

Final Project Report
Panther Pond Protection Project, Phase III #2017RR10



Grantee: Town of Raymond
Subgrantee: Cumberland County Soil & Water Conservation District (CCSWCD)
Project Coordinator: Heather Hunt, CCSWCD
Maine Department of Environmental Protection (MDEP) Agreement Administrator: Kristin Feindel and John MacLaine

Project Start Date: January 2017
Project Completion Date: December 2018

Funding for this project, in part, was provided by the U.S. Environmental Protection Agency under Section 319 of the Clean Water Act. Section 319 grants are administered by the Maine Department of Environmental Protection in partnership with EPA.

I. Project Overview

Project Purpose

The primary purpose of this project was to reduce erosion and the export of sediment and phosphorus into Panther Pond. Conservation practices that reduce erosion and polluted runoff were to be installed at twenty of the highest erosion impact sites identified in the 2014 watershed survey. In addition, the project raises awareness about watershed problems and fosters long-term watershed stewardship. These goals follow the action items listed in the Panther Pond Watershed-Based Protection Plan (2015) to maintain and protect the clean waters of Panther Pond.

Project Highlights and Difficulties

This project was very successful and exceeded outreach goals. Project highlights include:

- Technical assistance outreach to over twenty residential properties, exceeding the fifteen pledged.
- Site visits and technical assistance provided to eighteen potential large-scale NPS abatement sites, exceeding the goal of outreach of ten sites.
- Coordination of erosion control mulch deliveries to watershed citizens, at cost, with free delivery from the Town of Raymond's Public Works Department of which ten residents participated.

Difficulties encountered during the project included the following:

- There were very few, if any, difficulties encountered during this project. The project came slightly under meeting its goal of addressing ten residential sites (eight were met) and ten NPS abatement sites (nine were met) largely due the highly seasonal watershed population. However, given the strong culture of lake water quality protection, it is anticipated that nearly all recommendations provided will be implemented by watershed residents over the next couple of years with volunteer assistance and limited financial incentives from the Panther Pond Association (PPA).

Key Personnel

Key project personnel included:

- Heather Hunt, Project Manager/Coordinator at CCSWCD
- Cathy Ricker, Finance Director at Town of Raymond
- Aubrey Strause, P.E., District Engineer at CCSWCD
- Adam Sellick, Assistant District Engineer at CCSWCD
- Will Savage, P.E. Contracted Engineer at CCSWCD
- Kat Munson, Educator at CCSWCD
- Jenna Martyn-Fisher, Technical Specialist and Educator at CCSWCD
- Kristin Feindel, Agreement Administrator at MDEP
- John MacLaine, Agreement Administrator at MDEP

Changes in Scope of Project

No changes to the scope of the project occurred.

II. Task Summary

Task 1. Project Management

The Town of Raymond completed a Letter of Agreement with CCSWCD to serve as Project Coordinator and be responsible for the coordination and implementation of all project activities. CCSWCD tracked project progress, expenses, and local match and completed semi-annual Progress Reports and one Final Project Report. CCSWCD assisted Panther Pond Association (PPA) in updating their Panther Pond NPS Site Tracker with information on sites addressed. A summary of the updated Site Tracker information is included in this report as a project deliverable under **Appendix A. Panther Pond NPS Site Tracker Summary.**

Task 2. Steering Committee

A total of six official committee meetings were held over the project's duration. The steering committee for this project included representatives from PPA, Raymond Waterways Protective Association (RWPA), Portland Water District (PWD), CCSWCD, the Town of Raymond Landowners, and MDEP.

The six meetings were held on the following dates:

3/22/17	9/6/17	8/29/18
6/29/17	2/2/18	10/29/18

Task 3. NPS Abatement Projects

Task 3a. The Project Coordinator and a CCSWCD Engineer provided the Town of Raymond, private road associations, and property owners with technical assistance and 50% cost sharing to address erosion and runoff problems for high priority sites identified in the 2014 NPS watershed survey. Eighteen site visits were conducted with nine sites completed. A summary of technical assistance provided is included as a project deliverable under **Appendix B. Technical Assistance Summary.** A summary of pollutants controlled at the nine NPS sites is included as a project deliverable and listed in this section below. Property owners received technical assistance at no charge and up to 50% cost sharing for construction costs. Cost share recipients provided a minimum of 50% match through cash, material, or labor contributions and agreed to maintain the projects as directed. The Town of Raymond and cost share recipients completed cost share agreements prior to construction. The Project Coordinator also worked with landowners to obtain proper permits prior to construction and prepared a NPS Site Report for each NPS abatement site completed.

Task 3b. Three of the nine priority sites addressed were located on Camp Hinds property in Raymond. Camp Hinds is owned by the Pine Tree Council, Boy Scouts of America.

In Year 1, CCSWCD's education and technical staff worked with Camp Hinds, RSU 14's Katahdin Program and AmeriCorps members to develop student-led and implemented solutions. CCSWCD provided water quality and BMP lessons to RSU 14's Katahdin Program students on May 3rd, 2017. Students then assisted with determining BMP solutions for Site 2017-01. On May 17th, 2017, under CCSWCD's guidance, RSU 14 Katahdin Program students, teachers, and volunteers installed BMPs at Site 2017-01 through their school's Volunteer Day. In addition to installing the BMPs, students assisted in advertising the workshop to the community and documenting the work done.

