APPENDIX C

Phase 1 (Updated) and Phase 2 Stream Geomorphic Assessment Reach Summary Reports

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M01**
Topo Maps: **Westport, Mount Philo,Hinesburg,Bristol, Monkton**
Date Last Edited: **Sun, October 18, 2009**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Downstream-most 1.3 miles of Lewis Creek just above confluence**
1.2 Towns: **Ferrisburg**
1.3 Downstream Latitude: **44.25**
1.3 Downstream Longitude: **-73.28**

Step 2. Stream Type

2.1 Elevation Upstream: **95**
2.1 Elevation Downstream: **94**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **5519** feet. **1.05** Miles.
2.3 Valley Slope: **0.02** %
2.4.Channel Length: **6693** feet. **1.27** Miles.
2.5 Channel Slope: **0.01** %
2.6 Sinuosity: **1.21**
2.7 Watershed Area: **81** Square Miles
2.8 Channel Width: **91** feet.
2.9 Valley Width: **1,415** feet.
2.10 Confinement Ratio: **16**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **E**
Bedform: **Dune-Ripple**
Sub-class Slope: **None**
Bed Material: **Sand**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Alluvial** **65.2** %
3.3 Sub-dominant Geological Mat.: **Other**
3.4 Left Valley Side **Flat**
3.4 Right Valley Side **Hilly**
3.5 Soils

Hydrologic Group:	**C**	**65.9** %
Flooding:	**Frequent**	**92.9** %
Water Table Deep:	**1.5**	**65.3** %
Water Table Shallow:	**0.0**	**65.3** %
Erodibility:	**slight**	**6.9** %

7.4 Comments:

Updated October 2009, relying on 2004 field observations. Meander geometry (6.5, 6.6) likely not appropriate due to wetland conditions and backwater effects from Lake Champlain.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **60.4** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Shrub**
Current Dominant land Cover: **Forest** **34.8** %
Current Sub-Dominant Land Cover: **Field**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**None**	**0-25**
Length w/ less than 25 ft.:	**0**	**552**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **None**
Type: **None**
Use:
5.2 Bridges and Culverts: **0** **0** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **0.0** **0.0**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	**0.0** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**107** ft.	**0.0** ft.

6.3 Channel Bars: **None**
6.4 Meander Migration: **None**
6.5 Meander Width: **369.0** Ratio: **4.1**
6.6 Wavelength: **714.0** Ratio: **7.9**

Step 7. Windshield Survey

7.1 Bank Erosion: **0.00 ft.**
7.2 Bank Height: **0.00 ft.**
7.3 Ice/Debris Jam Potential: **None**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2	0	1	0	0	0	0	0	0	0	0	0	1	1	0	1	6
High	N.S.	Low	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	Low	Low	N.S.	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M02**
Topo Maps: **Westport,Mount,Philo,Hinesburg,Bristol, Monkon**
Date Last Edited: **Mon, October 19, 2009**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Extends three-quarters of a mile downstream from the Vermont**
1.2 Towns: **Ferrisburg**
1.3 Downstream Latitude: **44.24**
1.3 Downstream Longitude: **-73.27**

Step 2. Stream Type

2.1 Elevation Upstream: **96**
2.1 Elevation Downstream: **95**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **3099** feet. **0.59** Miles.
2.3 Valley Slope: **0.03** %
2.4.Channel Length: **4092** feet. **0.78** Miles.
2.5 Channel Slope: **0.02** %
2.6 Sinuosity: **1.32**
2.7 Watershed Area: **80** Square Miles
2.8 Channel Width: **90** feet.
2.9 Valley Width: **519** feet.
2.10 Confinement Ratio: **6**
2.10 Confinement Type: **Narrow**
2.11 Reference Stream Type: **E**
Bedform: **Dune-Ripple**
Sub-class Slope: **None**
Bed Material: **Sand**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Alluvial** **81.2** %
3.3 Sub-dominant Geological Mat.: **Glacial**
3.4 Left Valley Side **Flat**
3.4 Right Valley Side **Hilly**
3.5 Soils

Hydrologic Group:	**C**	**79.3** %
Flooding:	**Frequent**	**74.4** %
Water Table Deep:	**1.5**	**68.2** %
Water Table Shallow:	**0.0**	**68.2** %
Erodibility:	**slight**	**9.7** %

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **60.6** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Crop**
Current Dominant land Cover: **Forest** **38.0** %
Current Sub-Dominant Land Cover: **Field**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**>100**
Sub-dominant:	**>100**	**0-25**
Length w/ less than 25 ft.:	**1935**	**797**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **None**
Type: **None**
Use:
5.2 Bridges and Culverts: **1** **2** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **1585** **38 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **869.3** ft. **21 %**

	One Side	Both Sides
Road:	**0.0** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**869.3** ft.	**0.0** ft.
6.2 Development:	**0.0** ft.	**39** ft.

6.3 Channel Bars: **None**
6.4 Meander Migration: **None**
6.5 Meander Width: **919.0** Ratio: **10.2**
6.6 Wavelength: **205.0** Ratio: **2.3**

Step 7. Windshield Survey

7.1 Bank Erosion: **1,270.59 ft.**
7.2 Bank Height: **5.67 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

7.4 Comments:

Updated October 2009, relying on field observations from 2004. Meander geometry (6.5, 6.6) likely not appropriate due to wetland conditions and backwater effects from Lake

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	0 N.S.	2 High	0 N.S.	0 N.S.	0 N.S.	2 High	0 N.S.	2 High	0 N.S.	0 N.S.	0 N.S.	2 High	2 High	1 Low	1 Low	14

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M03**
Topo Maps: **Westport,Mount Philo,Hinesburg,Bristol,Monkton**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Greenbush Rd downstream to railroad bridge.**
1.2 Towns: **Ferrisburg**
1.3 Downstream Latitude: **44.24**
1.3 Downstream Longitude: **-73.26**

Step 2. Stream Type

2.1 Elevation Upstream: **98**
2.1 Elevation Downstream: **96**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **3794** feet. **0.72** Miles.
2.3 Valley Slope: **0.05** %
2.4.Channel Length: **5471** feet. **1.04** Miles.
2.5 Channel Slope: **0.04** %
2.6 Sinuosity: **1.44**
2.7 Watershed Area: **80** Square Miles
2.8 Channel Width: **90** feet.
2.9 Valley Width: **1,200** feet.
2.10 Confinement Ratio: **13**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **Dune-Ripple**
Sub-class Slope: **None**
Bed Material: **Sand**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Alluvial** **68.0** %
3.3 Sub-dominant Geological Mat.: **Glacial**
3.4 Left Valley Side **Steep**
3.4 Right Valley Side **Flat**
3.5 Soils

Hydrologic Group:	**C**	**43.4** %
Flooding:	**Frequent**	**56.3** %
Water Table Deep:	**6.0**	**44.5** %
Water Table Shallow:	**4.0**	**30.2** %
Erodibility:	**slight**	**17.3** %

7.4 Comments:

Murky, steep grass banks, looks deep, bridge no problem. Updated using Phase 2 data on 10/02/01 and on 7/22/04. Updated Sept 2007 with additional Phase 2 data.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **60.8** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Crop**
Current Dominant land Cover: **Crop** **27.0** %
Current Sub-Dominant Land Cover: **Forest**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**26-50**	**26-50**
Sub-dominant:	**>100**	**51-100**
Length w/ less than 25 ft.:	**101**	**728**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **Irrigation**
Type: **Small Withdrawal**
Use: **Other**
5.2 Bridges and Culverts: **2** **5** %
5.3 Bank Armoring: **3 %**
Left **169** Right **9.9**
5.4 Channel Straightening: **829** **15 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **3653** ft. **66 %**

	One Side	Both Sides
Road:	**0.0** ft.	**0.0** ft.
Railroad:	**1534** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**2119** ft.	**0.0** ft.
6.2 Development:	**549** ft.	**102** ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Multiple**
6.5 Meander Width: **385.0** Ratio: **4.3**
6.6 Wavelength: **564.0** Ratio: **6.3**

Step 7. Windshield Survey

7.1 Bank Erosion: **745.26 ft.**
7.2 Bank Height: **3.73 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	1 Low	1 Low	1 Low	0 N.S.	1 Low	0 N.S.	2 High	1 Low	1 Low	1 Low	1 Low	1 Low	0 N.S.	1 Low	16

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M04**
Topo Maps: **Westport,Mount Philo,Hinesburg,Bristol,Monkton**
Date Last Edited: **Sun, October 18, 2009**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Extends from Route 7 crossing near the upstream end to Greenbush**
1.2 Towns: **Ferrisburg**
1.3 Downstream Latitude: **44.25**
1.3 Downstream Longitude: **-73.25**

Step 2. Stream Type

2.1 Elevation Upstream: **102**
2.1 Elevation Downstream: **98**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **3489** feet. **0.66** Miles.
2.3 Valley Slope: **0.11** %
2.4.Channel Length: **5344** feet. **1.01** Miles.
2.5 Channel Slope: **0.07** %
2.6 Sinuosity: **1.53**
2.7 Watershed Area: **80** Square Miles
2.8 Channel Width: **54** feet.
2.9 Valley Width: **730** feet.
2.10 Confinement Ratio: **14**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **E**
Bedform: **Dune-Ripple**
Sub-class Slope: **None**
Bed Material: **Sand**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Alluvial** **75.2** %
3.3 Sub-dominant Geological Mat.: **Glacial**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Hilly**
3.5 Soils

Hydrologic Group:	**B**	**76.7** %
Flooding:	**Frequent**	**58.7** %
Water Table Deep:	**6.0**	**66.3** %
Water Table Shallow:	**4.0**	**56.3** %
Erodibility:	**slight**	**11.5** %

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **61.0** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Field**
Current Dominant land Cover: **Forest** **34.4** %
Current Sub-Dominant Land Cover: **Field**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**26-50**	**0-25**
Length w/ less than 25 ft.:	**736**	**1324**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **None**
Type: **None**
Use:
5.2 Bridges and Culverts: **0** **0** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **992** **18 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	**0.0** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Multiple**
6.5 Meander Width: **319.0** Ratio: **5.9**
6.6 Wavelength: **445.0** Ratio: **8.2**

Step 7. Windshield Survey

7.1 Bank Erosion: **2,438.28 ft.**
7.2 Bank Height: **7.02 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

7.4 Comments:

Updated October 2009, relying on 2004 Phase 2 assessment and 2006 Phase 3 assessment in limited sections. Substituted measured channel width in Step 2.8 (which factors in to estimate of

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2	1	2	0	0	0	1	0	0	0	1	1	0	0	0	1	9
High	Low	High	N.S.	N.S.	N.S.	Low	N.S.	N.S.	N.S.	Low	Low	N.S.	N.S.	N.S.	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M05**
Topo Maps: **Westport,Hinesburg,Mount Philo,Bristol,Monkton**
Date Last Edited: **Sun, October 18, 2009**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Short reach crossed by VT Route 7.**
1.2 Towns: **Ferrisburg**
1.3 Downstream Latitude: **44.25**
1.3 Downstream Longitude: **-73.23**

Step 2. Stream Type

2.1 Elevation Upstream: **108**
2.1 Elevation Downstream: **102**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **1948** feet. **0.37** Miles.
2.3 Valley Slope: **0.31** %
2.4.Channel Length: **2394** feet. **0.45** Miles.
2.5 Channel Slope: **0.25** %
2.6 Sinuosity: **1.23**
2.7 Watershed Area: **78** Square Miles
2.8 Channel Width: **89** feet.
2.9 Valley Width: **230** feet.
2.10 Confinement Ratio: **3**
2.10 Confinement Type: **Semi-confined**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **None**
Bed Material: **Cobble**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **Multiple**
3.3 Dominant Geologic Mat.: **Alluvial** **52.2** %
3.3 Sub-dominant Geological Mat.: **Glacial**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Very Steep**
3.5 Soils

Hydrologic Group:	**B**	**44.1** %
Flooding:	**None/Rare**	**47.8** %
Water Table Deep:	**3.0**	**64.2** %
Water Table Shallow:	**1.0**	**43.9** %
Erodibility:	**Moderate**	**44.2** %

7.4 Comments:

Updated October 2009, relying on 2004 Phase 2 assessment. Steps 6.5/6.6 (meander geometry) not applicable due to bedrock controls.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **61.7** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **37.5** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**333**	**125**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **None**
Type: **None**
Use:
5.2 Bridges and Culverts: **1** **6** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **0.0** **0.0**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **1570** ft. **65 %**

	One Side	Both Sides
Road:	**1058** ft.	**512.8** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**414** ft.	**156** ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **None**
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **154.74 ft.**
7.2 Bank Height: **4.00 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	1 Low	0 N.S.	1 Low	0 N.S.	0 N.S.	0 N.S.	2 High	2 High	1 Low	0 N.S.	0 N/A	0 N/A	0 N.S.	1 Low	12

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M06**
Topo Maps: **Westport,Hinesburg,Mount Philo,Bristol,Monkton**
Date Last Edited: **Mon, October 19, 2009**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **From Old Hollow Rd crossing in North Ferrisburg village to the Route**
1.2 Towns: **Ferrisburg**
1.3 Downstream Latitude: **44.25**
1.3 Downstream Longitude: **-73.23**

Step 2. Stream Type

2.1 Elevation Upstream: **150**
2.1 Elevation Downstream: **108**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **5401** feet. **1.02** Miles.
2.3 Valley Slope: **0.78** %
2.4.Channel Length: **5831** feet. **1.10** Miles.
2.5 Channel Slope: **0.72** %
2.6 Sinuosity: **1.08**
2.7 Watershed Area: **77** Square Miles
2.8 Channel Width: **89** feet.
2.9 Valley Width: **772** feet.
2.10 Confinement Ratio: **9**
2.10 Confinement Type: **Broad**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **None**
Bed Material: **Cobble**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **Ledge**
3.3 Dominant Geologic Mat.: **Alluvial** **64.2** %
3.3 Sub-dominant Geological Mat.: **Glacial**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Very Steep**
3.5 Soils

Hydrologic Group:	**B**	**51.8** %
Flooding:	**None/Rare**	**35.8** %
Water Table Deep:	**3.0**	**59.5** %
Water Table Shallow:	**1.5**	**33.9** %
Erodibility:	**Moderate**	**33.0** %

7.4 Comments:

Updated October 2009, relying on 2004 Phase 2 assessment and one additional 2009 cross section.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **62.0** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Crop**
Current Dominant land Cover: **Forest** **43.1** %
Current Sub-Dominant Land Cover: **Crop**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**None**	**None**
Length w/ less than 25 ft.:	**0**	**0**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **None**
Type: **None**
Use:
5.2 Bridges and Culverts: **0** **0** %
5.3 Bank Armoring: **2 %**
Left **0.0** Right **162**
5.4 Channel Straightening: **1838** **31 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	**0.0** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**128** ft.	**0.0** ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Multiple**
6.5 Meander Width: **322.0** Ratio: **3.6**
6.6 Wavelength: **654.0** Ratio: **7.4**

Step 7. Windshield Survey

7.1 Bank Erosion: **3,014.96 ft.**
7.2 Bank Height: **4.27 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2	2	0	0	0	0	2	0	0	0	2	1	1	1	0	1	12
High	High	N.S.	N.S.	N.S.	N.S.	High	N.S.	N.S.	N.S.	High	Low	Low	Low	N.S.	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M07**
Topo Maps: **Bristol,Hinesburg,Mount Philo,Monkton,Westport**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Largely forested reach from vicinity (south of) Spear Street and**
1.2 Towns: **Charlotte, Ferrisburg**
1.3 Downstream Latitude: **44.26**
1.3 Downstream Longitude: **-73.21**

Step 2. Stream Type

2.1 Elevation Upstream: **215**
2.1 Elevation Downstream: **150**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **8554** feet. **1.62** Miles.
2.3 Valley Slope: **0.76** %
2.4.Channel Length: **9124** feet. **1.73** Miles.
2.5 Channel Slope: **0.71** %
2.6 Sinuosity: **1.07**
2.7 Watershed Area: **75** Square Miles
2.8 Channel Width: **88** feet.
2.9 Valley Width: **255** feet.
2.10 Confinement Ratio: **3**
2.10 Confinement Type: **Semi-confined**
2.11 Reference Stream Type: **B**
Bedform: **Riffle-Pool**
Sub-class Slope: **c**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **Waterfall**
3.3 Dominant Geologic Mat.: **Glacial Lake 92.9** %
3.3 Sub-dominant Geological Mat.: **Alluvial**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Very Steep**
3.5 Soils

Hydrologic Group:	**D**	**92.3** %
Flooding:	**None/Rare**	**82.6** %
Water Table Deep:	**3.0**	**63.5** %
Water Table Shallow:	**1.0**	**63.5** %
Erodibility:	**Severe**	**64.1** %

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **63.0** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **56.0** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**None**	**None**
Length w/ less than 25 ft.:	**217**	**279**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **1** **1** %
5.3 Bank Armoring: **2 %**
Left **0.0** Right **227**
5.4 Channel Straightening: **0.0** **0.0**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **744** ft. **8 %**

	One Side	Both Sides
Road:	**744** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**1541** ft.	**175.3** ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Braiding**
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **334.41 ft.**
7.2 Bank Height: **2.50 ft.**
7.3 Ice/Debris Jam Potential: **None**

7.4 Comments:

Bedrock grade control, shallow and wide. Updated using Phase 2 data on 10/02/01 and on 7/22/04. Updated with additional Phase 2 data in Sept 2007. Meander geometry measurement is "Not

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2	1	1	0	0	0	0	0	1	1	1	0	0	0	0	0	7
High	Low	Low	N.S.	N.S.	N.S.	N.S.	N.S.	Low	Low	Low	N.S.	N/A	N/A	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M08**
Topo Maps: **Westport,Bristol,Mount Philo,Hinesburg,Monkton**
Date Last Edited: **Mon, August 17, 2009**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Extends from 1/4 mile upstream of the Quinlan Covered Bridge to**
1.2 Towns: **Charlotte**
1.3 Downstream Latitude: **44.27**
1.3 Downstream Longitude: **-73.19**

Step 2. Stream Type

2.1 Elevation Upstream: **225**
2.1 Elevation Downstream: **215**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **4990** feet. **0.95** Miles.
2.3 Valley Slope: **0.20** %
2.4.Channel Length: **6484** feet. **1.23** Miles.
2.5 Channel Slope: **0.15** %
2.6 Sinuosity: **1.30**
2.7 Watershed Area: **74** Square Miles
2.8 Channel Width: **87** feet.
2.9 Valley Width: **900** feet.
2.10 Confinement Ratio: **10**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **None**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **Ledge**
3.3 Dominant Geologic Mat.: **Glacial Lake 59.9** %
3.3 Sub-dominant Geological Mat.: **Alluvial**
3.4 Left Valley Side **Steep**
3.4 Right Valley Side **Steep**
3.5 Soils

Hydrologic Group:	**D**	**59.7** %
Flooding:	**Occasional**	**53.8** %
Water Table Deep:	**3.0**	**50.2** %
Water Table Shallow:	**1.0**	**35.6** %
Erodibility:	**Moderate**	**39.0** %

7.4 Comments:

Updated August 2009 relying on 2004 Ph2 field data. Landowners and CRREL ice jam database reports repeated ice jam related flooding at Quinlan Covered Bridge.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed

Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **63.5** %
Current Sub-Dominant Land Cover: **Field**

4.2 Corridor

Historic Land Cover: **Crop**
Current Dominant land Cover: **Forest** **38.5** %
Current Sub-Dominant Land Cover: **Field**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**905**	**535**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **1** **5** %
5.3 Bank Armoring: **4 %**
Left **187** Right **82**
5.4 Channel Straightening: **305** **4 %**
5.5 Dredging History: **Dredging**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **1640.0** ft. **25 %**

	One Side	Both Sides
Road:	**35** ft.	**1410** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**194** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**323** ft.	**0.0** ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Multiple**
6.5 Meander Width: **359.0** Ratio: **4.1**
6.6 Wavelength: **566.0** Ratio: **6.5**

Step 7. Windshield Survey

7.1 Bank Erosion: **2,455.34 ft.**
7.2 Bank Height: **5.21 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	2 High	0 N.S.	0 N.S.	0 N.S.	0 N.S.	2 High	2 High	0 N.S.	1 Low	1 Low	1 Low	1 Low	0 N.S.	2 High	16

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M09**
Topo Maps: **Westport,Bristol,Monkton,Hinesburg,Mount Philo**
Date Last Edited: **Sun, August 16, 2009**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Short reach along Lewis Creek Road including Scott Pond Dam**
1.2 Towns: **Charlotte**
1.3 Downstream Latitude: **44.28**
1.3 Downstream Longitude: **-73.18**

Step 2. Stream Type

2.1 Elevation Upstream: **230**
2.1 Elevation Downstream: **225**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **1091** feet. **0.21** Miles.
2.3 Valley Slope: **0.46** %
2.4.Channel Length: **1305** feet. **0.25** Miles.
2.5 Channel Slope: **0.38** %
2.6 Sinuosity: **1.20**
2.7 Watershed Area: **71** Square Miles
2.8 Channel Width: **85** feet.
2.9 Valley Width: **270** feet.
2.10 Confinement Ratio: **3**
2.10 Confinement Type: **Semi-confined**
2.11 Reference Stream Type: **B**
Bedform: **Riffle-Pool**
Sub-class Slope: **c**
Bed Material: **Cobble**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **Multiple**
3.3 Dominant Geologic Mat.: **Till** **55.7** %
3.3 Sub-dominant Geological Mat.: **Alluvial**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**C**	**38.3** %
Flooding:	**None/Rare**	**71.5** %
Water Table Deep:	**6.0**	**55.7** %
Water Table Shallow:	**6.0**	**55.7** %
Erodibility:	**Severe**	**71.5** %

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **64.6** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Field**
Current Dominant land Cover: **Forest** **41.4** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**>100**
Sub-dominant:	**26-50**	**None**
Length w/ less than 25 ft.:	**774**	**0**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **Impoundment**
Type: **Small Run of River**
Use: **Other**
5.2 Bridges and Culverts: **0** **0** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **487** **37 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **1305** ft. **100 %**

	One Side	Both Sides
Road:	**1305** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**614** ft.	**207** ft.

6.3 Channel Bars: **Mid-channel**
6.4 Meander Migration: **None**
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **0.00 ft.**
7.2 Bank Height: **0.00 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

7.4 Comments:

Updated in August 2009 relying on 2004 Phase 2 field observations. Step 6.5, 6.6 not applicable due to bedrock control of linear planform, and because reach length is less than meander

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	2 High	1 Low	0 N.S.	0 N.S.	2 High	0 N.S.	2 High	2 High	0 N.S.	0 N.S.	0 N/A	0 N/A	1 Low	1 Low	15

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M10**
Topo Maps: **Westport,Bristol,Mount Philo,Hinesburg,Monkton**
Date Last Edited: **Mon, August 24, 2009**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **From covered bridge at Roscoe Road crossing downstream to Scott**
1.2 Towns: **Charlotte**
1.3 Downstream Latitude: **44.28**
1.3 Downstream Longitude: **-73.18**

Step 2. Stream Type

2.1 Elevation Upstream: **298**
2.1 Elevation Downstream: **230**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **11834** feet. **2.24** Miles.
2.3 Valley Slope: **0.57** %
2.4.Channel Length: **13833** feet. **2.62** Miles.
2.5 Channel Slope: **0.49** %
2.6 Sinuosity: **1.17**
2.7 Watershed Area: **71** Square Miles
2.8 Channel Width: **85** feet.
2.9 Valley Width: **400** feet.
2.10 Confinement Ratio: **5**
2.10 Confinement Type: **Narrow**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **None**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **Multiple**
3.3 Dominant Geologic Mat.: **Till** **38.5** %
3.3 Sub-dominant Geological Mat.: **Glacial**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Very Steep**
3.5 Soils

Hydrologic Group:	**D**	**42.6** %
Flooding:	**None/Rare**	**71.9** %
Water Table Deep:	**6.0**	**43.9** %
Water Table Shallow:	**6.0**	**36.5** %
Erodibility:	**Severe**	**66.9** %

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **64.6** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **55.0** %
Current Sub-Dominant Land Cover: **Crop**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**844**	**1225**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **1** **1** %
5.3 Bank Armoring: **1 %**
Left **149** Right **43**
5.4 Channel Straightening: **1787** **12 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **2381.3**ft. **17 %**

	One Side	Both Sides
Road:	**2059** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**321** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**537** ft.	**54** ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Multiple**
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **1,887.74 ft.**
7.2 Bank Height: **3.41 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

7.4 Comments:

Updated using Phase 2 data on 10/02/01 and on 7/22/04. Updated with additional Phase 2 data in Sept 2007 based on Nov 2006 reach walk. Meander geometry measurements "Not

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2	1	1	0	0	0	1	0	1	0	1	1	0	0	0	1	9
High	Low	Low	N.S.	N.S.	N.S.	Low	N.S.	Low	N.S.	Low	Low	N/A	N/A	N.S.	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M11**
Topo Maps: **Bristol,Monkton,Hinesburg,Mount Philo,Westport**
Date Last Edited: **Sun, October 18, 2009**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **From Cedar Brook confluence downstream to Charlotte town line just**
1.2 Towns: **Hinesburg**
1.3 Downstream Latitude: **44.29**
1.3 Downstream Longitude: **-73.15**

Step 2. Stream Type

2.1 Elevation Upstream: **310**
2.1 Elevation Downstream: **298**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **2272** feet. **0.43** Miles.
2.3 Valley Slope: **0.53** %
2.4.Channel Length: **3341** feet. **0.63** Miles.
2.5 Channel Slope: **0.36** %
2.6 Sinuosity: **1.47**
2.7 Watershed Area: **66** Square Miles
2.8 Channel Width: **83** feet.
2.9 Valley Width: **500** feet.
2.10 Confinement Ratio: **6**
2.10 Confinement Type: **Broad**
2.11 Reference Stream Type: **E**
Bedform: **Dune-Ripple**
Sub-class Slope: **None**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **Ledge**
3.3 Dominant Geologic Mat.: **Glacial Lake** **44.4** %
3.3 Sub-dominant Geological Mat.: **Alluvial**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Hilly**
3.5 Soils

Hydrologic Group:	**D**	**56.5** %
Flooding:	**None/Rare**	**56.5** %
Water Table Deep:	**3.0**	**60.1** %
Water Table Shallow:	**1.0**	**42.8** %
Erodibility:	**Severe**	**54.9** %

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **66.0** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Crop**
Current Dominant land Cover: **Field** **27.1** %
Current Sub-Dominant Land Cover: **Forest**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**0-25**
Sub-dominant:	**51-100**	**>100**
Length w/ less than 25 ft.:	**0**	**1574**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **None**
Type: **None**
Use:
5.2 Bridges and Culverts: **0** **0** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **0.0** **0.0**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	**0.0** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **None**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **1,351.95 ft.**
7.2 Bank Height: **7.29 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

7.4 Comments:

Updated October 2009, relying on 2004 Phase 2 assessment. Predicted channel width in Step 2.8 is likely higher than actual (and estimate of valley confinement, Step 2.10, is likely lower than

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2	2	2	0	0	0	0	0	0	0	1	0	0	0	1	1	9
High	High	High	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	Low	N.S.	N.D.	N.D.	Low	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M12**
Topo Maps: **314 (Mount Philo), 414 (Hinesburg)**
Date Last Edited: **Sun, October 18, 2009**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **From Pond Brook confluence downstream to Cedar Brook**
1.2 Towns: **Hinesburg**
1.3 Downstream Latitude: **44.29**
1.3 Downstream Longitude: **-73.14**

Step 2. Stream Type

2.1 Elevation Upstream: **335**
2.1 Elevation Downstream: **310**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **9423** feet. **1.78** Miles.
2.3 Valley Slope: **0.27** %
2.4.Channel Length: **14294** feet. **2.71** Miles.
2.5 Channel Slope: **0.17** %
2.6 Sinuosity: **1.52**
2.7 Watershed Area: **59** Square Miles
2.8 Channel Width: **79** feet.
2.9 Valley Width: **537** feet.
2.10 Confinement Ratio: **7**
2.10 Confinement Type: **Broad**
2.11 Reference Stream Type: **E**
Bedform: **Dune-Ripple**
Sub-class Slope: **None**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Glacial Lake** **48.7** %
3.3 Sub-dominant Geological Mat.: **Alluvial**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Steep**
3.5 Soils

Hydrologic Group:	**D**	**46.4** %
Flooding:	**None/Rare**	**62.0** %
Water Table Deep:	**3.0**	**38.0** %
Water Table Shallow:	**1.0**	**24.2** %
Erodibility:	**Moderate**	**46.3** %

