

Project Title	#20200011 Thatcher Brook Restoration Project Phase III
Organization	City of Biddeford
Start Date	January 1, 2021
Completion Date	December 31, 2022

## I. Waterbody and Watershed Information

### a. Background

Waterbody Name	Thatcher Brook
Waterbody Size (e.g., lake acres, stream miles)	7.7 miles
Watershed Area (acres or square miles)	4,525 acres
Watershed Location (town(s), county(s))	Biddeford, Arundel
Title and Date of Existing or Past Watershed-based Management Plan	Thatcher Brook Watershed Management Plan, January 7, 2015
Public Access to Waterbody	Eastern Trail, streamside trail at Glaude Ave.

### b. Waterbody and Watershed Physical Characteristics

The Thatcher Brook Watershed includes the City of Biddeford and the Town of Arundel. Thatcher Brook is a Class B stream. The Brook flows 7.7 miles through these municipalities before draining into the Saco River. Thatcher Brook's watershed area consists of 14% impervious cover (IC) and contains densely developed commercial sections along Route 1 and Route 111. The designated growth area within the watershed includes retail and commercial development, most of the City's industrial/business parks, and low to moderate income housing. However, the watershed also contains much undeveloped forest, wetlands, and pasture lands.

### c. Description of Waterbody Uses and Value

Thatcher Brook is a valuable resource that includes a network of trail systems, including the Eastern Trail, which bisects the watershed. The watershed also contains endangered species and significant habitat areas that are Beginning with Habitat Focus Areas. These include New England Cottontail sites, a highly threatened brook trout fishery, threatened plant communities (including swamp saxifrage) and vernal pool areas.

The Saco Valley Land Trust, which preserves scenic, historic, recreational, and environmental resources in the Biddeford, Saco, and Old Orchard Beach area, maintains a 40-acre parcel which includes a section of the Brook. In addition, Thatcher Brook has been the focus of the Biddeford Conservation Commission for the last decade. The City of Biddeford's Master Plan lists the watershed as an important City water resource, and it is considered a high priority waterbody under their MS4 General Stormwater Discharge permit.

## **II. Water Quality Problem or Threat**

### **a. Water Quality Listing Status**

Is water quality listed as impaired?	Yes
If impaired, what is the listed cause(s) and/or impaired use?	Bacteria, Aquatic Life
Name and date of any DEP TMDL report(s) for the waterbody.	Statewide IC Total Maximum Daily Load (TMDL) 2012, Statewide bacteria TMDL 2009

### **b. Water Quality Overview**

Thatcher Brook is on Maine's 303(d) list for aquatic life (benthic macroinvertebrates/biomonitoring), bacteria nonattainment, and degraded aquatic habitat, caused by urban nonpoint source pollution. Thatcher Brook is included in the statewide IC Total Maximum Daily Load (TMDL) and the statewide bacteria TMDL. The Brook has been listed as an Urban Impaired Stream by the Maine Department of Environmental Protection (MDEP) in Chapter 502 of Stormwater Management Law.

MDEP macroinvertebrate samples collected during 2004, 2012, and 2013 indicate the Brook is not meeting Class B standards for aquatic life use criteria. DEP's biomonitoring station 746 just downstream from Route 111 and the Maine Turnpike did not meet Class B standards in 2004 or 2012. The downstream station 451 attained standards when monitored in 2000, 2005 and 2010; however, it did not attain standards in 2015. In 2012, as part of the development of the WMP, MDEP collected information on stream dissolved oxygen (DO), bacteria, temperature, phosphorus, specific conductance and chloride. Over the summer of 2012, MDEP collected continuous water quality data and GZA collected grab samples. MDEP collected additional grab and storm samples in 2014.

Based on this information, the Thatcher Brook WMP concluded that temperature was relatively good throughout the watershed, and specific conductance/chloride was not a significant issue except in a small tributary draining the large commercial areas in the Biddeford Crossing area. Dissolved Oxygen (DO) levels fell below Class B standards at several stations. Large daily swings in DO and phosphorus monitoring data indicated at the time that nutrients caused the DO problems, especially in Richardson Brook and the Thatcher Brook monitoring station just below the Route 111/Maine Turnpike crossing. Bacteria levels were found to be highest in Richardson Brook.

