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Watershed Survey and Pilot LCC Project

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Three Ponds Protective Association

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THREE PONDS PROTECTIVE ASSOCIATION

Watershed Survey and Pilot LCC Project

A Final Report to

The Piscataqua Region Estuaries Partnership

Submitted by

Norman Turgeon

Three Ponds Protective Association

Milton, NH

December 4, 2010

*This Project is funded in part by a grant
from the Piscataqua Region Estuaries
Partnership, as authorized by the US
Environmental Protection Agency's National
Estuary Program*



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ABSTRACT

This describes two projects accomplished in 2010 by the Three Ponds Protective Association (TPPA) and several partners to identify and reduce soil erosion due to storm water runoff into the Milton Three Ponds.

EXECUTIVE SUMMARY.

A watershed survey of the Depot Pond and a soil erosion reduction project at the Milton Town Beach were completed in 2010, as part of a comprehensive watershed-based Lake Management Plan for the Milton Three Ponds of Milton NH and Lebanon ME.

These projects were funded in part by a grant from the Piscataqua Region Estuaries Partnership (PREP)

The watershed survey was accomplished by TPPA member volunteers assisted by professionals from NH DES, ME DEP, York County Soil and Water Conservation District, and UNH. The professionals served as surveyor trainers, survey team leaders, and technical reviewers.

The soil erosion project was accomplished as a pilot Lake Conservation Corps (LCC) project. It consisted of installing three rain gardens, a water retention basin, and two sets of infiltrations steps. Much of the work was done by a team of students from Nute High School.

Partners who participated in the soil erosion project included New Hampshire Lakes Association, Nute High School, and the Town of Milton Public Works Department.

INTRODUCTION

About 18 years ago, a group of Milton residents concerned with the quality of the Milton Three Ponds began to analyze water samples as part of the University of New Hampshire Lay Lakes Monitoring Program. The purpose was to develop a database from which trends in water quality could be determined and sources of problems identified and corrected.

By the spring of 2005 it had become evident that the quality of the ponds was in decline. At that time, residents of Milton NH and Lebanon ME formed TPPA, an all volunteer nonprofit corporation dedicated to protecting the quality of the Milton Three Ponds.

The biggest threats to the quality of New Hampshire's and Maine's fresh water bodies are invasive aquatic plants and nonpoint source pollution, especially that caused by soil erosion due to storm water runoff.

To deal with these threats TPPA developed a comprehensive watershed-based Lake Management Plan whose elements include:

- Continuation and expansion of water sampling
- Weed monitoring to provide for early detection of invasive aquatic plants
- Boat launch inspections to ensure incoming boats are free of invasive plants
- Watershed surveys to identify sources of soil erosion.
- Soil erosion reduction projects

PROJECT GOALS AND OBJECTIVES

The Milton Three Ponds consist of three interconnected ponds named Townhouse Pond, Depot Pond, and Northeast Pond. A survey of the Townhouse Pond watershed in 2009 had

previously identified the Milton Town Beach as serious soil erosion site due to storm water runoff.

Hence, two of TPPA's goals for 2010 were to:

1. Complete a watershed survey of the Depot Pond and the channel that connects the Depot Pond to the Northeast Pond.
2. Accomplish a significant soil erosion reduction project on the Milton Town Beach as a pilot LCC project.

ACTIVITIES

Watershed Survey Activities.

The survey was conducted in accordance with a formal Quality Assurance Program Plan (QAPP), which had been developed for the 2009 survey of the Townhouse Pond watershed. Activities included:

- Publicize the survey in the Rochester Times.
- Send a survey notification letter to all watershed property owners (Appendix 1).
- Recruit volunteer surveyors.
- Hire professionals from NH DES, ME DEP, York County Soil and Water Conservation District, and UNH to serve as surveyor trainers, survey team leaders, and technical reviewers.
- Collect data in accordance with the QAPP.
- Prepare fact summary sheet (Appendix 2) and formal survey report.

