



Town of Carrboro

Illicit Discharge, Detection and Elimination (IDDE) Plan

May 2022

Town of Carrboro, NC
Public Works Department
Stormwater Division

NPDES Permit #NCS000450

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1 Justification

1.1 NPDES Permit No. NCS000450

The Town of Carrboro has a Stormwater Discharge permit under the National Pollutant Discharge Elimination System effective 1/1/2022 until 12/31/2026. The permit authorizes the point source discharge of stormwater runoff from the municipal separate storm sewer system (MS4), sets forth the minimum management measures required to implement a successful stormwater management program, and introduces objectives and Best Management Practices (BMPs) for each measure. Section D: Illicit Discharge Detection and Elimination (IDDE) is attached to this document, and the objectives and BMPs listed therein shall be referenced throughout this plan.

This plan fulfills the following permit objective:

- (a) Implement and enforce a program to address the detection and elimination of illicit discharges into the MS4.

This plan also fulfills the following permit BMP:

BMP	Measurable Goals
Maintain an Illicit Discharge Detection and Elimination Program	Maintain a written Illicit Discharge Detection and Elimination Program, including provisions for program assessment and evaluation and integrating program.

2 Background

Illicit discharges are defined as the release of a pollutant into the storm sewer system or surface waters, directly (discharged within the physical limits of the storm sewer system, stream, pond or lake) or indirectly (discharged outside the physical limits but in such a manner that the pollutant is carried to these systems). The Town of Carrboro maintains an illicit discharge ordinance expressly prohibiting such discharges as well as illicit connections, which are the connection of drains or lines that convey pollutants and/or wastewater to the storm sewer system.

The Town is committed to upholding its illicit discharge ordinance in order to both comply with its NPDES permit and protect the water quality of its receiving streams and uphold the effectiveness and integrity of its municipal separate storm sewer system. The below plan details the best management practices, procedures, steps and methods that the Town has integrated into its operations in order to identify, prevent and remedy illicit discharges and connections throughout its jurisdiction.

3 Goals and best management practices

3.1 Best Management Practices

The Town has initiated Best Management Practices in order to comply with those set out in the NPDES permit. These are described in detail in the Town’s Stormwater Management Program (SWMP) and are listed below:

Table 15: Illicit Discharge Detection and Elimination BMPs				
Permit Ref.	3.4.1: MS4 Map Measures to develop, update and maintain a municipal storm sewer system map including stormwater conveyances, flow direction, major outfalls and waters of the United States receiving stormwater discharges.			
	A	B	C	D

Table 15: Illicit Discharge Detection and Elimination BMPs

BMP No.	Description of BMP	Measurable Goal(s)	Schedule for Implementation	Annual Reporting Metric
16.	Continuously update stormwater system map			
	The Town shall maintain a stormwater system map and GIS database based on field work to locate infrastructure and devices, and continuously updated as infrastructure changes. The map includes all above and below ground Town owned and maintained stormwater infrastructure along with key attribute information.	1. Add new infrastructure as it is constructed.	1. Continuously Permit Years 1-5	1. Total number of outfalls mapped Number of outfalls added during permit year Total miles of above ground infrastructure Total miles of below ground infrastructure
17.	Maintain Stormwater Control Measure inventory and map			
	The Town shall identify and maintain a database of Stormwater Control Measures (SCMs), integrated into existing stormwater system map. The map shall distinguish between privately/non-Town-owned and Town-owned SCMs.	1. Add new SCMs as they are constructed.	1. Continuously Permit Years 1-5	1. Total number of SCMs mapped Number of SCMs added during permit year
Permit Ref.	3.4.2: Regulatory Mechanism Measures to provide an IDDE ordinance or other regulatory mechanism that provides legal authority to prohibit, detect, and eliminate illicit connections and discharges, illegal dumping and spills into the MS4, including enforcement procedures and actions.			
BMP No.	A	B	C	D
	Description of BMP	Measurable Goal(s)	Schedule for Implementation	Annual Reporting Metric
18.	Update the Illicit Discharge Ordinance as necessary to maintain legal authority.			
	The Town shall ensure the continued applicability, accuracy and legal standing of the IDDE provisions in the Town Code.	1. Coordinate with Town Attorney to conduct review of Illicit Discharge Ordinance.	1. Permit Year 1	1. Yes/No/Status
		2. Update Illicit Discharge Ordinance	2. Permit Year 1	2. Yes/No/Status
Permit Ref.	3.4.3: IDDE Plan Measures to maintain and implement a written IDDE Plan to detect and address illicit discharges, illegal dumping and any non-stormwater discharges identified as significant contributors of pollutants to the MS4. The plan shall provide standard procedures and documentation to: <ul style="list-style-type: none"> a) Locate priority areas likely to have illicit discharges, b) Conduct routine dry weather outfall inspections, c) Identify illicit discharges and trace sources, d) Eliminate the source(s) of an illicit discharge, and e) Evaluate and assess the IDDE Program. 			

