



S.W.I.M. Coalition

Stormwater Infrastructure Matters: utilizing stormwater as a resource, not a waste!

A S.W.I.M COALITION
COMMUNITY WORKSHOP:

be a Stormwater Steward

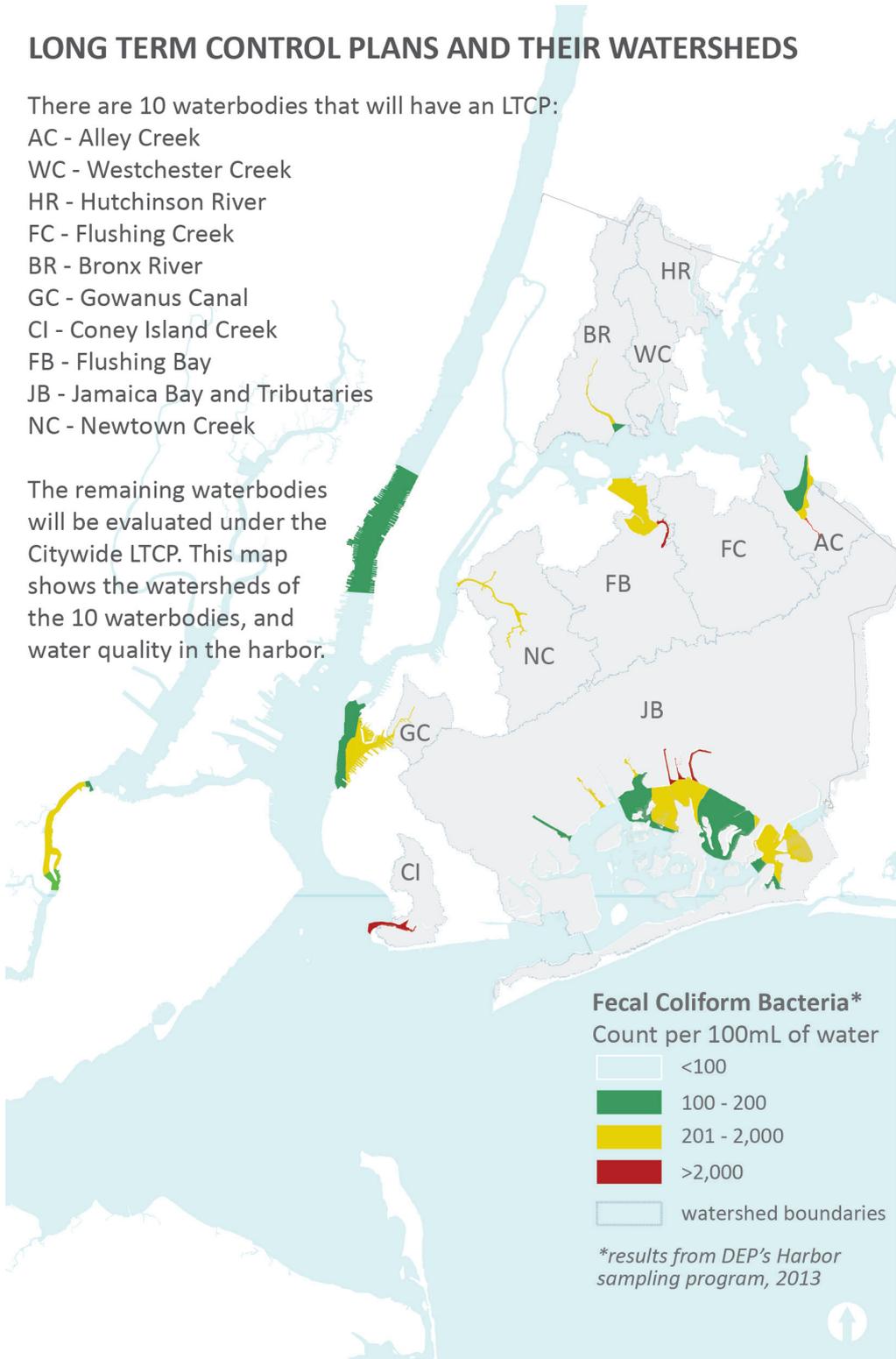
Your guide to understanding the
City's water quality plans &
how to advocate for
*fishable, swimmable
waterways.*