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover:
Current Dominant land Cover: **Forest** **68.0** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover:
Current Dominant land Cover: **Forest** **45.2** %
Current Sub-Dominant Land Cover: **Wetland**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**437**	**1902**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **1** **1** %
5.3 Bank Armoring: **1 %**
Left **71** Right **87**
5.4 Channel Straightening: **775** **5 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	**0.0** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**0.0** ft.	**75** ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Multiple**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **4,873.72 ft.**
7.2 Bank Height: **7.03 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

7.4 Comments:

Updated October 2009, relying on 2004 Phase 2 assessment. Predicted channel width in Step 2.8 is likely higher than actual (and estimate of valley confinement, Step 2.10, is likely lower than

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2	1	1	0	0	0	1	0	0	0	1	1	0	0	0	1	8
High	Low	Low	N.S.	N.S.	N.S.	Low	N.S.	Unk.	N.S.	Low	Low	N.D.	N.D.	N.S.	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M13**
Topo Maps: **Bristol,Monkton,Hinesburg,Mount Philo,Westport**
Date Last Edited: **Mon, October 19, 2009**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Extends from Lewis Creek Rd to the confluence of Pond Brook,**
1.2 Towns: **Hinesburg**
1.3 Downstream Latitude: **44.28**
1.3 Downstream Longitude: **-73.12**

Step 2. Stream Type

2.1 Elevation Upstream: **350**
2.1 Elevation Downstream: **335**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **6072** feet. **1.15** Miles.
2.3 Valley Slope: **0.25** %
2.4.Channel Length: **7844** feet. **1.49** Miles.
2.5 Channel Slope: **0.19** %
2.6 Sinuosity: **1.29**
2.7 Watershed Area: **39** Square Miles
2.8 Channel Width: **66** feet.
2.9 Valley Width: **416** feet.
2.10 Confinement Ratio: **6**
2.10 Confinement Type: **Broad**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **None**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Alluvial** **42.4** %
3.3 Sub-dominant Geological Mat.: **Other**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Hilly**
3.5 Soils

Hydrologic Group:	**B**	**40.8** %
Flooding:	**None/Rare**	**53.6** %
Water Table Deep:	**3.0**	**33.0** %
Water Table Shallow:	**1.5**	**33.0** %
Erodibility:	**Moderate**	**28.7** %

7.4 Comments:

Updated October 2009, relying on 2004 & 2005 Phase 2 assessment.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed

Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **74.9** %
Current Sub-Dominant Land Cover: **Field**

4.2 Corridor

Historic Land Cover: **Field**
Current Dominant land Cover: **Crop** **25.1** %
Current Sub-Dominant Land Cover: **Forest**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**1173**	**1788**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **None**
Type: **None**
Use:
5.2 Bridges and Culverts: **1** **3** %
5.3 Bank Armoring: **3 %**
Left **165** Right **99**
5.4 Channel Straightening: **2327** **29 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	**0.0** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**92.6** ft.	**88** ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Multiple**
6.5 Meander Width: **221.0** Ratio: **3.4**
6.6 Wavelength: **349.0** Ratio: **5.3**

Step 7. Windshield Survey

7.1 Bank Erosion: **1,604.00 ft.**
7.2 Bank Height: **6.88 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	2 High	0 N.S.	0 N.S.	0 N.S.	2 High	0 N.S.	0 N.S.	0 N.S.	1 Low	1 Low	1 Low	2 High	0 N.S.	1 Low	14

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M14**
Topo Maps: **Bristol,Monkton,Hinesburg,Mount Philo,Westport**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Reach is parallel to Lewis Creek Road, east of intersection with Silver**
1.2 Towns: **Hinesburg**
1.3 Downstream Latitude: **44.29**
1.3 Downstream Longitude: **-73.11**

Step 2. Stream Type

2.1 Elevation Upstream: **360**
2.1 Elevation Downstream: **350**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **2863** feet. **0.54** Miles.
2.3 Valley Slope: **0.35** %
2.4.Channel Length: **3003** feet. **0.57** Miles.
2.5 Channel Slope: **0.33** %
2.6 Sinuosity: **1.05**
2.7 Watershed Area: **38** Square Miles
2.8 Channel Width: **65** feet.
2.9 Valley Width: **188** feet.
2.10 Confinement Ratio: **3**
2.10 Confinement Type: **Semi-confined**
2.11 Reference Stream Type: **B**
Bedform: **Riffle-Pool**
Sub-class Slope: **c**
Bed Material: **Cobble**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **Ledge**
3.3 Dominant Geologic Mat.: **Glacial Lake** **63.1** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Very Steep**
3.5 Soils

Hydrologic Group:	**D**	**65.5** %
Flooding:	**None/Rare**	**84.8** %
Water Table Deep:	**2.0**	**62.5** %
Water Table Shallow:	**0.0**	**47.8** %
Erodibility:	**Very Severe**	**84.8** %

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **75.7** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **35.4** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**51-100**
Sub-dominant:	**None**	**26-50**
Length w/ less than 25 ft.:	**141**	**1175**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **Irrigation**
Type: **Small Withdrawal**
Use: **Other**
5.2 Bridges and Culverts: **1** **10** %
5.3 Bank Armoring: **5 %**
Left **47** Right **125**
5.4 Channel Straightening: **0.0** **0.0**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **3002** ft. **99 %**

	One Side	Both Sides
Road:	**3002** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**645** ft.	**49** ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Braiding**
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **0.00 ft.**
7.2 Bank Height: **0.00 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

7.4 Comments:

Vegetated mid bar bifurcated upstream of bridge. Updated using 2001 Phase 2 data on 7/22/04. Updated with additional Phase 2 data in Sept 2007. Meander geometry "Not Applicable" due to

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	2 High	1 Low	1 Low	1 Low	0 N.S.	0 N.S.	2 High	2 High	1 Low	0 N.S.	0 N/A	0 N/A	0 N.S.	1 Low	15

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M15**
Topo Maps: **Bristol,Monkton,Hinesburg,Mount Philo,Westport**
Date Last Edited: **Wed, March 03, 2010**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **From confluence of Hollow Brook (T4) downstream, under Tyler**
1.2 Towns: **Hinesburg, Monkton, Stark, Starksboro**
1.3 Downstream Latitude: **44.29**
1.3 Downstream Longitude: **-73.10**

Step 2. Stream Type

2.1 Elevation Upstream: **376**
2.1 Elevation Downstream: **360**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **7337** feet. **1.39** Miles.
2.3 Valley Slope: **0.22** %
2.4.Channel Length: **10151** feet. **1.92** Miles.
2.5 Channel Slope: **0.16** %
2.6 Sinuosity: **1.38**
2.7 Watershed Area: **38** Square Miles
2.8 Channel Width: **65** feet.
2.9 Valley Width: **1,145** feet.
2.10 Confinement Ratio: **18**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **None**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Alluvial** **84.5** %
3.3 Sub-dominant Geological Mat.: **Glacial**
3.4 Left Valley Side **Steep**
3.4 Right Valley Side **Steep**
3.5 Soils

Hydrologic Group:	**B**	**61.0** %
Flooding:	**Frequent**	**61.3** %
Water Table Deep:	**6.0**	**40.4** %
Water Table Shallow:	**4.0**	**35.4** %
Erodibility:	**slight**	**12.1** %

7.4 Comments:

Updated using Phase 2 data on 10/02/01 and on 7/22/04. Updated with additional Phase 2 data in Sept 2007.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **75.8** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **53.5** %
Current Sub-Dominant Land Cover: **Wetland**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**None**	**None**
Length w/ less than 25 ft.:	**498**	**258**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **Irrigation**
Type: **Small Withdrawal**
Use: **Other**
5.2 Bridges and Culverts: **1** **1** %
5.3 Bank Armoring: **3 %**
Left **0.0** Right **326.4**
5.4 Channel Straightening: **4037** **39 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **769** ft. **7 %**

	One Side	Both Sides
Road:	**769** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**592** ft.	**64** ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Multiple**
6.5 Meander Width: **222.0** Ratio: **3.4**
6.6 Wavelength: **279.0** Ratio: **4.3**

Step 7. Windshield Survey

7.1 Bank Erosion: **5,148.88 ft.**
7.2 Bank Height: **3.11 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	1 Low	1 Low	1 Low	0 N.S.	0 N.S.	2 High	0 N.S.	1 Low	1 Low	2 High	2 High	1 Low	2 High	0 N.S.	1 Low	17

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M16**
Topo Maps: **Bristol,Monkton,Hinesburg,Mount Philo,Westport**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Reach on west side of Rt 116 between M. Kelly farm and Tyler Bridge**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.27**
1.3 Downstream Longitude: **-73.08**

Step 2. Stream Type

2.1 Elevation Upstream: **380**
2.1 Elevation Downstream: **376**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **4303** feet. **0.81** Miles.
2.3 Valley Slope: **0.09** %
2.4.Channel Length: **6559** feet. **1.24** Miles.
2.5 Channel Slope: **0.06** %
2.6 Sinuosity: **1.52**
2.7 Watershed Area: **27** Square Miles
2.8 Channel Width: **55** feet.
2.9 Valley Width: **800** feet.
2.10 Confinement Ratio: **14**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **E**
Bedform: **Riffle-Pool**
Sub-class Slope: **None**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Alluvial** **81.1** %
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Hilly**
3.4 Right Valley Side **Hilly**
3.5 Soils

Hydrologic Group:	**B**	**62.2** %
Flooding:	**Occasional**	**58.9** %
Water Table Deep:	**3.0**	**58.9** %
Water Table Shallow:	**1.5**	**59.2** %
Erodibility:	**slight**	**14.9** %

7.4 Comments:

Select updates using Phase 2 data on 10/02/01 and 7/22/04 to then current protocols (SMRC, 2004). Updated in Jan 2008 to 2007 protocols relying on 2002 Ph2 data and 2005 Ph3 data.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed

Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **77.5** %
Current Sub-Dominant Land Cover: **Field**

4.2 Corridor

Historic Land Cover: **Crop**
Current Dominant land Cover: **Field** **25.8** %
Current Sub-Dominant Land Cover: **Crop**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**26-50**	**26-50**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**1961**	**2514**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **0** **0** %
5.3 Bank Armoring: **18 %**
Left **379** Right **835**
5.4 Channel Straightening: **0.0** **0.0**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	**0.0** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Multiple**
6.5 Meander Width: **235.0** Ratio: **4.2**
6.6 Wavelength: **213.0** Ratio: **3.8**

Step 7. Windshield Survey

7.1 Bank Erosion: **4,104.87 ft.**
7.2 Bank Height: **5.96 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	2	2	0	0	1	0	0	0	0	1	2	1	2	0	1	13
Low	High	High	N.S.	N.S.	Low	N.S.	N.S.	N.S.	N.S.	Low	High	Low	High	N.S.	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Lewis Creek** Reach **M16S1.01**
Topo Maps: **414**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Flows alongside and through agricultural fields, crosses Route 116 to Starksboro**
1.2 Towns:
1.3 Downstream Latitude: **44.26**
1.3 Downstream Longitude: **-73.07**

Step 2. Stream Type

2.1 Elevation Upstream: **440**
2.1 Elevation Downstream: **380**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **2520** feet. **0.48** Miles.
2.3 Valley Slope: **2.38** %
2.4.Channel Length: **3208** feet. **0.61** Miles.
2.5 Channel Slope: **1.87** %
2.6 Sinuosity: **1.27**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **13** feet.
2.9 Valley Width: **65** feet.
2.10 Confinement Ratio: **5**
2.10 Confinement Type: **Narrow**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **None**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Alluvial** **48.6** %
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Steep**
3.4 Right Valley Side **Very Steep**
3.5 Soils

Hydrologic Group:	**C**	**50.1** %
Flooding:	**None/Rare**	**51.4** %
Water Table Deep:	**1.5**	**48.3** %
Water Table Shallow:	**0.0**	**48.3** %
Erodibility:	**Moderate**	**45.8** %

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **73.6** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **35.5** %
Current Sub-Dominant Land Cover: **Field**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**51-100**	**51-100**
Sub-dominant:	**26-50**	**>100**
Length w/ less than 25 ft.:	**647**	**434**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **1** **2** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **634** **19 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **455** ft. **14 %**

	One Side	Both Sides
Road:	**455** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**0.0** ft.	**105** ft.

6.3 Channel Bars: **None**
6.4 Meander Migration:
6.5 Meander Width: **38.0** Ratio: **2.9**
6.6 Wavelength: **174.0** Ratio: **13.1**

Step 7. Windshield Survey

7.1 Bank Erosion: **0.00 ft.**
7.2 Bank Height: **0.00 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

7.4 Comments:

While 1974 photos indicate a land cover similar to present day (see Historic Watershed and Historic Corridor land cover, Steps 4.1, 4.2), the 1942 photos of the region show forest nearly absent

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	1 Low	2 High	0 N.S.	0 N.S.	0 N.S.	1 Low	0 N.S.	1 Low	0 N.S.	0 N.S.	0 N.S.	2 High	0 N.S.	0 N.S.	2 High	11

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Lewis Creek** Reach **M16S1.02**
Topo Maps: **414**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Forested valley between agricultural fields, crossed by private, gated**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.26**
1.3 Downstream Longitude: **-73.06**

Step 2. Stream Type

2.1 Elevation Upstream: **540**
2.1 Elevation Downstream: **440**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **2100** feet. **0.40** Miles.
2.3 Valley Slope: **4.76** %
2.4.Channel Length: **2304** feet. **0.44** Miles.
2.5 Channel Slope: **4.34** %
2.6 Sinuosity: **1.10**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **13** feet.
2.9 Valley Width: **19** feet.
2.10 Confinement Ratio: **1**
2.10 Confinement Type: **Narrowly Confined**
2.11 Reference Stream Type: **A**
Bedform: **Step-Pool**
Sub-class Slope: **None**
Bed Material: **Cobble**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Ice-Contact 89.1** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Very Steep**
3.5 Soils

Hydrologic Group:	**A**	**89.1** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**89.1** %
Water Table Shallow:	**6.0**	**89.1** %
Erodibility:	**Very Severe**	**99.6** %

7.4 Comments:

Small tributary to this reach is impounded by Varney Hill Road culvert crossing - small pond/wetland upstream of the crossing.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **77.7** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **37.6** %
Current Sub-Dominant Land Cover: **Field**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**51-100**
Sub-dominant:	**None**	**>100**
Length w/ less than 25 ft.:	**144**	**232**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **2** **3** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **0.0** **0.0**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **221** ft. **9 %**

	One Side	Both Sides
Road:	**221** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**0.0** ft.	**120** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration:
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **0.00 ft.**
7.2 Bank Height: **0.00 ft.**
7.3 Ice/Debris Jam Potential: **Culvert**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	6
High	Low	Low	N.S.	N.S.	N.S.	N.S.	N.S.	Low	Low	N.S.	N.S.	N/A	N/A	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Lewis Creek** Reach **M16S1.03**
Topo Maps: **414**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Forested valley between agricultural fields and residential properties**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.26**
1.3 Downstream Longitude: **-73.05**

Step 2. Stream Type

2.1 Elevation Upstream: **700**
2.1 Elevation Downstream: **540**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **2400** feet. **0.45** Miles.
2.3 Valley Slope: **6.67** %
2.4.Channel Length: **2602** feet. **0.49** Miles.
2.5 Channel Slope: **6.15** %
2.6 Sinuosity: **1.08**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **10** feet.
2.9 Valley Width: **15** feet.
2.10 Confinement Ratio: **2**
2.10 Confinement Type: **Narrowly Confined**
2.11 Reference Stream Type: **A**
Bedform: **Step-Pool**
Sub-class Slope: **None**
Bed Material: **Cobble**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **Ledge**
3.3 Dominant Geologic Mat.: **Ice-Contact 68.0** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Very Steep**
3.5 Soils

Hydrologic Group:	**A**	**68.0** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**100.** %
Water Table Shallow:	**6.0**	**100.** %
Erodibility:	**Very Severe**	**97.1** %

7.4 Comments:

Presence of channel-spanning bedrock (3.2) suggested by Thompson, et al., 2004. While 1974 photos indicate a land cover similar to present day (see Historic Watershed and Historic Corridor land

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **86.6** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **56.9** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**None**	**None**
Length w/ less than 25 ft.:	**238**	**0**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **0** **0** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **0.0** **0.0**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **638** ft. **24 %**

	One Side	Both Sides
Road:	**638** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration:
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **0.00 ft.**
7.2 Bank Height: **0.00 ft.**
7.3 Ice/Debris Jam Potential: **No Data**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	5
Low	Low	Low	N.S.	N.S.	N.S.	N.S.	N.S.	High	N.S.	N.S.	N.S.	N/A	N/A	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Lewis Creek** Reach **M16S1.04**
Topo Maps: **413, 414**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Remote, forested reach**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.25**
1.3 Downstream Longitude: **-73.05**

Step 2. Stream Type

2.1 Elevation Upstream: **1290**
2.1 Elevation Downstream: **700**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **4000** feet. **0.76** Miles.
2.3 Valley Slope: **14.75** %
2.4.Channel Length: **4135** feet. **0.78** Miles.
2.5 Channel Slope: **14.27** %
2.6 Sinuosity: **1.03**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **9** feet.
2.9 Valley Width: **13** feet.
2.10 Confinement Ratio: **1**
2.10 Confinement Type: **Narrowly Confined**
2.11 Reference Stream Type: **A**
Bedform: **Cascade**
Sub-class Slope: **None**
Bed Material: **Bedrock**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **Ledge**
3.3 Dominant Geologic Mat.: **Till** **100.** %
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**D**	**100.** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**100.** %
Water Table Shallow:	**6.0**	**100.** %
Erodibility:	**Very Severe**	**100.** %

7.4 Comments:

Presence of channel-spanning bedrock (3.2) suggested by Thompson, et al., 2004.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **90.1** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **89.0** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**None**	**None**
Length w/ less than 25 ft.:	**360**	**0**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **1** **0** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **0.0** **0.0**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **983** ft. **23 %**

	One Side	Both Sides
Road:	**983** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration:
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **0.00 ft.**
7.2 Bank Height: **0.00 ft.**
7.3 Ice/Debris Jam Potential: **Culvert**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	2	1	0	0	0	0	0	2	0	0	0	0	0	0	0	6
Low	High	Low	N.S.	N.S.	N.S.	N.S.	N.S.	High	N.S.	N.S.	N.S.	N/A	N/A	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M17**
Topo Maps: **Bristol,Monkton,Hinesburg,Westport,Mount Philo**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Reach flows to the north along the west side of Rt 116 from State**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.27**
1.3 Downstream Longitude: **-73.07**

Step 2. Stream Type

2.1 Elevation Upstream: **415**
2.1 Elevation Downstream: **380**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **8315** feet. **1.57** Miles.
2.3 Valley Slope: **0.42** %
2.4.Channel Length: **14003** feet. **2.65** Miles.
2.5 Channel Slope: **0.25** %
2.6 Sinuosity: **1.68**
2.7 Watershed Area: **23** Square Miles
2.8 Channel Width: **52** feet.
2.9 Valley Width: **625** feet.
2.10 Confinement Ratio: **12**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **E**
Bedform: **Riffle-Pool**
Sub-class Slope: **None**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **Yes**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Alluvial** **62.9** %
3.3 Sub-dominant Geological Mat.: **Glacial**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Very Steep**
3.5 Soils

Hydrologic Group:	**B**	**63.7** %
Flooding:	**Occasional**	**41.1** %
Water Table Deep:	**3.0**	**45.9** %
Water Table Shallow:	**1.5**	**52.5** %
Erodibility:	**Moderate**	**32.9** %

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **78.8** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Crop**
Current Dominant land Cover: **Forest** **30.8** %
Current Sub-Dominant Land Cover: **Crop**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**2384**	**3172**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **3** **2** %
5.3 Bank Armoring: **6 %**
Left **275** Right **645**
5.4 Channel Straightening: **2149** **15 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **2442** ft. **17 %**

	One Side	Both Sides
Road:	**924** ft.	**871** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**310** ft.	**334** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**394** ft.	**145.3** ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Multiple**
6.5 Meander Width: **210.0** Ratio: **4.0**
6.6 Wavelength: **209.0** Ratio: **4.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **4,340.82 ft.**
7.2 Bank Height: **4.20 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

7.4 Comments:

Beaver activity. Cows in stream in downstream third. Updated using 2002 Phase 2 data on 7/22/04. Updated with additional Phase 2 data in Sept 2007. "Alluvial fan" was selected due to

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1 Low	2 High	2 High	0 N.S.	0 N.S.	1 Low	1 Low	0 N.S.	1 Low	0 N.S.	2 High	2 High	1 Low	2 High	0 N.S.	2 High	17

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M18**
Topo Maps: **Bristol,Monkton,Hinesburg,Mount Philo,Westport**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Reach flows through bedrock gorge along the north side of States**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.24**
1.3 Downstream Longitude: **-73.07**

Step 2. Stream Type

2.1 Elevation Upstream: **515**
2.1 Elevation Downstream: **415**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **1398** feet. **0.26** Miles.
2.3 Valley Slope: **7.15** %
2.4.Channel Length: **1446** feet. **0.27** Miles.
2.5 Channel Slope: **6.92** %
2.6 Sinuosity: **1.03**
2.7 Watershed Area: **18** Square Miles
2.8 Channel Width: **47** feet.
2.9 Valley Width: **120** feet.
2.10 Confinement Ratio: **3**
2.10 Confinement Type: **Semi-confined**
2.11 Reference Stream Type: **B**
Bedform: **Step-Pool**
Sub-class Slope: **a**
Bed Material: **Boulder**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **Waterfall**
3.3 Dominant Geologic Mat.: **Till** **97.6** %
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Steep**
3.5 Soils

Hydrologic Group:	**B**	**57.3** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**99.5** %
Water Table Shallow:	**2.0**	**57.3** %
Erodibility:	**Very Severe**	**98.1** %

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **80.6** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Urban** **30.4** %
Current Sub-Dominant Land Cover: **Forest**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**51-100**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**324**	**148**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **2** **11** %
5.3 Bank Armoring: **4 %**
Left **69** Right **0.0**
5.4 Channel Straightening: **0.0** **0.0**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **1579** ft. **109 %**

	One Side	Both Sides
Road:	**1397** ft.	**42** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**139** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**217** ft.	**241** ft.

6.3 Channel Bars: **Island**
6.4 Meander Migration: **Multiple**
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **193.54 ft.**
7.2 Bank Height: **3.00 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

7.4 Comments:

Updated using 2002 Phase 2 data on 7/22/04 to then current protocols (SMRC, 2004). Updated to 2007 protocols in Jan 2008 by SMRC, relying on 2002 Ph2 data and limited observations on

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	2	2	0	1	0	0	0	2	2	0	0	0	0	1	1	12
Low	High	High	N.S.	Low	N.S.	N.S.	N.S.	High	High	N.S.	N.S.	N/A	N/A	Low	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M19**
Topo Maps: **Bristol,Monkton,Hinesburg,Mount Philo, Westport**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Reach extends along the west side of Rt 116 - begins at farm bridge**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.24**
1.3 Downstream Longitude: **-73.07**

Step 2. Stream Type

2.1 Elevation Upstream: **550**
2.1 Elevation Downstream: **515**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **7996** feet. **1.51** Miles.
2.3 Valley Slope: **0.44** %
2.4.Channel Length: **10885** feet. **2.06** Miles.
2.5 Channel Slope: **0.32** %
2.6 Sinuosity: **1.36**
2.7 Watershed Area: **18** Square Miles
2.8 Channel Width: **47** feet.
2.9 Valley Width: **907** feet.
2.10 Confinement Ratio: **19**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **None**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Alluvial** **85.6** %
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Very Steep**
3.5 Soils

Hydrologic Group:	**C**	**46.5** %
Flooding:	**Frequent**	**70.2** %
Water Table Deep:	**1.5**	**46.5** %
Water Table Shallow:	**0.0**	**46.5** %
Erodibility:	**slight**	**14.4** %

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **80.6** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Field**
Current Dominant land Cover: **Field** **26.2** %
Current Sub-Dominant Land Cover: **Crop**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**26-50**	**26-50**
Length w/ less than 25 ft.:	**286**	**1150**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **Irrigation**
Type: **Small Withdrawal**
Use: **Other**
5.2 Bridges and Culverts: **3** **5** %
5.3 Bank Armoring: **22 %**
Left **841** Right **1652**
5.4 Channel Straightening: **6779** **62 %**
5.5 Dredging History: **Gravel Mining**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **3061** ft. **28 %**

	One Side	Both Sides
Road:	**1726** ft.	**1335** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**341** ft.	**72** ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Multiple**
6.5 Meander Width: **47.2** Ratio: **1.0**
6.6 Wavelength: **47.2** Ratio: **1.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **2,770.62 ft.**
7.2 Bank Height: **4.07 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

7.4 Comments:

Downstream subreach, E-type. Beaver activity. Downstream half fallow (except for ball fields). Updated with 2001 Phase 2 data in 10/01, and with 2002-2003 Phase 3 and training data on

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	2	1	1	0	2	2	1	2	0	1	2	2	2	0	2	21
Low	High	Low	Low	N.S.	High	High	Low	High	N.S.	Low	High	High	High	N.S.	High	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M20**
Topo Maps: **Bristol,Monkton,Hinesburg,Mount Philo,Westport**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Reach is west of and parallel to Route 116 - begins just north of Tatro**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.23**
1.3 Downstream Longitude: **-73.06**

Step 2. Stream Type

2.1 Elevation Upstream: **578**
2.1 Elevation Downstream: **550**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **3363** feet. **0.64** Miles.
2.3 Valley Slope: **0.83** %
2.4.Channel Length: **4032** feet. **0.76** Miles.
2.5 Channel Slope: **0.69** %
2.6 Sinuosity: **1.20**
2.7 Watershed Area: **17** Square Miles
2.8 Channel Width: **45** feet.
2.9 Valley Width: **442** feet.
2.10 Confinement Ratio: **10**
2.10 Confinement Type: **Broad**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **None**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Alluvial** **52.8** %
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Very Steep**
3.5 Soils

Hydrologic Group:	**B**	**54.6** %
Flooding:	**None/Rare**	**47.2** %
Water Table Deep:	**6.0**	**93.3** %
Water Table Shallow:	**4.0**	**46.2** %
Erodibility:	**Moderate**	**47.1** %

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **83.8** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Crop**
Current Dominant land Cover: **Forest** **39.3** %
Current Sub-Dominant Land Cover: **Field**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**>100**
Sub-dominant:	**>100**	**0-25**
Length w/ less than 25 ft.:	**602**	**360**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **1** **2** %
5.3 Bank Armoring: **5 %**
Left **206** Right **0.0**
5.4 Channel Straightening: **2222** **55 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **575** ft. **14 %**

	One Side	Both Sides	
Road:	**173** ft.	**0.0**	ft.
Railroad:	**0.0** ft.	**0.0**	ft.
Berm:	**0.0** ft.	**0.0**	ft.
Improved Path:	**402** ft.	**0.0**	ft.
6.2 Development:	**0.0** ft.	**73**	ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Flood Chute**
6.5 Meander Width: **45.1** Ratio: **1.0**
6.6 Wavelength: **45.1** Ratio: **1.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **466.73 ft.**
7.2 Bank Height: **4.52 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

7.4 Comments:

Cows in stream (fenced crossing) near downstream end. Gravel extraction at right-bank point bar near downstream extent of reach . Updated using 2002 Phase 2 data on 7/22/04.

