormwater Sampling Guidance Document (EPA 833-B-92-001). Grab samples are discrete water samples collected from the surface water body. Samples will be taken from the stream at a point as near to the centerline of the stream as possible. Sampling equipment (i.e. sterile collection vessel or laboratory provided bottles) will be utilized to obtain water samples.

Handling and Preservation

After sample collection, sample handling should be minimized to ensure that samples are not contaminated. Water samples will be capped, labeled, and placed inside a cooler for delivery to the designated laboratory.

Monitoring Locations

Monitoring will be performed at the locations listed above. Based on sampling results, staff will attempt to identify any illicit discharges and if any additional sampling will be required.

FECAL COLIFORM / E. COLI WATER QUALITY SAMPLING & MONITORING

Source Assessment

Both point and nonpoint sources may contribute Fecal Coliform to a given water body. Potential sources of Fecal Coliform include: failing septic systems, poorly treated municipal sewage, urban storm water runoff, sanitary sewer overflows and combined sewer overflows, rural storm water runoff, and fecal bacteria from warm blooded wildlife and domestic animals.

Fecal Coliform Criteria

The Fecal Coliform criteria should not exceed a geometric mean of 2.0 CFU (colony forming units) per 100 mL. This measurement is based on samples taken once per month. The water quality assessment published in the *South Carolina Watershed Water Quality Management Strategy: Catawba Santee Basin (1996)* was used for determining the stream segment impairment and for listing the water on the South Carolina 2016 303(d) list and 2018 TMDL list. Waters in which there are less than or equal to 10% of the samples collected over a five year period or greater than 4.0 CFU per 100 mL are considered to comply with South Carolina water quality standard for Fecal Coliform bacteria. Waters with more than 10% of samples greater than 4.0 CFU per 100 mL are considered impaired and listed for Fecal Coliform bacteria on South Carolina's 303(d) and TMDL lists.

Parameters

Water quality samples will be collected as "grab" samples and analyzed for Fecal Coliform bacteria according to the analytical methods summarized below.

Bacteria Constituent	Minimum Detection Limit	Analytical Method	Laboratory
Fecal Coliform	2.0 CFU/100ml	Plate Count	Prism Laboratories

Sampling Frequency

Sampling is typically performed once per month yielding 12 samples per site annually. Sampling should be performed without regard to weather conditions (dry or wet weather) and ideally should be performed at the beginning of each month.

Quality Assurance

Adequate records on analytical procedures and the Quality Assurance/Quality Control measures should be maintained to document their proper implementation and performance, and that the records should remain on file and available for review for a minimum of three years.

Monitoring Locations

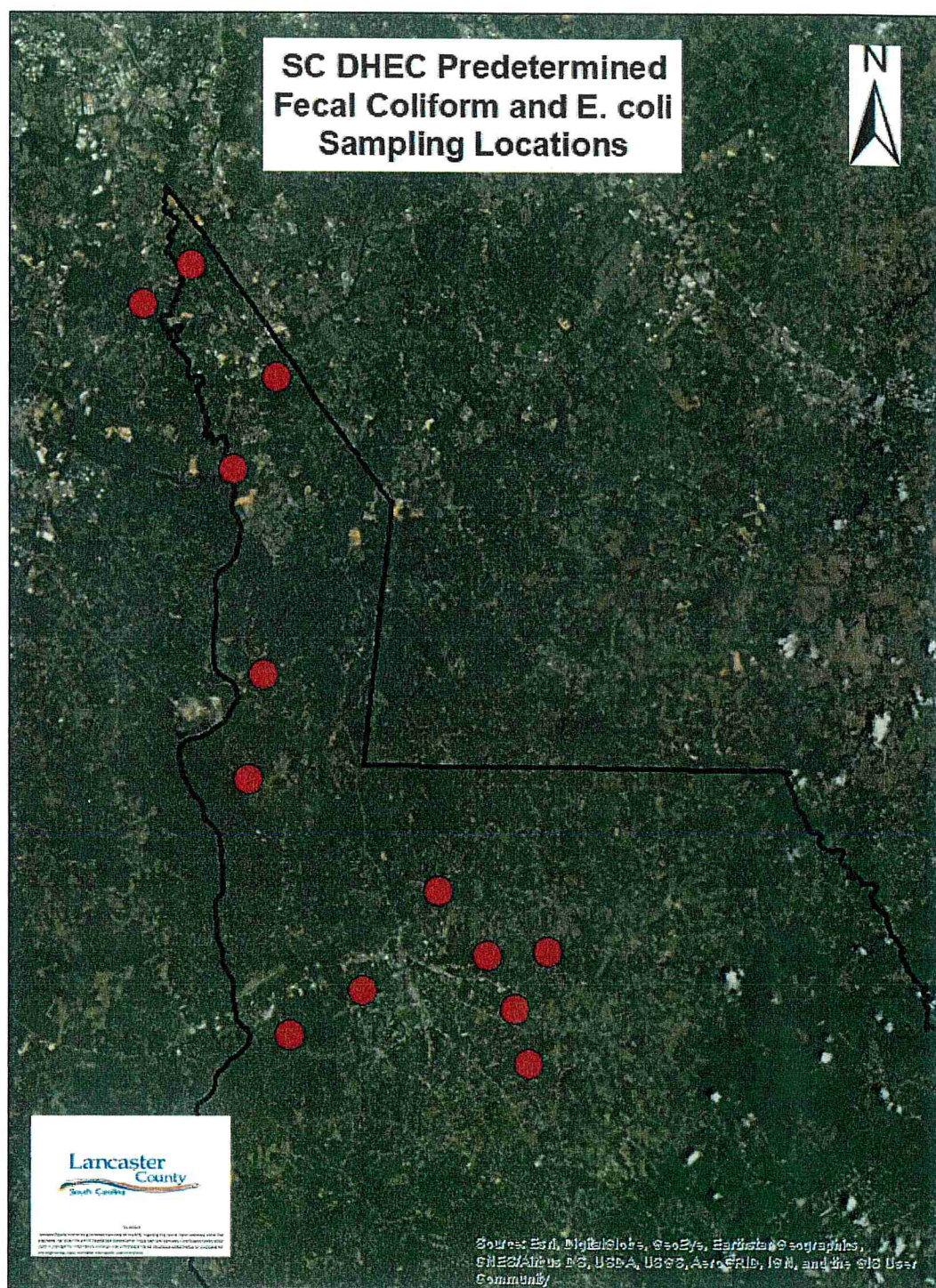
Monitoring for Fecal Coliform and E. coli to be performed at the locations listed in Table 2 below, providing conditions allow for adequate sampling. Based on sampling results, staff will attempt to identify any illicit discharges and if any additional sampling will be required.