Town Beach Project Activities

The work at the Town Beach was accomplished as a pilot project, preparatory to eventually establishing a LCC program at the Milton Three Ponds. Project activities included:

- Design work, assisted by a professional wetlands landscape designer.
- Develop a Project Plan for PREP approval (Appendix 3).
- Select LCC students under the sponsorship of Nute High School's Extended Learning Opportunities Program.
- Work with New Hampshire Lakes Association who served as the students' administrative employer, and provided training materials and consultation services.
- Provide classroom training and hands-on water sampling training for the students.
- Obtain approval from Milton Board of Selectmen to accomplish the project on town property. The Board agreed to donate the use of Public Works Dept. heavy equipment for the excavation work.
- Recruit volunteers to help accomplish the project.
- Order and schedule material deliveries.
- Publicize the project in the Rochester Times.
- Design and construct an interpretive sign located on the project site.
- Accomplish the project.

FUNDING

The total value of the two projects was \$31,262 as detailed in **Table 1** and **Table 2**.

Table 1 - Costs broken down by Project and Category

<i>Category</i>	<i>Project</i>		
	Watershed Survey	Town Beach	Totals
Volunteer Value	\$6,471	\$6,987	\$13,458
Contractual	\$2,335	\$4,138	\$6,473
Supplies/Materials	\$609	\$7,198	\$7,807
Equipment	\$0	\$4,075	\$4,075
Total	\$9,415	\$22,398	\$31,813

Table 2 - Funding Sources

Source	Amount	Comment
TPPA Funds	\$6,280	
PREP Grant Funds	\$8,000	The grant award was based in part on the fact that Milton NH and Lebanon ME are part of the Piscataqua-Salmon Falls Watershed, and these projects will contribute significantly to achieving several goals and objectives of the PREP Management Plan
TPPA Volunteer Hours	\$13,458	Valued at \$20.25/hour
Donated Equipment Use	\$4,075	Loader, Excavator, Dump Truck and Tractor
All	\$31,813	

OUTCOMES AND PLANS FOR FUTURE WORK

The watershed survey data gathering work was completed on 12 June 2010. A two-page summary report is included as Appendix 2. The full survey report may be viewed on the TPPA's website, www.threeponds.org.

The pilot project was completed over a four-week period starting on 2 August 2010. It consisted of three rain gardens, a water retention basin, and infiltrations steps. Photos are provided as Appendix, 4.

TPPA plans to conduct a survey of the Northeast Pond watershed, and subject to availability of funding partners, begin implementing a Lake Conservation Corps in 2011.

APPENDICES

1. Survey notification letter sent to watershed landowners.
2. Milton (Depot) Pond Watershed Survey Summary Fact Sheet
3. Project Plan for Stormwater Treatment at Milton Town Beach
4. Town Beach Project Interpretive Sign
5. Town Beach Project Photos

May 5, 2010

Dear Landowner

As you are no doubt aware our Milton Three Pond water quality has decreased in recent years and the need to take corrective action has become critical. This letter is a notification of the second stage of an effort to take such action. On June 12 of this year the Three Ponds Protective Association (TPPA) will start conducting a second watershed survey, this time along the Salmon Falls River channel and Depot Pond in both New Hampshire and Maine.

The purpose of the survey is to locate erosion sites on the land, roads, and developed areas around the lakes that may be impacting the water quality and therefore decreasing your property values. Our first watershed survey of Townhouse Pond in May 2009 gave us a picture of what needs attention there. The Townhouse pond survey results can be found on the TPPA website at www.threeponds.org.

We plan to include your land in the survey of the Salmon Falls River channel and Depot Pond watershed; but **if you do not want us to cross your land** please notify Norm Turgeon, TPPA President, by calling at (603) 652-7863 or email at normturgeon@metrocast.net. **If so, we will respect your wishes and not cross your property lines.** We want landowner participation to be purely voluntary

TPPA is not a regulatory agency, and the information we gather during the survey will not be used for enforcement purposes or finger pointing. Rather, it will be used to identify erosion issues, give us a better handle on the extent of problems, and enable us to acquire grant funds to help fix problems.