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1 Low	1 Low	2 High	0 N.S.	0 N.S.	1 Low	2 High	0 N.S.	1 Low	0 N.S.	1 Low	1 Low	2 High	2 High	0 N.S.	1 Low	15

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M21**
Topo Maps: **Monkton,Hinesburg,Bristol,Mount Philo,Westport**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Parallels RT 116 to the West. Begins downstream of Meadowlark**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.22**
1.3 Downstream Longitude: **-73.06**

Step 2. Stream Type

2.1 Elevation Upstream: **599**
2.1 Elevation Downstream: **578**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **3651** feet. **0.69** Miles.
2.3 Valley Slope: **0.58** %
2.4.Channel Length: **4398** feet. **0.83** Miles.
2.5 Channel Slope: **0.48** %
2.6 Sinuosity: **1.20**
2.7 Watershed Area: **11** Square Miles
2.8 Channel Width: **38** feet.
2.9 Valley Width: **409** feet.
2.10 Confinement Ratio: **11**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **None**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Alluvial** **63.7** %
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Hilly**
3.4 Right Valley Side **Hilly**
3.5 Soils

Hydrologic Group:	**B**	**63.8** %
Flooding:	**Frequent**	**54.6** %
Water Table Deep:	**6.0**	**90.8** %
Water Table Shallow:	**4.0**	**54.6** %
Erodibility:	**Moderate**	**29.9** %

7.4 Comments:

Updated using 2002 Phase 2 data on 7/22/04.
Updated with additional Phase 2 data in Sept 2007.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **84.5** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Field**
Current Dominant land Cover: **Forest** **36.0** %
Current Sub-Dominant Land Cover: **Crop**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**None**	**None**
Length w/ less than 25 ft.:	**0**	**543**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **1** **2** %
5.3 Bank Armoring: **5 %**
Left **57** Right **186**
5.4 Channel Straightening: **617** **14 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **334** ft. **7 %**

	One Side	Both Sides
Road:	**0.0** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**334** ft.	**0.0** ft.
6.2 Development:	**101** ft.	**66** ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Multiple**
6.5 Meander Width: **164.0** Ratio: **4.3**
6.6 Wavelength: **116.0** Ratio: **3.1**

Step 7. Windshield Survey

7.1 Bank Erosion: **1,602.99 ft.**
7.2 Bank Height: **4.31 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	2	1	0	0	1	1	0	1	0	2	2	1	2	0	1	15
Low	High	Low	N.S.	N.S.	Low	Low	N.S.	Low	N.S.	High	High	Low	High	N.S.	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M22**
Topo Maps: **Hinesburg,Bristol,Monkton,Mount Philo,Westport**
Date Last Edited: **Fri, January 22, 2010**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Reach crosses under Hillsboro Rd, then under Rt. 116 and extends**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.21**
1.3 Downstream Longitude: **-73.06**

Step 2. Stream Type

2.1 Elevation Upstream: **660**
2.1 Elevation Downstream: **599**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **7064** feet. **1.34** Miles.
2.3 Valley Slope: **0.86** %
2.4.Channel Length: **7944** feet. **1.50** Miles.
2.5 Channel Slope: **0.77** %
2.6 Sinuosity: **1.12**
2.7 Watershed Area: **11** Square Miles
2.8 Channel Width: **37** feet.
2.9 Valley Width: **1,325** feet.
2.10 Confinement Ratio: **36**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **None**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **Yes**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Alluvial** **78.2** %
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Steep**
3.5 Soils

Hydrologic Group:	**B**	**43.0** %
Flooding:	**Frequent**	**49.6** %
Water Table Deep:	**1.5**	**38.8** %
Water Table Shallow:	**0.0**	**42.3** %
Erodibility:	**slight**	**6.1** %

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **85.8** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Field**
Current Dominant land Cover: **Field** **22.6** %
Current Sub-Dominant Land Cover: **Forest**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**0-25**
Sub-dominant:	**26-50**	**>100**
Length w/ less than 25 ft.:	**2113**	**2682**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **3** **6** %
5.3 Bank Armoring: **12 %**
Left **739** Right **259**
5.4 Channel Straightening: **3905** **49 %**
5.5 Dredging History: **Dredging**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **1486** ft. **18 %**

	One Side	Both Sides	
Road:	**1061** ft.	**0.0**	ft.
Railroad:	**0.0** ft.	**0.0**	ft.
Berm:	**425** ft.	**0.0**	ft.
Improved Path:	**0.0** ft.	**0.0**	ft.
6.2 Development:	**163** ft.	**218**	ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Multiple**
6.5 Meander Width: **106.0** Ratio: **2.9**
6.6 Wavelength: **160.0** Ratio: **4.3**

Step 7. Windshield Survey

7.1 Bank Erosion: **3,319.82 ft.**
7.2 Bank Height: **3.17 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

7.4 Comments:

Updated using 2002 Phase 2 data on 7/22/04 to then current protocols (SMRC, 2004). Updated to 2007 protocols by SMRC Jan 2008 relying on 2002 observations along entire reach, and limited

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	2	2	0	1	1	2	2	1	0	2	2	2	2	0	2	22
Low	High	High	N.S.	Low	Low	High	High	Low	N.S.	High	High	High	High	N.S.	High	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M23**
Topo Maps: **Bristol,Hinesburg,Monkton,Mount Philo,Westport**
Date Last Edited: **Fri, January 22, 2010**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Reach starts at bedrock outcropping between Ireland Rd and**
1.2 Towns: **Bristol, Starksboro**
1.3 Downstream Latitude: **44.19**
1.3 Downstream Longitude: **-73.05**

Step 2. Stream Type

2.1 Elevation Upstream: **779**
2.1 Elevation Downstream: **660**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **4500** feet. **0.85** Miles.
2.3 Valley Slope: **2.64** %
2.4.Channel Length: **4505** feet. **0.85** Miles.
2.5 Channel Slope: **2.64** %
2.6 Sinuosity: **1.00**
2.7 Watershed Area: **9** Square Miles
2.8 Channel Width: **34** feet.
2.9 Valley Width: **290** feet.
2.10 Confinement Ratio: **8**
2.10 Confinement Type: **Narrow**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **b**
Bed Material: **Cobble**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **Yes**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Ice-Contact** **64.7** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**B**	**69.8** %
Flooding:	**None/Rare**	**94.7** %
Water Table Deep:	**2.0**	**46.6** %
Water Table Shallow:	**1.5**	**53.3** %
Erodibility:	**Severe**	**52.2** %

7.4 Comments:

Updated Dec 2008, relying on some August 2002 observations as well as limited field observations and repeat cross sections from July 2008.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **88.7** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **31.0** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**26-50**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**1451**	**101**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **1** **1** %
5.3 Bank Armoring: **1 %**
Left **62** Right **0.0**
5.4 Channel Straightening: **0.0** **0.0**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **2823** ft. **62 %**

	One Side		Both Sides	
Road:	**2113**	ft.	**0.0**	ft.
Railroad:	**0.0**	ft.	**0.0**	ft.
Berm:	**709**	ft.	**0.0**	ft.
Improved Path:	**0.0**	ft.	**0.0**	ft.
6.2 Development:	**315.8**	ft.	**14**	ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Flood Chute**
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **932.86 ft.**
7.2 Bank Height: **3.27 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	2	2	0	0	0	0	0	2	1	1	1	0	0	0	1	11
Low	High	High	N.S.	N.S.	N.S.	N.S.	N.S.	High	Low	Low	Low	N/A	N/A	N.S.	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M24**
Topo Maps: **Bristol,Hinesburg,Monkton,Westport,Mount Philo**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Rt 116 to Hillsboro Rd. The reach begins at the first sharp turn on the**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.19**
1.3 Downstream Longitude: **-73.04**

Step 2. Stream Type

2.1 Elevation Upstream: **1000**
2.1 Elevation Downstream: **779**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **4778** feet. **0.90** Miles.
2.3 Valley Slope: **4.63** %
2.4.Channel Length: **5592** feet. **1.06** Miles.
2.5 Channel Slope: **3.95** %
2.6 Sinuosity: **1.17**
2.7 Watershed Area: **8** Square Miles
2.8 Channel Width: **32** feet.
2.9 Valley Width: **72** feet.
2.10 Confinement Ratio: **2**
2.10 Confinement Type: **Semi-confined**
2.11 Reference Stream Type: **A**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Till** **100.** %
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**B**	**100.** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**100.** %
Water Table Shallow:	**2.0**	**100.** %
Erodibility:	**Very Severe**	**100.** %

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **89.0** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **45.4** %
Current Sub-Dominant Land Cover: **Crop**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**51-100**	**51-100**
Length w/ less than 25 ft.:	**0**	**0**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **0** **0** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:		**0.0**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft. **0.0**	ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Low	N.S.	N.S.	N.S.	N.S.	N.D.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.D.	N.D.	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M25**
Topo Maps: **Hinesburg,Monkton,Bristol,Mount Philo, Westport**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Starts where the valley sloe decreases and ends where Ireland road**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.20**
1.3 Downstream Longitude: **-73.03**

Step 2. Stream Type

2.1 Elevation Upstream: **1550**
2.1 Elevation Downstream: **1000**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **8448** feet. **1.60** Miles.
2.3 Valley Slope: **6.51** %
2.4.Channel Length: **9284** feet. **1.76** Miles.
2.5 Channel Slope: **5.92** %
2.6 Sinuosity: **1.10**
2.7 Watershed Area: **3** Square Miles
2.8 Channel Width: **21** feet.
2.9 Valley Width: **17** feet.
2.10 Confinement Ratio: **1**
2.10 Confinement Type: **---**
2.11 Reference Stream Type: **A**
Bedform: **---**
Sub-class Slope:
Bed Material: **Boulder**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Till** **100.** %
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**B**	**82.8** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**82.8** %
Water Table Shallow:	**2.0**	**82.8** %
Erodibility:	**Very Severe**	**100.** %

7.4 Comments:

Pond at end of Ireland Rd, vegetated banks, instream culvert - undercut on downstream pool, poor lineup.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **87.3** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **54.7** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**51-100**	**51-100**
Length w/ less than 25 ft.:	**0**	**0**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **1** **1** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:		**0.0**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height: **Medium (5 - 15 ft.)**
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1 Low	1 Low	0 N.S.	0 N.S.	0 N.S.	0 N.D.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.D.	0 N.D.	1 Low	1 Low	4

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Lewis Creek** Reach **M26**
Topo Maps: **513 (Mount Ellen)**
Date Last Edited: **Wed, August 29, 2007**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Remote, forested reach**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.20**
1.3 Downstream Longitude: **-73.00**

Step 2. Stream Type

2.1 Elevation Upstream: **1770**
2.1 Elevation Downstream: **1550**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **0** feet. **0.00** Miles.
2.3 Valley Slope: **0.00** %
2.4.Channel Length: **3242** feet. **0.61** Miles.
2.5 Channel Slope: **6.79** %
2.6 Sinuosity: **0.00**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **12** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Narrowly Confined**
2.11 Reference Stream Type: **A**
Bedform: **Step-Pool**
Sub-class Slope: **None**
Bed Material: **Boulder**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Till** **100.** %
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Steep**
3.4 Right Valley Side **Steep**
3.5 Soils

Hydrologic Group:	**D**	**67.2**	%
Flooding:	**None/Rare**	**100.**	%
Water Table Deep:	**2.0**	**67.2**	%
Water Table Shallow:	**0.0**	**67.2**	%
Erodibility:	**Very Severe**	**100.**	%

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover:
Current Dominant land Cover: **Forest** **91.5** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover:
Current Dominant land Cover: **Forest** **60.9** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**---**	**---**
Sub-dominant:	**---**	**---**
Length w/ less than 25 ft.:	**---**	**---**

4.4 Ground Water Inputs:

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type:
Use:
5.2 Bridges and Culverts: **0** **0** %
5.3 Bank Armoring: **0.0**
Left Right
5.4 Channel Straightening: **0.0**
5.5 Dredging History:

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	ft.	ft.

6.3 Channel Bars:
6.4 Meander Migration:
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Low	N.S.	N.D.	N.S.	N.S.	Unk.	Unk.	N.S.	Unk.	Unk.	N.S.	N.S.	N.D.	N.D.	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Prindle Brook** Reach **T1.01**
Topo Maps: **314**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Flows south to southeast to the east of Spear Street through**
1.2 Towns: **Charlotte**
1.3 Downstream Latitude: **44.29**
1.3 Downstream Longitude: **-73.18**

Step 2. Stream Type

2.1 Elevation Upstream: **340**
2.1 Elevation Downstream: **245**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **2760** feet. **0.52** Miles.
2.3 Valley Slope: **3.44** %
2.4.Channel Length: **3968** feet. **0.75** Miles.
2.5 Channel Slope: **2.39** %
2.6 Sinuosity: **1.44**
2.7 Watershed Area: **3** Square Miles
2.8 Channel Width: **21** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Semi-confined**
2.11 Reference Stream Type: **B**
Bedform: **Step-Pool**
Sub-class Slope: **None**
Bed Material: **Cobble**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Glacial Lake 70.3** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Steep**
3.5 Soils

Hydrologic Group:	**D**	**70.3** %
Flooding:	**None/Rare**	**90.9** %
Water Table Deep:	**1.0**	**46.7** %
Water Table Shallow:	**0.0**	**43.0** %
Erodibility:	**Moderate**	**44.2** %

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **38.9** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Field**
Current Dominant land Cover: **Forest** **65.1** %
Current Sub-Dominant Land Cover: **Field**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**None**	**None**
Length w/ less than 25 ft.:	**482**	**558**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **1** **1** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **0.0** **0.0**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **959** ft. **24 %**

	One Side	Both Sides
Road:	**0.0** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**959** ft.	**0.0** ft.
6.2 Development:	**0.0** ft.	**35** ft.

6.3 Channel Bars: **None**
6.4 Meander Migration:
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **0.00 ft.**
7.2 Bank Height: **0.00 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	0 N.S.	2 High	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	2 High	0 N.S.	0 N.S.	0 N.S.	0 N/A	0 N/A	0 N.S.	0 N.S.	6

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Prindle Brook** Reach **T1.02**
Topo Maps: **314**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Flows southwest from the vicinity of the Prindle Road crossing**
1.2 Towns: **Charlotte**
1.3 Downstream Latitude: **44.29**
1.3 Downstream Longitude: **-73.18**

Step 2. Stream Type

2.1 Elevation Upstream: **370**
2.1 Elevation Downstream: **340**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **5206** feet. **0.99** Miles.
2.3 Valley Slope: **0.58** %
2.4.Channel Length: **6282** feet. **1.19** Miles.
2.5 Channel Slope: **0.48** %
2.6 Sinuosity: **1.21**
2.7 Watershed Area: **3** Square Miles
2.8 Channel Width: **20** feet.
2.9 Valley Width: **1,191** feet.
2.10 Confinement Ratio: **59**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **None**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Glacial Lake 81.2 %**
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Hilly**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**D**	**80.9** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**1.0**	**79.0** %
Water Table Shallow:	**0.0**	**75.8** %
Erodibility:	**slight**	**17.6** %

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **39.6** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **35.7** %
Current Sub-Dominant Land Cover: **Wetland**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**0-25**
Sub-dominant:	**>100**	**>100**
Length w/ less than 25 ft.:	**3729**	**3804**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **1** **0** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **4082** **64 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	**0.0** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **None**
6.4 Meander Migration:
6.5 Meander Width: **20.2** Ratio: **1.0**
6.6 Wavelength: **20.2** Ratio: **1.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **0.00 ft.**
7.2 Bank Height: **0.00 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	2 High	0 N.S.	0 N.S.	0 N.S.	2 High	0 N.S.	0 Unk.	0 N.S.	0 N.S.	0 N.S.	2 High	2 High	0 N.S.	0 N.S.	12

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Prindle Brook** Reach **T1.03**
Topo Maps: **314**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Flows through narrow wetland between bedrock knolls west of Bean**
1.2 Towns: **Charlotte**
1.3 Downstream Latitude: **44.30**
1.3 Downstream Longitude: **-73.17**

Step 2. Stream Type

2.1 Elevation Upstream: **373**
2.1 Elevation Downstream: **370**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **1970** feet. **0.37** Miles.
2.3 Valley Slope: **0.15** %
2.4.Channel Length: **2286** feet. **0.43** Miles.
2.5 Channel Slope: **0.13** %
2.6 Sinuosity: **1.16**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **13** feet.
2.9 Valley Width: **480** feet.
2.10 Confinement Ratio: **38**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **E**
Bedform: **Dune-Ripple**
Sub-class Slope: **c**
Bed Material: **Sand**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Glacial Lake 84.9** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Hilly**
3.5 Soils

Hydrologic Group:	**D**	**100.** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**1.0**	**79.9** %
Water Table Shallow:	**0.0**	**79.9** %
Erodibility:	**slight**	**20.1** %

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Crop**
Current Dominant land Cover: **Crop** **38.0** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Wetland**
Current Dominant land Cover: **Wetland** **42.1** %
Current Sub-Dominant Land Cover: **Forest**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**None**	**None**
Length w/ less than 25 ft.:	**82**	**75**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **1** **4** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **1387** **60 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	**0.0** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**0.0** ft.	**40** ft.

6.3 Channel Bars: **None**
6.4 Meander Migration:
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **0.00 ft.**
7.2 Bank Height: **0.00 ft.**
7.3 Ice/Debris Jam Potential: **Culvert**

7.4 Comments:

Reach is a wetland. Meander geometry (Steps 6.5, 6.6) not applicable. Livestock pasture in corridor downstream of Prindle Road culvert crossing.

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2	1	1	0	0	0	2	0	0	0	0	0	0	0	0	1	7
High	Low	Low	N.S.	N.S.	N.S.	High	N.S.	Unk.	N.S.	N.S.	N.S.	N/A	N/A	N.S.	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Prindle Brook** Reach **T1.04**
Topo Maps: **314**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Flows through wetland along west side Bean Road**
1.2 Towns: **Charlotte**
1.3 Downstream Latitude: **44.31**
1.3 Downstream Longitude: **-73.17**

Step 2. Stream Type

2.1 Elevation Upstream: **380**
2.1 Elevation Downstream: **373**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **3730** feet. **0.71** Miles.
2.3 Valley Slope: **0.19** %
2.4.Channel Length: **3899** feet. **0.74** Miles.
2.5 Channel Slope: **0.18** %
2.6 Sinuosity: **1.05**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **10** feet.
2.9 Valley Width: **1,085** feet.
2.10 Confinement Ratio: **114**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **E**
Bedform: **Dune-Ripple**
Sub-class Slope: **c**
Bed Material: **Sand**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Glacial Lake 98.0** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Hilly**
3.5 Soils

Hydrologic Group:	**D**	**98.0** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**1.0**	**97.0** %
Water Table Shallow:	**0.0**	**83.4** %
Erodibility:	**slight**	**3.0** %

7.4 Comments:

Reach is a wetland. Meander geometry (Steps 6.5, 6.6) not applicable.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Crop**
Current Dominant land Cover: **Crop** **37.5** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Wetland**
Current Dominant land Cover: **Wetland** **75.9** %
Current Sub-Dominant Land Cover: **Field**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**None**	**None**
Length w/ less than 25 ft.:	**485**	**370**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **0** **0** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **2783** **71 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	**0.0** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **None**
6.4 Meander Migration:
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **0.00 ft.**
7.2 Bank Height: **0.00 ft.**
7.3 Ice/Debris Jam Potential: **None**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2	1	2	0	0	0	2	0	0	0	0	0	0	0	0	0	7
High	Low	High	N.S.	N.S.	N.S.	High	N.S.	Unk.	N.S.	N.S.	N.S.	N/A	N/A	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Prindle Brook** Reach **T1.2S1.01**
Topo Maps: **314**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Wetland-dominated reach crossing Prindle Road northwest of Prindle**
1.2 Towns: **Charlotte**
1.3 Downstream Latitude: **44.30**
1.3 Downstream Longitude: **-73.17**

Step 2. Stream Type

2.1 Elevation Upstream: **377**
2.1 Elevation Downstream: **370**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **2846** feet. **0.54** Miles.
2.3 Valley Slope: **0.25** %
2.4.Channel Length: **3109** feet. **0.59** Miles.
2.5 Channel Slope: **0.23** %
2.6 Sinuosity: **1.09**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **14** feet.
2.9 Valley Width: **708** feet.
2.10 Confinement Ratio: **49**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **Dune-Ripple**
Sub-class Slope: **None**
Bed Material: **Sand**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Glacial Lake 99.5** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Steep**
3.4 Right Valley Side **Very Steep**
3.5 Soils

Hydrologic Group:	**D**	**97.4** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**1.0**	**87.9** %
Water Table Shallow:	**0.0**	**67.1** %
Erodibility:	**slight**	**10.1** %

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **49.2** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Crop**
Current Dominant land Cover: **Crop** **32.6** %
Current Sub-Dominant Land Cover: **Wetland**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**>100**
Sub-dominant:	**>100**	**0-25**
Length w/ less than 25 ft.:	**1325**	**1174**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **1** **5** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **2811** **90 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **84** ft. **2 %**

	One Side	Both Sides
Road:	**84** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**69** ft.	**56** ft.

6.3 Channel Bars: **None**
6.4 Meander Migration:
6.5 Meander Width: **14.4** Ratio: **1.0**
6.6 Wavelength: **14.4** Ratio: **1.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **0.00 ft.**
7.2 Bank Height: **0.00 ft.**
7.3 Ice/Debris Jam Potential: **Culvert**

7.4 Comments:

Scour pool downstream of Prindle Road culvert crossing.

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	2 High	0 N.S.	0 N.S.	0 N.S.	2 High	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	2 High	2 High	0 N.S.	1 Low	13

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Prindle Brook** Reach **T1.2S1.02**
Topo Maps: **314**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Short wetland reach downstream of Garen Road crossing**
1.2 Towns: **Charlotte**
1.3 Downstream Latitude: **44.31**
1.3 Downstream Longitude: **-73.16**

Step 2. Stream Type

2.1 Elevation Upstream: **390**
2.1 Elevation Downstream: **377**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **2326** feet. **0.44** Miles.
2.3 Valley Slope: **0.56** %
2.4.Channel Length: **2785** feet. **0.53** Miles.
2.5 Channel Slope: **0.47** %
2.6 Sinuosity: **1.20**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **13** feet.
2.9 Valley Width: **1,116** feet.
2.10 Confinement Ratio: **86**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **E**
Bedform: **Dune-Ripple**
Sub-class Slope: **c**
Bed Material: **Sand**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Glacial Lake 100.** %
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Steep**
3.4 Right Valley Side **Hilly**
3.5 Soils

Hydrologic Group:	**D**	**100.** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**1.0**	**100.** %
Water Table Shallow:	**0.0**	**84.3** %
Erodibility:	**slight**	%

7.4 Comments:

Reach is a wetland. Meander geometry (Steps 6.5, 6.6) not applicable.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **51.1** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Wetland**
Current Dominant land Cover: **Wetland** **88.7** %
Current Sub-Dominant Land Cover: **Forest**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**51-100**	**>100**
Sub-dominant:	**>100**	**None**
Length w/ less than 25 ft.:	**0**	**0**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **0** **0** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **706** **25 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	**0.0** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **None**
6.4 Meander Migration:
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **0.00 ft.**
7.2 Bank Height: **0.00 ft.**
7.3 Ice/Debris Jam Potential: **None**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	5
High	Low	N.S.	N.S.	N.S.	N.S.	High	N.S.	Unk.	N.S.	N.S.	N.S.	N/A	N/A	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Prindle Brook** Reach **T1.2S1.03**
Topo Maps: **314**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Flows north through agricultural fields and forest, crossing Garen**
1.2 Towns: **Charlotte, Hinesburg**
1.3 Downstream Latitude: **44.31**
1.3 Downstream Longitude: **-73.15**

Step 2. Stream Type

2.1 Elevation Upstream: **410**
2.1 Elevation Downstream: **390**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **4760** feet. **0.90** Miles.
2.3 Valley Slope: **0.42** %
2.4.Channel Length: **5010** feet. **0.95** Miles.
2.5 Channel Slope: **0.40** %
2.6 Sinuosity: **1.05**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **11** feet.
2.9 Valley Width: **494** feet.
2.10 Confinement Ratio: **47**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **None**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Glacial Lake 98.2** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**D**	**96.8** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**1.0**	**90.8** %
Water Table Shallow:	**0.0**	**56.4** %
Erodibility:	**slight**	**6.1** %

7.4 Comments:

Apparent excavated pond immediately upstream of Garen Road culvert crossing near downstream end of reach.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **56.0** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **31.4** %
Current Sub-Dominant Land Cover: **Wetland**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**>100**
Sub-dominant:	**>100**	**0-25**
Length w/ less than 25 ft.:	**2185**	**1997**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **2** **2** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **2988** **59 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **96** ft. **1 %**

	One Side	Both Sides
Road:	**96** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**0.0** ft.	**42** ft.

6.3 Channel Bars: **None**
6.4 Meander Migration:
6.5 Meander Width: **10.6** Ratio: **1.0**
6.6 Wavelength: **10.6** Ratio: **1.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **0.00 ft.**
7.2 Bank Height: **0.00 ft.**
7.3 Ice/Debris Jam Potential: **Culvert**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	2 High	0 N.S.	0 N.S.	0 N.S.	2 High	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	2 High	2 High	0 N.S.	1 Low	13

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Cedar Lake** Reach **T2.01**
Topo Maps: **---**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Forested downstream-most reach of Cedar Brook which joins the**
1.2 Towns: **Hinesburg**
1.3 Downstream Latitude: **44.29**
1.3 Downstream Longitude: **-73.14**

Step 2. Stream Type

2.1 Elevation Upstream: **383**
2.1 Elevation Downstream: **310**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **2695** feet. **0.51** Miles.
2.3 Valley Slope: **2.71** %
2.4.Channel Length: **3202** feet. **0.61** Miles.
2.5 Channel Slope: **2.28** %
2.6 Sinuosity: **1.19**
2.7 Watershed Area: **6** Square Miles
2.8 Channel Width: **29** feet.
2.9 Valley Width: **65** feet.
2.10 Confinement Ratio: **2**
2.10 Confinement Type: **Semi-confined**
2.11 Reference Stream Type: **B**
Bedform: **Step-Pool**
Sub-class Slope: **None**
Bed Material: **Cobble**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **Multiple**
3.3 Dominant Geologic Mat.: **Glacial Lake 99.2** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Very Steep**
3.5 Soils

Hydrologic Group:	**D**	**99.2** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**3.0**	**80.3** %
Water Table Shallow:	**1.0**	**80.3** %
Erodibility:	**Very Severe**	**81.1** %

7.4 Comments:

Updated using Phase 2 data on 10/02/01 and on 7/22/04. Updated with additional Phase 2 data in Sept 2007. Beaver dams.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Field**
Current Dominant land Cover: **Forest** **49.0** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **58.6** %
Current Sub-Dominant Land Cover: **Field**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**None**	**None**
Length w/ less than 25 ft.:	**0**	**0**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **0** **0** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **0.0** **0.0**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	**0.0** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Multiple**
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **88.71 ft.**
7.2 Bank Height: **3.67 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
High	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N/A	N/A	N.S.	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Cedar Lake** Reach **T2.02**
Topo Maps: **---**
Date Last Edited: **Thu, August 30, 2007**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Walk in from T2.1**
1.2 Towns: **Hinesburg**
1.3 Downstream Latitude: **44.28**
1.3 Downstream Longitude: **-73.14**

Step 2. Stream Type

2.1 Elevation Upstream: **398**
2.1 Elevation Downstream: **383**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **4024** feet. **0.76** Miles.
2.3 Valley Slope: **0.37** %
2.4.Channel Length: **4650** feet. **0.88** Miles.
2.5 Channel Slope: **0.32** %
2.6 Sinuosity: **1.16**
2.7 Watershed Area: **6** Square Miles
2.8 Channel Width: **29** feet.
2.9 Valley Width: **325** feet.
2.10 Confinement Ratio: **11**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Glacial Lake100.** %
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Steep**
3.5 Soils

Hydrologic Group:	**D**	**99.6** %
Flooding:	**Frequent**	**45.0** %
Water Table Deep:	**1.0**	**65.7** %
Water Table Shallow:	**0.0**	**62.4** %
Erodibility:	**Moderate**	**31.7** %

7.4 Comments:

Upstream part of reach has been straightened.
Beaver pond devloping in reach.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Field**
Current Dominant land Cover: **Forest** **47.7** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Shrub**
Current Dominant land Cover: **Wetland** **25.6** %
Current Sub-Dominant Land Cover: **Forest**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**0-25**
Sub-dominant:	**>100**	**>100**
Length w/ less than 25 ft.:	**3952**	**3952**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **0** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:	**3113.0**	**66 %**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: **23.0** Ratio: **0.8**
6.6 Wavelength: **23.0** Ratio: **0.8**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	1 Low	2 High	0 N.S.	0 Unk.	0 N.D.	2 High	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	2 High	2 High	0 N.S.	0 N.S.	11

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Cedar Lake** Reach **T2.03**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Rt 116 to State Prison Hollow Rd, Left on Starksboro Rd, Right on**
1.2 Towns: **Monkton**
1.3 Downstream Latitude: **44.27**
1.3 Downstream Longitude: **-73.14**

Step 2. Stream Type

2.1 Elevation Upstream: **418**
2.1 Elevation Downstream: **398**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **1260** feet. **0.24** Miles.
2.3 Valley Slope: **1.59** %
2.4.Channel Length: **1595** feet. **0.30** Miles.
2.5 Channel Slope: **1.25** %
2.6 Sinuosity: **1.27**
2.7 Watershed Area: **2** Square Miles
2.8 Channel Width: **16** feet.
2.9 Valley Width: **362** feet.
2.10 Confinement Ratio: **22**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Glacial Lake100.** %
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Steep**

3.5 Soils

Hydrologic Group:	**D**	**100.** %
Flooding:	**Frequent**	**97.4** %
Water Table Deep:	**1.0**	**97.4** %
Water Table Shallow:	**0.0**	**97.4** %
Erodibility:	**slight**	**2.6** %

7.4 Comments:

Reach has been completely straightened.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed

Historic Land Cover: **Field**
Current Dominant land Cover: **Forest** **39.0** %
Current Sub-Dominant Land Cover: **Field**

