

Capital Project Appropriation Request

6/26/2023

FY 22/23

Project: 001346	Cummings Pond Area Flood & Ecological Resilience Plan
Agency: 0230	Operations: Land Use

Total Request: \$481,125.00

Part A - Description of Request



There is a 4-foot diameter stormwater outfall that empties into Cummings Pond. Installed in the 1930s, the number of drainage structures attached to it has grown severely out of proportion to its capacity over the years. The goal is to do a hydrologic and hydraulic analysis as a basis for developing concept level plans, prioritizing nature-based solutions.

Part B - Appropriation Request Detail

Fund Source	FY 22/23	Capital Forecast						Total
	Amount	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29	
State Grant	481,125.00	0	0	0	0	0	0	481,125.00
Total	\$481,125.00	\$0	\$0	\$0	\$0	\$0	\$0	\$481,125.00

Part C - Project History

Part D - Approvals

Preparer <i>OPM Dept</i>	Date 06/27/2023	OPM Director/OPM Asst Director  <small>Elda Sinani (Jun 28, 2023 16:47 EDT)</small>	Date Jun 28, 2023
Department Head <i>Louis Casolo</i>	Date Jun 27, 2023	Director of Administration <i>Bridget Fox</i> <small>Bridget Fox (Jun 29, 2023 10:04 EDT)</small>	Date Jun 29, 2023
Director  <small>Matt Quiñones (Jun 28, 2023 14:58 EDT)</small>	Date Jun 28, 2023	Mayor <i>Caroline Simmons</i> <small>Caroline Simmons (Jun 29, 2023 11:55 EDT)</small>	Date Jun 29, 2023



DEEP Climate Resilience Fund

TRACK 2: PROJECT DEVELOPMENT APPLICATION

Cummings Pond Area Flood & Ecological Resilience Plan City of Stamford

December 1, 2022

Section 1 – Applicant Details

1.	Applicant name:	City of Stamford
2.	Mailing Address:	888 Washington Blvd. Stamford, CT 06901
3.	Primary Contact Name:	Erin McKenna, Associate Planner
	Primary Contact Email Address:	emckenna@stamfordct.gov
	Primary Contact Phone Number:	203-977-4715
4.	Fiscal Agent name:	Emmanuel Bouchotte, Grants Accounts Analyst
	Fiscal Agent contact email address:	ebouchotte@stamfordct.gov
	Fiscal Agent contact phone number:	203-977-5772
5.	Organization EIN:	066001897
6.	Requested Amount:	\$481,125

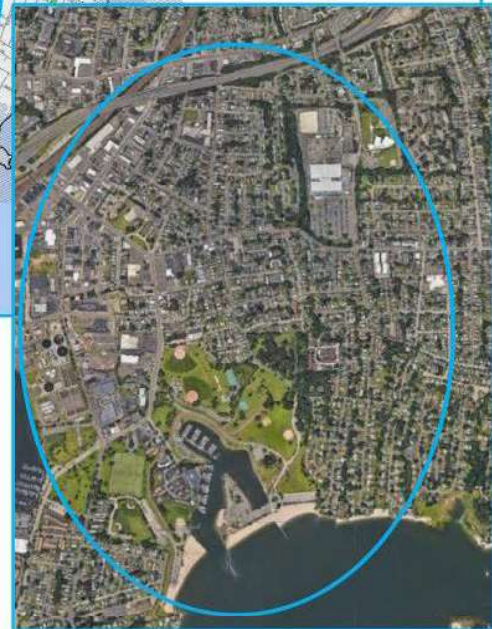
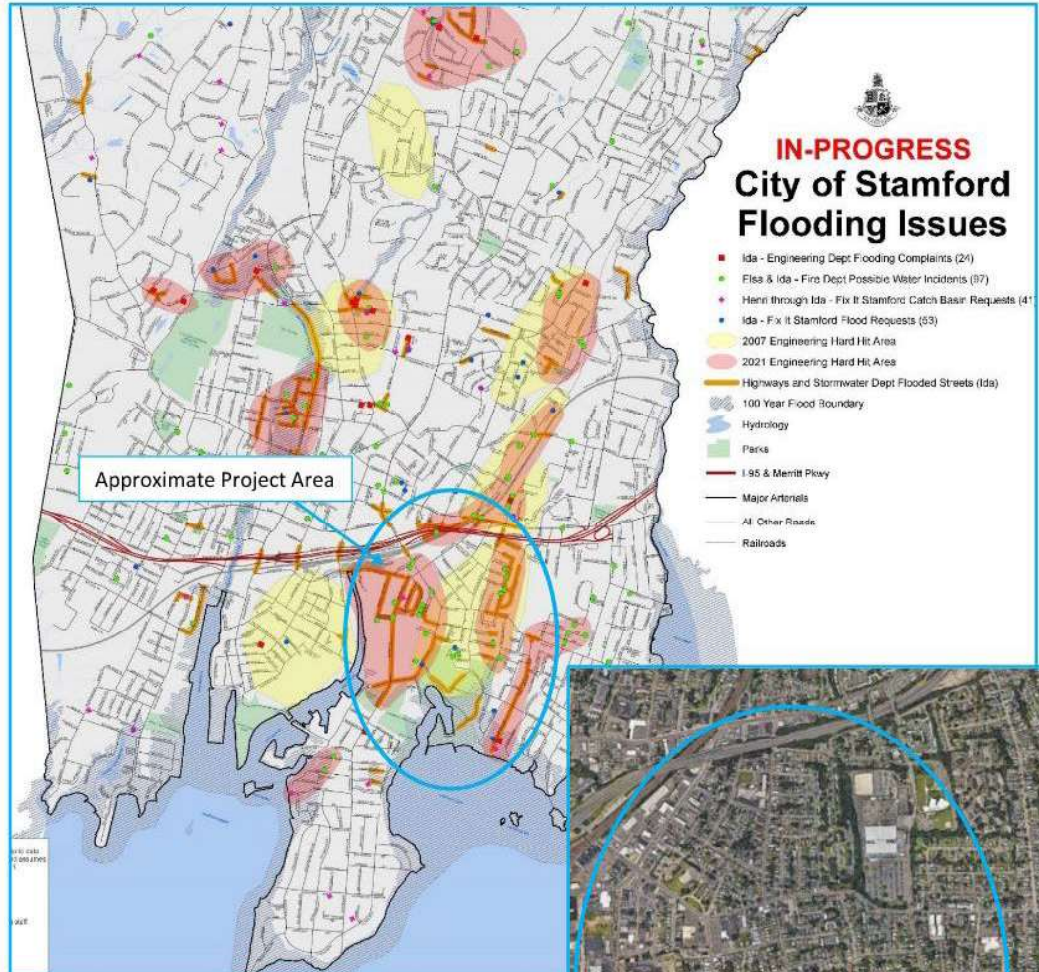
Section 2 – Proposal Overview

1.	<p>Which of the following relevant hazards will your plan or project address? (select all that apply)</p>	<p><input checked="" type="checkbox"/> Extreme precipitation</p> <p><input checked="" type="checkbox"/> Flooding from riverine (including ice jams and dam failures), stormwater, tidal sources, or a combination.</p> <p><input checked="" type="checkbox"/> Sea level rise (including groundwater impacts)</p> <p><input checked="" type="checkbox"/> Extreme temperatures (heat and cold)</p> <p><input checked="" type="checkbox"/> Extreme weather (winter storms, nor'easters, severe thunderstorms, tornadoes)</p> <p><input checked="" type="checkbox"/> Tropical storm and hurricane impacts</p> <p><input type="checkbox"/> Windstorms</p> <p><input type="checkbox"/> Fire</p> <p><input type="checkbox"/> Drought</p>
2.	<p><input checked="" type="checkbox"/> [CHECK BOX] I understand that projects must incorporate climate change impacts out to 2050 or beyond and that DEEP will provide technical assistance for support throughout the process. The final report to DEEP must detail how this task was accomplished.</p>	
3.	<p>Is your project development team including a budgetary request for grant writing for federal resilience funding at the end of the project development work as part of this application?</p> <p>(Note: this is an allowable cost and is encouraged for project development teams that want to pursue federal resilience grant competition funding for next steps.)</p>	<p><input checked="" type="checkbox"/> (a) Yes.</p> <p><input type="checkbox"/> (b) No. We have our own support for applying for federal resilience grant funding.</p> <p><input type="checkbox"/> (c) No. We do not intend to apply for federal resilience grant funding.</p>

Section 3 – Community Overview

4. Which municipality/municipalities will this project serve? Please include a map of the project area (a screenshot of a Google map is fine).

The project will serve the City of Stamford. The approximate project area is shown in the map below.



Aerial Image of Cummings Pond Project Area

5. **Please state where this project was identified as a need in previous resilience planning. Include a link with relevant page number identified here (or include a copy of the plan in your application, if no link is available)**

The City's [2015 Community Resilience Building \(CRB\) Workshop](#) process and summary report (page 4) identified coastal flooding/storm surge and inland flooding as two of the City's top four climate hazards. Cummings Park Beach was identified as one of the key vulnerable ecosystems, and infrastructure in and around Cummings Park was also identified as vulnerable. The Cummings Pond drainage area has experienced significant flooding over the years during high-intensity precipitation events due to the outdated and undersized drainage system. Cummings Park is also identified in the [WestCOG Multi-Jurisdiction Hazard Mitigation Plan Update](#) (August 2021, page 24) as being a particularly vulnerable area of the Long Island Sound Coastline, with low lying coasts subject to both nuisance and storm surge flooding. The Cummings Pond drainage area is therefore a high-priority for the City in terms of flood mitigation and stormwater drainage improvements. The [Cummings Park and West Beach Master Plan](#) and the [Cummings Pond Restoration Master Plan](#) further identified the need to restore the ecological health of the park system and tidal stream, which was previously buried.

The CRB process identified as high priority actions: conducting assessments to identify opportunities to improve resilience of coastal neighborhoods, as well as generating flood reduction solutions that incorporate living shorelines and green infrastructure projects. Both of these actions will be advanced by the proposed project. Restoring and protecting the ecological health and resilience of tidal habitats in the park will be key to any effort to protect infrastructure and reduce flood impacts for the surrounding area and should be a focus of any nature-based approach to resilience in this area of the City.

6. **If applicable, please describe previous community engagement efforts about this project and what responses have been, especially from residents who are considered part of vulnerable populations (see Section 4 for definition).**

The City has conducted a variety of planning studies and efforts, including the Community Resilience Building process and the Cummings Park and West Beach Master Planning process, each of which has incorporated community engagement efforts. During the Cummings Park and West Beach planning process, two public meetings were held (June and October 2014), two online preference surveys were circulated among the public (soliciting approximately 340 total responses), and a series of stakeholder meetings were held (including 30+ groups and individuals). This process gathered information that was incorporated into the master plan, including input on accessibility, public amenities, and the natural environment.

The upcoming project will more specifically seek to engage the public, and in particular, residents who are considered part of the climate vulnerable populations, in discussions around resilience and nature-based solutions through a series of public workshops and engagement opportunities. The public outreach and community engagement for this project will target the affected residents and businesses within the project area, in addition to municipal stakeholders and the general public.

7. **How is this project consistent with the municipality's Plan of Conservation and Development (POCD)? Please include a link to the most recent POCD.**

Stamford is part of the Western Connecticut Council of Governments, 2020-2030 Regional Plan of Conservation and Development

(<https://www.stamfordct.gov/home/showpublisheddocument/3537/637477922226370000>). The proposed project is consistent with the recommendations for infrastructure and climate resilience, which focus on redundancy, mitigation, and adaptation. In particular, this project focuses on adaptation, using green infrastructure and nature-based solutions as a means of developing long-term investment strategies to make Stamford better able to establish sustainable development patterns and increase the resilience of municipal infrastructure in the face of climate change.

