Gowanus Canal and Flushing Bay and Creek Watershed Initiative 2009
Grant Proposal Narrative Application Form

Instructions: Use the template below and answer each question in full detail. Please provide as much relevant information as necessary to help us better understand the project being proposed and determine if it meets the objective of the Grant Program. Proposal narrative shall not exceed twelve (12) pages.

A) Describe the current stormwater problem the project will address and its source.

B) Describe and quantify the stormwater flow reduction to existing sewer systems and water quality improvement goals of the project. The primary objective of this Grant is to address how the project will reduce stormwater flows into the sewer system and reduce Combined Sewer Overflow (CSO) volumes. Also please describe improvements to overall stormwater quality flowing into the Gowanus Canal or Flushing Bay and Creek.

C) Describe how your project will **reduce or eliminate the problem**.

D) Overall Context: Describe how this project specifically relates to the eligible activities described in the Gowanus Canal and Flushing Bay Watershed Initiative Request for Grants and where available a specific local or regional watershed initiative or plan. *(See PDFs Application form, list of plans and relevant documents.)*

E) Continuing Projects: Indicate whether this project is a continuation or expansion of an existing project and provide information on the status and results/outcome of the previous work.

F) Describe in written form and **include** an **aerial photo or map** with the **project site location** and **boundaries marked on the photo or map. Include a description of the project site** in terms of its relationship to the Gowanus Canal or Flushing Bay and Creek. Provide the latitude and longitude of the project location. *(Map and/or photo do not count towards 12-page limit.)*

G) Estimate the extent of the area to be retrofitted or restored (linear feet, square feet, acres, etc.).

H) Identify specific site ownership (e.g., Ms. Stormwater BMP, 12 LID Way, Estuary, NY).

Applicant must submit **a letter from the property owner documenting permission to work** on private, federal or state land or waters which are the subject of this project.

I) Identify current uses of the proposed retrofit/restoration area and **the expected impacts of the project** upon those uses.

J) Discuss/list any feasibility studies or assessments prepared to address the site restoration/retrofit and the major results of those studies (e.g., flow analysis, plant lists etc.). If you have other relevant documentation associated with the project design i.e., plant lists etc. please also submit those documents. *(Plans and lists are not counted towards 12-page limit.)*

K) Describe the methods to be used to complete the storm water retrofit or low impact development project and **submit conceptual plans and drawings**. Plans and drawings are particularly important to our review. **While not required for the grant application process, please note that all projects require final engineering drawings if they are approved for funding. Projects should be "engineering design ready" and not experimental.** (*Plans and drawings are not counted towards 12 page limit.)*

L) Provide work plan activities and anticipated implementation timetable. Projects should be completed within **twelve** months and be ready to start within 45 days of the award letter. Use the following blank table. Use only the rows that you require. Additional rows may be added.

Activity	**Time Period**

M) Maintenance, Monitoring and Management: Describe specific provisions for detailed short and long-term monitoring plan, detailed maintenance plan and equipment needs, management and protection, as appropriate, associated with project (e.g., maintenance of debris-catching devices, removing blockages, etc.). To verify that the original goals and objectives of the proposal regarding stormwater flow reduction and water quality improvement projections, a detailed 3-year monitoring

plan shall be developed for review and approval using the protocols outlined in the Reporting and Monitoring section.

N): A detailed cost breakdown is required for each of the project elements (e.g., engineer design drawings, material costs and labor costs for installation, **permits** (it is the responsibility of the applicant to ensure that all required permits are obtained prior to starting work, provide detailed list**)**, three-year monitoring, maintenance, and reporting requirements).

O) Describe *in detail* how you will measure flow inputs and outputs of the project and the specific water quality benefits of the project. (e.g., targeted water quality data sampling at designated locations; or maintenance activities to document the effectiveness of projects or practices).

P) Experience and Expertise: Describe the special skills and experience possessed by your organization, staff and subcontractors in association with the type of project you are proposing.