Table 2:

<u>Basin</u>	<u>Description</u>	<u>Station</u>	<u>County</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Cause</u>
CATAWBA	MCALPINE CREEK AT S-29-64 (Harrisburg Rd)	CW-064	LANCASTER	35°02'27.4"N	80°53'31.0"W	ECOLI/BIO
CATAWBA	STEELE CREEK AT S-46-270 (Springfield Parkway/Hwy 460) (Lower Bridge)	CW-011	YORK	35°01'25.5"N	80°55'05.3"W	FC
CATAWBA	SIXMILE CREEK AT S-29-54 (Marvin Rd)	CW-176	LANCASTER	34°59'29.7"N	80°50'41.4"W	FC
CATAWBA	TWELVE MILE CREEK AT S-29-55 0.3 MI NW OF VAN WYCK (Van Wyck Rd)	CW-083	LANCASTER	34°51'34.2"N	80°51'07.3"W	FC
CATAWBA	WAXHAW CREEK AT S-29-29 (Riverside Rd)	CW-145	LANCASTER	34°48'46.3"N	80°51'36.4"W	FC
CATAWBA	CANE CREEK AT S-29-50 (Grace Ave)	CW-017	LANCASTER	34°42'00.0"N	80°50'15.1"W	FC/DO
CATAWBA	BEAR CREEK AT S-29-292 1.6 MI W OF LANCASTER (Plantation Rd)	CW-131	LANCASTER	34°43'10.2"N	80°47'50.0"W	FC

CATAWBA	CANE CREEK AT SC 200 5 MI NNE OF LANCASTER (Monroe Hwy)	CW-185	LANCASTER	34°45'49.5"N	80°45'20.6"W	FC/DO
CATAWBA	GILLS CREEK AT S-29-51 (Camp Creek Rd)	RS-14200	LANCASTER	34°44'06.1"N	80°43'43.5"W	FC
CATAWBA	HANNAHS CREEK AT S-29-376 3.4 MI E OF LANCASTER (Hilldale Dr)	RS-05403	LANCASTER	34°42'42.8"N	80°42'47.7"W	FC/DO
CATAWBA	BEAR CREEK AT S-29-362 3.5 MI SE OF LANCASTER (Community Ln)	CW-151	LANCASTER	34°41'14.6"N	80°42'22.5"W	FC
CATAWBA	GILLS CREEK AT S-29-36 4.5 MI ENE OF LANCASTER (Potter Rd)	RS-07043	LANCASTER	34°44'13.7"N	80°41'44.2"W	FC/DO
CATAWBA	SUGAR CREEK AT S-46-36 (Doby's Bridge Rd)	CW-036	LANCASTER	34°57'02.5"N	80°52'06.8"W	ECOLI

Map 2:



DISSOLVED OXYGEN WATER QUALITY SAMPLING & MONITORING

Source Assessment

Both point and nonpoint sources may contribute to Dissolved Oxygen in a given water body. Potential sources of decreased DO include: wastewater from sewage treatment plants, stormwater runoff from farmland or urban streets, feedlots, and failing septic systems. Certain natural conditions may also cause a depression of DO in surface waters. DO levels fluctuate seasonally and over a 24-hour period and vary with water temperature (cold water holds more oxygen than warm water). Aquatic animals are most vulnerable to lowered DO levels in the early morning on hot summer days when stream flows are low, water temperatures are high and aquatic plants have not been producing oxygen since sunset.

Dissolved Oxygen (DO) Quality Standards

For freshwaters, there should be a DO value of 4.0 mg/L or higher

Parameters

In-stream water quality samples will be measured using a Dissolved Oxygen meter according to the analytical methods summarized below.

Bacteria Constituent	Detection Minimum	Analytical Method
Dissolved Oxygen	4.0 mg/L	Meter and Probe

Sampling Frequency

Sampling is typically performed once per month yielding 12 samples per site annually. Sampling should be performed without regard to weather conditions (dry or wet weather) and ideally should be performed at the beginning of each month.

Quality Assurance

Adequate records on analytical procedures and the Quality Assurance/Quality Control measures should be maintained to document their proper implementation and performance. The records should remain on file and available for review for a minimum of three years.

