

FINAL REPORT

Task #1 Deliverable #6

Maine DEP 319 program: Sheepscot West Branch NPS Control & Habitat Improvement
Project # 2006R-08 December 2007



West Branch of the Sheepscot and its tributaries flow through a varied landscape in rural, rural residential and rural resource of Palermo, Windsor, China and Whitefield. This is a section of the West Branch located along the Tyler Rd. in China. This stream flows through dense forest cover but is also impacted by housing development and many dirt roads throughout the four towns. The West Branch of the Sheepscot, has historically supported a wild population of Atlantic Salmon. Photo by: K. Fiendel

Grantee: Kennebec County Soil & Water Conservation District

Contact: John Blais, Watershed Project Director

KCSWCD, 21 Enterprise Dr. Suite #1

Augusta, ME 04330

Tel: (207) 622-7847 Ext. 3

Project Start Date: May, 2006

Project Completion Date: January 1st, 2008

This project was funded in part by the Maine DEP through a US EPA Nonpoint Source Grant under Section 319 of the federal Clean Water Act

Sheepscot West Branch NPS Control & Habitat Improvement

Grantee: Kennebec County Soil & Water Conservation District

I. Project Overview

The West Branch of the Sheepscot River Watershed is approximately 50 square miles (32,512 acres) and is located in the towns of China, Palermo, Whitefield and Windsor in Kennebec, Waldo, and Lincoln Counties. The watershed is primarily rural with a few areas of concentrated residential development. The West Branch is included on three lists: the Category 1 Central Coastal Basin list; the TMDL list and DEP's Non-point Source Priority Watersheds list. The West Branch of the Sheepscot River has been given high priority by the Environmental Protection Agency (EPA) for total maximum daily load (TMDL) work because of non-point source (NPS) pollution problems.

Prescott Pond is the headwater of the West Branch watershed, located in Palermo. A second branch of the upper watershed begins in a wetland on the Albion/Palermo line. The river flows about 4 miles before entering Branch Pond. Branch Pond is a run of the river pond about two miles long with a dam on the outlet. From the outlet of Branch Pond, the river flows approximately 14 miles to the junction of the main stem of the Sheepscot River in Whitefield. Branch Pond is the major impoundment in the watershed. There are four smaller named ponds including Prescott Pond mentioned above, Moody, Savade and Fox Ponds. In addition, there are five major tributary streams, including Dearborn, Choate, Wingood, Hewitt, and Meadow Brooks and several smaller tributaries. The largest land use in the watershed according to the 1995 CCAP Satellite Imagery¹ is forestry with 70% of the watershed in this land use category. Other land uses include agriculture and grassland (18%), wetland and water (8%), and developed areas (4%).

The entire Sheepscot watershed, and in particular the West Branch, has historically supported a wild population of Atlantic salmon. In recent years there has been a decline in spawning salmon. Atlantic salmon habitat is affected by NPS pollution, such as sediment-laden runoff from roads and crossings, which impact water quality and cause embedded substrate.

¹ More up to date land cover data is not yet available; 2003 aerial photographs are available but have not been analyzed.

² "Atlantic salmon require cool, well-oxygenated streams with coarse gravel beds and suitable water depths and velocities. The proportion and distribution of different land uses within a watershed influence their cumulative effects on these habitat characteristics. Habitat is lost to Atlantic salmon production if dams, road culverts, pollutants, elevated water temperatures, or reduced stream volume block or delay adult passage to spawning areas. Habitat area and quality are reduced when water is withdrawn during low flow periods. Sediment eroded from roads, cleared and developed land, agricultural fields and pastures, and poor forestry practices fills spaces in gravel streambeds, reducing productive capacity. Excessive nutrients increase aquatic plant growth, changing streambed characteristics." Maine Atlantic Salmon Conservation Plan 1997 (*Ref. 5*).