LONG TERM CONTROL PLANS AND THEIR WATERSHEDS

There are 10 waterbodies that will have an LTCP:

- AC - Alley Creek
- WC - Westchester Creek
- HR - Hutchinson River
- FC - Flushing Creek
- BR - Bronx River
- GC - Gowanus Canal
- CI - Coney Island Creek
- FB - Flushing Bay
- JB - Jamaica Bay and Tributaries
- NC - Newtown Creek

The remaining waterbodies will be evaluated under the Citywide LTCP. This map shows the watersheds of the 10 waterbodies, and water quality in the harbor.



overview

What New York City has in store for our waterways

Through 2017, city, state and federal agencies are planning how, and to what extent, New York City must reduce the current 27 billion gallons of annual sewage overflow into our waterbodies and improve water quality citywide. These decisions will significantly impact the livability of our neighborhoods for generations to come.

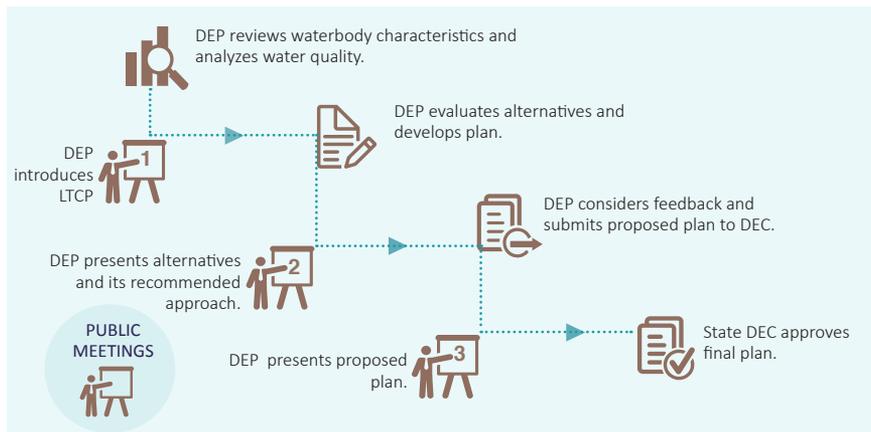
The NYC Department of Environmental Protection (DEP) is compiling 11 Combined Sewer Overflow Long Term Control Plans (LTCP) for local waterbodies. The LTCPs are submitted (see LTCP timeline) to the NY State Department of Environmental Conservation (DEC), which must approve the plans before they can be implemented. The implementation phases of these plans will take years, likely a decade or more.

Some of the plans are not yet complete, and the goals of each plan are still being debated. The City and State need to hear from all of us consistently over the long term; public input is needed to make sure these plans are comprehensive and effective.

YOUR VOICE MATTERS!

be a storwater steward: overview

DEP's LTCP Public Process timeline



When to weigh in: Besides the DEP meetings, anyone can send comments to DEP, DEC, and EPA throughout the process. Some time after Meeting #3 on each plan, DEC will announce a formal comment period before the state makes any final decision to approve or disapprove a plan.

overview

How to use this workbook

This workbook is for water users, community organizations, and concerned citizens to use as a guide for how to respond to the plans. It identifies the shortcomings and ways provide meaningful input throughout the planning process.

The underlying question we should all be asking is:

Does the LTCP ensure that the City will achieve swimmable, fishable water?

This workbook will empower you to confidently address that question at the next LTCP public meeting in your neighborhood.



This megaphone represents a call to action. It provides tips and tools for you to advocate for swimmable, fishable water.



This pen and paper provides a space for you to fill in details about your own waterbody and experience to refer to at the next LTCP meeting.

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section 1: the pollutants

Under the federal Clean Water Act law, all waterbodies in New York City are required to meet fishable and swimmable water quality standards.



The Environmental Protection Agency (EPA) is the federal agency that regulates the Clean Water Act. The EPA regulates the NY State Department of Environmental Conservation (DEC), who in turn regulates the City Department of Environmental Protection (DEP).

How do we know if a waterbody is fishable and swimmable? The DEC has set water quality criteria based on indicator bacteria and dissolved oxygen in the water.

Indicator bacteria

The water quality criteria for safe swimming is based on the count of Fecal Coliform bacteria in the water. This bacteria is considered to indicate presence of sewage pollution. According the NY State department of Health standards, to swim safely, Fecal Coliform levels must be below 200 colony-forming units per 100 milliliters of water over a 30-day period.