Further, the POCD highlights the requirement (Public Act 13-179) to 'consider sea level rise when making critical plans for land use, hazard mitigation and civil preparedness.' Consistent with this directive, this project will utilize the best available climate projections and design guidance by incorporating guidance from the Resilient Massachusetts Action Team (RMAT) design standards as well as downscaled existing and future precipitation estimates available through Connecticut Institute for Resilience & Climate Adaptation (CIRCA).

The project is further consistent with the themes for building climate resilience identified in the POCD and the goals and policies outlined for stormwater management and floodplain management. The green infrastructure and nature-based solutions included in this project go above and beyond strategies spelled out in the POCD, such as "minimize the installation of impervious surfaces in new developments" and requesting updates to flood boundary information. This project will lead to the identification of strategies and solutions that will actively address improvements over existing conditions in line with these same strategic goals.

Section 4 – Vulnerable Populations

Executive Order 21-3 states that at least 40 percent of the resources in this program MUST go to planning activities/project development that serves vulnerable populations. For example, if DEEP awards a total of \$10 million in planning grants, at least \$4 million of that amount must directly serve vulnerable populations as defined in Section 16-243y(7). The questions in this section will help DEEP evaluate whether your proposed plan will benefit vulnerable populations.

8.	<p>Is your project located in an Environmental Justice municipality or census tract identified on the DEEP Connecticut Environmental Justice Communities map?</p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
9.	<p>Is your project located in a community eligible for community reinvestment pursuant to section 36a-30 and the Community Reinvestment Act of 1977, 12 USC 2901 et seq., as amended from time to time?</p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
10.	<p>People who are considered vulnerable to climate change with limited capacity to adapt include:</p> <ul style="list-style-type: none"> • Communities of color • Children and seniors • Low-income communities • People with disabilities • Pregnant people • People with Limited English Proficiency (LEP) • Other historically disadvantaged people • People impacted by the social determinants of health • Populations identified by the American Public Health Association. <p>Tell us more about the vulnerable populations in the area the project will serve? Be specific and include data if available.</p> <p>The Cummings Pond drainage area, a 230-acre densely developed residential and commercial area, stretches from I-95 south to the Long Island Sound in the southeast section of Stamford. Portions of the project area are included in the DEEP Connecticut Environmental Justice Communities map, and communities within this project area rank in the 90th percentile for most of the EPA EJ Screen environmental and demographic indicators and are therefore considered EJ communities. Communities of color and low-income communities are typically considered to be among the most vulnerable to climate change, and to have limited capacity to adapt to the impacts of climate change. The project area (census tract 09001022102) is identified as moderate income for the purposes of the Community Reinvestment Act, as of 2022. Two neighborhoods within the study area have significant vulnerable populations:</p> <ul style="list-style-type: none"> • The Cove Neighborhood (zipcode 06902) contains Cummings Park and stretches from Interstate 95 to Long Island Sound. The population in this neighborhood is approximately 	

	<p>45% Hispanic, and 17% Black. 21.5% of the population has limited English language proficiency, and the per capita income is \$29,346, making it one of the lowest-income neighborhoods in Stamford.</p> <ul style="list-style-type: none"> • The East Side Neighborhood (zip code 06902) is bisected by Interstate 95 and is immediately north of The Cove. The neighborhood is made up of approximately 46% Hispanic, 12% Black, and 5% Asian residents, and has a per capita income of \$34,946, which is below the state average. 15% of households have limited English proficiency.
<p>11.</p>	<p>How will your project, if constructed, benefit the people you have identified as vulnerable? Be specific.</p> <p>City of Stamford residents who live in these flood-prone neighborhoods will benefit from being included in the process of re-envisioning a vibrant, healthy neighborhood enhanced with green infrastructure producing co-benefits such as urban heat island reduction as well as water quality enhancement and flood risk reduction. These residents, many of whom are un- or underemployed, simply do not have the income to fund a community design process. DCRF funding will support the engagement of city and institutional planners and other City stakeholders.</p> <p>Regional visitors to Cummings Pond Park will also benefit from this project when experiencing a healthier and more resilient park and shoreline. Local businesses will benefit from reduced nuisance and storm event flood damage and operational disruption.</p> <p>The green infrastructure and floodplain restoration solutions, as well as the increased tree canopy and green space resources proposed through the project will have multiple benefits to this community directly by:</p> <ul style="list-style-type: none"> • helping to limit flooding risks in the neighborhood • attenuating the impacts of increasingly heavy precipitation • infiltrating stormwater in place to enhance groundwater recharge and limit transport of sediments and nutrient pollution • decreasing operational disruptions in the neighborhood and increasing ability of residents to access critical neighborhood services (groceries, transportation, etc.) during or directly after storm events or heavy rainfall • raising or relocating infrastructure and structures outside of areas impacted by flooding • identifying opportunities for increased shoreline and/or natural area access • protecting the quality of streams and ponds, in particular Cummings Pond • providing aesthetic and quality of life benefits in low-income neighborhoods • increasing shade for increased cooling during extreme heat

Section 5 – Project Development

<p>12.</p>	<p>Please briefly describe the climate-related problem that the project area is experiencing.</p> <p>Over the past several decades, ongoing sediment deposition has altered Cummings Pond from an open water body to a supratidal wetland. The pond’s drainage area consists of over a square mile of highly developed urban neighborhoods. Stormwater runoff from the drainage area has degraded water quality in the pond due to sedimentation, nutrient enrichment, and thermal impacts. Urban stormwater runoff also threatens downstream infrastructure, increases potential flood-related risks, and encourages movement of pollutants to Long Island Sound. The larger Cummings Pond drainage area has also experienced significant flooding over the years during high-intensity precipitation events due to the outdated and undersized drainage system.</p> <p>These problems are all expected to worsen with increasing frequency and intensity of heavy precipitation events, as anticipated by climate change projections. As precipitation events become more frequent and intense, undersized and aging stormwater infrastructure is expected to pose a greater threat of failure and damaging flooding. Catch basins can be overwhelmed, and even where drainage pipes are of adequate size, high volume stormwater flows can result in powerful erosive forces and scouring at outfalls and unprotected areas, with corresponding impacts to natural waterbodies. The Cummings Pond drainage area is therefore a high-priority for the City in terms of flood mitigation and stormwater drainage improvements.</p> <p>Stormwater runoff also picks up surface pollutants and carries these into natural waterbodies, often without an opportunity for effective treatment and/or filtration. This can lead to water quality impairments associated with phosphorus, nitrogen, sediments and solids, salts, bacteria, etc. Cummings Pond was also once linked to the estuary via a tidal stream, which has been buried through Cummings Park. The loss of the tidal stream reduced potential vegetative filters which would have the potential to naturally improve water quality at the discharge point to Long Island Sound.</p>
<p>13.</p>	<p>Please describe the proposed project that is intended to reduce risk and increase resilience to the climate-related problem. If implemented, how would it increase resilience?</p> <p>The proposed evaluation will better define the causes and factors contributing to degraded water quality and drainage-related flooding in the area, while also providing recommended measures to enhance and protect water quality in Cummings Pond and Long Island Sound and to reduce flooding in the upgradient drainage area. The project will result in concept-level water quality and flood mitigation solutions that could be implemented in future design and implementation phases.</p> <p>In addition to the evaluation focused on the upgradient drainage area and external sources of pollutants to the pond and Long Island Sound, the project will further refine restoration concepts originally developed as part of the 2019 Cummings Pond Restoration Master Plan to restore the habitat and ecological function of the pond and downstream coastal marsh areas, which would also serve to enhance coastal resilience through nature-based solutions.</p>

	<p>This dual-pronged approach will address both the underlying problem of stormwater pollutant inputs and flooding driven by excessive stormwater runoff, as well as restore the self-sustaining characteristics of the natural ecosystems at the site which serve to regulate water quality and flooding.</p>
<p>14.</p>	<p>What, if any, initial designs or development work have been done on this project to date? In your emailed application, you may include attachments of designs or development work described.</p> <p>Several planning studies have been completed to date that collectively paved the way for this project, developing different pieces of information and context that have ultimately shaped the direction proposed for this project. These include:</p> <ul style="list-style-type: none"> • 2015 Cummings Pond Park Master Plan • 2015 Stamford Masterplan • 2015 TNC Community Resilience Building Workshop • 2016 West COG Natural Hazard Mitigation Plan • 2018 Topographic Survey • 2018 Stamford Resilience Opportunity Assessment Project Grant Report • 2019 Cummings Pond Restoration Master Plan • 2021 Multi-jurisdictional Hazard Mitigation Plan Update • 2021 Resilient Connecticut Phase II <p>The 2015 Cummings Pond Park Master Plan and 2019 Cummings Pond Restoration Master Plan are most directly relevant to the current project. The 2019 pond restoration plan, in particular, speaks to the dual-pronged approach of upgradient improvements combined with ecosystem restoration, the two key project elements that will be further developed/designed with the requested grant funds.</p>
<p>15.</p>	<p>Please describe what specific component of the project development process you are seeking funding for from DEEP and how you intend to accomplish this.</p> <p><u>TASK 1: Project Management & Meetings</u></p> <p>Task 1 includes the overall coordination of project tasks between the City of Stamford, the consultant team, and project stakeholders. Task 1 also includes an initial project kickoff meeting to review the project approach, schedule, work plan, and stakeholders that will be engaged in public outreach.</p> <p>Task 1 also includes recurring monthly project team meetings (18 half-hour meetings are planned). Draft deliverables such as site investigation findings, modeling results, and conceptual designs will be reviewed at these meetings. These meetings will also be coordinated with meetings with regulators, property owners, and other stakeholders. Six (6) quarterly progress reports will be prepared and distributed electronically to the project team with critical project updates.</p>

TASK 2: Existing Conditions Review & Mapping

Task 2 includes collecting and reviewing the existing information within the project area, including but not limited to site stormwater and utility mapping as well as initial delineation of the project drainage area. A review of previous State, regional, and local studies and masterplans will be performed. Information regarding water quality, water quality impairments, historic flooding, and flood damage within the project area will be reviewed, including rainfall and flooding resulting from recent high-intensity storms in 2021 and 2022. Ecological impairments and opportunities for enhancement will also be reviewed and assessed as well as past plans for community facilities and amenities with the goal of incorporating community and ecological co-benefits into the project. Information from the following previous planning studies will be reviewed relative to existing conditions and prior restoration concepts:

- 2015 Cummings Pond Park Master Plan
- 2015 Stamford Masterplan
- 2015 TNC Community Resilience Building Workshop
- 2016 West COG Natural Hazard Mitigation Plan
- 2018 Topographic Survey
- 2018 Stamford Resilience Opportunity Assessment Project Grant Report
- 2019 Cummings Pond Restoration Masterplan
- 2021 Multi-jurisdictional Hazard Mitigation Plan Update
- 2021 Resilient Connecticut Phase II

The specific needs for site investigation will be based on an in-depth analysis of the City's well-developed GIS data base.

TASK 3: Gap Analysis & Data Collection

The existing conditions information compiled in Task 2 will be reviewed to identify missing information or confirmation of information critical for the development, calibration, and validation of the hydrologic and hydraulic models, as well as to support the development of alternative restoration concepts.