Monitoring Locations

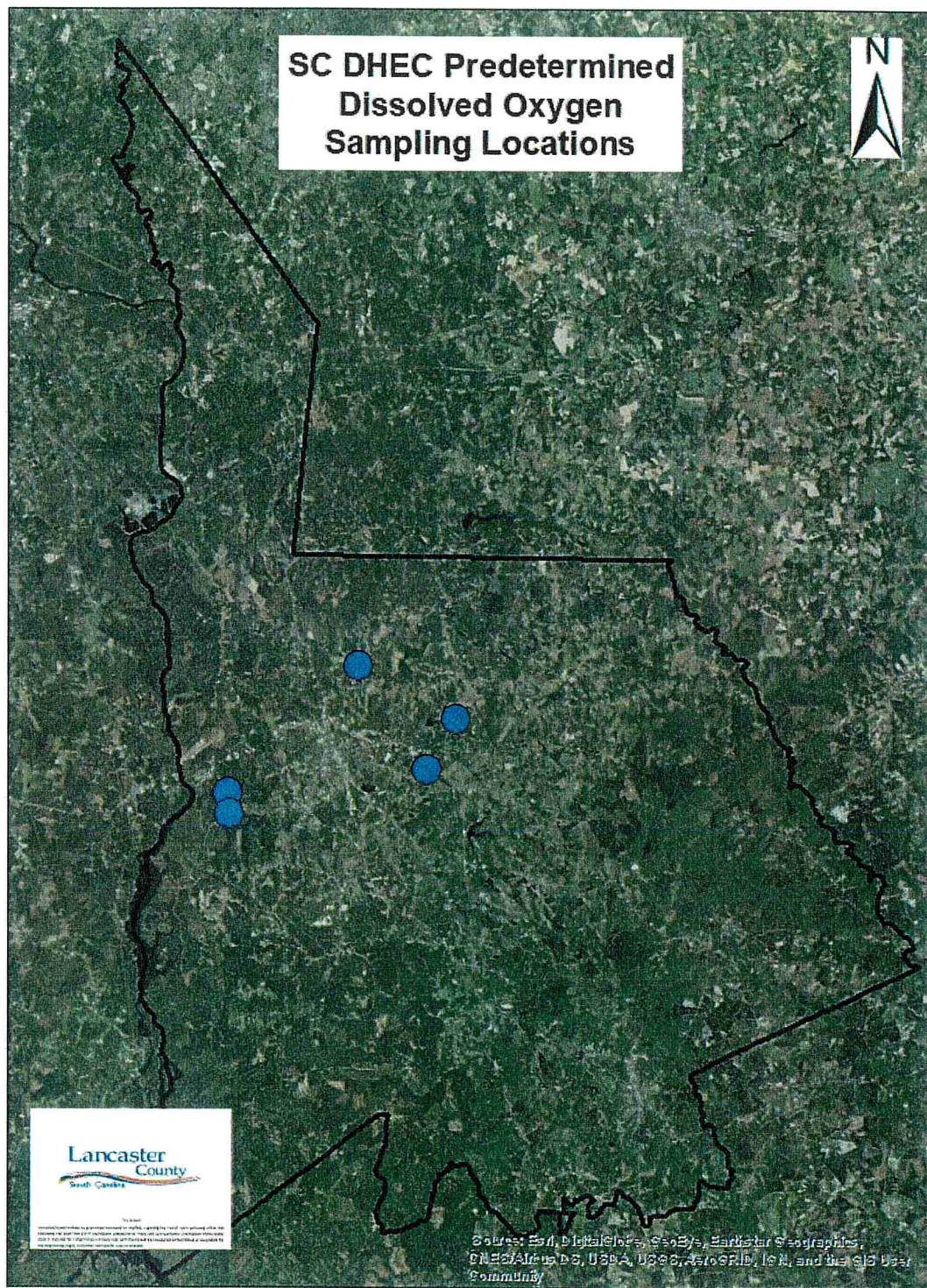
Monitoring to be performed for Dissolved Oxygen Levels at the locations listed in Table 3 below, providing conditions allow for adequate sampling. Based on sampling results, staff will attempt to identify any illicit discharges and if any additional sampling will be required.

Table 3:

<u>Basin</u>	<u>Description</u>	<u>Station</u>	<u>County</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Cause</u>
CATAWBA	CANE CREEK AT S-29-50 (Grace Ave)	CW-017	LANCASTER	34°42'00.0"N	80°50'15.1"W	FC/DO

CATAWBA	RUM CREEK AT S-29-187 (Bethel Rd)	CW-232	LANCASTER	34°41'21.6"N	80°50'11.6"W	DO
CATAWBA	CANE CREEK AT SC 200 5 MI NNE OF LANCASTER (Monroe Hwy)	CW-185	LANCASTER	34°45'49.5"N	80°45'20.6"W	FC/DO
CATAWBA	HANNAHS CREEK AT S-29-376 3.4 MI E OF LANCASTER (Hilldale Dr)	RS-05403	LANCASTER	34°42'42.8"N	80°42'47.7"W	FC/DO
CATAWBA	GILLS CREEK AT S-29-36 4.5 MI ENE OF LANCASTER (Potter Rd)	RS-07043	LANCASTER	34°44'13.7"N	80°41'44.2"W	FC/DO

Map 3:



WATER QUALITY SAMPLING & MONITORING – NEW SITE BACKGROUND DATA

Parameters

Water quality samples will be collected as “grab” samples and analyzed for Fecal Coliform bacteria and Dissolved Oxygen Levels according to the analytical methods summarized below.