Camp Hinds staff completed recommendations at Site 2017-01 over the Summer of 2017 by installing additional roof dripline trenches and water bars along the walking path leading to the western beach. The Camp also addressed Site 1-3c with 50 volunteers and staff members during their annual organized volunteer day on October 7th, 2017.

In Year 2, CCSWCD's education and technical staff worked with Camp Hinds and Boy Scout Troop 73 to implement yet another student-led and implemented BMP lesson and service-learning project. CCSWCD provided water quality and BMP lessons to Troop 73 on October 28th, 2018 and the Scouts installed BMPs at Site B-9 on November 4th, 2018. The lesson and service-learning project assisted the Scouts in earning an environmental badge

The nine high priority sites addressed included:

- **Site 1-3c, Camp Hinds, Raymond**

Site 1-3c is located at Camp Hinds, 146 Plains Road, Raymond, Maine on the northern shoreline of Panther Pond. An erosion gully had formed from the Camp's old office/lodge down the walking path to the Camp's Main Beach. This resulted in sediment washing directly into Panther Pond. Following CCSWCD's recommendations and under an approved Maine DEP Permit-by-Rule, crushed stone roof dripline trenches were installed by 50 volunteers and staff members along the southern and eastern side of the old office/lodge at an annual organized volunteer day at the Camp on October 7th, 2017. This allowed for stormwater runoff to infiltrate into the ground rather than flowing directly downhill towards Panther Pond. The Boy Scouts of America Pine Tree Council at Camp Hinds signed a cost sharing agreement with the Town of Raymond on September 19th, 2017 which states they will properly operate and maintain all installed BMPs per guidance provided for the ten-year predicted service span of the BMPs.

- **Site 1-4a, Route 121 Stream Crossing, Raymond**

Site 1-4a is located at the unnamed stream crossing on Route 121 (Meadow Road) in Raymond adjacent to Fire Lane 71. This stream crossing is fed by roadside ditches and sediment basins along Route 121 upstream from the crossing. Excess winter sand and sediment were observed at this site contributing a significant amount of material and phosphorus into the stream crossing. A driveway culvert was full of road sand preventing proper stormwater runoff conveyance and road shoulder erosion was occurring due to high-velocity stormwater flow. Per CCSWCD recommendations, the Maine Department of Transportation (MDOT) cleaned out ditching, sediment basins, and driveway culverts of accumulated winter sand. Riprap was used in select areas to filter sediment and protect against road shoulder erosion. Roadside ditches were re-established and stabilized using erosion control blankets. Approximately 800-feet of new ditching was installed along the north side of the stream crossing and 1,900-feet along the south side of the crossing. A cost share agreement was not created as MDOT did not receive 319 grant funds for the improvements made. MDOT will monitor and maintain this site per their yearly road maintenance assignments. The Panther Pond Association will also informally review this site each spring and notify MDOT should issues arise or maintenance be needed.

- **Site 2-14 Cattle Road, Raymond**

Site 2-14 is located at the stream crossing on Cattle Road in Raymond adjacent to CMP pole #10/65. This site consisted of a rusted out and undersized 18-inch metal culvert at an intermittent stream crossing that was causing gravel road material to wash downstream towards Panther Pond as well as contributing to downstream bank scour. The Rocky Shores Improvement Association hired a contractor to replace the undersized 18-inch culvert with a 24-inch by 30-foot long HDPE culvert. The culvert inlet and outlet were stabilized with riprap and crushed gravel was installed over the replaced culvert and properly crowned to improve road drainage. The Rocky Shores Improvement Association signed a cost sharing agreement with the Town of Raymond on June 8th, 2018 which states they will properly

operate and maintain the installed BMP to the best of their ability per guidance provided for the ten-year predicted service span of the BMPs.

- **Site 3-5, 1 Gina Lane, Raymond**

Site 3-5 is located at 1 Gina Lane in Raymond off Ai Road on the eastern shore of Panther Pond. A significant amount of runoff was washing down the driveway, along the northern side of the camp, and into Panther Pond. The amount and velocity of this runoff resulted in erosion gullies in the driveway and washouts of sediment at the end of the driveway resulting in sediment being transported into Panther Pond. Following CCSWCD's recommendations, the property owners hired Alan E. Whitten, General Construction to implement the following recommendations:

- Build-up and crown the driveway with 3/4" crushed gravel to remove erosion gullies and tire ruts.
- Re-angle the rubber water diverter at the top of the driveway to direct stormwater into natural vegetation along the northern side of the property.
- Install 50 linear feet of drainage trench at the bottom of the driveway to direct stormwater into natural vegetation along the northern side of the property. Installed 1 ½-inch crushed stone at outlet of trench and prior to vegetation to prevent scouring.
- Install a roof dripline trench along the northern side of the camp.

The property owner, Diane Neumann-Hernsdorff, signed a cost sharing agreement with the Town of Raymond on November 25th, 2018 stating she will properly operate and maintain all installed BMPs per guidance provided for the ten-year predicted service span of the BMPs.