Table 15: Illicit Discharge Detection and Elimination BMPs

BMP No.	A	B	C	D
	Description of BMP	Measurable Goal(s)	Schedule for Implementation	Annual Reporting Metric
19.	Maintain a written IDDE Plan			
	The Town shall maintain a written IDDE plan to detect and address illicit discharges, illegal dumping and non-stormwater discharges identified as significant contributors of pollutants to the MS4, including provisions for program assessment and evaluation and associated documents.	1. Conduct comprehensive initial review of current plan and revise accordingly.	1. Permit Year 1	1. Yes/No/Partial
		2. Submit new plan to DEQ for review and approval.	2. Permit Year 1	2. Date submitted
		3. Implement written IDDE Plan.	3. Continuously Permit Years 2 - 5	3. Yes/No/Partial
		4. Conduct review of plan, standard documentation, forms, procedures and SOPs; make changes as necessary.	4. Annually Permit Years 1-5	4. Yes/No/Partial
20.	Locate priority areas most likely to have illicit discharges			
	The Town shall identify areas with high Illicit Discharge Potential (IDP) based on physical factors, historical problems, and surrounding land use. The Town has developed an Illicit Discharge Potential matrix and scored subwatersheds and identified priority outfalls for illicit discharge investigations.	1. Review/update MS4 inspection areas using Illicit Discharge Potential matrix.	1. Annually Permit Years 1-5	1. Review conducted: Yes/No/Partial Number of high priority subwatersheds
21.	Conduct routine dry weather outfall inspections			
	The Town shall implement a program of conducting and tracking dry weather outfall inspections. The Town's Illicit Discharge Program Plan includes a program for conducting dry weather flow field observations, prioritizing outfalls by subwatershed and their respective illicit discharge potential. Inspections utilize the written Outfall Inspection SOP, Outfall Inspection Field Sheet, and the IDDE Documentation SOP.	1. Establish Outfall Reconnaissance Inventory inspection schedule, with minimum of 20% inspected annually	1. Permit Year 1	1. Yes/No/Partial
		2. Develop ORI inspection procedure, standard documentation and forms	2. Permit Year 1	2. Yes/No/Partial
		3. Inspect minimum of 20% MS4 per year (100% every 5 years)	3. Continuously Permit Years 1-5	3. Number of outfalls inspected Number of illicit discharges identified as a result of outfall inspections
22.	Identify illicit discharges and connections, trace and eliminate sources			
	The Town's Illicit Discharge Program Plan includes a program of identifying and eliminating illicit discharges by tracing their sources and	1. Investigate reports of illicit discharges to determine sources.	1. Continuously Permit Years 1-5	1. Number of potential illicit discharges reported Number of verified illicit discharges

Table 15: Illicit Discharge Detection and Elimination BMPs

	pursuing enforcement as necessary. The program includes procedures for responding to reports of illicit discharges, conducting various types of inspections to determine sources, eliminating illicit discharges and connections, and issuing enforcement as necessary.	2. Halt illicit discharges and remedy illicit connections as necessary	2. Continuously Permit Years 1-5	2. Number of illicit connections and discharges remedied
		3. Issue verbal and written enforcement, including Notices of Violation and penalties as appropriate	3. Continuously Permit Years 1-5	3. Number of enforcement actions issued for illicit discharges or connections
23.	Evaluate and assess the IDDE program at least annually			
	The Town shall evaluate the IDDE program at least annually and incorporate changes as necessary. Assessment will utilize number of stormwater hotline emails and voicemail messages, illicit discharge investigations conducted, outcomes of investigations, enforcement issued, chronic violators, and areas of improvement.	1. Review program implementation and IDDE metrics at least annually.	1. Annually Permit Years 1-5	1. Yes/No/Status
Permit Ref.	3.4.4: IDDE Tracking Measures for tracking and documenting the date(s) an illicit discharge, illicit connection or illegal dumping was observed, the results of the investigation, any follow-up of the investigation, the date the investigation was closed, the issuance of enforcement actions, and the ability to identify chronic violators.			
BMP No.	A Description of BMP	B Measurable Goal(s)	C Schedule for Implementation	D Annual Reporting Metric
24.	Monitor illicit discharges, investigations and enforcement actions			
	The Town shall maintain an “Event Tracking” spreadsheet of reported illicit discharges including location, type, enforcement actions, and outcomes. The spreadsheet	1. Document illicit discharges in accordance with the Illicit Discharge Documentation SOP, including the Event Tracking spreadsheet and CityWorks.	1. Continuously Permit Years 1-5	1. Number of entries in Event Tracking spreadsheet per permit year

Table 15: Illicit Discharge Detection and Elimination BMPs

	documents the following: date reported, date closed, investigation ID #, location, hotline report (Y/N), confirmed illicit discharge (Y/N), nature of discharge, results of investigation, actions taken to remedy illicit discharge, enforcement actions issued, file folder name, reporting party (staff/public), investigator, subwatershed, receiving stream. The Town utilizes the CityWorks platform for storing and sharing details, photos and comments. Staff shall follow the Illicit Discharge Documentation SOP.	2. Review illicit discharge database for potential chronic violators at least annually	2. Annually Permit Years 1-5	2. Number of established chronic violators
Permit Ref.	3.4.5: Staff IDDE Training Measures to provide training for municipal staff and contractors who, as part of their normal job responsibilities, may observe an illicit discharge, illicit connection, illegal dumping or spills. Training shall include how to identify and report illicit discharges, illicit connections, illegal dumping and spills. Each staff training event shall be documented, including the agenda/materials, date, and number of staff participating.			
BMP No.	A Description of BMP	B Measurable Goal(s)	C Schedule for Implementation	D Annual Reporting Metric
25.	Train municipal staff to identify illicit discharges			
	The Town shall train relevant personnel on methods of identifying illicit discharges, connections, dumping or spills. Personnel will take exams before and after training to evaluate comprehension.	1. Develop written training plan and presentations for Town employees, first responders, and contractors likely to encounter illicit discharges	1. Permit Year 1	1. Yes/No/Partial
		2. Train municipal staff to identify and report potential illicit discharges	2. Annually Permit Years 1-5	2. Number of staff members trained Percent of exams with passing score
		3. Evaluate effectiveness of training by analyzing illicit discharges identified by Town personnel	3. Annually Permit Years 2 – 5	3. Percent illicit discharges identified by staff
Permit Ref.	3.4.6: IDDE Reporting Measures for the public and staff to report illicit discharges, illegal dumping and spills. The mechanism shall be publicized to facilitate reporting and shall be managed to provide rapid response by appropriately trained personnel.			
BMP No.	A Description of BMP	B Measurable Goal(s)	C Schedule for Implementation	D Annual Reporting Metric
26.	Monitor hotline and other reporting mechanisms for public and staff to report illicit discharges			