Locally led watershed surveys such as this have been used successfully on neighboring lakes throughout Maine and New Hampshire to document threats to water quality. The success of our effort will depend on the willingness of residents to allow us to survey their properties, and also on the number of people who volunteer to be surveyors.

In this connection, we need even more volunteer surveyors than we had last year. Please volunteer to be a surveyor by contacting Mike Dubois by phone (603)-652-9487 or email jmdubois@metrocast.net. No prior experience is necessary as all surveyors will receive training on the day of the survey. By the way, all previous surveyors reported they enjoyed the experience.

Thank you in advance for your cooperation and participation in this effort. It is your property values, your community's future and the enjoyment of our lakes that is at stake.

Sincerely

TPPA Board of Directors:

Norm Turgeon, Mike McDonnell, Steve Baker, Linda Dame, Wayne Sylvester, Mike Dubois, Bob Myrick, Jeff Everett, Heidi Ford, Emery Booska



Milton (Depot) Pond Watershed Survey Summary Fact Sheet

BACKGROUND:

Milton Pond is one of three waterbodies which makes up the Milton Three Ponds watershed; Northeast Pond, Milton Pond and Townhouse Pond. Milton Pond is known locally as Depot Pond. It is broken into two segments, Depot Pond and "The River" which is the channel portion that flows from the outlet of Northeast Pond. The watershed (all of the land that drains to Depot Pond) is 1,929 acres (3 square miles) and is split by State lines in Milton, New Hampshire and Lebanon, Maine.

Depot Pond's water quality is the highest of the Milton Three Ponds but has been declining over the past 18 years since testing began. The greatest threat to water quality in Depot Pond, and the likely cause of this drop in water quality, is *soil erosion*.

- Soil contains the nutrient phosphorus, which has the potential to promote algae blooms when it enters a lake in large quantities. Just one pound of phosphorus can produce up to 1,000 pound of algae!
- Algae blooms also turn water green, decreasing water clarity and making the waterbody virtually unusable. Studies have shown that as water clarity decreases, property values also drop.



Examples of Identified Erosion Problems

WATERSHED SURVEY:

On June 5th, 2010, a team of 23 volunteers and trained technical staff from the Three Ponds Protective Association (TPPA), Maine Department of Environmental Protection (DEP), New Hampshire DES, York County Soil and Water Conservation District (YCSWCD), and the Acton Wakefield Watersheds Alliance (AWWA) conducted a watershed survey on Depot Pond.

Using cameras and standardized field data sheets, the teams documented stormwater runoff sites from areas with the following land use: state and town roads, right of ways (ROW), residential properties, driveways, municipal and public lands, construction sites, commercial properties as well as boat and beach access areas.

Teams also made recommendations to remediate each source of NPS erosion using BMPs (Best Management Practices). All of the NPS sites were assigned an impact (high, medium or low) based on the potential impact and also were also given a cost estimate (high, medium, or low) to fix the problem.

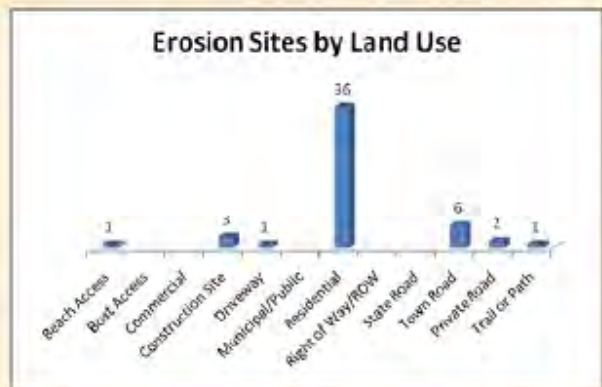
Results and recommendations were compiled in the *Milton (Depot) Pond Watershed Survey Report*.