Maine DEP has assigned the West Branch the highest water quality goal, “AA”. The West Branch is not attaining this standard and is therefore listed on DEP’s NPS Priority Watershed List as well as the TMDL List and a number of other listings in various agencies. The Sheepscot River Water Quality Monitoring Strategic Plan (Ref.1) found the West Branch to be one of eight sections of the Sheepscot (of 28) that exhibit poor water quality. Persistent low dissolved oxygen (DO), high phosphorus (TP), high turbidity (sediments) as well as thermal stress in some locations is impairing the living conditions for salmon and other aquatic organisms.²

The purpose of this project was to improve water quality in the West Branch watershed by reducing sediment loading through non-point source (NPS) pollution reduction activities (20 sites) a total of 26 BMP sites where completed throughout the watershed over the last two years. We provided specialized training for towns in road maintenance with the help of Maine DOT Local Roads program and provided many site visits with town public works and road commissioners within the town of China, Palermo and Windsor to discuss and explain the importance of road maintenance and how poor maintenance leads to high maintenance cost and non-point source pollution. We also provided a workshop focused on permitting and culvert replacement within the watershed with the help from state and federal agencies.

Water quality monitoring for the assessment of the NPS work and future approaches to water quality enhancement was completed in the summer 2006 & 2007 by SVCA. The reports show that both high bacteria and low dissolved is still an issue within the watershed and non-point source pollution is the number one cause. We feel the monitoring program should move into areas of more focus. To the areas of high bacteria counts and low dissolved oxygen a new turbidity study and final analysis of the 15 years of data collecting would be recommended after the year 2008.

Overall, the district feels that relationships within communities have been established by the public outreach it has performed. This cultivated interest will continue the enhancement of water quality protection and road maintenance. The project was a success and we feel the district will provide a critical link for future water quality enhancement, gravel road work and Best Management Practices (BMP’S), within the watershed.

II. Task Summary

The following tasks were the responsibility of the KCSWCD.

Task 1, Project Management

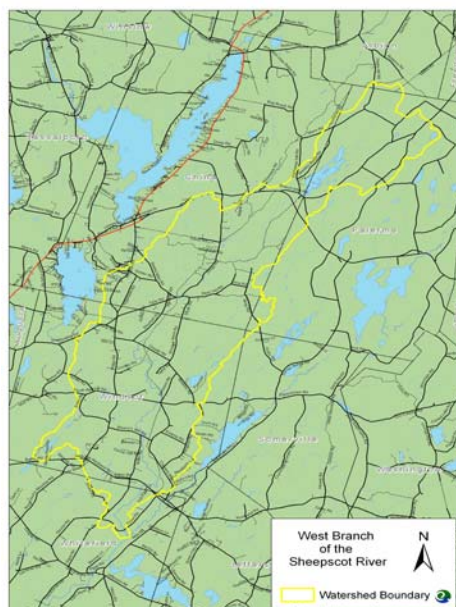
Work plan: Sign contract with DEP, LOA with Sheepscot Valley Conservation Association (SVCA), semi-annual progress reports and final project report to DEP

Completed: All of the above. Detailed in deliverables list below.

Remarks: Agreements are fulfilled. KCSWCD was active in keeping MDEP up to date on issues within the project task. No serious issues to note.

Task 2: Publicity & Outreach

Overview: Most of the outreach was focused on individual assistance to towns and the town training events (see Task 3). In addition, there was general project outreach and publicity. We wrote the outreach letter to the individual towns. Project implementers took advantage of other opportunities to inform the watershed residents of the project, e.g., presenting at monthly public meetings hosted by watershed groups (the SVCA, SRWC) and written publicity in the bi-monthly District newsletter. The District's mapping software (GIS) was used on a routine basis to aid in town discussions, public presentations and publications. See map of watershed on this page.



A. Outreach to Towns:

Work plan: An initial visit by KCSWCD staff with town managers in each of the four towns in order to re-introduce the project to town management, invite participation in the several tasks, introduce the towns' to the utility of GIS to NPS management, and schedule next steps in the project. Future contact with the towns will fall under Task 3: Technical Assistance.

Completed: Marketing letters to the towns of Windsor (2), China, Windsor, Palermo and Whitefield to describe grant guidelines and identify areas of possible BMP sites. Created a GIS Map of watershed to identify NPS locations and project area. This map was used in many meeting with towns, SVCA and The Sheepscot Watershed Council. We also direct called all the towns in the summer of 2007 to remind towns we still had some grant money available. These calls landed the district with site visits made in the Towns of Windsor and Palermo.

Remarks: Even though we had completed outreach to many towns only one town participated in the 319 grant program. The towns who didn't participate had issues that were mostly too large in scope and service that our 319 program could provide.