Table 15: Illicit Discharge Detection and Elimination BMPs

The Town shall monitor the stormwater hotline (phone and email) for reports of illicit discharges. IDDE reporting shall follow the IDDE Documentation SOP.	1. Develop written procedure for documenting and communicating hotline reports to relevant personnel, reporting tracking system and relevant forms	1. Permit Year 1	1. Yes/No/Partial
	2. Distribute flyers and educational materials with reporting information to Town personnel and public	2. Continuously Permit Years 1 – 5	2. Number of educational materials distributed
	3. Track hotline and email communications	3. Continuously Permit Years 1 – 5	3. Number of hotline emails and phone calls Number of inquiries leading to confirmed illicit discharges
	4. Review efficacy of stormwater email and hotline in identifying illicit discharges with Town personnel at least annually	4. Annually Permit Years 1 – 5	4. Yes/No/Partial

3.2 Program evaluation and assessment

The Town assesses IDDE program effectiveness through the reporting metrics detailed above, which include the following:

- Total number of outfalls mapped
- Number of outfalls added during permit year
- Total miles of above ground infrastructure
- Total miles of below ground infrastructure
- Total number of SCMs mapped
- Number of SCMs added during permit year
- Number of outfalls inspected
- Number of illicit discharges identified as a result of outfall inspections
- Number of potential illicit discharges reported
- Number of verified illicit discharges
- Number of illicit connections and discharges remedied
- Number of enforcement actions issued for illicit discharges or connections
- Number of entries in Event Tracking spreadsheet per permit year
- Number of established chronic violators
- Number of staff members trained
- Percent of exams with passing score
- Percent illicit discharges identified by staff
- Number of educational materials distributed
- Number of hotline emails and phone calls
- Number of inquiries leading to confirmed illicit discharges

In permit year 1, the Town will conduct a comprehensive initial review of both the IDDE Plan and Illicit Discharge Ordinance. Additionally, the Town will review this IDDE Plan and related illicit discharge standard documentation, forms, procedures, and SOPs annually. The Town will also annually review its MS4 inspection areas using the illicit discharge potential matrix, program implementation and IDDE

metrics, illicit discharge database for potential chronic violators, and the efficacy of the stormwater email and hotline in identifying illicit discharges.

Program evaluation metrics are tracked in the spreadsheet “Program Evaluation KPIs”.

4 Storm Sewer Map

4.1 Permit requirement

The applicable permit objective for this section is:

- (b) Maintain a storm sewer system map, showing the location of all major outfalls and the names and location of all waters of the United States that receive discharges from those outfalls;

The applicable permit BMP for this section is:

BMP	Measurable Goals
Maintain a Storm Sewer System Map of Major Outfalls.	The permittee shall maintain a current a map showing major outfalls and receiving streams.

4.2 Mapping initiative

The Town initiated a detailed stormwater mapping program in 2000. As of 2020, all drainage structures, public and private, within the Town’s jurisdiction have been mapped utilizing GIS technology. Mapping has been enhanced as new digital and as-built information has become available. In FY2008-2009, the Town completed a major update to stream data that improved the accuracy and classification of perennial, intermittent, and ephemeral streams; it also updated drainage areas, outfalls, ditches, SCMs and new system features subsequent to the original mapping. The Town plans to undergo a Town-wide condition assessment of stormwater infrastructure in 2022.

4.3 Cityworks and GIS

The Town utilizes Cityworks software, which incorporates existing GIS layers with asset management, allowing efficient tracking and work order dispatch to appropriate personnel. Cityworks is available as both a desktop and mobile platform – this allows personnel in the field to identify discrepancies between the listed asset characteristics (e.g. outlet size, SCM type) and what is observed in order to increase accuracy.

4.4 Additional resources

The Town utilizes additional resources to supplement its mapping initiatives, including the following:

- [NCDEQ Community Mapping System](#)
- [Orange County GIS Website](#)

5 Prohibit non-stormwater discharges, implement appropriate enforcement procedures and actions

5.1 Permit requirement

The applicable permit objective for this section is:

- (c) Prohibit, through ordinance, or other regulatory mechanism, non-storm water discharges except as allowed in this permit and implement appropriate enforcement procedures and actions;

The applicable permit BMP for this section is:

BMP	Measurable Goals
Maintain adequate legal authorities	The permittee shall maintain an IDDE ordinances or other regulatory mechanisms that provides the legal authority to prohibit illicit connections and discharges.
Enforcement of the IDDE ordinance	The permittee shall implement a mechanism to track the issuance of notices of violation and enforcement actions as administered by the permittee. This mechanism shall include the ability to identify chronic violators for initiation of actions to reduce noncompliance.