Q) Partners: Describe the strength, qualifications and nature of the contribution of other organizations with whom you contemplate collaborating.

R) Evaluation Logic Framework: Use the blank Evaluation Logic Framework table which follows. Use only the rows that you require to fully explain the project; additional rows may be added as needed. The following definitions will be helpful to you in completing the logic framework for your project:

a) Activities - List very specific actions that you will undertake and complete with the grant funding. These actions should help you achieve the overall goals of your project.
b) Indicator - Choose an indicator that you can measure to help determine whether or not your project will provide environmental benefit in future.
c) Baseline - Provide a numerical estimate of your indicator at the time the project starts. If you already have baseline information for your project the example could be an actual measurement.
d) Short-term Project Output - Briefly describe the immediate environmental or behavioral response which will occur because of one or more of the activities listed in activities column. Only list responses which would be apparent by the time of the end of the three year monitoring period.
e) Long-term Project Outcome - Describe the longer-term or "big picture" environmental result(s) that you expect will ultimately occur as a result of a particular activity or activities. For projects with continuing long-term benefits (such as riparian buffer plantings) you may want to estimate the environmental benefits after a set period of time.

S) Support Letters (minimum of 3 and maximum of 5 letters): The purpose of a support letter is to show the level and type of support for the project among interested

constituencies. Support letters should not be from persons affiliated with the applicant's organization (e.g., Board of Directors) or partners or direct participants in the project i.e., federal or state employee providing long-term technical assistance. For example, a letter from a manager of City Park generally supporting the project of Friends group on park lands is acceptable or from a City Official supportive of work in a community park, a Boy or Girl Scout leader who is committing their packs to a planting project etc. *Please note these letters are attached to the application submittals.* *Letters will not be accepted after the close of the application period*. *(The letters do not count toward the required 12-page application limit.)*

EXAMPLE OF FRAMEWORKS

Activities →	**Indicator →**	**Baseline →**	**Short-term Project Output →**	**Long-term Project Outcome →**
Example 1:Create multiple grassed swales	*# of grassed swales* *Amount of untreated storm water flow into river* *% site planted with native meadow and edge species* *# of acres restored*	*0 swales* *X percentage untreated storm water flow* *50% degraded littered site* *0 acres*	*3 linked swales* *25% storm water treated* *50% planted natives* *3 acres*	*Treatment and attenuation of 75% storm water runoff* *100% natives sustained in swales* *3 acres native meadow and edge habitat for migratory birds*

Activities →	**Indicator →**	**Baseline →**	**Short-term Project Output →**	**Long-term Project Outcome →**

Project Scoring

The project scoring system described below is one part of the evaluation process that will lead to selection of projects for funding. The project is scored based on information in the application. The scoring system is designed to evaluate projects in terms of their potential to reduce CSO volumes and attenuate and treat stormwater runoff by assessing the severity of the problem, the nature of the impairment, and the potential for short and long-term improvement.

A. CSO Tier Classification:

Projects will be rated on their location within CSO Tier Classification watersheds. Higher scoring will be given for lower Tier classifications.

Gowanus CSO Tier	Points	Flushing CSO Tier	Points
Tier 3	15	Tier 1	15
Tiers 3 and 4	**12.5**	Tier 2	10
Tier 4	10	Tier 4	5
Tier 5	5	Tier 5	3
Other	**5**	**Other**	**3**

B. Project Scope:

Projects that provide sufficient information on intent, drawings, schematics, maps, and plans to reduce CSO volume and attenuate stormwater runoff will be rated higher than those with inadequate or incomplete information. Only one will apply:

Project Scope	Points
Application contains comprehensive information on project intent, drawings, schematics, maps and plans to reduce CSO volume and attenuate stormwater runoff. All components are included to determine project effectiveness. Package is clear and legible.	25
Application contains comprehensive information on project intent, drawings, schematics, maps and plans to reduce CSO volume and attenuate stormwater runoff. Most components are included to determine project effectiveness. Package is clear and legible but may not be organized well.	20
Application contains adequate information on project intent, drawings, schematics, maps and plans to reduce CSO volume and attenuate stormwater runoff. Some components are included to determine project effectiveness. Package is less than clear and legible.	15
Application contains minimum information on project intent, drawings, schematics, maps and plans to reduce CSO volume and attenuate stormwater runoff. Few components are included to determine project effectiveness. Package is difficult to determine overall effectiveness and is less than clear and legible.	5
Application contains insufficient information on project intent, drawings, schematics, maps and plans to reduce CSO volume and attenuate stormwater runoff to determine project effectiveness.	0

C. Future Contribution:

Projects that will directly contribute scientific data, information, and other technical knowledge to assist in reasonable development and implementation of future CSO volume reduction and stormwater quality improvement projects and strategies will receive the most points under this category. Points will be awarded as follows (points are cumulative; more than one can apply).

Future Contribution	**Points**
Develops and implements a citywide replicable LID or "green solutions" project.	20
Project will provide ecological benefits.	15
Project will scientifically inform the widespread application of these technologies.	10
Project implements goals of related City best management practices, watershed and stormwater planning documents.	10
Produces comprehensive and scientifically reliable data and/or conclusions to implement or otherwise advance CSO or stormwater abatement.	10
Implementation not likely to positively impact development of future projects or abatement strategies.	0

D. Other Factors (points are cumulative; more than one can apply)**:**

Other Factors	**Points**
Conceived, designed, or implemented with strong and multiple partners or university class, department, or student group.	15
Can obtain matching funds.	15
Provides complete monitoring metrics.	15
Project is visible and accessible to the public.	10
Education and Stewardship Component.	15

Gowanus Canal and Flushing Bay and Creek Watershed Initiative (GFWI) 2009 Score Sheet

A. CSO Tier Classification	**A._____**
B. Project Scope	**B._____**
C. Future Contribution	**C._____**
D. Other Factors	**D._____**
TOTAL PROJECT SCORE: (A + B + C + D)	**Score: _____**

Other Considerations:

- Extent to which the proposed project contributes to a comprehensive approach to water quality improvement.

- Usefulness of the proposed project as a pilot study to inform future water quality management decisions.

- Innovativeness of the project: Original and inventive solutions to the problem of wet-weather pollution are greatly encouraged. However, projects must offer a reasonable and/or demonstrated prospect for success and replicability.

- Applicant's performance on previous projects; reasonable and/or demonstrated prospect for a successful implementation.

- Feasibility of construction and/or implementation.

- Favorable comparison to projects competing for funding that propose a similar or overlapping scope of work.

- Involvement of a college or university engineering department or student group: Student involvement provides a source of fresh ideas as well as an opportunity for students to develop their engineering skills and an acute understanding of important environmental issues.

- Project cost-effectiveness: Projects must offer benefits that are reasonable in comparison to the project costs, in terms of meeting the Department's priorities and other stated goals.

GRANTEE Section

Upon approval of a successful grant application, the Grantee shall, at a minimum, as part of the design for each Project, include the following information:

Stormwater Best Management Practice Location Plan

Grantee shall submit a *Stormwater Best Management Practice Location Plan* to NYCDEP for NYCDEP review and approval 30 days prior to the start of any work on any Project. The *Stormwater Best Management Practice Location Plan* shall include:

- Proposed locations for Project
- Engineering design, plans and specifications for Project
- Detailed three-year Monitoring (including measurement of stormwater flow inputs and outputs through the BMP/LID system) and Maintenance Plan for Project.
- All permissions, approvals and any federal, state, or local **permits** required to build Project

Engineering Design of Projects

Design plans and specifications must be certified and stamped by a currently licensed Professional Engineer of New York State.