B. Outreach to the Public:

Work plan: The project was to be announced to the public via press release and news articles. Press releases will attribute the grant funding to the EPA. Project Coordinator will make brief presentations at public town meetings in each of the four towns at least twice in the course of the project.

Completed: Press releases/news paper articles on four different occasions. To include: 8/5/06 Town to Explore New Boat Landing, 11/14/06 Rocky Roads Get More So, 12/23/06 Rutted Roads a problem for town. News Release June 12, 2007. Meeting with the town of Palermo & Windsor was completed in January of 2007 & July of 2007 and a meeting with the town of Windsor on October 15, 2007 to discuss potential projects. A final meeting was held with town of Palermo to discuss an issue on Marden Hill Rd. This meeting led to the final cost share in 2007.

Remarks: All public outreach was welcomed by the communities. It did strike-up CSA agreements in Palermo and bring attention to the non-point pollution site on Branch Pond (Grange/Boat Launch Article). KCSWCD did initiate conversation with the grange and with possible additional funding agency (Maine Department of Conservation-Boating Facilities Program) unfortunately, both avenues did not work out to fix NPS site. KCSWCD did provide needed public outreach to all communities in the watershed. Our focus was gravel road maintenance and permit requirements around road improvements. We provided the town of Windsor with cost estimates for culvert replacements, permitting requirements and bmp controls for in-stream construction.

Task 3: Technical Assistance

Task 3A. Technical Assistance to Towns: Technical assistance to towns will be comprised of three types of activities:

Work plan: The Maine DOT Local Roads Center will offer the towns assistance in road management through their regular training programs as well as on-site consultation.

Completed: Presentation by Phil Curtis "Maine's Road Ranger" Maine Local Roads Center

- 1.) October, 2006 5 people attended
- 2.) November, 2006 5 people attended
- 3.) June 16, 2006 15 people attended
- 4.) July 22, 2006 6 people attended

Remarks: Phil Curtis worked with towns of Palermo, Windsor and China on topics such as ditching, crowning, grading and BMP installations. All of these road maintenance issues if implemented lead to less non-point source pollution in the West Branch Watershed.

Work plan: KCSWCD to coordinate 2 town-training events on road work for water quality and when and where towns and other landowners need to contact government agencies for permits.

Completed: Permitting Culvert Workshop July 26, 2007

Remarks: Only one District lead town training event took place regarding road work, culverts and permitting, but we did offer it to all the towns within the watershed and had attendance of over 23 people. Presenters included; KCSWCD, MDEP, IF&W, MDOT, BSR Fisheries and US Fish & Wildlife. The workshop was well received by many people. Through this training we have identified culverts as a major source of habitat loss for cold water species and have been encouraging towns to replace culverts that are creating barriers.

Work plan: Technical assistance to towns for the purpose of site prioritization and cost-share development is an activity attached to BMP implementation and is therefore included in the budget of Task 3.

Technical assistance (site assessments) that does not result in implementation of a BMP will nevertheless be documented in the Final Report in terms of number of such visits, kinds of NPS problems, and reasons why BMP not implemented (e.g., non-priority site, lack of interest from landowner, too costly)

Completed:

Landowner/rep	Year	Location	Problem Description/Assistance Given
To Windsor	20	Griffin Road	Failing Culvert on Griffin Rd. / Cost estimates and different options. (5 different Options) Result: Too expensive
Town of	2006	Choate Road	options. Result: MDOT ROW/town not willing to participate.
Town of	2006	Shuman Road	culvert/armor culvert fix bent culvert. Result: Not high priority.
Town of	2006 &	Grange Site	Options on replacement/BMPs and funding opportunities. Grange not interested.
Town of	2006	General Permitting	in the Sheepscot watershed.
Town of Palermo	2006	Banton Road	was outside of grant area.

Remarks: Good working relationships have been established with the towns of Palermo & Windsor. We feel when it comes to proper bmp installation, gravel road repair, estimation and permitting we are a valuable asset to protecting the resources around the West Branch watershed.