5.2 Illicit discharge ordinance (Town Code)

The Town’s Illicit Discharge Ordinance is located in the Town Code, Chapter 5 Article IV – Illicit Discharges Into and Connections to Storm Sewer System (attached). The Ordinance achieves the following:

- Establishes regulatory authority to prohibit discharges of any pollutants directly or indirectly into the storm sewer system or surface waters;
- Prohibits illicit connections to the storm sewer system
- Establishes the rights of town officers, agents and employees to enter on any premises with the intention of enforcing the Ordinance;
- References the applicable penalties and remedies available for enforcement of the Ordinance (located in Section 5-21 of the Town Code).

5.3 Enforcement actions

In the event that an illicit discharge is detected and its source is identified (see Section 7), the Stormwater Division shall implement the following enforcement procedures and actions:

- Contact the responsible party via phone, email or in person to discuss the violation.
- Provide information regarding the nature of the discharge and the manner in which does not comply with the Town Code; supply written documentation such as the Illicit Discharge Ordinance.
- Issue a formal written notice of noncompliance with the ordinance to the responsible party, stating that the letter is a written warning to cease and desist the illicit discharge and that further enforcement may follow.
- Should the illicit discharge continue, refer the matter to the Public Works Director and/or Town Attorney for further action.

Enforcement actions are determined based on several factors, including the degree and extent of harm to natural resources, public health and private property; duration and gravity of the violation; cost to the violator or others of rectifying the damage; amount of money saved by the violator by noncompliance; whether the violation was committed willfully or intentionally, negligently, or as the result of an unforeseeable or unavoidable accident; whether the violator ceased the violation upon notice and took steps necessary to limit or correct any damage; prior record of illicit discharges by the violator; and cost to the town of enforcement procedures.

Enforcement actions may include the assessment of a civil penalty of up to \$5,000 for a single event; however, each day that a violation continues after the offender has been notified may constitute a separate offense. In this case, penalties assessed on a daily basis may cumulatively exceed the \$5,000 cap. See Town Code Section 5-21 Penalties (attached).

Additional enforcement actions may also include the physical removal of an illicit connection from the Town stormwater system, when it has been determined that such connection is prohibited. In all cases, the Stormwater Division seeks to remedy compliance issues by communicating with the violator or property

owner and providing them with an opportunity to discontinue the illicit discharge before further enforcement is needed.

5.4 Enforcement tracking

All incidents of suspected or known illicit discharges shall be documented and tracked according to the IDDE Documentation SOP (attached) and as described in section 7.7 of this plan. Specifically, enforcement actions shall be tracked via the Event Tracking spreadsheet.

6 Detect, address and track illicit discharges

6.1 Permit requirement

The applicable permit objectives for this section are:

(d) Implement a plan to detect and address non-storm water discharges, including illegal dumping, to the MS4;

(f) Address the following categories of non-storm water discharges or flows (i.e., illicit discharges) only if you identify them as significant contributors of pollutants to the MS4: water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration, uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, charity car washes, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, and street wash water (discharges or flows from firefighting activities are excluded from the effective prohibition against non-storm water and need only be addressed where they are identified as significant sources of pollutants to waters of the United States).

The applicable permit BMPs for this section are:

BMP	Measurable Goals
Implement a program to detect dry weather flows	The permittee shall maintain a program for conducting dry weather flow field observations in accordance with written procedures.
Investigate sources of identified illicit discharges.	The permittee shall maintain written procedures for conducting investigations of identified illicit discharges.
Track and document investigations illicit discharges	For each case the permittee shall track and document 1) the date(s) the illicit discharge was observed; 2) the results of the investigation; 3) any follow-up of the investigation; and 4) the date the investigation was closed.
Provide a public reporting mechanism	The permittee shall promote, publicize, and facilitate a reporting mechanism for the public and staff to report illicit discharges and establish and implement citizen request response procedures.

6.2 Locating priority areas

The Town has located priority areas for investigating illicit discharges through the development of an illicit discharge potential (IDP) matrix, which ranks subwatersheds by a number of factors which may increase their risk of illicit discharges. The IDP matrix was developed from the CWP IDDE Manual, Chapter 5: Desktop Assessment of Illicit Discharge Potential.

The subwatersheds in the Town's jurisdiction are divided as follows:

- Upper Bolin Creek
- Middle Bolin Creek
- Lower Bolin Creek
- Morgan Creek (Below University Lake)
- Upper University Lake (Morgan Glen)
- Lower University Lake

Maps of the subwatersheds are attached.

The TOC screening factors include the following:

Discharge Screening Factor	Definition
Past discharge complaints and reports	Frequency of past discharge complaints, hotline reports, and spill responses.
Storm water outfall density	Density of mapped stormwater outfalls in the subwatershed.
Age of subwatershed development	Average age of the majority of development in a subwatershed.
Sewer conversion	Subwatersheds that had septic systems but have been connected to the sanitary sewer system.
Aging or failing sewer infrastructure	Age and condition of the subwatershed sewer network.
Density of aging septic systems	Subwatersheds with a high density of septic drain fields.

There are several factors typically included in illicit discharge potential screening that were not utilized for the Town, either due to inapplicability or because they do not contribute significantly to relative IDP.

- **Density of generating sites or industrial NPDES stormwater permits:** There is one industrial stormwater permit in Carrboro, located in the Morgan Creek subwatershed: Ready Mix Concrete, located on Guthrie Avenue.
- **Presence of older industrial operations:** There is only one current industrial operation in Carrboro: Ready Mix Concrete, located on Guthrie Avenue.
- **Historic combined sewer systems:** The Town of Carrboro was developed with separated sewer systems and does not have a history of combined sewers in any area.

Once factors were chosen and defined, ranking of the factors was completed using personnel historical and institutional knowledge as well as the MS4 map and septic system information from the Orange County Environmental Health Department. Below is the completed and scored IDP matrix for the Town of Carrboro.

Screening Factor	Upper Bolin Creek	Middle Bolin Creek	Lower Bolin Creek	Morgan Creek	Upper University Lake	Lower University Lake
Past discharge complaints and reports	1	2	2	3	0	0
Storm water outfall density	2	1	1	3	2	1
Age of subwatershed development	2	2	3	3	1	1
Sewer conversion	0	3	0	1	0	0
Aging or failing sewer infrastructure	1	2	3	3	0	0

Density of aging septic systems	3	3	1	1	2	1
Raw IDP Score	9	13	10	14	5	3
Normalized IDP Score (on scale from 0-3)	1.5	2.2	1.7	2.3	0.8	0.5

*updated September 9th, 2021

Therefore, subwatersheds are ranked in order of highest to lowest illicit discharge potential as follows:

- Morgan Creek
- Middle Bolin Creek
- Lower Bolin Creek
- Upper Bolin Creek
- Upper University Lake
- Lower University Lake

The Town’s Outfall Inspections (Section 6.3) are prioritized based on this ranking.

6.3 Conducting dry weather flow field observations

The Town conducts Outfall Inspections both in response to reported illicit discharge incidents and as a means of inventorying outfalls to detect previously unnoticed illicit discharges or connections. Outfall Inspections are conducted using the Outfall Inspection SOP (attached) and the Outfall Inspection Field Sheet (attached). See section 6.4.3. for more information.

The Outfall Reconnaissance Inventory (ORI) is a tool recommended for Phase II communities to develop a robust inventory of outfalls throughout their MS4, and includes walking stream miles throughout the system to inspect and catalog all outfalls. Because the Town of Carrboro has developed a comprehensive inventory of outfalls in its GIS database, a full inventory and stream walk program is not of immediate importance and is therefore planned for the second and third years of the permit cycle.

However, the Town inspects priority outfalls throughout the system on a rotating basis. TOC currently has 51 priority outfalls in the system, which were identified based on illicit discharge potential and location, and 20 major outfalls that are 36” or greater in diameter, and 4 “major combined” outfalls that are 36” or greater in diameter and include both stormwater runoff AND a piped stream. The Town has developed a rotating schedule whereby each outfall is inspected at least once every 5 years. The schedule is grouped by subwatershed and subbasin and prioritized by illicit discharge potential as described above.

Priority, Major and Major Combined Outfalls (May 2022)				
Outfall ID	Outlet Type	Subwatershed	Subbasin	Cycle Year
OUT-1102	Priority Outfall	Morgan Creek	1574	A
OUT-1105	Priority Outfall	Morgan Creek	1574	A
OUT-1247	Priority Outfall	Morgan Creek	1574	A
OUT-1351	Priority Outfall	Morgan Creek	1574	A
OUT-1355	Priority Outfall	Morgan Creek	1574	A
OUT-1356	Priority Outfall	Morgan Creek	1574	A
OUT-1432	Priority Outfall	Morgan Creek	1574	A
OUT-1814	Priority Outfall	Morgan Creek	1574	A
OUT-1317	Priority Outfall	Morgan Creek	1643	A
OUT-1639	Priority Outfall	Morgan Creek	1643	A

OUT-1341	Major Outfall	Morgan Creek	1677	A
OUT-1015	Priority Outfall	Morgan Creek	1677	A
OUT-1338	Priority Outfall	Morgan Creek	1677	A
OUT-1928	Priority Outfall	Morgan Creek	1677	A
OUT-1246	Major Combined Outfall	Morgan Creek	1312	B
OUT-1086	Priority Outfall	Morgan Creek	1312	B
OUT-1501	Priority Outfall	Morgan Creek	1312	B
OUT-1789	Priority Outfall	Morgan Creek	1312	B
OUT-1294	Major Outfall	Morgan Creek	1473	B
OUT-1298	Major Outfall	Morgan Creek	1473	B
OUT-1299	Major Outfall	Morgan Creek	1473	B
OUT-1300	Major Outfall	Morgan Creek	1473	B
OUT-1758	Major Outfall	Morgan Creek	1473	B
OUT-1010	Priority Outfall	Morgan Creek	1473	B
OUT-1297	Priority Outfall	Morgan Creek	1473	B
OUT-1760	Priority Outfall	Morgan Creek	1473	B
OUT-1929	Priority Outfall	Morgan Creek	1473	B
OUT-2000	Priority Outfall	Morgan Creek	1473	B
OUT-1660	Priority Outfall	Morgan Creek	1631	B
OUT-1932	Priority Outfall	Morgan Creek	1631	B
OUT-1032	Priority Outfall	Morgan Creek	1135	C
OUT-1211	Priority Outfall	Morgan Creek	1135	C
OUT-1278	Priority Outfall	Morgan Creek	1135	C
OUT-1311	Priority Outfall	Morgan Creek	1135	C
OUT-1312	Priority Outfall	Morgan Creek	1135	C
OUT-1313	Priority Outfall	Morgan Creek	1135	C
OUT-1361	Priority Outfall	Morgan Creek	1135	C
OUT-1213	Major Combined Outfall	Morgan Creek	1288	C
OUT-1088	Major Outfall	Morgan Creek	1288	C
OUT-1367	Priority Outfall	Morgan Creek	1288	C
OUT-1930	Priority Outfall	Morgan Creek	1288	C
OUT-1282	Major Combined Outfall	Morgan Creek	1536	C
OUT-1040	Priority Outfall	Morgan Creek	1536	C
OUT-1084	Priority Outfall	Morgan Creek	1536	C
OUT-1138	Priority Outfall	Morgan Creek	1536	C
OUT-1139	Priority Outfall	Morgan Creek	1536	C
OUT-1724	Priority Outfall	Morgan Creek	1536	C
OUT-1136	Priority Outfall	Morgan Creek	1582	C
OUT-1188	Priority Outfall	Morgan Creek	1582	C
OUT-1755	Major Combined Outfall	Morgan Creek	1142	D
OUT-1229	Major Outfall	Morgan Creek	1142	D
OUT-1493	Major Outfall	Morgan Creek	1142	D
OUT-1073	Priority Outfall	Morgan Creek	1142	D

OUT-1752	Priority Outfall	Morgan Creek	1142	D
OUT-1907	Major Outfall	Middle Bolin Creek	736	D
OUT-1379	Major Outfall	Middle Bolin Creek	830	D
OUT-1909	Priority Outfall	Middle Bolin Creek	830	D
OUT-1999	Priority Outfall	Middle Bolin Creek	933	D
OUT-1372	Major Outfall	Middle Bolin Creek	1021	D
OUT-1421	Major Outfall	Middle Bolin Creek	1153	D
OUT-1428	Major Outfall	Lower Bolin Creek	1101	D
OUT-1424	Priority Outfall	Lower Bolin Creek	1165	D
OUT-1118	Major Outfall	Lower Bolin Creek	1252	D
OUT-1070	Priority Outfall	Lower Bolin Creek	1252	D
OUT-1271	Priority Outfall	Lower Bolin Creek	1252	D
OUT-1272	Priority Outfall	Lower Bolin Creek	1252	D
OUT-1931	Priority Outfall	Lower Bolin Creek	1252	D
OUT-1733	Priority Outfall	Upper Bolin Creek	54	E
OUT-1940	Major Outfall	Upper Bolin Creek	278	E
OUT-1842	Major Outfall	Upper Bolin Creek	521	E
OUT-1175	Major Outfall	Upper Bolin Creek	548	E
OUT-1865	Major Outfall	Upper Bolin Creek	548	E
OUT-1875	Major Outfall	Upper Bolin Creek	548	E

6.4 Investigating sources of identified illicit discharges

Stormwater Investigations may be prompted by reports via the stormwater hotline or email address, issues observed by staff or personnel in other departments, observations from an outfall inspection, or for a variety of other reasons. If it is determined that an issue requires investigation as an illicit discharge, it is investigated using a variety of tools. In some cases, the source of the illicit discharge is strongly suspected and reported directly; in this case, the Town confirms the information and moves directly to enforcement if necessary. However, if the source is unknown, the Town proceeds using drainage area investigations, storm drain investigations and/or characterization of the discharge.

6.4.1 Responding to reports of illicit discharge

The Stormwater Division has established a stormwater hotline (**919-913-2999**) and shared email address (stormwater@carrboronc.gov) which are used to report issues of flooding, potential illicit discharges, and general inquiries. The number and email address are published on the Stormwater Division website (www.townofcarrboro.org/287/Stormwater) and advertised during events and on promotional materials. All voicemails recorded on the hotline and emails sent to the shared address are automatically and immediately forwarded to all Stormwater Division Staff.

Upon receipt of an email or voicemail to the hotline, staff determine whether or not an illicit discharge investigation is warranted, investigation and/or enforcement will follow. Staff respond to reports of illicit discharge within one business day and begin investigation immediately. Staff coordinate with other agencies including Orange Water and Sewer Authority and the Orange County Health Department, Environmental Health Division.

6.4.2 Remote investigation

Before initiating field investigations, TOC staff gather and confirm reported information. Methods of remote investigation include:

- Calling or emailing the party that reported the discharge
- Calling or emailing the suspected responsible party
- Reviewing previous issues in the same location or attributed to the same party
- Reviewing photographs and video of the illicit discharge
- Using the MS4 map to identify the upstream network of pipes and drainage ditches to target for inspection

Town staff acknowledge that reports are sometimes reported erroneously due to a misunderstanding or tension between parties. In order to best conserve labor and prevent unreasonable enforcement, all efforts are made to confirm reported information before additional investigation or enforcement is pursued.

6.4.3 Outfall Inspections

The Town conducts outfall inspections utilizing the Outfall Inspection SOP (attached) and Outfall Inspection Field Sheet (attached). In short, the procedure includes:

- Collecting background information
- Scheduling the inspection in Cityworks
- Gathering required materials and PPE
- Conducting the inspection
- Reporting results of the inspection
- Sending samples for analysis

The Outfall Inspection Field Sheet details information that is to be collected during the inspection, including:

- **Background Data:** Location of the outfall, time and date of the inspection, surrounding land use, and other relevant contextual information. This section may be partially completed before the inspection.
- **Outfall Description:** Information about the outfall itself, including the material, shape, and dimensions of the pipe or open drainage channel.
- **Field Data for Flowing Outfalls:** If collecting a sample, measurement of flow speed, depth and width of flow, temperature, pH, and ammonia level of the flow using field kits.
- **Physical Indicators for Flowing Outfalls Only:** Physical characteristics of the flow, including odor, color, turbidity and floatables, with a severity ranking from 1 to 3, as well as additional physical indicators observed.
- **Physical Indicators for All Outfalls:** Physical characteristics of the outfall itself, including damage, stains, abnormal vegetation, poor pool quality or benthic growth within the pipe.
- **Overall Outfall Characterization:** An overall characterization of the outfall based on the information collected including a judgement of whether or not an illicit discharge may be occurring.
- **Sample Collection:** If a sample is being collected for analysis, notes of if it was taken from the flow or pool, and whether or not an intermittent flow trap was set.
- **Non-Illicit Discharge Concerns:** Additional concerns you may have about the outfall.
- **Additional Comments**

6.4.4 Storm drain network investigations

In storm drain investigations, the goal is to narrow the potential source of the discharge by strategically sampling or observing different locations throughout the MS4. Crews may use any of the following methods: visual inspection at manholes; indicator sampling; sandbagging or damming at the trunk; smoke testing; dye testing; or video observations.

Once a likely source of the illicit discharge is identified, the Town may proceed to eliminating the source and/or enforcement as applicable.

6.4.5 Septic system investigations

The Town of Carrboro has partnered with the Orange County Health Department, Environmental Health Division to maintain an inventory of on-site domestic wastewater systems within the Town's jurisdiction and reduce the amount of fecal coliform present in the stormwater system. Because OCEH maintains authority for the septic systems throughout the County, the Town does not perform inspections of domestic wastewater systems, issue permits, or manage maintenance reports. The attached Fecal Coliform Reduction Program describes the partnership in detail.

As discussed in the Program, TOC staff will accompany OCEH staff on environmental surveys and inspections performed within the Town and maintain a database of all incidents related to septic systems. Conversely, if an illicit discharge is suspected to be due to a failing septic system, Town staff will immediately notify OCEH for their response and enforcement.

6.5 Remediating sources of illicit discharge

The Town of Carrboro maintains the authority to remedy sources of illicit discharge or illicit connections as noted in the Town Code Sections 5-21 Penalties and Remedies, 5-35 Enforcement and Chapter 11, Article V, Part 2 regarding summary abatement of conditions dangerous and prejudicial to the public health. Many corrective actions involve infrastructure modification or repair, such as in instances of direct discharges like sewage cross-connections, straight pipes, industrial cross-connections, and commercial cross-connections. Indirect discharges, like sewage from sewer breaks or failing septic systems, may also require structural repairs, while transitory discharges may be eliminated with spill containment and clean-up.

In cases where Town infrastructure is responsible for a discharge, the Stormwater Division refers the matter to the Public Works Director and/or Superintendent to dispatch personnel as appropriate. Additionally, Town personnel may be dispatched if it is not Town infrastructure, but if the matter is urgent and immediate elimination is required. If investigation determines a party responsible for the discharge, the cost of clean-up and/or repair may be invoiced to them directly. Due to the variety of circumstances under which illicit discharges may occur, actions taken to repair the problem also vary.

6.6 Preventing illicit discharges

The Town of Carrboro prevents illicit discharges, in part, through three of its other required management measures: public education and outreach, public participation and involvement, and municipal pollution prevention and good housekeeping. Educational initiatives are described in section 7 of this document, with the other initiatives described in the Town's Stormwater Management Plan.

Additionally, TOC's partnership with the Orange County Health Department, Environmental Health Division helps to prevent discharges from domestic wastewater systems through inventory, maintenance and inspection efforts. See section 6.4.5.

6.7 Documentation and Tracking

Illicit discharge investigations are documented and tracked in several ways.

6.7.1 Stormwater hotline and email

Any reports of illicit discharges that are reported through the stormwater hotline and email are recorded following the IDDE Documentation SOP (attached). Emails from these hotlines are stored both in Microsoft Outlook and on the Division's shared server. All hotline calls and emails are logged in Cityworks and tagged with "Stormwater Hotline" whether or not they result in an illicit discharge investigation. They are also recorded in the Hotline and Illicit Discharge Summary Spreadsheet.

6.7.2 Cityworks

The Cityworks platform allows a stormwater investigation to be tracked from initiation to completion, with all parties able to access the information. All illicit discharge investigations, no matter how they are generated, are tracked through Cityworks. Once an investigation is opened, users can attach pictures, emails, correspondence etc., write comments describing the situation, record the hotline caller, property owner or other party and link the investigation to assets such as an inlet or outfall. The investigation can be assigned to a user, while others can be tagged for their attention. If a field visit is warranted, users generate work orders for the inspection, which is connected to the investigation and also allows labor hours or other resources to be tracked. Enforcement documents are also attached as they are generated, and ultimately the status of the investigation is changed to “closed” as it is completed. In this way, Cityworks allows continuous tracking of ongoing investigations, summarizes relevant information, relates investigations to outfalls and other assets, and allows easy evaluation of the IDDE program.

6.7.3 Event Tracking Spreadsheet

The Event Tracking spreadsheet records and summarizes hotline calls/emails and IDDE investigations that have taken place along with relevant details, outcomes, and their stormwater investigation ID number in Cityworks. The information tracked in the spreadsheet includes:

- Date reported
- Date closed
- Cityworks Stormwater Investigation ID
- Location
- Hotline report? (yes/no)
- Illicit discharge? (yes/no)
- Non-Illicit Discharge Issue
- Nature of the discharge
- Results of the investigation (source of the discharge, etc)
- Action taken to eliminate the discharge
- Enforcement actions
- File folder name (located in G:\PW\Stormwater\NPDES Permit-Townwide\Required Management Measures\IDDE\Tracking\Events)
- Reporting party (public, staff, etc)
- Primary investigator
- Subwatershed
- Receiving stream

While Cityworks contains detailed information and attachments, the spreadsheet allows for easy reference and summary. It also allows the Town to evaluate how many hotline calls/emails result in illicit discharge investigations, as a form of evaluation of the program.

7 Education

7.1 Permit requirement

The applicable permit objective for this section is:

- (e) Inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste;

The applicable permit BMPs for this section are:

BMP	Measurable Goals
Provide Employee Training	The permittee shall implement and document a training program for appropriate municipal staff, who as part of their normal job responsibilities, may come into contact with or otherwise observe an illicit discharge or illicit connection.
Provide Public Education	The permittee shall inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste.

7.2 Public employees

The Town has developed written training plan and presentation for Town employees, first responders, and contractors likely to encounter illicit discharges. The training includes methods of identifying illicit discharges, connections, dumping or spills. Training occurs annually, with the Stormwater Division tracking the number of staff members trained and percentage of exams with a passing score. Effectiveness of the training is also evaluated by the percentage of illicit discharges identified by staff.

7.3 Businesses

The Stormwater website contains a plethora of information regarding illicit discharge identification, prevention, remediation and best practices. One major area of educational outreach is outdoor washing, such as mobile pressure washing and surface cleaning. The Town provides information regarding the regulation of this wastewater and measures contractors should take to prevent releasing chemicals and wastewater into the stormwater system. Additionally, the website contains information for apartment complexes and other entities that maintain swimming pools and spas for their residents and guests. This information also includes best practices, contact information for Orange Water and Sewer Authority, and information about the harm caused by allowing pool wastewater to enter the stormwater system. The Town has developed numerous brochures and other printable outreach materials for other businesses as well, such as landscapers, directional boring companies, and car washes.

7.4 General public

7.4.1 Homeowners' Manual

Stormwater staff have created the “Homeowner’s Watershed and Stormwater Handbook: A Homeowner’s Guide to Carrboro’s Watersheds, Creeks, and Stormwater Management.” The document provides information about local watersheds, how and why stormwater is managed in Carrboro, and the responsibilities of residential property owners and the Town. The Manual provides education to the public by explaining regulatory requirements that the Town must uphold to remain in compliance, as well as the environmental importance of maintaining stream buffers and preventing pollution to the stormwater system and creeks. It also provides recommendations for managing stormwater volume and quality by collecting roof runoff, planting native vegetation and collecting yard debris before it enters the stormwater system, among others. The Manual is available through the Stormwater website and is promoted regularly through advertising on the Town’s website, newsletters, and social media. The Division also has created a form on the website which allows neighborhood associations to request an education stormwater presentation promoting the Manual at their neighborhood meeting.

7.4.2 Stormwater website

The Stormwater website contains abundant information that enables citizens to identify and report illicit discharges, as well as remedy problems on their own property. The Stormwater Hotline and Illicit Discharge Reporting tool are both featured on the main Stormwater page, and various subpages include information regarding pet waste, home oil tanks, swimming pools, outdoor washing, and other activities. Most importantly, the website highlights the importance of protecting stormwater and local surface water quality,

enables citizens to take action to prevent pollution, and provides the means to report potential problems to Town authorities.

8 Goals

The Town of Carrboro plans to pursue additional program components related to the IDDE program, but beyond those required by the MS4 permit. These goals include:

8.1 Inlet labeling

At this time, all storm drains within the MS4 are labeled with unique identifiers. However, since the Cityworks program has been incorporated into the Town's work flow, the storm drains have been given different identifiers that do not necessarily match with those physically labeled. Ideally, the Town would like to re-label storm drains with their Inlet ID that matches the GIS/Cityworks system. This would allow employees and the public to accurately report inlets where an illicit discharge or other suspicious flow is occurring, allowing Stormwater staff to more efficiently respond to reports. However, with over 2400 inlets from the road, it would be a challenging long-term project to individually label each one, so this project is planned for a later date.

8.2 Adopt-a-stream program

Carrboro is fortunate to have an engaged citizenry who frequently express a desire to participate in environmental clean-up events or otherwise assist in protecting their environment. The Town would like to pursue an adopt-a-stream program, allowing individuals, families, or neighborhoods to "adopt" a local creek or stretch thereof. Adopters would be encouraged to clean up trash, report bank erosion or large woody debris, and of course report any illicit discharges or potential illicit connections. This would reduce the workload of the Town for conducting outfall reconnaissance investigations and stream walks and help to ensure continuous monitoring of sensitive surface waters.

9 Related documents

See the following related documents, which support the planning, implementation and tracking of the Town's IDDE Program:

- NPDES Permit No. NCS000450 Section D
- Town Code Article IV Illicit Discharge Ordinance
- Town Code Section 5-21 Penalties
- Outfall Inspection SOP
- Outfall Inspection Field Sheet
- IDDE Documentation SOP
- IDDE Investigation Procedure
- Fecal Coliform Reduction Plan
- Staff Training Plan
- IDP Scoring Matrix
- MS4 Map
- Program Evaluation KPIs spreadsheet
- Event Tracking spreadsheet