The EPA, per the Clean Water Act, is requiring states to update their indicator bacteria from Fecal Coliform to Enterococcus by the end of 2015. Enterococcus bacteria are more able to survive in salt water and more scientifically accepted indicator of sewage pollution in coastal recreational waters. Scientists and advocates contend that Enterococcus-based criteria are more protective of public health.

The DEC has missed the 2015 deadline and will continue to use Fecal Coliform as the indicator bacteria. Because of this, DEP is only required to meet Fecal Coliform criteria.

Agency	Indicator bacteria standard used	Significance of bacteria levels*		
		Safe for swimming	Unsafe if levels persist	Unsafe for swimming
DEC/DEP	Fecal Coliform	<200	200-1,000	>1,000
EPA	Enterococcus	<35	35-104	>104

*Unit: bacteria cells per 100mL of marine water



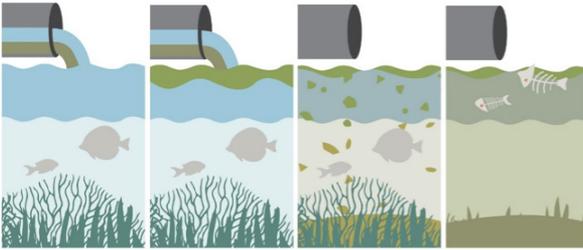
Look for analyses of fecal coliform and enterococcus in the LTCF. Do we meet swimmable water quality criteria for both?

the pollutants

Dissolved Oxygen

Dissolved oxygen (D.O.) is the amount of oxygen in water, measured in milligrams of dissolved oxygen per liter of water (mg/L). Low levels of dissolved oxygen are a water quality impairment that impacts fish and aquatic life survival.

When sewage or other nutrients enter a waterway, algae thrives and create an algae bloom. After a CSO event, or when sewage or nutrient flows stop, the algae decomposes and consumes the dissolved oxygen, suffocating fish and other aquatic life.



To sustain aquatic life, D.O. in the water must not fall below 4.0 mg/L **at any time** and must have a daily average of more than 4.8 mg/L.



Look for D.O. analysis in the LTCP. The LTCP should analyze D.O. and determine D.O. compliance along with other non-pathogenic pollutants.

Other Contaminants

The LTCPs have primarily focused on bacteria and dissolved oxygen as water quality criteria. However, there are more contaminants that make the waterbody fall short of something we would want to swim in or eat fish from. Some contaminants besides pathogens include:

- oils
- heavy metals
- industrial toxins from waterfront properties and activities
- contaminated sediments which may contain PCBs, PAHs, VOCs and more trash

What contaminants do you suspect or know are in your waterbody?



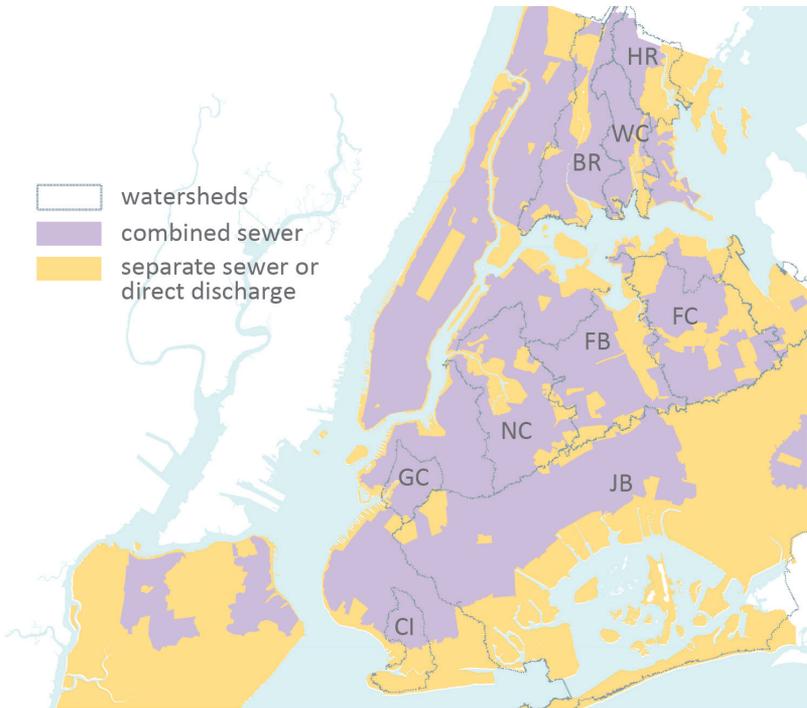


Urge DEP and DEC to address all contaminants directly in the LTCP by conducting a full characterization of the waterbody and all of its impairments, and establish a comprehensive, coordinated plan to address them.