4.2 Corridor

Historic Land Cover: **Field**
Current Dominant land Cover: **Field** **39.3** %
Current Sub-Dominant Land Cover: **Crop**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**0-25**
Sub-dominant:	**>100**	**>100**
Length w/ less than 25 ft.:	**1595**	**1595**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **0** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:	**1948.0**	**122 %**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft. **0.0**	ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **Migration**
6.5 Meander Width: **14.0** Ratio: **0.9**
6.6 Wavelength: **14.0** Ratio: **0.9**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2	1	2	0	0	0	2	0	0	0	0	2	2	2	0	0	13
High	Low	High	N.S.	Unk.	N.D.	High	N.S.	N.S.	N.S.	N.S.	High	High	High	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Cedar Lake** Reach **T2.04**
Topo Maps: **---**
Date Last Edited: **Thu, August 30, 2007**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Rt 116 to State Prison Hollow Rd, Left on Starksboro Rd, Right on**
1.2 Towns: **Monkton**
1.3 Downstream Latitude: **44.26**
1.3 Downstream Longitude: **-73.14**

Step 2. Stream Type

2.1 Elevation Upstream: **490**
2.1 Elevation Downstream: **418**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **2902** feet. **0.55** Miles.
2.3 Valley Slope: **2.48** %
2.4.Channel Length: **3378** feet. **0.64** Miles.
2.5 Channel Slope: **2.13** %
2.6 Sinuosity: **1.16**
2.7 Watershed Area: **2** Square Miles
2.8 Channel Width: **16** feet.
2.9 Valley Width: **231** feet.
2.10 Confinement Ratio: **14**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **B**
Bedform: **---**
Sub-class Slope:
Bed Material: **Cobble**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Glacial Lake** **59.0** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Steep**
3.4 Right Valley Side **Steep**
3.5 Soils

Hydrologic Group:	**D**	**59.0** %
Flooding:	**None/Rare**	**99.4** %
Water Table Deep:	**3.0**	**99.4** %
Water Table Shallow:	**1.0**	**58.3** %
Erodibility:	**Very Severe**	**99.4** %

7.4 Comments:

Very low flow.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed

Historic Land Cover: **Field**
Current Dominant land Cover: **Forest** **40.5** %
Current Sub-Dominant Land Cover: **Field**

4.2 Corridor

Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **17.3** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**0-25**
Sub-dominant:	**51-100**	**51-100**
Length w/ less than 25 ft.:	**2161**	**2161**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **2** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:	**750.0**	**22 %**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**246.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height: **Low (<5 ft.)**
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2	2	2	0	0	0	2	0	0	1	0	0	0	0	1	0	10
High	High	High	N.S.	Unk.	N.D.	High	N.S.	N.S.	Low	N.S.	N.S.	N.D.	N.D.	Low	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Cedar Lake** Reach **T2.05**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Rt 116 to State Prison Hollow Rd, Left on Starksboro Rd, Right on**
1.2 Towns: **Monkton**
1.3 Downstream Latitude: **44.26**
1.3 Downstream Longitude: **-73.14**

Step 2. Stream Type

2.1 Elevation Upstream: **495**
2.1 Elevation Downstream: **490**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **6019** feet. **1.14** Miles.
2.3 Valley Slope: **0.08** %
2.4.Channel Length: **6475** feet. **1.23** Miles.
2.5 Channel Slope: **0.08** %
2.6 Sinuosity: **1.08**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **15** feet.
2.9 Valley Width: **2,455** feet.
2.10 Confinement Ratio: **163**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **E**
Bedform: **---**
Sub-class Slope:
Bed Material: **Sand**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Glacial Lake 74.5** %
3.3 Sub-dominant Geological Mat.: **Other**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**D**	**98.2** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**0.0**	**34.4** %
Water Table Shallow:	**-1.0**	**34.4** %
Erodibility:	**Moderate**	**32.5** %

7.4 Comments:

Narrow and deep, may be entrenched, tiny stream, culvert too small. Lake part of reach. All straightened.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Field**
Current Dominant land Cover: **Forest** **42.0** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Field**
Current Dominant land Cover: **Wetland** **22.0** %
Current Sub-Dominant Land Cover: **Forest**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**1683**	**1165**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **1** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:	**1965.0**	**30 %**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft. **0.0**	ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: **12.0** Ratio: **0.8**
6.6 Wavelength: **12.0** Ratio: **0.8**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height: **Medium (5 - 15 ft.)**
7.3 Ice/Debris Jam Potential: **Shallow**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	2 High	0 N.S.	0 Unk.	0 N.D.	2 High	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	2 High	2 High	1 Low	0 N.S.	13

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Cedar Lake** Reach **T2.06**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Corner of Boro Rd and Connecting Rd (Pond Rd)**
1.2 Towns: **Ferrisburg**
1.3 Downstream Latitude: **44.25**
1.3 Downstream Longitude: **-73.14**

Step 2. Stream Type

2.1 Elevation Upstream: **615**
2.1 Elevation Downstream: **495**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **1559** feet. **0.30** Miles.
2.3 Valley Slope: **7.70** %
2.4.Channel Length: **4009** feet. **0.76** Miles.
2.5 Channel Slope: **2.99** %
2.6 Sinuosity: **2.57**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **7** feet.
2.9 Valley Width: **51** feet.
2.10 Confinement Ratio: **7**
2.10 Confinement Type: **Broad**
2.11 Reference Stream Type: **C**
Bedform: **---**
Sub-class Slope:
Bed Material: **Sand**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Glacial Lake** **84.4** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Steep**
3.4 Right Valley Side **Very Steep**
3.5 Soils

Hydrologic Group:	**D**	**63.9** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**0.0**	**41.7** %
Water Table Shallow:	**0.0**	**42.7** %
Erodibility:	**Moderate**	**36.1** %

7.4 Comments:

Wetland, pond at headwaters, grass and shrub banks. Reach has been completely straightened.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Field**
Current Dominant land Cover: **Forest** **43.0** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Field**
Current Dominant land Cover: **Urban** **39.6** %
Current Sub-Dominant Land Cover: **Crop**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**0-25**
Sub-dominant:	**>100**	**26-50**
Length w/ less than 25 ft.:	**3086**	**3086**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **1** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:	**1206.0**	**30 %**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft. **0.0**	ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **Migration**
6.5 Meander Width: **5.0** Ratio: **0.7**
6.6 Wavelength: **5.0** Ratio: **0.7**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height: **Low (<5 ft.)**
7.3 Ice/Debris Jam Potential: **Shallow**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	2 High	0 N.S.	0 Unk.	0 N.D.	2 High	0 N.S.	0 N.S.	0 N.S.	0 N.S.	1 Low	2 High	2 High	1 Low	0 N.S.	14

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Tribn to Cedar lake** Reach **T2.2S1.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Rt 116 to State Prison Hollow Rd, Left on Starksboro Rd, Right on**
1.2 Towns: **Monkton**
1.3 Downstream Latitude: **44.27**
1.3 Downstream Longitude: **-73.14**

Step 2. Stream Type

2.1 Elevation Upstream: **405**
2.1 Elevation Downstream: **403**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **2938** feet. **0.56** Miles.
2.3 Valley Slope: **0.07** %
2.4.Channel Length: **9352** feet. **1.77** Miles.
2.5 Channel Slope: **0.02** %
2.6 Sinuosity: **3.18**
2.7 Watershed Area: **4** Square Miles
2.8 Channel Width: **23** feet.
2.9 Valley Width: **209** feet.
2.10 Confinement Ratio: **9**
2.10 Confinement Type: **Broad**
2.11 Reference Stream Type: **C**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Other** **87.2** %
3.3 Sub-dominant Geological Mat.: **Glacial**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Steep**
3.5 Soils

Hydrologic Group:	**D**	**98.6** %
Flooding:	**None/Rare**	**95.1** %
Water Table Deep:	**0.0**	**87.2** %
Water Table Shallow:	**-1.0**	**87.2** %
Erodibility:	**slight**	**3.2** %

7.4 Comments:

Reach has been completely straightened.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed

Historic Land Cover: **Wetland**
Current Dominant land Cover: **Forest** **51.7** %
Current Sub-Dominant Land Cover: **Field**

4.2 Corridor

Historic Land Cover: **Wetland**
Current Dominant land Cover: **Forest** **47.8** %
Current Sub-Dominant Land Cover: **Wetland**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**93**	**374**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **1** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:	**2025.0**	**21 %**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: **16.0** Ratio: **0.7**
6.6 Wavelength: **16.0** Ratio: **0.7**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	1 Low	0 N.S.	0 N.S.	0 Unk.	0 N.D.	2 High	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	2 High	2 High	0 N.S.	0 N.S.	9

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Tribn to Cedar lake** Reach **T2.2S1.02**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Parallels Rotex Rd to the south west of the v notch in the road.**
1.2 Towns: **Monkton**
1.3 Downstream Latitude: **44.26**
1.3 Downstream Longitude: **-73.16**

Step 2. Stream Type

2.1 Elevation Upstream: **480**
2.1 Elevation Downstream: **403**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **4737** feet. **0.90** Miles.
2.3 Valley Slope: **1.63** %
2.4.Channel Length: **5380** feet. **1.02** Miles.
2.5 Channel Slope: **1.43** %
2.6 Sinuosity: **1.14**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **13** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Semi-confined**
2.11 Reference Stream Type: **C**
Bedform: **---**
Sub-class Slope:
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Glacial Lake** **88.2** %
3.3 Sub-dominant Geological Mat.: **Other**
3.4 Left Valley Side **Steep**
3.4 Right Valley Side **Steep**
3.5 Soils

Hydrologic Group:	**D**	**88.2** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**3.0**	**55.4** %
Water Table Shallow:	**1.0**	**54.7** %
Erodibility:	**Severe**	**55.4** %

7.4 Comments:

Almost no water, wetland like w/channel.Reach has been completely straightened.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed

Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **45.1** %
Current Sub-Dominant Land Cover: **Field**

4.2 Corridor

Historic Land Cover: **Field**
Current Dominant land Cover: **Field** **37.4** %
Current Sub-Dominant Land Cover: **Forest**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**1560**	**1560**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **0** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:	**4503.0**	**83 %**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft. **0.0**	ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height: **Low (<5 ft.)**
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	2 High	0 N.S.	0 Unk.	0 N.D.	2 High	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.D.	0 N.D.	1 Low	1 Low	10

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Tribn to Cedar lake** Reach **T2.2S1.1S1.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Parallels T2.3 to the west and intersects Rotex Road**
1.2 Towns: **Monkton**
1.3 Downstream Latitude: **44.26**
1.3 Downstream Longitude: **-73.15**

Step 2. Stream Type

2.1 Elevation Upstream: **460**
2.1 Elevation Downstream: **402**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **3388** feet. **0.64** Miles.
2.3 Valley Slope: **1.71** %
2.4.Channel Length: **4319** feet. **0.82** Miles.
2.5 Channel Slope: **1.34** %
2.6 Sinuosity: **1.27**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **7** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Semi-confined**
2.11 Reference Stream Type: **C**
Bedform: **---**
Sub-class Slope:
Bed Material: **Sand**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Glacial Lake 81.7 %**
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Steep**
3.4 Right Valley Side **Steep**
3.5 Soils

Hydrologic Group:	**D**	**99.7** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**1.0**	**52.1** %
Water Table Shallow:	**0.0**	**52.1** %
Erodibility:	**slight**	**15.1** %

7.4 Comments:

Shrubby wetland, straight, very small. Reach has been completely straightened.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed

Historic Land Cover: **Field**
Current Dominant land Cover: **Forest** **44.5** %
Current Sub-Dominant Land Cover: **Field**

4.2 Corridor

Historic Land Cover: **Field**
Current Dominant land Cover: **Forest** **46.3** %
Current Sub-Dominant Land Cover: **Wetland**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**0-25**
Sub-dominant:	**>100**	**>100**
Length w/ less than 25 ft.:	**2505**	**2505**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **2** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:	**2598.0**	**60 %**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft. **0.0**	ft.

6.3 Channel Bars: **Mid-channel**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height: **Low (<5 ft.)**
7.3 Ice/Debris Jam Potential: **Shallow**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2	1	2	0	0	0	2	0	0	0	1	0	0	0	1	0	9
High	Low	High	N.S.	Unk.	N.D.	High	N.S.	N.S.	N.S.	Low	N.S.	N.D.	N.D.	Low	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Tribn to Cedar lake** Reach **T2.2S1.2S1.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Intersects Rotex Rd about 1/3 of a mile to the east of Charlotte Rd.**
1.2 Towns: **Monkton**
1.3 Downstream Latitude: **44.26**
1.3 Downstream Longitude: **-73.16**

Step 2. Stream Type

2.1 Elevation Upstream: **480**
2.1 Elevation Downstream: **403**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **3362** feet. **0.64** Miles.
2.3 Valley Slope: **2.29** %
2.4.Channel Length: **6175** feet. **1.17** Miles.
2.5 Channel Slope: **1.25** %
2.6 Sinuosity: **1.84**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **11** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Semi-confined**
2.11 Reference Stream Type: **B**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Glacial Lake 60.6** %
3.3 Sub-dominant Geological Mat.: **Other**
3.4 Left Valley Side **Steep**
3.4 Right Valley Side **Steep**
3.5 Soils

Hydrologic Group:	**D**	**62.7**	%
Flooding:	**None/Rare**	**100.**	%
Water Table Deep:	**3.0**	**34.5**	%
Water Table Shallow:	**1.0**	**34.5**	%
Erodibility:	**Severe**	**53.0**	%

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Field**
Current Dominant land Cover: **Field** **35.8** %
Current Sub-Dominant Land Cover: **Forest**
4.2 Corridor
Historic Land Cover: **Field**
Current Dominant land Cover: **Forest** **28.4** %
Current Sub-Dominant Land Cover: **Crop**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**2964**	**2964**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **2** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:	**2535.0**	**41 %**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.

6.2 Development: **0.0** ft. **0.0** ft.
6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	2 High	0 N.S.	0 Unk.	0 N.D.	2 High	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.D.	0 N.D.	0 N.S.	0 N.S.	8

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Tribn to Cedar lake** Reach **T2.2S1.2S1.1S1.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Parallels T2.3 & Intersects Rotex Rd west of the unnamed road.**
1.2 Towns: **Monkton**
1.3 Downstream Latitude: **44.26**
1.3 Downstream Longitude: **-73.16**

Step 2. Stream Type

2.1 Elevation Upstream: **480**
2.1 Elevation Downstream: **403**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **3017** feet. **0.57** Miles.
2.3 Valley Slope: **2.55** %
2.4.Channel Length: **3220** feet. **0.61** Miles.
2.5 Channel Slope: **2.39** %
2.6 Sinuosity: **1.07**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **8** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Semi-confined**
2.11 Reference Stream Type: **B**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Glacial Lake** **99.3** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Steep**
3.4 Right Valley Side **Steep**
3.5 Soils

Hydrologic Group:	**D**	**99.3** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**3.0**	**78.9** %
Water Table Shallow:	**1.0**	**78.2** %
Erodibility:	**Very Severe**	**78.9** %

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Field**
Current Dominant land Cover: **Field** **54.9** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Field**
Current Dominant land Cover: **Field** **39.4** %
Current Sub-Dominant Land Cover: **Crop**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**0-25**
Sub-dominant:	**>100**	**>100**
Length w/ less than 25 ft.:	**3220**	**3220**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **2** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:	**3130.0**	**97 %**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	2 High	0 N.S.	0 Unk.	0 N.D.	2 High	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.D.	0 N.D.	0 N.S.	0 N.S.	8

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Pond Brook** Reach **T3.01**
Topo Maps: **414**
Date Last Edited: **Wed, December 31, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Flows to the north-northwest crossing Silver Street and ending at the Hinesburg, Monkton**
1.2 Towns:
1.3 Downstream Latitude: **44.28**
1.3 Downstream Longitude: **-73.12**

Step 2. Stream Type

2.1 Elevation Upstream: **398**
2.1 Elevation Downstream: **335**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **6872** feet. **1.30** Miles.
2.3 Valley Slope: **0.92** %
2.4.Channel Length: **9402** feet. **1.78** Miles.
2.5 Channel Slope: **0.67** %
2.6 Sinuosity: **1.37**
2.7 Watershed Area: **18** Square Miles
2.8 Channel Width: **47** feet.
2.9 Valley Width: **384** feet.
2.10 Confinement Ratio: **8**
2.10 Confinement Type: **Broad**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **None**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Glacial Lake** **48.7** %
3.3 Sub-dominant Geological Mat.: **Alluvial**
3.4 Left Valley Side **Steep**
3.4 Right Valley Side **Steep**
3.5 Soils

Hydrologic Group:	**C**	**51.9** %
Flooding:	**None/Rare**	**54.7** %
Water Table Deep:	**1.5**	**26.2** %
Water Table Shallow:	**0.0**	**42.1** %
Erodibility:	**Moderate**	**47.1** %

7.4 Comments:

Updated Dec 2008, relying primarily on field observations and additional cross sections from Sept 2008, to supplement original assessment in October 2004.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **56.7** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Field**
Current Dominant land Cover: **Forest** **36.3** %
Current Sub-Dominant Land Cover: **Wetland**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**1001**	**642**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type: **None**
Use:
5.2 Bridges and Culverts: **3** **4** %
5.3 Bank Armoring: **5 %**
Left **246** Right **259.4**
5.4 Channel Straightening: **1526** **16 %**
5.5 Dredging History: **Dredging**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **1415.8** ft. **15 %**

	One Side	Both Sides
Road:	**1415.8** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**280** ft.	**122** ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Multiple**
6.5 Meander Width: **182.0** Ratio: **3.9**
6.6 Wavelength: **243.0** Ratio: **5.2**

Step 7. Windshield Survey

7.1 Bank Erosion: **2,987.77 ft.**
7.2 Bank Height: **4.28 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	1 Low	0 N.S.	0 N.S.	1 Low	1 Low	2 High	1 Low	0 N.S.	1 Low	2 High	1 Low	2 High	0 N.S.	1 Low	17

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Pond Brook** Reach **T3.02**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Rt 116 to Tyler Bridge Rd, At the end a left on Turkey LN, The reach is**
1.2 Towns: **Monkton**
1.3 Downstream Latitude: **44.27**
1.3 Downstream Longitude: **-73.11**

Step 2. Stream Type

2.1 Elevation Upstream: **430**
2.1 Elevation Downstream: **398**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **2889** feet. **0.55** Miles.
2.3 Valley Slope: **1.11** %
2.4.Channel Length: **3617** feet. **0.69** Miles.
2.5 Channel Slope: **0.88** %
2.6 Sinuosity: **1.25**
2.7 Watershed Area: **17** Square Miles
2.8 Channel Width: **45** feet.
2.9 Valley Width: **224** feet.
2.10 Confinement Ratio: **5**
2.10 Confinement Type: **Narrow**
2.11 Reference Stream Type: **B**
Bedform: **Riffle-Pool**
Sub-class Slope:
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Glacial Lake 100.** %
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Very Steep**

3.5 Soils

Hydrologic Group:	**B**	**81.6** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**3.5**	**81.6** %
Water Table Shallow:	**1.5**	**81.6** %
Erodibility:	**Very Severe**	**100.** %

7.4 Comments:

updated with Phase2 collected 9/14/01 and on 7/22/04

Step 4. Land Cover - Reach Hydrology

4.1 Watershed

Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **58.0** %
Current Sub-Dominant Land Cover: **Field**

4.2 Corridor

Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **26.3** %
Current Sub-Dominant Land Cover: **Field**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**51-100**	**51-100**
Length w/ less than 25 ft.:	**0**	**361**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **0** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:		**0.0**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft. **0.0**	ft.

6.3 Channel Bars: **None**
6.4 Meander Migration: **Avulsion**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height: **Low (<5 ft.)**
7.3 Ice/Debris Jam Potential: **Debris**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2	1	1	0	0	0	0	0	0	0	0	1	0	0	1	0	6
High	Low	Low	N.S.	Unk.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	Low	N.D.	N.D.	Low	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Pond Brook** Reach **T3.03**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Rt 116 to State Prison Hollow Rd, Reach is near the intersection of**
1.2 Towns: **Monkton**
1.3 Downstream Latitude: **44.26**
1.3 Downstream Longitude: **-73.10**

Step 2. Stream Type

2.1 Elevation Upstream: **445**
2.1 Elevation Downstream: **430**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **5311** feet. **1.01** Miles.
2.3 Valley Slope: **0.28** %
2.4.Channel Length: **7484** feet. **1.42** Miles.
2.5 Channel Slope: **0.20** %
2.6 Sinuosity: **1.41**
2.7 Watershed Area: **16** Square Miles
2.8 Channel Width: **45** feet.
2.9 Valley Width: **679** feet.
2.10 Confinement Ratio: **15**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **E**
Bedform: **---**
Sub-class Slope:
Bed Material: **Sand**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Glacial Lake 69.8** %
3.3 Sub-dominant Geological Mat.: **Other**
3.4 Left Valley Side **Hilly**
3.4 Right Valley Side **Extremely Steep**

3.5 Soils

Hydrologic Group:	**D**	**90.0** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**0.0**	**53.8** %
Water Table Shallow:	**-1.0**	**53.8** %
Erodibility:	**slight**	**14.1** %

7.4 Comments:

Pastured, grass banks, SAV.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed

Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **58.6** %
Current Sub-Dominant Land Cover: **Field**

4.2 Corridor

Historic Land Cover: **Forest**
Current Dominant land Cover: **Wetland** **56.0** %
Current Sub-Dominant Land Cover: **Forest**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**0-25**
Sub-dominant:	**>100**	**>100**
Length w/ less than 25 ft.:	**4265**	**4265**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **4** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:		**0.0**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**176.0** ft.	**0.0** ft.

6.3 Channel Bars: **Mid-channel**
6.4 Meander Migration: **No Data**
6.5 Meander Width: **333.0** Ratio: **7.5**
6.6 Wavelength: **406.0** Ratio: **9.1**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height: **Medium (5 - 15 ft.)**
7.3 Ice/Debris Jam Potential: **Shallow**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2	1	2	0	0	0	0	0	0	0	1	0	0	0	1	0	7
High	Low	High	N.S.	Unk.	N.D.	N.S.	N.S.	Unk.	N.S.	Low	N.S.	N.S.	N.S.	Low	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Pond Brook** Reach **T3.04**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Runs along the western side of mountain rd.**
1.2 Towns: **Monkton**
1.3 Downstream Latitude: **44.25**
1.3 Downstream Longitude: **-73.10**

Step 2. Stream Type

2.1 Elevation Upstream: **460**
2.1 Elevation Downstream: **445**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **18343** feet. **3.47** Miles.
2.3 Valley Slope: **0.08** %
2.4.Channel Length: **24824** feet. **4.70** Miles.
2.5 Channel Slope: **0.06** %
2.6 Sinuosity: **1.35**
2.7 Watershed Area: **15** Square Miles
2.8 Channel Width: **44** feet.
2.9 Valley Width: **1,196** feet.
2.10 Confinement Ratio: **27**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **E**
Bedform: **Dune-Ripple**
Sub-class Slope:
Bed Material: **Sand**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Other** **62.8** %
3.3 Sub-dominant Geological Mat.: **Glacial**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Steep**
3.5 Soils

Hydrologic Group:	**D**	**85.2** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**0.0**	**62.8** %
Water Table Shallow:	**-1.0**	**62.8** %
Erodibility:	**slight**	**14.8** %

7.4 Comments:

Wetland. Updated using Phase 2 data on 10/02/01 and on 7/22/04.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **55.7** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Wetland**
Current Dominant land Cover: **Forest** **38.6** %
Current Sub-Dominant Land Cover: **Wetland**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**51-100**	**51-100**
Length w/ less than 25 ft.:	**0**	**248**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **0** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:	**8465.0**	**34 %**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft. **0.0**	ft.

6.3 Channel Bars: **None**
6.4 Meander Migration: **Avulsion**
6.5 Meander Width: **290.0** Ratio: **6.6**
6.6 Wavelength: **413.0** Ratio: **9.5**

Step 7. Windshield Survey

7.1 Bank Erosion: **None**
7.2 Bank Height:
7.3 Ice/Debris Jam Potential: **None**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	0 N.S.	0 N.S.	0 Unk.	0 N.S.	2 High	0 N.S.	0 N.S.	0 N.S.	0 N.S.	1 Low	0 N.S.	0 N.S.	0 N.S.	0 N.S.	7

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Pond Brook** Reach **T3.05**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Runs along the western side of mountain rd just south of East**
1.2 Towns: **Monkton**
1.3 Downstream Latitude: **44.21**
1.3 Downstream Longitude: **-73.11**

Step 2. Stream Type

2.1 Elevation Upstream: **475**
2.1 Elevation Downstream: **460**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **9135** feet. **1.73** Miles.
2.3 Valley Slope: **0.16** %
2.4.Channel Length: **11625** feet. **2.20** Miles.
2.5 Channel Slope: **0.13** %
2.6 Sinuosity: **1.27**
2.7 Watershed Area: **7** Square Miles
2.8 Channel Width: **30** feet.
2.9 Valley Width: **490** feet.
2.10 Confinement Ratio: **16**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **---**
Sub-class Slope:
Bed Material: **Sand**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Other** **96.1** %
3.3 Sub-dominant Geological Mat.: **Glacial**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Steep**
3.5 Soils

Hydrologic Group:	**D**	**96.1**	%
Flooding:	**None/Rare**	**100.**	%
Water Table Deep:	**0.0**	**96.1**	%
Water Table Shallow:	**-1.0**	**96.1**	%
Erodibility:	**slight**	**3.9**	%

7.4 Comments:

Wetland, culvert way too small.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **59.9** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Wetland** **36.8** %
Current Sub-Dominant Land Cover: **Forest**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**26-50**	**26-50**
Length w/ less than 25 ft.:	**930**	**348**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **3** %
5.3 Bank Armoring: **0.0**
Left Right
5.4 Channel Straightening: **0.0**
5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**119.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **Migration**
6.5 Meander Width: **135.0** Ratio: **4.4**
6.6 Wavelength: **238.0** Ratio: **7.8**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height: **Low (<5 ft.)**
7.3 Ice/Debris Jam Potential: **Shallow**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2	0	1	0	0	0	0	0	0	0	0	1	1	1	1	0	7
High	N.S.	Low	N.S.	Unk.	N.D.	N.S.	N.S.	N.S.	N.S.	N.S.	Low	Low	Low	Low	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Pond Brook** Reach **T3.06**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Rt 17 to Monkton Rd. Reach goes from above the inlet to Winona**
1.2 Towns: **Bristol**
1.3 Downstream Latitude: **44.18**
1.3 Downstream Longitude: **-73.10**

Step 2. Stream Type

2.1 Elevation Upstream: **550**
2.1 Elevation Downstream: **475**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **9979** feet. **1.89** Miles.
2.3 Valley Slope: **0.75** %
2.4.Channel Length: **10598** feet. **2.01** Miles.
2.5 Channel Slope: **0.71** %
2.6 Sinuosity: **1.06**
2.7 Watershed Area: **5** Square Miles
2.8 Channel Width: **28** feet.
2.9 Valley Width: **4,697** feet.
2.10 Confinement Ratio: **171**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Glacial Lake 88.1 %**
3.3 Sub-dominant Geological Mat.: **Other**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**C**	**38.4** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**58.8** %
Water Table Shallow:	**6.0**	**58.8** %
Erodibility:	**Severe**	**54.0** %

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **54.4** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Wetland**
Current Dominant land Cover: **Forest** **29.1** %
Current Sub-Dominant Land Cover: **Wetland**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**26-50**	**51-100**
Length w/ less than 25 ft.:	**0**	**0**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **0** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:	**4197.0**	**39 %**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: **240.0** Ratio: **8.7**
6.6 Wavelength: **487.0** Ratio: **17.7**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	0 N.S.	0 N.S.	0 Unk.	0 N.D.	2 High	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	1 Low	2 High	0 N.S.	0 N.S.	9

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Pond Brook** Reach **T3.07**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Reach crosses Monkton Rd on both sides. On the eastern side it**
1.2 Towns: **Monkton**
1.3 Downstream Latitude: **44.16**
1.3 Downstream Longitude: **-73.09**

Step 2. Stream Type

2.1 Elevation Upstream: **550**
2.1 Elevation Downstream: **550**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **4586** feet. **0.87** Miles.
2.3 Valley Slope: **0.00** %
2.4.Channel Length: **6319** feet. **1.20** Miles.
2.5 Channel Slope: **0.00** %
2.6 Sinuosity: **1.38**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **13** feet.
2.9 Valley Width: **198** feet.
2.10 Confinement Ratio: **15**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **B**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.:
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Steep**
3.4 Right Valley Side **Very Steep**
3.5 Soils
Hydrologic Group: %
Flooding: %
Water Table Deep: %
Water Table Shallow: %
Erodibility: **slight** %