Task 3B. Technical Assistance to Private Landowners:

Work plan: Technical assistance to private landowners for the purpose of site prioritization and cost-share development is an activity attached to BMP implementation and is therefore included in the budget of Task 3. Technical assistance (site assessments) that does not result in implementation of a BMP will nevertheless be documented in the Final Report in terms of number of such visits, kinds of NPS problems, and reasons why BMP not implemented (e.g., non-priority site, no BMP needed, lack of interest from landowner, engineering constraints, too costly)

Completed:

Landowner/rep	Year	Location	Problem Description/Assistance Given
Branch Pond Lake Association	2007	ated Camps on the Branch Pond	Eroding banks, lack of buffers, camp driveway eroding, Handouts on buffers, cost estimates and site visits. One cost share was developed by the

Remarks: Only limited contact was made with private landowners because of the lack of defined ownership of the watershed. We felt the bulk of the NPS problem was with the town infrastructure (gravel roads) so that is where our efforts were geared towards.



A successful BMP implementation on Dinsmore Lane on Branch Pond
New culvert, level-lip spreader and ditch to divert channeled flow away from pond

Task 4: BMP Implementation

Work plan: KCSWCD staff will work with town officials and contracted engineer as need be to prioritize the candidate sites, finalize cost-share agreements with towns or other landowners, and implement the BMPs. Depending on cost of individual sites, construction work will be completed at an estimated 15-20
FINAL REPORT: Sheepscot West Branch NPS Control & Habitat Improvement
(Maine DEP 319 Program, Project #2006R-08)

road sites in the West Branch. Towns are Palermo, China, Windsor and Whitefield. KCSWCD will coordinate with neighboring Soil & Water Conservation Districts to work in the two other counties. Deliverables: BMP reports + photos, list of completed sites, record of site visits/consultations; pollution reduction reports. **The table on the next page list all completed BMP sites, private & public.**

Landowner	Location	Type of Work	# Sites	Shoreline/ streambank protected (feet)	Tons sediment	Pounds phosphorus; Pounds nitrogen	319 payment (\$)	Match (\$)	Total cost (\$)
Town of Palermo	Rowe Rd.	3,000 feet of road work. Ditching, culverts (6) with armored inlets and outlets. Trib. to West Branch received sediment every year.	12	n/a	1.59	1.59/3.18	21,500.00	50,530.16	72,030.16
Town of Palermo	Marden Hill Road Phase II	500 ft. of rebuilt road, one new culvert with armored inlets and outlets. Tributary to West Branch received sediment every year.	3	n/a	1.06	1.06/2.12	7,466.03	1,866.31	9,332.34
Town of Palermo	Nelson Lane	1,100 ft. of rebuilt road, (2) new culverts, Tributary to West Branch Received sediment every year.	2	n/a	0.40	.40/.80	8,000	21,949.25	29,949.25
Town of Palermo	Marden Hill.	Culvert Replacement, stream stabilization and armored ditch. Large hill with gravel road dumping surface runoff into Tributary to West Branch.	1	50	1.5	1.5/3.0	4,000	4,176.10	8,176.10
Sheepscot Valley Conservation Association	Whitefield Salmon Preserve/Whitefield	MCC Trail Crew work-Erosion mitigation to tributaries of the West Branch. Bog bridges, shoreline stabilization, plank spans and stone stepping stones	9	50	No proper model to run.	No proper model to run.	3,650	2,546	6,196
Dinsmore Lane	Palermo	Road crown, culvert and level-lip spreader	1	n/a	.003	.003/.006	863.70	575.80	1439.50
TOTALS			28	100	4.55	P=4.55, N=9.1	\$45,479.73	\$81,643.62	\$127,123

Task 5: Water Quality Monitoring

Work plan: KCSWCD will enter into an agreement with SVCA to provide a volunteer water quality monitoring program in the West Branch for the 2006 and 2007 field seasons. The scale of the program and the protocol for water sampling and analysis will be consistent with the program as it was reported in the 2004 report (Ref. 4). According to past practice of the SVCA, the West Branch data will be included in the overall report for the Sheepscot. However, a separate West Branch report, with brief analysis of the data, will also be delivered to KCSWCD at the completion of the monitoring season, in time for submittal of KCSWCD's report to DEP. SVCA and KCSWCD will also assemble 2006 and 2007 water quality data collected by governmental agencies, as time allows. The SVCA will update their programmatic QAP and write a SAP for the West Branch project. These plans must be reviewed and approved by DEP before field work begins in spring of 2006.