section 2: the sources

For many waterbodies, there are multiple sources of pollution. The LTCPs to date have analyzed CSO impacts on waterbodies in isolation, at the same time placing blame on other pollution sources as major barriers from attaining water quality standards. Beyond CSO, some common sources of water pollution are:

- separate storm sewers
- illicit discharge or sewer hookups
- direct discharges (i.e., surface runoff)
- illegal dumping directly into the waterbody
- adjacent and hydrologically connected waterbodies
- wildlife (such as birds).



be a stormwater steward: the sources

How much of your watershed is in the separate sewer areas?



the sources

What is illicit discharge?

Even when the sewer system is working as designed, on a sunny day there is potential that the waterbody is contaminated with sewage or other pollutants if there is an illicit hookup. These illegal connections are most often found in the City's separate storm sewer areas. Homes or entire developments are sometimes accidentally or intentionally hooked up to the storm sewer instead of sanitary sewer.



Tell DEP what is happening in the waterbody beyond just CSO (this can include industrial pollution, illicit discharges, illegal dumping) and urge DEP to take action to minimize these sources of pollution.

be a steward: the sources

What are the other sources of pollution in your waterbody?



section 3: the plan

Although the plan has many sections, the heart of the plan is the alternatives for CSO control. These alternatives might involve civil engineering, other technology-based solutions, ecological engineering, or combinations of these. The plan will also include modeling results that guide the selection of CSO control alternatives. Here is a list of what to look for.

Will the plan *reduce* CSO?



Grey infrastructure alternatives are those that typically strive to increase the sewer system capacity. These alternatives include things like:

- tunnels
- storage tanks (that can hold excess water temporarily)
- sewer separation
- re-routing flow within the sewer system



Green infrastructure uses ecological systems, such as soil and plants, to *reduce* CSOs at the source and strives to divert excess water from entering the sewer system.

Another alternative explored in many of the City's plans is seasonal disinfection. Disinfection uses sodium hypochlorite, a concentrated form of ordinary household bleach, to kill pathogens in CSOs. Disinfection does not reduce CSOs; it merely kills the pathogens.

source control	additional green infrastructure		high level sewer separation	
System Optimization	Fixed Weir	Parallel interceptor/sewer	bending weir control gates	pump station expansion
CSO Relocation	gravity flow tipping to other watersheds	pumpin station modification	flow tipping with conduit/tunnel and pumping	
ecological enhancement`	floatables control		dissolved oxygen improvement	
treatment	outfall disinfection	disinfection at existing CSO	High rate clarification (HRC)	
storage	in-system	shaft	tank	tunnel

Reducing the volume of CSOs tends to be more costly than disinfection, for example:

44 million gallon storage tunnel for \$450 million (reduce)

vs.

seasonal disinfection of 50 million gallon flow for \$100 million (disinfect)

the plan

DEP evaluates the cost compared to performance (CSOs reduced OR disinfected) and chooses the plan with the most cost-effective performance, which tends to be disinfection.

Disinfection typically involves an injection of chlorine, travel time for the chlorine to kill bacteria in the water, then dechlorination before it is discharged through an outfall. The evaluation of potential human and wildlife health impacts of residual chlorine has not yet been fully studied. DEP will be piloting residual chlorine in Spring Creek in Jamaica Bay in 2016, the results of which will not be released until December 31, 2017. Until then, disinfection (chlorination) has been submitted as the preferred alternative for many LTCPs without understanding of the full impact.

What is the plan's proposed alternative for your waterbody? Does it eliminate, reduce or disinfect CSO?



Does the plan give sufficient attention to Green Infrastructure (GI)?

According to the NYC Green Infrastructure (GI) Plan, the City has agreed to manage the stormwater generated by one inch of precipitation from 10 percent of impermeable surfaces citywide, using GI methods within the combined sewer areas, by 2030.