- **Sites 5-8 and 5-9, Chickadee Lane, Raymond**

Sites 5-8 and 5-9 are located just north of the intersection of David Plummer Road and Chickadee Lane. They include the portion of road between #15 and #16 Chickadee Lane (Site 5-8) and the driveway of #16 Chickadee Lane (Site 5-9). Site 5-8 along Chickadee Lane has historically ponded stormwater resulting in erosion occurring on Site 5-9. Runoff from Site 5-8 flowed down the gravel driveway of Site 5-9 causing erosion and sediment into Panther Pond. A rain garden and asphalt water diverter were installed near this site in a prior 319 implementation project, but these structures were no longer performing as designed due to the ponding that was occurring in the road at Site 5-8. Following CCSWCD's engineered recommendations, the Panther Pond Beaches Road Association hired contractors to:

- Install a catch basin on the uphill side of Chickadee Lane in front of #15 Chickadee Lane where stormwater was ponding following the recommendations and diagram provided.
- Provide pipe outlet protection at the existing rain garden using 4"-6" riprap to prevent scouring from occurring in the rain garden.
- Build-up and re-establish the crown of the road along Site 5-8 and repave to direct stormwater runoff to the uphill side of the road thereby maximizing the effectiveness of the proposed catch basin.

Panther Pond Beaches Road Association signed a cost sharing agreement with the Town of Raymond on October 3rd, 2018 which states they will properly operate and maintain the installed BMPs to the best of their ability per guidance provided for the ten-year predicted service span of the BMPs.

- **Site 2017-01, Camp Hinds, Raymond**

Site 2017-01 is located at Camp Hinds, 146 Plains Road, Raymond, Maine on the northern shoreline of Panther Pond. This site is located at the Camp's most western log cabins and includes the walking path from these cabins down the hill towards the footbridge leading to West Beach. Bare soil and erosion gullies were present along the steep walking path from the newly built cabins. This resulted in sediment washing directly into Panther Pond. Roof dripline trenches were installed at the cabins by RSU 14 Katahdin Program students, teachers, and volunteers. Volunteers also created two large broad-based diverters at the top of the walking path adjacent to the cabins using fill dug out from the roof dripline trenches. Three to four inches of erosion control mulch was spread over these diverters and in front of the cabins and down the steep walking path leading to West Beach. Two timber water bar diverters were installed along the steep walking path by Camp Hinds staff diverting stormwater into adjacent vegetation. The Boy Scouts of America Pine Tree Council at Camp Hinds signed a cost sharing agreement with the Town of Raymond on September 19th, 2017 which states they will properly operate and maintain all installed BMPs per guidance provided for the 10-year predicted service span of the BMPs.

- **Site 2018-01, Lakeside Drive, Raymond**

Site 2018-01 is located just south of Fire Lane 63 on Lakeside Drive in Raymond and includes the portion of gravel road from the corner of Fire Lane 63 and Lakeside Drive to approximately #50 Lakeside Drive. Erosion on Lakeside Drive resulted in the washing of gravel road material into a drainage at the corner of Lakeside Drive and Fire Lane 63 and into Panther Pond. Following CCSWCD's recommendations, the following improvements were made:

- The existing sediment basin on Lakeside Drive north of house #50 was cleaned out and restored to its original function. A second sediment basin was installed just south of #50 Lakeside Drive to capture and infiltrate stormwater coming from the top of the hill.
- The section of road from #50 Lakeside Drive to the intersection of Lakeside Drive with Fire Lane 63 was resurfaced with gravel road material consisting of a heavier crushed stone than the existing fine gravel. This road was pitched toward the downhill/eastern side of the road into the two sediment basins.
- Two gravel speed bump diverters were installed along this section of road just south of the two sediment basins to divert stormwater runoff into the sediment basins on the downhill/eastern side of the road.

Panther Pond Lakeside Drive 63A signed a cost sharing agreement with the Town of Raymond on September 19th, 2018 which states they will properly operate and maintain all installed BMPs per guidance provided for the 10-year predicted service span of the BMPs.

- **Site B-9, Camp Hinds, Raymond**

Site B-9 is located at Camp Hinds, 146 Plains Road, Raymond, Maine on the northern shoreline of Panther Pond. This site is located at the Camp's eastern end of the property on the waterfront at the youth lean-tos. Erosion gullies had formed along the walking paths from the lean-tos leading down to the shoreline resulting in sediment washing directly into Panther Pond. Under CCSWCD's guidance, and through a service-learning lesson and as a badge requirement, Boy Scouts from Gorham's Troop 73 installed two roof dripline trenches along two of the lean-tos (each approximately 13-feet long). Soil extracted in creating these trenches was used to create an earthen water bar berm at the top of the walking path. The water bar was angled to direct stormwater into adjacent vegetation on the northern side of the walking path. This berm and bare areas of the walking path were

then covered with three to four inches of erosion control mulch. The Boy Scouts of America Pine Tree Council at Camp Hinds signed a cost sharing agreement with the Town of Raymond on December 5th, 2018 stating they will properly operate and maintain all installed BMPs per guidance provided for the 10-year predicted service span of the BMPs.