Bacteria Constituent	Detection Limit	Analytical Method	Laboratory
Fecal Coliform	2.0 CFU/100 ml	Plate Count	Waypoint Laboratories

Bacteria Constituent	Detection Minimum	Analytical Method
Dissolved Oxygen	4.0 mg/l	Meter and Probe

Sampling Frequency

Sampling is typically performed once per month yielding 12 samples per site annually. Sampling should be performed without regard to weather conditions (dry or wet weather) and ideally should be performed at the beginning of each month.

Quality Assurance

Adequate records on analytical procedures and the Quality Assurance/Quality Control measures should be maintained to document their proper implementation and performance, and that the records should remain on file and available for review for a minimum of three years.

Monitoring Locations

Sampling to be performed at the locations listed in Table 4 below, providing conditions allow for adequate sampling. These sites have been chosen in an effort to establish a baseline for potential illicit discharge entering and exiting Lancaster County. The sites to be tested should establish background data for future monitoring/reporting.

Table 4:

<u>Basin</u>	<u>Description</u>	<u>Station</u>	<u>County</u>	<u>Latitude</u>	<u>Longitude</u>
CATAWBA	SUGAR CREEK (Hwy 51) (NC)	LCMS4-001	MECKLENBURG	35°05'26.4"N	80°53'57.7"W
CATAWBA	SUGAR CREEK (Regent Pkwy)	LCMS4-002	LANCASTER	35°03'45.6"N	80°54'06.7"W

CATAWBA	TWELVE MILE CREEK (Walking trail bridge on SC/NC Line)	LCMS4-005	LANCASTER	34°56'08.7"N	80°46'55.3"W
CATAWBA	SIXMILE CREEK (Jim Wilson Rd)	LCMS4-006	LANCASTER	34°56'06.0"N	80°49'06.0"W
CATAWBA	WAXHAW CREEK (Maggie Robinson Rd) (NC)	LCMS4-009	UNION	34°50'12.5"N	80°47'30.2"W
CATAWBA	SILVER RUN AT S-29-51 (Camp Creek Rd)	LCMS4-011	LANCASTER	34°48'26.1"N	80°35'40.6"W
CATAWBA	POLECAT CK AT S-29-51 (Camp Creek Rd)	LCMS4-012	LANCASTER	34°48'38.1"N	80°34'42.6"W
CATAWBA	LYNCHES RIVER AT S-29-51 (Camp Creek Rd)	LCMS4-013	LANCASTER	34°48'52.6"N	80°33'50.1"W
CATAWBA	LITTLE SUGAR CREEK (Prestwick Subdivision Crossing Bridge)	LCMS4-014	Lancaster	35°04'02.9"N	80°53'55.3"W

Map 4:



BEST MANAGEMENT PRACTICES

Lancaster County Stormwater management team plans to continue to implement its Stormwater Management Plan (SWMP) under its current NPDES permit. The Lancaster County Stormwater management team will evaluate the monitoring data, for the initial two (2) years of this program, to ascertain the level of contamination in the creeks and watersheds. As part of this plan, the Lancaster County Stormwater management team will implement a number of best management practices (BMPs) in an effort to reduce the occurrences of releases of Fecal Coliform bacteria, which can result in unsatisfactory Dissolved Oxygen levels in local SMS4 located watersheds.

Lancaster County Stormwater management team plans to implement an educational aspect to this program. The educational portion of the SMS4 program plans to include visits to local neighborhoods within the SMS4 area and provide materials to aid citizens in helping to limit illicit discharge in local communities. The Lancaster County Stormwater management team plans to create presentations to be conducted throughout the year to educate the public of water quality in the area. Lastly, Lancaster County Stormwater management team plans to engage the public in stream and tributary testing through the local Adopt-A-Stream Foundation.

EVALUATION OF MONITORING DATA

Fecal Coliform and Dissolved Oxygen monitoring results are evaluated annually based on criteria established by SC DHEC.

- Fecal Coliform: The Fecal Coliform criteria should not exceed a geometric mean of 2.0 CFU per 100 ml. This measurement is based on samples taken once per month.
- Dissolved Oxygen: For freshwaters, there should be a DO reading of 4.0 mg/l or higher

ANNUAL REPORTING

Lancaster County Stormwater management team plans to develop an annual water quality report for the listed monitoring locations. This report typically includes the following items:

- Monitoring Results of that Year's Data
- Trend Analysis of the Water Quality Monitoring Data (following establishment of at least two years of data)
- Documentation of any Activities Undertaken in that Year Pursuant to this Plan
- Recommendations of any Additional Activities based on the Evaluation
- Location and Remediation of any Illicit Discharges within the Basin

The analysis of each year's water quality data along with the above-mentioned trend analysis should be utilized to determine the water quality data relative to state standards and if the trend is showing improvement or degradation relative to previous years. Additionally, the results of the various BMPs

should be outlined to document the identification of pollution sources along with the mitigation actions taken each year for sources identified in these efforts. If the trend analysis indicates that water quality is worsening or not improving, site investigation and assessment may yield additional BMP requirements for pollution sources located within Lancaster County.

EQUIPMENT DETAILS

All equipment to be calibrated & maintained in accordance with their respective factory instruction manuals and to be replaced as needed with same or comparable model.

YSI ProDSS Multi-Parameter Water Quality Meter



Total Suspended Solids (TSS) – Lovibond MD 100 Suspended Solids Photometer



UPDATES TO MONITORING PLAN

The following sites have been removed from sampling due to access safety, or duplication of efforts.