## **III. Watershed Nonpoint Pollution Sources and NPS Mitigation Activities**

### **a. Summary of Watershed Assessments and Priority Nonpoint Pollution Sources**

According to a MDEP TMDL study (2012), stormwater runoff from impervious cover is likely the largest source of pollution to Thatcher Brook. About 13% of the Brook watershed is made up of impervious cover due to rooftops, parking areas and roadways. The TMDL study states that in order to support Class B aquatic life use, the Thatcher Brook watershed may require the characteristics of a watershed with 8% impervious cover. A combination of these assessments, and stream habitat and geomorphic assessments, resulted in the identification of the following water quality stressors: **1)** poor riparian vegetated zone (30.7% of the watershed); **2)** stream channel alteration and resulting stream bank erosion and degraded habitat [fair condition (Sites

B2 and A3); poor condition (Site B1)]; **3**) elevated phosphorus [range from 10 to 300 µg/L (criterion: 30µg/L)]; **4**) decreased dissolved oxygen (DO) (range from 4.9 ppm to 9.68 ppm; multiple sites with more than 7 days lower than 7 ppm criterion); **5**) elevated chloride and specific conductance (260 mg/l).

During development of the Thatcher Brook Watershed Based Management Plan (the Plan), the Thatcher Brook Technical Committee identified nine priority stormwater retrofit projects to address the nutrient and DO stressors. The projects were focused along two high-traffic roads in the watershed (Route 111 and Morin Street) due to the high pollutant loading. Roads represent 27% of the total impervious cover, and 53% have traffic volumes in excess of 20,000 vehicles per day, with sections of these roads approaching, and at times reaching, an annual average traffic count of 35,000 vehicles per day. Stream habitat and rapid geomorphic surveys also identified two instream habitat restoration projects, five buffer restoration areas, three culvert replacements and one bank stabilization project. Water quality monitoring indicates that chloride impacts are most prominent in the subwatershed of a small tributary along Route 111. The Plan recommended outreach, technical assistance and ordinances to improve winter maintenance practices and reduce chloride use on roads and commercial parking lots in this part of the watershed.

#### **b. Description of Watershed Activities to Address NPS Pollution**

Thatcher Brook has been the focus of the City of Biddeford and the Biddeford Conservation Commission for several years. In 2012, the City of Biddeford received a Maine Department of Environmental Protection (MDEP) grant funded in part by the US Environmental Protection Agency (USEPA) under Section 604(b) of the Clean Water Act (CWA) to develop the Thatcher Brook Watershed Management Plan (WMP). The plan was completed and accepted by the Maine DEP in January 2015. In 2016, the Thatcher Brook Watershed Workgroup was established with representatives from key organizations and watershed stakeholders and continued the public outreach efforts within the watershed. The Thatcher Brook Restoration Project, Phase I (2017RT11), which was funded in part by USEPA under the Clean Water Act, Section 319, began in 2017 and was completed in 2019. During this project, one stormwater retrofit was installed on Morin Street in the Biddeford Industrial Park, two in-stream habitat restoration projects were installed near Kohl's in Biddeford and one project included a road and culvert removal on Mountain Drive. Thatcher Brook Phase II (20190004), also funded in part by USEPA under Section 319 of the Clean Water Act, began in 2019 and is expected to be completed in 2021. The project focuses on the installation of three underdrained soil filters on Morin Street in the Biddeford Industrial Park.

The City has continued to proactively make strides in land use management within the Thatcher Brook watershed by requiring incorporation of stringent stormwater design standards and providing recreational access points throughout the watershed. The City of Biddeford also established a stormwater compensation fund process which applies to all non-residential projects in the watershed.

#### **Anticipated Future Project Phases:**

It is anticipated that multiple additional phases will be needed to implement the Plan and to continue to restore Thatcher Brook, including a focus on reducing bacteria and chloride levels

in the brook. Additional phases would include continued water quality monitoring of installed BMPs, approximately six stormwater retrofit projects near the Maine Turnpike in Biddeford and multiple culvert replacement projects in Arundel, which were determined to be high priority in the Plan, as well as continued education and outreach and ordinance development in Arundel and Biddeford.

#### **IV. Purpose**

The overall purpose of the *Thatcher Brook Watershed Implementation Project, Phase III* is to restore the water quality and stream habitat in Thatcher Brook. The Phase III project will address eight NPS sites and will include four stormwater BMP installations, two buffer enhancement projects, and one in-stream restoration project to reduce inputs of nutrients and untreated stormwater runoff to Thatcher Brook, specifically Richardson Brook, so it can meet Class B water quality standards. In addition, one buffer planting workshop will be conducted as well as additional outreach and ordinance development efforts.

#### **V. Environmental Outcome**

This project will help Thatcher Brook meet Class B water quality standards and reduce phosphorous and nitrogen introduction to Richardson Brook through installation of BMPs within the industrial park. An estimated 11 lbs/year of Total Nitrogen, 1 lb/year of Total Phosphorous and 780 lbs/year of Total Suspended Sediments will be removed from the environment as a result of the SWR 9 project proposed in Phase III. It will also help to create habitat and improve dissolved oxygen in stretches of the Brook where an in-stream Chop and Drop application will occur along approximately 5,900 linear feet of the Brook and the project will also help to determine the effectiveness of the previously installed BMPs through water quality monitoring.