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: %
Current Sub-Dominant Land Cover:
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: %
Current Sub-Dominant Land Cover:

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**0-25**
Sub-dominant:	**26-50**	**>100**
Length w/ less than 25 ft.:	**3285**	**3096**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **1** %
5.3 Bank Armoring: Left **0.0** Right
5.4 Channel Straightening: **0.0**
5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**513.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
0	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	3
N.S.	N.S.	High	N.S.	Unk.	N.D.	N.S.	N.S.	N.S.	Low	N.S.	N.S.	N.D.	N.D.	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Tribn to Pond Brook** Reach **T3.1S1.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Parallels Silver St to the SW. Ends near Starksboro Rd.**
1.2 Towns: **Monkton**
1.3 Downstream Latitude: **44.27**
1.3 Downstream Longitude: **-73.11**

Step 2. Stream Type

2.1 Elevation Upstream: **500**
2.1 Elevation Downstream: **410**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **3714** feet. **0.70** Miles.
2.3 Valley Slope: **2.42** %
2.4.Channel Length: **7301** feet. **1.38** Miles.
2.5 Channel Slope: **1.23** %
2.6 Sinuosity: **1.97**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **10** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Semi-confined**
2.11 Reference Stream Type: **B**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Glacial Lake** **98.9** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Very Steep**
3.5 Soils

Hydrologic Group:	**C**	**86.3** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**2.0**	**67.1** %
Water Table Shallow:	**0.0**	**63.1** %
Erodibility:	**Very Severe**	**99.3** %

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Field** **42.2** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Crop**
Current Dominant land Cover: **Field** **28.0** %
Current Sub-Dominant Land Cover: **Crop**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**0-25**
Sub-dominant:	**51-100**	**51-100**
Length w/ less than 25 ft.:	**6570**	**5986**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **1** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:		**0.0**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**140.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	2 High	0 N.S.	0 Unk.	0 N.D.	0 Unk.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.D.	0 N.D.	0 N.S.	0 N.S.	6

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Tribn to Pond Brook** Reach **T3.2S1.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Rt 116 to Tyler Bridge Rd, At the end a left on Turkey LN, The reach is**
1.2 Towns: **Monkton**
1.3 Downstream Latitude: **44.27**
1.3 Downstream Longitude: **-73.10**

Step 2. Stream Type

2.1 Elevation Upstream: **500**
2.1 Elevation Downstream: **420**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **2656** feet. **0.50** Miles.
2.3 Valley Slope: **3.01** %
2.4.Channel Length: **2824** feet. **0.53** Miles.
2.5 Channel Slope: **2.83** %
2.6 Sinuosity: **1.06**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **5** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Semi-confined**
2.11 Reference Stream Type: **B**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Glacial Lake** **93.9** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Steep**
3.4 Right Valley Side **Steep**
3.5 Soils

Hydrologic Group:	**B**	**88.5** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**3.5**	**88.5** %
Water Table Shallow:	**1.5**	**88.5** %
Erodibility:	**Very Severe**	**99.9** %

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **35.0** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Shrub**
Current Dominant land Cover: **Field** **30.1** %
Current Sub-Dominant Land Cover: **Crop**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**0-25**
Sub-dominant:	**>100**	**51-100**
Length w/ less than 25 ft.:	**2767**	**2541**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **0** %
5.3 Bank Armoring: **0.0**
Left Right
5.4 Channel Straightening: **0.0**
5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft. **0.0**	ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	2 High	0 N.S.	0 Unk.	0 N.D.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.D.	0 N.D.	0 N.S.	0 N.S.	6

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Tribn to Pond Brook** Reach **T3.3S1.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Rt 116 to Tyler Bridge Rd, At the end a left on Turkey LN, The reach is**
1.2 Towns: **Monkton**
1.3 Downstream Latitude: **44.26**
1.3 Downstream Longitude: **-73.10**

Step 2. Stream Type

2.1 Elevation Upstream: **470**
2.1 Elevation Downstream: **442**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **2649** feet. **0.50** Miles.
2.3 Valley Slope: **1.06** %
2.4.Channel Length: **2821** feet. **0.53** Miles.
2.5 Channel Slope: **0.99** %
2.6 Sinuosity: **1.06**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **6** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Narrow**
2.11 Reference Stream Type: **C**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Glacial Lake** **73.0** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Hilly**
3.5 Soils

Hydrologic Group:	**D**	**77.1**	%
Flooding:	**None/Rare**	**100.**	%
Water Table Deep:	**1.5**	**71.1**	%
Water Table Shallow:	**0.0**	**71.1**	%
Erodibility:	**Moderate**	**28.9**	%

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **47.1** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Crop**
Current Dominant land Cover: **Forest** **44.7** %
Current Sub-Dominant Land Cover: **Field**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**1213**	**1213**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **0** %
5.3 Bank Armoring: **0.0**
Left Right
5.4 Channel Straightening: **0.0**
5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft. **0.0**	ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Low	N.S.	High	N.S.	Unk.	N.D.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.D.	N.D.	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Tribn to Pond Brook** Reach **T3.4S1.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Runs along the western side of mountain rd.**
1.2 Towns: **Monkton**
1.3 Downstream Latitude: **44.23**
1.3 Downstream Longitude: **-73.11**

Step 2. Stream Type

2.1 Elevation Upstream: **890**
2.1 Elevation Downstream: **423**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **9029** feet. **1.71** Miles.
2.3 Valley Slope: **5.17** %
2.4.Channel Length: **10737** feet. **2.03** Miles.
2.5 Channel Slope: **4.35** %
2.6 Sinuosity: **1.19**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **14** feet.
2.9 Valley Width: **198** feet.
2.10 Confinement Ratio: **14**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **A**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Other** **55.3** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**Not Rated**	**45.9** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**0.0**	**14.7** %
Water Table Shallow:	**-1.0**	**14.7** %
Erodibility:	**Moderate**	**33.4** %

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **70.4** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Crop**
Current Dominant land Cover: **Forest** **38.3** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**3543**	**3328**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **1** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:	**3456.0**	**32 %**
5.5 Dredging History:	**No Data**	

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**783.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	2 High	0 N.S.	0 Unk.	0 N.D.	2 High	0 N.S.	0 N.S.	1 Low	0 N.S.	0 N.S.	0 N.D.	0 N.D.	0 N.S.	0 N.S.	9

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Tribn to Pond Brook** Reach **T3.4S2.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Runs along the western side of mountain rd.**
1.2 Towns: **Monkton**
1.3 Downstream Latitude: **44.21**
1.3 Downstream Longitude: **-73.10**

Step 2. Stream Type

2.1 Elevation Upstream: **495**
2.1 Elevation Downstream: **456**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **7550** feet. **1.43** Miles.
2.3 Valley Slope: **0.52** %
2.4.Channel Length: **9584** feet. **1.82** Miles.
2.5 Channel Slope: **0.41** %
2.6 Sinuosity: **1.27**
2.7 Watershed Area: **2** Square Miles
2.8 Channel Width: **18** feet.
2.9 Valley Width: **1,263** feet.
2.10 Confinement Ratio: **69**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Glacial Lake100.** %
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Hilly**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**C**	**56.0**	%
Flooding:	**None/Rare**	**100.**	%
Water Table Deep:	**2.0**	**56.0**	%
Water Table Shallow:	**0.0**	**57.8**	%
Erodibility:	**Severe**	**56.0**	%

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **69.3** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Crop**
Current Dominant land Cover: **Crop** **21.5** %
Current Sub-Dominant Land Cover: **Forest**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**0-25**
Sub-dominant:	**>100**	**>100**
Length w/ less than 25 ft.:	**5558**	**6133**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **0** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:	**2722.0**	**28 %**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft. **0.0**	ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: **15.0** Ratio: **0.8**
6.6 Wavelength: **15.0** Ratio: **0.8**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	2 High	0 N.S.	0 Unk.	0 N.D.	2 High	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	2 High	2 High	0 N.S.	0 N.S.	12

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Tribn to Pond Brook** Reach **T3.4S3.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Runs along the western side of mountain rd.**
1.2 Towns: **Monkton**
1.3 Downstream Latitude: **44.21**
1.3 Downstream Longitude: **-73.11**

Step 2. Stream Type

2.1 Elevation Upstream: **680**
2.1 Elevation Downstream: **456**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **14309** feet. **2.71** Miles.
2.3 Valley Slope: **1.57** %
2.4.Channel Length: **18941** feet. **3.59** Miles.
2.5 Channel Slope: **1.18** %
2.6 Sinuosity: **1.32**
2.7 Watershed Area: **2** Square Miles
2.8 Channel Width: **16** feet.
2.9 Valley Width: **378** feet.
2.10 Confinement Ratio: **24**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **B**
Bedform: **---**
Sub-class Slope:
Bed Material: **Sand**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Till** **45.8** %
3.3 Sub-dominant Geological Mat.: **Other**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Very Steep**
3.5 Soils

Hydrologic Group:	**B**	**44.3** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**50.8** %
Water Table Shallow:	**2.0**	**37.3** %
Erodibility:	**Severe**	**69.9** %

7.4 Comments:

Meander and natural ponds, unable to measure meander geometry

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **63.5** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **53.4** %
Current Sub-Dominant Land Cover: **Wetland**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**>100**
Sub-dominant:	**>100**	**0-25**
Length w/ less than 25 ft.:	**7576**	**7386**

4.4 Ground Water Inputs: **No Data**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **1** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:	**3236.0**	**17 %**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**280.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height: **Low (<5 ft.)**
7.3 Ice/Debris Jam Potential: **Shallow**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2	1	2	0	0	0	1	0	0	0	0	0	0	0	1	0	7
High	Low	High	N.S.	Unk.	N.D.	Low	N.S.	N.S.	N.S.	N.S.	N.S.	N.D.	N.D.	Low	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Tribn to Pond Brook** Reach **T3.6S1.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Rt 17 to Monkton Rd. Reach goes from the outlet Winona Lake to the**
1.2 Towns: **Bristol**
1.3 Downstream Latitude: **44.17**
1.3 Downstream Longitude: **-73.09**

Step 2. Stream Type

2.1 Elevation Upstream: **520**
2.1 Elevation Downstream: **470**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **4626** feet. **0.88** Miles.
2.3 Valley Slope: **1.08** %
2.4.Channel Length: **4932** feet. **0.93** Miles.
2.5 Channel Slope: **1.01** %
2.6 Sinuosity: **1.07**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **9** feet.
2.9 Valley Width: **510** feet.
2.10 Confinement Ratio: **60**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Glacial Lake 77.0** %
3.3 Sub-dominant Geological Mat.: **Other**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Steep**
3.5 Soils

Hydrologic Group:	**D**	**42.1** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**0.0**	**42.1** %
Water Table Shallow:	**-1.0**	**42.1** %
Erodibility:	**Severe**	**57.9** %

7.4 Comments:

Reach is all straightened

Step 4. Land Cover - Reach Hydrology

4.1 Watershed

Historic Land Cover: **Forest**
Current Dominant land Cover: **Crop** **42.3** %
Current Sub-Dominant Land Cover: **Forest**

4.2 Corridor

Historic Land Cover: **Forest**
Current Dominant land Cover: **Crop** **26.5** %
Current Sub-Dominant Land Cover: **Wetland**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**0-25**
Sub-dominant:	**>100**	**>100**
Length w/ less than 25 ft.:	**3353**	**3353**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **1** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:	**2229.0**	**45 %**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**416.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: **6.0** Ratio: **0.7**
6.6 Wavelength: **6.0** Ratio: **0.7**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	2 High	0 N.S.	0 Unk.	0 N.D.	2 High	0 N.S.	0 Unk.	1 Low	0 N.S.	0 N.S.	2 High	2 High	0 N.S.	0 N.S.	13

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Hollow Brook** Reach **T4.01**
Topo Maps: **414**
Date Last Edited: **Wed, December 31, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **From Hinesburg sand and gravel quarry downstream along**
1.2 Towns: **Hinesburg, Starksboro**
1.3 Downstream Latitude: **44.28**
1.3 Downstream Longitude: **-73.08**

Step 2. Stream Type

2.1 Elevation Upstream: **465**
2.1 Elevation Downstream: **376**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **7341** feet. **1.39** Miles.
2.3 Valley Slope: **1.21** %
2.4.Channel Length: **9650** feet. **1.83** Miles.
2.5 Channel Slope: **0.92** %
2.6 Sinuosity: **1.31**
2.7 Watershed Area: **9** Square Miles
2.8 Channel Width: **35** feet.
2.9 Valley Width: **867** feet.
2.10 Confinement Ratio: **25**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **None**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **Yes**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Alluvial** **48.4** %
3.3 Sub-dominant Geological Mat.: **Other**
3.4 Left Valley Side **Hilly**
3.4 Right Valley Side **Hilly**
3.5 Soils

Hydrologic Group:	**B**	**30.7** %
Flooding:	**Frequent**	**48.7** %
Water Table Deep:	**6.0**	**27.1** %
Water Table Shallow:	**0.0**	**27.6** %
Erodibility:	**slight**	**9.3** %

7.4 Comments:

Updated Dec 2008, relying primarily on August 2008 field observations and additional cross sections, and limited field observations from July and Sept 2002.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **76.4** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Crop**
Current Dominant land Cover: **Forest** **38.9** %
Current Sub-Dominant Land Cover: **Wetland**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**1614**	**1741**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **4** **6** %
5.3 Bank Armoring: **5 %**
Left **288.8** Right **284**
5.4 Channel Straightening: **1344** **13 %**
5.5 Dredging History: **Dredging**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **1937.0** ft. **20 %**

	One Side		Both Sides	
Road:	**1021**	ft.	**0.0**	ft.
Railroad:	**0.0**	ft.	**0.0**	ft.
Berm:	**791**	ft.	**124**	ft.
Improved Path:	**0.0**	ft.	**0.0**	ft.
6.2 Development:	**527**	ft.	**178**	ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Multiple**
6.5 Meander Width: **284.0** Ratio: **8.2**
6.6 Wavelength: **248.0** Ratio: **7.1**

Step 7. Windshield Survey

7.1 Bank Erosion: **1,826.92 ft.**
7.2 Bank Height: **3.06 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	1 Low	2 High	0 N.S.	1 Low	1 Low	1 Low	2 High	2 High	1 Low	2 High	2 High	1 Low	1 Low	0 N.S.	1 Low	20

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Hollow Brook** Reach **T4.02**
Topo Maps: **414**
Date Last Edited: **Wed, December 31, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Flows from east to west along Hinesburg Hollow Rd from vicinity of Hinesburg**
1.2 Towns:
1.3 Downstream Latitude: **44.29**
1.3 Downstream Longitude: **-73.07**

Step 2. Stream Type

2.1 Elevation Upstream: **600**
2.1 Elevation Downstream: **465**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **6213** feet. **1.18** Miles.
2.3 Valley Slope: **2.17** %
2.4.Channel Length: **7019** feet. **1.33** Miles.
2.5 Channel Slope: **1.92** %
2.6 Sinuosity: **1.13**
2.7 Watershed Area: **7** Square Miles
2.8 Channel Width: **32** feet.
2.9 Valley Width: **220** feet.
2.10 Confinement Ratio: **7**
2.10 Confinement Type: **Broad**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **b**
Bed Material: **Cobble**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **Multiple**
3.3 Dominant Geologic Mat.: **Till** **56.5** %
3.3 Sub-dominant Geological Mat.: **Other**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Very Steep**

3.5 Soils

Hydrologic Group:	**C**	**56.9** %
Flooding:	**None/Rare**	**97.1** %
Water Table Deep:	**2.5**	**42.9** %
Water Table Shallow:	**1.5**	**44.9** %
Erodibility:	**Very Severe**	**75.4** %

Step 4. Land Cover - Reach Hydrology

4.1 Watershed

Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **84.0** %
Current Sub-Dominant Land Cover: **Urban**

4.2 Corridor

Historic Land Cover: **Industrial**
Current Dominant land Cover: **Urban** **25.9** %
Current Sub-Dominant Land Cover: **Forest**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**>100**
Sub-dominant:	**51-100**	**0-25**
Length w/ less than 25 ft.:	**3231**	**1982**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type: **None**
Use:
5.2 Bridges and Culverts: **2** **4** %
5.3 Bank Armoring: **15 %**
Left **1043** Right **71**
5.4 Channel Straightening: **2827.0** **40 %**
5.5 Dredging History: **Dredging**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **5732** ft. **81 %**

	One Side		Both Sides	
Road:	**5732**	ft.	**0.0**	ft.
Railroad:	**0.0**	ft.	**0.0**	ft.
Berm:	**0.0**	ft.	**0.0**	ft.
Improved Path:	**0.0**	ft.	**0.0**	ft.
6.2 Development:	**1144**	ft.	**145**	ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Multiple**
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **1,631.26 ft.**
7.2 Bank Height: **3.08 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

7.4 Comments:

Updated Dec 2008, relying primarily on field observations from Aug and Oct 2008, including additional cross sections, that supplement an original July 2005 assessment. Steps 6.5, 6.6 not

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	2	2	0	0	1	2	2	2	1	1	1	0	0	0	1	16
Low	High	High	N.S.	N.S.	Low	High	High	High	Low	Low	Low	N/A	N/A	N.S.	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Hollow Brook** Reach **T4.03**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Where brook crosses hollow rd for the 4th time until below**
1.2 Towns: **Hinesburg**
1.3 Downstream Latitude: **44.29**
1.3 Downstream Longitude: **-73.04**

Step 2. Stream Type

2.1 Elevation Upstream: **635**
2.1 Elevation Downstream: **600**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **8565** feet. **1.62** Miles.
2.3 Valley Slope: **0.41** %
2.4.Channel Length: **10730** feet. **2.03** Miles.
2.5 Channel Slope: **0.33** %
2.6 Sinuosity: **1.25**
2.7 Watershed Area: **7** Square Miles
2.8 Channel Width: **30** feet.
2.9 Valley Width: **417** feet.
2.10 Confinement Ratio: **14**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **---**
Sub-class Slope:
Bed Material: **Cobble**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Alluvial** **46.1** %
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**C**	**62.7**	%
Flooding:	**None/Rare**	**53.9**	%
Water Table Deep:	**1.5**	**50.7**	%
Water Table Shallow:	**0.0**	**58.5**	%
Erodibility:	**Moderate**	**30.2**	%

7.4 Comments:

Flatter, riffle-pool, old terrace?, some buffer, wetland, beavers, overhanging branches.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **84.1** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Field**
Current Dominant land Cover: **Forest** **35.0** %
Current Sub-Dominant Land Cover: **Wetland**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**0-25**
Sub-dominant:	**>100**	**>100**
Length w/ less than 25 ft.:	**9764**	**9764**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **2** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:	**3608.0**	**33 %**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**185.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **Avulsion**
6.5 Meander Width: **195.0** Ratio: **6.4**
6.6 Wavelength: **177.0** Ratio: **5.8**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height: **Low (<5 ft.)**
7.3 Ice/Debris Jam Potential: **Shallow**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1 Low	2 High	2 High	0 N.S.	0 Unk.	0 N.D.	2 High	0 N.S.	0 Unk.	0 N.S.	0 N.S.	1 Low	0 N.S.	2 High	1 Low	0 N.S.	11

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Hollow Brook** Reach **T4.04**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Confluence of T9&T10 to start of increase in slope next to trailer park**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.29**
1.3 Downstream Longitude: **-73.02**

Step 2. Stream Type

2.1 Elevation Upstream: **660**
2.1 Elevation Downstream: **635**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **3352** feet. **0.63** Miles.
2.3 Valley Slope: **0.75** %
2.4.Channel Length: **3862** feet. **0.73** Miles.
2.5 Channel Slope: **0.65** %
2.6 Sinuosity: **1.15**
2.7 Watershed Area: **3** Square Miles
2.8 Channel Width: **20** feet.
2.9 Valley Width: **490** feet.
2.10 Confinement Ratio: **24**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **---**
Sub-class Slope:
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Other** **39.8** %
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**D**	**44.5** %
Flooding:	**None/Rare**	**85.2** %
Water Table Deep:	**0.0**	**39.8** %
Water Table Shallow:	**-1.0**	**39.8** %
Erodibility:	**slight**	**15.6** %

7.4 Comments:

C stream type.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Field**
Current Dominant land Cover: **Forest** **87.6** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Field**
Current Dominant land Cover: **Wetland** **24.9** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**0-25**
Sub-dominant:	**>100**	**26-50**
Length w/ less than 25 ft.:	**3862**	**2085**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **1** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:	**1516.0**	**39 %**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**462.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: **400.0** Ratio: **19.6**
6.6 Wavelength: **16.0** Ratio: **0.8**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	2	2	0	0	0	2	0	0	1	0	0	2	2	0	0	12
Low	High	High	N.S.	Unk.	N.D.	High	N.S.	Unk.	Low	N.S.	N.S.	High	High	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Hollow Brook** Reach **T4.05**
Topo Maps: **414**
Date Last Edited: **Wed, December 31, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Extends to the southeast from Lincoln Hill Road crossing**
1.2 Towns: **Hinesburg, Starksboro**
1.3 Downstream Latitude: **44.30**
1.3 Downstream Longitude: **-73.01**

Step 2. Stream Type

2.1 Elevation Upstream: **1070**
2.1 Elevation Downstream: **660**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **6839** feet. **1.30** Miles.
2.3 Valley Slope: **6.00** %
2.4.Channel Length: **7879** feet. **1.49** Miles.
2.5 Channel Slope: **5.20** %
2.6 Sinuosity: **1.15**
2.7 Watershed Area: **2** Square Miles
2.8 Channel Width: **19** feet.
2.9 Valley Width: **45** feet.
2.10 Confinement Ratio: **2**
2.10 Confinement Type: **Semi-confined**
2.11 Reference Stream Type: **B**
Bedform: **Step-Pool**
Sub-class Slope: **a**
Bed Material: **Cobble**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **Yes**
3.2 Grade Control: **Multiple**
3.3 Dominant Geologic Mat.: **Till** **80.3** %
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Very Steep**
3.5 Soils

Hydrologic Group:	**C**	**44.2**	%
Flooding:	**None/Rare**	**100.**	%
Water Table Deep:	**6.0**	**41.2**	%
Water Table Shallow:	**1.5**	**41.0**	%
Erodibility:	**Very Severe**	**98.4**	%

7.4 Comments:

Updated Dec 2008, relying primarily on Sept 2005 observations, as well as limited field observations and additional cross sections completed in July of 2008.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **90.8** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **46.7** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**1302**	**394**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type: **Small Store and Release**
Use: **Other**
5.2 Bridges and Culverts: **4** **6** %
5.3 Bank Armoring: **4 %**
Left **345** Right **0.0**
5.4 Channel Straightening: **582** **7 %**
5.5 Dredging History: **Dredging**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **1538** ft. **19 %**

	One Side	Both Sides	
Road:	**741.8** ft.	**359**	ft.
Railroad:	**0.0** ft.	**0.0**	ft.
Berm:	**437** ft.	**0.0**	ft.
Improved Path:	**0.0** ft.	**0.0**	ft.
6.2 Development:	**747** ft.	**128**	ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Multiple**
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **1,589.40 ft.**
7.2 Bank Height: **2.68 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	1	2	1	1	0	1	2	1	1	1	1	0	0	0	1	14
Low	Low	High	Low	Low	N.S.	Low	High	Low	Low	Low	Low	N/A	N/A	N.S.	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Hollow Brook** Reach **T4.06**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Crossing at Lincoln Hill Rd.**
1.2 Towns: **Hinesburg**
1.3 Downstream Latitude: **44.31**
1.3 Downstream Longitude: **-73.04**

Step 2. Stream Type

2.1 Elevation Upstream: **1090**
2.1 Elevation Downstream: **1070**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **1237** feet. **0.23** Miles.
2.3 Valley Slope: **1.62** %
2.4.Channel Length: **1509** feet. **0.29** Miles.
2.5 Channel Slope: **1.33** %
2.6 Sinuosity: **1.22**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **12** feet.
2.9 Valley Width: **160** feet.
2.10 Confinement Ratio: **13**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **---**
Sub-class Slope:
Bed Material: **Sand**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Till** **100.** %
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**D**	**76.1**	%
Flooding:	**None/Rare**	**100.**	%
Water Table Deep:	**2.0**	**76.1**	%
Water Table Shallow:	**0.0**	**76.1**	%
Erodibility:	**Very Severe**	**94.4**	%

7.4 Comments:

Wetland, bottom culvert, widens at either side of culvert.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **91.7** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Wetland**
Current Dominant land Cover: **Wetland** **49.9** %
Current Sub-Dominant Land Cover: **Forest**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**51-100**	**26-50**
Length w/ less than 25 ft.:	**0**	**0**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **1** %
5.3 Bank Armoring: **0.0**
Left Right
5.4 Channel Straightening: **0.0**
5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft. **0.0**	ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height: **Low (<5 ft.)**
7.3 Ice/Debris Jam Potential: **Shallow**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
Low	N.S.	N.S.	N.S.	Unk.	N.D.	Unk.	N.S.	Unk.	N.S.	N.S.	N.S.	N.D.	N.D.	Low	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Hollow Brook** Reach **T4.07**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **N of Lincoln Hill Rd., Top of Hollow Brook, includes trib // to road**
1.2 Towns: **Hinesburg**
1.3 Downstream Latitude: **44.31**
1.3 Downstream Longitude: **-73.04**

Step 2. Stream Type

2.1 Elevation Upstream: **1170**
2.1 Elevation Downstream: **1090**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **3522** feet. **0.67** Miles.
2.3 Valley Slope: **2.27** %
2.4.Channel Length: **3284** feet. **0.62** Miles.
2.5 Channel Slope: **2.44** %
2.6 Sinuosity: **0.93**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **11** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Narrowly Confined**
2.11 Reference Stream Type: **A**
Bedform: **---**
Sub-class Slope:
Bed Material: **Sand**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Till** **100.** %
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**D**	**76.1** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**2.0**	**70.5** %
Water Table Shallow:	**0.0**	**70.5** %
Erodibility:	**Very Severe**	**94.4** %

7.4 Comments:

Flat part, wetland.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **93.9** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **75.1** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**51-100**	**26-50**
Length w/ less than 25 ft.:	**131**	**131**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **0** %
5.3 Bank Armoring: **0.0**
Left Right
5.4 Channel Straightening: **0.0**
5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft. **0.0**	ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height: **Low (<5 ft.)**
7.3 Ice/Debris Jam Potential: **Shallow**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1 Low	1 Low	1 Low	0 N.S.	0 Unk.	0 N.D.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.D.	0 N.D.	1 Low	1 Low	5

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Hollow Brook** Reach **T4.1S1.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **1000' West of rt 116 through a farm to the head waters**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.28**
1.3 Downstream Longitude: **-73.07**

Step 2. Stream Type

2.1 Elevation Upstream: **460**
2.1 Elevation Downstream: **400**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **2037** feet. **0.39** Miles.
2.3 Valley Slope: **2.95** %
2.4.Channel Length: **1596** feet. **0.30** Miles.
2.5 Channel Slope: **3.76** %
2.6 Sinuosity: **0.78**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **4** feet.
2.9 Valley Width: **100** feet.
2.10 Confinement Ratio: **24**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **B**
Bedform: **---**
Sub-class Slope:
Bed Material: **Sand**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Glacial Lake 99.8** %
3.3 Sub-dominant Geological Mat.: **Alluvial**
3.4 Left Valley Side **Hilly**
3.4 Right Valley Side **Hilly**
3.5 Soils

Hydrologic Group:	**B**	**51.8** %
Flooding:	**None/Rare**	**99.8** %
Water Table Deep:	**3.5**	**51.8** %
Water Table Shallow:	**1.5**	**51.8** %
Erodibility:	**Very Severe**	**94.6** %

7.4 Comments:

1' wide, cattail wetland.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Field**
Current Dominant land Cover: **Field** **52.5** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Field**
Current Dominant land Cover: **Field** **33.4** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**0-25**
Sub-dominant:	**>100**	**>100**
Length w/ less than 25 ft.:	**1596**	**1596**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **1** %
5.3 Bank Armoring: **0.0**
Left Right
5.4 Channel Straightening: **0.0**
5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**105.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height: **Low (<5 ft.)**
7.3 Ice/Debris Jam Potential: **Shallow**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2	2	2	0	0	0	0	0	0	1	0	0	0	0	1	0	8
High	High	High	N.S.	Unk.	N.D.	Unk.	N.S.	N.S.	Low	N.S.	N.S.	N.D.	N.D.	Low	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Hollow Brook** Reach **T4.1S2.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **300' West of Rt 116 to headwater break of T3**
1.2 Towns: **Hinesburg, Starksboro**
1.3 Downstream Latitude: **44.28**
1.3 Downstream Longitude: **-73.07**

Step 2. Stream Type

2.1 Elevation Upstream: **480**
2.1 Elevation Downstream: **410**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **2612** feet. **0.49** Miles.
2.3 Valley Slope: **2.68** %
2.4.Channel Length: **2837** feet. **0.54** Miles.
2.5 Channel Slope: **2.47** %
2.6 Sinuosity: **1.09**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **12** feet.
2.9 Valley Width: **100** feet.
2.10 Confinement Ratio: **8**
2.10 Confinement Type: **Broad**
2.11 Reference Stream Type: **B**
Bedform: **---**
Sub-class Slope:
Bed Material: **Sand**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Glacial Lake 70.6** %
3.3 Sub-dominant Geological Mat.: **Alluvial**
3.4 Left Valley Side **Hilly**
3.4 Right Valley Side **Hilly**
3.5 Soils

Hydrologic Group:	**C**	**66.5** %
Flooding:	**None/Rare**	**70.6** %
Water Table Deep:	**2.0**	**54.7** %
Water Table Shallow:	**0.0**	**62.8** %
Erodibility:	**Severe**	**58.3** %

7.4 Comments:

Wetland

Step 4. Land Cover - Reach Hydrology

4.1 Watershed

Historic Land Cover: **Field**
Current Dominant land Cover: **Forest** **56.5** %
Current Sub-Dominant Land Cover: **Urban**

4.2 Corridor

Historic Land Cover: **Forest**
Current Dominant land Cover: **Wetland** **21.0** %
Current Sub-Dominant Land Cover: **Forest**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**26-50**	**26-50**
Length w/ less than 25 ft.:	**0**	**0**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **1** %
5.3 Bank Armoring: Left **0.0** Right
5.4 Channel Straightening: **0.0**
5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height: **Low (<5 ft.)**
7.3 Ice/Debris Jam Potential: **Shallow**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	4
High	Low	N.S.	N.S.	Unk.	N.D.	N.D.	N.S.	N.S.	N.S.	N.S.	N.S.	N.D.	N.D.	Low	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Hollow Brook** Reach **T4.1S3.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Mouth of second trib off left bank, 700 ft west of Rt 116**
1.2 Towns: **Hinesburg**
1.3 Downstream Latitude: **44.28**
1.3 Downstream Longitude: **-73.07**

Step 2. Stream Type

2.1 Elevation Upstream: **600**
2.1 Elevation Downstream: **480**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **4158** feet. **0.79** Miles.
2.3 Valley Slope: **2.89** %
2.4.Channel Length: **4009** feet. **0.76** Miles.
2.5 Channel Slope: **2.99** %
2.6 Sinuosity: **0.96**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **6** feet.
2.9 Valley Width: **120** feet.
2.10 Confinement Ratio: **19**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **B**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Glacial Lake** **49.9** %
3.3 Sub-dominant Geological Mat.: **Other**
3.4 Left Valley Side **Hilly**
3.4 Right Valley Side **Hilly**
3.5 Soils

Hydrologic Group:	**B**	**27.3** %
Flooding:	**None/Rare**	**90.0** %
Water Table Deep:	**6.0**	**41.1** %
Water Table Shallow:	**6.0**	**40.4** %
Erodibility:	**Severe**	**60.5** %

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Field**
Current Dominant land Cover: **Forest** **71.2** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Shrub**
Current Dominant land Cover: **Forest** **49.2** %
Current Sub-Dominant Land Cover: **Wetland**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**440**	**801**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **1** %
5.3 Bank Armoring: **0.0**
Left Right
5.4 Channel Straightening: **0.0**
5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft. **0.0**	ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **Migration**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	5
Low	N.S.	High	N.S.	Unk.	N.D.	Unk.	N.S.	N.S.	N.S.	N.S.	High	N.D.	N.D.	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Hollow Brook** Reach **T4.1S4.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Break off T3, 100' East of Rt 116 to the start of steep slope**
1.2 Towns: **Hinesburg**
1.3 Downstream Latitude: **44.28**
1.3 Downstream Longitude: **-73.07**

Step 2. Stream Type

2.1 Elevation Upstream: **500**
2.1 Elevation Downstream: **410**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **3061** feet. **0.58** Miles.
2.3 Valley Slope: **2.94** %
2.4.Channel Length: **4633** feet. **0.88** Miles.
2.5 Channel Slope: **1.94** %
2.6 Sinuosity: **1.51**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **10** feet.
2.9 Valley Width: **100** feet.
2.10 Confinement Ratio: **10**
2.10 Confinement Type: **Broad**
2.11 Reference Stream Type: **C**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **Yes**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Alluvial** **36.0** %
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Hilly**
3.4 Right Valley Side **Hilly**
3.5 Soils

Hydrologic Group:	**C**	**46.5** %
Flooding:	**None/Rare**	**64.0** %
Water Table Deep:	**1.5**	**69.1** %
Water Table Shallow:	**0.0**	**46.7** %
Erodibility:	**slight**	**22.0** %

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Field**
Current Dominant land Cover: **Forest** **55.4** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Shrub**
Current Dominant land Cover: **Wetland** **36.4** %
Current Sub-Dominant Land Cover: **Forest**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**0-25**	**0-25**
Sub-dominant:	**51-100**	**>100**
Length w/ less than 25 ft.:	**3196**	**3243**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **1** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:		**0.0**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
2 High	2 High	2 High	0 N.S.	0 Unk.	0 N.D.	0 Unk.	0 N.S.	0 Unk.	0 N.S.	0 N.S.	0 N.S.	0 N.D.	0 N.D.	0 N.S.	0 N.S.	6

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Hollow Brook** Reach **T4.1S4.02**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Steep slope off of T4 , S of Quarry, in Fred Johnson WMA, E of Tyler**
1.2 Towns: **Hinesburg**
1.3 Downstream Latitude: **44.29**
1.3 Downstream Longitude: **-73.06**

Step 2. Stream Type

2.1 Elevation Upstream: **600**
2.1 Elevation Downstream: **500**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **766** feet. **0.15** Miles.
2.3 Valley Slope: **13.05** %
2.4.Channel Length: **576** feet. **0.11** Miles.
2.5 Channel Slope: **17.36** %
2.6 Sinuosity: **0.75**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **5** feet.
2.9 Valley Width: **40** feet.
2.10 Confinement Ratio: **8**
2.10 Confinement Type: **Broad**
2.11 Reference Stream Type: **A**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Glacial Lake 64.3** %
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Very Steep**
3.4 Right Valley Side **Very Steep**
3.5 Soils

Hydrologic Group:	**D**	**64.3** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**2.0**	**64.3** %
Water Table Shallow:	**0.5**	**64.3** %
Erodibility:	**Very Severe**	**100.** %

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **96.8** %
Current Sub-Dominant Land Cover:
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **68.8** %
Current Sub-Dominant Land Cover:

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**51-100**	**51-100**
Length w/ less than 25 ft.:	**0**	**0**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **0** %
5.3 Bank Armoring: **0.0**
Left Right
5.4 Channel Straightening: **0.0**
5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft. **0.0**	ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 Unk.	0 N.D.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.D.	0 N.D.	0 N.S.	0 N.S.	0

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Hollow Brook** Reach **T4.3S1.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **1st Right going up Hollow R. to // with Mason Hill Rd., Includes 2nd**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.29**
1.3 Downstream Longitude: **-73.03**

Step 2. Stream Type

2.1 Elevation Upstream: **1240**
2.1 Elevation Downstream: **630**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **4643** feet. **0.88** Miles.
2.3 Valley Slope: **13.14** %
2.4.Channel Length: **6601** feet. **1.25** Miles.
2.5 Channel Slope: **9.24** %
2.6 Sinuosity: **1.42**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **12** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Narrowly Confined**
2.11 Reference Stream Type: **A**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Till** **92.4** %
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**B**	**52.1** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**86.0** %
Water Table Shallow:	**2.0**	**63.7** %
Erodibility:	**Very Severe**	**99.9** %

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **87.1** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **39.3** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**1518**	**1782**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **1** %
5.3 Bank Armoring: **0.0**
Left Right
5.4 Channel Straightening: **0.0**
5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**137.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Low	High	High	N.S.	Unk.	N.D.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.D.	N.D.	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Hollow Brook** Reach **T4.3S2.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Off right bank of H3. Crosses Hollow Rd. longer than T13**
1.2 Towns: **Hinesburg**
1.3 Downstream Latitude: **44.29**
1.3 Downstream Longitude: **-73.03**

Step 2. Stream Type

2.1 Elevation Upstream: **1330**
2.1 Elevation Downstream: **630**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **4855** feet. **0.92** Miles.
2.3 Valley Slope: **14.42** %
2.4.Channel Length: **5355** feet. **1.01** Miles.
2.5 Channel Slope: **13.07** %
2.6 Sinuosity: **1.10**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **6** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Narrowly Confined**
2.11 Reference Stream Type: **A**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Till** **100.** %
3.3 Sub-dominant Geological Mat.: **Alluvial**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**C**	**90.9**	%
Flooding:	**None/Rare**	**100.**	%
Water Table Deep:	**3.5**	**60.0**	%
Water Table Shallow:	**2.0**	**69.1**	%
Erodibility:	**Very Severe**	**100.**	%

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **74.7** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **51.0** %
Current Sub-Dominant Land Cover: **Wetland**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**26-50**	**51-100**
Length w/ less than 25 ft.:	**267**	**267**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **0** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:		**0.0**
5.5 Dredging History:	**No Data**	

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Low	N.S.	Low	N.S.	Unk.	N.D.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.D.	N.D.	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Hollow Brook** Reach **T4.3S3.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **200' S. of Hollow Rd., off S brook of Hollow brook**
1.2 Towns: **Hinesburg**
1.3 Downstream Latitude: **44.29**
1.3 Downstream Longitude: **-73.02**

Step 2. Stream Type

2.1 Elevation Upstream: **1000**
2.1 Elevation Downstream: **630**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **1738** feet. **0.33** Miles.
2.3 Valley Slope: **21.29** %
2.4.Channel Length: **2952** feet. **0.56** Miles.
2.5 Channel Slope: **12.53** %
2.6 Sinuosity: **1.70**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **4** feet.
2.9 Valley Width: **40** feet.
2.10 Confinement Ratio: **9**
2.10 Confinement Type: **Broad**
2.11 Reference Stream Type: **A**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Till** **99.2** %
3.3 Sub-dominant Geological Mat.: **Alluvial**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**D**	**77.1** %
Flooding:	**None/Rare**	**99.2** %
Water Table Deep:	**6.0**	**77.1** %
Water Table Shallow:	**6.0**	**64.2** %
Erodibility:	**Very Severe**	**99.2** %

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **75.3** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **63.7** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**51-100**	**26-50**
Length w/ less than 25 ft.:	**118**	**383**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **0** %
5.3 Bank Armoring: **0.0**
Left Right
5.4 Channel Straightening: **0.0**
5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**83.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Low	Low	Low	N.S.	Unk.	N.D.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.D.	N.D.	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Hollow Brook** Reach **T4.3S4.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Crosses Mason Hill Road**
1.2 Towns: **Hinesburg**
1.3 Downstream Latitude: **44.29**
1.3 Downstream Longitude: **-73.02**

Step 2. Stream Type

2.1 Elevation Upstream: **1160**
2.1 Elevation Downstream: **630**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **3376** feet. **0.64** Miles.
2.3 Valley Slope: **15.70** %
2.4.Channel Length: **3105** feet. **0.59** Miles.
2.5 Channel Slope: **17.07** %
2.6 Sinuosity: **0.92**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **6** feet.
2.9 Valley Width: **10** feet.
2.10 Confinement Ratio: **2**
2.10 Confinement Type: **Narrowly Confined**
2.11 Reference Stream Type: **A**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Till** **96.1** %
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**D**	**41.6** %
Flooding:	**None/Rare**	**98.8** %
Water Table Deep:	**6.0**	**64.2** %
Water Table Shallow:	**6.0**	**41.6** %
Erodibility:	**Very Severe**	**98.8** %

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **70.5** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **58.0** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**26-50**	**>100**
Sub-dominant:	**>100**	**26-50**
Length w/ less than 25 ft.:	**372**	**372**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **0** %
5.3 Bank Armoring: Left **0.0** Right
5.4 Channel Straightening: **0.0**
5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**50.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Low	Low	High	N.S.	Unk.	N.D.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.D.	N.D.	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Hollow Brook** Reach **T4.3S5.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Off Rt Bank Of #3 at mouth, may cross Hollow Rd.**
1.2 Towns: **Hinesburg**
1.3 Downstream Latitude: **44.29**
1.3 Downstream Longitude: **-73.02**

Step 2. Stream Type

2.1 Elevation Upstream: **1000**
2.1 Elevation Downstream: **630**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **2223** feet. **0.42** Miles.
2.3 Valley Slope: **16.64** %
2.4.Channel Length: **2276** feet. **0.43** Miles.
2.5 Channel Slope: **16.26** %
2.6 Sinuosity: **1.02**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **4** feet.
2.9 Valley Width: **10** feet.
2.10 Confinement Ratio: **2**
2.10 Confinement Type: **Semi-confined**
2.11 Reference Stream Type: **A**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Till** **100.** %
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**

3.5 Soils

Hydrologic Group:	**C**	**63.9**	%
Flooding:	**None/Rare**	**100.**	%
Water Table Deep:	**3.5**	**63.9**	%
Water Table Shallow:	**2.0**	**99.6**	%
Erodibility:	**Very Severe**	**100.**	%

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed

Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **74.0** %
Current Sub-Dominant Land Cover: **Field**

4.2 Corridor

Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **54.2** %
Current Sub-Dominant Land Cover: **Field**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**51-100**	**51-100**
Length w/ less than 25 ft.:	**0**	**0**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **0** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:		**0.0**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft. **0.0**	ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 Unk.	0 N.D.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.D.	0 N.D.	0 N.S.	0 N.S.	0

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Hollow Brook** Reach **T4.3S6.01**
Topo Maps: **414**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Reach parallels Big Hollow Road and extends from upstream of**
1.2 Towns: **Hinesburg, Starksboro**
1.3 Downstream Latitude: **44.29**
1.3 Downstream Longitude: **-73.02**

Step 2. Stream Type

2.1 Elevation Upstream: **1090**
2.1 Elevation Downstream: **670**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **5050** feet. **0.96** Miles.
2.3 Valley Slope: **8.32** %
2.4.Channel Length: **7746** feet. **1.47** Miles.
2.5 Channel Slope: **5.42** %
2.6 Sinuosity: **1.53**
2.7 Watershed Area: **2** Square Miles
2.8 Channel Width: **17** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Narrowly Confined**
2.11 Reference Stream Type: **A**
Bedform: **Step-Pool**
Sub-class Slope: **None**
Bed Material: **Cobble**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Till** **87.4** %
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**B**	**62.8** %
Flooding:	**None/Rare**	**98.9** %
Water Table Deep:	**6.0**	**72.8** %
Water Table Shallow:	**2.0**	**62.8** %
Erodibility:	**Very Severe**	**96.3** %

7.4 Comments:

Culvert - fish barrier, downstream mid bar, deep pool. Updated using Phase 2 data on 10/02/01 and on 7/22/04. Updated to 2007 methods in Sept 2007 (relying on 2001 data).

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Field**
Current Dominant land Cover: **Forest** **82.1** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Field**
Current Dominant land Cover: **Urban** **31.6** %
Current Sub-Dominant Land Cover: **Forest**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**26-50**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**2477**	**2498**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **7** **10** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **3054** **39 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **5541** ft. **71 %**

	One Side	Both Sides	
Road:	**5243** ft.	**298**	ft.
Railroad:	**0.0** ft.	**0.0**	ft.
Berm:	**0.0** ft.	**0.0**	ft.
Improved Path:	**0.0** ft.	**0.0**	ft.
6.2 Development:	**853** ft.	**524.6**	ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Flood Chute**
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **319.30 ft.**
7.2 Bank Height: **4.75 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	2	2	0	1	0	2	0	2	1	2	1	0	0	0	1	15
Low	High	High	N.S.	Low	N.S.	High	N.S.	High	Low	High	Low	N/A	N/A	N.S.	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Hollow Brook** Reach **T4.3S7.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **off T9, Includes 2 tribs entering T10, crosses Ruby Brace Rd**
1.2 Towns: **Hinesburg, Starksboro**
1.3 Downstream Latitude: **44.29**
1.3 Downstream Longitude: **-73.01**

Step 2. Stream Type

2.1 Elevation Upstream: **1100**
2.1 Elevation Downstream: **630**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **9880** feet. **1.87** Miles.
2.3 Valley Slope: **4.76** %
2.4.Channel Length: **8671** feet. **1.64** Miles.
2.5 Channel Slope: **5.42** %
2.6 Sinuosity: **0.88**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **15** feet.
2.9 Valley Width: **70** feet.
2.10 Confinement Ratio: **5**
2.10 Confinement Type: **Narrow**
2.11 Reference Stream Type: **A**
Bedform: **---**
Sub-class Slope:
Bed Material: **Cobble**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Till** **88.5** %
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**B**	**46.8** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**72.6** %
Water Table Shallow:	**2.0**	**46.8** %
Erodibility:	**Very Severe**	**100.** %

7.4 Comments:

Culvert above stream, almost to high on upstream, water cut around, upstream bar/sediment wedge

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **85.1** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **36.4** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**1474**	**1387**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **1** %
5.3 Bank Armoring: Left **0.0** Right
5.4 Channel Straightening: **0.0**
5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**190.0** ft.	**0.0** ft.

6.3 Channel Bars: **None**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height: **Low (<5 ft.)**
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	2	2	0	0	0	0	0	0	0	0	0	0	0	1	2	8
Low	High	High	N.S.	Unk.	N.D.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.D.	N.D.	Low	High	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Hollow Brook** Reach **T4.5S1.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **off H5 Crosses Lincoln Hill Rd.**
1.2 Towns: **Hinesburg**
1.3 Downstream Latitude: **44.30**
1.3 Downstream Longitude: **-73.02**

Step 2. Stream Type

2.1 Elevation Upstream: **1370**
2.1 Elevation Downstream: **820**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **3892** feet. **0.74** Miles.
2.3 Valley Slope: **14.13** %
2.4.Channel Length: **4410** feet. **0.84** Miles.
2.5 Channel Slope: **12.47** %
2.6 Sinuosity: **1.13**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **7** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Narrowly Confined**
2.11 Reference Stream Type: **A**
Bedform: **---**
Sub-class Slope:
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Till** **97.7** %
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**D**	**61.5** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**63.8** %
Water Table Shallow:	**2.0**	**69.2** %
Erodibility:	**Very Severe**	**100.** %

7.4 Comments:

Narrow valley, vegetation hanging over, culvert has a bottom.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **88.8** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **76.5** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**0-25**	**0-25**
Length w/ less than 25 ft.:	**352**	**352**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **1** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:		**0.0**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height: **Low (<5 ft.)**
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	4
N.S.	Low	Low	N.S.	Unk.	N.D.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.D.	N.D.	Low	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Hollow Brook** Reach **T4.5S2.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Starts below downstream end of H6, Crosses no roads**
1.2 Towns: **Hinesburg**
1.3 Downstream Latitude: **44.31**
1.3 Downstream Longitude: **-73.04**

Step 2. Stream Type

2.1 Elevation Upstream: **1360**
2.1 Elevation Downstream: **1070**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **3253** feet. **0.62** Miles.
2.3 Valley Slope: **8.91** %
2.4.Channel Length: **3309** feet. **0.63** Miles.
2.5 Channel Slope: **8.76** %
2.6 Sinuosity: **1.02**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **7** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Narrowly Confined**
2.11 Reference Stream Type: **A**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Till** **100.** %
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**C**	**99.6** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**2.5**	**99.6** %
Water Table Shallow:	**1.5**	**99.6** %
Erodibility:	**Very Severe**	**91.6** %

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **94.7** %
Current Sub-Dominant Land Cover:
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **60.1** %
Current Sub-Dominant Land Cover: **Crop**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**26-50**	**51-100**
Length w/ less than 25 ft.:	**0**	**0**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **0** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:		**0.0**
5.5 Dredging History:	**No Data**	

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft. **0.0**	ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 Unk.	0 N.D.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.D.	0 N.D.	0 N.S.	0 N.S.	0

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Hogback Brook** Reach **T5.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **West of 116**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.24**
1.3 Downstream Longitude: **-73.07**

Step 2. Stream Type

2.1 Elevation Upstream: **610**
2.1 Elevation Downstream: **415**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **3488** feet. **0.66** Miles.
2.3 Valley Slope: **5.59** %
2.4.Channel Length: **3374** feet. **0.64** Miles.
2.5 Channel Slope: **5.78** %
2.6 Sinuosity: **0.97**
2.7 Watershed Area: **2** Square Miles
2.8 Channel Width: **19** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Narrowly Confined**
2.11 Reference Stream Type: **A**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Other** **54.5** %
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**Not Rated**	**54.5**	%
Flooding:	**None/Rare**	**100.**	%
Water Table Deep:	**6.0**	**45.5**	%
Water Table Shallow:	**6.0**	**23.5**	%
Erodibility:	**Moderate**	**45.5**	%

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **87.4** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **53.3** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**0-25**	**51-100**
Length w/ less than 25 ft.:	**236**	**0**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **1** %
5.3 Bank Armoring: **0.0**
Left Right
5.4 Channel Straightening: **0.0**
5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Low	N.S.	Low	N.S.	Unk.	N.D.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.D.	N.D.	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Hogback Brook** Reach **T5.02**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **West of 116**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.24**
1.3 Downstream Longitude: **-73.07**

Step 2. Stream Type

2.1 Elevation Upstream: **614**
2.1 Elevation Downstream: **610**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **3089** feet. **0.59** Miles.
2.3 Valley Slope: **0.13** %
2.4.Channel Length: **4013** feet. **0.76** Miles.
2.5 Channel Slope: **0.10** %
2.6 Sinuosity: **1.30**
2.7 Watershed Area: **2** Square Miles
2.8 Channel Width: **19** feet.
2.9 Valley Width: **464** feet.
2.10 Confinement Ratio: **25**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Other** **93.1** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**D**	**76.9** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**0.0**	**70.0** %
Water Table Shallow:	**-1.0**	**70.0** %
Erodibility:	**slight**	**6.9** %

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **88.6** %
Current Sub-Dominant Land Cover: **Wetland**
4.2 Corridor
Historic Land Cover: **Wetland**
Current Dominant land Cover: **Wetland** **71.7** %
Current Sub-Dominant Land Cover: **Forest**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**51-100**	**51-100**
Length w/ less than 25 ft.:	**0**	**0**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **0** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:		**0.0**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.

6.2 Development: **0.0** ft. **0.0** ft.
6.3 Channel Bars: **No Data**
6.4 Meander Migration: **Avulsion**
6.5 Meander Width: **174.0** Ratio: **9.3**
6.6 Wavelength: **162.0** Ratio: **8.7**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	3
Low	N.S.	N.S.	N.S.	Unk.	N.D.	N.S.	N.S.	N.S.	N.S.	N.S.	Low	Low	N.S.	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Hogback Brook** Reach **T5.03**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **West of 116**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.23**
1.3 Downstream Longitude: **-73.07**

Step 2. Stream Type

2.1 Elevation Upstream: **618**
2.1 Elevation Downstream: **614**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **1444** feet. **0.27** Miles.
2.3 Valley Slope: **0.28** %
2.4.Channel Length: **1756** feet. **0.33** Miles.
2.5 Channel Slope: **0.23** %
2.6 Sinuosity: **1.22**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **15** feet.
2.9 Valley Width: **320** feet.
2.10 Confinement Ratio: **21**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Ice-Contact** **93.3** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**C**	**93.3**	%
Flooding:	**None/Rare**	**100.**	%
Water Table Deep:	**1.0**	**93.3**	%
Water Table Shallow:	**0.0**	**93.3**	%
Erodibility:	**slight**	**6.7**	%

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **88.3** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Wetland**
Current Dominant land Cover: **Wetland** **65.8** %
Current Sub-Dominant Land Cover: **Forest**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**51-100**	**51-100**
Length w/ less than 25 ft.:	**0**	**0**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **0** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:		**0.0**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft. **0.0**	ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **Avulsion**
6.5 Meander Width: **111.0** Ratio: **7.3**
6.6 Wavelength: **99.0** Ratio: **6.5**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1 Low	1 Low	0 N.S.	0 N.S.	0 Unk.	0 N.D.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	1 Low	0 N.S.	1 Low	0 N.S.	0 N.S.	4

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Hogback Brook** Reach **T5.04**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **West of 116**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.22**
1.3 Downstream Longitude: **-73.07**

Step 2. Stream Type

2.1 Elevation Upstream: **638**
2.1 Elevation Downstream: **618**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **4190** feet. **0.79** Miles.
2.3 Valley Slope: **0.48** %
2.4.Channel Length: **4734** feet. **0.90** Miles.
2.5 Channel Slope: **0.42** %
2.6 Sinuosity: **1.13**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **15** feet.
2.9 Valley Width: **628** feet.
2.10 Confinement Ratio: **43**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Ice-Contact** **96.2** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**

3.5 Soils

Hydrologic Group:	**C**	**96.2**	%
Flooding:	**None/Rare**	**100.**	%
Water Table Deep:	**1.0**	**96.2**	%
Water Table Shallow:	**0.0**	**96.2**	%
Erodibility:	**slight**	**3.8**	%

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed

Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **89.6** %
Current Sub-Dominant Land Cover: **Crop**

4.2 Corridor

Historic Land Cover: **Wetland**
Current Dominant land Cover: **Forest** **43.0** %
Current Sub-Dominant Land Cover: **Wetland**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**51-100**	**51-100**
Length w/ less than 25 ft.:	**0**	**0**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **1** %
5.3 Bank Armoring: **0.0**

	Left	Right
5.4 Channel Straightening:	**858.0**	**18 %**

5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: **98.0** Ratio: **6.6**
6.6 Wavelength: **90.0** Ratio: **6.1**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1 Low	1 Low	0 N.S.	0 N.S.	0 Unk.	0 N.D.	1 Low	0 N.S.	0 Unk.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	1 Low	0 N.S.	0 N.S.	4

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Hogback Brook** Reach **T5.05**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **West of 116**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.21**
1.3 Downstream Longitude: **-73.07**

Step 2. Stream Type

2.1 Elevation Upstream: **870**
2.1 Elevation Downstream: **638**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **4225** feet. **0.80** Miles.
2.3 Valley Slope: **5.49** %
2.4.Channel Length: **6410** feet. **1.21** Miles.
2.5 Channel Slope: **3.62** %
2.6 Sinuosity: **1.52**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **9** feet.
2.9 Valley Width: **266** feet.
2.10 Confinement Ratio: **28**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **A**
Bedform: **Step-Pool**
Sub-class Slope:
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **Ledge**
3.3 Dominant Geologic Mat.: **Other** **82.5** %
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**Not Rated**	**82.5** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**11.6** %
Water Table Shallow:	**2.0**	**7.8** %
Erodibility:	**slight**	**11.6** %

7.4 Comments:

Past logging practices, atv tril had gully potential. Updated using Phase 2 data on 10/02/01 and on 7/22/04.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **92.2** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **60.6** %
Current Sub-Dominant Land Cover: **Wetland**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**51-100**	**51-100**
Length w/ less than 25 ft.:	**0**	**0**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **2** %
5.3 Bank Armoring: **0.0**
Left Right
5.4 Channel Straightening: **0.0**
5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft. **0.0**	ft.

6.3 Channel Bars: **Point**
6.4 Meander Migration: **None**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **None**
7.2 Bank Height:
7.3 Ice/Debris Jam Potential: **Multiple**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
Low	N.S.	N.S.	N.S.	Unk.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.D.	N.D.	N.S.	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **High Knob Brook** Reach **T6.01**
Topo Maps: **413**
Date Last Edited: **Mon, December 08, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Flows past Freedom Acres MHP and gravel pit, crosses Route 116,**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.22**
1.3 Downstream Longitude: **-73.06**

Step 2. Stream Type

2.1 Elevation Upstream: **755**
2.1 Elevation Downstream: **580**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **5000** feet. **0.95** Miles.
2.3 Valley Slope: **3.50** %
2.4.Channel Length: **5649** feet. **1.07** Miles.
2.5 Channel Slope: **3.10** %
2.6 Sinuosity: **1.13**
2.7 Watershed Area: **5** Square Miles
2.8 Channel Width: **25** feet.
2.9 Valley Width: **155** feet.
2.10 Confinement Ratio: **6**
2.10 Confinement Type: **Broad**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **b**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **Ledge**
3.3 Dominant Geologic Mat.: **Ice-Contact 73.0** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**A**	**69.3** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**76.7** %
Water Table Shallow:	**6.0**	**76.7** %
Erodibility:	**Very Severe**	**94.6** %

7.4 Comments:

Presence of channel-spanning bedrock (3.2) suggested by DiPietro, 1983. Large sediment deposit (mid-channel bar) immediately upstream of Freedom Acres Road culvert crossing is

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **84.6** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **58.1** %
Current Sub-Dominant Land Cover: **Field**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**None**	**None**
Length w/ less than 25 ft.:	**499**	**0**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **2** **5** %
5.3 Bank Armoring: **1 %**
Left **57** Right **0.0**
5.4 Channel Straightening: **0.0** **0.0**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides	
Road:	**0.0** ft.	**0.0**	ft.
Railroad:	**0.0** ft.	**0.0**	ft.
Berm:	**0.0** ft.	**0.0**	ft.
Improved Path:	**0.0** ft.	**0.0**	ft.
6.2 Development:	**484.7** ft.	**0.0**	ft.

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Flood Chute**
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **419.40 ft.**
7.2 Bank Height: **2.91 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1 Low	1 Low	1 Low	0 N.S.	1 Low	0 N.S.	0 N.S.	0 N.S.	0 Unk.	1 Low	1 Low	1 Low	0 N/A	0 N/A	0 N.S.	2 High	9

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **High Knob Brook** Reach **T6.02**
Topo Maps: **413**
Date Last Edited: **Mon, December 08, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Remote, forested reach upstream of Freedom Acres MHP**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.22**
1.3 Downstream Longitude: **-73.05**

Step 2. Stream Type

2.1 Elevation Upstream: **805**
2.1 Elevation Downstream: **755**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **1700** feet. **0.32** Miles.
2.3 Valley Slope: **2.94** %
2.4.Channel Length: **1854** feet. **0.35** Miles.
2.5 Channel Slope: **2.70** %
2.6 Sinuosity: **1.09**
2.7 Watershed Area: **5** Square Miles
2.8 Channel Width: **26** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Semi-confined**
2.11 Reference Stream Type: **B**
Bedform: **Step-Pool**
Sub-class Slope: **None**
Bed Material: **Cobble**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **Multiple**
3.3 Dominant Geologic Mat.: **Till** **100.** %
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Steep**
3.5 Soils

Hydrologic Group:	**D**	**100.** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**100.** %
Water Table Shallow:	**6.0**	**100.** %
Erodibility:	**Very Severe**	**100.** %

7.4 Comments:

Presence of channel-spanning bedrock (3.2) suggested by DiPietro, 1983.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **85.9** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **77.2** %
Current Sub-Dominant Land Cover:

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**None**	**None**
Length w/ less than 25 ft.:	**0**	**0**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **0** **0** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **0.0** **0.0**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	**0.0** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration:
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **0.00 ft.**
7.2 Bank Height: **0.00 ft.**
7.3 Ice/Debris Jam Potential: **No Data**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Low	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	Unk.	N.S.	N.S.	N.S.	N/A	N/A	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **High Knob Brook** Reach **T6.03**
Topo Maps: **413**
Date Last Edited: **Mon, December 08, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Flows to south between Baldwin Pond on the west and High Knob on**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.23**
1.3 Downstream Longitude: **-73.05**

Step 2. Stream Type

2.1 Elevation Upstream: **835**
2.1 Elevation Downstream: **805**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **2984** feet. **0.57** Miles.
2.3 Valley Slope: **1.01** %
2.4.Channel Length: **3438** feet. **0.65** Miles.
2.5 Channel Slope: **0.87** %
2.6 Sinuosity: **1.15**
2.7 Watershed Area: **5** Square Miles
2.8 Channel Width: **26** feet.
2.9 Valley Width: **579** feet.
2.10 Confinement Ratio: **22**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **None**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **Ledge**
3.3 Dominant Geologic Mat.: **Ice-Contact 49.7** %
3.3 Sub-dominant Geological Mat.: **Alluvial**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**B**	**35.8** %
Flooding:	**None/Rare**	**68.6** %
Water Table Deep:	**6.0**	**54.3** %
Water Table Shallow:	**0.0**	**34.9** %
Erodibility:	**Moderate**	**26.9** %

7.4 Comments:

Reach located within the Source Protection Area for the spring water source supplying the Starksboro Village Water Coop.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **86.0** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **40.3** %
Current Sub-Dominant Land Cover: **Crop**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**None**	**51-100**
Length w/ less than 25 ft.:	**0**	**116**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **0** **0** %
5.3 Bank Armoring: **1 %**
Left **62** Right **0.0**
5.4 Channel Straightening: **0.0** **0.0**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	**0.0** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **Multiple**
6.5 Meander Width: **52.0** Ratio: **2.0**
6.6 Wavelength: **162.0** Ratio: **6.2**

Step 7. Windshield Survey

7.1 Bank Erosion: **371.60 ft.**
7.2 Bank Height: **3.40 ft.**
7.3 Ice/Debris Jam Potential: **No Data**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1 Low	1 Low	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 Unk.	0 N.S.	0 N.S.	0 N.S.	2 High	1 Low	0 N.S.	0 N.S.	5

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **High Knob Brook** Reach **T6.04**
Topo Maps: **413**
Date Last Edited: **Mon, December 08, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Along southeast side Big Hollow Rd, crossing Brown Hill Rd**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.23**
1.3 Downstream Longitude: **-73.05**

Step 2. Stream Type

2.1 Elevation Upstream: **860**
2.1 Elevation Downstream: **835**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **2535** feet. **0.48** Miles.
2.3 Valley Slope: **0.99** %
2.4.Channel Length: **2907** feet. **0.55** Miles.
2.5 Channel Slope: **0.86** %
2.6 Sinuosity: **1.15**
2.7 Watershed Area: **3** Square Miles
2.8 Channel Width: **22** feet.
2.9 Valley Width: **1,300** feet.
2.10 Confinement Ratio: **59**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **None**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Ice-Contact 83.2** %
3.3 Sub-dominant Geological Mat.: **Alluvial**
3.4 Left Valley Side **Flat**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**A**	**83.2** %
Flooding:	**None/Rare**	**84.2** %
Water Table Deep:	**6.0**	**84.2** %
Water Table Shallow:	**6.0**	**83.2** %
Erodibility:	**Severe**	**61.1** %

7.4 Comments:

Reach located within the Source Protection Area for the spring water source supplying the Starksboro Village Water Coop.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **84.8** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Urban** **33.0** %
Current Sub-Dominant Land Cover: **Forest**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**51-100**
Sub-dominant:	**None**	**None**
Length w/ less than 25 ft.:	**359**	**0**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **2** **5** %
5.3 Bank Armoring: **9 %**
Left **112** Right **150**
5.4 Channel Straightening: **1575** **54 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **944** ft. **32 %**

	One Side	Both Sides	
Road:	**199** ft.	**745** ft.	
Railroad:	**0.0** ft.	**0.0** ft.	
Berm:	**0.0** ft.	**0.0** ft.	
Improved Path:	**0.0** ft.	**0.0** ft.	
6.2 Development:	**156** ft.	**32** ft.	

6.3 Channel Bars: **No Data**
6.4 Meander Migration:
6.5 Meander Width: **22.0** Ratio: **1.0**
6.6 Wavelength: **22.0** Ratio: **1.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **93.21 ft.**
7.2 Bank Height: **2.36 ft.**
7.3 Ice/Debris Jam Potential: **Multiple**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1 Low	2 High	1 Low	0 N.S.	1 Low	1 Low	2 High	0 N.S.	2 High	1 Low	0 N.S.	0 N.S.	2 High	2 High	0 N.S.	1 Low	16

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **High Knob Brook** Reach **T6.05**
Topo Maps: **413**
Date Last Edited: **Mon, December 08, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Flows south-southwest along Big Hollow Rd; ends just upstream of Starksboro**
1.2 Towns:
1.3 Downstream Latitude: **44.24**
1.3 Downstream Longitude: **-73.04**

Step 2. Stream Type

2.1 Elevation Upstream: **935**
2.1 Elevation Downstream: **860**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **5670** feet. **1.07** Miles.
2.3 Valley Slope: **1.32** %
2.4.Channel Length: **6236** feet. **1.18** Miles.
2.5 Channel Slope: **1.20** %
2.6 Sinuosity: **1.10**
2.7 Watershed Area: **3** Square Miles
2.8 Channel Width: **21** feet.
2.9 Valley Width: **168** feet.
2.10 Confinement Ratio: **8**
2.10 Confinement Type: **Broad**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **None**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **Ledge**
3.3 Dominant Geologic Mat.: **Ice-Contact** **38.6** %
3.3 Sub-dominant Geological Mat.: **Till**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Very Steep**
3.5 Soils

Hydrologic Group:	**A**	**38.6**	%
Flooding:	**None/Rare**	**77.1**	%
Water Table Deep:	**6.0**	**77.1**	%
Water Table Shallow:	**6.0**	**38.8**	%
Erodibility:	**Severe**	**74.2**	%

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **86.1** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **52.2** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**None**	**None**
Length w/ less than 25 ft.:	**110**	**170**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **2** **1** %
5.3 Bank Armoring: **3 %**
Left **136** Right **59**
5.4 Channel Straightening: **452** **7 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **808** ft. **12 %**

	One Side	Both Sides	
Road:	**496** ft.	**312** ft.	
Railroad:	**0.0** ft.	**0.0** ft.	
Berm:	**0.0** ft.	**0.0** ft.	
Improved Path:	**0.0** ft.	**0.0** ft.	
6.2 Development:	**376.1** ft.	**0.0** ft.	

6.3 Channel Bars: **Multiple**
6.4 Meander Migration: **Multiple**
6.5 Meander Width: **73.0** Ratio: **3.4**
6.6 Wavelength: **300.0** Ratio: **14.1**

Step 7. Windshield Survey

7.1 Bank Erosion: **186.10 ft.**
7.2 Bank Height: **2.79 ft.**
7.3 Ice/Debris Jam Potential: **Culvert**

7.4 Comments:

In the upstream half of the reach, land appears cleared in the corridor for pasture or cultivated use in 1942 aerial photographs. At that time, channel was apparently straightened and pushed along

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	2	0	0	0	0	1	0	1	1	1	1	1	1	0	1	11
Low	High	N.S.	N.S.	N.S.	N.S.	Low	N.S.	Low	Low	Low	Low	Low	Low	N.S.	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **High Knob Brook** Reach **T6.06**
Topo Maps: **414**
Date Last Edited: **Thu, January 08, 2009**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **From upstream extent of tributary near drainage divide with Hollow**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.25**
1.3 Downstream Longitude: **-73.03**

Step 2. Stream Type

2.1 Elevation Upstream: **1060**
2.1 Elevation Downstream: **935**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **7650** feet. **1.45** Miles.
2.3 Valley Slope: **1.63** %
2.4.Channel Length: **8482** feet. **1.61** Miles.
2.5 Channel Slope: **1.47** %
2.6 Sinuosity: **1.11**
2.7 Watershed Area: **2** Square Miles
2.8 Channel Width: **16** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Semi-confined**
2.11 Reference Stream Type: **E**
Bedform: **Riffle-Pool**
Sub-class Slope: **None**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Till** **91.5** %
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**C**	**37.4** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**35.8** %
Water Table Shallow:	**2.0**	**34.7** %
Erodibility:	**Very Severe**	**92.6** %

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **83.4** %
Current Sub-Dominant Land Cover: **Crop**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **36.8** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**51-100**
Sub-dominant:	**None**	**26-50**
Length w/ less than 25 ft.:	**2779**	**2783**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **Small Run of River**
Use: **Recreation**
5.2 Bridges and Culverts: **4** **12** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **630** **7 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **5994** ft. **70 %**

	One Side	Both Sides
Road:	**5994** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**1134** ft.	**0.0** ft.

6.3 Channel Bars: **None**
6.4 Meander Migration: **Braiding**
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **0.00 ft.**
7.2 Bank Height: **0.00 ft.**
7.3 Ice/Debris Jam Potential: **Culvert**

7.4 Comments:

In the downstream half of the reach, land appears cleared in the corridor for pasture or cultivated use in 1942 aerial photographs. At that time, channel was apparently straightened and pushed along

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	2	2	1	1	0	1	0	2	1	0	0	0	0	0	1	12
Low	High	High	Low	Low	N.S.	Low	N.S.	High	Low	N.S.	N.S.	N/A	N/A	N.S.	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to High Knob Brook** Reach **T6.3S1.01**
Topo Maps: **413**
Date Last Edited: **Mon, December 08, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Drains across broad glacio-fluvial terrace to south-southwest to join**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.23**
1.3 Downstream Longitude: **-73.04**

Step 2. Stream Type

2.1 Elevation Upstream: **870**
2.1 Elevation Downstream: **835**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **1466** feet. **0.28** Miles.
2.3 Valley Slope: **2.39** %
2.4.Channel Length: **1586** feet. **0.30** Miles.
2.5 Channel Slope: **2.21** %
2.6 Sinuosity: **1.08**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **14** feet.
2.9 Valley Width: **1,400** feet.
2.10 Confinement Ratio: **100**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **C**
Bedform: **Riffle-Pool**
Sub-class Slope: **b**
Bed Material: **Gravel**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Ice-Contact 52.8** %
3.3 Sub-dominant Geological Mat.: **Alluvial**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Flat**
3.5 Soils

Hydrologic Group:	**A**	**52.8** %
Flooding:	**None/Rare**	**76.1** %
Water Table Deep:	**6.0**	**76.1** %
Water Table Shallow:	**6.0**	**76.1** %
Erodibility:	**Very Severe**	**76.1** %

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **89.4** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **37.5** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**None**	**None**
Length w/ less than 25 ft.:	**0**	**718**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **1** **1** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **1371** **86 %**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **742** ft. **46 %**

	One Side	Both Sides	
Road:	**0.0** ft.	**0.0**	ft.
Railroad:	**0.0** ft.	**0.0**	ft.
Berm:	**742** ft.	**0.0**	ft.
Improved Path:	**0.0** ft.	**0.0**	ft.
6.2 Development:	**162** ft.	**0.0**	ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration:
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **566.33 ft.**
7.2 Bank Height: **2.83 ft.**
7.3 Ice/Debris Jam Potential: **Culvert**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	2	2	0	0	0	2	0	2	1	0	0	0	0	0	1	11
Low	High	High	N.S.	N.S.	N.S.	High	N.S.	High	Low	N.S.	N.S.	N/A	N/A	N.S.	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to High Knob Brook** Reach **T6.3S1.02**
Topo Maps: **413**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Remote, forested reach; drains to southwest along Brown Hill Road.**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.24**
1.3 Downstream Longitude: **-73.04**

Step 2. Stream Type

2.1 Elevation Upstream: **1300**
2.1 Elevation Downstream: **870**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **5600** feet. **1.06** Miles.
2.3 Valley Slope: **7.68** %
2.4.Channel Length: **5845** feet. **1.11** Miles.
2.5 Channel Slope: **7.36** %
2.6 Sinuosity: **1.04**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **14** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Narrowly Confined**
2.11 Reference Stream Type: **A**
Bedform: **Step-Pool**
Sub-class Slope: **None**
Bed Material: **Cobble**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **Ledge**
3.3 Dominant Geologic Mat.: **Till** **100.** %
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**D**	**65.4** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**100.** %
Water Table Shallow:	**6.0**	**65.4** %
Erodibility:	**Very Severe**	**100.** %

7.4 Comments:

Presence of channel-spanning bedrock (3.2) suggested by DiPietro, 1983. Significant road ditch runoff (small gravels, sand) from a private road to the left bank just downstream of a culvert

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **90.5** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **74.9** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**51-100**	**None**
Length w/ less than 25 ft.:	**49**	**36**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **1** **1** %
5.3 Bank Armoring: **0 %**
Left **0.0** Right **42**
5.4 Channel Straightening: **0.0** **0.0**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **1566** ft. **26 %**

	One Side	Both Sides
Road:	**1566** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**0.0** ft.	**31** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration:
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **0.00 ft.**
7.2 Bank Height: **0.00 ft.**
7.3 Ice/Debris Jam Potential: **Culvert**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	1	0	0	0	0	0	0	2	0	0	0	0	0	0	1	5
Low	Low	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	High	N.S.	N.S.	N.S.	N/A	N/A	N.S.	Low	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to High Knob Brook** Reach **T6.3S1.03**
Topo Maps: **413**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Remote, forested reach; drains to northwest, north of Brown Hill**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.24**
1.3 Downstream Longitude: **-73.02**

Step 2. Stream Type

2.1 Elevation Upstream: **1680**
2.1 Elevation Downstream: **1300**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **3700** feet. **0.70** Miles.
2.3 Valley Slope: **10.27** %
2.4.Channel Length: **3906** feet. **0.74** Miles.
2.5 Channel Slope: **9.73** %
2.6 Sinuosity: **1.06**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **9** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Narrowly Confined**
2.11 Reference Stream Type: **A**
Bedform: **Step-Pool**
Sub-class Slope: **None**
Bed Material: **Cobble**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Till** **100.** %
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**B**	**97.0** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**97.0** %
Water Table Shallow:	**2.0**	**97.0** %
Erodibility:	**Very Severe**	**100.** %

7.4 Comments:

Presence of channel-spanning bedrock (3.2) suggested by the steep gradient and surficial geologic mapping. Detailed bedrock mapping not available.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **93.2** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **73.7** %
Current Sub-Dominant Land Cover:

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**None**	**None**
Length w/ less than 25 ft.:	**27**	**49**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **0** **0** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **0.0** **0.0**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	**0.0** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration:
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **0.00 ft.**
7.2 Bank Height: **0.00 ft.**
7.3 Ice/Debris Jam Potential: **No Data**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Low	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	Unk.	N.S.	N.S.	N.S.	N/A	N/A	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to High Knob Brook** Reach **T6.5S1.01**
Topo Maps: **414, 413**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Steep, forested reach draining to west from Browns Mountain to join**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.25**
1.3 Downstream Longitude: **-73.03**

Step 2. Stream Type

2.1 Elevation Upstream: **1680**
2.1 Elevation Downstream: **940**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **6700** feet. **1.27** Miles.
2.3 Valley Slope: **11.04** %
2.4.Channel Length: **6950** feet. **1.32** Miles.
2.5 Channel Slope: **10.65** %
2.6 Sinuosity: **1.04**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **13** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Narrowly Confined**
2.11 Reference Stream Type: **A**
Bedform: **Cascade**
Sub-class Slope: **None**
Bed Material: **Bedrock**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **Ledge**
3.3 Dominant Geologic Mat.: **Till** **98.3** %
3.3 Sub-dominant Geological Mat.: **Ice-Contact**
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**B**	**98.3** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**100.** %
Water Table Shallow:	**2.0**	**98.3** %
Erodibility:	**Very Severe**	**100.** %

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **91.8** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **48.2** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**None**	**None**
Length w/ less than 25 ft.:	**13**	**27**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **2** **1** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **0.0** **0.0**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **256** ft. **3 %**

	One Side	Both Sides	
Road:	**256** ft.	**0.0**	ft.
Railroad:	**0.0** ft.	**0.0**	ft.
Berm:	**0.0** ft.	**0.0**	ft.
Improved Path:	**0.0** ft.	**0.0**	ft.
6.2 Development:	**0.0** ft.	**71**	ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration:
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **0.00 ft.**
7.2 Bank Height: **0.00 ft.**
7.3 Ice/Debris Jam Potential: **Culvert**

7.4 Comments:

Presence of channel-spanning bedrock (3.2) suggested by DiPietro, 1983. A constructed dam / reservoir (Clifford Dam) is located on a small, non-delineated tributary to this reach. According to the

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Low	Low	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N/A	N/A	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to High Knob Brook** Reach **T6.6S1.01**
Topo Maps: **414**
Date Last Edited: **Tue, January 22, 2008**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **Forested reach flowing west to join High Knob Brook upstream of T6.**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.25**
1.3 Downstream Longitude: **-73.03**

Step 2. Stream Type

2.1 Elevation Upstream: **1200**
2.1 Elevation Downstream: **970**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **1100** feet. **0.21** Miles.
2.3 Valley Slope: **20.91** %
2.4.Channel Length: **1285** feet. **0.24** Miles.
2.5 Channel Slope: **17.90** %
2.6 Sinuosity: **1.17**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **10** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Narrowly Confined**
2.11 Reference Stream Type: **A**
Bedform: **Cascade**
Sub-class Slope: **None**
Bed Material: **Bedrock**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Till** **100.** %
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**B**	**81.0** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**81.0** %
Water Table Shallow:	**2.0**	**81.0** %
Erodibility:	**Very Severe**	**100.** %

7.4 Comments:

Presence of channel-spanning bedrock (3.2) suggested by the steep gradient and surficial geologic mapping. Detailed bedrock mapping not available.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **81.7** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **100.** %
Current Sub-Dominant Land Cover:

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**None**	**None**
Length w/ less than 25 ft.:	**0**	**0**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type: **None**
Use:
5.2 Bridges and Culverts: **2** **5** %
5.3 Bank Armoring: **0.0**
Left **0.0** Right **0.0**
5.4 Channel Straightening: **0.0** **0.0**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	**0.0** ft.	**0.0** ft.
Railroad:	**0.0** ft.	**0.0** ft.
Berm:	**0.0** ft.	**0.0** ft.
Improved Path:	**0.0** ft.	**0.0** ft.
6.2 Development:	**0.0** ft.	**17** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration:
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion: **0.00 ft.**
7.2 Bank Height: **0.00 ft.**
7.3 Ice/Debris Jam Potential: **Culvert**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 Unk.	0 N.S.	0 N.S.	0 N.S.	0 N/A	0 N/A	0 N.S.	0 N.S.	0

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to High Knob Brook** Reach **T6.6S1.02**
Topo Maps: **414**
Date Last Edited: **Thu, September 06, 2007**
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **From southwest slopes of Shaker Mountain, drains to west-southwest**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.25**
1.3 Downstream Longitude: **-73.02**

Step 2. Stream Type

2.1 Elevation Upstream: **1860**
2.1 Elevation Downstream: **1200**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **4700** feet. **0.89** Miles.
2.3 Valley Slope: **14.04** %
2.4.Channel Length: **4969** feet. **0.94** Miles.
2.5 Channel Slope: **13.28** %
2.6 Sinuosity: **1.06**
2.7 Watershed Area: **0** Square Miles
2.8 Channel Width: **9** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Narrowly Confined**
2.11 Reference Stream Type: **A**
Bedform: **Cascade**
Sub-class Slope: **None**
Bed Material: **Bedrock**

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **None**
3.3 Dominant Geologic Mat.: **Till** **100.** %
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**B**	**100.** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**100.** %
Water Table Shallow:	**2.0**	**100.** %
Erodibility:	**Very Severe**	**100.** %

7.4 Comments:

Presence of channel-spanning bedrock (3.2) suggested by the steep gradient and surficial geologic mapping. Detailed bedrock mapping not available.

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **80.3** %
Current Sub-Dominant Land Cover: **Field**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **66.0** %
Current Sub-Dominant Land Cover: **Field**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**None**	**None**
Length w/ less than 25 ft.:	**---**	**---**

4.4 Ground Water Inputs: **Minimal**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old):
Type:
Use:
5.2 Bridges and Culverts: **0** **0** %
5.3 Bank Armoring: **0.0**
Left Right
5.4 Channel Straightening: **0.0**
5.5 Dredging History: **None**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft. **0.0**	ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration:
6.5 Meander Width: **N/A** Ratio: **0.0**
6.6 Wavelength: **N/A** Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential: **No Data**

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
0 N.S.	0 N.S.	0 N.D.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N.S.	0 N/A	0 N/A	0 N.S.	0 N.S.	0

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Headwater Trib** Reach **T7.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **East of Rt 116 and East Mountain**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.20**
1.3 Downstream Longitude: **-73.03**

Step 2. Stream Type

2.1 Elevation Upstream: **1120**
2.1 Elevation Downstream: **1000**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **2966** feet. **0.56** Miles.
2.3 Valley Slope: **4.05** %
2.4.Channel Length: **3060** feet. **0.58** Miles.
2.5 Channel Slope: **3.92** %
2.6 Sinuosity: **1.03**
2.7 Watershed Area: **4** Square Miles
2.8 Channel Width: **23** feet.
2.9 Valley Width: feet.
2.10 Confinement Ratio: **0**
2.10 Confinement Type: **Semi-confined**
2.11 Reference Stream Type: **B**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Till** **100.** %
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**B**	**99.1** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**99.1** %
Water Table Shallow:	**2.0**	**99.1** %
Erodibility:	**Very Severe**	**100.** %

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **91.9** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **49.3** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**51-100**	**51-100**
Length w/ less than 25 ft.:	**0**	**0**

4.4 Ground Water Inputs: **None**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **0** %
5.3 Bank Armoring: Left **0.0** Right
5.4 Channel Straightening: **0.0**
5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Low	Low	N.S.	N.S.	Unk.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.D.	N.D.	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Headwater Trib** Reach **T7.02**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **East of Rt 116 and East Mountain**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.21**
1.3 Downstream Longitude: **-73.03**

Step 2. Stream Type

2.1 Elevation Upstream: **1690**
2.1 Elevation Downstream: **1120**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **9662** feet. **1.83** Miles.
2.3 Valley Slope: **5.90** %
2.4.Channel Length: **10613** feet. **2.01** Miles.
2.5 Channel Slope: **5.37** %
2.6 Sinuosity: **1.10**
2.7 Watershed Area: **1** Square Miles
2.8 Channel Width: **15** feet.
2.9 Valley Width: **254** feet.
2.10 Confinement Ratio: **17**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **A**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Till** **100.** %
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**B**	**86.7** %
Flooding:	**None/Rare**	**100.** %
Water Table Deep:	**6.0**	**90.0** %
Water Table Shallow:	**2.0**	**86.7** %
Erodibility:	**Very Severe**	**98.9** %

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **91.7** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **56.2** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**51-100**	**51-100**
Length w/ less than 25 ft.:	**0**	**0**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **0** %
5.3 Bank Armoring: Left **0.0** Right
5.4 Channel Straightening: **0.0**
5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Low	Low	N.S.	N.S.	Unk.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.D.	N.D.	N.S.	N.S.	

Lewis Creek

Phase 1 - Reach Summary Report

Basin: **Otter, Little Otter, Lewis**
Stream Name: **Unnamed Trib to Headwater Trib** Reach **T7.1S1.01**
Topo Maps: **---**
Date Last Edited:
Watershed: **Lewis Creek, Little Otter, Lake Champlain**
Sub-watershed: **Lewis Creek**
Is Reach an Impoundment? **No** Quality Control Status: **Unknown**

Step 1. Reach Location

1.1 Reach Description: **East of Rt 116 and East Mountain**
1.2 Towns: **Starksboro**
1.3 Downstream Latitude: **44.21**
1.3 Downstream Longitude: **-73.03**

Step 2. Stream Type

2.1 Elevation Upstream: **2100**
2.1 Elevation Downstream: **1120**
2.1 Is Gradient Gentle? **No**
2.2 Valley Length: **11352** feet. **2.15** Miles.
2.3 Valley Slope: **8.63** %
2.4.Channel Length: **14276** feet. **2.70** Miles.
2.5 Channel Slope: **6.86** %
2.6 Sinuosity: **1.26**
2.7 Watershed Area: **2** Square Miles
2.8 Channel Width: **18** feet.
2.9 Valley Width: **362** feet.
2.10 Confinement Ratio: **20**
2.10 Confinement Type: **Very Broad**
2.11 Reference Stream Type: **A**
Bedform: **---**
Sub-class Slope:
Bed Material:

Step 3. Basin Characteristics:

3.1 Alluvial Fan: **None**
3.2 Grade Control: **No Data**
3.3 Dominant Geologic Mat.: **Till** **100.** %
3.3 Sub-dominant Geological Mat.:
3.4 Left Valley Side **Extremely Steep**
3.4 Right Valley Side **Extremely Steep**
3.5 Soils

Hydrologic Group:	**B**	**97.7**	%
Flooding:	**None/Rare**	**100.**	%
Water Table Deep:	**6.0**	**100.**	%
Water Table Shallow:	**2.0**	**97.7**	%
Erodibility:	**Very Severe**	**100.**	%

7.4 Comments:

Step 4. Land Cover - Reach Hydrology

4.1 Watershed
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **92.1** %
Current Sub-Dominant Land Cover: **Urban**
4.2 Corridor
Historic Land Cover: **Forest**
Current Dominant land Cover: **Forest** **52.8** %
Current Sub-Dominant Land Cover: **Urban**

4.3 Riparian Buffer	Left Bank	Right Bank
Dominant:	**>100**	**>100**
Sub-dominant:	**51-100**	**51-100**
Length w/ less than 25 ft.:	**0**	**0**

4.4 Ground Water Inputs: **Abundant**

Step 5. Instream Channel Modifications

5.1 Flow Regulation - (old): **No Data**
Type:
Use:
5.2 Bridges and Culverts: **2** %
5.3 Bank Armoring: **0.0**
Left Right
5.4 Channel Straightening: **0.0**
5.5 Dredging History: **No Data**

Step 6. Floodplain Modifications

6.1 Berms and Roads old **0.0** ft. **0.0**

	One Side	Both Sides
Road:	ft.	ft.
Railroad:	ft.	ft.
Berm:	ft.	ft.
Improved Path:	ft.	ft.
6.2 Development:	**0.0** ft.	**0.0** ft.