KEY SURVEY RESULTS:

Volunteers and technical staff identified 50 sites in the watershed survey that were either impacting or had the potential to impact water quality. Results closely paralleled those from Townhouse Pond where residential sites accounted for the largest number of sites impacting the Pond:

- 36 of the identified sites (72%) were found on residential properties. Over half of these sites have a low impact on water quality and will be inexpensive to fix (less than \$500) with little technical expertise required.
- 8 of the sites identified (16%) are associated with roads: state, town, and private. These sites tend to have a more severe impact on the lake with higher associated costs (greater than \$2,500) and required technical knowledge.
- Construction sites accounted for 3 of the sites identified (6%). With recent economic struggles, it is not uncommon for construction projects to be delayed or abandoned midstream. Erosion and sediment controls that were established prior to breaking ground are often not maintained leaving large areas of exposed soil vulnerable to the elements.

Project Partners:
 Three Ponds Protective Association
 Town of Milton, NH
 Town of Lebanon, Me
 New Hampshire DES, Maine DEP
 Acton Wakefield Watersheds Alliance
 York County SWCD
 Piscataqua Region Estuaries Partnership



Ten different land uses were identified in the survey. Thus, no single source is responsible for pollution of the Pond, and all parties need to be involved in protecting the water quality. Every land use has aspects that can be improved and there are a number of resources available to aid in this improvement.

NEXT STEPS:

- Send letter offering technical assistance to property owners and the Town with identified erosion problems encouraging them to make improvements.
- Make copies of the survey report available and provide educational materials and guidance to members of the Depot Pond watershed community.
- Apply for grants to help fix erosion problems identified in the survey.
- Continue to promote the Lake Host, Weed Watch, and other water quality monitoring programs
- Host a meeting and/or workshop with presentations by New Hampshire DES and University of New Hampshire to educate property owners about the Comprehensive Shoreland Protection Act and publications such as "Landscaping at the Water's Edge" for landowners and landscapers.
- Contact TFWA to learn more about the upcoming Northeast Pond watershed survey in 2011. Lend a hand and learn how to fix problems on your own property!

FOR MORE INFORMATION:

Three Ponds Protective Association www.threeponds.org P.O. Box 1242 Milton, NH 03851	Sally Soule New Hampshire DES sallysoule@des.nh.gov 603-559-0032	Wendy Garland Maine DEP wendy.garland@maine.gov 207-822-6000	Joe Anderson York County SWCD janderson@yorkswcd.org 207-324-0888
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This Project is funded in part by a grant from the Piscataqua Region Estuaries Partnership, as authorized by the US Environmental Protection Agency's National Estuary Program



THREE PONDS PROTECTIVE ASSOCIATION

**Project Plan
for
Stormwater Treatment
at
Milton Town Beach**

Prepared by:

Norman Tugeon

TPPA President and Board Member

Date: June 10, 2010

*This Project is funded in part by a grant from the
Piscataqua Region Estuaries Partnership, as
authorized by the US Environmental Protection
Agency's National Estuary Program.*



Project Plan for Stormwater Treatment at Milton Town Beach

10 June 2010

OBJECTIVE

The objective of this project is to reduce soil erosion due to stormwater runoff at the Milton NH Town Beach using Best Management Practices (BMPs), namely rain gardens, infiltration steps, and a vegetated retention basin.

DESIGN SPECIFICATION

The rain gardens, infiltration steps, and vegetated retention basins shall be installed as specified in the Town Beach Project Design Package, Attachment (1).

PERMITTING

In accordance with the New Hampshire Comprehensive Shoreland Protection Act, a permit from New Hampshire Department of Environmental Services is not required since the grading and excavation work using heavy equipment will occur outside of the protected Shoreland district.

A construction permit will be obtained from the Milton Code Enforcement Officer, if required. The Milton Board of Selectmen has waived the fee for this permit.

INTERPRETIVE SIGN

A sign will be erected on the Milton Town Beach to describe the project and its purpose. This sign shall be similar to that shown in Figure 1.