#### **VI. Partner Coordination, Roles and Responsibility**

The **City of Biddeford** will serve as the Project Coordinator and project grantee. Specifically, the City staff will be responsible for ordinance development, participating on the Steering Committee, assisting with coordination of the buffer planting workshop, and assisting YCSWCD in organizing project tasks. The City will also provide matching contributions by funding part of an in-stream chop and drop project. The City of Biddeford will use appropriate procurement procedures outlined in DEP's NPS Grant Administrative Guidelines for all purchasing of services.

The **York County Soil and Water Conservation District** will be a sub-grantee and will provide assistance to the City of Biddeford by providing financial oversight, budget tracking, submitting deliverables, writing the final project report and semi-annual reports. YCSWCD will perform water quality monitoring with volunteer assistance, organize BMP projects and work with landowners, organize and facilitate the education and outreach task, lead the Restoration Workgroup and calculate pollutant load reduction estimates.

A **consulting engineer from Cumberland County Soil and Water Conservation District (CCSWCD)** will be contracted through a subgrant to develop designs and provide construction oversight for several BMP projects that will not be on City property.

The **Biddeford Conservation Commission** will assist with water quality monitoring and education and outreach as well as participate on the Thatcher Brook Restoration Committee.

The **Town of Arundel** will assist with ordinance development within the grant as well as participate on the Thatcher Brook Restoration Committee.

The **Saco Watershed Collaborative** (representing the University of New England and Wells Reserve) will assist with education and outreach, water quality monitoring and participate on the Thatcher Brook Restoration Committee.

**Biddeford High School** teachers and students will assist with the buffer workshop and water quality monitoring. Teachers will participate on the Thatcher Brook Restoration Committee.

**Contractor(s)** will be hired (following procurement procedures in the DEP's NPS Grant Administrative Guidelines) to provide design, oversight, and installation of the in-stream woody debris installations.

**Maine Department of Transportation (Maine DOT)** will participate on the Thatcher Brook Restoration Committee.

**Maine Department of Environmental Protection** will administer project funding, serve as the project advisor and provide project and technical support.

The **US Environmental Protection Agency** will provide project funding and work plan guidance.

## **VII. Tasks, Schedules and Estimated Costs**

All press releases, outreach materials and plans will acknowledge that the project is funded in part by the United States Environmental Protection Agency under Section 319 of the Clean Water Act. Project staff will consult with DEP on EPA's public awareness terms and conditions for Section 319 grants before the project commences. In addition, project staff will consult with DEP and EPA before project signs are designed. Refer to the Service Contract, Rider A. Section III. D. Acknowledgement.

The project will not use project funds to undertake, complete or maintain work required by existing permits, consent decrees or other orders. Project staff will exercise best professional judgment in the selection, design and installation of BMPs for NPS sites and will design and install BMPs at NPS sites according to design guidance described in Maine BMP guidance manuals or use other BMPs acceptable to the DEP. Project staff will ensure that permits required for construction are secured prior to construction and BMPs are constructed in an acceptable manner, before reimbursing landowners according to applicable Cost Sharing Agreements.

The project will be conducted within the City of Biddeford's Urbanized Area designation. The project activities are not permit requirements under the City of Biddeford's Municipal Separate Storm Sewer System (MS4) General MEPDES permit effective July 1, 2013.

### **Task 1 – Project Administration**

The City of Biddeford will administer the project according to the grant agreement with DEP. The City will create a sub-agreement with YCSWCD. The YCSWCD will track

project progress, expenses, matching funds, submit semi-annual progress reports, and a final project report and all other project deliverables. YCSWCD will continue to update the NPS Site Tracker spreadsheet tool to efficiently accumulate and record information about NPS sites observed during this project to enable continued activity in future years to maintain existing BMPs and address new NPS sites. The YCSWCD will also work with the City of Biddeford to create a sub-agreement for CCSWCD for engineering services at NPS abatement sites not on City of Biddeford property within the grant. Contracting for construction services paid for with project funds will be arranged and carried out using procurement procedures as described under Section 4 of DEP’s Nonpoint Source Grant Administrative Guidelines (<https://www.maine.gov/dep/water/grants/319.html>) and applicable local guidelines.

Start and Completion Dates	01/2021 to 12/2022	
Grant Cost: \$4,685	Match Cost: \$2,454	<b>Total Cost: \$7,139</b>
Breakdown of Grant by Cost Category: \$4,685 ( <i>Subgrant- YCSWCD</i> )		
Breakdown of Match by Cost Category: \$ 462 ( <i>Donated services- volunteer in-kind match</i> ), \$1,992 ( <i>Salary and fringe - City of Biddeford in-kind match</i> )		

**Task 2 – Thatcher Brook Restoration Workgroup**

A Thatcher Brook Restoration Workgroup will meet 4 times throughout the course of the project and will consist of representatives from key City Departments and partner organizations including: City of Biddeford Engineering Department, City of Biddeford Department of Public Works, and YCSWCD. YCSWCD will be responsible for meeting coordination, facilitation and summarization while project partners will be responsible for meeting participation and input. Other members of the Workgroup will include volunteers from Maine DOT, Saco River Watershed Collaborative, Biddeford Conservation Commission and Biddeford High School.