CATAWBA	SUGAR CREEK AT SC 160 E OF FORT MILL (Hwy 160)	CW-013	LANCASTER	35°00'20.7"N	80°54'08.3"W	BIO
CATAWBA	SIXMILE CREEK AT S-29-126 (Collins Rd)	RS-13168	LANCASTER	34°57'34.2"N	80°50'35.6"W	FC
CATAWBA	GILLS CREEK AT US 521 NNW OF LANCASTER (N Main St)	CW-047	LANCASTER	34°43'47.7"N	80°46'33.7"W	FC
CATAWBA	MCALPINE CREEK (S Lancaster Hwy)	CW-226	MECKLENBURG	35°03'46.4"N	80°52'37.0"W	
CATAWBA	SIX MILE CREEK (Marvin Rd - Union/Mecklenburg County Line) (NC)	LCMS4-003	UNION	35°00'37.6"N	80°49'41.2"W	
CATAWBA	SIX MILE CREEK (Shelley Mullis Rd)	LCMS4-004	LANCASTER	34°57'15.4"N	80°49'57.6"W	
CATAWBA	TWELVE MILE CREEK (Hwy 521)	LCMS4-007	LANCASTER	34°54'55.4"N	80°48'55.2"W	
CATAWBA	WAXHAW CREEK (Hwy 521)	LCMS4-008	LANCASTER	34°49'55.7"N	80°48'20.0"W	
CATAWBA	CANE CREEK (W Meeting St/Hwy 9)	LCMS4-010	LANCASTER	34°42'48.8"N	80°48'30.4"W	

The following sites have been added to the sampling program.

CATAWBA	LITTLE SUGAR CREEK (Prestwick Subdivision Crossing Bridge)	LCMS4-014	Lancaster	35°04'02.9"N	80°53'55.3"W
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Lancaster County Stormwater Ambient Water Sample Collection and Field Analysis : TDS (PPM)												
Sample ID/Location	January	February	March	April	May	June	July	August	September	October	November	December
CW-064							214	262	296	311	259	246
CW-226							236	270	316	303	278	260
LCMS4-001							211	155	180	188	164	158
LCMS4-002							218	176	188	197	145	160
CW-681							99	85	96	107	68	81
CW-011							83	76	115	108	45	85
CW-013							188	204	231	270	172	219
CW-176							75	75	80	83	65	74
LCMS4-003							71	81	80	92	70	83
RS-13168							50	71	72	79	62	73
LCMS4-004							48	64	69	103	53	75
CW-131							59	63	69	115	52	58
LCMS4-010							51	83	72	107	49	54
CW-232							64	48	57	63	37	42
CW-017							83	56	76	68	51	43
CW-145							72	73	80	84	67	47
LCMS4-008							67	97	96	90	81	48
LCMS4-009							80	315	387	402	97	44
CW-083							70	94	90	201	89	101
LCMS4-007							99	103	120	242	112	130
LCMS4-006							36	64	59	86	61	68
LCMS4-005							164	171	156	282	157	79
CW-047							52	50	55	101	49	52
CW-185							63	86	106	107	54	60
RS-14200							50	67	48	N/A	49	43
RS-05403							58	71	53	N/A	53	67
CW-151							56	48	55	72	58	55
RS-07043							59	52	52	70	52	53
LCMS4 - 011							76	64	65	91	80	78
LCMS4 - 012							68	66	57	N/A	53	57
LCMS4 - 013							72	61	57	77	66	61
CW-036							222	108	227	258	197	154

2019 TDS

Lancaster County Stormwater Ambient Water Sample Collection and Field Analysis : TDS (PPM)												
Sample ID/Location	January	February	March	April	May	June	July	August	September	October	November	December
CW-064	250	150	198	COVID-19	225	154	357	203				
CW-226	263											
LCMS4-001	143	140	162	COVID-19	166	121	216	136				
LCMS4-002	145	126	155	COVID-19	151	156	183	126				
CW-681	89	69	85	COVID-19	77	132	155	85				
CW-011	78	57	72	COVID-19	69	113	135	76				
CW-013	171											
CW-176	79	58	72	COVID-19	72	115	131	83				
LCMS4-003	79											
RS-13168	72											
LCMS4-004	68											
CW-131	33	22	33	COVID-19	43	70	71	71				
LCMS4-010	32											
CW-232	33	35	46	COVID-19	44	78	60	58				
CW-017	31	22	32	COVID-19	39	61	56	58				
CW-145	30	28	34	COVID-19	43	74	87	71				
LCMS4-008												
LCMS4-009	30	28	34	COVID-19	40	206	97	70				
CW-083	75	39	53	COVID-19	67	118	173	103				
LCMS4-007	75											
LCMS4-006	70	47	54	COVID-19	64	107	112	70				
LCMS4-005	91	54	68	COVID-19	84	147	214	97				
CW-047												
CW-185	32	29	36	COVID-19	44	61	61	58				
RS-14200	30	20	32	COVID-19	32	54	59	76				
RS-05403	36	35	41	COVID-19	39	79	66	3				
CW-151	29	22	25	COVID-19	29	39	39	48				
RS-07043	36	33	40	COVID-19	41	67	65	73				
LCMS4 - 011	48	52	53	COVID-19	58	93	101	68				
LCMS4 - 012	38	43	47	COVID-19	65	95	99	70				
LCMS4 - 013	28	45	54	COVID-19	94	109	104	65				
CW-036	169	104	146	COVID-19	162	70	254	126				
LCMS4-014		24	26	COVID-19	30	47	72	51				