Task 4. Residential Matching Grants

Residential properties comprise the single largest land use for which NPS sites were documented in the 2014 watershed survey with 36 residential sites identified amounting to 48% of the total number of erosion sites. Combined, these sites contribute an estimated ten tons/year of sediment to the lake. To specifically address these sites, CCSWCD provided watershed residents with technical assistance at no charge for twenty sites and reached out to an additional three sites who had expressed initial interest. Up to ten sites were awarded \$350 in matching grant funds (\$100 from PPA's matching grant program and \$250 from grant funds). A total of eight sites were completed. Cost share recipients provided a minimum of 50% match through cash, material, or labor contributions and agreed to maintain the projects as directed. Cost share recipients also signed a cost share agreement with the Town of Raymond prior to construction. A summary of all residential sites addressed are included as a project deliverable in **Appendix C. Residential Matching Grants**.

To assist with incentives for addressing residential sites, CCSWCD helped coordinate at-cost purchase and delivery of erosion control mulch (ECM) for watershed residents. Ten residents took part in this offer. The Town of Raymond offered ECM storage and free delivery.

PPA also assisted in promoting the availability of matching grant funds and outreach to residents identified as having a high priority site. PPA offered volunteer labor for sites needing assistance and provided their time in gathering volunteers and assisting with Site 2017-01 at Camp Hinds (NPS Abatement Site) in 2017 and the Romaine Property (Residential Matching Grant Property) in 2018.

Task 5. Watershed Stewardship and Prompting of Maintenance

The following stewardship initiatives were implemented through this Project:

A. Place-based Education to Schools

CCSWCD provided water quality and BMP lessons and oversaw student-led and implemented solutions for both RSU 14's Katahdin Program students in 2017 and Boy Scout Troop 73 in 2018. Details of these programs are discussed in **Task 3b** above. A flier created by RSU 14's Katahdin Program students advertising their volunteer day of service was submitted as a project deliverable on December 31st, 2018.

B. Promote Conservation Practice Maintenance

PPA volunteers compiled data on previously installed 319 BMPs (from Phase I and II) and inspected the BMPs in the Summer of 2018 to determine if the conservation practices were maintained and to provide maintenance recommendations. PPA notified owners of the inspection prior to conducting the survey and sent customized letters stating the inspection results and recommendations to each property owner. A summary table of conservation practice maintenance inspections, including maintenance conditions, maintenance recommendations, and contacts made, was submitted as a project deliverable on December 12th, 2018 (*PPA's BMP Inspection Summary*).

C. NPS Protection Outreach

Steering committee members assisted with project outreach and its opportunities to the community through targeted letters, articles, websites, presentations (PPA and RWPA Annual

Meetings) and one-on-one outreach. CCSWCD presented at PPA's Annual Meeting in 2018 and posted information about the grant on its website. An article for website posting was submitted as a project deliverable on December 31st, 2018.

A workshop was held at the Romaine Property on Ladyslipper Lane in Raymond on August 16th, 2018 in which CCSWCD provided in-the-field guidance on installing rubber water bars, infiltration steps, and timber water bars. Approximately 20 volunteers participated.

A two-sided end-of-project factsheet was produced by CCSWCD that provides an overview of project accomplishments and future steps for NPS protection on Panther Pond. This brochure will be distributed by PPA and the Town of Raymond with the goal of continuing education efforts to all watershed residents on the work completed and how they can continue to protect Panther Pond.

Task 6. Pollution Reduction Estimates

Pollutants Controlled Reports were submitted in December of 2017 and 2018. Complete soil loss estimates are included with this report under **Appendix D. Soil Loss Calculations and Estimates**.

III. Deliverables Summary

List of Deliverables from Work Plan	Date Deliverable submitted to MDEP
1. Semi-Annual Progress Reports (Task 1)	<ul style="list-style-type: none">• 5/15/17: May 2017 Progress Report• 11/15/17: November 2017 Progress Report• 5/15/18: May 2018 Progress Report
2. Sub-Agreements (Task 1)	<ul style="list-style-type: none">• 3/2/17: Town of Raymond and CCSWCD
3. Final Project Report including (Task 1): <ul style="list-style-type: none">• Updated NPS Site Tracker database printout (Task 1)• Summary of technical assistance provided (Tasks 3&4)• Summary of all residential sites addressed (Task 4)• Summary of pollutant controlled at NPS sites (Task 3)	<ul style="list-style-type: none">• 1/4/18: Final Report
4. NPS Site Reports for ten sites, including pre- and post-installation photos (Task 3)	<ul style="list-style-type: none">• 7/30/18: Site 2-14: Cattle Road• 7/30/18: Site 1-4a: Route 121 Stream Crossing• 7/30/18: Site 2017-01: Camp Hinds• 11/21/18: Site 5-8 and 5-9: Chickadee Lane• 12/3/18: Site 1-3c: Camp Hinds• 12/3/18: Site 2018-01: Lakeside Drive• 12/12/18: Site B-9: Camp

	Hinds <ul style="list-style-type: none">• 12/27/18: Site 3-5: 1 Gina Lane
5. Summary table of conservation practice maintenance inspection, including maintenance conditions, maintenance recommendations, and contacts made (Task 5)	<ul style="list-style-type: none">• 12/12/18: Panther Pond Association's BMP Inspection Summary
6. Project outreach materials and end-of-project factsheet (Task 5)	<ul style="list-style-type: none">• 5/15/17: "Another Clean Water Act, Section 319 Grant" Press Release submitted to Keep Me Current on 4/19/17• 12/31/18: Panther Pond Fact Sheet• 12/31/18: Katahdin Program Community Service Day Flier• 12/31/18: CCSWCD Website Article
7. Pollutant Controlled Report (Task 6)	<ul style="list-style-type: none">• 12/26/17: 2017 Pollutants Controlled Report• 12/27/18: 2018 Pollutants Controlled Report

IV. Project Outcomes

Major Outcomes

- Outreach and recommendations were provided to 38 properties with 17 sites addressed (NPS Abatement Sites and Residential Matching Grant Sites).
- Two place-based education lessons in combination with student-led hands-on solution workshops were held.