Completed: Sheepscot Valley Conservation Association (SVCA), completed two successful seasons of water quality monitoring on the West Branch of the Sheepscot. They completed two years of testing, monitoring 30 sites, including 7 on the West Branch. This work was done using 35 volunteers, many which participated in the two year effort.

The SVCA water quality monitoring program also received Maine Department of Environmental Protection approval for its Quality Assurance Program in 2006. The number of testing sites, protocol, testing has remained constant for the two years.

Remarks: The SVCA water quality monitoring program has documented over the last 15 years of water quality monitoring. Results show, that both high bacteria and low dissolved oxygen is still an issue within the watershed and non-point source pollution is the number one cause. More focused research is needed to pinpoint the impacts.

Task 6: Estimating Pollutant Load Reduction

Work plan: Annual Pollutants Controlled Report (PCR) submitted Dec. 2006 and Dec. 2007

Completed: Year-end Pollutants Controlled Reports (PCRs) were submitted for 2006 and 2007. Total estimated load reduction: 9,100 pounds of sediment, 4.55 pounds of phosphorus & 9.1 pounds nitrogen.

Remarks: Estimation methods used included: Region 5 Spreadsheet model/streambank/urban Runoff; WEPP/Roads.

III. Deliverables Summary

Summary of deliverables from the Sheepscot West Branch NPS Control & Habitat Improvement Project

Deliverable	Date Submitted	Value- High/Med/Low
1. Signed grant agreement & sub-agreement	DEP signed 3/15/06 LOA w/SVCA Signed 4/26/06	High. Necessary item.
2. Record of attendance at public events & all outreach materials.	Press Release June 16, 11/16/07 Meeting with Palermo & Windsor updates July 25, 2007, 11/16/07 SRWC Minutes, 11/16/07 Road Ranger Training, 11/16/07 Permitting Training, 11/16/07 Site Visit Log 11/16/07 Outreach Letter, Town of Windsor 6/8/07 Project Announcement Letter towns of China, Windsor, Palermo and Whitefield 6/8/07 Articles in Kennebec (3) 6/8/07 Project Announcement (2) 6/8/07	High. Good to generate interest in project & good information on maintaining roads, permitting and BMP Installation.
3. NPS Site Reports	SVCA 12/3/07 Palermo, Rowe Rd. 11/20/07 Marden Hill Rd II. 11/20/07 Nelson Lane. 11/20/07 Dinsmore Lane 11/20/07 Marden Hill Culvert 11/20/07 (total 28 sites)	High- shows results of BMP's Implemented.
4. Annual Pollutants Controlled Report (PCR)	PCR 12/28/07, 12/10/07	Med- Good overview of sediment, phosphorus and nitrogen reduction.
5. Updated QAPP Summary	Addendum to water quality monitoring. 11/16/07 Updated QAPP 11/14/06	Med- Good Science based information/data
6. Semi-Annual Reports (SARs) Final Project Report	SAR 5-06 SAR 11-06 SAR 5-07 SAR 11-07 Date of this report for final	Med. Some of the reporting seems redundant. (SAR) High- Thorough overview of entire project. (final)

IV. Project Outcomes

Major Outcomes

Community outreach and education was fairly strong in this project. We accomplished all of the publicity and outreach activities that were set out in the work plan. Connections were made with State and Federal regulators and the town representatives who are seeking permits within the watershed. The options for site mitigation, stream restoration, road maintenance will be further continued by towns within the watershed.

We exceeded our goal for number of sites with BMP installations. (28 completed of 20 planned).

Environmental Results

As a result of best management practices (BMPs) implemented at 28 sites, the total pollutant load reduction was: 4.55 tons sediment, 4.55 pounds phosphorus, 9.1 pounds nitrogen. An estimated 4,600 feet of road was reconstructed which protects miles of the West Branch of Sheepscot and its tributaries.

Lessons Learned

There is still a need to provide small towns with limited funds assistance with road maintenance, technical assistance and BMP Installations. This program was an important link to implement proper road maintenance, permitting requirements and BMP installations over the last two years.