Site survey will be coordinated as required to develop the hydraulic model of the drainage system. Survey data collection will include the following items, saved in a georeferenced format:

- Locations of manholes, catch basins, and outfalls for the contributing drainage area to Cummings Pond
- Pipe invert elevations
- Catch basin rim elevations
- Pipe sizes and material

Data collection will also include field reconnaissance of the project area to verify drainage area characteristics, as well as inspection of the structural condition of the drainage system to identify areas that need upgrades, repair, or maintenance. CCTV will be used to perform a condition assessment of the drainpipes where needed.

We will also gather key information about existing site conditions and conditions at nearby reference wetland/stream systems in order to identify realistic recommendations and end-goals for the character of the restored condition at each site.

Prior assessments conducted during the 2019 restoration plan process included vegetation inventories for four habitat areas within Cummings Park. These identified extensive invasive species as well as natives. A confirmatory assessment will be included to check for any substantive changes in vegetation type or extent of invasive since the previous assessment.

A qualitative ecosystem and habitat functions and values assessment will be conducted for existing semi-natural and natural areas where restoration is potentially proposed to gather baseline information additional to that collected during the 2019 restoration plan study.

No soils or groundwater information was collected during the 2019 planning study. Hand augering/digging will be performed at locations distributed throughout the potential restoration area based on initial desktop review of topography, surficial geology, mapped soil conditions, and historic aerial photography. Soils information and hand-dug test pits will be used to determine depth to seasonal high groundwater and characterize the soil profile, noting the depth of buried native soil in areas where fill was placed when the tidal stream was buried, as well as other characteristics of the soil profile which will help to develop an understanding of hydrology and necessary elevations that would need to be attained to restore functioning wetlands on the site. In addition, up to eight (8) groundwater monitoring wells will be located on the site to collect detailed data to inform design.

A nearby reference wetland will be identified and characterized via hand augering/digging; the reference wetland will serve to further characterize the future conditions that should be emulated in the restoration design, and the expected ecological functions and values that would be associated with the restored site.

A preliminary sediment quality and depth assessment will be conducted to determine whether contaminants are present in the pond sediments and characterize the volume of sediment that would potentially need to be managed. This will enable development of management options to address any potentially hazardous conditions. A total of two (2) three-point composite samples will be collected from two transects within the pond and analyzed for potential contaminants.

Also included in Task 3 will be the installation and monitoring of two (2) tide gauges as well as flow meters installed in strategic locations within the storm drainage system to inform both planning and design, but also calibration of the below mentioned model in Task 4.

TASK 4: Hydrologic & Hydraulic Modeling

An existing conditions hydrologic and hydraulic model will be developed for the project area using EPA's Storm Water Management Model (SWMM). The model will be used to accurately simulate existing hydrologic and hydraulic conditions within the storm drainage

network in the project area, as well as simulate pollutant loads. The model will also be used in Task 5 to evaluate various proposed drainage system improvements and flood mitigation alternatives, including green infrastructure, gray infrastructure, and hybrid approaches, for a range of existing and future storm events. The model will be used to simulate stormwater quantity (peak flows and volumes) as well as pollutant loads and load reductions.

In addition to the information gathered from the site survey in Task 2, The following publicly available online data will be used for development of the SWMM model for the project area:

- LiDAR - 2016 USGS CoNED Topobathymetric Model (1-meter)
- Precipitation data from NOAA Atlas-14
- Soils data from the USDA Web Soil Survey
- Impervious data layer (2012) from the University of Connecticut
- Local or region-specific pollutant export coefficients or Event Mean Concentrations
- EPA Region 1 Stormwater BMP Performance Curves

Following model calibration/validation, baseline capacity analyses will be performed to evaluate conveyance capacity of the existing drainage system. Five (5) design storms between the 1-year and 100-year storm events will be selected for analysis. The design storms will include 24-hour duration storms as well as shorter duration, higher-intensity events. The specific storm event return intervals and durations will be determined in coordination with the City. The use of a range of design storms will help identify critical return periods and storm intensities. The existing conditions model results will demonstrate where the hydraulic constrictions are within the drainage system, which will inform the selection of alternative improvements to mitigate flooding. The model will also be used to simulate event-based and/or annual loadings of stormwater pollutants including sediment (TSS), fecal indicator bacteria, and nutrients (total nitrogen and total phosphorus).

TASK 5: Conceptual Development & Alternatives Analysis

Develop conceptual level alternatives to address flood risk reduction, ecological restoration, and other climate resilience goals, like reducing extreme heat and addressing social resilience through public gathering spaces and equitable design.

Following establishment of baseline conditions, the SWMM model will be configured to simulate water quality and flood mitigation improvements. Up to three (3) conceptual level alternatives will be developed to address flood risk reduction and water quality in the project area. The alternatives may include a range of green infrastructure, gray infrastructure, and hybrid approaches such as:

- Reduction of effective impervious cover through the use of green stormwater infrastructure on public and private property to reduce flows to the system
- Opportunities for increased flood storage within the drainage area
- Location of opportunities in increase urban canopy and green spaces aiding in flood reduction, water quality enhancement, and reduction of urban heat impacts

- Increased system capacity or improved conveyance in locations where hydraulic constrictions are identified or where flow reduction alone is insufficient to mitigate flooding.

The alternatives will demonstrate the achievable flood risk reduction from “small”, “medium”, and “large” storms. Given the uncertainty in the capacity of the existing drainage system, the specific design storms used for the alternatives analysis will be determined after finalizing the existing conditions analysis. The alternative approaches will be summarized in terms of order-of-magnitude costs (-30% to +50%), advantages and disadvantages, and concept plan views and typical sections. The model will also include proposed green stormwater infrastructure and other water quality measures to calculate pollutant load reductions.

The preferred alternatives will be refined during a workshop with project stakeholders. Once the preferred alternatives and design storm are selected, the model will be run under a potential future climate change scenario. Massachusetts has developed the Resilient Massachusetts Action Team (RMAT) climate resilience design standards tool which provides scaled precipitation factors depending on design storm and project life expectancy. While Connecticut does not currently have similar statewide resilient design guidelines or tool, the Connecticut Institute for Resilience & Climate Adaptation (CIRCA) has developed downscaled existing and future precipitation estimates for Connecticut for various emissions scenarios, future planning horizons, and return periods. The RMAT precipitation multipliers and CIRCA downscaled precipitation will be used to select appropriate precipitation estimates for the project area under a potential future climate change scenario.

The alternative approaches will be summarized in terms of costs, advantages and disadvantages, and concept plan views and typical sections. The results of the modeling, concept development, alternatives analysis, and recommendations will be summarized in a technical memorandum.

TASK 6: Benefit-Cost Analysis

A benefit-cost analysis (BCA) will be conducted for the preferred flood resilience alternatives using FEMA’s BCA Toolkit. The calculator assesses pre and post conditions of the project area and assigns a benefit dollar value to areas that achieve flood reduction. Projects with benefits that exceed the project cost are deemed cost-effective and have a Benefit-Cost Ratio (BCR) greater than 1.0. The BCA will be used to determine the cost-effectiveness of the preferred alternative and to support future grant funding requests that require a BCA such as the FEMA hazard mitigation assistance grant programs. Other non-quantifiable benefits will be identified (e.g., water quality and ecological benefits, community benefits, heat reduction, social benefits) but not necessarily included in the BCA.

TASK 7: Stakeholder & Community Engagement

The consultant will form, facilitate, and provide updates to a Citizen and Technical Advisory Committee through a series of dedicated meetings over the course of the project. Identification and selection of stakeholders for participation on the advisory committee will be done in coordination with the City and should reflect a broad cross section of community stakeholders with expertise on the project area. Project stakeholders will include, but not be limited to:

- The Cove and East Side Partnership neighborhood associations
- City staff from Engineering, Land Use, Parks, Public Safety, and MS4 Compliance
- NBC/Chelsea Piers complex managers
- KT Murphy & Rogers Elementary School principals and staff
- 6 Representatives from Districts 1, 3, and 4
- Environmental organizations (Southwest Conservation District, Save the Sound, etc.)
- Local business representatives
- Homeowners

The consultant will organize a minimum of 4 meetings with the advisory committee, including: Meeting 1 - Evaluate and discuss existing plans and data, review climate conditions analysis and impacts of flooding and heat. Meeting 2 -- Establish and review priorities and discuss trade-offs and compromises of potential adaptation strategies, Meeting 3 – presentation and interactive discussion of adaptation alternatives for priority areas after Public Workshop #2, and Meeting 4 – presentation and review of the preliminary draft report and steps to complete the project. The Consultant will be responsible for scheduling, preparing agendas and meeting materials, and providing meeting minutes to the Committee and the City following each meeting. The Consultant should prepare options for in-person or virtual meetings based on public health guidance from the State of Connecticut and the preferences of participating Committee members. Locations for in-person meetings should be coordinated with City staff.

The Consultant will organize a series of 3 public workshops to present information, gather input, and develop consensus among community members and stakeholders on key milestones and deliverables. At a minimum, the events will include Workshop 1 – presentation of project scope, review of climate impacts, and solicitation of feedback on community needs and priorities related to the planning study area; Workshop 2 – workshop on adaptation strategies and potential project concepts to mitigate climate risks in the planning study area, and; Workshop 3 – present draft final report and discuss implementation next steps with the community and stakeholders. The Consultant will be responsible for facilitating the events and preparing meeting agendas and materials, including maps and visual aids for presentations. A summary of outcomes and feedback from the community should be developed as a Public Engagement Memorandum for inclusion in the final report. A project webpage (like a GIS StoryMap) will be established and maintained where documents and presentations can be made available for public access in English and Spanish. The team will also produce information sheets, flyers, and related materials to raise awareness and facilitate participation in engagement activities. Outreach materials should be available in both English and Spanish.

TASK 8: Flood and Ecological Resilience Plan

Task 8 will document the process and outcomes of this project in a highly graphic report to serve as a roadmap for the next recommended actions to progress this project towards implementation. The final document will include a detailed project prioritization as well as the Final Resilience Plan. The Final Resilience Plan will detail: Short- and long-term priority projects; Draft project narrative for federal applications; Funding/financing strategy including locally derived match funding strategy exercise that examines measures authorized in An Act Concerning Climate Change Adaptation (Public Act 21-115); Separate executive summary highlighting the process and lessons learned; and a presentation slide communicating accomplishments and lessons learned. In addition to the flood and ecological resilience components of the project, the final plan will highlight the relationship building process throughout this project enhancing community and social resilience.

TASK 9: Grant Application for Next Steps

Task 9 includes budget for the development of the grant application identified to progress this project through final design and implementation. This task will include the production of any necessary application materials including but not limited to detailed scope, project budget, project timeline, project location maps, and project descriptions and narrative.