Environmental Results

16.55 tons of sediment (14.07 pounds of phosphorus) were reduced from entering Panther Pond each year in addressing just nine NPS abatement sites alone helping the Pond to maintain its Class GPA water quality standards. This figure does not reflect soil loss prevented from residential sites having been addressed based on technical assistance recommendations. Estimates of total pollutants controlled are included as **Appendix D: Soil Loss Calculations and Estimates**.

Lessons Learned

This project was highly successful largely due to a very engaged local community wanting to do their part in helping to protect Panther Pond. More recommendations than anticipated were provided due to the interest of the community. Recommendations not implemented are likely due to the highly seasonal residency and are anticipated to be installed. When asked at the last steering committee meeting what has created such a culture of water quality protection on Panther Pond, committee members attributed it to be a very family-oriented lake, with many residents having grown up on the lake as children, and that a lot of communication has occurred between PPA and residents.

V. Summary of Total Expenditures

	Federal NPS Grant	Local Match	Total
Funds Originally Allocated:	\$64,827.00	\$54,156.00	\$118,983.00
Funds Expended:	\$64,827.00	\$47,241.77	\$112,068.77
Funds Remaining:	\$0	\$6,914.23	\$6,914.23

VI. Non-Federal Match Documentation and Certification

See **Appendix E. Table of Match Sources** and **Appendix F. Match Certification Form**.

VII. Appendices

Appendix A: Panther Pond NPS Site Tracker Summary

Appendix B: Technical Assistance Summary

Appendix C: Residential Matching Grants

Appendix D: Soil Loss Calculations and Estimates

Appendix E: Table of Match Sources

Appendix F: Match Certification Form

Panther Pond Watershed NPS Site Tracker Summary

The **Panther Pond Watershed NPS Site Tracker** is actively kept up-to-date by the Panther Pond Association. The Site Tracker consists of a MicroSoft Excel spreadsheet with all known NPS sites to-date that are identifiable by a Site Number. This Site Number links the spreadsheet to corresponding photos and GPS coordinates which can be easily mapped.

The Panther Pond NPS Site Tracker is a dynamic document being updated as sites are addressed, and new sites are identified. Current additions to the Panther Pond NPS Site Tracker include 2014 survey information, 2018 BMP maintenance conditions results from site reviews, and 2017-2018 sites addressed through Section 319 Clean Water Act grant funds and community match through the Panther Pond Protection Project. Although the Panther Pond Watershed NPS Site Tracker is too large to print in its entirety, specific information included in the Tracker includes the following:

- GPS Coordinates
- Map ID, Site #, Map/Lot
- Land Use, Location, Road
- Owner
- Date Identified
- Original Status (Fixed or Problem)
- Problem
- Recommendations
- 2014 Survey Status (Fixed or Problem)
- If Fixed: Date Fixed, Funding Source (Match/Grant), Work Completed
- Impact, Technical Costs, Material Costs (high, medium, low)
- Phase III Maintenance Survey Status

Appendix B:

Panther Pond III Technical Assistance Summary

	Site # or Landowner	Location	CCSWCD Site Visit	Services Provided (V=visit, R=recs., C=cost sharing agree., P=permit)	Basic Recommendations	Status
1	2-14	Cattle Road, Raymond (Drainage Crossing)	5/24/2017	VRC	Replace 18" culvert with 24" culvert.	Completed as NPS abatement site
2	5-9	Chickadee Lane, Raymond	6/28/17 and 9/7/17 with engineer	VRCP	Install catch basin leading to rain garden, removing driveway adjacent to rain garden, ECM and infiltration steps.	Completed as NPS abatement site
3	1-4a	Rt. 121, Raymond (Stream Crossing)	5/19/17 with DOT	VR	Cleaning basins of sediment and increasing maintenance inspections, stabilizing portions of ditching with riprap, re-establishing portions of ditching with erosion control blankets.	Completed as NPS abatement site
4	Site 2017-01	Camp Hinds, Raymond (New Cabins and Walking Path to West Beach)	4/17/2017	VRCP	Install roof dripline trenches at new cabins and water bar diverter on walking path to western beach.	Completed as NPS abatement site
5	Site 1-3c	Camp Hinds, Raymond (Camp Lodge to Main Beach)	4/17/2017	VRCP	Install roof dripline trench at old dinning hall and possibly at health office. Need steps or retaining wall to eastern side of current infiltration steps.	Completed as NPS abatement site

Appendix B:

Panther Pond III Technical Assistance Summary

	Site # or Landowner	Location	CCSWCD Site Visit	Services Provided (V=visit, R=recs., C=cost sharing agree., P=permit)	Basic Recommendations	Status
6	Site B-9	Camp Hinds, Raymond (Youth Camp Lean-Tos)	10/18/2018	VRCP	Install roof dripline trenches at youth lean-tos, install water bar along walking path, cover bare areas of walking path with ECM.	Completed as NPS abatement site
7	2018-02	1 Gina Lane, Raymond (Neumann-Hernsdorf Property)	7/28/2017	VRC	Re-angle rubber water bar, install infiltration trench at base of driveway, build up driveway, install roof dripline trench.	Completed as NPS abatement site
8	2018-01	Lakeside Drive, Raymond	5/4/2018	VRC	Build up and crown road, install water bar speed bump diverter leading to sediment basins.	Completed as NPS abatement site
9	6-1 and 6-3	Rt. 121, Raymond (Stream Crossing)	5/19/17 with DOT	VR	Plant vegetation along road shoulder/stream embankments and looking into methods to reduce sand use and/or sweep winter sand each spring.	DOT did not address 6-1 and 6-3 as they do not believe it is a high impact site nor has a good solution.
10	NA	River Road, Raymond (Drainage Crossing)	4/13/17 with Hall Thompson	V	Small rusted stream culvert, crushed at top of inlet needing to be replaced.	Hall interested in grant funds if available, site was not a high impact site.
11	2-12	Jordan Lane, Raymond (Boat Launch)	5/24/2017	VRC	Replace rubber razors and regrade road slope.	Site addressed in previous 319 and did not qualify for Phase III funds.
12	4-8c	Boulder Road, Raymond	6/28/17 and 9/7/17 with engineer	VR	Regrade and raise road to original height, remove road grader berms.	Site improvements are considered maintenance and would not qualify for 319 grant funds.
13	2-13	Jordan Lane, Raymond (Drainage Crossing)	5/24/2017	VRC	Hand-pack stone or concrete under base of metal culvert inlet to prevent scouring; Stabilize inlet pool and outlet with coir fiber matting.	Association added some stabilization around culvert inlets yet do not feel additional work is needed. No need for grant funds.
14	Site 2-2	Camp Hinds, Raymond	4/17/2017	V	None	Site not determined as a high priority for Phase III project.
15	Site 1-3bb	Camp Hinds, Raymond	4/17/2017	V	None	Site not determined as a high priority for Phase III project.

Appendix B:

Panther Pond III Technical Assistance Summary

	Site # or Landowner	Location	CCSWCD Site Visit	Services Provided (V=visit, R=recs., C=cost sharing agree., P=permit)	Basic Recommendations	Status
16	Site 1-3b	Camp Hinds, Raymond (Tenney River Fishing Spot)	4/17/2017	VR	Recommend extending and keying in existing timber water bars.	Camp will address in 2019. May shut off access to this site as another on the other side of the river is now available.
17	Site 1-3aa	Camp Hinds, Raymond	4/17/2017	V	None	Site not determined as a high priority for Phase III project.
18	Site 1-3a	Camp Hinds, Raymond (Cabins and Shelter Area)	4/17/2017	VR	Install roof drip-line trenches; Define walking paths.	Not addressed in Phase III.
19	Site 2017-02	Camp Hinds, Raymond (Fire Pit)	4/17/17	VR	Well point recommendations for fire pit provided via email on 5/31/17.	Site not addressed during grant project's timeframe.
20	Site 3-7b	Ai Road	5/4/18 by CCSWCD Project Manager and Engineer; 7/24/18 by CCSWCD Project Manager, DEP staff, and road members	VR	Verbal recommendations to consider catch basin and chamber system along Gina Lane.	Will be reviewing site again in 2019 through Stormwater Compensation Funds.
21	Judy Beaupain	1 Jordan Lane, Raymond	Site visit on 6/20/17.	VRCP	Install water bar diverters, infiltration steps, dripline trench, and native plants.	Completed as residential matching grant site.
22	Kathleen Kroessler	159 Meadow Road, Raymond	Site visit on 8/30/18.	VRCP	Install infiltration steps at top of walking path	Completed as residential matching grant site.
23	Harry Loring	269 Meadow Road, Casco	Site visit on 6/7/17.	VRC	Install speed bump diverters, water bar, and meandering walking paths.	Completed as residential matching grant site.
24	Jeff Pelletier	72 Lakeside Drive, Raymond	Site visit on 8/28/17.	VRCP	Install roof gutter with drywell, infiltration basin, water bars/stepping stones to stabilize walking path.	Completed as residential matching grant site.
25	Rebecca Romaine	20 Ladyslipper Lane, Raymond	Site visit on 8/10/17.	VRCP	Install water bars and infiltration steps, ECM, and rubber razor water bars on Ladyslipper Lane.	Completed as residential matching grant site.

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	Site # or Landowner	Location	CCSWCD Site Visit	Services Provided (V=visit, R=recs., C=cost sharing agree., P=permit)	Basic Recommendations	Status
26	Seth Murdock	Bumpy Road, Raymond	Site visit on 7/24/18.	VR	Install rubber razor water diverter across road to direct stormwater into existing adjacent vegetation.	Completed as residential matching grant site.
27	Eleanor Sharpe	38 Lakeside Drive, Raymond	Site visit on 7/28/17.	VRC	Recommendations sent via email on 8/14/17. CCSWCD engineer recommended high fescue grass seed mix (like Tuff Turf).	Completed as residential matching grant site.
28	Andrew Watson and Nora Morse	114 Sloans Cove Road, Raymond	Site visit on 8/12/17.	VRC	Install rubber diverter on driveway, water bar at end of driveway, meandering walking path, fencing to allow vegetation to grow adjacent to walkway, infiltration steps at shoreline.	Completed as residential matching grant site.
29	Gloria and Victor Otey	7 Jordan Lane, Raymond	Site visit on 5/24/17.	VR	Verbal recommendations provided during road site visit on 5/24/17 to cover bare area walking path with ECM available from the Town. Small project not likely needing matching grant funds.	Site not addressed during grant project's timeframe / Not eligible as residential matching grant site.
30	Bill and Lisa Bryant	64 Lakeside Drive, Raymond	Site visit conducted on 6/30/17.	VRC	Install water bar, roof dripline trench, and ECM. Emailed recommendations and Cost Share Agreement on 8/17/17. Checked in on 8/30/17 and 7/19/18 yet no response.	Site not addressed during grant project's timeframe.
31	Linda Howard	52 Lakeside Drive, Raymond	Reached out to Linda on 7/24/17 to see if interested in technical assistance per request from Peggy Jensen on 7/23/17 yet no response.	Outreach	None	None

Appendix B:

Panther Pond III Technical Assistance Summary

	Site # or Landowner	Location	CCSWCD Site Visit	Services Provided (V=visit, R=recs., C=cost sharing agree., P=permit)	Basic Recommendations	Status
32	Nancy Crilly-Kirk and Jan Parmalee	9 Fallen Birch Lane, Raymond	Site visit conducted on 7/29/17.	VRC	Install lake access steps, moss/herb seating area stabilization, and infiltration step/water bar walking path on steep hill.	Site to be addressd in 2019 by landscaping contractor.
33	Paul and Alice Crilly	219 and 217 Meadow Road, Raymond	Spoke with Paul on 8/14/17 who had received letter with results from 2014 Survey. Letter stated that rubber diverters need to be cleaned out.	Emailed and mailed factsheet on rubber diverters. Matching grant funds unable to be used for this site as addressing diverters is considered maintenance.		Not eligible as residential matching grant site.
34	Mark Meister	12 Giselle Lane, Raymond	Site visit conducted on 9/7/17.	VR	Add plants to the buffer zone where some larger trees were removed.	Site not addressed during grant project's timeframe. Steering Committee hesitant to use cost sharing funds for replanting areas in which trees had been removed.
35	John Facella	N/A	John expressed interested in site visit at 2017 PPA Annual Meeting. Emailed on 8/23/17 and again on 9/5/17 to set up site visit. On 9/7/17 John emailed that he was too busy to meet in September but would call to set up a time perhaps for the following month.	Outreach	None	None

Appendix B:

Panther Pond III Technical Assistance Summary

	Site # or Landowner	Location	CCSWCD Site Visit	Services Provided (V=visit, R=recs., C=cost sharing agree., P=permit)	Basic Recommendations	Status
36	Sally McLain	11 Cedar Lane, Raymond	Site visit conducted on 8/31/17.	VR	Many great BMPs were already in place yet shoreline erosion was undercutting the bank (a tree that looked ready to fall, and another tree pulling away from the bank was observed). Verbal recommendations provided on installing coconut logs for the undercutting bank.	Site not addressed during grant project's timeframe.
37	Mike Sauter	283 Meadow Road, FL 72, Raymond	Site visit conducted on 8/31/17.	VR	Install water bars to divert water off drive way and infiltration trenches or rain gardens to help infiltrate stormwater.	Site not addressed during grant project's timeframe. Recommendations emailed on 9/29/17 yet matching funds not promised at the time due to previous allocations. Emailed on 10/4/18 to see if interested in addressing site with left-over matching grant funds yet no response.
38	Ray and Marge Parry	66 Lakeside Drive, FL 63A, Raymond	Site visit conducted on 8/31/17.	VR	Install ECM to cover shady areas of bare soil, and install water diverters, infiltration steps and trenches, plants.	Site not addressed during grant project's timeframe. Recommendations emailed on 9/28/17 yet matching funds not promised at the time due to previous allocations. Emailed on 10/4/18 to see if interested in addressing site with left-over matching grant funds yet no response.
39	John Palmer	4 Judges Way, FL 118B (off of River Road/FL 118), Raymond	Site visit conducted on 9/7/17.	VR	Recommendations included more frequent water bars placed across the driveway, plants and or mulch to stabilize slope towards pond, and infiltration steps down to beach.	Site not addressed during grant project's timeframe. Recommendations emailed on 9/29/17 yet matching funds not promised at the time due to previous allocations. Emailed on 10/4/18 to see if interested in addressing site with left-over matching grant funds yet no response.








Appendix B:

Panther Pond III Technical Assistance Summary

	Site # or Landowner	Location	CCSWCD Site Visit	Services Provided (V=visit, R=recs., C=cost sharing agree., P=permit)	Basic Recommendations	Status
40	Marcia Gartley	22 Boulder Road, Raymond	Site visit conducted on 9/13/17.	VR	Recommendations included placing ECM on pathways, installing infiltration trenches along dripline, and installing infiltration steps down to water.	Site not addressed during grant project's timeframe. Recommendations emailed on 9/29/17 yet matching funds not promised at the time due to previous allocations. Emailed on 10/4/18 to see if interested in addressing site with left-over matching grant funds yet no response.
41	Brenda and Jay Cook	50 Lakeside Drive, Raymond	Site visit conducted on 8/3/17.	VRC	Install roof dripline trench, plantings, extension of earthen berm parallel to shoreline, and ECM.	Site not addressed during grant project's timeframe yet some work appears to have been done. Recommendations sent 8/18/17. Checked in on 8/30/17: landowners were busy with home renovations and hadn't started water quality improvements. Checked in again on 8/2/18 with deadline yet no response. Appears landowner have extended the earthen berm as seen during site visit on Lakeside Drive.
42	George Tanguay	211 Meadow Road, Raymond	Site visit conducted on 9/13/18.	VRCP	Retrofit steps into infiltration steps. Material quantities taken from follow-up site visit provided on 10/15/18.	Site not addressed during grant project's timeframe. Checked in on site status on 11/9/18: landowner had not started work, thought we were going to deliver all materials. Worked to get ECM and stone delivered. 11/15/18: Landowner emailed to say ground it too frozen to retrofit steps.






Appendix C:

Panther Pond III Residential Matching Grants

	Name	Physical Address	Basic Recommendations	BMPs Installed	Before	After	Grant	Match	Total
1	Judy Beaupain	1 Jordan Lane, Raymond	Site visit on 6/20/17. Recommendations include water bar diverters, infiltration steps, dripline trench, and native plants.	Installed 8 native plants; Installed 2 water bars and a retaining wall.		NA	\$282.31	\$367.07	\$649.38
2	Kathleen Kroessler	159 Meadow Road, Raymond	Site visit on 8/30/18. Recommendations include installing infiltration steps at top of walking path.	Installed 5 crushed stone infiltration steps at right-of-way.			\$350.00	\$800.00	\$1,150.00
3	Harry Loring	269 Meadow Road, Casco	Site visit on 6/7/17. Recommendations include speed bump diverters, water bar, and meandering walking paths.	Increased size of earthen water diverters along driveway leading to lake per CCSWCD recommendations.	NA	NA	\$0.00	\$234.83	\$234.83
4	Jeff Pelletier	72 Lakeside Drive, Raymond	Site visit on 8/28/17. Recommendations included roof gutter with drywell, infiltration basin, water bars/stepping stones to stabilize walking path.	Installed 3x3x5 drywell at base of steps to absorb stormwater coming off patio and roof; Installed two cubic yards of ECM along steep walkway along north side of house.			\$350.00	\$390.00	\$740.00
5	Rebecca Romaine	20 Ladyslipper Lane, Raymond	Site visit on 8/10/17. Recommendations include water bars and infiltration steps. Temporary erosion control using ECM. Rubber razor water bars on road.	Installed rubber razor water diverter along Ladyslipper Lane; Installed water bar at top of walking path and 1/3 way down path; Installed ECM along walking path.			\$190.45	\$1,188.67	\$1,379.12

Appendix C:

Panther Pond III Residential Matching Grants

	Name	Physical Address	Basic Recommendations	BMPs Installed	Before	After	Grant	Match	Total
6	Seth Murdock	Bumpy Road	Site visit on 7/24/18. Recommendations to install rubber water diverter across road to direct stormwater into existing adjacent vegetation.	Installed rubber razor water diverter.	NA		\$0.00	\$0.00	\$0.00
7	Eleanor Sharpe	38 Lakeside Drive, Raymond	Site visit on 7/28/17. Recommendations sent via email on 8/14/17. Aubrey Strause recommended high fescue grass seed mix (like Tuff Turf).	Installed approximately 50 plants along shoreline; Installed ECM along hand-carry boat launch; Installed sod over bare areas of soil.			\$350.00	\$3,148.97	\$3,498.97
8	Andrew Watson and Nora Morse	114 Sloans Cove Road, Raymond	Site visit on 8/12/17. Recommendations include rubber diverter on driveway, water bar at end of driveway, meandering walking path, fencing to allow vegetation to grow adjacent to walkway, infiltration steps at shoreline.	Installed rubber razor water diverter along driveway at top of property.			\$0.00	\$233.50	\$233.50

Appendix D:

Soil Loss Calculations and Estimates

Total Soil Loss Per Site

Site	Soil Loss (Tons/Year)	Total Pounds of Phosphorus
Site 2017-01: Camp Hinds	2.85	2.42
Site 1-3c: Camp Hinds	2.05	1.74
Site 2-14: Cattle Road	0.32	0.27
Site 5-8 and 5-9: Chickadee Lane	2.64	2.25
Site 2018-01: Lakeside Drive	0.62	0.53
Site B-9: Camp Hinds	1.03	0.88
Site 1-4a: Route 121	0.31	0.27
Site 3-5: 1 Gina Lane	6.73	5.72
Totals	16.55	14.07

Check 16.55

[Click Here for Appendices E-F](#)