2020 TDS

Lancaster County Stormwater Ambient Water Sample Collection and Field Analysis : Weather Conditions, Ambient Temperature (°F)											
Sample ID/Location	January	February	March	April	May	June	July	August	September	October	November
CW-064							Cloudy, 79	Sunny, 81	Partly Cloudy, 72	Cloudy, 72	Sunny, 41
CW-226							Cloudy, 77	Sunny, 82	Partly Cloudy, 72	Cloudy, 73	Sunny, 46
LCMS4-001							Cloudy, 79	Sunny, 82	Partly Cloudy, 73	Cloudy, 73	Sunny, 55
LCMS4-002							Cloudy, 81	Sunny, 84	Partly Cloudy, 73	Cloudy, 73	Sunny, 46
CW-681							Cloudy, 79	Sunny, 84	Partly Cloudy, 73	Cloudy, 73	Sunny, 50
CW-011							Cloudy, 81	Sunny, 86	Partly Cloudy, 73	Cloudy, 73	Sunny, 59
CW-013							Cloudy, 82	Sunny, 88	Partly Cloudy, 75	Cloudy, 73	Sunny, 59
CW-176							Cloudy, 81	Sunny, 88	Partly Cloudy, 75	Cloudy, 72	Sunny, 59
LCMS4-003							Cloudy, 79	Partly Cloudy, 88	Partly Cloudy, 75	Cloudy, 70	Sunny, 60
RS-13168							Cloudy, 81	Partly Cloudy, 88	Partly Cloudy, 75	Cloudy, 72	Sunny, 60
LCMS4-004							Cloudy, 81	Sunny, 89	Sunny, 77	Cloudy, 72	Sunny, 59
CW-131							Sunny, 79	Sunny, 81	Sunny, 70	Cloudy, 63	Cloudy, 55
LCMS4-010							Partly Cloudy, 79	Sunny, 81	Sunny, 70	Cloudy, 63	Cloudy, 55
CW-232							Partly Cloudy, 82	Sunny, 82	Sunny, 72	Cloudy, 63	Cloudy, 57
CW-017							Partly Cloudy, 84	Sunny, 83	Sunny, 66	Partly Cloudy, 63	Sunny, 61
CW-145							Partly Cloudy, 86	Sunny, 88	Sunny, 64	Partly Cloudy, 66	Cloudy, 61
LCMS4-008							Partly Cloudy, 86	Sunny, 93	Sunny, 63	Cloudy, 66	Cloudy, 61
LCMS4-009							Partly Cloudy, 86	Sunny, 91	Partly Cloudy, 79	Cloudy, 66	Sunny, 63
CW-083							Partly Cloudy & Drizzle, 80	Sunny, 93	Partly Cloudy, 79	Cloudy, 70	Cloudy, 64
LCMS4-007							Sunny, 79	Sunny, 97	Partly Cloudy, 79	Sunny, 68	Cloudy, 64
LCMS4-006							Sunny, 79	Sunny, 95	Partly Cloudy, 78	Sunny, 70	Cloudy, 66
CW-047							Partly Cloudy, 81	Partly Cloudy, 79	Sunny, 72	Sunny, 59	Sunny, 59
CW-185							Partly Cloudy, 81	Partly Cloudy, 79	Sunny, 72	Sunny, 61	Sunny, 57
RS-14200							Sunny, 82	Partly Cloudy, 81	Sunny, 72	Sunny, 63	Sunny, 61
RS-05003							Sunny, 84	Partly Cloudy, 81	Sunny, 72	Sunny, 63	Sunny, 59
CW-151							Sunny, 84	Partly Cloudy, 81	Sunny, 73	Sunny, 64	Sunny, 61
RS-07043							Partly Cloudy, 84	Partly Cloudy, 82	Sunny, 72	Sunny, 64	Sunny, 61
LCMS4 - 011							Sunny, 86	Partly Cloudy, 84	Sunny, 73	Sunny, 66	Sunny, 63
LCMS4 - 012							Partly Cloudy, 90	Partly Cloudy, 84	Sunny, 73	Sunny, 66	Sunny, 64
LCMS4 - 013							Partly Cloudy, 90	Partly Cloudy, 88	Sunny, 77	Sunny, 72	Sunny, 64
CW-036							Sunny, 90	Partly Cloudy, 88	Sunny, 77	Sunny, 72	Sunny, 64