16. **A primary goal of the DEEP Climate Resilience Fund is to set Connecticut communities up for success when applying for federal resilience grants, which will fund construction and implementation. Which federal grant program(s) is your municipality intending to apply to for final design, construction, and/or implementation funding?**

- [Federal Emergency Management Agency \(FEMA\) Building Resilient Infrastructure and Communities \(BRIC\) program](#)
- [FEMA Hazard Mitigation Grant Program \(HMGP\)](#)
- [FEMA Flood Mitigation Assistance Program \(FMA\)](#)
- [National Fish and Wildlife Federation \(NFWF\) National Coastal Resilience Fund \(NCRF\)](#)
- [NFWF Long Island Sound Futures Fund \(LISFF\)](#)
- [NOAA Transformational Habitat Restoration and Coastal Resilience Grants](#)
- [NOAA Coastal Habitat Restoration and Resilience Grants for Underserved Communities](#)
- [Connecticut Clean Water Fund](#)

		<input type="checkbox"/> Other (specify) Click or tap here to enter text.
17.	<p>How does this project connect to the PERSISTS decision-support criteria framework? PERSISTS stands for Permittable, Equitable, Realistic, Safe, Innovative, Scientific, Transferable and Sustainable.</p> <p>Permittable – There is ample precedent for permitting green infrastructure and nature-based solutions of the types anticipated to be proposed here. Federal, state, and local permitting timelines need to be incorporated into the project pathway, but there is no reason to anticipate unusual permitting hurdles in this case.</p> <p>Equitable – Project co-benefits focus on equitable outcomes for climate vulnerable populations, and a robust outreach element is incorporated into the project, including hosting a public meeting in the EJ community to make participation easier and more accessible for residents from the neighborhood as well as providing translation services for outreach materials and making all outreach information available online.</p> <p>Realistic – Green infrastructure solutions and related floodplain restoration projects such as the solutions anticipated here are tried and true nature-based solutions that can be realistically engineered and have a history of successfully receiving implementation funding from the types of funding programs targeted for this project.</p> <p>Safe – By better managing stormwater from large precipitation events, the proposed solutions will reduce risks to people and infrastructure.</p> <p>Innovative – Nature-based solutions are innovative approaches to flood resilience that make use of natural processes to promote resilience in ways that are effective in the long term and add significant community co-benefits.</p>	

	<p>Scientific – The project will utilize current climate projections and best practices for climate resilient design to develop solutions for future conditions and combine this approach with cutting edge nature-based solutions approaches.</p> <p>Transferrable – The approach and solutions developed for Stamford will serve as a model for other communities seeking to identify holistic resilience solutions to address stormwater management and related flooding issues, while simultaneously addressing other community needs.</p> <p>Sustainable – Green infrastructure is socially, economically, and ecologically sustainable and supported by the public and leadership. Green infrastructure designs contribute a suite of co-benefits to the community, including aesthetic improvements, green space, reduction of urban heat island effects, as well as addressing the core problems of managing extreme precipitation and flooding.</p>
18.	<p>Please describe how this project incorporates nature-based solutions. If it does not, state that.</p> <p>This project proposes to utilize green infrastructure and floodplain restoration as nature-based solutions to provide flood resilience while also considering nature-based coastal resilience measures like living shorelines where applicable.</p> <p>Green infrastructure for stormwater management will promote environmentally-sustainable redevelopment, and this project specifically aims to carve out space for low-impact development practices in a neighborhood that was not developed with green space or infiltration in mind. The green infrastructure installations will serve as demonstration projects and provide the scaffolding for sustainable development and redevelopment projects that can be implemented throughout Stamford in the future, enabling protection of vital natural resources while also serving and protecting the citizenry.</p> <p>Infiltration-based green infrastructure stormwater control measures will also increase groundwater recharge and improve water quality by filtering out pollutants and sediment. Water quality problems are expected to be exacerbated by climate change impacts (increasing temperatures, drier summers, and lower water levels), but also by land use practices and excessive use of fertilizers. By encouraging green infrastructure this project will ultimately result in improved water quality and less influx of pollutants into the City’s groundwater and surface waters, including Long Island Sound.</p> <p>The proposed green infrastructure measures (e.g., tree box filters, bioswales, and other vegetation-based surface practices) will also provide micro-scale habitat enhancements, including important pollinator habitat.</p> <p>The nature-based solutions developed through this project will integrate and build upon the three approaches highlighted in the 2019 Cumplings Pond Restoration Master Plan: 1) modify the upper basin by planting more street trees, modify the drainage inlets, increase the rate of catch basin cleanout, and more; 2) restore cumplings pond by dredging, installing native aquatic species, install a filtration wetland in the north of the pond, replace the piped outlet at the south of the pond with surface flow, and more; 3) daylight the waterway from the south pond to the marina.</p>

	<p>The proposed daylighting of the tidal stream is inherently a nature-based solution, as it will restore the existing ecosystem functions which provide a whole suite of protective benefits for both the Stamford community and the natural community.</p>
<p>19.</p>	<p>Please describe how this project incorporates co-benefits (reduces emissions, solves multiple problems, serves as a community amenity, etc.)? If it does not, state that.</p> <p>Cummings Park is an approximately 80-acre site that offers numerous public amenities in its current state—a public beach and pond, athletic fields, and open lawn space. As such the park and its facilities are important assets for residents in the adjacent low- and moderate-income neighborhoods, the City as a whole, as well as a regional attraction. Access to the waterfront, in particular, is important for cooling and will be increasingly valuable as climate conditions continue to result in more excessive heat conditions. By enhancing resilience to flooding and protecting the park and surrounding neighborhoods, these important public assets will be preserved and enhanced.</p> <p>Green infrastructure implemented in upgradient areas outside of the park will also create additional green space within the urbanized area, creating new green linkages between existing parks and enhancing tree canopy within the neighborhoods for aesthetic benefits, as well as increased shade cover and cooling to counter urban heat island effects while also increasing essential pollinator habitat.</p> <p>Both green infrastructure and ecological restoration projects also offer numerous opportunities for public engagement and curricular coordination with the schools. With the incorporation of public educational signage and connections to local schools, the project site can become an outdoor living laboratory for students to study ecosystems, nature-based design solutions, and the process of engineering solutions to address critical and timely problems facing our cities.</p>
<p>20.</p>	<p>Is there anything else you would like to share with DEEP regarding the community’s commitments to improving resilience?</p> <p>The City of Stamford is committed to city-wide climate resilience and sustainability initiatives, as demonstrated through an ongoing city-wide drainage assessment, an upcoming coastal resilience planning project, the recently completed tree inventory for downtown Stamford, implementation of a city-wide stormwater drainage manual to promote the implementation of Low Impact Development and green infrastructure practices, and the Mayor’s Climate Council and Task Force on Sustainability. This green infrastructure and restoration project will build upon and complement these other resilience and sustainability initiatives.</p> <p>The project team will be led by City staff and supported by a consultant team, working closely with a Technical and Community Advisory Committee including community-based organizations. Erin</p>

	<p>McKenna, Associate Planner with the City of Stamford Land Use Bureau, will serve as the municipal point of contact and overall project manager for this project. Erin will be responsible for the administrative aspects of the project and project management, and she will serve as the City’s technical lead for the project. She has 12+ years of experience managing municipal planning projects, managing the mayor’s sustainability task force, coordinating sustainability and transportation projects, and managing grant funded resilience and sustainability projects. Erin will be assisted by staff from other City departments including Engineering; Parks & Facilities; Stormwater Management; Transportation, Traffic & Parking; Land Use Bureau; and others.</p> <p>The City intends to retain the planning and engineering consulting firm Fuss & O’Neill, Inc. to provide technical expertise and capacity to complete this project. Fuss & O’Neill provides comprehensive climate resilience and adaptation services to municipalities to address a variety of climate risks including extreme heat and flooding. Fuss & O’Neill is currently working on several CIRCA-led flood and heat resilience planning studies and concept design projects to develop adaptation solutions for urban neighborhoods in the Fair Haven neighborhood of New Haven and downtown Danbury. The Fuss & O’Neill team will be led by Sara Morrison (Project Manager) and a support team that includes Erik Mas and Elsa Loehmann. Sara specializes in large-scale climate resilience design and planning with an expertise in integrating natural and engineered systems using nature-based solutions. Sara and the supporting principals from Fuss & O’Neill are working on a wide array of flood resilience assessments, green infrastructure, ecological restoration, and similar projects elsewhere in southern New England.</p> <p>Resumes for the above principals are attached to this application.</p>
21.	<p><input checked="" type="checkbox"/> [CHECK BOX] I understand the final report submitted to DEEP with the deliverable that was funded must also include an exercise for municipal government to assess capacity to raise locally derived match funding and other capital costs associated with implementing resilience measures. This includes examining the measures authorized in An Act Concerning Climate Change Adaptation (Public Act 21-115), including the opportunity to form stormwater authorities, explore special taxing districts, and form flood prevention, climate resilience, and erosion control boards.</p>
22.	<p><input checked="" type="checkbox"/> [CHECK BOX] I understand that the final report submitted to DEEP must identify what federal sources of resilience funding the applicant or partners intend to pursue to further fund implementation efforts, including construction. Additionally, the team must include a draft project narrative for federal applications in final reporting. Technical assistance will be available to support federal grant application development and submission. We encourage applicants to include in their budget funding for writing federal grant applications for funding next steps and implementation.</p>

Section 6 – Community and Stakeholder Engagement

23. **Describe how this team will engage residents and stakeholders. Be specific. Include details about the number of meetings, charettes, workshops, public feedback sessions, etc., and any other outreach and engagement strategies. Also include how information collected during those sessions will be used to inform the project.**

Note: Project teams are required to hold at least two (2) public meetings, including one (1) to share results with residents. The overall number of public engagement opportunities should be commensurate with the scope and complexity of the project, and projects serving vulnerable populations should incorporate inclusive engagement practices specifically designed to meet the needs of those identified as vulnerable.

The project team will form, facilitate, and provide updates to a Citizen and Technical Advisory Committee through a series of dedicated meetings over the course of the project. Identification and selection of stakeholders for participation on the advisory committee will be done in coordination with the City; and is intended to reflect a broad cross section of community stakeholders with expertise on the project area. Project stakeholders will include, but not be limited to:

- The Cove and East Side Partnership neighborhood associations
- City staff from Engineering, Land Use, Parks, Public Safety, and MS4 Compliance
- NBC/Chelsea Piers complex managers
- KT Murphy & Rogers Elementary School principals and staff
- 6 Representatives from Districts 1, 3, and 4
- Environmental organizations (Southwest Conservation District, Save the Sound, etc.)
- Local business representatives
- Homeowners

We will organize a minimum of 4 meetings with the advisory committee, including:

- Meeting 1 - Evaluate and discuss existing plans and data, review climate conditions analysis and impacts of flooding and heat.
- Meeting 2 -- Establish and review priorities and discuss trade-offs and compromises of potential adaptation strategies,
- Meeting 3 – presentation and interactive discussion of adaptation alternatives for priority areas after Public Workshop #2, and
- Meeting 4 – presentation and review of the preliminary draft report and steps to complete the project.

In addition to the engagement work conducted with and through the Advisory Committee, we will also organize a series of 3 public workshops to present information, gather input, and develop consensus among community members and stakeholders on key milestones and deliverables. At a minimum, the events will include the following:

- Workshop 1 – presentation of project scope, review of climate impacts, and solicitation of feedback on community needs and priorities related to the planning study area;
- Workshop 2 – workshop on adaptation strategies and potential project concepts to mitigate

climate risks in the planning study area and;

- Workshop 3 – present draft final report and discuss implementation next steps with the community and stakeholders.

A summary of outcomes and feedback from the community will be developed as a Public Engagement Memorandum for inclusion in the final report. A project webpage (like a GIS StoryMap) will be established and maintained where documents and presentations can be made available for public access. The team will also produce information sheets, flyers, and related materials to raise awareness and facilitate participation in engagement activities.

To best connect with and ensure that materials are accessible to a broad public audience within the EJ community, outreach materials will be translated to be made available in both English and one additional language, based on the language determined to be most prominent within the local neighborhood.

24. Describe how your project team specifically will engage and collaborate with residents who are considered vulnerable populations.

As noted above, outreach materials (web site, flyers, information sheets, etc.) will be translated into Spanish for accessibility among residents for whom English is not their primary language and language isolation may otherwise prevent the dissemination of information and engagement with the project.

Representation from and on behalf of vulnerable populations will be sought for participation on the Citizen and Technical Advisory Committee, which will meet regularly throughout the project to discuss options and provide input as to how solutions under consideration would impact or benefit vulnerable populations.

Finally, the public workshop process described above will allow a wider range of residents from vulnerable populations to be involved in the project and have their voices heard, without a substantial time commitment for participation.

All public input will be collected and summarized for re-distribution to communicate back to residents what was heard and establish accountability for the ultimate consideration of residents' voices and incorporation of feedback from vulnerable populations into the project outcomes.

25. **How will you communicate the results of the project work and get final input from residents and stakeholders, as necessary depending on scope and complexity of this proposal?**

As already detailed in questions 23 and 24, communication with residents and stakeholders, both to share information out and to gather input, will be achieved in three primary ways:

- Development of a Citizen and Technical Advisory Committee made up of project stakeholders including, but not limited to:
 - The Cove and East Side Partnership neighborhood associations
 - City staff from Engineering, Land Use, Parks, Public Safety, and MS4 Compliance
 - NBC/Chelsea Piers complex managers
 - KT Murphy & Rogers Elementary School principals and staff
 - 6 Representatives from Districts 1, 3, and 4
 - Environmental organizations (Southwest Conservation District, Save the Sound, etc.)
 - Local business representatives
 - Homeowners

The advisory committee will meet at minimum four times throughout the project to review information, discuss priorities and alternatives, and summarize decisions made and recommendations to be finalized in the project reports.

- A public workshop process will provide opportunities for a larger audience of residents and stakeholders to directly receive information, ask questions, and provide input on the project.
- All public input will be collected and summarized and shared back out to communicate to residents what was heard and discussed and establish accountability for incorporation of residents' voices into the project outcomes.
- Project work and updates will be presented on a project website in both English and Spanish.

Attachments

Please attach this application document and the following documents in an email to DEEP.climateresilience@ct.gov as your application submission.

- **Milestone Chart** ([Please use template provided.](#))
- **Budget summary and justification** ([Please use template provided.](#))

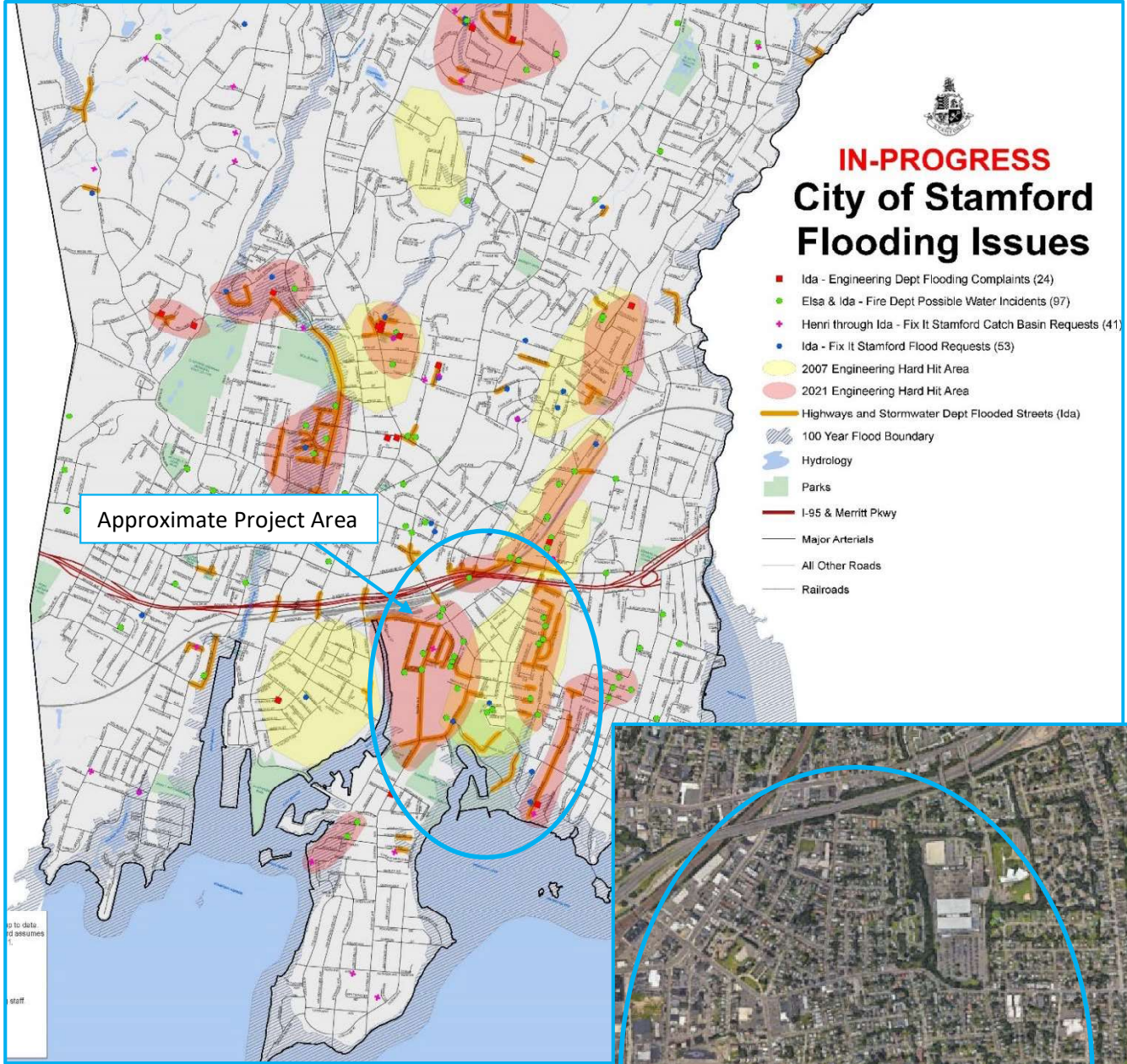
- **Resumes for all principals (please keep to no more than 2 pages and edit to include only relevant experience, including volunteer work)**

- **Letters of support from project partners, municipalities, community-based organizations, etc.**
 - Letters must include how project partners or organizations will participate in the project.

 - If the applicant is not a municipality, i.e., a Council of Government or non-profit organization, letters of support should come from every municipality involved in the plan, and those letters must commit staff time to participating in the planning process and engagement efforts.

 - Letters of support can be sent as part of the package or emailed by the author directly to DEEP.climate resilience@ct.gov. Subject line must include the name of the primary applicant and must be received by the application deadline.

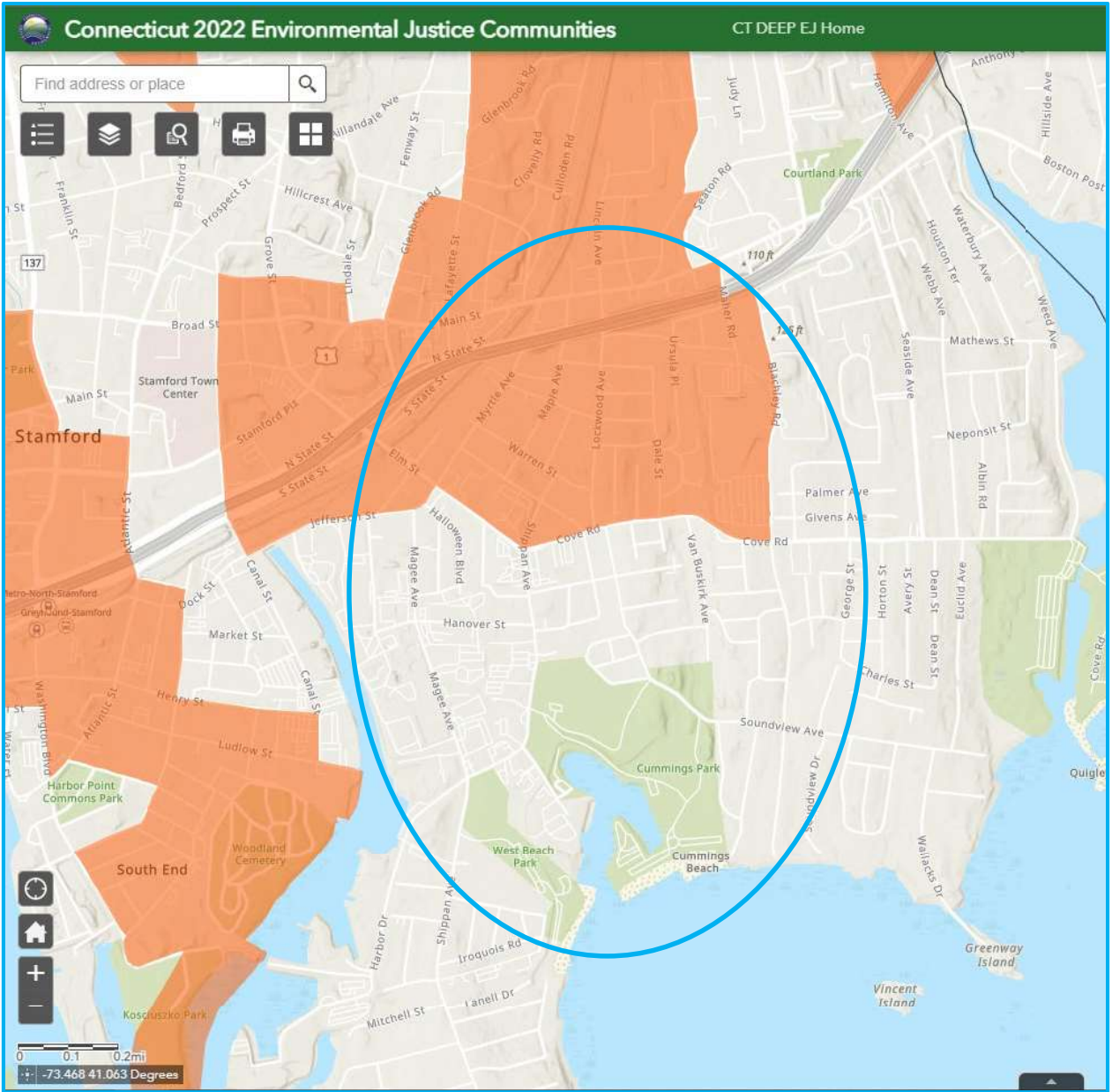
- **Optional: If applicable, attach any initial designs or development work performed to date**