Start and Completion Dates	01/2021 to 12/2022	
Grant Cost: \$2,140	Match Cost: \$2,564	<b>Total Cost: \$4,704</b>
Breakdown of Grant by Cost Category: \$1,820 ( <i>Subgrant - YCSWCD</i> ), \$70 ( <i>YCSWCD travel</i> ), \$250 ( <i>YCSWCD supplies</i> )		
Breakdown of Match by Cost Category: \$1,140 ( <i>Donated services, volunteer in-kind match</i> ), \$1,354 ( <i>Salary/fringe, City of Biddeford in-kind match</i> ), \$70 ( <i>volunteer travel</i> )		

**Task 3 – BMP Installation at NPS Sites**

The YCSWCD will work with the City of Biddeford and landowners at project sites to submit final design, specifications, and construction plans to DEP for review and approval before construction begins. An NPS Site Report, including before and after photographs, will be prepared for each completed site. NPS abatement sites were selected based on the following criteria: high priority and high impact NPS sites identified during the watershed-based management plan, as well as projects identified within the Biddeford Industrial park during the Phase I, Commercial Property Tech Assist site visits. Five NPS Sites will be addressed including four stormwater BMP installations, two buffer plantings, one stream bank stabilization project, and one in-stream habitat restoration project. The candidate sites are outlined in the Candidate NPS Site List and include the following:

- Installation of a vegetative BMP, such as a rain garden, on FMI property above the present

City catch basin to treat stormwater run-off. FMI is supportive of this work

- A tree box filter will be installed on Morin Street to capture and filter stormwater within the Industrial Park, which has a high percent of impervious cover.
- Morin Maine, LLC is a company within the Industrial Park. At this site, three projects will take place:
  - An underdrained soil filter will be installed behind the facility (SWR 9 of the Plan).
  - Buffer plantings will be installed behind the facility and a buffer workshop will be performed at this location (see Task 4).
  - The bank of the Brook will also be stabilized behind the facility (B1 of the Plan).
  - A ditch to divert stormwater to an existing detention basin, as well as buffer plantings, will be installed at Barrette, a company within the Industrial Park.
- An in-stream habitat restoration project will be performed on property northeast of Kohl's. This Chop and Drop will be performed along approximately 5,900 linear feet of the Brook. During Phase I, the District and the City of Biddeford were informed that the property adjacent to the north-east of Kohl's in Biddeford, owned by the Maine Turnpike Authority, could not be used for a Chop and Drop application. However, the new landowners of Map 7/Lot 8 are committed to the project and the opportunity to participate in restoring Thatcher Brook. A fluvial geomorphologist will be consulted for the design and project oversight. A contractor will be hired for this project following appropriate procurement procedures.

Start and Completion Dates	01/2021 to 12/2022	
Grant Cost: \$91,948	Match Cost: \$62,056	<b>Total Cost: \$154,004</b>
Breakdown of Grant Cost by Cost Category: \$5,200 (Subgrant YCSWCD), \$76,168 (construction), \$250 (YCSWCD supplies), \$70 (YCSWCD travel), \$10,220 (Subgrant - CCSWCD engineering), \$40 (CCSWCD mileage)		
Breakdown of Match by Cost Category: \$1,575 (Salary & Fringe- City of Biddeford Engineering match), \$60,481 (Construction match)		

**Task 4 – Education and Outreach**

**Workshop:** One buffer workshop will be hosted by the City of Biddeford and YCSWCD in the Biddeford Industrial Park. Volunteers will be organized and recruited with assistance from the Biddeford High School, the Saco River Watershed Collaborative and the Biddeford Conservation Commission. YCSWCD will create a design for the buffer site, and volunteer attendees will install buffer plantings as a part of the workshop. YCSWCD will attend the workshop and assist volunteers. YCSWCD will also develop a workshop summary with photographs and submit this to the MDEP as a project deliverable

**Publications:** Two press releases will be completed by YCSWCD documenting the progress of the grant in 2020 and 2021. They will be submitted to the MDEP as deliverables. The City of Biddeford has worked hard to keep their website updated with the most recent and credible information about the Thatcher Brook Watershed and current grant projects. They will continue to update the website for the public and assist with review and edits of all press releases. The Town of Arundel will also keep their website updated. The Biddeford Conservation Commission will continue to keep their Facebook materials updated regarding the project. The Saco River Watershed Collaborative will assist by posting updates and press release materials to their website as well.