2019 Weather Conditions

Lancaster County Stormwater Ambient Water Sample Collection and Field Analysis : Weather Conditions, Ambient Temperature (°F)												
Sample ID/Location	January	February	March	April	May	June	July	August	September	October	November	December
CW-064	Sunny, 33	Cloudy, 37	Sunny, 39	COVID-19	Sunny, 55	PC, 77	Sunny, 72	Sunny, 72				
CW-226	Sunny, 34	Cloudy, 37	Sunny, 39	COVID-19	Sunny, 55	PC, 77	Sunny, 72	Sunny, 73				
LCM54-001	Sunny, 35	Cloudy, 37	Sunny, 39	COVID-19	Sunny, 55	PC, 77	Sunny, 73	Sunny, 73				
LCM54-002	Sunny, 34	Cloudy, 39	Sunny, 41	COVID-19	Sunny, 55	PC, 77	Sunny, 79	Sunny, 75				
CW-681	Sunny, 37	Cloudy, 41	Sunny, 46	COVID-19	Sunny, 57	PC, 79	Sunny, 79	Sunny, 76				
CW-011	Sunny, 37	Cloudy, 43	Sunny, 46	COVID-19	Sunny, 57	PC, 79	Sunny, 79	Sunny, 76				
CW-013	Sunny, 38											
CW-176	Sunny, 39	Cloudy, 45	Sunny, 50	COVID-19	Sunny, 59	PC, 79	Sunny, 79	Sunny, 79				
LCM54-003	Sunny, 39											
RS-13168	Sunny, 42											
LCM54-004	Sunny, 40											
CW-131	Cloudy, 46	PC, 70	Sunny, 63	COVID-19	Sunny, 57	PC, 79	Light Rain, 75	Sunny, 77				
LCM54-010	Cloudy, 46											
CW-232	PC, 50	Cloudy, 70	Sunny, 63	COVID-19	Sunny, 57	PC, 81	Light Rain, 75	Sunny, 77				
CW-017	PC, 50	Cloudy, 68	Sunny, 64	COVID-19	Sunny, 57	PC, 81	Light Rain, 75	Sunny, 77				
CW-145	Sunny, 55	PC, 52	Sunny, 64	COVID-19	Sunny, 57	PC, 82	Light Rain, 75	Sunny, 80				
LCM54-008												
LCM54-009	Sunny, 55	PC, 52	Sunny, 61	COVID-19	Sunny, 63	PC, 79	Sunny, 84	Sunny, 82				
CW-083	Sunny, 45	PC, 54	Sunny, 61	COVID-19	Sunny, 63	PC, 81	Sunny, 82	Sunny, 82				
LCM54-007	Sunny, 44											
LCM54-006	Sunny, 40	Cloudy, 46	Sunny, 55	COVID-19	Sunny, 61	PC, 81	Sunny, 82	Sunny, 80				
LCM54-005	Sunny, 42	Cloudy, 46	Sunny, 54	COVID-19	Sunny, 63	PC, 79	Sunny, 82	Sunny, 79				
CW-047												
CW-185	Rain, 46	Light Rain, 63	PC, 57	COVID-19	Sunny, 45	PC, 77	Light Rain, 73	Foggy, 70				
RS-14200	Rain, 45	Sunny, 68	PC, 59	COVID-19	Sunny, 55	PC, 81	Cloudy, 76	Sunny, 72				
RS-05403	Rain, 45	PC, 68	PC, 61	COVID-19	Sunny, 57	PC, 81	Light Rain, 77	Sunny, 75				
CW-151	PC, 45	PC, 70	PC, 61	COVID-19	Sunny, 57	PC, 81	Light Rain, 75	Sunny, 77				
RS-07043	Rain, 46	Sunny, 68	PC, 59	COVID-19	Sunny, 55	PC, 81	Cloudy, 75	Sunny, 77				
LCM54 - 011	Cloudy, 44	PC, 64	PC, 57	COVID-19	Sunny, 52	PC, 79	Cloudy, 74	Sunny, 70				
LCM54 - 012	Rain, 43	PC, 63	PC, 57	COVID-19	Sunny, 52	PC, 79	Cloudy, 74	Foggy, 70				
LCM54 - 013	Rain, 43	Cloudy, 63	PC, 57	COVID-19	Sunny, 52	PC, 77	Cloudy, 73	Foggy, 70				
CW-036	Sunny, 46	Cloudy, 55	Sunny, 54	COVID-19	Sunny, 59	PC, 82	Sunny, 79	Sunny, 87				
LCM54-014		Light Rain, 63	Sunny, 57	COVID-19	Sunny, 61	PC, 81	Sunny, 82	Sunny, 79				

2020 Weather Conditions

Lancaster County Stormwater Ambient Water Sample Collection and Field Analysis : 24 - Hr Rainfall (in)												
Sample ID/Location	January	February	March	April	May	June	July	August	September	October	November	December
CW-064							0.14	0	0	0	0	0
CW-226							0.14	0	0	0	0	0
LCMS4-001							0.14	0	0	0	0	0
LCMS4-002							0.14	0	0	0	0	0
CW-681							0.14	0	0	0	0	0
CW-011							0.14	0	0	0	0	0
CW-013							0.14	0	0	0	0	0
CW-176							0.14	0	0	0	0	0
LCMS4-003							0.14	0	0	0	0	0
RS-13168							0.14	0	0	0	0	0
LCMS4-004							0.14	0	0	0	0	0
CW-131							0	0	0	0	0	0
LCMS4-010							0	0	0	0	0	0
CW-232							0	0	0	0	0	0
CW-017							0	0	0	0	0	0
CW-145							0	0	0	0	0	0
LCMS4-008							0	0	0	0	0	0
LCMS4-009							0	0	0	0	0	0
CW-083							0	0	0	0	0	0
LCMS4-007							0	0	0	0	0	0
LCMS4-006							0	0	0	0	0	0
LCMS4-005							0	0	0	0	0	0
CW-047							0	0.01	0	0	0	0
CW-185							0	0.01	0	0	0	0
RS-14200							0	0.01	0	0	0	0
RS-05403							0	0.01	0	0	0	0
CW-151							0	0.01	0	0	0	0
RS-07043							0	0.01	0	0	0	0
LCMS4 - 011							0	0.01	0	0	0	0
LCMS4 - 012							0	0.01	0	0	0	0
LCMS4 - 013							0	0.01	0	0	0	0
CW-036							0	0.01	0	0	0	0