Documented Flooding in Project Area



Aerial Image of Cummings Pond Project Area



CT DEEP 2022 Environmental Justice Census Tracts in Project Area

Climate Change Vulnerability Index (CCVI) Viewer

Introduction

How To Use The Viewer Tool

Flood Vulnerability

Heat Vulnerability

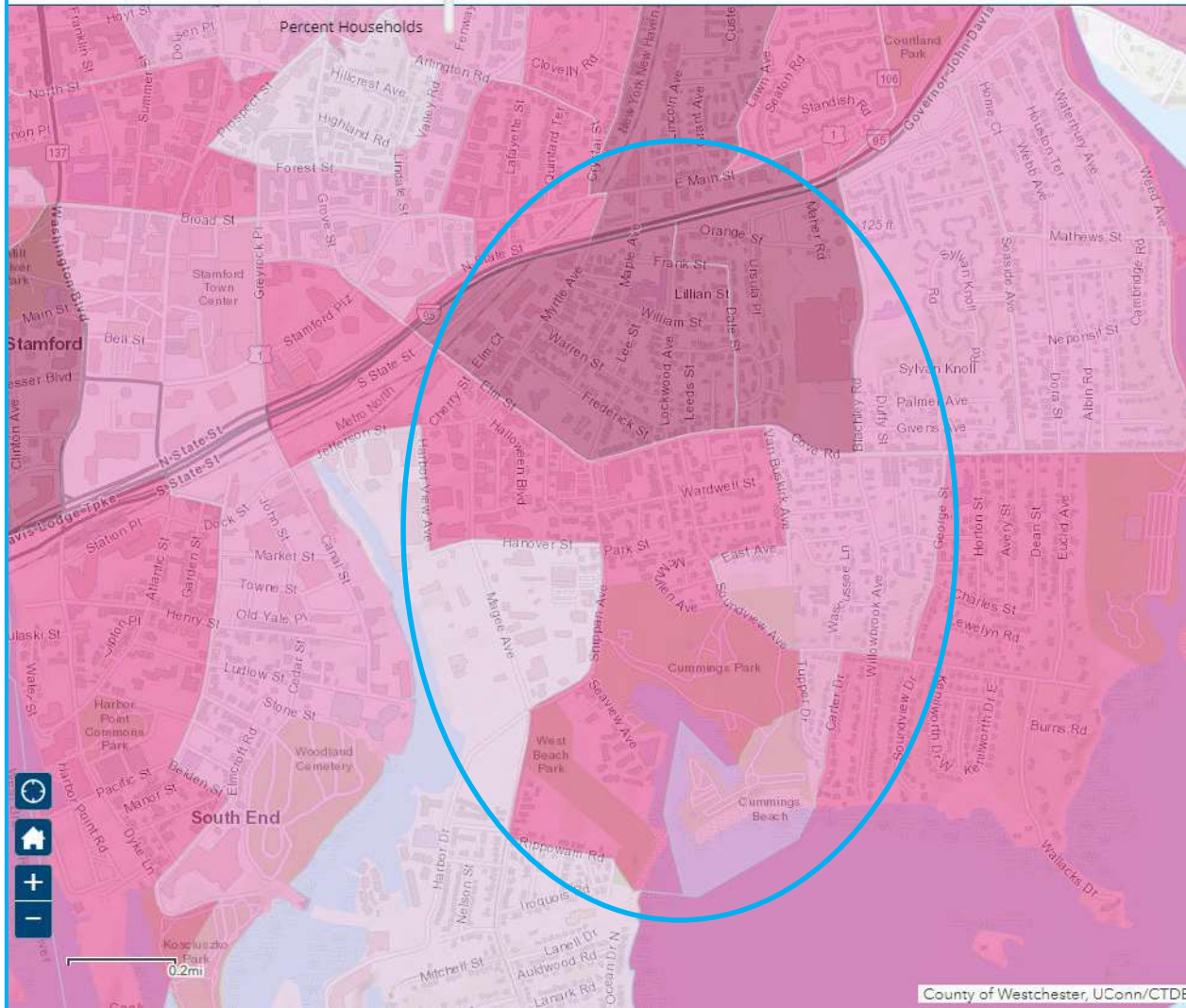
Flood and Heat Vulnerability Combined

Social Vulnerability



Social Vulnerability Index Viewer

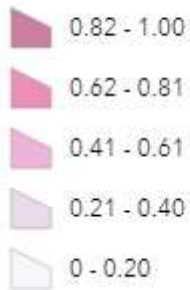
Resilient Connecticut



SVI_Overall Vulnerability

CIRCA Resilient Connecticut Social Vulnerability Index in Project Area

Overall Vulnerability





DEEP Climate Resilience Fund Budget

Cummings Pond Area Flood & Ecological Resilience Plan
 City of Stamford

Budget Summary

Salaries *	\$0
Fringe	\$0
Total Salary & Fringe	\$0
Travel	\$0
Participant Support Costs	\$7,125
Subawards	\$0
Contractual Services	\$470,000
Materials and Supplies	\$4,000
Total Other Direct	\$474,000
Indirect	\$0
Total Budget:	\$481,125

Budget Justification

Direct Costs: \$481,125

Indirect Costs: \$0

Total Request: \$481,125

Personnel \$0

We are not requesting grant funding for City of Stamford personnel.

Fringe Benefits \$0

We are not requesting grant funding for City of Stamford personnel.

Travel \$0

We are not requesting grant funding for project-related travel by City of Stamford personnel. Consultant travel costs are included in the contractual services budget item.

Participant Support Costs \$7,125

We request participant support costs of \$4,750 in Year 1 and \$2,375 in Year 2 (\$7,125 total). We will work in partnership with a Citizen and Technical Advisory Committee, including City staff, community organizations, youth/school groups, and local business representatives and homeowners to conduct the following project meetings:



Meeting Description	Number of Meetings	In-person or Virtual?	Food Provided?	Language Translation Services?
Citizen and Technical Advisory Committee Meetings	4	In-person or virtual*	Yes	No
Public Workshop Meetings	3	In-person	Yes	Yes

*In-person meeting format assumed for budgeting purposes.

In order to facilitate a high level of stakeholder participation, funds will be used to provide food for in-person meetings and language translation services for the public workshop meetings. We expect that up to 25 people will participate in each in-person meeting where food will be provided at a cost of approximately \$15 per person, per meeting (\$375 per meeting x 7 meetings = \$2,625). Meetings are anticipated to be 1 to 2 hours in duration depending on the specific focus of the meeting and include a light breakfast, lunch, or dinner depending on time of day. No facility rental fees are anticipated. An allowance of \$4,500 is requested for language translation services for up to 3 meetings (\$1,500 per meeting).

Other Direct Costs \$474,000

Other direct costs include contractual services for a planning and engineering consultant, as well as materials, supplies, and printed translational services in support of stakeholder and community engagement activities.

Contractual Services \$470,000

We request \$470,000 to contract with Fuss & O’Neill to provide planning and engineering services for this project. Fuss & O’Neill will work closely with the City, Citizen and Technical Advisory Committee, community organizations, and youth/school groups, and other stakeholders, providing overall project management, technical expertise related to flood modeling, identification and evaluation of various flood mitigation scenarios, and development of a flood and ecological resilience plan.

Materials and Supplies \$4,000

We request \$2,000 for materials, supplies, and printing/distribution of outreach materials in support of the advisory committee and public workshop meetings. These are anticipated to include fact sheets, flyers, solicitations for feedback and participation in the project (e.g., on-line survey or questionnaire), and related materials. These materials will be distributed via electronic methods and via USPS to households and businesses within the project area. We request an additional \$2,000 for written translation services to translate English language community outreach and engagement materials to one additional language. The proposed



materials, supplies, and written translation services are essential for increasing participation in and enhancing the effectiveness of the stakeholder and community engagement meetings.

Indirect Costs \$0

We are not requesting grant funding for indirect costs.

Resilience Project Milestone Chart – DEEP Resilience Fund Grant – TRACK 2

There is no formal cap on funding requests for Track 2, however, DEEP expects awards to range between \$300,000 and \$700,000. The expected duration of Track 2 project development is up to 18 months from the contract execution date, depending on project scope, complexity, and community engagement plan.

1. Applicant Name: **City of Stamford**
2. Project Name:
3. Program Duration: **18 months**
4. Total Grant Request: **\$481,125**

Cummings Pond Area Flood & Ecological Resilience Plan

If approved, the schedule will become part of your grant contract with the state. You will be monitored for compliance with these dates. Therefore, you must estimate the dates as wisely as possible.

Please provide projected dates of completion. Be advised these dates will be considered part of your project schedule. A quarterly progress report is required. Quarters are January 1 – March 31; April 1 – June 30; July 1 – September 30; and October 1 – December 31.

Primary Tasks (expand as needed)	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	5th Qtr.	6th Qtr.
TASK 1: Project Management & Meetings	X	X	X	X	X	X
TASK 2: Existing Conditions Review & Mapping	X					
TASK 3: Gap Analysis & Data Collection		X				
TASK 4: Hydrologic & Hydraulic Modeling		X	X			
TASK 5: Conceptual Development & Alternatives Analysis				X	X	
TASK 6: Benefit-Cost Analysis					X	
TASK 7: Stakeholder & Community Engagement	X	X	X	X	X	X
TASK 8: Flood & Ecological Resilience Plan						X
TASK 9: Grant Application for Next Steps						X

MAYOR CAROLINE SIMMONS
CITY OF STAMFORD, CONNECTICUT



TEL: 203-977-4150
EMAIL: MAYORSOFFICE@STAMFORDCT.GOV

November 22, 2022

Commissioner Katie Dykes
CT Department of Energy & Environmental Protection
79 Elm Street
Hartford, CT. 06106-5127

Dear Commissioner Dykes:

Re: Stamford Cummings Pond Flood Resilience Study
DEEP Climate Resilience Fund – Track 2 grant application

Please accept this letter as a demonstration of support and commitment for the application for Stamford Cummings Pond Flood Resilience Study. The Cummings Pond project area is a highly urbanized commercial and residential area with major transportation infrastructure forming the northern boundary (I-95 and Metro North / Amtrak rail lines) and the waters of the Long Island Sound at the southern edge. Communities within this project area rank in the 90th percentile for most of the EPA EJ Screen environmental and demographic indicators and are therefore being considered EJ communities.

The City is requesting funding to support a flood mitigation evaluation, focused on this area, as a necessary step in developing strategies to make this community more resilient to current and future flooding while also improving water quality. The project will result in concept-level flood mitigation recommendations to alleviate flooding within the drainage area and at downstream locations, including a combination of drainage system improvements (increased capacity of drainpipes, culverts, etc.), nature-based solutions such as green stormwater infrastructure and floodplain restoration, and raising or relocating infrastructure and structures outside of areas impacted by flooding. The concept development will provide the City with numerous benefits as it places a heavy emphasis on solutions with layered co-benefits including public amenities, risk reduction for extreme heat, and ecological enhancement.

Thank you in advance for your consideration of this project. I extend my full support in this application and look forward to the implementation of this project and the benefits it will bring to our community. Please do not hesitate to reach out if you have any questions or need any additional information.

Respectfully,

A handwritten signature in blue ink, appearing to be "Caroline Simmons", is written over a light blue horizontal line.

Caroline Simmons

cc: Sarah Watson, CT DEEP Office of Climate Planning

DAVID J. WATKINS
257 Ocean Drive W.
Stamford, CT 06902
DWatkins1@StamfordCT.gov

November 21, 2022

Commissioner Katie Dykes
CT Department of Energy & Environmental Protection
79 Elm Street
Hartford, CT. 06106-5127
Re: Stamford Cummings Pond Flood Resilience Study
DEEP Climate Resilience Fund – Track 2 grant application

Dear Commissioner Dykes:

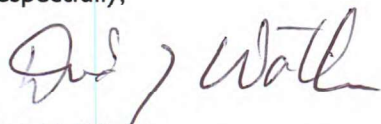
I am writing you in my capacity as a member of the **City of Stamford Board of Representatives**, representing District 1 which includes the area known as Cummings Pond

Please accept this letter as a demonstration of support and commitment for the application for Stamford Cummings Pond Flood Resilience Study. The Cummings Pond project area is a highly urbanized commercial and residential area with major transportation infrastructure forming the northern boundary (I-95 and Metro North / Amtrak rail lines) and the waters of the Long Island Sound at the southern edge. Communities within this project area rank in the 90th percentile for most of the EPA EJ Screen environmental and demographic indicators and are therefore being considered EJ communities.

The City is requesting funding to support a flood mitigation evaluation, focused on this area, as a necessary step in developing strategies to make this community more resilient to current and future flooding while also improving water quality. The project will result in concept-level flood mitigation recommendations to alleviate flooding within the drainage area and at downstream locations, including a combination of drainage system improvements (increased capacity of drainpipes, culverts, etc.), nature-based solutions such as green stormwater infrastructure and floodplain restoration, and raising or relocating infrastructure and structures outside of areas impacted by flooding. The concept development will provide the City with numerous benefits as it places a heavy emphasis on solutions with layered co-benefits including public amenities, risk reduction for extreme heat, and ecological enhancement.

Thank you in advance for your consideration of this project. I extend my full support in this application and look forward to the implementation of this project and the benefits it will bring to our community. Please do not hesitate to reach out if you have any questions or need any additional information.

Respectfully,



David J. Watkins

cc: Sarah Watson, CT DEEP Office of Climate Planning



Save the Sound[®]

Action for our region's environment.

November 30th, 2022

Commissioner Katie Dykes
CT Department of Energy & Environmental Protection
79 Elm Street
Hartford, CT. 06106-5127

Re: Stamford Cummings Pond Flood Resilience Study
DEEP Climate Resilience Fund – Track 2 grant application

Dear Commissioner Dykes:

Please accept this letter as a demonstration of support and commitment for the application for the Stamford Cummings Pond Flood Resilience Study. The Cummings Pond project area is a highly urbanized commercial and residential area with major transportation infrastructure forming the northern boundary (I-95 and Metro North / Amtrak rail lines) and the waters of the Long Island Sound at the southern edge. Communities within this project area rank in the 90th percentile for most of the EPA EJ Screen environmental and demographic indicators and are therefore being considered EJ communities.

The City is requesting funding to support a flood mitigation evaluation, focused on this area, as a necessary step in developing strategies to make this community more resilient to current and future flooding while also improving water quality. The project will result in concept-level flood mitigation recommendations to alleviate flooding within the drainage area and at downstream locations, including a combination of drainage system improvements (increased capacity of drainpipes, culverts, etc.), nature-based solutions such as green storm water infrastructure and floodplain restoration, and raising or relocating infrastructure and structures outside of areas impacted by flooding. The concept development will provide the City with numerous benefits as it places a heavy emphasis on solutions with layered co-benefits including public amenities, risk reduction for extreme heat, and ecological enhancement.

We ask you to look favorably on this request, as it will prioritize water quality improvements and nature-based flood resiliency using green infrastructure that will benefit the community around Cummings Pond and in the greater City of Stamford. Our Ecological Restoration team will look forward to the advancement of green stormwater infrastructure and floodplain restoration in Stamford through this project, and stands ready to support as a project partner or advisor for future implementation, as we have in other coastal Connecticut municipalities.

Thank you in advance for your consideration of this project. I extend my full support in this application and look forward to the implementation of this project and the benefits it will bring to our community. Please do not hesitate to reach out if you have any questions or need any additional information.

Best regards,

Sam Marquand
Clean Water Advocate
Save the Sound
Email: smarquand@savethesound.org

[cc: Sarah Watson, CT DEEP Office of Climate Planning](#)



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Commissioner Katie Dykes
CT Department of Energy & Environmental Protection
79 Elm Street
Hartford, CT. 06106-5127
Re: Stamford Cummings Pond Flood Resilience Study
DEEP Climate Resilience Fund – Track 2 grant application

Dear Commissioner Dykes:

I submit this letter as SoundWaters' support and commitment for the application for Stamford Cummings Pond Flood Resilience Study. The Cummings Pond project area is a highly urbanized commercial and residential area with major transportation infrastructure forming the northern boundary and the waters of the Long Island Sound at the southern edge. Communities within this project area rank in the 90th percentile for most of the EPA EJ Screen environmental and demographic indicators and are therefore being considered EJ communities.

The City is requesting funding to support a flood mitigation evaluation, focused on this area, as a necessary step in developing strategies to make this community more resilient to current and future flooding while also improving water quality. This is important for the community and for Long Island Sound, as the Sound is heavily influenced by upstream activity, especially urban runoff. This project will provide numerous benefits, given the emphasis on solutions with layered co-benefits including public amenities, risk reduction for extreme heat, and ecological enhancement.

At SoundWaters, we partner with the City on many resilience projects, and we give our full support in this application and look forward to the benefits it will bring to our community. Thank you in advance for your consideration of this project. Please reach out if you have any questions or need any additional information.

Respectfully,

Leigh Shemitz, PHD
President, SoundWaters

cc: Sarah Watson, CT DEEP Office of Climate Planning

William P. Brink, P.E. BCEE
Executive Director
Stamford Water Pollution Control Authority
203-977-5809
wbrink@stamfordct.gov



Edward Kelly, Chairman
SWPCA Board of Directors
Stamford Water Pollution Control Authority
ekelly@stamfordct.gov

November 18, 2022

Commissioner Katie Dyes
CT Department of Energy & Environmental Protection
79 Elm Street
Hartford, CT. 06106-5127

Re: Stamford Cummings Pond Flood Resilience Study
DEEP Climate Resilience Fund – Track 2 grant application

Dear Commissioner Dykes:

Please accept this letter as a demonstration of support and commitment for the application for the Stamford Cummings Pond Flood Resilience Study. The Cummings Pond project area is a highly urbanized commercial and residential area with major transportation infrastructure forming the northern boundary (I-95 and Metro North / Amtrak rail lines) and the waters of the Long Island Sound at the southern edge. Communities within this project area rank in the 90th percentile for most of the EPA EJ Screen environmental and demographic indicators and are therefore being considered EJ communities.

The City is requesting funding to support a flood mitigation evaluation, focused on this area, as a necessary step in developing strategies to make this community more resilient to current and future flooding while also improving water quality. The project will result in concept-level flood mitigation recommendations to alleviate flooding within the drainage area and at downstream locations, including a combination of drainage system improvements (increased capacity of drainpipes, culverts, etc.), nature-based solutions such as green storm water infrastructure and floodplain restoration, and raising or relocating infrastructure and structures outside of areas impacted by flooding. The concept development will provide the City with numerous benefits as it places a heavy emphasis on solutions with layered co-benefits including public amenities, risk reduction for extreme heat, and ecological enhancement.

The SWPCA operates and maintains three stormwater pumping stations as part of the Stamford Hurricane Barrier, which is key to flood hazard mitigation in the City. The Cummings Pond project would substantially advance our efforts.

Thank you in advance for your consideration of this project. I extend my full support in this application and look forward to the implementation of this project and the benefits it will bring to our community. Please do not hesitate to reach out if you have any questions or need any additional information.

Respectfully,

A handwritten signature in blue ink that reads "Ann M. Brown".

Ann M. Brown, P.E.
Supervising Engineer, SWPCA

cc: Rhudeen Bull, SWPCA
Sarah Watson, CT DEEP Office of Climate Planning

Stamford WPCA, 111 Harbor View Ave., Stamford, CT 06902

Erin McKenna

CITY OF STAMFORD LAND USE BUREAU

888 WASHINGTON BLVD.

STAMFORD, CT 06901

(203) 977 4715

EMCKENNA@STAMFORDCT.GOV

Associate Planner with 12+ years of experience primarily managing parks planning projects; managing the mayor's task force on sustainability; and coordinating sustainability and transportation projects.

I am looking to broaden my knowledge of urban sustainability strategies, particularly with regard to urban adaptation to climate change.

Professional Experience relevant to Innovative Governance of Large Urban Systems Program

CITY OF STAMFORD, STAMFORD, CT

Associate Planner, April 2004 - present

- Project management of all aspects of design development for park master plans including hiring consultants, public meetings, the design process, consultant contracts, permitting, and coordinating with City staff during both planning and construction.
- Co-founded the Mayor's Task Force on Sustainability. Accomplishments include the Solarize Stamford program, membership in Energize CT's *Clean Energy Communities* program, the *Corporate Challenge* (energy & water efficiencies), creation and adoption of the Sustainability Amendment to the City's Master Plan, and the LEED Ordinance for City Buildings.
- Project management of the 2015 Glenbrook/Springdale Transit Oriented Development Feasibility Study, centered on the two neighborhood train stations.
- Project management of sustainability projects including electric car charging stations in City garages, one which is connected to a solar array; ongoing work with hydrogen advocate groups to locate a demonstration hydrogen fueling station in Stamford; and ongoing efforts with the Grants & Engineering Departments and local business organizations to pursue funding/grants to create a comprehensive climate change risk assessment for the City.
- Coordination of policies, grants, constructions projects, outreach, and volunteer projects for "Friends of Parks" groups, including Friends of Mianus River Park, the Scalzi River Nature Preserve, the Cove Island Wildlife Sanctuary, and the Friends of Sleepy Hollow Park.

NEW YORK CITY PARKS DEPARTMENT – STREET TREES DIVISION, NEW YORK, NY

Construction Project Manager, September 1997 – September 2000

- Construction management of all aspects of street tree planting projects and contracts in Greenpoint & Williamsburg neighborhoods in Brooklyn, NY.

Education

YALE SCHOOL OF FORESTRY & ENVIRONMENTAL STUDIES, NEW HAVEN, CT

- MES, Environmental Management

COLUMBIA UNIVERSTIY, NEW YORK, NY

- BS English Literature, Geology Minor
- Graduated Magna Cum Laude, Phi Beta Kappa

Additional Skills

- GIS ArcMap



Sara Morrison, MLA, WEDG

Coastal Adaptation and Community Engagement

"I get most excited about working on projects at the intersection of land and water and am passionate about helping communities and ecosystems evolve and adapt in the face of an evolving climate. I like working on multi-disciplinary teams to integrate natural and engineered systems using nature-based solutions to achieve socially-resilient, economically-viable, and environmentally-sustainable projects."

smorrison@fando.com

800.286.2469 x5300

EDUCATION

MS, Landscape Architecture - City College of New York

BS, Psychology - 2005 Louisiana Tech University

LICENSES & REGISTRATIONS

WEDG Associate

PROFESSIONAL AFFILIATIONS

American Soc Adaptation Profs
CT Association of Flood Managers
MA Assoc of Floodplain Mgmt
American Soc of Landscape Architects

EXPERIENCE

15 Years Professional Experience

Sara Morrison is a Business Line Manager specializing in Climate Adaptation in our Water and Natural Resources Business Line with a background in systems-based, urban landscape architecture and large-scale climate resilience design and planning. Sara's expertise is integrating natural and engineered systems using nature-based solutions to achieve socially resilient, economically viable, and environmentally sustainable projects. She has led the management, planning, and design of climate adaptation projects of varying scales across the northeast including complex, interdisciplinary coastal resilience projects in NYC in the aftermath of Superstorm Sandy. Her experience includes both coastal and inland environments and ranges from living shorelines, salt marsh and dune enhancements to floodplain and river restoration projects.

REPRESENTATIVE PROJECTS:

Pocasasset River Flood Control Improvements, Cranston, RI: A \$48M capital project that combines traditional gray infrastructure and nature-based practices. The project includes buy-outs of more than 120 privately-owned buildings, with plans to convert that space to restored floodplain in urban neighborhoods. In addition to creating floodplain storage in a high-vulnerability watershed, these restored floodplain nodes will create open space and recreational access to the river in their urban neighborhoods. Sara leads the coordination of the buyout process and design of nature-based solutions, community access, and floodplain compensation.

Tottenville Shoreline Protection Project, Staten

Island, NY: At her previous firm, Sara served as Project Manager and Lead Designer for this \$32.5M coastal and community resiliency project to provide a layered system of risk reduction, ecological resiliency, and social resiliency for the community of Staten Island's south shore. The design of the system incorporates structured dunes, eco-revetments, and a robust shoreline planting and restoration plan to reduce erosion and attenuate wave action. Sara was responsible for coordination among five internal cross-disciplinary groups and six subconsultants. She supported the client by leading working groups that included members of the public, city/state agencies, academics, and elected officials to foster communication and attain buy in, improve understanding of local issues, and educate on risks to coastal habitats.