**Site Walk:** The Saco Watershed Collaborative (SWC) will organize a site walk to an in-stream habitat restoration project once complete. This will include a Chop and Drop application on property north-east of Kohls’ in Biddeford. The SWC will provide guidance and education information to participants of the Site Walk related to the benefits of a Chop and Drop project, as well as how it improves the Dissolved Oxygen of the stream and creates habitat diversity for macroinvertebrates.

**“No Dumping” Stencils:** Volunteers will use existing stencils to paint “No Dumping- Drains to Thatcher Brook” message by catch basins along Morin Street and the Industrial Park area. This will promote keeping the catch basins clean and will increase watershed awareness.

Start and Completion Dates	01/2021 to 12/2022	
Grant Cost: \$3,123	Match Cost: \$1,396	<b>Total Cost: \$4,519</b>
Breakdown of Grant Cost by Cost Category: \$3,070 ( <i>Subgrant - YCSWCD</i> ), \$53( <i>YCSWCD travel</i> )		
Breakdown of Match by Cost Category: \$472 ( <i>Salary/fringe, City of Biddeford in-kind match</i> ). \$924 ( <i>Donated services-labor, Volunteer in-kind match</i> )		

**Task 5 – Ordinance Development**

In order to address long term impacts from new and redevelopment, the Plan for the Thatcher Brook Watershed included the adoption of ordinances to increase protection for Thatcher Brook. During Phase I, a few ordinance changes took place, however there was some ordinance work that was not completed. The City of Biddeford will complete their revised comprehensive plan in 2020/2021. Following the completion and adoption of the Comprehensive Plan, the City will make ordinance development a 2021 priority including, but not limited to, work towards the following:

- Explore zoning changes to modify land use zones so that zone boundaries better reflect the watershed boundaries, or create a Thatcher Brook Watershed Overlay Zone, in order to better address the following, but not limited to:
  - a. Increasing densities and encouraging a mixture of uses, where appropriate, while minimizing the addition of new impervious pavement within the watershed. The City has begun (fall 2020) the development of new ordinance amendments that will integrate residential uses into the previously non-residential zones identified as Business-2 (B-2) and Industrial-3 (I-3). The goal is to encourage redevelopment within these zones, both of which are largely located within the Thatcher Brook Watershed. Redevelopment of older industrial/commercial properties in these zones through allowing residential uses will provide for development review through the Planning Board which includes enhanced attention to stormwater and non-point source pollution caused by such existing characteristics as large expanses of pavement that results in often untreated runoff into the watershed.
  - b. Reestablishing buffers previously lost to development by encouraging redevelopment of properties in the watershed. It is difficult to require buffers be re-established without properties coming through the development review process. Creating maximum parking standards and requirements that parking above and beyond the maximum be constructed

with, for example, pervious pavement or the payment of impact fees.

- c. Allowing mixed-uses (residential uses) in the B-2 and I-3 Zone allows for a more efficient use of parking as residential uses and non-residential uses can share parking. Maximum parking standards may also include an option to increase beyond the maximum with the use of pervious pavement option or the payment of impact fees, above those already collected through the recently adopted “Post-Construction Stormwater Discharge” Ordinance (Chapter 34, Article VI of the City of Biddeford Code of Ordinances);
- d. Creation of a local Pesticide and Herbicide Use Ordinance that may be adapted from those already adopted in such communities as Falmouth, Ogunquit, South Portland and Portland.
- e. Creating landscape standards that minimize the need for the non-residential application of chemical herbicides, pesticides, and fertilizers.
- f. Creation of a Low Impact Development (LID) Ordinance within the Thatcher Brook Watershed.

This effort will be led by the City of Biddeford Planning and Development, primarily through the City Planner. A summary of progress, including any adopted ordinances, will be submitted to MDEP as a project deliverable.

Start and Completion Dates	01/2021 to 12/2022	
Grant Cost: \$0	Match Cost: \$4,800	<b>Total Cost: \$4,800</b>
Breakdown of Grant by Cost Category: \$0		
Breakdown of Match by Cost Category: \$4,800 ( <i>Salary &amp; Fringe -City of Biddeford in kind match</i> )		

**Task 6 – Water Quality Monitoring**

The City of Biddeford and the YCSWCD will perform water quality monitoring within Thatcher Brook. Volunteers will also participate from the Biddeford High School, the Biddeford Conservation Commission and the Saco River Watershed Collaborative. Monitoring will help assess the impact of BMP installations in the watershed. Data will be collected in accordance with the previously established Quality Assurance Project Plan (QAPP) held by the YCSWCD. A Sampling and Analysis Plan (SAP) will be created for this monitoring activity by the YCSWCD and submitted as a deliverable to MDEP. A water quality data report in MS Excel format will also be created by YCSWCD and submitted to the MDEP as a deliverable.