2019 24 Hr. Rainfall

Lancaster County Stormwater Ambient Water Sample Collection and Field Analysis : 72 - Hr Rainfall (in)												
Sample ID/Location	January	February	March	April	May	June	July	August	September	October	November	December
CW-064							0.14	0	0	0	0	0
CW-226							0.14	0	0	0	0	0
LCMS4-001							0.14	0	0	0	0	0
LCMS4-002							0.14	0	0	0	0	0
CW-681							0.14	0	0	0	0	0
CW-011							0.14	0	0	0	0	0
CW-013							0.14	0	0	0	0	0
CW-176							0.14	0	0	0	0	0
LCMS4-003							0.14	0	0	0	0	0
RS-13168							0.14	0	0	0	0	0
LCMS4-004							0.14	0	0	0	0	0
CW-131							0.14	0	0	0	0	0
LCMS4-010							0.14	0	0	0	0	0
CW-232							0.14	0	0	0	0	0
CW-017							0.14	0	0	0	0	0
CW-145							0.14	0	0	0	0	0
LCMS4-008							0.14	0	0	0	0	0
LCMS4-009							0.14	0	0	0	0	0
CW-083							0.14	0	0	0	0	0
LCMS4-007							0.14	0	0	0	0	0
LCMS4-006							0.14	0	0	0	0	0
LCMS4-005							0.14	0	0	0	0	0
CW-047							0.14	0.18	0	0	0	0
CW-185							0.14	0.18	0	0	0	0
RS-14200							0.14	0.18	0	0	0	0
RS-05403							0.14	0.18	0	0	0	0
CW-151							0.14	0.18	0	0	0	0
RS-07043							0.14	0.18	0	0	0	0
LCMS4 - 011							0.14	0.18	0	0	0	0
LCMS4 - 012							0.14	0.18	0	0	0	0
LCMS4 - 013							0.14	0.18	0	0	0	0
CW-036							0.14	0.18	0	0	0	0

Lancaster County Stormwater Ambient Water Sample Collection and Field Analysis : 24 - Hr Rainfall (in)												
Sample ID/Location	January	February	March	April	May	June	July	August	September	October	November	December
CW-064	0	0.03	0	COVID-19	0	0	0.82	0.03				
CW-226	0											
LCMS4-001	0	0.03	0	COVID-19	0	0	0.82	0.03				
LCMS4-002	0	0.03	0	COVID-19	0	0	0.82	0.03				
CW-681	0	0.03	0	COVID-19	0	0	0.82	0.03				
CW-011	0	0.03	0	COVID-19	0	0	0.82	0.03				
CW-013	0											
CW-176	0	0.03	0	COVID-19	0	0	0.82	0.03				
LCMS4-003	0											
RS-13168	0											
LCMS4-004	0											
CW-131	0	0.03	0	COVID-19	0	0	0.82	0.03				
LCMS4-010	0											
CW-232	0	0.03	0	COVID-19	0	0	0.82	0.03				
CW-017	0	0.03	0	COVID-19	0	0	0.82	0.03				
CW-145	0	0.03	0	COVID-19	0	0	0.82	0.03				
LCMS4-008												
LCMS4-009	0	0.03	0	COVID-19	0	0	0.82	0.03				
CW-083	0	0.03	0	COVID-19	0	0	0.82	0.03				
LCMS4-007	0											
LCMS4-006	0	0.03	0	COVID-19	0	0	0.82	0.03				
LCMS4-005	0	0.03	0	COVID-19	0	0	0.82	0.03				
CW-047												
CW-185	0	0.03	0	COVID-19	0	0	0.82	0.03				
RS-14200	0	0.03	0	COVID-19	0	0	0.82	0.03				
RS-05403	0	0.03	0	COVID-19	0	0	0.82	0.03				
CW-151	0	0.03	0	COVID-19	0	0	0.82	0.03				
RS-07043	0	0.03	0	COVID-19	0	0	0.82	0.03				
LCMS4 - 011	0	0.03	0	COVID-19	0	0	0.82	0.03				
LCMS4 - 012	0	0.03	0	COVID-19	0	0	0.82	0.03				
LCMS4 - 013	0	0.03	0	COVID-19	0	0	0.82	0.03				
CW-036	0	0.03	0	COVID-19	0	0	0.82	0.03				
LCMS4-014		0.03	0	COVID-19	0	0	0.82	0.03				

2020 24 hr. Rainfall

Lancaster County Stormwater Ambient Water Sample Collection and Field Analysis : 72 - Hr Rainfall (in)												
Sample ID/Location	January	February	March	April	May	June	July	August	September	October	November	December
CW-064	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
CW-226	0.06											
LCMS4-001	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
LCMS4-002	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
CW-681	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
CW-011	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
CW-013	0.06											
CW-176	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
LCMS4-003	0.06											
RS-13168	0.06											
LCMS4-004	0.06											
CW-131	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
LCMS4-010	0.06											
CW-232	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
CW-017	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
CW-145	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
LCMS4-008												
LCMS4-009	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
CW-083	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
LCMS4-007	0.06											
LCMS4-006	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
LCMS4-005	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
CW-047												
CW-185	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
RS-14200	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
RS-05403	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
CW-151	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
RS-07043	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
LCMS4 - 011	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
LCMS4 - 012	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
LCMS4 - 013	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
CW-036	0.06	0.23	0	COVID-19	0	0	0.82	0.03				
LCMS4-014		0.23	0	COVID-19	0	0	0.82	0.03				

2020 72 hr. Rainfall

Map 1:

