North Branch and Kingsbury Branch

Class Three and Four Road Erosion Assessment

Project funded with a grant from VT DEC ERP

Assessment managed and conducted by

Central Vermont Regional Planning Commission with assistance from

FWR, WNRCD, VT ANR DEC, WRP

and the Towns of Middlesex, Calais, Woodbury, East Montpelier, and Worcester

December 26, 2012

Table of Contents

Introduction

In 2012 Central Vermont Regional Planning Commission along with the Friends of the Winooski River and Winooski Natural Resource Conservation District conducted an analysis to map, inventory, prioritize, and prepare site maps for Class 3 and 4 road erosion sites within the North Branch and Kingsburg Branch Watersheds which included the following towns (East Montpelier, Calais, Middlesex, Woodbury, and Worcester). The purpose of the project was to 1) better understand the scope of the erosion problems along the Class 3 and 4 roads, 2) to provide an inventory of erosion sites, 3) prioritize the erosion sites for impact to water quality by sedimentation, 4) provide a simple site map and erosion treatment techniques for the highest priority erosion sites, and 5) present the results of the study to the towns and discuss the erosion treatment techniques. The project was funded through a Grant provided by the State of Vermont Ecosystem Restoration Program (ERP).

Methodology

Geographic Information Systems (GIS) Desktop Analysis

A constraints analysis was conducted by the Central Vermont Regional Planning Commission (CVRPC) using ArcView GIS. The purpose of the constraints analysis was to use desktop GIS to identify areas of the road network that were likely susceptible to erosion and sedimentation resulting in water quality impact, in order to focus the scope of the field investigation. The constraints analysis considered a total of five parameters, which included stream crossings, width of buffers to streams, width of buffers to mapped State-regulated Class II wetlands, soil erodibility, and road slope. The road network within the five Towns was divided into 100-foot segments, and for each segment the presence or absence of the five constraints was analyzed. Then, for each road, the number of constraints was totaled. The segments of each road with the relative constraints scoring were displayed on a GIS map. In addition to the line segments a point location was also developed by CVRPC to specify locations where three, four, or five of the constraints existed at the same location. This data was then used on the field maps to help locate general and specific road areas to visit. The GIS maps are included in Attachment A. Field crews visited all point locations with 3 and greater constraints and all line segments with a total constraints score of 37 and greater. Table 1 below provides a summary of the constraint values considered in the GIS analysis.

Constraint	**Criteria**	**Data Source**
Stream Crossings	Road / Stream intersection	Vermont Hydrography Dataset (VHDCARTO, 2010)
Stream Buffer	Width 50 feet	Vermont Hydrography Dataset (VHDCARTO, 2010)
Class II Wetland	Buffer 50 feet	Vermont Significant Wetlands Inventory (VSWI, 2010)
Soil Erodibility	Kw > 0.36	Natural Resource Conservation Service (NRCS) Soil

		Survey (Geologic_SO, 2011)
Slope	rise/run > 15%	Vermont Hydrography Dataset DEM (ElevationDEM_VTHYDRODEM, 2005)

Table 1. GIS Analysis parameters.

Field Priority Indicators

After the completion of the GIS desktop analysis, a series of field priority indicators were developed along with a scoring matrix, which were used by field crews to rank each erosion area impact to water quality during the field mapping effort. These priority indicators included volume of runoff expected through the erosion area, the steepness of the area, the condition of the ground cover, and finally the opportunity for sediment deposition to surface waters. Individual erosion areas were scored in the field as high, medium, and low, for each of these indicators. Following the field data collection, scoring for each of the field indicators was imported into an excel spreadsheet to calculate total scores for each area. Each high, medium, and low score was assigned a value of 3, 2, or 1, respectively. In the case of the opportunity for deposition indicator, percentages of 30%, 20%, or 10% were assigned to a high, medium or low score, given that depositional areas were assumed to have a weighted importance. A summary table of the field priority indicators is provided in Table 2 below. The complete scoring matrix is provided in Attachment B.

Priority Indicators	Description	Score	Notes
Volume	small channel, headwater area	Low	Volume indicator refers to the condition at and upstream of the erosion area
	medium channel, middle of watershed	Medium	
	large channel, close to receiving water	High	
Velocity/Steepness	low slope, <5%	Low	Velocity/Steepness indicator refers to the condition at and downstream of the erosion area
	moderate slope, >5% and < 15%	Medium	
	steep slope, > 15%	High	
Soil Cover	stone	Low	Soil Cover indicator refers to the condition downstream of the erosion area
	vegetation	Medium	
	minor vegetation	Medium/High	
	bare	High	
Deposition to Stream	sheet flow over well vegetated terrain/ channel with turnouts to vegetated terrain	Low	Deposition indicator refers to the condition downstream of the erosion area
	channel flow with defined break in slope with some deposition before stream	Medium	

	channel flow with no slope breaks, obvious in stream deposition	High	

Table 2. Priority indicators for water quality scoring.

Data Collection and Reduction

Field crews walked/drove each priority road segment during the 2012 field season. Field crews carried a Trimble GeoXM GPS unit capable of sub meter accuracy with post processing correction and a digital camera. The roadway surface, shoulders, and ditches where scanned for areas of erosion. Field data was entered directly into the GPS units using a data dictionary which allowed for customized drop down menus to be used to log the data. The digital camera was used to take photos of the erosion and those photos where loaded and linked directly to each site being recorded in the GPS units through a wireless network join. These two data collection techniques significantly increased data collection efficiency. The descriptor data is summarized in Table 3.

Descriptors	**Type**	**Notes**
General Erosion Category	Rill	small channel that could be graded
	Incision	medium channel that could be graded
	Gully	larger channel that could not be repaired by grading
	Slump	failure of road edge or surface
	In stream / in ditch scour	carving of stream bank / ditch side slopes
Erosion Location	Roadway	
	Roadway Shoulder	
	Ditch	
	Ditched Stream	
	Culvert Headwall	
	Culvert Endwall	
Culvert Data (Culvert Sites Only)	Diameter	inches
	Material	metal/plastic/concrete
	Condition	poor/fair/good
	Ownership	Town/Private
	Drop from outlet to stream	inches - live stream crossings only
	Bankfull width at outlet	inches - live stream crossing only

Table 3. Erosion area descriptors.

Results

A total of 237 erosion sites were mapped across the five towns. Sites having the highest priority scores in each Town were selected and a site plan with erosion treatment developed. A total of 29 sites were selected for site plan with erosion treatment development. CVRPC utilizes the Better Back Roads manual in the development of all road erosion treatments.

The list of erosion sites by town follows this section of the report.

Summary of Town Erosion Results

Calais

Erosion site 1 –

Location –500 feet of road shoulder erosion along Long Meadow Rd 0.44 miles west of County Rd in Calais, VT.

Field Collection Data –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
ROADWAY SHOULDER	HIGH	STEEP >15	BARE	HIGH	GULLY/INCISION	13.0

Site Slope Calculation – 12%

Suggested Erosion Treatment –

- Add 2-3 new cross culverts below existing culvert
- Add stone aprons at outlets of new culverts and existing culvert
- Install headers and footers on all new culverts and existing culvert
- Armor shoulder above existing culvert
- Improve ditch and stone line for length of erosion about 500 ft
- Replace existing culvert if undersized for location.

Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment to stream
- Existing culvert header and footer information
- Stream channel bankfull width
- Calculate stone needed for ditch and armor – estimate about 100 Yards
- Calculate stone needed for stone aprons at culvert outlets - estimate about 6 Yards
- Price of new and replacement culverts

Map of Site

Photos of Sites

Erosion site 2 – Good site for Better Back Roads Grant

Location – 820 feet of road shoulder erosion along Mirror Lake Rd 0.16 miles west of Number 10 Pond Rd in Calais, VT.

Field Collection Data –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
ROADWAY SHOULDER	HIGH	STEEP >15	BARE	HIGH	GULLY/INCISION	13.0

Site Slope Calculation – 12%

Suggested Erosion Treatment –

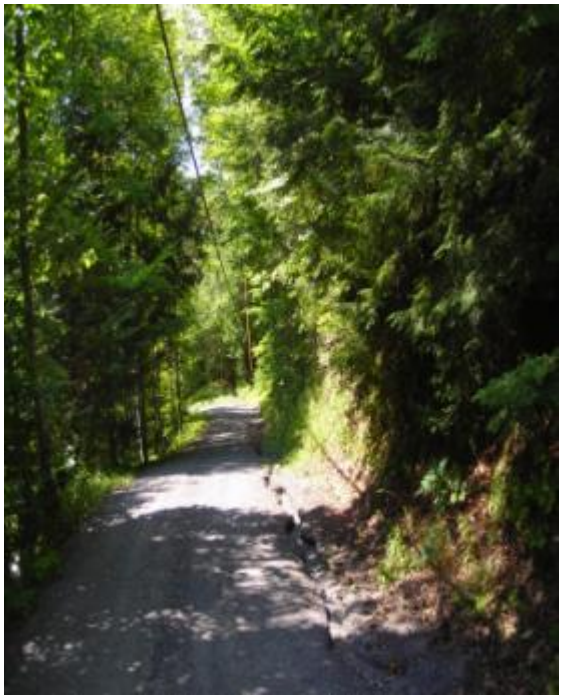
- Add 1-2 new cross culverts above existing culverts
- Realign existing cross culverts
- Add stone aprons at outlets of new culverts and existing culverts
- Install headers and footers on all new culverts and existing culvert
- Improve ditch and stone line for length of erosion about 820 ft
- Replace existing culvert if undersized for location.

Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment
- Existing culvert header and footer information
- Calculate stone needed for ditch – estimate about 150 Yards
- Calculate stone needed for stone aprons at culvert outlets - estimate about 8 Yards
- Price of new and replacement culverts

Map of Site –

Photos of Site



Erosion site 3

Location – 320 feet of road shoulder erosion along Dugar Brook Rd 220 feet east of West County Rd in Calais, VT.

Field Collection Data –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
ROADWAY SHOULDER	HIGH	STEEP >15	BARE	HIGH	GULLY/INCISION	13.0

Site Slope Calculation – 13%

Suggested Erosion Treatment –

- Add 1-2 new cross culverts above existing culvert
- Add stone aprons at outlets of new culverts and existing culvert
- Install headers and footers on all new culverts and existing culvert
- Improve ditch and stone line for length of erosion about 320 ft
- Replace existing culvert if undersized for location.

Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment
- Existing culvert header and footer information
- Calculate stone needed for ditch – estimate about 75 Yards
- Calculate stone needed for stone aprons at culvert outlets - estimate about 3 Yards
- Price of new and replacement culverts

Map of Site

Photos of Site

Erosion site 4 - Good site for Better Back Roads Grant

Location – 320 feet of road shoulder erosion along Apple Hill 350 feet south of Dugar Brook Rd in Calais, VT.

Field Collection Data –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
ROADWAY SHOULDER	HIGH	STEEP >15	BARE	HIGH	GULLY/INCISION	13.0

Site Slope Calculation – 13%

Suggested Erosion Treatment –

- Improve ditch and stone line for length of erosion about 320 ft
- Improve turnout above bridge
- Stone line apron at turnout
- Install settling pond below turnout.

Needed Information from Site –

- Calculate stone needed for ditch, turnout, settling pond – estimate about 80 Yards

Map of Site

Photos of Site

Erosion site 5

Location – 700 feet of road shoulder erosion along Jack Hill Rd 0.37 miles north of Pekin Brook Rd in Calais, VT.

Field Collection Data –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
ROADWAY SHOULDER	HIGH	STEEP >15	BARE	MEDIUM	GULLY/INCISION	12.0

Site Slope Calculation – 7%

Suggested Erosion Treatment –

- Add 1-2 new cross culverts below existing culvert
- Add stone aprons at outlets of new culverts and existing culvert
- Install headers and footers on all new culverts and existing culvert
- Improve ditch by moving it closer to road
- Improve ditch by stone line for length of erosion about 700 ft
- Cut down soil berm along both sides of road
- Replace existing culvert if undersized for location.

Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment
- Existing culvert header and footer information
- Calculate stone needed for ditch – estimate about 120 Yards
- Calculate stone needed for stone aprons at culvert outlets - estimate about 5 Yards
- Price of new and replacement culverts

Map of Site

Photos of Site

Erosion site 6 –

Location – 760 feet of road shoulder erosion along Singleton Rd 0.3 miles west of Pekin Brook Rd in Calais, VT

Field Collection Data –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
ROADWAY SHOULDER	HIGH	STEEP >15	BARE	MEDIUM	GULLY/INCISION	12.0

Site Slope Calculation – 10%

Suggested Erosion Treatment –

- Add 1-2 new cross culverts above existing culvert
- Add stone aprons at outlets of new culverts and existing culvert
- Install headers and footers on all new culverts and existing culvert
- Improve ditch and stone line for length of erosion about 760 ft
- Improve turnouts and stone line
- Replace existing culvert if undersized for location.

Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment
- Existing culvert header and footer information
- Calculate stone needed for ditch – estimate about 90 Yards
- Calculate stone needed for turnouts and aprons at culvert outlets - estimate about 8 Yards
- Price of new and replacement culverts

Map of Site

Photos of Site

East Montpelier

Erosion site 1

Location – 200 feet of ditch erosion along Horn of the Moon Rd 0.55 miles east of VT Route 12 in East Montpelier, VT.

Field Collection Data –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
DITCH	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	11.7

Site Slope Calculation – 7%

Suggested Erosion Treatment –

- Add 1-2 new cross culverts above existing culvert
- Add stone aprons at outlets of new culverts and existing culvert
- Install headers and footers on all new culverts and existing culvert
- Improve ditch by stone line for length of erosion about 200 ft
- Replace existing culvert if undersized for location.

Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment
- Existing culvert header and footer information
- Calculate stone needed for ditch – estimate about 50 Yards
- Calculate stone needed for stone aprons at culvert outlets - estimate about 5 Yards
- Price of new and replacement culverts

Map of Site

Photos of Site

Erosion site 2

Location – 600 feet of road shoulder erosion along Jacobs Rd 0.2 miles west of Horn of the Moon Rd in East Montpelier, VT

Field Collection Data –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
DITCH	HIGH	MOD 5-15	MINOR VEG	HIGH	GULLY/INCISION	10.4

Site Slope Calculation – 7%

Suggested Erosion Treatment –

- Add 3-4 new cross culverts above existing culvert
- Add stone aprons at outlets of new culverts and existing culvert
- Install headers and footers on all new culverts and existing culvert
- Improve ditch moving it closer to the road
- Improve ditch by stone lining for length of erosion about 600 ft
- Replace existing culvert if undersized for location.

Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment
- Existing culvert header and footer information
- Calculate stone needed for ditch – estimate about 120 Yards
- Calculate stone needed for stone aprons at culvert outlets - estimate about 5 Yards
- Price of new and replacement culverts

Map of Site

Pictures of Site

Erosion site 3 - Good site for Better Back Roads Grant (combined with site 4)

Location – 370 feet of road shoulder erosion along Horn of the Moon Rd 0.58 miles south of Sanders Circle in East Montpelier, VT

Field Collection Data –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
ROADWAY SHOULDER	HIGH	MOD 5-15	BARE	LOW	GULLY/INCISION	9.9

Site Slope Calculation – 7%

Suggested Erosion Treatment –

- Add 1-2 new cross culverts above existing culvert
- Add stone aprons at outlets of new culverts and existing culvert
- Install headers and footers on all new culverts and existing culvert
- Improve ditch by stone line for length of erosion about 300 ft
- Replace existing culvert if undersized for location.

Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment
- Existing culvert header and footer information
- Calculate stone needed for ditch – estimate about 60 Yards
- Calculate stone needed for stone aprons at culvert outlets - estimate about 5 Yards
- Price of new and replacement culverts

Map of Site

Pictures of Site

Erosion site 4 - Good site for Better Back Roads Grant (combined with site 3)

Location – 230 feet of road shoulder and ditch erosion along Horn of the Moon Rd 0.5 miles south of Sanders Circle in East Montpelier, VT

Field Collection Data –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
DITCH	HIGH	MOD 5-15	BARE	LOW	GULLY/INCISION	9.9

Site Slope Calculation – 8%

Suggested Erosion Treatment –

- Add 1-2 new cross culverts above existing culvert
- Add stone aprons at outlets of new culverts and existing culvert
- Install headers and footers on all new culverts and existing culvert
- Improve ditch by stone line for length of erosion about 230 ft
- Replace existing culvert if undersized for location.

Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment
- Existing culvert header and footer information
- Calculate stone needed for ditch – estimate about 50 Yards
- Calculate stone needed for stone aprons at culvert outlets - estimate about 3 Yards
- Price of new and replacement culverts

Map of Site

Photos of Site

Erosion site 5

Location – 130 feet of ditch erosion along Lyle Young Rd 0.22 miles east of Center Rd (just below Rock Rd) in East Montpelier, VT.

Field Collection Data –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
DITCH	HIGH	MOD 5-15	MINOR VEG	LOW	GULLY/INCISION	8.8

Site Slope Calculation – 6%

Suggested Erosion Treatment –

- Improve driveway culvert above ditch
- Improve ditch by stone line for length of erosion about 130 ft
- Replace existing culvert if undersized for location.

Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment
- Existing culvert header and footer information
- Calculate stone needed for ditch – estimate about 40 Yards
- Price of replacement culvert

Map of Site

Photos of Site

Middlesex

Erosion site 1 and 2- Good site for Better Back Roads Grant (combined together)

Location – 320 feet of road shoulder erosion and head cut at end of ditch where it enters stream on Macey Rd 0.72 miles south of West Hill Rd in Middlesex, VT.

Field Collection Data Site 1 Point –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
DITCH	HIGH	STEEP >15	BARE	HIGH	GULLY/INCISION	13

Comment - Head cut starting at end of ditch.

Field Collection Data Site 2 Line –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
ROADWAY SHOULDER	HIGH	STEEP >15	MINOR VEG	HIGH	GULLY/INCISION	11.7

Comment - Water stays on road and does not access ditch.

Site Slope Calculation – Unknown

Suggested Erosion Treatment –

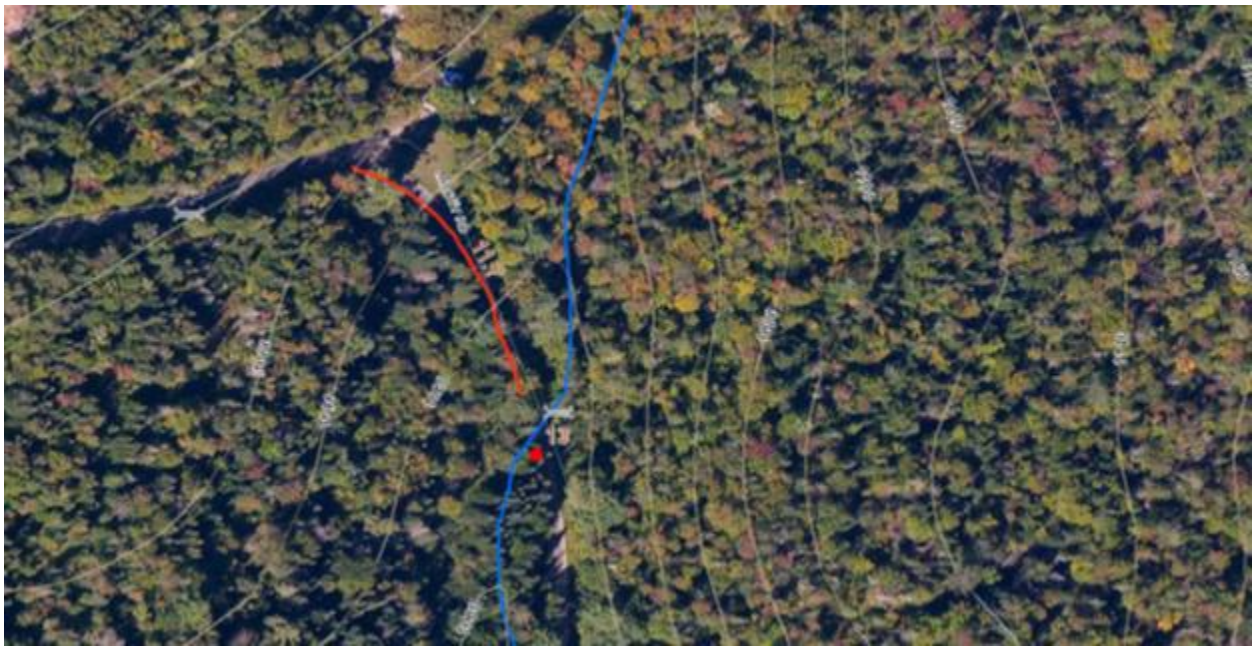
- Add 1-2 new cross culverts above existing culvert
- Add stone aprons at outlets of new culverts and existing culvert
- Install headers and footers on all new culverts and existing culvert
- Improve ditch by stone line for length of erosion about 320 ft
- Stabilize head cut at end of ditch with rock
- Replace existing culvert if undersized for location.

Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment
- Determine bankfull width for existing culvert
- Existing culvert header and footer information
- Calculate stone needed for ditch – estimate about 100 Yards
- Calculate stone needed for stone aprons at culvert outlets - estimate about 3 Yards
- Calculate stone needed for head cut stabilization

- Price of new and replacement culverts

Map of Site



Photos of Site

Erosion site 3

Location – Slump location over outlet of culvert on Woods Rd 0.4 miles north of Macey Rd in Middlesex, VT.

Field Collection Data –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
ROADWAY SHOULDER	HIGH	STEEP >15	BARE	HIGH	SLUMP	13

Site Slope Calculation – Unknown

Suggested Erosion Treatment –

- Stabilize slope with rock and vegetation
- Reshape slump

Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment
- Determine bankfull width for existing culvert
- Existing culvert header and footer information
- Gather slump slope information
- Calculate stone needed for slop stabilization
- Price of replacement culvert

Map of Site

Photos of Site

Erosion site 4-

Location – 700 feet of ditch erosion on Bolduc Rd 0.12 miles south of Dolan Rd and Tangletown Rd intersection in Middlesex, VT.

Field Collection Data –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
DITCH	HIGH	STEEP >15	BARE	MEDIUM	GULLY/INCISION	12

Site Slope Calculation – 11%

Suggested Erosion Treatment –

- Add 3-4 new cross culverts above existing culvert
- Add stone aprons at outlets of new culverts and existing culvert
- Install headers and footers on all new culverts and existing culvert
- Improve ditch by stone line for length of erosion about 700 ft
- Replace existing culvert at location.

Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment
- Existing culvert header and footer information
- Calculate stone needed for ditch – estimate about 150 Yards
- Calculate stone needed for stone aprons at culvert outlets - estimate about 8 Yards
- Price of new and replacement culverts

Map of Site

Photos of Site

Erosion site 5 and 6

Location – 200 feet of roadway shoulder erosion on Bolduc Rd 290 feet north of Dolan Rd in Middlesex, VT.

Field Collection Data Site 1 Line –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
ROADWAY SHOULDER	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	11.7

Comment - Water from driveway

Field Collection Data Site 2 Point–

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
ROADWAY SHOULDER	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	11.7

Site Slope Calculation –5%

Suggested Erosion Treatment –

- Add turn outs above driveway
- Add turnout on driveway before entering road
- Improve ditch by bringing it closer to road edge
- Replace existing culvert at location.

Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment
- Existing culvert header and footer information
- Calculate stone needed for ditch – estimate about 50 Yards
- Price of replacement culvert

Map of Site

Photos of Sites

Woodbury

Erosion site 1

Location – 300 feet of ditch erosion on Valley Lake Rd 0.53 miles west of Wheeler Hill Rd in Woodbury, VT.

Field Collection Data–

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
DITCH	HIGH	STEP > 15	BARE	HIGH	GULLY/INCISION	13

Site Slope Calculation –18%

Suggested Erosion Treatment –

- Add 1 new culverts along length of erosion
- Improve ditch by stone lining it for the length of the erosion – 300 ft
- Improve turnout entering culvert by adding stone apron
- Replace existing culvert at location.

Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment
- Existing culvert header and footer information
- Calculate stone needed for ditch – estimate about 80 Yards
- Calculate stone needed for stone aprons at culvert inlet - estimate about 3 Yards
- Price of new and replacement culverts

Map of Site

Photos of Site

Erosion site 2 and 6 – Good sites for Better Back Roads grant

Location – 5 roadway shoulder erosion sites on County Rd 300 feet north of Log Town Rd in Woodbury, VT.

Field Collection Data Site 2-6 Points –

Site Number	**Location of Erosion**	**Water Volume**	**Steepness of Site**	**Soil Cover**	**Deposition to Stream**	**Type of Erosion**	**Total Score**
2	ROADWAY SHOULDER	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	11.7
3	ROADWAY SHOULDER	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	11.7
4	ROADWAY SHOULDER	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	11.7
5	ROADWAY SHOULDER	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	11.7
6	ROADWAY SHOULDER	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	11.7

Site Slope Calculation – Unknown

Suggested Erosion Treatment –

- Improve ditch on opposite side of road from erosion sites and stone line for about 400 ft
- Regrade road to shed water toward new ditch
- Replace existing culverts at location

Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment
- Existing culvert header and footer information
- Calculate stone needed for ditch – estimate about 90 Yards
- Price of replacement culvert

Map of Sites

Photos of Site

Worcester

Erosion site 1 - Good site for Better Back Roads Grant

Location – 130 feet of road shoulder erosion on Hampshire Hill Rd at intersection of Minister Brook Rd in Worcester, VT.

Field Collection Data –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
ROADWAY SHOULDER	HIGH	STEEP >15	BARE	HIGH	RILL	13

Site Slope Calculation – 19%

Suggested Erosion treatment –

- Remove cross culvert above erosion
- Improve ditch uphill right side by stone lining for length of about 400 ft
- Regrade to slope roadway toward new ditch.
- Replace existing culvert if undersized at bottom of new ditch.

Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment
- Existing culvert header and footer information
- Gather information on sources of water.
- Calculate stone needed for ditch – estimate about 80 Yards
- Price of new and replacement culverts

Map of Site

Photos of Site

Erosion site 2-

Location – 325 feet of ditch erosion on Harris Hill Rd 0.33 miles north of Eagle Ledge Rd in Worcester, VT.

Field Collection Data –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
DITCH	HIGH	STEEP >15	BARE	MEDIUM	GULLY/INCISION	12

Site Slope Calculation – 11%

Suggested Erosion Treatment –

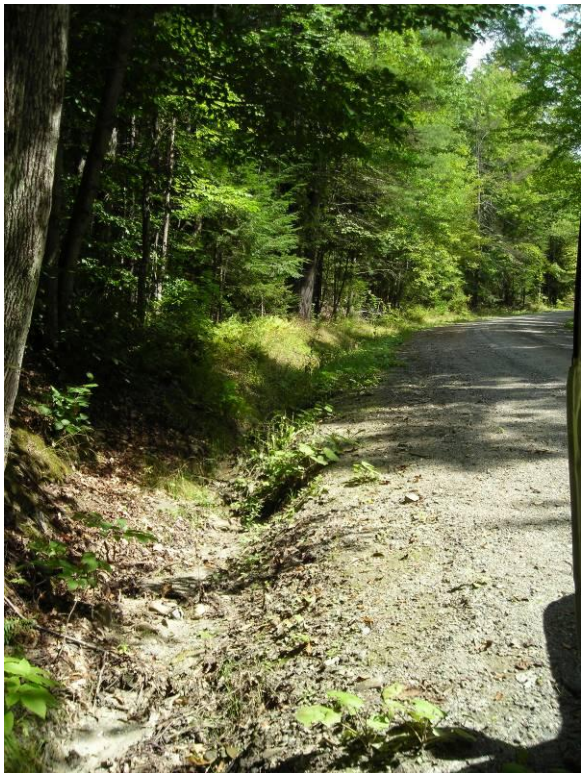
- Add 1-2 new cross culverts above existing culvert
- Add stone aprons at outlets of new culverts and existing culvert
- Install headers and footers on all new culverts and existing culvert
- Improve ditch by stone lining for length of erosion about 325 ft
- Replace existing culvert if undersized for location.

Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment
- Existing culvert header and footer information
- Calculate stone needed for ditch – estimate about 80 Yards
- Calculate stone needed for stone aprons at culvert outlets - estimate about 3 Yards
- Price of new and replacement culverts

Map of Site

Photos of Site



Erosion site 3-

Location – 600 feet of ditch erosion on Hancock Brook Rd (Class 4) 0.63 miles west of Elmore Rd (Route 12) in Worcester, VT.

Field Collection Data –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
DITCH	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	11.7

Site Slope Calculation – 5%

Suggested Erosion Treatment –

- Add 2-3 new cross culverts above existing culvert
- Add stone aprons at outlets of new culverts and existing culvert
- Install headers and footers on all new culverts and existing culvert
- Improve ditch by stone lining for length of erosion about 600 ft
- Replace existing culvert if undersized for location.

Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment
- Existing culvert header and footer information
- Calculate stone needed for ditch – estimate about 110 Yards
- Calculate stone needed for stone aprons at culvert outlets - estimate about 6 Yards
- Price of new and replacement culverts

Map of Site

Photos of Site

Erosion site 4

Location – 520 feet of ditch erosion on Hancock Brook Rd (Class 4) 0.38 miles west of Elmore Rd (Route 12) in Worcester, VT.

Field Collection Data –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
DITCH	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	11.7

Site Slope Calculation – 8%

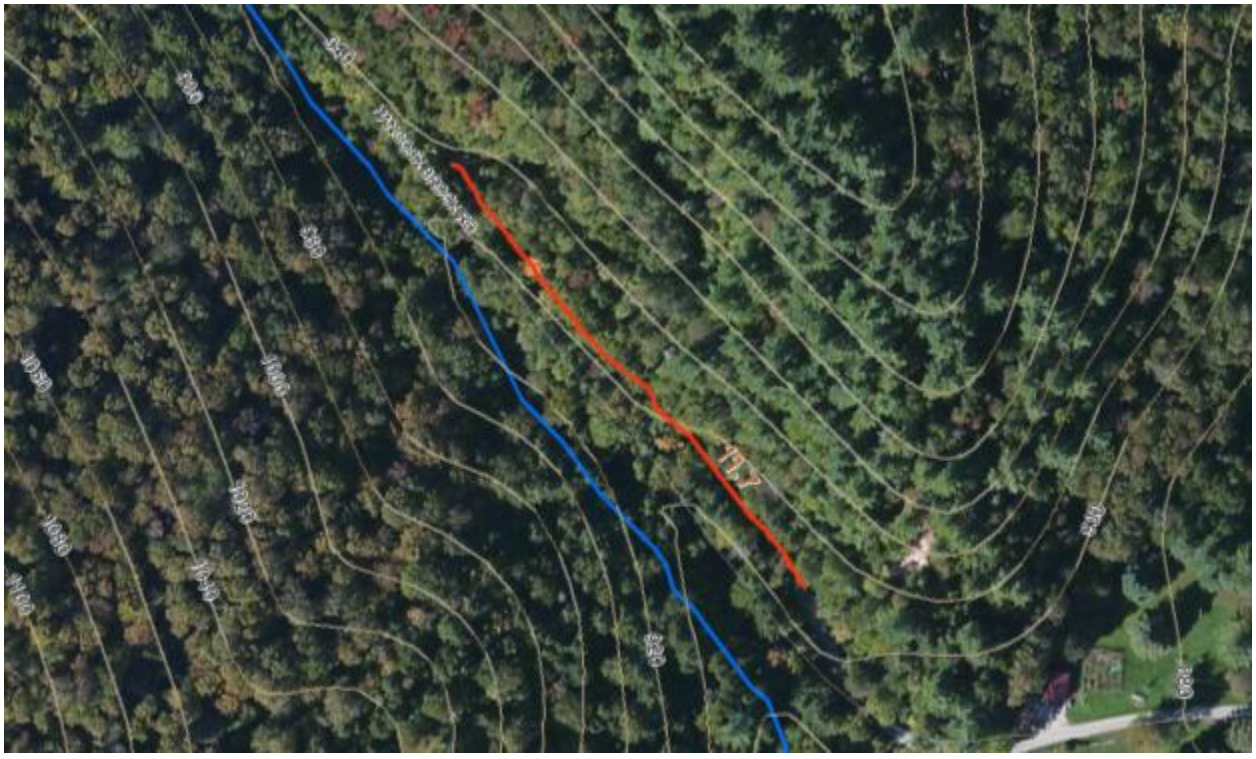
Suggested Erosion Treatment –

- Add 2-3 new cross culverts above existing culvert
- Add stone aprons at outlets of new culverts and existing culvert
- Install headers and footers on all new culverts and existing culvert
- Improve ditch by stone lining for length of erosion about 520 ft
- Replace existing culvert if undersized for location.

Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment
- Existing culvert header and footer information
- Calculate stone needed for ditch – estimate about 100 Yards
- Calculate stone needed for stone aprons at culvert outlets - estimate about 6 Yards
- Price of new and replacement culverts

Map of Site



Photos of Site

Erosion site 5

Location – 745 feet of road ditch erosion on Downs Rd (Class 4) 1.36 miles west of Elmore Rd (Route 12) in Worcester, VT.

Field Collection Data –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
IN ROADWAY	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	11.7

Site Slope Calculation – 13%

Suggested Erosion Treatment –

- Sunken road bed needs to be built back up
- Add 3-4 new culverts if possible
- Add water bars in roadway if culverts are not possible
- Add stone aprons at outlets of new culverts and existing culvert
- Install headers and footers on all new culverts and existing culvert
- Add turnouts along roadway where culverts are not possible
- Stone line turnout apron
- Improve ditch by stone lining for length of erosion about 745 ft
- Replace existing culverts if undersized for location.

Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment
- Existing culvert header and footer information
- Calculate stone needed for ditch – estimate about 150 Yards
- Calculate stone needed for stone aprons at culvert outlets and turnout - estimate about 6 Yards
- Calculate stone needed to build up road bed.
- Price of new and replacement culverts

Map of Site

Photos of Site

Erosion site 6

Location – Erosion along road edge over outlet of culvert on Harris Hill Rd 0.26 miles north of Eagle Ledge Rd in Worcester, VT.

Field Collection Data –

Location of Erosion	Water Volume	Steepness of Site	Soil Cover	Deposition to Stream	Type of Erosion	Total Score
ROADWAY SHOULDER	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	11.7

Site Slope Calculation – Unknown

Suggested Erosion Treatment –

- Armor road shoulder above culvert
- Replace existing culvert if undersized for location.

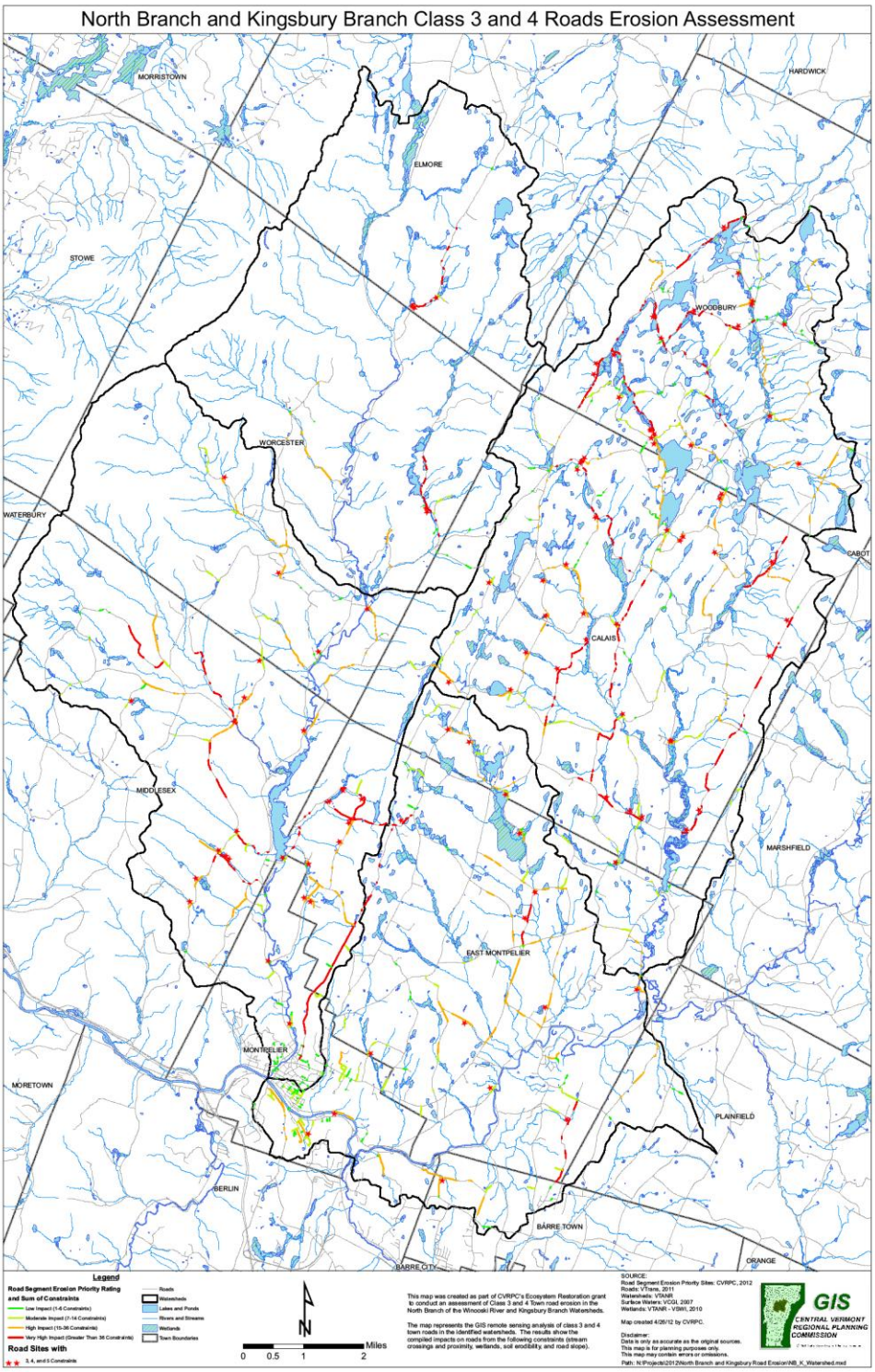
Needed Information from Site –

- Existing culvert dimensions and condition
- Existing culvert alignment
- Determine stream bankful width at culvert
- Existing culvert header and footer information
- Calculate stone needed for stone apron at culvert outlet - estimate about 2 Yards
- Price of replacement culvert

Map of Site

Photo of Site

Attachment A – Study Area Map



Attachment B – Scoring Matrix

Volume	add	Steepness ~ Velocity	add	Soil Cover	add	Deposition to Stream	add	total
L		S		K		D		
High Vol	3	Steep	3	Bare	4	Much Depo	30%	13
	3		3		4	Some Depo	20%	12
	3		3		4	Low Depo	10%	11
	3		3	Minor Veg	3	Much Depo	30%	11.7
	3		3		3	Some Depo	20%	10.8
	3		3		3	Low Depo	10%	9.9
	3		3	Veg	2	Much Depo	30%	10.4
	3		3		2	Some Depo	20%	9.6
	3		3		2	Low Depo	10%	8.8
	3		3	Stone	1	Much Depo	30%	9.1
	3		3		1	Some Depo	20%	8.4
	3		3		1	Low Depo	10%	7.7
	3	Moderate	2	Bare	4	Much Depo	30%	11.7
	3		2		4	Some Depo	20%	10.8
	3		2		4	Low Depo	10%	9.9
	3		2	Minor Veg	3	Much Depo	30%	10.4
	3		2		3	Some Depo	20%	9.6
	3		2		3	Low Depo	10%	8.8
	3		2	Veg	2	Much Depo	30%	9.1
	3		2		2	Some Depo	20%	8.4
	3		2		2	Low Depo	10%	7.7
	3		2	Stone	1	Much Depo	30%	7.8
	3		2		1	Some Depo	20%	7.2
	3		2		1	Low Depo	10%	6.6
	3	Shallow	1	Bare	4	Much Depo	30%	10.4
	3		1		4	Some Depo	20%	9.6

Volume	add	Steepness ~ Velocity	add	Soil Cover	add	Deposition to Stream	add	total
	3		1		4	Low Depo	10%	8.8
	3		1	Minor Veg	3	Much Depo	30%	9.1
	3		1		3	Some Depo	20%	8.4
	3		1		3	Low Depo	10%	7.7
	3		1	Veg	2	Much Depo	30%	7.8
	3		1		2	Some Depo	20%	7.2
	3		1		2	Low Depo	10%	6.6
	3		1	Stone	1	Much Depo	30%	6.5
	3		1		1	Some Depo	20%	6
	3		1		1	Low Depo	10%	5.5
Med Vol	2	Steep	2	Bare	4	Much Depo	30%	10.4
	2		2		4	Some Depo	20%	9.6
	2		2		4	Low Depo	10%	8.8
	2		2	Minor Veg	3	Much Depo	30%	9.1
	2		2		3	Some Depo	20%	8.4
	2		2		3	Low Depo	10%	7.7
	2		2	Veg	2	Much Depo	30%	7.8
	2		2		2	Some Depo	20%	7.2
	2		2		2	Low Depo	10%	6.6
	2		2	Stone	1	Much Depo	30%	6.5
	2		2		1	Some Depo	20%	6
	2		2		1	Low Depo	10%	5.5
	2	Moderate	1	Bare	4	Much Depo	30%	9.1
	2		1		4	Some Depo	20%	8.4
	2		1		4	Low Depo	10%	7.7
	2		1	Minor Veg	3	Much Depo	30%	7.8
	2		1		3	Some Depo	20%	7.2
	2		1		3	Low Depo	10%	6.6

Volume	add	Steepness ~ Velocity	add	Soil Cover	add	Deposition to Stream	add	total
	2		1	Veg	2	Much Depo	30%	6.5
	2		1		2	Some Depo	20%	6
	2		1		2	Low Depo	10%	5.5
	2		1	Stone	1	Much Depo	30%	5.2
	2		1		1	Some Depo	20%	4.8
	2		1		1	Low Depo	10%	4.4
	2	Shallow	0	Bare	4	Much Depo	30%	7.8
	2		0		4	Some Depo	20%	7.2
	2		0		4	Low Depo	10%	6.6
	2		0	Minor Veg	3	Much Depo	30%	6.5
	2		0		3	Some Depo	20%	6
	2		0		3	Low Depo	10%	5.5
	2		0	Veg	2	Much Depo	30%	5.2
	2		0		2	Some Depo	20%	4.8
	2		0		2	Low Depo	10%	4.4
	2		0	Stone	1	Much Depo	30%	3.9
	2		0		1	Some Depo	20%	3.6
	2		0		1	Low Depo	10%	3.3
Low Vol	1	Steep	1	Bare	4	Much Depo	30%	7.8
	1		1		4	Some Depo	20%	7.2
	1		1		4	Low Depo	10%	6.6
	1		1	Minor Veg	3	Much Depo	30%	6.5
	1		1		3	Some Depo	20%	6
	1		1		3	Low Depo	10%	5.5
	1		1	Veg	2	Much Depo	30%	5.2
	1		1		2	Some Depo	20%	4.8
	1		1		2	Low Depo	10%	4.4
	1		1	Stone	1	Much Depo	30%	3.9

Volume	add	Steepness ~ Velocity	add	Soil Cover	add	Deposition to Stream	add	total
	1		1		1	Some Depo	20%	3.6
	1		1		1	Low Depo	10%	3.3
	1	Moderate	0	Bare	4	Much Depo	30%	6.5
	1		0		4	Some Depo	20%	6
	1		0		4	Low Depo	10%	5.5
	1		0	Minor Veg	3	Much Depo	30%	5.2
	1		0		3	Some Depo	20%	4.8
	1		0		3	Low Depo	10%	4.4
	1		0	Veg	2	Much Depo	30%	3.9
	1		0		2	Some Depo	20%	3.6
	1		0		2	Low Depo	10%	3.3
	1		0	Stone	1	Much Depo	30%	2.6
	1		0		1	Some Depo	20%	2.4
	1		0		1	Low Depo	10%	2.2
	1	Shallow	0	Bare	4	Much Depo	30%	6.5
	1		0		4	Some Depo	20%	6
	1		0		4	Low Depo	10%	5.5
	1		0	Minor Veg	3	Much Depo	30%	5.2
	1		0		3	Some Depo	20%	4.8
	1		0		3	Low Depo	10%	4.4
	1		0	Veg	2	Much Depo	30%	3.9
	1		0		2	Some Depo	20%	3.6
	1		0		2	Low Depo	10%	3.3
	1		0	Stone	1	Much Depo	30%	2.6
	1		0		1	Some Depo	20%	2.4
	1		0		1	Low Depo	10%	2.2

Attachment C – Summary of all Data by Town

Page Left Blank

Site Number	Town	Road Name	Road Class	Feature Type	Total	Volume	Steepness	Soil Cover	Deposition to Stream	Erosion Type	Erosion Location	Photo 1	Photo 2	Photo 3	Photo 4	Photo 5	Comments	Culvert Type	Culvert Material	Culvert Owner	Culvert Condition	Culvert Dimension	Bankfull Width
1	Calais	LONG MEADOW HILL RD	3	Line	13.0	HIGH	STEEP >15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN4996310.JPG	DSCN4997311.JPG	DSCN4998312.JPG	DSCN4999313.JPG								
2	Calais	MIROR LAKE RD	3	Line	13.0	HIGH	STEEP >15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5006319.JPG	DSCN5005320.JPG	DSCN5007321.JPG									
3	Calais	DUGAR BROOK RD	3	Line	13.0	HIGH	STEEP >15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN4958274.JPG	DSCN4957275.JPG	DSCN4956276.JPG			intoculvert						
4	Calais	APPLE HILL RD	3	Line	13.0	HIGH	STEEP >15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN4972290.JPG	DSCN4973291.JPG	DSCN4974292.JPG	DSCN4975293.JPG		intoculvert						
5	Calais	JACK HILL RD	3	Line	12.0	HIGH	STEEP >15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN4931249.JPG	DSCN4930250.JPG	DSCN4929251.JPG	DSCN4928252.JPG		ditch there but not flowing in						
6	Calais	SINGLETON RD	3	Line	12.0	HIGH	STEEP >15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN4978294.JPG	DSCN4976295.JPG	DSCN4977296.JPG			intoculvert						
7	Calais	MAX GRAY RD	3	Line	6.0	LOW	LOW <5	BARE	MEDIUM	RILL	DITCH	DSCN4780106.JPG	DSCN4779107.JPG				plugged culvert						
8	Calais	MAX GRAY RD	3	Line	4.8	LOW	LOW <5	MINOR VEG	MEDIUM	RILL	DITCH	DSCN4783108.JPG	DSCN4782109.JPG	DSCN4781110.JPG			minor vegetation						
9	Calais	MAX GRAY RD	3	Line	7.8	MEDIUM	MOD 5-15	MINOR VEG	HIGH	GULLY/INCISION	DITCH	DSCN4789111.JPG	DSCN4790112.JPG	DSCN4788113.JPG	DSCN4784114.JPG	DSCN4785115.JPG	minor vegetation poor cul/stream alignment						
10	Calais	BLACHLY RD	3	Line	5.5	LOW	LOW <5	BARE	LOW	RILL	DITCH	DSCN4796118.JPG	DSCN4794119.JPG	DSCN4797120.JPG									
11	Calais	BLACHLY RD	3	Line	7.8	MEDIUM	LOW <5	BARE	HIGH	RILL	ROADWAY SHOULDER	DSCN4800121.JPG	DSCN4798122.JPG	DSCN4799123.JPG									
12	Calais	BLACHLY RD	3	Line	9.1	MEDIUM	MOD 5-15	BARE	HIGH	GULLY/INCISION	DITCH	DSCN4801124.JPG	DSCN4803125.JPG	DSCN4802126.JPG									
13	Calais	E HILL RD	3	Line	8.4	MEDIUM	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	DITCH	DSCN4807129.JPG	DSCN4806130.JPG	DSCN4808131.JPG									
14	Calais	BLACHLY RD	3	Line	10.8	HIGH	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	DITCHED STREAM	DSCN4809132.JPG	DSCN4810133.JPG	DSCN4813134.JPG	DSCN4811135.JPG	DSCN4812136.JPG							
15	Calais	E HILL RD	3	Line	8.8	HIGH	LOW <5	BARE	LOW	GULLY/INCISION	DITCH	DSCN4814137.JPG	DSCN4815138.JPG	DSCN4816139.JPG	DSCN4817140.JPG	DSCN4818141.JPG							
16	Calais	E HILL RD	3	Line	5.5	LOW	LOW <5	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4821142.JPG	DSCN4819143.JPG	DSCN4820144.JPG			incision						
17	Calais	E HILL RD	3	Line	7.7	MEDIUM	MOD 5-15	BARE	LOW	RILL	ROADWAY SHOULDER	DSCN4822145.JPG	DSCN4824146.JPG	DSCN4823147.JPG			run off from roof down driveway						
18	Calais	E HILL RD	3	Line	7.7	MEDIUM	MOD 5-15	BARE	LOW	RILL	ROADWAY SHOULDER	DSCN4825148.JPG	DSCN4826149.JPG										
19	Calais	E HILL RD	3	Line	9.9	HIGH	MOD 5-15	BARE	LOW	RILL	ROADWAY SHOULDER	DSCN4832152.JPG	DSCN4830153.JPG	DSCN4831154.JPG	DSCN4829155.JPG								
20	Calais	E HILL RD	3	Line	8.4	MEDIUM	MOD 5-15	BARE	MEDIUM	RILL	ROADWAY SHOULDER	DSCN4835156.JPG	DSCN4834157.JPG	DSCN4833158.JPG									
21	Calais	E HILL RD	3	Line	6.6	MEDIUM	LOW <5	BARE	LOW	RILL	ROADWAY SHOULDER	DSCN4836159.JPG	DSCN4837160.JPG	DSCN4838161.JPG			plugged culvert						
22	Calais	E HILL RD	3	Line	7.7	HIGH	MOD 5-15	VEGETATION	LOW	GULLY/INCISION	DITCH	DSCN4841162.JPG	DSCN4840163.JPG	DSCN4842164.JPG			plugged culvert						
23	Calais	E HILL RD	3	Line	3.3	LOW	LOW <5	VEGETATION	LOW	GULLY/INCISION	DITCH	DSCN4843165.JPG	DSCN4844166.JPG	DSCN4845167.JPG			incision						
24	Calais	LONG MEADOW HILL RD	3	Line	8.8	MEDIUM	STEEP >15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4986300.JPG	DSCN4987301.JPG	DSCN4988302.JPG									
25	Calais	LONG MEADOW HILL RD	3	Line	9.1	MEDIUM	MOD 5-15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN4990303.JPG	DSCN4989304.JPG										
26	Calais	LONG MEADOW HILL RD	3	Line	6.0	LOW	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN4992305.JPG	DSCN4991306.JPG				left side of rd going down to county rd						
27	Calais	LONG MEADOW HILL RD	3	Line	7.8	LOW	STEEP >15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN4993307.JPG	DSCN4994308.JPG	DSCN4995309.JPG									

Site Number	Town	Road Name	Road Class	Feature Type	Total	Volume	Steepness	Soil Cover	Deposition to Stream	Erosion Type	Erosion Location	Photo 1	Photo 2	Photo 3	Photo 4	Photo 5	Comments	Culvert Type	Culvert Material	Culvert Owner	Culvert Condition	Culvert Dimension	Bankfull Width
28	Calais	MIRROR LAKE RD	3	Line	5.5	LOW	MOD 5-15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN5004318.JPG											
29	Calais	HAYDEN RD	4	Line	11.0	HIGH	STEEP >15	BARE	LOW	GULLY/INCISION	IN ROADWAY	DSCN5010322.JPG	DSCN5009323.JPG	DSCN5008324.JPG	DSCN5011325.JPG								
30	Calais	HAYDEN RD	4	Line	5.5	LOW	MOD 5-15	BARE	LOW	GULLY/INCISION	IN ROADWAY	DSCN5012326.JPG	DSCN5013327.JPG										
31	Calais	SAND HILL RD	3	Line	5.5	LOW	MOD 5-15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN5014328.JPG											
32	Calais	SAND HILL RD	3	Line	5.5	LOW	MOD 5-15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN5015329.JPG											
33	Calais	SAND HILL RD	3	Line	10.4	MEDIUM	STEEP >15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5016330.JPG											
34	Calais	LIGHTENING RIDGE RD	3	Line	11.0	HIGH	STEEP >15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4905226.JPG	DSCN4908227.JPG	DSCN4907228.JPG	DSCN4906229.JPG		a few turn outbeing bypassec						
35	Calais	GEORGE RD	3	Line	8.8	MEDIUM	STEEP >15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4909230.JPG	DSCN4910231.JPG	DSCN4911232.JPG									
36	Calais	GEORGE RD	3	Line	7.2	LOW	STEEP >15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN4914233.JPG	DSCN4913234.JPG	DSCN4912235.JPG									
37	Calais	GEORGE RD	3	Line	9.6	MEDIUM	STEEP >15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN4917236.JPG	DSCN4916237.JPG	DSCN4915238.JPG			2 failed turn outs						
38	Calais	GEORGE RD	3	Line	9.6	MEDIUM	STEEP >15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN4918239.JPG	DSCN4919240.JPG	DSCN4920241.JPG									
39	Calais	GEORGE RD	3	Line	9.6	MEDIUM	STEEP >15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN4921242.JPG	DSCN4923243.JPG	DSCN4922244.JPG									
40	Calais	PECK HILL RD	3	Line	8.8	MEDIUM	STEEP >15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4925245.JPG	DSCN4927246.JPG	DSCN4926247.JPG	DSCN4924248.JPG								
41	Calais	JACK HILL RD	3	Line	11.0	HIGH	STEEP >15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4933253.JPG	DSCN4932254.JPG	DSCN4934255.JPG	DSCN4936256.JPG	DSCN4935257.JPG	land owner unhappy						
42	Calais	JACK HILL RD	3	Line	11.0	HIGH	STEEP >15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4940258.JPG	DSCN4939259.JPG	DSCN4938260.JPG	DSCN4941261.JPG		land owner unhappy						
43	Calais	JACK HILL RD	3	Line	9.1	MEDIUM	MOD 5-15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN4944262.JPG	DSCN4943263.JPG	DSCN4942264.JPG									
44	Calais	JACK HILL RD	3	Line	11.7	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN4945265.JPG	DSCN4947266.JPG	DSCN4948267.JPG	DSCN4949268.JPG								
45	Calais	DUGAR BROOK RD	3	Line	6.5	LOW	LOW <5	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN4952269.JPG	DSCN4951270.JPG				into culvert						
46	Calais	DUGAR BROOK RD	3	Line	9.9	HIGH	MOD 5-15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4954271.JPG	DSCN4955272.JPG	DSCN4953273.JPG									
47	Calais	APPLE HILL RD	3	Line	8.8	MEDIUM	STEEP >15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4962278.JPG	DSCN4961279.JPG	DSCN4960280.JPG			intoculvert						
48	Calais	APPLE HILL RD	4	Line	8.8	MEDIUM	STEEP >15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4963281.JPG	DSCN4964282.JPG	DSCN4965283.JPG			intoculvert						
49	Calais	APPLE HILL RD	4	Line	8.8	MEDIUM	STEEP >15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4966284.JPG	DSCN4967285.JPG	DSCN4968286.JPG			intoculvert						
50	Calais	APPLE HILL RD	4	Line	8.8	MEDIUM	STEEP >15	BARE	LOW	GULLY/INCISION	IN ROADWAY	DSCN4969287.JPG	DSCN4970288.JPG	DSCN4971289.JPG			intoculvert						
51	Calais	SINGLETON RD	3	Line	11.0	HIGH	STEEP >15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4981297.JPG	DSCN4980298.JPG	DSCN4979299.JPG									
52	Calais	MAX GRAY RD	3	Line	10.4	HIGH	MOD 5-15	MINOR VEG	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN4847168.JPG	DSCN4848169.JPG	DSCN4849170.JPG	DSCN4850171.JPG		minor vegetation, water from log landing						
53	Calais	MAX GRAY RD	3	Line	5.5	LOW	LOW <5	BARE	LOW	GULLY/INCISION	DITCH	DSCN4851172.JPG	DSCN4852173.JPG				insition, v shaped ditch						
54	Calais	MAX GRAY RD	3	Line	5.5	LOW	MOD 5-15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4857178.JPG	DSCN4856179.JPG				insition						
55	Calais	MAX GRAY RD	3	Line	8.8	HIGH	MOD 5-15	MINOR VEG	LOW	GULLY/INCISION	DITCH	DSCN4860181.JPG	DSCN4859182.JPG				insition, minor vegetation						
56	Calais	MAX	3	Line	7.7	MEDIUM	MOD 5-15	BARE	LOW	GULLY/INCI	ROADWAY	DSCN4862183	DSCN4863184	DSCN4864185			gully						

Site Number	Town	Road Name	Road Class	Feature Type	Total	Volume	Steepness	Soil Cover	Deposition to Stream	Erosion Type	Erosion Location	Photo 1	Photo 2	Photo 3	Photo 4	Photo 5	Comments	Culvert Type	Culvert Material	Culvert Owner	Culvert Condition	Culvert Dimension	Bankfull Width
		GRAY RD								SION	SHOULDER	.JPG	.JPG	.JPG									
57	Calais	MAX GRAY RD	3	Line	7.8	MEDIUM	LOW <5	BARE	HIGH	GULLY/INCISION	DITCH	DSCN4865187.JPG	DSCN4867188.JPG	DSCN4868189.JPG			insition, pirched culvert with down stream erosion						
58	Calais	MAX GRAY RD	3	Line	10.4	HIGH	LOW <5	BARE	HIGH	GULLY/INCISION	DITCH	DSCN4869190.JPG	DSCN4870191.JPG	DSCN4871192.JPG	DSCN4872193.JPG	DSCN4873194.JPG	insition, water from logging rd						
59	Calais	MAX GRAY RD	3	Line	4.4	LOW	MOD 5-15	MINOR VEG	LOW	RILL	DITCH	DSCN4877198.JPG	DSCN4878199.JPG				minor vegetation						
60	Calais	MAX GRAY RD	3	Line	5.5	LOW	MOD 5-15	BARE	LOW	GULLY/INCISION	DITCH	DSCN4881202.JPG	DSCN4882203.JPG				insition						
61	Calais	MAX GRAY RD	3	Line	5.5	LOW	MOD 5-15	BARE	LOW	GULLY/INCISION	DITCH	DSCN4883204.JPG	DSCN4884205.JPG				insition						
62	Calais	MAX GRAY RD	3	Line	6.6	MEDIUM	LOW <5	BARE	LOW	RILL	ROADWAY SHOULDER	DSCN4885206.JPG	DSCN4886207.JPG				minor insition above culvert						
63	Calais	E HILL RD	3	Line	6.0	LOW	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN4887208.JPG	DSCN4888209.JPG	DSCN4889210.JPG			insition						
64	Calais	E HILL RD	3	Line	5.5	LOW	LOW <5	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4890211.JPG					insition						
65	Calais	LIGHTENING RIDGE RD	3	Line	8.8	HIGH	LOW <5	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4891212.JPG	DSCN4892213.JPG				insition						
66	Calais	LIGHTENING RIDGE RD	3	Line	7.7	MEDIUM	MOD 5-15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4893214.JPG	DSCN4894215.JPG	DSCN4895216.JPG			insition, erosion into ditch						
67	Calais	LIGHTENING RIDGE RD	3	Line	8.8	HIGH	LOW <5	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4896217.JPG	DSCN4897218.JPG	DSCN4898219.JPG			erosion from roads into turn out						
68	Calais	LIGHTENING RIDGE RD	3	Line	9.9	HIGH	MOD 5-15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4899220.JPG	DSCN4900221.JPG	DSCN4901222.JPG			insition ,water from drive way						
69	Calais	LIGHTENING RIDGE RD	3	Line	8.8	HIGH	MOD 5-15	MINOR VEG	LOW	GULLY/INCISION	DITCH	DSCN4902223.JPG	DSCN4903224.JPG	DSCN4904225.JPG			gully, minor vegetation						
70	Calais	W COUNTY RD	3	Line	8.4	MEDIUM	MOD 5-15	BARE	MEDIUM	RILL	ROADWAY SHOULDER	DSCN5167478.JPG	DSCN5166479.JPG										
71	Calais	E HILL RD	3	Point	4.8	LOW	STEEP >15	VEGETATION	MEDIUM	SLUMP	ROADWAY SHOULDER	DSCN4827150.JPG	DSCN4828151.JPG										
72	Calais	SAND HILL RD	3	Point	10.4	MEDIUM	STEEP >15	BARE	HIGH	SLUMP	CULVERT ENDWALL	DSCN5018331.JPG	DSCN5017332.JPG					ROUND	STEEL	TOWN	FAIR	6	0
73	Calais	ROBINSON CEMETERY RD	3	Point	7.8	LOW	STEEP >15	BARE	HIGH	SLUMP	CULVERT HEADWALL	DSCN5003316.JPG	DSCN5002317.JPG					ROUND	STEEL	TOWN	FAIR	5	15
74	Calais	BLACHLY RD	3	Point	7.2	MEDIUM	LOW <5	BARE	MEDIUM	RILL	CULVERT HEADWALL	DSCN4805127.JPG	DSCN4804128.JPG					ROUND	STEEL	TOWN	POOR		
75	Calais	DUGAR BROOK RD	3	Point	10.4	MEDIUM	STEEP >15	BARE	HIGH	SLUMP	CULVERT ENDWALL	DSCN4959277.JPG						ROUND	STEEL	TOWN	FAIR	10	26
76	Calais	BLISS POND RD	3	Point	9.1	MEDIUM	MOD 5-15	BARE	HIGH	SLUMP	CULVERT ENDWALL	DSCN5001314.JPG	DSCN5000315.JPG				existing damn	ROUND	STEEL	TOWN	FAIR	4	11
77	Calais	MAX GRAY RD	3	Point	6.5	LOW	STEEP >15	BARE	HIGH	SLUMP	CULVERT HEADWALL	DSCN4791116.JPG	DSCN4792117.JPG					BOX	STONE	TOWN	GOOD	24	7
78	Calais	MAX GRAY RD	3	Point	4.4	LOW	STEEP >15	VEGETATION	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4853(1)174.JPG	DSCN4854175.JPG				gully , culvert short for rd						
79	Calais	MAX GRAY RD	3	Point	8.8	MEDIUM	STEEP >15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4855176.JPG					gully						
80	Calais	MAX GRAY RD	3	Point	5.5	LOW	STEEP >15	MINOR VEG	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4858177.JPG					insition , minor vegetation , multiple slump						

Site Number	Town	Road Name	Road Class	Feature Type	Total	Volume	Steepness	Soil Cover	Deposition to Stream	Erosion Type	Erosion Location	Photo 1	Photo 2	Photo 3	Photo 4	Photo 5	Comments	Culvert Type	Culvert Material	Culvert Owner	Culvert Condition	Culvert Dimension	Bankfull Width
																	locations						
81	Calais	MAX GRAY RD	3	Point	9.9	HIGH	MOD 5-15	BARE	LOW	SLUMP	ROADWAY SHOULDER	DSCN4861180.JPG											
82	Calais	MAX GRAY RD	3	Point	8.4	MEDIUM	MOD 5-15	BARE	MEDIUM	SLUMP	ROADWAY SHOULDER	DSCN4866186.JPG											
83	Calais	MAX GRAY RD	3	Point	9.1	MEDIUM	STEEP >15	MINOR VEG	HIGH	SLUMP	ROADWAY SHOULDER	DSCN4874195.JPG					minor vegetation						
84	Calais	MAX GRAY RD	3	Point	7.7	MEDIUM	MOD 5-15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4875196.JPG	DSCN4876197.JPG				multiple gullis along rd edge						
85	Calais	MAX GRAY RD	3	Point	7.7	MEDIUM	MOD 5-15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4879200.JPG					gully						
86	Calais	MAX GRAY RD	3	Point	6.6	LOW	STEEP >15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN4880201.JPG					insition						
1	East Montpelier	HORN OF THE MOON RD	3	Line	11.7	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	DITCH	\DSCN473064.JPG	\DSCN473165.JPG	\DSCN473266.JPG	\DSCN473467.JPG								
2	East Montpelier	JACOBS RD	3	Line	10.4	HIGH	MOD 5-15	MINOR VEG	HIGH	GULLY/INCISION	DITCH	\DSCN469333.JPG	\DSCN469434.JPG	\DSCN469535.JPG			bare w/ minor veg, gully						
3	East Montpelier	HORN OF THE MOON RD	3	Line	9.9	HIGH	MOD 5-15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	\DSCN473870.JPG	\DSCN473971.JPG	\DSCN473772.JPG	\DSCN474073.JPG		culvert pluged forcing water out of ditch into rd way						
4	East Montpelier	HORN OF THE MOON RD	3	Line	9.9	HIGH	MOD 5-15	BARE	LOW	GULLY/INCISION	DITCH	\DSCN474174.JPG	\DSCN474275.JPG	\DSCN474376.JPG									
5	East Montpelier	LYLE YOUNG RD	3	Line	8.8	HIGH	MOD 5-15	MINOR VEG	LOW	GULLY/INCISION	DITCH	\DSCN472660.JPG	\DSCN472761.JPG				minor vegetation, gully						
6	East Montpelier	COUNTY RD	2	Line	6.6	MEDIUM	LOW <5	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	\DSCN467011.JPG	\DSCN467112.JPG	\DSCN467213.JPG			insition						
7	East Montpelier	HORN OF THE MOON RD	3	Line	5.5	LOW	MOD 5-15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	\DSCN467314.JPG	\DSCN467415.JPG	\DSCN467516.JPG			insition road ditch run out						
8	East Montpelier	HORN OF THE MOON RD	3	Line	6.6	MEDIUM	LOW <5	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	\DSCN467617.JPG	\DSCN467718.JPG	\DSCN467819.JPG			insition road ditch run out						
9	East Montpelier	HORN OF THE MOON RD	3	Line	6.0	LOW	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	\DSCN467920.JPG	\DSCN468021.JPG	\DSCN468222.JPG	\DSCN468323.JPG	\DSCN468124.JPG	insition/bare w/ minor veg						
10	East Montpelier	HORN OF THE MOON RD	3	Line	4.8	LOW	LOW <5	MINOR VEG	MEDIUM	RILL	IN ROADWAY	\DSCN468525.JPG	\DSCN468726.JPG	\DSCN468632.JPG	\DSCN468827.JPG		bare w/ minor veg						
11	East Montpelier	JACOBS RD	3	Line	7.8	MEDIUM	MOD 5-15	MINOR VEG	HIGH	RILL	DITCH	\DSCN469028.JPG	\DSCN468929.JPG	\DSCN469130.JPG	\DSCN469231.JPG		bare w/ minor veg						
12	East Montpelier	SANDERS CIR	3	Line	4.4	LOW	LOW <5	MINOR VEG	LOW	GULLY/INCISION	DITCH	\DSCN469636.JPG	\DSCN469737.JPG				bare w/ minor veg, gully						
13	East Montpelier	NORTH ST	3	Line	5.5	MEDIUM	LOW <5	MINOR VEG	LOW	GULLY/INCISION	DITCH	\DSCN470241.JPG	\DSCN470142.JPG	\DSCN470343.JPG	\DSCN470444.JPG		bare w/ minor veg, insition , water input from woods						
14	East Montpelier	NORTH ST	3	Line	5.5	MEDIUM	LOW <5	MINOR VEG	LOW	GULLY/INCISION	DITCH	\DSCN470646.JPG	\DSCN470747.JPG	\DSCN470848.JPG			bare w/ minor veg, insition						
15	East Montpelier	LYLE YOUNG RD	3	Line	6.6	MEDIUM	MOD 5-15	MINOR VEG	LOW	GULLY/INCISION	DITCH	\DSCN471549.JPG	\DSCN471650.JPG	\DSCN471751.JPG	\DSCN471852.JPG	\DSCN471953.JPG	minor vegetation						
16	East Montpelier	LYLE YOUNG RD	3	Line	7.8	MEDIUM	MOD 5-15	MINOR VEG	HIGH	RILL	DITCH	\DSCN472054.JPG	\DSCN472155.JPG	\DSCN472256.JPG			minor vegetation						
17	East Montpelier	LYLE YOUNG RD	3	Line	5.5	MEDIUM	LOW <5	MINOR VEG	LOW	GULLY/INCISION	DITCH	\DSCN472357.JPG	\DSCN472458.JPG	\DSCN472559.JPG			minor vegetation, insition						

Site Number	Town	Road Name	Road Class	Feature Type	Total	Volume	Steepness	Soil Cover	Deposition to Stream	Erosion Type	Erosion Location	Photo 1	Photo 2	Photo 3	Photo 4	Photo 5	Comments	Culvert Type	Culvert Material	Culvert Owner	Culvert Condition	Culvert Dimension	Bankfull Width
18	East Montpelier	TEMPLETON RD	3	Line	6.6	MEDIUM	LOW <5	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	\DSCN472862.JPG	\DSCN472963.JPG				water from town garage						
19	East Montpelier	HORN OF THE MOON RD	3	Line	6.6	MEDIUM	MOD 5-15	MINOR VEG	LOW	GULLY/INCISION	DITCH	\DSCN474477.JPG	\DSCN474578.JPG	\DSCN474779.JPG	\DSCN474880.JPG		minor vegetation, culvert full and crush at outlet						
20	East Montpelier	CLARK RD	3	Line	5.5	MEDIUM	LOW <5	MINOR VEG	LOW	GULLY/INCISION	DITCH	\DSCN475688.JPG	\DSCN475789.JPG				minor vegetation						
21	East Montpelier	CLARK RD	3	Line	6.6	MEDIUM	MOD 5-15	MINOR VEG	LOW	GULLY/INCISION	DITCH	\DSCN475990.JPG	\DSCN475891.JPG				minor vegetation						
22	East Montpelier	CLARK RD	3	Line	6.6	MEDIUM	MOD 5-15	MINOR VEG	LOW	GULLY/INCISION	DITCH	\DSCN476092.JPG	\DSCN476193.JPG				minor vegetation						
23	East Montpelier	CLARK RD	3	Line	6.5	LOW	LOW <5	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	\DSCN476294.JPG	\DSCN476395.JPG				insition						
24	East Montpelier	E HILL RD	3	Line	5.5	LOW	LOW <5	BARE	LOW	GULLY/INCISION	DITCH	\DSCN476496.JPG	\DSCN476597.JPG	\DSCN476698.JPG			gully,						
25	East Montpelier	E HILL RD	3	Line	5.5	LOW	MOD 5-15	BARE	LOW	GULLY/INCISION	DITCH	\DSCN476899.JPG	DSCN4769102.JPG				gully,						
26	East Montpelier	E HILL RD	3	Line	7.7	MEDIUM	MOD 5-15	BARE	LOW	GULLY/INCISION	DITCH	DSCN4770100.JPG	DSCN4771101.JPG				gully,						
27	East Montpelier	E HILL RD	3	Line	8.4	MEDIUM	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	DITCH	DSCN4772103.JPG	DSCN4773104.JPG	DSCN4774105.JPG			gully,						
28	East Montpelier	SANDERS CIR	3	Point	5.5	LOW	MOD 5-15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN469838.JPG	DSCN469939.JPG										
29	East Montpelier	FOSTER RD	3	Point	6.5	LOW	STEEP >15	MINOR VEG	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN474981.JPG	DSCN475082.JPG				minor vegetation, gully						
30	East Montpelier	HORN OF THE MOON RD	3	Point	5.2	LOW	STEEP >15	VEGETATION	HIGH	SLUMP	ROADWAY SHOULDER	DSCN470040.JPG					gullies in vegetation						
31	East Montpelier	COBURN RD	3	Point	6.5	LOW	STEEP >15	MINOR VEG	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN475183.JPG	DSCN475284.JPG	DSCN475385.JPG			minor vegetation, gully, 48 x 48 box	BOX	CONCRETE	TOWN	FAIR	6	10
32	East Montpelier	HORN OF THE MOON RD	3	Point	7.8	LOW	STEEP >15	BARE	HIGH	SLUMP	ROADWAY SHOULDER	DSCN473568.JPG	DSCN473669.JPG				culvert short for rd way						
33	East Montpelier	NORTH ST	3	Point	5.5	MEDIUM	LOW <5	MINOR VEG	LOW	GULLY/INCISION	CULVERT ENDWALL	DSCN470545.JPG					minimal vegetation	ROUND	STEEL	TOWN	FAIR	6	0
34	East Montpelier	COBURN RD	3	Point	7.2	LOW	STEEP >15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN475486.JPG	DSCN475587.JPG				mass failure 22 ft king by 30 ft high						
1	Middlesex	MACEY RD	3	Point	13.0	HIGH	STEEP >15	BARE	HIGH	GULLY/INCISION	DITCH	DSCN5047361.JPG					gully, with head cut						
2	Middlesex	MACEY RD	3	Line	11.7	HIGH	STEEP >15	MINOR VEG	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5046360.JPG					minor vegetation, insition, water stays in rd and does not access ditch						
3	Middlesex	WOOD RD	3	Point	13.0	HIGH	STEEP >15	BARE	HIGH	SLUMP	ROADWAY SHOULDER	DSCN5055369.JPG											
4	Middlesex	BOLDUC RD	3	Line	12.0	HIGH	STEEP >15	BARE	MEDIUM	GULLY/INCISION	DITCH	DSCN5128441.JPG	DSCN5129442.JPG	DSCN5130443.JPG	DSCN5131444.JPG		gully						
5	Middlesex	CULVER HILL RD	3	Line	11.7	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5063378.JPG					insition, water from driveway						
6	Middlesex	CULVER HILL RD	3	Point	11.7	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5064377.JPG					gully						
7	Middlesex	E BEAR SWAMP RD	3	Line	7.7	MEDIUM	MOD 5-15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN5019333.JPG	DSCN5020334.JPG				insition						
8	Middlesex	E BEAR SWAMP RD	3	Line	9.9	HIGH	MOD 5-15	BARE	LOW	RILL	ROADWAY SHOULDER	DSCN5025339.JPG	DSCN5027340.JPG	DSCN5026341.JPG			water from driveway						
9	Middlesex	E BEAR	3	Line	7.7	MEDIUM	MOD 5-15	BARE	LOW	RILL	IN	DSCN5030343	DSCN5029344										

Site Number	Town	Road Name	Road Class	Feature Type	Total	Volume	Steepness	Soil Cover	Deposition to Stream	Erosion Type	Erosion Location	Photo 1	Photo 2	Photo 3	Photo 4	Photo 5	Comments	Culvert Type	Culvert Material	Culvert Owner	Culvert Condition	Culvert Dimension	Bankfull Width
		SWAMP RD									ROADWAY	.JPG	.JPG										
10	Middlesex	E BEAR SWAMP RD	3	Line	10.8	HIGH	MOD 5-15	BARE	MEDIUM	RILL	IN ROADWAY	DSCN5033345 .JPG	DSCN5031346 .JPG	DSCN5032347 .JPG			sheet and insition aslo pressent on rd						
11	Middlesex	N BEAR SWAMP RD	3	Line	8.8	MEDIUM	STEEP >15	BARE	LOW	GULLY/INCISION	DITCH	DSCN5035349 .JPG	DSCN5036350 .JPG				bed rock present in ditch, gully and slump along rd edge						
12	Middlesex	N BEAR SWAMP RD	3	Line	11.0	HIGH	STEEP >15	BARE	LOW	GULLY/INCISION	DITCH	DSCN5037351 .JPG	DSCN5038352 .JPG										
13	Middlesex	MACEY RD	3	Line	9.9	HIGH	MOD 5-15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN5039353 .JPG	DSCN5040354 .JPG	DSCN5042355 .JPG	DSCN5041356 .JPG		insition, water crosses rd						
14	Middlesex	MACEY RD	3	Line	11.0	HIGH	STEEP >15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN5043357 .JPG	DSCN5045358 .JPG	DSCN5044359 .JPG			insition, water stays in rd and does not access ditch						
15	Middlesex	MACEY RD	3	Line	7.2	MEDIUM	MOD 5-15	MINOR VEG	MEDIUM	SLUMP	ROADWAY SHOULDER	DSCN5050363 .JPG	DSCN5049364 .JPG				minor vegetation, bed rock present in ditch						
16	Middlesex	MACEY RD	3	Line	7.7	MEDIUM	MOD 5-15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN5051365 .JPG	DSCN5052366 .JPG				insition, water from driveway						
17	Middlesex	MACEY RD	3	Line	6.5	LOW	MOD 5-15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5056370 .JPG	DSCN5057371 .JPG				insition						
18	Middlesex	CULVER HILL RD	3	Line	6.6	MEDIUM	LOW <5	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN5059373 .JPG	DSCN5060374 .JPG				insition, water from driveway						
19	Middlesex	DOLAN RD	3	Line	9.9	HIGH	MOD 5-15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN5065379 .JPG	DSCN5066380 .JPG	DSCN5067381 .JPG			insition, water from driveway						
20	Middlesex	CULVER HILL RD	3	Line	7.7	MEDIUM	MOD 5-15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN5068382 .JPG					insition, water from driveway						
21	Middlesex	CULVER HILL RD	3	Line	7.8	MEDIUM	LOW <5	BARE	HIGH	GULLY/INCISION	DITCH	DSCN5069383 .JPG	DSCN5070384 .JPG				insition, water from driveway						
22	Middlesex	CULVER HILL RD	3	Line	8.4	MEDIUM	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN5121434 .JPG	DSCN5122435 .JPG				insition						
23	Middlesex	BOLDUC RD	3	Line	8.4	MEDIUM	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN5124437 .JPG	DSCN5126439 .JPG				insition						
24	Middlesex	MACEY RD	3	Point	10.4	MEDIUM	STEEP >15	BARE	HIGH	SLUMP	ROADWAY SHOULDER	DSCN5058372 .JPG											
25	Middlesex	CULVER HILL RD	3	Point	5.5	LOW	LOW <5	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN5061375 .JPG					gully						
26	Middlesex	CULVER HILL RD	3	Point	5.5	LOW	LOW <5	BARE	LOW	GULLY/INCISION	CULVERT ENDWALL	DSCN5062376 .JPG					gully	ROUND	STEEL	TOWN	FAIR		
27	Middlesex	E BEAR SWAMP RD	3	Point	8.8	HIGH	MOD 5-15	MINOR VEG	LOW	SLUMP	ROADWAY SHOULDER	DSCN5023336 .JPG	DSCN5022337 .JPG				bare with minor vegetation	ROUND					
28	Middlesex	E BEAR SWAMP RD	3	Point	5.5	MEDIUM	MOD 5-15	VEGETATION	LOW	SLUMP	ROADWAY SHOULDER	DSCN5024338 .JPG						ROUND	ALUMINUM	TOWN	POOR		
29	Middlesex	E BEAR SWAMP RD	3	Point	6.6	MEDIUM	LOW <5	BARE	LOW	SLUMP	ROADWAY SHOULDER	DSCN5028342 .JPG					culvert to short for rd, inlet slump	ROUND	STEEL	TOWN	POOR		
30	Middlesex	CULVER HILL RD	3	Point	6.0	LOW	LOW <5	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN5123436 .JPG					insition						
31	Middlesex	PORTAL RD	3	Point	5.5	LOW	LOW <5	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN5132445 .JPG					gully						
32	Middlesex	BOLDUC RD	3	Point	6.0	LOW	LOW <5	BARE	MEDIUM	SLUMP	ROADWAY SHOULDER	DSCN5125438 .JPG											
33	Middlesex	BOLDUC RD	3	Point	10.4	HIGH	LOW <5	BARE	HIGH	SLUMP	ROADWAY SHOULDER	DSCN5127440 .JPG											

Site Number	Town	Road Name	Road Class	Feature Type	Total	Volume	Steepness	Soil Cover	Deposition to Stream	Erosion Type	Erosion Location	Photo 1	Photo 2	Photo 3	Photo 4	Photo 5	Comments	Culvert Type	Culvert Material	Culvert Owner	Culvert Condition	Culvert Dimension	Bankfull Width
34	Middlesex	MACEY RD	3	Point	7.8	LOW	STEEP >15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5048362.JPG					insition						
35	Middlesex	MACEY RD	3	Point	7.8	LOW	STEEP >15	BARE	HIGH	SLUMP	ROADWAY SHOULDER	DSCN5053367.JPG	DSCN5054368.JPG										
36	Middlesex	N BEAR SWAMP RD	3	Point	5.5	LOW	LOW <5	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN5034348.JPG					gully, water coming from driveway						
1	Woodbury	VALLEY LAKE RD	3	Line	13.0	HIGH	STEEP >15	BARE	HIGH	GULLY/INCISION	DITCH	DSCN5213525.JPG	DSCN5214526.JPG	DSCN5215527.JPG			incision						
3	Woodbury	COUNTY RD	3	Point	11.7	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5177489.JPG					insition						
4	Woodbury	COUNTY RD	3	Point	11.7	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5180492.JPG					insition						
5	Woodbury	COUNTY RD	3	Point	11.7	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5181493.JPG					gully						
6	Woodbury	COUNTY RD	3	Point	11.7	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5184494.JPG					gully						
7	Woodbury	DOG POND RD	3	Line	4.4	LOW	MOD 5-15	MINOR VEG	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN5135448.JPG	DSCN5136449.JPG	DSCN5137450.JPG			minor vegetation, insition						
8	Woodbury	KING POND RD	3	Line	8.4	MEDIUM	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN5138451.JPG	DSCN5139452.JPG	DSCN5140453.JPG			insition						
9	Woodbury	KING POND RD	3	Line	6.6	LOW	STEEP >15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN5141454.JPG					insition						
10	Woodbury	KING POND RD	3	Line	7.2	LOW	STEEP >15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN5142455.JPG					insition						
11	Woodbury	SCRIBNER RD	3	Line	7.8	MEDIUM	MOD 5-15	MINOR VEG	HIGH	GULLY/INCISION	DITCH	DSCN5143456.JPG	DSCN5144457.JPG				insition, minor vegetation						
12	Woodbury	CRANBERRY MEADOW RD	3	Line	5.2	LOW	LOW <5	MINOR VEG	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5145458.JPG	DSCN5146459.JPG				gully, minor vegetation						
13	Woodbury	CRANBERRY MEADOW RD	3	Line	10.4	HIGH	LOW <5	BARE	HIGH	GULLY/INCISION	DITCH	DSCN5148461.JPG	DSCN5149462.JPG				insition						
14	Woodbury	CRANBERRY MEADOW RD	3	Line	7.7	MEDIUM	MOD 5-15	BARE	LOW	SHEET	IN ROADWAY	DSCN5152465.JPG											
15	Woodbury	CRANBERRY MEADOW RD	3	Line	7.7	MEDIUM	MOD 5-15	BARE	LOW	GULLY/INCISION	DITCH	DSCN5151464.JPG					insition						
16	Woodbury	SCRIBNER RD	4	Line	8.4	MEDIUM	MOD 5-15	BARE	MEDIUM	SHEET	IN ROADWAY	DSCN5155468.JPG	DSCN5156469.JPG										
17	Woodbury	LOG TOWN RD	4	Line	8.4	MEDIUM	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	IN ROADWAY	DSCN5157470.JPG	DSCN5158471.JPG				insition						
18	Woodbury	COUNTY RD	3	Line	8.4	MEDIUM	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	DITCH	DSCN5164476.JPG	DSCN5163477.JPG				gully						
19	Woodbury	W COUNTY RD	3	Line	8.4	MEDIUM	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN5168481.JPG	DSCN5169482.JPG				insition						
20	Woodbury	COUNTY RD	4	Line	9.6	HIGH	MOD 5-15	MINOR VEG	MEDIUM	GULLY/INCISION	DITCH	DSCN5173485.JPG	DSCN5174486.JPG	DSCN5175487.JPG			insition, minor vegetation						
21	Woodbury	COUNTY RD	3	Line	10.8	HIGH	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN5179491.JPG					insition						
22	Woodbury	COUNTY RD	3	Line	9.1	MEDIUM	MOD 5-15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5182495.JPG	DSCN5183496.JPG				gully						
23	Woodbury	COUNTY RD	3	Line	10.8	HIGH	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN5185497.JPG	DSCN5186498.JPG	DSCN5187499.JPG	DSCN5188500.JPG		insition						

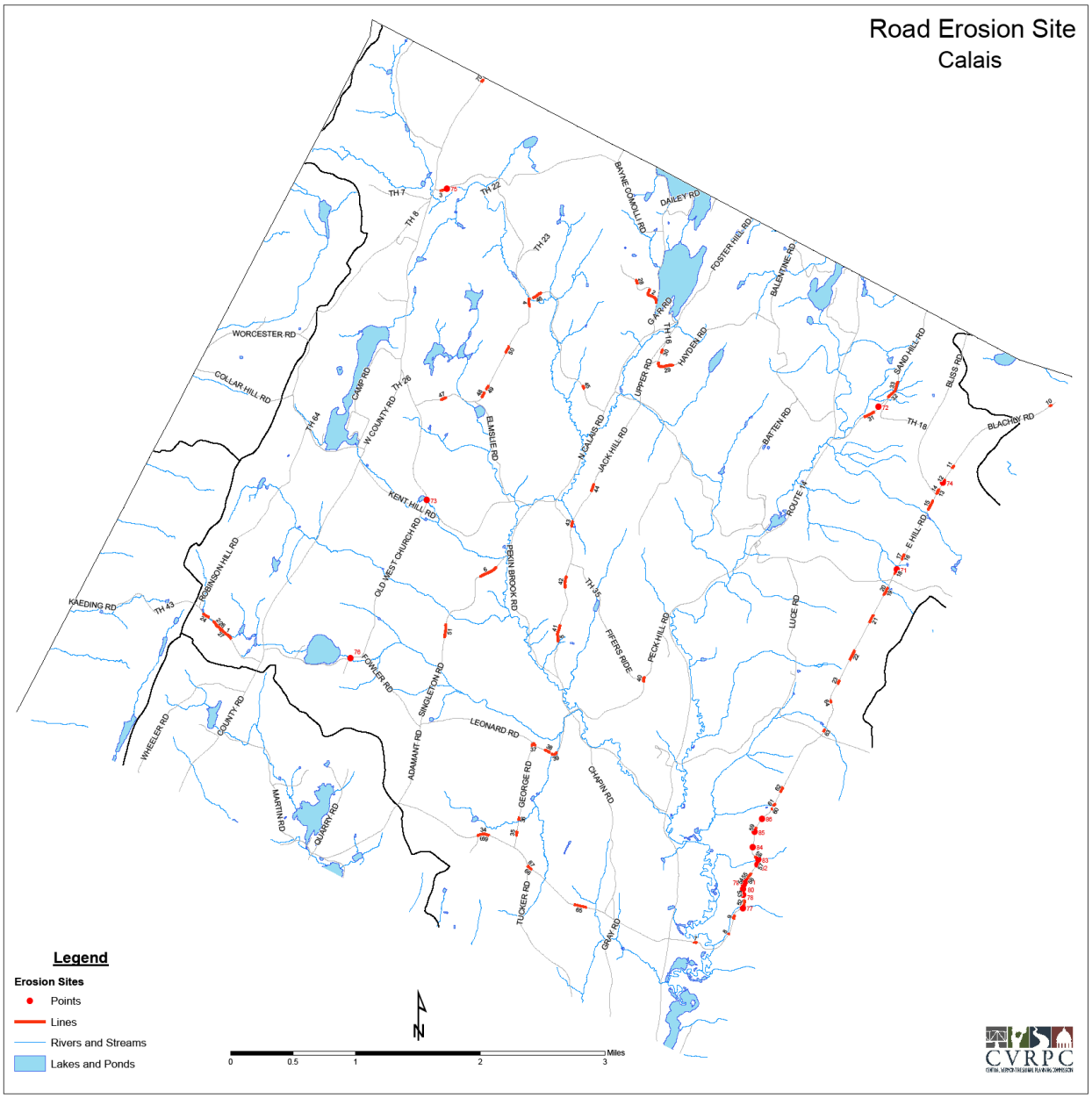
Site Number	Town	Road Name	Road Class	Feature Type	Total	Volume	Steepness	Soil Cover	Deposition to Stream	Erosion Type	Erosion Location	Photo 1	Photo 2	Photo 3	Photo 4	Photo 5	Comments	Culvert Type	Culvert Material	Culvert Owner	Culvert Condition	Culvert Dimension	Bankfull Width
24	Woodbury	COUNTY RD	3	Line	11.7	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5189501.JPG	DSCN5190502.JPG	DSCN5191503.JPG			gully, three gully sites						
25	Woodbury	COUNTY RD	3	Line	9.9	HIGH	MOD 5-15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN5194506.JPG	DSCN5195507.JPG				insition						
26	Woodbury	COUNTY RD	3	Line	7.7	MEDIUM	MOD 5-15	BARE	LOW	RILL	ROADWAY SHOULDER	DSCN5196508.JPG											
27	Woodbury	COUNTY RD	3	Line	8.4	MEDIUM	MOD 5-15	BARE	MEDIUM	RILL	ROADWAY SHOULDER	DSCN5197509.JPG	DSCN5198510.JPG										
28	Woodbury	COUNTY RD	3	Line	8.4	MEDIUM	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN5199511.JPG	DSCN5200512.JPG				insition						
29	Woodbury	VALLEY LAKE RD	3	Line	7.7	MEDIUM	MOD 5-15	BARE	LOW	GULLY/INCISION	ROADWAY SHOULDER	DSCN5205517.JPG	DSCN5206518.JPG				insition, ledge under rdway						
30	Woodbury	VALLEY LAKE RD	3	Line	8.8	MEDIUM	STEEP >15	BARE	LOW	GULLY/INCISION	DITCH	DSCN5207519.JPG	DSCN5208520.JPG				incision						
31	Woodbury	VALLEY LAKE RD	3	Line	6.6	LOW	STEEP >15	BARE	LOW	GULLY/INCISION	DITCH	DSCN5209521.JPG					incision						
32	Woodbury	VALLEY LAKE RD	3	Line	6.5	LOW	MOD 5-15	BARE	HIGH	GULLY/INCISION	DITCH	DSCN5210522.JPG					incision						
33	Woodbury	VALLEY LAKE RD	3	Line	8.8	MEDIUM	STEEP >15	BARE	LOW	GULLY/INCISION	DITCH	DSCN5218528.JPG	DSCN5216529.JPG	DSCN5219530.JPG			incision						
34	Woodbury	DOG POND RD	3	Line	8.8	MEDIUM	STEEP >15	BARE	LOW	GULLY/INCISION	DITCH						incision						
35	Woodbury	WHEELER HILL RD	3	Line	7.7	MEDIUM	MOD 5-15	BARE	LOW	GULLY/INCISION	DITCH		DSCN5300537.JPG	DSCN5299538.JPG	DSCN5298539.JPG		incision						
36	Woodbury	WHEELER HILL RD	3	Line	5.5	LOW	MOD 5-15	BARE	LOW	GULLY/INCISION	DITCH	DSCN5301540.JPG	DSCN5302541.JPG				incision						
37	Woodbury	WHEELER HILL RD	3	Line	6.0	LOW	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN5222536.JPG	DSCN5293542.JPG	DSCN5296543.JPG	DSCN5292544.JPG	DSCN5294545.JPG	incision bedrock in ditch						
38	Woodbury	DOG POND RD	3	Point	5.5	LOW	MOD 5-15	BARE	LOW	RILL	ROADWAY SHOULDER	DSCN5222(1)533.JPG	DSCN5223534.JPG	DSCN5224535.JPG				ROUND	STEEL	TOWN	FAIR		
39	Woodbury	SCRIBNER RD	4	Point	9.1	MEDIUM	MOD 5-15	BARE	HIGH	SHEET	IN ROADWAY	DSCN5154466.JPG	DSCN5153467.JPG										
40	Woodbury	COUNTY RD	3	Point	8.4	MEDIUM	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN5201513.JPG					gully at culvert inlet	ROUND	PLASTIC	TOWN	GOOD		
41	Woodbury	VALLEY LAKE RD	3	Point	9.1	MEDIUM	MOD 5-15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5211523.JPG					incision						
42	Woodbury	VALLEY LAKE RD	3	Point	9.1	MEDIUM	MOD 5-15	BARE	HIGH	SLUMP	ROADWAY SHOULDER	DSCN5212524.JPG											
43	Woodbury	VALLEY LAKE RD	3	Point	9.6	MEDIUM	STEEP >15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN5220531.JPG					incision						
44	Woodbury	LOG TOWN RD	3	Point	7.8	MEDIUM	LOW <5	BARE	HIGH	SHEET	IN ROADWAY	DSCN5159472.JPG	DSCN5160473.JPG				flowing from rd off bridge edges						
45	Woodbury	DOG POND RD	3	Point	3.3	LOW	LOW <5	VEGETATION	LOW	GULLY/INCISION	DITCH	DSCN5133446.JPG					gully at end of turn out						
46	Woodbury	DOG POND RD	3	Point	6.5	LOW	LOW <5	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5134447.JPG					insition						
47	Woodbury	COUNTY RD	3	Point	5.5	LOW	LOW <5	BARE	LOW	RILL	ROADWAY SHOULDER	DSCN5161474.JPG	DSCN5162475.JPG										
48	Woodbury	COUNTY RD	3	Point	11.7	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5176488.JPG					gully						
49	Woodbury	COUNTY RD	3	Point	9.1	MEDIUM	MOD 5-15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5178490.JPG					insition						
50	Woodbury	VALLEY LAKE RD	3	Point	7.8	MEDIUM	LOW <5	BARE	HIGH	RILL	ROADWAY SHOULDER	DSCN5204516.JPG					water from fire dpt roof						
51	Woodbury	COUNTY RD	3	Point	10.4	HIGH	LOW <5	BARE	HIGH	SLUMP	CULVERT HEADWALL	DSCN5202514.JPG					large sediment source up stream of culvert	ROUND	STEEL	TOWN	FAIR		
52	Woodbury	COUNTY RD	3	Point	6.5	LOW	LOW <5	BARE	HIGH	RILL	ROADWAY SHOULDER	DSCN5203515.JPG						ROUND					
53	Woodbury	VALLEY LAKE RD	3	Point	6.0	LOW	LOW <5	BARE	MEDIUM	RILL	ROADWAY SHOULDER	DSCN5221532.JPG						ROUND	STEEL	TOWN	FAIR		