Locations and designs for all Projects must be reviewed and approved by NYCDEP's Bureau of Water and Sewer Operations (BWSO) and must have a NYCDEP-approved fail safe connection returning stormwater back to the municipal sewer system in the event of BMP failure or heavy rainfall.

Grantee shall also:

- Calculate a mass balance for water inputs and outputs of each of the Project locations for the 2, 5, and 10-year storm events (to be compared against actual performance through monitoring measurements of built system).

- Perform a survey of the areas surrounding each Project location to characterize the precise scale, land uses and quantity of water generated by each sub-watershed.

- Using the Rational Method, calculate the estimated flow by surveying the subwatershed and characterizing 2-year, 5-year and 10-year rainfall events for New York City, and the export coefficient of the surrounding media. Based on this survey data, each of the projects shall be designed to capture a given design storm (e.g., 90th percentile) and each shall be characterized on a cost per capture volume basis which shall be expressed in dollars per gallon of stormwater captured and treated.

Equipment

As NYCDEP expects to continue to monitor the BMP locations beyond the required three years, any equipment purchased with funds paid under this Grant shall be owned by NYCDEP and shall remain installed within each BMP for additional data collection and analyses by NYCDEP. In addition, removal of monitoring devices will likely compromise the integrity and function of the BMP.

Sample equipment for monitoring may include but is not limited to the following:

1) Measurement of input flows and output flows with Pressure Transducers, water flow meters and data logger (**highly encouraged**).

2) To allow direct observation of the below-grade environment, PVC wells can be installed to provide access to soil water/shallow groundwater as well as soil sampling at various depths.

3) Stormwater quality sampling (approximately 4x – 6x a year) to characterize stormwater quality before entering BMP/LID system and after treatment leaving the system.

4) Gypsum block resistors with terminals accessible to the surface can be installed in a distributed area across the surface of the proposed BMP or LID and from the base of the excavation to mid -levels and near the surface of the proposed BMP. Resistance through these blocks is a function of the hydration level, can be measured directly, and allows non-invasive testing of below grade conditions following storm events and during dry periods.

5) ECHO or analogous tensiometric probes can be inserted at various depths to assess hydration levels of the soil during and following storm events. These can provide comparative data to the gypsum blocks, as well as soil conductivity and soil pH. These probes can be used to assess the cost of the monitoring effort compared to the less costly gypsum block method.

6) To test the performance of the monitoring array, quantities of water can be delivered at measured rates to the BMP or LID systems during days with no precipitation. This can test the response of the shallow sampling wells, gypsum block resistors and tensiometer probes. This battery of test results can then the used as a baseline predictor for the behavior of the BMP or LID system during design storms in specific size classes.

7) Below grade water catchments may be used, utilizing RainStore[3], StormChambers™, and/or similar storage media. These structures can be outfitted with a port that allows for direct measurement of water volumes following storm events to assess volume capture during storm events. And

also by outfitting these below grade cisterns with float valves, measurement of soil infiltration following storm events can also be directly measured.

8) Installation of geoprobes - groundwater sampling wells to assess water table height, pH, conductivity, and alkalinity. Depending on depth to groundwater, these wells can also be retrofitted to pump the water to surface vegetation as a means for increasing plant growth and health, water treatment, and, to regulate the depth to the water table to alleviate potential flooding issues.

9) Inputs and outputs from a green roof can be monitored through rain gauges and weather stations, as well as by outfitting all roof drains with water flow monitoring devices.

10) Because green roof media come with performance criteria for water catchment for a given soil depth, a predictive model can be generated for each roof based on area and soil depth to predict water capture and throughput for a given design storm.

11) To test precise predictive frameworks, the green roof can be outfitted with irrigation devices capable of monitoring flow so that a given quantity of water can be delivered to the soil system, and the break-through volume to the roof drains predicted. This can then be directly measured during the course of a specific irrigation event, with soil water quantity assessed prior to and following the application of water to the green roof.

Reporting and Monitoring

Monitoring Forms

Grantee shall record all Project monitoring data on monitoring forms that will be developed in consultation with NYCDEP. **However, the scope and methods of the monitoring plan shall be sufficiently developed (with estimated costs) with the grant application submission.**

The input of data on the monitoring forms is the responsibility of the Grantee. A monitoring form shall be completed for each Project location. The Grantee shall provide NYCDEP with legible completed monitoring forms for each project location on a monthly basis.

Monitoring Plan

The grantee shall submit to NYCDEP a detailed Monitoring Plan and frequency of testing for all Projects for NYCDEP review and approval that provides for the following (minimum parameters to be established by NYCDEP):

Data Collection

a) To capture the performance of the projects, monitoring shall coincide to the greatest extent possible, during or shortly after precipitation events.

b) Data will be entered into a data base system (e.g., Microsoft Access) to allow detailed searching and analysis of monitoring data.

General Data Requirements for Monitoring Plan for three years

Monitoring Plan shall provide for the collection and recording of the data outlined below and as requested by NYCDEP, including, but not limited to:

- Meteorological conditions from nearby certified weather locations and actual precipitation data and stormwater flow data.
- Estimated evapo-transpiration rates of various plant species used on project utilizing meteorological conditions data from nearby certified weather station or on site data collectors.
- Weather conditions (precipitation, cloud cover, wind, temperature, etc.).
- Incidental wildlife observations.
- Summary of sub watershed characteristics and estimated flow volume rates.
- Estimated and actual soil infiltration rates.
- Percent volume capture with respect to drainage area total.
- Measurement where possible of pollutant and sediment load reductions.

Testing to Capacity/Testing to Failure

Capacity/Testing to Failure will allow for a mass balance check on how water delivery actually behaves in the system, as well as a means of evaluating the monitoring arrays and their behavior under various defined loading rates and volumes. To that purpose:

a) Each of the systems shall be designed to capture as large a design storm as feasible.

b) In all cases, the system will be designed and engineered to discharge excess water into the New York City storm drain system.

c) Based on the area of the sub-watershed, a table will be created showing catchment capabilities of each project for a specific design storm.

d) Using known quantities of input water, all installed systems shall be tested to capacity.

Monitoring Plan shall provide for the collection and recording of all data pertinent to each project location as outlined below and as requested by NYCDEP. The Monitoring Plan shall be designed to be adaptive and to allow for the collection of additional data as the projects are constructed and as new information becomes available over the three-year monitoring period. Many of the monitoring parameters may be used interchangeably with other projects within the City to normalize data collection and to allow direct comparisons of their effectiveness.

Reporting

Reporting shall begin at the start of design for each project location and shall continue for three years after installation of each BMP.

The Grantee shall provide quarterly and annual summary reports describing the performance of Project location.

Quarterly Summary

Grantee shall prepare summary and submit within 7 days of the end of the quarter and shall provide the status of project design, construction and monitoring during the previous three-month period. The summary shall contain (but not be limited to) information pertaining to the quality of influent stormwater, quality of effluent stormwater, estimated and actual soil infiltration rates, estimated transpiration rates by species, percent volume capture of total runoff of Project watershed, measurements of pollutant loading reductions and soil porosity. Actual dates for monitoring and climate conditions must be recorded. The quarterly periods are defined as December 1 – February 28, March 1 – May 30, June 1 - August 30 and September 1- November 30.

Annual Reports

An annual report shall be submitted within 15 days of the end of the September 1 - November 30 Monitoring Quarter.

More frequent reporting after significant precipitation events may provide important information or reveal potential problems with the performance of the BMP.

Final Report

At the conclusion of the Project, a final report shall be submitted by the Grantee and at a minimum should describe the performance, maintenance issues and future design modifications and recommendations for improved performance of each Project.

Project Certification: I certify that _____ (name of organization and Grantee) is in compliance with all local, state and federal laws. I certify that this project is not a legally mandated action under local, state or federal law, under an administrative permit condition, or under the terms of a settlement agreement.