Updates to Connecticut Statewide Stormwater

Manuals, Statewide, CT: Supported lead author in developing updates to the Connecticut Stormwater Quality Manual and Connecticut Guidelines for Soil Erosion and Sediment Control.

Easton's Beach Program Planning Study, City of

Newport, RI: Fuss & O'Neill is performing a program planning study at Easton's Beach taking into account the impacts of our changing climate and visitor needs now and in the future. As the Atlantic's water levels rise, storm activity increases in frequency and strength, and overland flooding threatens the beach from the north. Preserving the beach and any associated structures and amenities required by beachgoers necessitates rethinking how the constructed and natural landscape interact.

Portland Landing, Portland, ME: At a previous firm, Sara led the resiliency design approach for a study of an underutilized three-acre parcel on the Portland waterfront. The City envisioned a highly programmed, climate-change responsive, iconic civic amenity. The proposed solution that not only satisfied the City's program, but also addressed climate change through a dramatic and highly-usable landscape that advanced the City's initiative to sustain and enliven its waterfront.

Climate Change Vulnerability and Risk Assessment of Infrastructure, Winthrop, MA:

At a previous firm, Sara served as Landscape Lead on vulnerability assessment of public infrastructure to coastal flooding using the Boston Harbor Flood Risk Model. The assessment systematically evaluated and prioritized critical infrastructure at a Town-wide level. Concept level adaptation measures were developed for key locations integrating hard and soft solutions.

GATE 195082A – Jamaica Bay West Pond Shoreline Restoration, Queens, NY:

At a previous firm as Landscape Architectural Designer, Sara lent knowledge to the development of living shoreline solutions leading to the preliminary design for West Pond. The site is one of the largest coastal wetland ecosystems in the region with an approximately 45-acre fresh water pond on the western side of the Jamaica Bay Wildlife Refuge. The embankment of the pond was beached during Hurricane Sandy, resulting water flowing between West Pond and Jamaica Bay. Initiated by the NPS, the goals of the project are to control bank erosion, restore approximately 5 acres of low and high marsh wetland habitat, stabilize the shoreline, and to function as a sustainable living shoreline to protect the breach repair in the West Pond embankment.



Erik Mas, PE

Project Manager

“Applying math and science to solve environmental problems is what first attracted me to engineering, but working with really bright, passionate people on real-world projects – both simple and complex – is what I enjoy the most about being a consultant.”

emas@fando.com

800.286.2469 x4433

EDUCATION

BS, Civil Engineering - 1992
Tufts University

MSE, Civil Engineering - 1995
Princeton University

LICENSES & REGISTRATIONS

Professional Engineer CT
Professional Engineer MA

PROFESSIONAL AFFILIATIONS

New England Water Env Assoc
Water Environment Federation

EXPERIENCE

29 Years Professional Experience

Erik is a Principal of the firm and his background and experience combine planning and engineering in the areas of flood protection, climate resilience, and stormwater management. Erik is working with the City of Stamford and the City of Danbury on FEMA grant development for flood mitigation initiatives. He directed the creation of the RIDOT Road-Stream Crossing Assessment Handbook and developed a flood resilience plan for the 300-square-mile Wood-Pawcatuck watershed in southeastern CT and southern RI. He is also the lead author for updates to the Connecticut state stormwater manuals, and leads the firm's MS4 practice in Connecticut. Erik served on the Rivers Subgroup of the Connecticut Governor's Council on Climate Change (GC3) Working and Natural Lands Working Group. He also leads the firm's municipal climate resilience practice in Massachusetts (MVP Program), providing project management and technical oversight of climate vulnerability assessments and adaptation projects for municipalities.

REPRESENTATIVE PROJECTS:

FEMA BRIC/FMA Grant Development, Coastal Flood

Resilience Plan, Stamford, CT: Project Manager for development of a city-wide coastal resilience plan to address existing and future flood prone areas.

FEMA HMGP Grant Development, Neighborhood-Scale Flood Mitigation Evaluations, Stamford, CT:

Project Director for evaluation of flood protection alternatives to address riverine and drainage-related flooding in the Dannell Drive and Cummings Pond neighborhoods.

FEMA BRIC Grant Development, Upper Falls Dam Removal Feasibility Evaluation, Norwich, CT:

Project Director for a feasibility study to evaluate the removal of Upper Falls Dam to reduce flood risk along the Yantic River.

Municipal Stormwater Drainage Manuals, Greenwich, Stamford, Danbury, CT: Project Manager for development of municipal design manuals to promote the use of low impact development and green infrastructure for more effective and resilient stormwater management.

Updates to Connecticut Statewide Stormwater Manuals, CT DEEP, CT: Project Manager and lead author for updates to the Connecticut Stormwater Quality Manual and Connecticut Guidelines for Soil Erosion and Sediment Control.

Coastal Flood Resilience Project, City of Milford, CT: Project Manager for the initial planning phase of coastal resilience projects to address flooding in low-lying areas of Milford. The projects included a vulnerability assessment and feasibility study for raising a section of Beachland Avenue, and conceptual design of drainage infrastructure and outfall improvements to address tidal and storm-related flooding in the Bayview Beach area.

RIDOT Statewide Manual and Road-Stream Crossing Assessment Pilot Study, Woonasquatucket River Watershed, RI: Project Director for an assessment of 300+ culverts and bridges in the Woonasquatucket River watershed as part of the development of a statewide road-stream crossing assessment manual for RIDOT.

Wood-Pawcatuck Watershed Flood Resilience Management Plan, RI and CT: Led the development of a flood resiliency management plan for the 317-square-mile Pawcatuck River watershed.

Town-wide Road Stream Crossing Assessment and Climate Change Adaptation Plan, Town of Belchertown, MA: Project Director for Belchertown's MVP Action Grant in the first round of MVP implementation funding from EEA. The project identified and provided recommendations for high-priority crossings to enhance community resiliency, mitigate existing and potential future flooding, and increase stream continuity and aquatic passage. The project included field survey of beaver activity and development of vulnerability assessments to quantify potential flood storage or flood risk from beaver impoundments and recommend management actions from restoration to beaver exclusion.

Infrastructure Planning for Climate Change Resilience, City of Northampton, MA: Project Manager for development of resilience strategy recommendations related to storm drainage infrastructure and flood control/floodplain management to support development of a Climate Resiliency and Regeneration Plan.

Integrated Water Infrastructure Vulnerability Assessment and Climate Resiliency Plan, Towns of Charlton and Spencer, MA: Project Manager for a joint MVP Action Grant project in the first round of MVP implementation from EEA. The project examined culverts and bridges, dams, water and wastewater infrastructure, and green infrastructure opportunities.

Upper Susquehanna River Watershed Flood Resilience Study, Tioga and Broome Counties, NY: Project Manager for the development of a watershed-based flood resilience study and management plan for flood-prone tributaries to the Upper Susquehanna River in the Southern Tier of NY.



Elsa Loehmann, PE

Plan Development Technical Lead

“I am driven to provide sustainable solutions to create a resilient future. My passion is developing strong relationships to bring my clients’ visions to life.”

eloehmann@fando.com

800.286.2469 x5339

EDUCATION

BS, Civil Engineering - 1999
Montana State University-Billings

MS, Civil Engineering - 2002
Montana State University-Billings

LICENSES & REGISTRATIONS

Professional Engineer CT

PROFESSIONAL AFFILIATIONS

Assoc State Dam Safety Offcls

EXPERIENCE

16 Years Professional Experience

Elsa leads Fuss & O’Neill’s South Region Water Resources Practice, furthering and promoting climate resilience through stormwater management, dam safety, stream restoration, fish passage, and floodplain management services. The Water Resources Practice protects New England’s waterways, watercourses, and the land, species, and habitats of the surrounding areas.

Elsa is an engineer and fluvial geomorphologist with experience throughout New England. She has a passion for climate adaptation and resiliency, as evidenced by her work on living shoreline, aquatic habitat restoration, flood control, and green infrastructure projects.

REPRESENTATIVE PROJECTS:

FEMA HMGP Grant, Neighborhood-Scale Flood Mitigation Evaluations, Stamford, CT: Technical lead for development of hydrologic/hydraulic analysis approach to address riverine and drainage-related flooding in the Dannell Drive and Cummings Pond neighborhoods.

FEMA Grant, Hartford Flood Control System, Hartford, CT: Project Manager and technical oversight for a FEMA BRIC/HMGP grant application and Benefit-Cost Analysis for proposed flood protection measures associated with the City’s existing flood control system.

Stormwater Drainage Manual, City of Danbury, CT: Project Manager for the development of a municipal design manual to promote the use of low impact development and green infrastructure for more effective and resilient stormwater management

Stormwater Management Plan, Norwich, CT:

Developed stormwater Best Management Practices (BMP) guidance for municipal staff.

Harbor Brook Flood Control Project, Meriden, CT:

Project Manager for the ongoing design and implementation of nature-based floodplain restoration, building floodproofing, and acquisition/removal of several structures in downtown Meriden.

East Shore Park Living Shoreline, New Haven, CT:

With a previous firm, Elsa coordinated design for 1,500 linear feet of living shoreline at East Shore Park in New Haven Harbor. Submitted grant application to NOAA Coastal Resilience Grant Program.

Shoreline Stabilization Manual, FirstLight Power, CT:

With a previous firm, Elsa prepared shoreline stabilization designs, including living shorelines and vegetated buffer zones for inclusion in the Shoreline Stabilization Manual. This guide received the 2014 Honor Award from the Connecticut Chapter of the American Society of Landscape Architects. The manual provides appropriate sustainable shoreline management practices to improve water quality, stabilize banks, and enhance shoreline habitat.

Sunken Meadow State Park Green Infrastructure Retrofit, Smithtown, Long Island, NY:

With a previous firm, Elsa assessed green infrastructure retrofit of 16.6-acre parking lot at Sunken Meadow State Park. Reviewed site plans, technical reports, and stormwater modeling.

New Haven Green Infrastructure, New Haven, CT:

With a previous firm, Elsa completed technical review of street-side bioswales for treatment of road runoff for 200+ bioswales. Elsa recommended design improvements.

Mill/Rippowam River Dam Removal and Habitat Improvements, Stamford, CT:

With a previous firm, Elsa developed a HEC-RAS hydraulic model of proposed conditions for dam removal and habitat improvement in downtown Stamford. Developed permit applications to support the proposed dam removal, channel restoration, and linear park along this urban river corridor. Successfully secured Stream Channel Encroachment, Diversion and Dam Safety permits from CTDEEP Inland Water Resources Division and a Structures, Dredging, and Fill permit from the Office of Long Island Sound Programs.

Natural Hazard Mitigation Plan, New Haven, CT:

With a previous firm, Elsa co-prepared a natural hazard mitigation plan for the City of New Haven. Evaluated hazard effects of sea level rise, inland and coastal flooding, hurricanes, tornadoes, earthquakes, and land subsidence. Recommended improvements including land acquisition, beach nourishment, changes to regulations and municipal zoning, as well as structural and infrastructure improvements. Within five years, the City had implemented most of the plan's recommendations, which addressed resilience and disaster preparedness.

Natural Hazard Mitigation Plan, Greater Bridgeport Planning Agency, Southwestern CT:

With a previous firm, Elsa contributed to a natural hazard mitigation plan for the City of Bridgeport and four adjacent municipalities. Evaluated hazard effects of sea level rise, inland and coastal flooding, hurricanes, tornadoes, earthquakes, and land subsidence. Recommended mitigation strategies, including planning and prevention, structural projects, public information, and resource protection.