Sampling will occur at a total of four sites. There will be three sampling events at each sampling site between July and August of each year. Monitoring parameters will include dissolved oxygen (D.O.), temperature, and specific conductivity. Sampling will include sampling in the early morning, and potentially diurnally, to assess presence, duration and extent of D.O. problems. The YCSWCD will coordinate with MDEP and the Volunteer River Monitoring Program to use/borrow a field meter to perform this work. Proposed monitoring sites include:

- Richardson Brook near the City Stormwater Outfall off Morin Street (downstream from Morin Street BMPs installed in Phase I, II and III);
- Thatcher Brook behind the Maine Turnpike park and ride (downstream from Phase I Route

111 BMP installation); and

- Upstream and downstream of the Phase I and III Chop and Drop restoration sites behind Kohls in Biddeford.

Start and Completion Dates	01/2021 to 12/2022	
Grant Cost: \$2,576	Match Cost: \$2,345	<b>Total Cost: \$4,921</b>
Breakdown of Grant by Cost Category: \$ 2,470 ( <i>Subgrant -YCSWCD salary/fringe</i> ), \$106 ( <i>YCSWCD travel</i> )		
Breakdown of Match by Cost Category: \$2,081 ( <i>Donated Services - volunteer in-kind match</i> ), \$264 ( <i>volunteer travel</i> )		

**Task 7 – Pollutant Load Reduction Estimates**

YCSWCD staff will estimate NPS pollutant load reductions and resources protected under this project. During design or installation of conservation practices at NPS sites, appropriate field measurements will be recorded to prepare estimates of pollutant load reductions. Estimates will be prepared for all NPS sites, unless there is not an applicable estimation method. Methods to be used are the EPA Region 5 Load Estimation Model <http://it.tetrattech-ffx.com/step1web/> and/or the U. S. Forest Service WEPP Road Model at <http://forest.moscowfs1.wsu.edu/fswepp/> Results will be provided using DEP’s "Pollutants Controlled Report" (PCR), which will be submitted to the MDEP, by December 31<sup>st</sup> of each project year. The City of Biddeford will review pollutant-controlled reports prior to submittal to MDEP.

Start and Completion Dates	01/2021 to 12/2022	
Grant Cost: \$1,630	Match Cost: \$252	<b>Total Cost: \$1,882</b>
Breakdown of Grant Cost by Cost Category: \$1,560 ( <i>Subgrant - YCSWCD salary/fringe</i> ), \$70 ( <i>YCSWCD travel</i> )		
Breakdown of Match by Cost Category: \$ 252 ( <i>Salary &amp; Fringe -City of Biddeford in-kind match</i> )		

**VIII. Deliverables**

An electronic copy of each deliverable will be provided to the DEP Contract Administrator (AA). Each deliverable will be labeled according to procedures described in DEP document *Nonpoint Source Grant Administrative Guidelines*, <http://www.maine.gov/dep/water/grants/319-documents/2016GrantAdminGuidelinesFinal2.docx>.

1. YCSWCD and CCSWCD Sub-Contract agreements, Semi-annual progress reports, final project report, NPS site tracker (Task 1)
2. NPS Site Report for each NPS Site (Task 3)
3. Two Press Releases and Workshop Summary (Task 4)
4. Summary of Ordinance Development Outcomes (Task 5)
5. Sampling Analysis Plan (SAP) and water quality data in MS Excel or similar electronic format so that it can be uploaded into EGAD. (Task 6)
6. Pollutant Controlled Reports each year until project completion (Task 7)

**IX. Project Coordinator**

Name	Tom Milligan, P.E., City Engineer
Organization	City of Biddeford
Mailing Address	205 Main Street, Biddeford ME 04005
Telephone Number	(207) 284-9118
Email Address	Tom.Milligan@biddefordmaine.org
DUNS #	126268981

**X. Project Budget**

<b>Federal Funds:</b>	<b>\$106,102</b>
<b>Non-Federal Match:</b>	<b>\$75,867</b>
<b>Proposed Total Cost:</b>	<b>\$181,969</b>

**Part 1. Estimated Personnel Expenses: (Applicant staff only)**

<b>Position Name &amp; Title</b>	<b>Hourly Rate</b>	<b>Number of Hours</b>	<b>Salary &amp; Fringe</b>	<b>Total Applicant Personnel Expenses</b>
Tom Milligan, City Engineer	\$63.00	63	\$3,969	\$3,969
Greg Tansley, City Planner	\$60.00	88	\$5,280	\$5,280
Danica Lamontagne, Communications Coordinator	\$23.12	23	\$531	\$531
Christine Ohman, Special Projects Funding Coordinator	\$23.12	8	\$185	\$185
Finance Director	\$40.00	12	\$480	\$480
<b>Totals</b>		<b>194</b>		<b>\$10,445</b>