Site Number	Town	Road Name	Road Class	Feature Type	Total	Volume	Steepness	Soil Cover	Deposition to Stream	Erosion Type	Erosion Location	Photo 1	Photo 2	Photo 3	Photo 4	Photo 5	Comments	Culvert Type	Culvert Material	Culvert Owner	Culvert Condition	Culvert Dimension	Bankfull Width
54	Woodbury	COUNTY RD	3	Point	6.5	LOW	MOD 5-15	BARE	HIGH	RILL	ROADWAY SHOULDER	DSCN5192504 .JPG	DSCN5193505 .JPG										
55	Woodbury	CRANBERRY MEADOW RD	3	Point	6.5	LOW	LOW <5	BARE	HIGH	SLUMP	ROADWAY SHOULDER	DSCN5147460 .JPG											
56	Woodbury	CRANBERRY MEADOW RD	3	Point	7.8	MEDIUM	LOW <5	BARE	HIGH	RILL	ROADWAY SHOULDER	DSCN5150463 .JPG											
57	Woodbury	COUNTY RD	3	Point	9.1	MEDIUM	MOD 5-15	BARE	HIGH	RILL	ROADWAY SHOULDER	DSCN5170480 .JPG											
58	Woodbury	COUNTY RD	3	Point	6.0	LOW	LOW <5	BARE	MEDIUM	RILL	ROADWAY SHOULDER	DSCN5171483 .JPG	DSCN5172484 .JPG										
1	Worcester	HAMPSHIRE HILL RD	3	Line	13.0	HIGH	STEEP >15	BARE	HIGH	RILL	ROADWAY SHOULDER	DSCN5090402 .JPG	DSCN5089403 .JPG										
2	Worcester	HARRIS HILL RD	3	Line	12.0	HIGH	STEEP >15	BARE	MEDIUM	GULLY/INCISION	DITCH	DSCN5110423 .JPG	DSCN5111424 .JPG	DSCN5112425 .JPG			gully						
3	Worcester	HANCOCK BROOK RD	4	Line	11.7	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	DITCH	DSCN5099412 .JPG	DSCN5100413 .JPG				insition						
4	Worcester	HANCOCK BROOK RD	4	Line	11.7	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	DITCH	DSCN5101414 .JPG	DSCN5102415 .JPG				gully						
5	Worcester	DOWNS RD	4	Line	11.7	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	IN ROADWAY	DSCN5116428 .JPG	DSCN5115429 .JPG	DSCN5118430 .JPG	DSCN5117431 .JPG		insition, water running down road						
6	Worcester	HARRIS HILL RD	3	Point	11.7	HIGH	MOD 5-15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5108421 .JPG					insition	ROUND	STEEL	TOWN	FAIR		
7	Worcester	FRAZIER RD	3	Line	7.2	MEDIUM	LOW <5	BARE	MEDIUM	RILL	ROADWAY SHOULDER	DSCN5071385 .JPG	DSCN5072386 .JPG										
8	Worcester	FRAZIER RD	3	Line	6.5	MEDIUM	LOW <5	MINOR VEG	HIGH	GULLY/INCISION	DITCH	DSCN5073387 .JPG					minor vegetation, gully						
9	Worcester	MINISTER BROOK RD	3	Line	7.8	MEDIUM	MOD 5-15	MINOR VEG	HIGH	GULLY/INCISION	DITCH	DSCN5075388 .JPG	DSCN5074389 .JPG				minor vegetation, gully						
10	Worcester	MINISTER BROOK RD	3	Line	8.4	MEDIUM	MOD 5-15	BARE	MEDIUM	RILL	ROADWAY SHOULDER	DSCN5076390 .JPG	DSCN5077391 .JPG										
11	Worcester	MINISTER BROOK RD	3	Line	7.2	HIGH	MOD 5-15	STONE	MEDIUM	RILL	DITCH	DSCN5080392 .JPG	DSCN5078393 .JPG	DSCN5079394 .JPG			sediment filled stone lined ditch						
12	Worcester	MINISTER BROOK RD	3	Line	7.7	MEDIUM	MOD 5-15	BARE	LOW	GULLY/INCISION	DITCH	DSCN5083397 .JPG	DSCN5084398 .JPG				insition						
13	Worcester	MINISTER BROOK RD	3	Line	6.0	LOW	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	ROADWAY SHOULDER	DSCN5086400 .JPG	DSCN5087401 .JPG				insition						
14	Worcester	HANCOCK BROOK RD	4	Line	10.8	HIGH	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	DITCH	DSCN5094407 .JPG	DSCN5095408 .JPG	DSCN5096409 .JPG	DSCN5097410 .JPG	DSCN5098411 .JPG	insition, water from field above rd						
15	Worcester	EAGLE LEDGE RD	7	Line	8.4	MEDIUM	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	DITCH	DSCN5107418 .JPG	DSCN5106419 .JPG	DSCN5105420 .JPG			insition, water from frantz rd						
16	Worcester	HARRIS HILL RD	3	Line	10.8	HIGH	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	DITCH	DSCN5109422 .JPG					gully						
17	Worcester	HARRIS HILL RD	3	Line	8.4	MEDIUM	MOD 5-15	BARE	MEDIUM	GULLY/INCISION	DITCH	DSCN5114426 .JPG	DSCN5113427 .JPG				insition						
18	Worcester	DOWNS RD	3	Line	10.4	MEDIUM	STEEP >15	BARE	HIGH	GULLY/INCISION	IN ROADWAY	DSCN5120432 .JPG	DSCN5119433 .JPG				insition, water running down road						

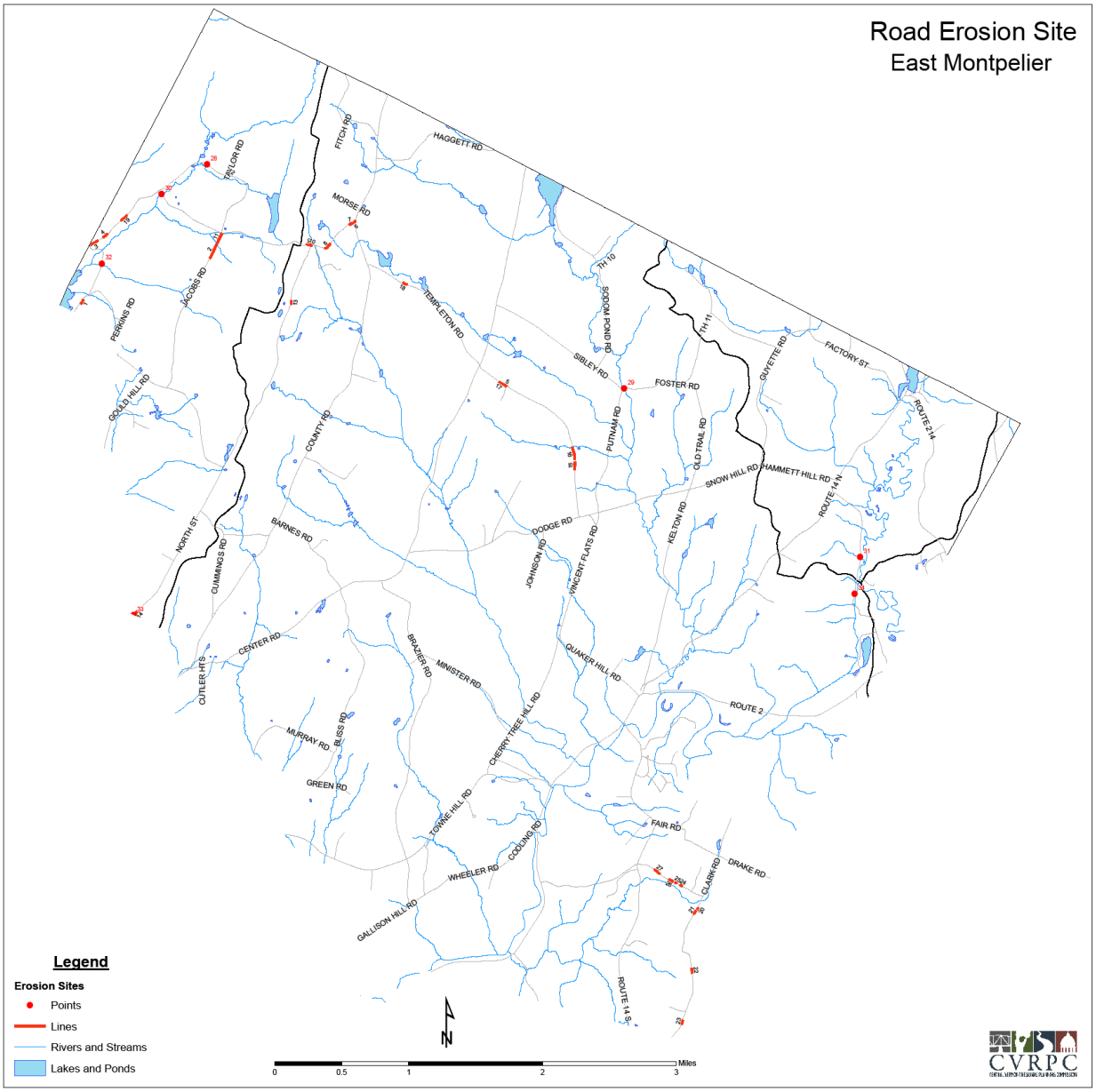
Site Number	Town	Road Name	Road Class	Feature Type	Total	Volume	Steepness	Soil Cover	Deposition to Stream	Erosion Type	Erosion Location	Photo 1	Photo 2	Photo 3	Photo 4	Photo 5	Comments	Culvert Type	Culvert Material	Culvert Owner	Culvert Condition	Culvert Dimension	Bankfull Width
19	Worcester	MINISTER BROOK RD	3	Point	9.1	MEDIUM	MOD 5-15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5091404.JPG	DSCN5092405.JPG				gully	ROUND					
20	Worcester	MINISTER BROOK RD	3	Point	7.2	MEDIUM	LOW <5	BARE	MEDIUM	GULLY/INCISION	CULVERT ENDWALL	DSCN5085399.JPG						ROUND	STEEL	TOWN	FAIR	8	0
21	Worcester	MINISTER BROOK RD	3	Point	10.4	MEDIUM	STEEP >15	BARE	HIGH	SLUMP	ROADWAY SHOULDER	DSCN5081395.JPG	DSCN5082396.JPG										
22	Worcester	HANCOCK BROOK RD	4	Point	9.1	MEDIUM	MOD 5-15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5103417.JPG					insition						
23	Worcester	HANCOCK BROOK RD	4	Point	9.1	MEDIUM	MOD 5-15	BARE	HIGH	GULLY/INCISION	ROADWAY SHOULDER	DSCN5104416.JPG					insition	ROUND					
24	Worcester	HANCOCK BROOK RD	4	Point	9.1	MEDIUM	MOD 5-15	BARE	HIGH	GULLY/INCISION	CULVERT ENDWALL	DSCN5093406.JPG					gully	ROUND	STEEL	TOWN	FAIR	18	0