Figure 1 -- Town Beach Project Interpretive Sign

Project Plan for Stormwater Treatment at Milton Town Beach**10 June 2010****WORK PLAN**

This will be a pilot Lake Conservation Corps (LCC) project, with the work accomplished by a team of students from Nute High School led by a high school teacher, and supported by TPPA adult volunteers and the Milton NH Public Works Department.

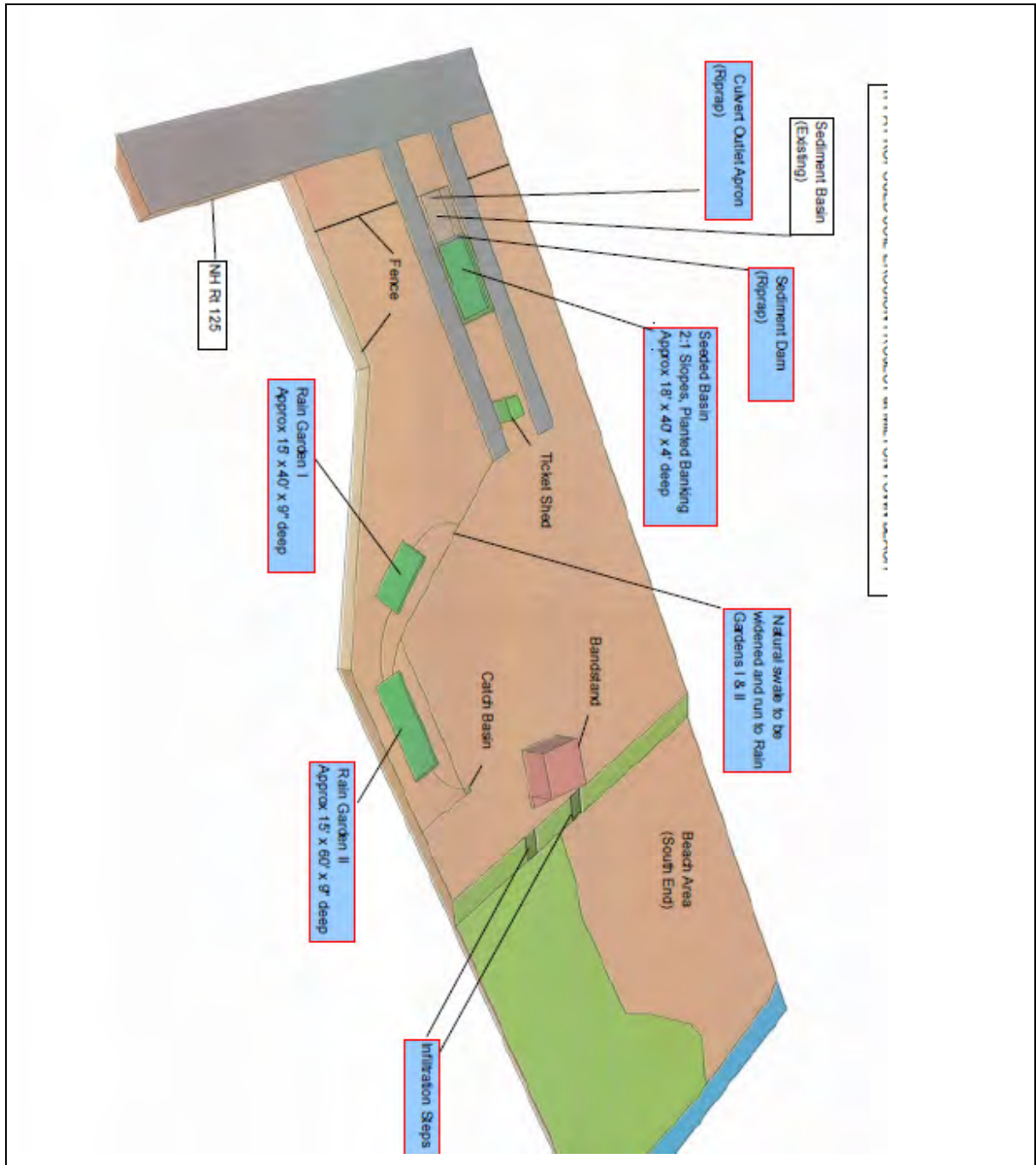
The excavation, grading, planting soil preparation, and fill work will be accomplished during weekends between 17 July and 1 August. This work will be done by TPPA volunteers and the Milton NH Public Works Department. Infiltration step construction, rain garden planting, and vegetated basin seeding and planting will be done by the Nute High School team and TPPA volunteers between 2 August and 21 August.

MAINTENANCE PLAN

The Town of Milton NH Recreation Committee and Public Works Department will be responsible for maintenance of the rain garden, filtration steps, and vegetated retention basin.

ATTACHMENTS

(1) Town Beach Project Design Package



Attachment 1 – Page 1

PLANT LIST

1. New Seeded Basin:

Conservation seed mixture for maintenance (mowing).

Basin edge could be planted with shrubs and perennials such as in Rain Gardens below.

2. Rain Gardens I & II:

Note: Plants and plant arrangement to be as specified on drawing previously presented to Board of Selectmen, namely:

Code	Qty	Genus	Species	Common Name	Size
Shrubs:					
AR	3	Aronia	arbutifolia	Red Chokeberry	3'-4'
CL	9	Clethra	alnifolia	Sweet Pepperbush	2'-3'
CO	8	Cornus	sericea	Red-osier Dogwood	3'-4'
IL	5F	Ilex	verticillata	Winterberry Holly	3'-4'
IL	1M	Ilex	verticillata	Winterberry Holly	3'-4'
Perennials:					
AL	25	Aster	linariifolius	Stiff-leaved Aster	1 Qt.
AN	50	Aster	novae-angliae	New England Aster	Plug
AS	10	Astilbe		Bridal Veil	1 Qt.
AT	50	Asclepias	tuberosa	Butterfly Milkweed	Plug
EM	50	Eupatorium	maculatum	Joe-Pye Weed	Plug
EP	50	Eupatorium	perfoliatum	Boneset	Plug
GM	55	Geranium	maculatum	Wild Geranium	1 Qt.
HA	50	Helenium	autumnale	Perennial Sunflower	Plug
HM	10	Hibiscus	moscheutos	Rosemallow	Plug
IV	100	Iris	versicolor	Blue Flag Iris	Plug
LC	100	Lobelia	cardinalis	Cardinal Flower	Plug
LS	50	Lobelia	siphilitica	Great Blue Lobelia	Plug
OS	50	Onoclea	sensibilis	Sensitive Fern	1 Qt.

THREE PONDS
PROTECTIVE ASSOCIATION

PlusTime

**A Stormwater Treatment and
Beautification Project
to reduce soil erosion into
Townhouse Pond
consisting of:**

Infiltration Stairs
Rain Gardens
Lined Retention Basin

by **Three Ponds Protective Association**
in partnership with
the **Town of Milton NH,**
Nute High School,
Piscataqua Region Estuaries Partnership
NH Lakes Association, and
PlusTime NH

**Infiltration Stairs and Rain Gardens
capture stormwater so that it is filtered by
the ground before it reaches the Lake
with its harmful nutrients and pollutants.
Lined Retention Basins reduce sediment
picked up by rushing stormwater**

**PISCATAQUA REGION
Estuaries
Partnership**

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Piscataqua Region Estuaries Partnership, as autho-
rized by the U.S. Environmental Protection Agency's
National Estuary Program.*

Project Interpretive Sign



John Nolan/Rochester Times photo

Workers took a quick break to pose for this photo. Seated in front is Norm Turgeon with the project interpretive sign, and from left are Steve Baker, Matthew Prive, Nute Extended Learning Opportunities coordinator Fern Downing, Vlad Maiseichykav, Dominic English, Mike McDonnell, Bob Myrick, Josh Hebert, Seth Lyons, Lydia Barca, and Milton Public Works Director Pat Smith

The following photos were obtained from a Powerpoint presentation prepared by the participating Nute High School students.