V. Summary of Total Expenditures

Table 3. Actual expenses of the Sheepscot West Branch NPS Control & Habitat Improvement 319 project (2006-2007)

	<u>NPS Grant</u>	<u>Non-Federal Match</u>
Grant Agreement Amount	\$79,330.00	59,550.00
Funds Expensed	\$77,943.42	87,451.42
Funds Balance	\$1, 386.58	+27,901.42

VI. Non-Federal Match Documentation/Certification

Match was calculated as follows:

Actual cash payments from landowners to their contractors/suppliers for cost-share site work was verified by receipt of an itemized bill from the contractors/suppliers. The grant contribution was subtracted from the total cost of construction and this amount was recorded as cash match by landowner last name. (See attached table.) The notation 'CSA' means cost-share agreement. Volunteer time was assigned the following values: \$10/hr for hand labor (e.g., planting, placing stone, etc.). Professional time was assigned one low estimate of \$20/hr. Professional time includes attendance at meetings. These two rates were chosen as low-end averages for the many types of manual and professional work descriptions listed by the Maine Commission for Community Service. Using these rates ensures that our match reporting is conservative. The match log is attached to this report.

ATTACHMENTS:

Match Certification

Match Log

Photos of Selected Sites.

Match Certification

Sheepscot West Branch NPS Control & Habitat Project (Maine DEP Project #2006R-08)

GRANTEE INFORMATION:

Name: Kennebec County Soil & Water Conservation District

Address: 21 Enterprise Drive, Suite #1
Augusta, ME 04330

Telephone: (207) 622-7847 X3

Contact: Dale Finseth John Blais
Executive Director Watershed Project Director

PROJECT INFORMATION:

Project ID: Sheepscot West Branch NPS Control & Habitat Improvement
(Maine DEP 319 Program, Project #2006R-08)

Match amount planned under the Grant Agreement: \$59,550

Match amount claimed: \$87,451.42

CERTIFICATION STATEMENT:

I certify that the non-federal match detailed in the attached information were expended in the course of completing work described in the Grant Agreement for the Project referenced above, and that detailed documentation of the match information is on file and available for review at the Grantee address shown above.

s/Dale Finseth

12/10/07

Dale Finseth, Executive Director

Date

Sheepscot West Branch NPS Control & Habitat Improvement (Maine DEP #2006R-08)

Photo Log: Selected BMP Sites

BEFORE

AFTER



Severe pot holes on Marden Hill Rd. Sediment entering tributary to the West Branch



Road crowned, pot holes eliminated less sediment entering the tributary to the West Branch



Failing culvert which leads into the tributary of the West Branch on Marden Hill Road. The culvert is blocked and sediment is carried over the culvert in a rain event.



New HPPE culvert pipe. Road is not being over topped and carrying sediments in the tributary.



Large failing culvert which leads into the tributary of the West Branch on Marden Hill Road. The culvert is blocked and sediment is carried over the culvert in a rain event. Also no armored apron is present to take channelized flows from the roadway.



New HPPE culvert pipe and rock apron. Erosion is eliminated.



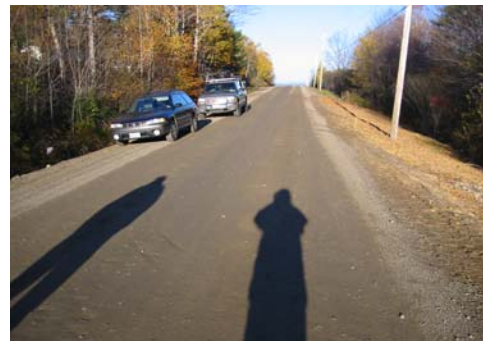
Different view Large failing culvert which leads into the tributary of the West Branch on Marden Hill Road. The culvert is blocked and sediment is carried over the culvert in a rain event. Also no armored apron is present to take channelized flows from the roadway.



New HPPE culvert pipe with armored inlet and outlet.



Nelson lane with lack of ditch and road berms, and roadway with no crown with excessive potholes which leads to excessive erosion into unnamed tributary to West Branch.



Roadway with ditch, crown and no apparent erosion.



Different view of Nelson lane with lack of ditch and road berms, and roadway with no crown with excessive potholes which leads to excessive erosion into unnamed tributary to West Branch



Roadway with ditch, crown and no apparent erosion