Attachment D – Town Erosion Site Maps

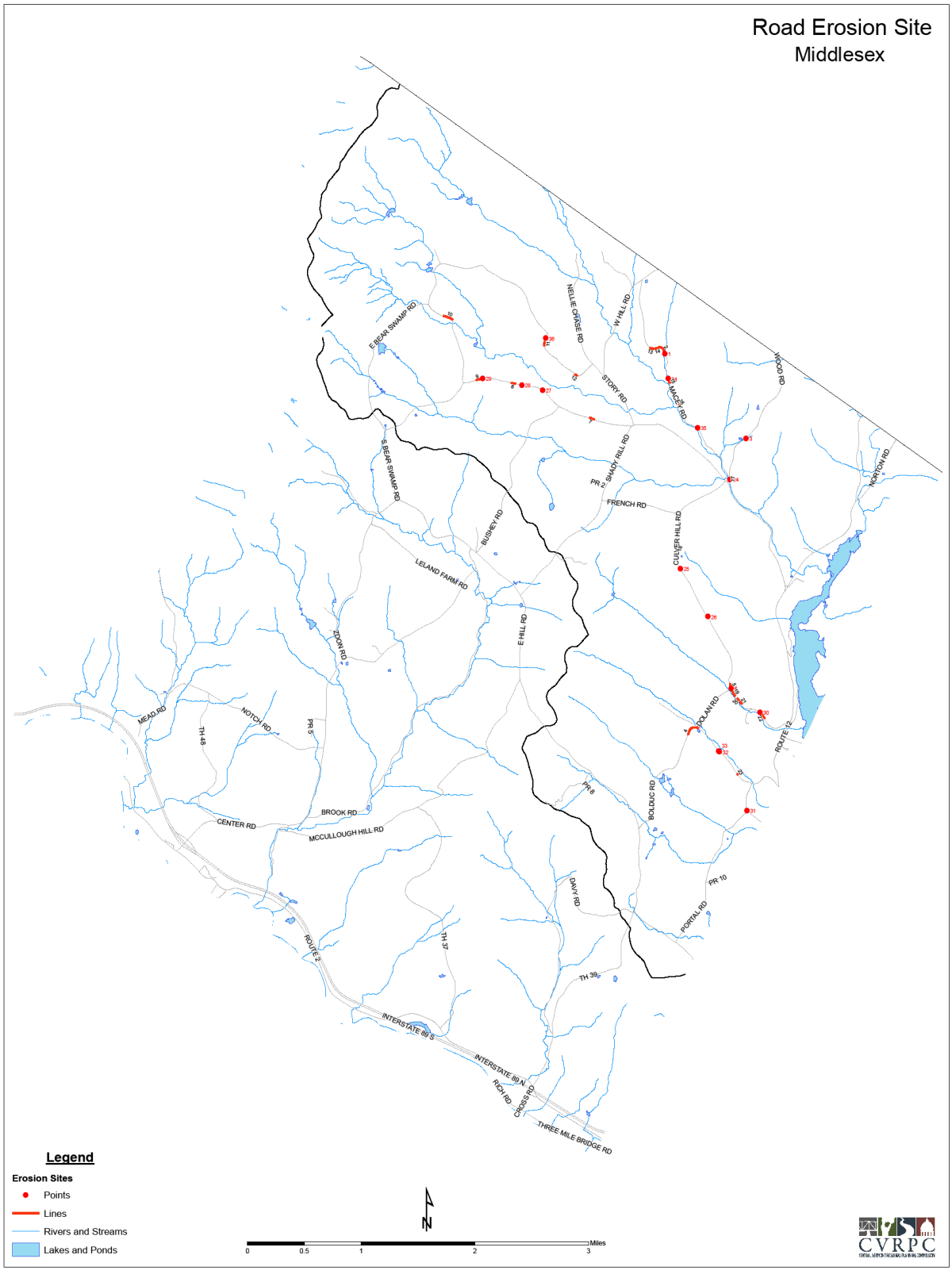
Calais



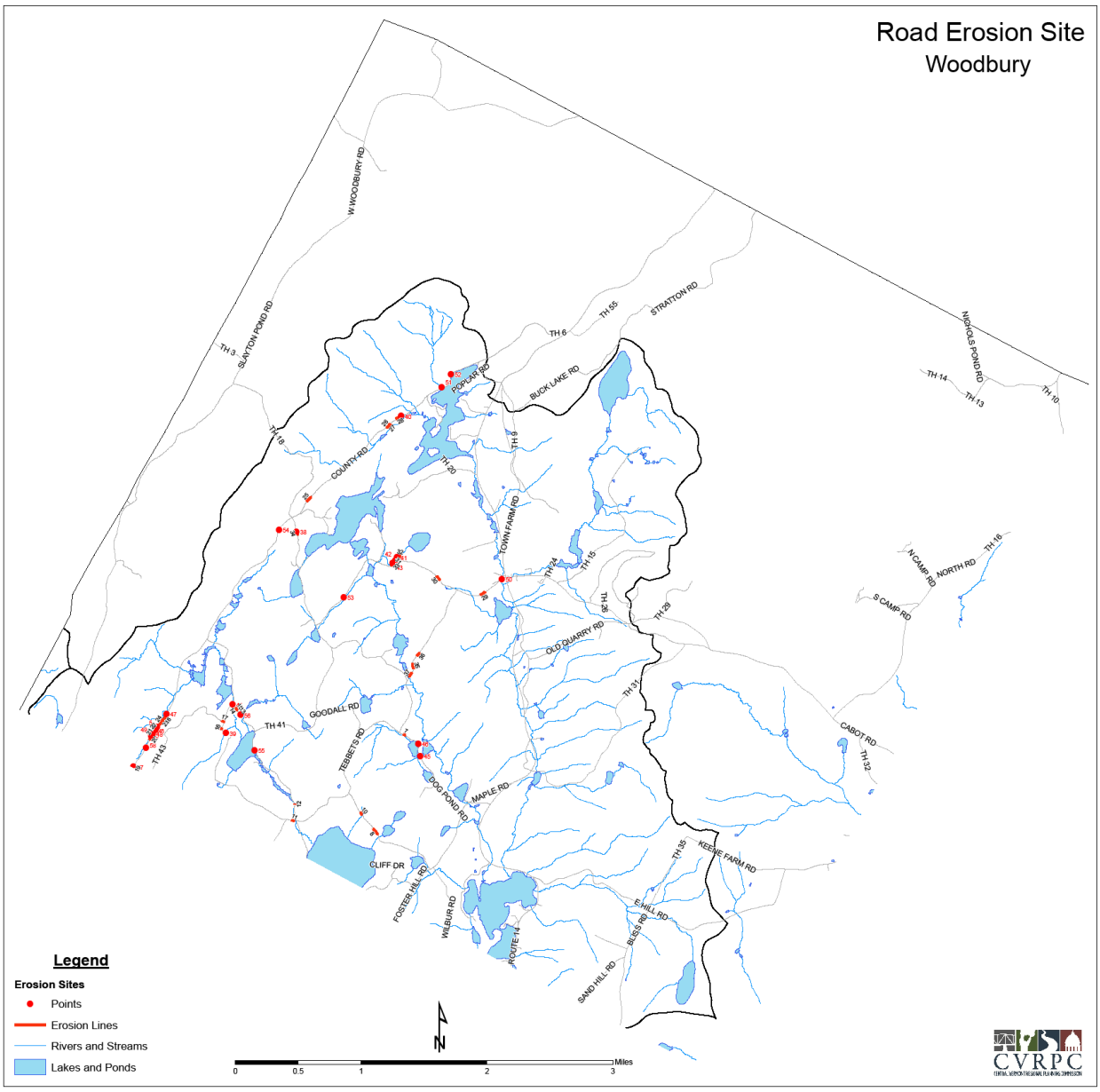
East Montpelier



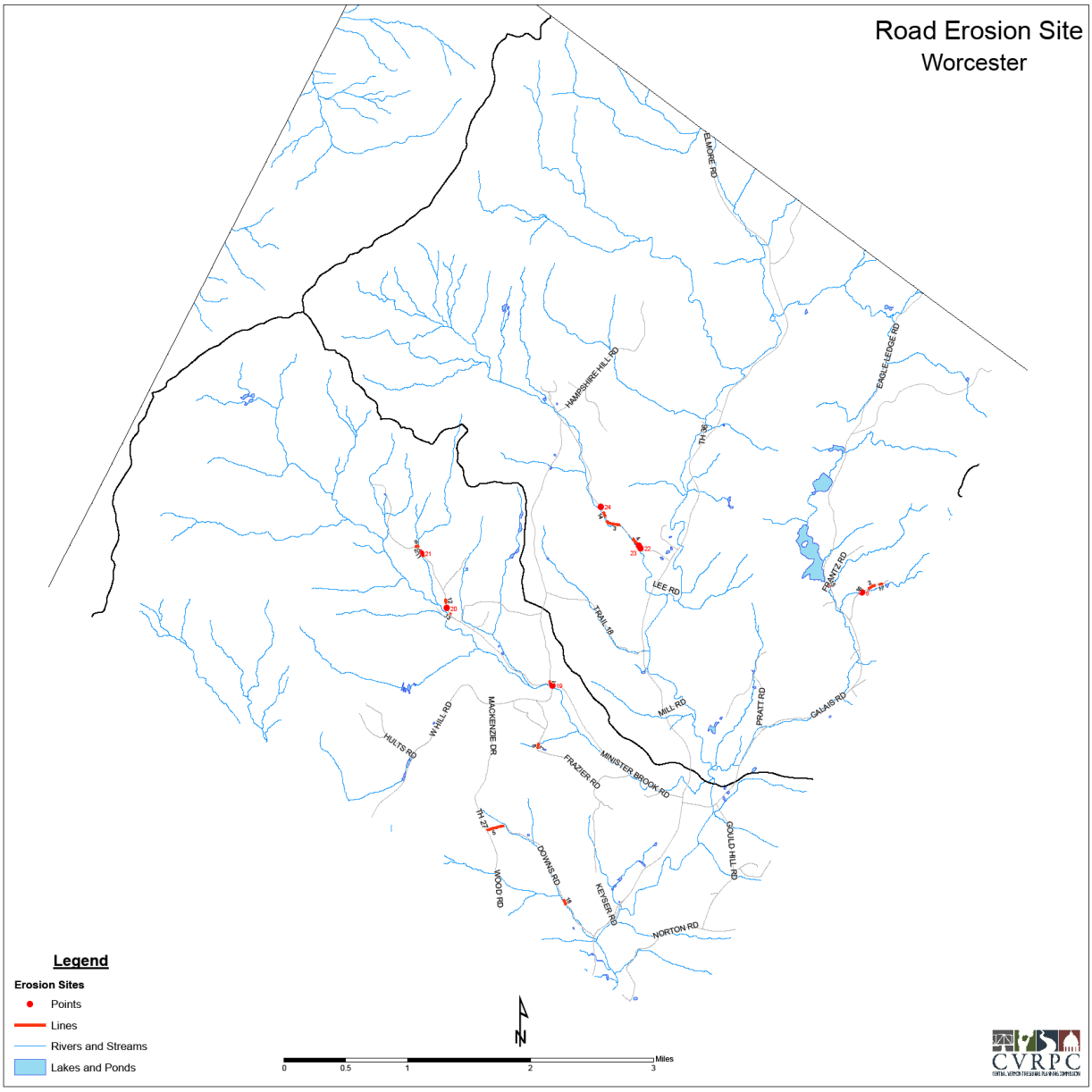
Middlesex


Road Erosion Site
Middlesex
E BEAR SWAMP RD
NELLIE CORSE RD
W HILL RD
WOOD RD
STORY RD
MACEY RD
S BEAR SWAMP RD
PR 2
SHARP HILL RD
NORTON RD
FRENCH RD
BUSHEY RD
CULVER HILL RD
LELAND FARM RD
E HILL RD
ZION RD
MEAD RD
NOTCH RD
TH 48
PR 5
DOLAN RD
ROUTE 12
BROOK RD
CENTER RD
MCCULLOUGH HILL RD
PR 9
BOLDUC RD
PR 10
DAVY RD
PORTAL RD
ROUTE 2
TH 37
TH 39
INTERSTATE 89 S
INTERSTATE 89 N
RICH RD
CROSS RD
THREE MILE BRIDGE RD
Legend
Erosion Sites
Points
Lines
Rivers and Streams
Lakes and Ponds
N
0
0.5
1
2
3
Miles
CVRPC

Woodbury


Road Erosion Site
Woodbury
W WOODBURY RD
SLAYTON POND RD
TH 3
TH 6
TH 55
STRATTON RD
NICHOLS POND RD
TH 14
TH 13
TH 10
POPLAR RD
BUCK LAKE RD
TH 18
COUNTY RD
TH 20
TOWN FARM RD
TH 14
TH 15
TH 35
TH 29
N CAMP RD
NORTH RD
TH 16
S CAMP RD
OLD QUARRY RD
TH 31
GOODALL RD
TH 41
TH 43
TEBBETS RD
POND RD
MAPLE RD
CABOT RD
TH 32
CLIFF DR
FOSTER HILL RD
WILBUR RD
ROUTE 14
TH 55
KEENE FARM RD
E HILL RD
BLISS RD
SAND HILL RD
Legend
Erosion Sites
Points
Erosion Lines
Rivers and Streams
Lakes and Ponds
N
0
0.5
1
2
3
Miles
CVRPC

Worcester


Road Erosion Site
Worcester
ELMORE RD
HAMPSHIRE HILL RD
TH 36
EAGLE LEDGE RD
FRANTZ RD
LEE RD
TRAIL 18
MILL RD
PRATT RD
GALAIS RD
W HILL RD
HULTS RD
MACKENZIE DR
FRAZIER RD
MINISTER BROOK RD
TH 27
DOWNS RD
WOOD RD
KEYSER RD
GOULD HILL RD
NORTON RD
Legend
Erosion Sites
Points
Lines
Rivers and Streams
Lakes and Ponds
N
0
0.5
1
2
3
Miles
CVRPC

Attachment E – Town Commitment Documents

Calais

FORM TO DOCUMENT COMMITMENT TO ROAD EROSION TREATMENTS

PROGRAM:	**Class 3 and 4 road erosion assessment in Calais, VT**
DATE OF MEETING:	November 12, 2012
MEETING LOCATION:	Town of Calais
TOPIC:	Class 3 and 4 road erosion assessment in Calais, VT
MEETING TIME:	7:00-8:00 PM

ATTENDEES

No.	NAME	AFFILIATION	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

6/28/05 One Meeting Form

East Montpelier

FORM TO DOCUMENT COMMITMENT TO ROAD EROSION TREATMENTS

PROGRAM:	**Class 3 and 4 road erosion assessment in East Montpelier, VT**
DATE OF MEETING:	November 19, 2012
MEETING LOCATION:	Town of East Montpelier
TOPIC:	Class 3 and 4 road erosion assessment in East Montpelier, VT
MEETING TIME:	7:00 8:00 PM

ATTENDEES

No	NAME	AFFILIATION	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

6/28/05 Ore Meeting Form

Middlesex

FORM TO DOCUMENT COMMITMENT TO ROAD EROSION TREATMENTS

PROGRAM: Class 3 and 4 road erosion assessment in Middlesex, VT
DATE OF MEETING: November 13, 2012
MEETING LOCATION: Town of Middlesex
TOPIC: Class 3 and 4 road erosion assessment in Middlesex, VT
MEETING TIME: 5:30-6:30 PM

ATTENDEES

No.	NAME	AFFILIATION	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

8/29/05 One Meeting Form

Woodbury

FORM TO DOCUMENT COMMITMENT TO ROAD EROSION TREATMENTS

PROGRAM:	**Class 3 and 4 road erosion assessment in Woodbury, VT**
DATE OF MEETING:	November 26, 2012
MEETING LOCATION:	Town of Woodbury
TOPIC:	Class 3 and 4 road erosion assessment in Woodbury, VT
MEETING TIME:	6:30-7:30 PM

ATTENDEES

No.	NAME	AFFILIATION	
1	Paul Clarey	LCRPC	
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

6/28/05 One Meeting Form

Worcester

FORM 10 DOCUMENT COMMITMENT TO ROAD EROSION TREATMENTS

PROGRAM: Class 3 and 4 road erosion assessment in Worcester VT
DATE OF MEETING: November 5, 2012
MEETING LOCATION: Town of Worcester
TOPIC: Class 3 and 4 road erosion assessment in Worcester VT
MEETING TIME: 6:45-7:20

ATTENDEES

No.	NAME	AFFILIATION		
1	Craig Lang	Worcester Selectboard	[illegible]	
2	[illegible]	Worcester Selectboard	[illegible]	
3	[illegible]	Worcester Selectboard	[illegible]	
4	[illegible]	[illegible]	[illegible]	
5	[illegible]	Clerk		
6				
7				
8				
9				
10				
11				
12				
13				

6/28/05 Pre Meeting Form

Attachment F – GIS Shapefiles and Photos

GIS Shapefiles

To view the erosion line and point data collected during this project please refer to the digital folder titled GIS Shapefiles and Photos and then sub folder titled GIS Shapefiles which contains two shapefiles titled:

1. Erosion_Lines_Roads.shp
2. Erosion_Points_Roads.shp

Photos

To view the erosion site photos taken during this project please refer to the digital folder titled GIS Shapefiles and Photos and then sub folder titled Photos which contains the photo folders titled:

1. CALAIS72312~files
2. CALAIS072512~files
3. EMONT071812~files
4. EMONTPELIER071612~files
5. MIDDLESEX082212~files
6. R080109A~files
7. R080809A~files
8. R091410B~files
9. WOODBURY082912~files
10. WOODBURY083112~files
11. WOODBURY091412~files
12. WORCESTER082312~files