**Part 2. Budget Estimates by Cost Category**

<b>Cost Category</b>	<b>Federal Funds</b>	<b>Non-Federal Match</b>	<b>Total Cost</b>
Salary & Fringe (from Part 1)	\$0	\$10,445	\$10,445
Subgrant (YCSWCD)	\$18,805	\$0	\$18,805
Subgrant (CCSWCD)	\$10,220	\$0	\$10,220
Donated Services – Labor		\$4,607	\$4,607
Construction	\$76,168	\$60,481	\$136,649
Travel	\$409	\$334	\$743
Supplies	\$500	\$0	\$500
<b>Totals</b>	<b>\$106,102</b>	<b>\$75,867</b>	<b>\$181,969</b>

**Part 2 Notes:**

**Subgrant** – (YCSWCD Project Manager \$65/hour @ 264 Hours and YCSWCD Intern \$35/hour @ 47 hours) (CCSWCD Engineer \$140/hour @ 73 Hours)

**Donated Services-Labor** – (182 hours @ \$23.12/hour, Saco Watershed Collaborative, Biddeford Conservation Commission, Biddeford High School and public volunteers, 8 hours @ \$50 Arundel town planner)

**Travel** – Grant - YCSWCD 839 miles at \$0.44/mile and CCSWCD 91 miles at \$0.44/mile; Match - 759 miles @ \$0.44/mile

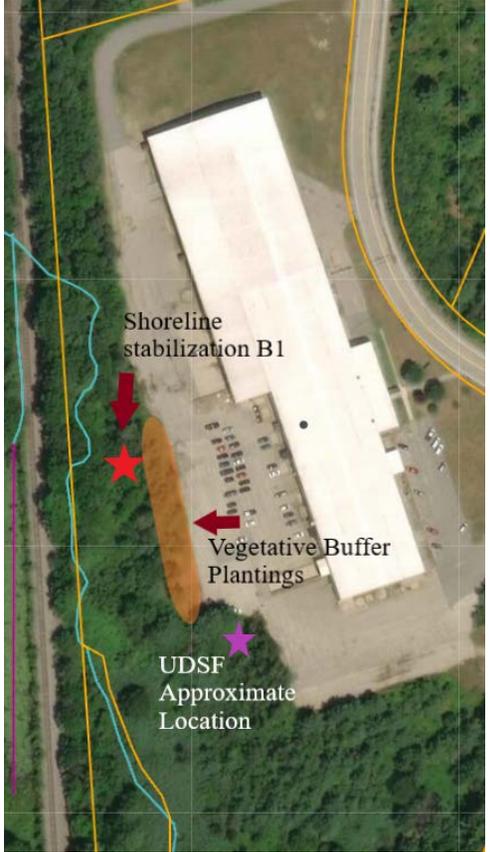
**Supplies** – YCSWCD, \$500 for supplies for NPS Abatement site work and Workgroup meetings

**Construction** – \$76,168 (Construction, grant), \$12,000 (City of Biddeford construction labor match), \$13,000 (City of Biddeford cash match), \$23,000 (Stormwater Compensation Fund match), \$10,400 (Construction - private landowner construction match), \$2,081 (volunteer in-kind construction match)

### **Part 3. Sources of Non-federal Match and Estimated Amounts**

<b>Sources of Non-federal Match</b>	<b>Amount</b>
City of Biddeford In-Kind Match	\$22,445
City of Biddeford Cash Match (Stormwater Compensation Mitigation Funds \$23,000, cash match \$13,000)	\$36,000
Volunteer Mileage	\$334
Volunteer In-Kind Match	\$6,688
Landowner Cash Match	\$10,400
<b>Total</b>	<b>\$75,687</b>

**XI: Candidate NPS Site List**

NPS Site Name & Location	Describe the NPS Site & Conditions at the Site Causing Polluted Runoff to Reach Surface Waters	BMPs Recommended	Construction Cost Estimates: Grant, Match, Total	Photographs
<p><b>NPS Site Name:</b> Morin Maine, LLC Project</p> <p><b>Level of Impact:</b> High</p> <p><b>Location:</b> 26 Morin Street</p>	<p>This site was identified in the Plan as having a high priority bank stabilization site (B1). Also, this site was identified as needing an enhanced vegetative buffer. A retrofit behind the building was also proposed in the Plan as Stormwater Retrofit 9. This retrofit is meant to treat water from the parking lot.</p>	<p>B1 will be stabilized and planted with native, woody, native vegetation. A hands-on buffer workshop will be held at this site as well. No portion of the proposed buffer plantings will be placed in the current parking lot. SWR 9 will be an underdrained soil filter, no less than 1,600 square feet in size, and it will treat an estimated one acre of impervious area.</p>	<p>Grant: \$46,000 Match: \$31,081 Total: \$77,081</p>  <p>Site B1 Erosion and proposed bank stabilization</p>  <p>Erosion behind parking lot and area of proposed vegetative plantings</p>	

NPS Site Name & Location	Describe the NPS Site & Conditions at the Site Causing Polluted Runoff to Reach Surface Waters	BMPs Recommended	Construction Cost Estimates: Grant, Match, Total	Photographs
<p><b>NPS Site Name:</b> Morin Street Tree Box Filter</p> <p><b>Level of Impact:</b> Medium</p> <p><b>Location:</b> Morin Street</p>	<p>Morin Street is part of the City of Biddeford’s Industrial Park, an area of high impervious cover, including the roadways, large paved parking lots, and large buildings with significant roof runoff that contribute pollutants from general site use and vehicles. Surface runoff discharges into the storm drains then directly into Richardson Brook without treatment. Options for the TBF include in the ROW and/or on a private property.</p>	<p>A tree box filter will be added along Morin Street to provide stormwater treatment. It will be placed upstream of an existing catch basin, filter the stormwater and connect back into the stormwater system before discharging to Richardson Brook. The site selection is subject to a field visit.</p>	<p>Grant: \$ 12,000 Match: \$ 12,945 Total: \$ 24,945</p>	

NPS Site Name & Location	Describe the NPS Site & Conditions at the Site Causing Polluted Runoff to Reach Surface Waters	BMPs Recommended	Construction Cost Estimates: Grant, Match, Total	Photographs
<p><b>NPS Site Name:</b> FMI Project</p> <p><b>Level of Impact:</b> Medium</p> <p><b>Location:</b> Outside the entrance to Fiber Materials Inc., 5 Morin Street</p>	<p>During Phase I, a commercial tech assist was performed at Fiber Materials Inc. (FMI). It was determined that water was running towards a catch basin owned by the City of Biddeford and tied into their stormwater outfall system which outlets to Richardson Brook, a tributary of Thatcher Brook.</p>	<p>A vegetative BMP, such as a rain garden composed of native vegetation, is proposed above the City catch basin on FMI property to appropriately treat runoff before it enters the catch basin. FMI is familiar with this proposed work and is supportive of the project.</p>	<p>Grant: \$ 1,000 Match: \$ 1,000 Total: \$ 2,000</p> <p>Armored Swale</p>  	

NPS Site Name & Location	Describe the NPS Site & Conditions at the Site Causing Polluted Runoff to Reach Surface Waters	BMPs Recommended	Construction Cost Estimates: Grant, Match, Total	Photographs
<p><b>NPS Site Name:</b> Barrette Drainage and Vegetative Plantings</p> <p><b>Level of Impact:</b> Low</p> <p><b>Location:</b> 8 Morin Street</p>	<p>During Phase I, a commercial tech assist was performed at Barrette. It was determined that water leaving the parking lot would travel to the railroad tracks and carry pollutants and sediments into the area behind the property, eventually reaching Richardson Brook.</p>	<p>A drainage swale will be created behind the building that will direct run-off from behind the parking lot into the existing detention pond. Buffer plantings will also be installed to help prevent erosion. All proposed work will not restrict or impact vehicular movement on the property necessary for operations at the facility.</p>	<p>Grant: \$ 2,600 Match: \$3,400 Total: \$6,000</p>  <p>Area where water leaves parking lot and travels towards train tracks behind facility</p>	

NPS Site Name & Location	Describe the NPS Site & Conditions at the Site Causing Polluted Runoff to Reach Surface Waters	BMPs Recommended	Construction Cost Estimates: Grant, Match, Total	Photographs
<p><b>NPS Site Name:</b> In Stream Habitat Restoration</p> <p><b>Level of Impact:</b> High</p> <p><b>Location:</b> North-East of Kohl's in Biddeford. Map 7/Lot 8</p>	<p>In the Thatcher Brook Phase I project a Chop and Drop was performed on City of Biddeford Property north-east of Kohl's in Biddeford. This area is also north of an original monitoring station from the Plan. It was found that improvement of Dissolved Oxygen in this area should be a priority for restoration of Thatcher Brook.</p>	<p>A Chop and Drop project is proposed north-east of Kohl's in Biddeford. It is located west of the original Chop and Drop project from Phase I. The practice of felling trees in strategic locations to create in-stream habitat, as well as improve Dissolved Oxygen, via a Chop and Drop project, will benefit the stream in this area and the landowners support the project.</p>	<p>Grant: \$ 14,528 Match: \$ 13,000 Total: \$ 27,528</p>	