What is the percentage of land that DEP is proposing to manage with GI? How are they proposing to meet it? Is it enough?



That means for every 100 acres of impermeable land, 10 acres of stormwater runoff must be managed with GI. The LTCPs assume the GI goals in each watershed will be met but without any details of how.

Yet, water quality improvements depend on meeting the GI goals. The LTCPs fully explore the feasibility of all grey infrastructure approaches, including costs, siting challenges, and performance. The plans should do the same for GI.



Look for any feasibility study for GI implementation, response to challenges implementing GI, a maintenance plan, and encourage a harder look at the GI strategy, based on data and feasibility.

the plan

Will implementation of the proposed alternatives achieve swimmable, fishable water quality standards?

The LTCP requires a plan that will control CSOs in order to meet water quality standards. However, due to other sources of pollution and other obstacles, there is a good chance that controlling CSOs (even 100% elimination) alone will not make the water swimmable or fishable.

If the plans cannot meet swimmable, fishable standards, DEP is required to conduct a Use Attainability Analysis (UAA), that examines how the waterbodies are being used and the factors that prohibit meeting the swimmable, fishable standard.

Unfortunately this process essentially allows DEP to declare that the waterbody is not being used for swimming or that swimmable, fishable standards cannot be met because of sources of pollution other than the CSOs.

Based on these conclusions, DEP can maintain the existing water quality even if the waterbody is currently not swimmable or fishable.

What kind of uses do you see in your waterbody (such as human-powered boating, fishing, or wading)?



be a stormwater steward: the sources



Use Attainability Analysis: UAA

There has been a UAA in every LTCP submitted so far. In all of them, pollution from other sources are cited as the reason for non-attainment of swimmable fishable water quality. This should not excuse the City from meeting swimmable, fishable standard, but rather require the LTCPs to be integrated with other water quality improvement efforts within DEP (e.g., separate storm water sewer – MS4 – efforts) and across other agencies (e.g., State DEC’s efforts in Westchester).



Look for a Use Attainability Analysis, or UAA, in the Appendix of the LTCP. Urge DEP to integrate the LTCP with other efforts to comprehensively improve water quality.

the plan

Is the selection of the CSO control alternatives based on Fecal Coliform or Enterococcus?

LTCPs to date have analyzed both Fecal Coliform and Enterococcus concentrations in the water with various alternatives. Often a particular CSO control alternative will achieve swimming water quality criterion with Fecal Coliform but not with Enterococcus.



Look for what the DEP claims will be achievable and find out if the claim is based on Fecal Coliform or Enterococcus. If it is based on Fecal Coliform, tell the DEP we need to make our decisions based on Enterococcus, which is more protective of human health.

Does the plan ensure swimmable, fishable water throughout the year?

The LTCP may only recommend “seasonal attainment” of water quality standards, rather than year-round attainment, commonly using seasonal disinfection. Seasonal disinfection means there will be no CSO mitigation during the non-recreation season during the months of November to May.

Boating and recreational uses happen in New York City waters beyond just the recreation season. By only aiming for seasonal attainment, the plan dismisses waterbody uses – boating, fishing, educational activities, etc. – that occur outside of the season.



write-in box





Tell the DEP when and how you’re using the water, and advocate for year-round swimmable, fishable water.

section 4: the process

Does the plan build from a reasonable present-day scenario?

The term “baseline analysis” is used to describe a condition from which the LTCF is built. The baseline conditions usually can have many assumptions, including the following:

- Waterbody/Watershed Facility Plans (WWFP) have been implemented
- Green Infrastructure has been implemented
- Illicit and dry-weather discharges are abated
- Upstream water pollution from outside of New York City (namely Westchester County) is in compliance

These assumptions are not always feasible, and do not represent the present-day situation. For example, water pollution upstream in another county will definitely impact downstream waters within the county. One cannot assume an upstream county will be in compliance if there is no plan for it to do so.

Furthermore, the Green Infrastructure plan will not be fully implemented until 2030. A baseline should represent the *actual* present-day situation, not give a false sense of what the plan will achieve.



Challenge the plan’s baseline scenario, and ask DEP for the feasibility for and the level of confidence in meeting the baseline conditions.

Does the sampling period align with the recreation season?

Especially for plans that have proposed alternatives with seasonal disinfection, the sampling period should match when water quality has the most users, which is during the recreation season. The recreation season is from May 1st to October 31st.



photo credit



Check the dates of DEPs sampling data, and question if the samples are taken in the winter when there is the least amount of people using the water.

the process

Did DEP reach out to a broad audience to notify the community about the public meeting?

Public meetings are not always held in the easiest places to get to or at the most convenient times for everyone. But showing up to the meetings in big numbers is a clear way to convey to DEP that people care about their waterbody. DEP's communication channel is fairly limited, and their notifications are usually only in English. They are required by law to have a "public outreach process", but there is no law qualifying how effective or widespread that process has to be. So it's up to us to ensure the public is informed about these important decisions.



Urge DEP to announce the public meetings more widely and in languages appropriate for your community. Offer to improve DEP's outreach by acting as a communication channel to your constituents, friends, family, and neighbors.

Once you receive notification of a public meeting, reach out to your networks and local news sources. Communicate the importance of attending these meetings to ensure DEP is working on making your waterbody swimmable and fishable.

Is DEP communicating effectively?

We admit, DEP's presentations and plans regarding the LTCP are not easy documents to get through and understand. These documents are hard to digest, even for our environmental lawyers! At the very least, presentations should be tailored to the audience they are serving, which is typically not hydrological

write-in



engineers, but concerned community organizers, fishing enthusiasts, boaters, or people simply invested in cleaning up our forgotten and neglected community assets.

DEP's presentations have improved over the years, but could be further simplified for their diverse audiences, so that we don't get lost in complicated graphs and miss an opportunity to understand the full picture. The complicated, technical information could be supplemented in online technical documents for further reference.



Make sure you are receiving enough material to make informed decisions and provide meaningful input. If it seems like material is missing, contact DEP and ask where you can find more material.

be a steward: the process

important terms

Consent Order: A legally binding agreement between two parties. The 2012 CSO Consent Order between DEC and DEP requires DEP to develop 10 waterbody specific and one city-wide LTCP to reduce CSO using a hybrid green and grey infrastructure approach.

CSO - Combined Sewer Overflow: Mix of stormwater and raw sewage that overflows into local waterbodies when it rains. A CSO event can happen with as little as 0.1 inches of rain over the course of one hour.

DEC - New York State Department of Environmental Conservation State agency that regulates the city DEP and addresses other matters such as hazardous material spills and brownfield sites. The State DEC is overseen by the Federal EPA (Environmental Protection Agency).

DEP- New York City Department of Environmental Protection City agency responsible for water and sewer infrastructure.

Disinfection: sewage treatment that kills pathogens, usually using sodium hypochlorite - a concentrated form of household bleach.

D.O. - Dissolved Oxygen: The amount of oxygen available in the water column that fish and marine creatures rely on for survival. It is used as an ecological health indicator.

EPA – Environmental Protection Agency: the federal agency that regulates the Clean Water Act, ensuring that all coastal waterbodies meet swimmable, fishable water quality standards.

GI - Green Infrastructure: Constructed urban green spaces designed to capture stormwater runoff, such as rain gardens, roadside plantings, and green roofs.

Grey Infrastructure: Built structures to capture and treat stormwater and sewage after it has already entered the sewer system.

important terms

LTCP - Long Term Control Plan: Under a consent order with the State DEC in 2012, the City DEP must develop plans to control CSO using grey and green infrastructure. These plans will be reviewed and approved by the State DEC. These plans are part of the Clean Water Act requirements.

Pathogens: disease-causing organisms found in sewage, such as Cryptosporidium or Giardia. Common bacteria such as fecal coliform and enterococcus are used to indicate the potential presence of these pathogens

Proposed alternative: The LTCP has a series of “alternatives” which are the different methods in which they can control CSO. The “Proposed alternative”, also called the recommended approach, is the method they suggest for controlling CSO for that specific waterbody. The DEP will propose this to the DEC, who will approve or deny the proposal.

Watershed : The area of land where all of the rain that falls on it drains to the same waterbody, such as a river or creek. For example, the Bronx River Watershed is the land area where all rainfall drains to the Bronx River.



notes



notes



Stormwater Infrastructure Matters (S.W.I.M.) is a coalition of 70 member organizations dedicated to ensuring swimmable and fishable waters around New York City through natural, sustainable stormwater management practices. For more information about the plans and to get involved with our outreach program contact us and follow us at:

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[@SWIMcoalition](#)