6.3 Channel Bars: **No Data**
6.4 Meander Migration: **No Data**
6.5 Meander Width: Ratio: **0.0**
6.6 Wavelength: Ratio: **0.0**

Step 7. Windshield Survey

7.1 Bank Erosion:
7.2 Bank Height:
7.3 Ice/Debris Jam Potential:

4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	Total
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Low	N.S.	N.S.	N.S.	Unk.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.D.	N.D.	N.S.	N.S.	

Stream: **Lewis Creek** Reach # **M01** Segment: **0** Completion Date: **September 27, 2004**

Organization: **Lewis Creek Association** Observers: **KLU, EE, MI** Why Not assessed: **wetland** Rain: **Yes**

Segment Length (ft): **6,693** Segment Location: **Downstream-most reach of Lewis Creek main stem, extending 1.3 miles downstream from**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **None**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	108	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Flat	Hilly
Continuous w/	Never	Never
W/in 1 Bankfill	Never	Never
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft) **1,415**

Width Determination **Estimated**

Confinement Type **Very Broad**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **0**

2.2 Max Depth (ft) **0.00**

2.3 Mean Depth (ft) **0.00**

2.4 Floodprone Width (ft) **0**

Notes:

Cows in stream. Direct pasturing along RB mid-reach. Development in RB corridor is boat launch site mid-reach. Reach is influenced by backwater effects from Lake Champlain; did not exhibit fluvial form /process. Therefore, RGA and RHA were not

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **0.00** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **0.00**

2.7 Entrenchment Ratio **0.00**

2.8 Incision Ratio **0.00**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Moderate**

2.10 Riffles Type **Not Applicable**

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Silt/Clay Present? **Yes**

Detritus **0** %

Large Woody **38**

2.13 Average Largest Particle on

Bed **0.0**

Bar **0.0**

2.14 Stream Type

Stream Type:

Bed Material:

Subclass Slope:

Bed Form:

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive
Lower		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	0	0
Erosion Height (ft)	0.00	0.00
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Deciduous	Deciduous

Bank Canopy	Left	Right
Canopy %	76-100	76-100
Mid-Channel Canopy	Open	

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	None	0-25
W less than 25	0	552

Buffer Veg. Type	Left	Right
Dominant	Deciduous	Deciduous
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Forest
Sub-dominant	None	Pasture
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Abundant**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **0**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments **None**

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg **None**

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	0	0

Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M02** Segment: **0** Completion Date: **September 27, 2004**

Organization: **Lewis Creek Association** Observers: **KLU, EE, MI** Why Not assessed: **wetland** Rain: **Yes**

Segment Length (ft): **4,092** Segment Location: **From Greenbush Rd crossing downstream to VT Railway bridge crossing.**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **None**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	869	0
height	7	0
Development	0	39

1.4 Adjacent Side	Left	Right
Hillside Slope	Flat	Hilly
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft) **500**

Width Determination **Estimated**

Confinement Type **Narrow**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **0**

2.2 Max Depth (ft) **0.00**

2.3 Mean Depth (ft) **0.00**

2.4 Floodprone Width (ft) **0**

Notes:

Cows in stream mid-reach. Pasture has direct access. Farm bridge is BKFL constrictor with span of 61 ft. Reach is influenced by backwater effects from Lake Champlain. Exhibits modified fluvial form and process; therefore RGA and RHA were not

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **0.00** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **0.00**

2.7 Entrenchment Ratio **0.00**

2.8 Incision Ratio **0.00**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Low**

2.10 Riffles Type **Not Applicable**

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Silt/Clay Present?

Detritus **0** %

Large Woody **30**

2.13 Average Largest Particle on

Bed **0.0**

Bar **0.0**

2.14 Stream Type

Stream Type:

Bed Material:

Subclass Slope:

Bed Form:

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive
Lower		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	597	674
Erosion Height (ft)	5.76	5.59
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Pasture	Deciduous

Bank Canopy	Left	Right
Canopy %	26-50	51-75
Mid-Channel Canopy	Open	

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	0-25	>100
Sub-dominant	>100	0-25
W less than 25	1,935	797

Buffer Veg. Type	Left	Right
Dominant	Mixed Trees	Mixed Trees
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Pasture	Forest
Sub-dominant	Forest	Pasture
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Abundant**

4.2 Adjacent Wetlands **Abundant**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **1**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments **None**

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg **None**

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	0	0

Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **Yes**

5.5 Straightening **Straightening**

Straightening Length: **1,585**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M03** Segment: **0** Completion Date: **September 17, 2007**

Organization: **Lewis Creek Association** Observers: **KLU, BOS** Why Not assessed: Rain: **Yes**

Segment Length (ft): **5,471** Segment Location: **From Greenbush Road downstream to the railroad bridge crossing.**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **None**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	**0**	**0**
height	**0**	**0**
Roads	**0**	**0**
height	**0**	**0**
Railroads	**1,534**	**0**
height	**25**	**0**
Improved Paths	**2,120**	**0**
height	**14**	**0**
Development	**549**	**103**

1.4 Adjacent Side	Left	Right
Hillside Slope	**Steep**	**Flat**
Continuous w/	**Sometimes**	**Never**
W/in 1 Bankfill	**Sometimes**	**Never**
Texture	**Not Evalua**	**Not Evalua**

1.5 Valley Features

Valley Width (ft) **1,200**

Width Determination **Estimated**

Confinement Type **Very Broad**

Rock Gorge? **No**

Human-caused Change? **yes**

Step 2. Stream Channel

2.1 Bankfull Width **65**

2.2 Max Depth (ft) **6.70**

2.3 Mean Depth (ft) **4.40**

2.4 Floodprone Width (ft) **1,030**

Notes:

Repeat cross sections and field notes completed in Sept 2007 to supplement Phase 2 data collected in July 2001 and Sept 2004. Slight valley encroachment at downstream end by railroad. However, valley confinement (Very Broad) remains unchanged. Small

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **6.90** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **14.84**

2.7 Entrenchment Ratio **15.77**

2.8 Incision Ratio **1.03**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Moderate**

2.10 Riffles Type **Not Applicable**

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Bedrock	**0** %
Boulder	**0** %
Cobble	**0** %
Coarse Gravel	**0** %
Fine Gravel	**26** %
Sand	**52** %
Silt and smaller	**23** %

Silt/Clay Present? **Yes**

Detritus **5** %

Large Woody **33**

2.13 Average Largest Particle on

Bed **N/A**

Bar **N/A**

2.14 Stream Type

Stream Type: **C**

Bed Material: **Sand**

Subclass Slope: **None**

Bed Form: **Dune-Ripple**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	**None**	**0.00**
Gullies	**None**	**0.00**

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	**Silt**	**Silt**
Consistency	**Cohesive**	**Cohesive**
Lower		
Material Type	**Silt**	**Silt**
Consistency	**Cohesive**	**Cohesive**

Bank Erosion	Left	Right
Erosion Length (ft)	**517**	**229**
Erosion Height (ft)	**3.46**	**4.34**
Revetmt. Type	**Rip-Rap**	**Rip-Rap**
Revetmt. Length (ft)	**170**	**10**

Near Bank Veg. Type	Left	Right
Dominant	**Herbaceous**	**Herbaceous**
Sub-dominant	**Deciduous**	**Deciduous**

Bank Canopy	Left	Right
Canopy %	**1-25**	**1-25**

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	**26-50**	**26-50**
Sub-dominant	**>100**	**51-100**
W less than 25	**101**	**728**

Buffer Veg. Type	Left	Right
Dominant	**Mixed Trees**	**Deciduous**
Sub-dominant	**Herbaceous**	**Herbaceous**

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	**Pasture**	**Crop**
Sub-dominant	**Shrubs/Saplin**	**Shrubs/Saplin**
Mass Failures	**0**	**0**
Height	**0**	**0**
Gullies	**0**	
Length	**0**	
Height	**0.00**	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Minimal**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **2**

4.5 Flow Regulation Type **Small**

Flow Regulation Use **Other**

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	**1**	**1**

Diagonal	Delta	Island
0	**0**	**0**

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
2	**0**	**0**	**0**

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	**0**	**No**

5.4 Stream Ford or Animal **No**

5.5 Straightening **Straightening**

Straightening Length: **830**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Phase 2 Segment Summary

Reach # M04 | Observers: KLU, EE | Segment Location: From vicinity of Rt 7 crossing downstream to Greenbush Rd crossing.

March 3, 2010 SGAT Version: 4.56
Segment: 0 | Why Not assessed: | Completion Date: September 25, 2004 | Rain: Yes

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **None**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Very Steep	Hilly
Continuous w/	Sometimes	Never
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft)	730
Width Determination	Estimated
Confinement Type	Very Broad
Rock Gorge?	No
Human-caused Change?	No

Step 2. Stream Channel

2.1 Bankfull Width	54
2.2 Max Depth (ft)	7.75
2.3 Mean Depth (ft)	5.04
2.4 Floodprone Width (ft)	1,500

Notes:

Short section of riffle/pool (subdominant bedform) near upstream end of reach. Neck cutoffs: one recent, one pending. Tributary along RB was observed to be eroded gully-like through silt/clays and fine sands. However, no other signs of active incision

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln	7.75 ft.
Human Elev Floodpln	0.00 ft.
2.6 Width/Depth Ratio	10.69
2.7 Entrenchment Ratio	27.83
2.8 Incision Ratio	1.00
Human Elevated Inc Rat	0.00
2.9 Sinuosity	Oxbows
2.10 Riffles Type	Not Applicable
2.11 Riffle/Step Spacing (ft)	0

2.12 Substrate Composition

Bedrock	0%
Boulder	0%
Cobble	0%
Coarse Gravel	5%
Fine Gravel	45%
Sand	16%
Silt and smaller	34%

Silt/Clay Present?	Yes
Detritus	10 %
# Large Woody	47

2.13 Average Largest Particle on

Bed	N/A
Bar	N/A

2.14 Stream Type

Stream Type:	E
Bed Material:	Sand
Subclass Slope:	None
Bed Form:	Dune-Ripple
Field Measured Slope:	

2.15 Reference Stream Type (if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Sand	Sand
Consistency	Non-cohesive	Non-cohesive
Lower		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	1,318	1,120
Erosion Height (ft)	7.10	6.92
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin

Bank Canopy	Left	Right
Canopy %	1-25	1-25
Mid-Channel Canopy	Open	

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	26-50	0-25
W less than 25	736	1,324

Buffer Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Shrubs/Saplin
Sub-dominant	Shrubs/Saplin	Forest
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps	Abundant
4.2 Adjacent Wetlands	Abundant
4.3 Flow Status	Moderate
4.4 # of Debris Jams	3
4.5 Flow Regulation Type	None
Flow Regulation Use	
Impoundments	None
Impoundmt. Location	
4.6 Up/Down strm flow reg	None
(old) Upstrm Flow Reg	None

4.9 # of Beaver Dams	0
Affected Length (ft)	0

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
1	9	4
Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
3	0	1	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal	Yes
5.5 Straightening	Straightening
Straightening Length:	993
5.5 Dredging	None

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M05** Segment: **0** Completion Date: **September 25, 2004**

Organization: **Lewis Creek Association** Observers: **KLU, EE** Why Not assessed: Rain: **Yes**

Segment Length (ft): **2,394** Segment Location: **Short channel section crossed by VT Route 7.**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **None**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	1,058	513
height	35	40
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	415	157

1.4 Adjacent Side	Left	Right
Hillside Slope	Extremely	Very Steep
Continuous w/	Sometimes	Never
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Silt/Clay	Silt/Clay

1.5 Valley Features

Valley Width (ft) **230**

Width Determination **Estimated**

Confinement Type **Semi-confined**

Rock Gorge? **No**

Human-caused Change? **Yes**

Step 2. Stream Channel

2.1 Bankfull Width **84**

2.2 Max Depth (ft) **3.90**

2.3 Mean Depth (ft) **2.60**

2.4 Floodprone Width (ft) **195**

Notes:

Roads passing through corridor are high on valley wall. Slight human-caused change in valley width due to VT Route 7 in vicinity of the bridge crossing. Not sufficient to cause change in valley type or overall confinement status. Shallow ledge under Rt 7 crossing.

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **5.80** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **32.27**

2.7 Entrenchment Ratio **2.32**

2.8 Incision Ratio **1.49**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Moderate**

2.10 Riffles Type **Complete**

2.11 Riffle/Step Spacing (ft) **800**

2.12 Substrate Composition

Bedrock	0%
Boulder	15%
Cobble	55%
Coarse Gravel	10%
Fine Gravel	3%
Sand	17%
Silt and smaller	0%

Silt/Clay Present? **Yes**

Detritus **1** %

Large Woody **8**

2.13 Average Largest Particle on

Bed **400.0** mm

Bar **250.0** mm

2.14 Stream Type

Stream Type: **C**

Bed Material: **Cobble**

Subclass Slope: **None**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type (if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	One	12.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Mix	Mix
Consistency	Cohesive	Cohesive
Lower		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	155	0
Erosion Height (ft)	4.00	0.00
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Deciduous	Deciduous

Bank Canopy	Left	Right
Canopy %	26-50	1-25

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	0-25	0-25
W less than 25	333	125

Buffer Veg. Type	Left	Right
Dominant	Mixed Trees	Mixed Trees
Sub-dominant	None	Shrubs/Saplin

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Forest
Sub-dominant	Residential	Residential
Mass Failures	87	0
Height	12	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **None**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **0**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments **None**

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg **None**

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
3	2	0

Diagonal	Delta	Island
2	1	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek** | **Phase 2 Segment Summary** | | March 3, 2010 | SGAT Version: 4.56

Stream: **Lewis Creek** | Reach # **M06** | Segment: **0** | Completion Date: **October 2, 2004**

Organization: **Lewis Creek Association** | Observers: **KLU, EE** | Why Not assessed: | Rain: **Yes**

Segment Length (ft): **5,831** | Segment Location: **From Old Hollow Rd crossing in North Ferrisburg village to the Route 7 crossing.**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **None**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	128	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Extremely	Very Steep
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Bedrock	Silt/Clay

1.5 Valley Features

Valley Width (ft) **780**

Width Determination **Estimated**

Confinement Type **Broad**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **85**

2.2 Max Depth (ft) **5.20**

2.3 Mean Depth (ft) **3.50**

2.4 Floodprone Width (ft) **175**

Notes:

Bedrock exposed along LB contributes to low sinuosity. Channel spanning bedrock mid-reach. Reach has similar planform on 1942 photo. Avulsion at downstream meander bend between 1995 and 2003. Historically, dam at bedrock falls upstream in M07 at No

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **10.20** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **24.26**

2.7 Entrenchment Ratio **2.06**

2.8 Incision Ratio **1.96**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Low**

2.10 Riffles Type **Sedimented**

2.11 Riffle/Step Spacing (ft) **200**

2.12 Substrate Composition

Bedrock	0%
Boulder	3%
Cobble	53%
Coarse Gravel	18%
Fine Gravel	4%
Sand	21%
Silt and smaller	1%

Silt/Clay Present? **No**

Detritus **0** %

Large Woody **25**

2.13 Average Largest Particle on

Bed **250.0** **mm**

Bar **0.0** **mm**

2.14 Stream Type

Stream Type: **C**

Bed Material: **Cobble**

Subclass Slope: **None**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	Multiple	34.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Mix	Mix
Consistency	Cohesive	Cohesive
Lower		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive
Bank Erosion	Left	Right
Erosion Length (ft)	1,471	1,544
Erosion Height (ft)	4.56	4.00
Revetmt. Type	None	Rip-Rap
Revetmt. Length (ft)	0	163
Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Deciduous	None
Bank Canopy	Left	Right
Canopy %	1-25	0
Mid-Channel Canopy	Open	

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	None	None
W less than 25	0	0
Buffer Veg. Type	Left	Right
Dominant	Mixed Trees	Herbaceous
Sub-dominant	Herbaceous	Shrubs/Saplin

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Shrubs/Saplin
Sub-dominant	None	None
Mass Failures	50	86
Height	60	8
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Abundant**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **1**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments **None**

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg **None**

4.7 StormwaterInputs

Field Ditch	0	Road Ditch	0
Other	1	Tile Drain	0
Overland Flow	0	Urb Strm Wtr Pipe	0

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
8	4	0

Diagonal	Delta	Island
6	2	2

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
3	0	1	2

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
8	0	No

5.4 Stream Ford or Animal **No**

5.5 Straightening **Straightening**

Straightening Length: **1,838**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Phase 2 Segment Summary

March 3, 2010 SGAT Version: 4.56

Reach # M07 Segment: 0 Completion Date: November 16, 2006
Observers: Brendan OShea, Thomas Why Not assessed: Rain: Yes
Segment Location: Largely forested reach from vicinity (south of) Spear Street and Guinea Rd intersection

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **None**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	744	0
height	15	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	1,541	175

1.4 Adjacent Side	Left	Right
Hillside Slope	Very Steep	Very Steep
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Mixed	Mixed

1.5 Valley Features

Valley Width (ft) **255**
Width Determination **Measured**
Confinement Type **Semi-confined**
Rock Gorge? **No**
Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **74**
2.2 Max Depth (ft) **4.46**
2.3 Mean Depth (ft) **3.40**
2.4 Floodprone Width (ft) **125**

Notes:

November 2006 field assessment supplemented by longitudinal profile and Phase 3 cross sections / pebble counts completed by VTDEC in August 2001. Bedrock waterfalls (e.g., falls at North Ferrisburg) are actually long lengths of

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **4.46** ft.
Human Elev Floodpln **0.00** ft.
2.6 Width/Depth Ratio **21.79**
2.7 Entrenchment Ratio **1.69**
2.8 Incision Ratio **1.00**
Human Elevated Inc Rat **0.00**
2.9 Sinuosity **Low**
2.10 Riffles Type **Complete**
2.11 Riffle/Step Spacing (ft) **350**

2.12 Substrate Composition

Bedrock	0%
Boulder	4%
Cobble	28%
Coarse Gravel	27%
Fine Gravel	4%
Sand	27%
Silt and smaller	10%

Silt/Clay Present? **Yes**
Detritus **5** %
Large Woody **7**

2.13 Average Largest Particle on

Bed **900.0** mm
Bar **N/A** mm

2.14 Stream Type

Stream Type: **B**
Bed Material: **Gravel**
Subclass Slope: **c**
Bed Form: **Riffle-Pool**
Field Measured Slope:

2.15 Reference Stream Type (if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks
Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Gravel	Gravel
Consistency	Non-cohesive	Non-cohesive
Lower		
Material Type	Boulder/Cobbl	Boulder/Cobbl
Consistency	Non-cohesive	Non-cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	167	168
Erosion Height (ft)	3.00	2.00
Revetmt. Type	None	Rip-Rap
Revetmt. Length (ft)	0	227

Near Bank Veg. Type	Left	Right
Dominant	Coniferous	Coniferous
Sub-dominant	Herbaceous	Herbaceous

Bank Canopy	Left	Right
Canopy %	51-75	51-75

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	None	None
W less than 25	217	279

Buffer Veg. Type	Left	Right
Dominant	Coniferous	Coniferous
Sub-dominant	None	None

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Forest
Sub-dominant	None	None
Mass Failures	126	0
Height	35	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**
4.2 Adjacent Wetlands **Minimal**
4.3 Flow Status **Moderate**
4.4 # of Debris Jams **0**
4.5 Flow Regulation Type **None**
Flow Regulation Use
Impoundments
Impoundmt. Location
4.6 Up/Down strm flow reg **None**
(old) Upstrm Flow Reg

4.7 StormwaterInputs

Field Ditch	0	Road Ditch	0
Other	0	Tile Drain	0
Overland Flow	0	Urb Strm Wtr Pipe	1

4.9 # of Beaver Dams **0**
Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
1	0	2
Diagonal	**Delta**	**Island**
0	0	1

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	1

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**
5.5 Straightening **None**
Straightening Length: **0**
5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Phase 2 Segment Summary

Reach # M08 | Observers: KLU, SHPytlik | Segment Location: From 1/4 mile upstream of Quinlan Covered Bridge to nearly one mile downstream of the

March 3, 2010 SGAT Version: 4.56
Segment: 0 | Why Not assessed: | Completion Date: September 17, 2004
Rain: Yes

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **None**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	194	0
height	7	0
Roads	35	1,411
height	9	6
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	323	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Hilly	Hilly
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft) **800**
Width Determination **Estimated**
Confinement Type **Very Broad**
Rock Gorge? **No**
Human-caused Change? **Yes**

Step 2. Stream Channel

2.1 Bankfull Width **75**
2.2 Max Depth (ft) **6.00**
2.3 Mean Depth (ft) **3.60**
2.4 Floodprone Width (ft) **900**

Notes:

Slight reduction in valley width at upstream end of reach by Spear Street and Lewis Creek Rd. Enough to cause change in valley confinement (from Very Broad to Narrow) but still unconfined - and only for a short section of the reach length. Bedrock exposures in

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **6.00** ft.
Human Elev Floodpln **0.00** ft.
2.6 Width/Depth Ratio **20.89**
2.7 Entrenchment Ratio **11.97**
2.8 Incision Ratio **1.00**
Human Elevated Inc Rat **0.00**
2.9 Sinuosity **Moderate**
2.10 Riffles Type **Sedimented**
2.11 Riffle/Step Spacing (ft) **450**

2.12 Substrate Composition

Bedrock	0%
Boulder	0%
Cobble	6%
Coarse Gravel	46%
Fine Gravel	23%
Sand	14%
Silt and smaller	11%

Silt/Clay Present? **Yes**
Detritus **3** %
Large Woody **26**

2.13 Average Largest Particle on

Bed	80.0	mm
Bar	N/A	mm

2.14 Stream Type

Stream Type: **C**
Bed Material: **Gravel**
Subclass Slope: **None**
Bed Form: **Riffle-Pool**
Field Measured Slope:

2.15 Reference Stream Type
(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	One	12.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks
Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Sand	Sand
Consistency	Non-cohesive	Non-cohesive
Lower		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive
Bank Erosion	Left	Right
Erosion Length (ft)	1,069	1,386
Erosion Height (ft)	4.66	5.62
Revetmt. Type	Rip-Rap	Rip-Rap
Revetmt. Length (ft)	187	82
Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin
Bank Canopy	Left	Right
Canopy %	0	0
Mid-Channel Canopy	Open	

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	0-25	0-25
W less than 25	905	535
Buffer Veg. Type	Left	Right
Dominant	Mixed Trees	Herbaceous
Sub-dominant	Shrubs/Saplin	None

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Shrubs/Saplin
Sub-dominant	None	Hay
Mass Failures	0	161
Height	0	12
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**
4.2 Adjacent Wetlands **Minimal**
4.3 Flow Status **Moderate**
4.4 # of Debris Jams **0**
4.5 Flow Regulation Type **None**
Flow Regulation Use
Impoundments
Impoundmt. Location
4.6 Up/Down strm flow reg **Up Stream**
(old) Upstrm Flow Reg

4.7 StormwaterInputs

Field Ditch	0	Road Ditch	1
Other	0	Tile Drain	0
Overland Flow	0	Urb Strm Wtr Pipe	0

4.9 # of Beaver Dams **0**
Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
2	1	0
Diagonal	Delta	Island
3	0	1

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	1

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**
5.5 Straightening **Straightening**
Straightening Length: **305**
5.5 Dredging **Dredging**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M09** Segment: **A** Completion Date: **September 17, 2004**

Organization: **Lewis Creek Association** Observers: **KLU, SHPytlik** Why Not assessed: Rain: **Yes**

Segment Length (ft): **1,004** Segment Location: **From just below Scott Pond Dam to approximately 1/4 mile upstream of the Quinlan**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Grade Controls**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	1,004	0
height	9	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	317	166

1.4 Adjacent Side	Left	Right
Hillside Slope	Very Steep	Extremely
Continuous w/	Never	Sometimes
W/in 1 Bankfill	Sometimes	Always
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft) **175**

Width Determination **Estimated**

Confinement Type **Semi-confined**

Rock Gorge? **No**

Human-caused Change? **Yes**

Step 2. Stream Channel

2.1 Bankfull Width **85**

2.2 Max Depth (ft) **3.50**

2.3 Mean Depth (ft) **2.67**

2.4 Floodprone Width (ft) **115**

Notes:

Lewis Creek Rd (gravel) encroaches within the valley and is elevated above the floodplain near the upstream end of the segment. For a majority of the segment length, the road is only slightly elevated above the LB terrace. Uncertain to what

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **9.30** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **31.72**

2.7 Entrenchment Ratio **1.36**

2.8 Incision Ratio **2.66**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Low**

2.10 Riffles Type **Not Applicable**

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Bedrock	0%
Boulder	4%
Cobble	39%
Coarse Gravel	16%
Fine Gravel	9%
Sand	25%
Silt and smaller	7%

Silt/Clay Present? **No**

Detritus **2** %

Large Woody **4**

2.13 Average Largest Particle on

Bed **250.0** mm

Bar **N/A** mm

2.14 Stream Type

Stream Type: **F**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Plane Bed**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Mix	Mix
Consistency	Cohesive	Cohesive
Lower		
Material Type	Mix	Mix
Consistency	Cohesive	Cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	0	0
Erosion Height (ft)	0.00	0.00
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Deciduous	Herbaceous
Sub-dominant	Herbaceous	Deciduous

Bank Canopy	Left	Right
Canopy %	51-75	76-100

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	0-25	>100
Sub-dominant	26-50	None
W less than 25	605	0

Buffer Veg. Type	Left	Right
Dominant	Deciduous	Mixed Trees
Sub-dominant	Shrubs/Saplin	None

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Hay	Forest
Sub-dominant	Residential	None
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Minimal**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **0**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **Up Stream**

(old) Upstrm Flow Reg

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
1	0	0

Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**

5.5 Straightening **Straightening**

Straightening Length: **487**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek** | **Phase 2 Segment Summary** | March 3, 2010 SGAT Version: 4.56

Stream: **Lewis Creek** Reach # **M09** Segment: **B** Completion Date: **September 17, 2004**

Organization: **Lewis Creek Association** Observers: **KLU, SHPytlik** Why Not assessed: **impounded** Rain: **Yes**

Segment Length (ft): **301** Segment Location: **Upstream end of reach comprising Scott Pond Dam, upstream impoundment, and bedrock**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Grade Controls**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	301	0
height	9	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	298	41

1.4 Adjacent Side	Left	Right
Hillside Slope	Very Steep	Extremely
Continuous w/	Never	Sometimes
W/in 1 Bankfill	Never	Always
Texture	Not Evalua	Bedrock

1.5 Valley Features

Valley Width (ft) **200**

Width Determination **Estimated**

Confinement Type **Semi-confined**

Rock Gorge? **No**

Human-caused Change? **Yes**

Step 2. Stream Channel

2.1 Bankfull Width **0**

2.2 Max Depth (ft) **0.00**

2.3 Mean Depth (ft) **0.00**

2.4 Floodprone Width (ft) **0**

Notes:

Segment comprises Scott Pond Dam and impoundment (refurbished in 1992; see Ph2 report). Historic record suggests larger upstream impoundment in the past, and period(s) of breached status. Lewis Creek Rd encroaches within the valley and is

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **0.00** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **0.00**

2.7 Entrenchment Ratio **0.00**

2.8 Incision Ratio **0.00**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity

2.10 Riffles Type

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Silt/Clay Present?

Detritus **0** %

Large Woody **0**

2.13 Average Largest Particle on

Bed **0.0**

Bar **0.0**

2.14 Stream Type

Stream Type:

Bed Material:

Subclass Slope:

Bed Form:

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Mix	Mix
Consistency	Non-cohesive	Cohesive
Lower		
Material Type	Mix	Mix
Consistency	Non-cohesive	Cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	0	0
Erosion Height (ft)	0.00	0.00
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Deciduous	Coniferous

Bank Canopy	Left	Right
Canopy %	26-50	51-75

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	51-100	>100
Sub-dominant	0-25	None
W less than 25	168	0

Buffer Veg. Type	Left	Right
Dominant	Herbaceous	Mixed Trees
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Hay	Forest
Sub-dominant	Residential	None
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **None**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **0**

4.5 Flow Regulation Type **Small Run of**

Flow Regulation Use **Other**

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.7 StormwaterInputs

Field Ditch	0	Road Ditch	1
Other	0	Tile Drain	0
Overland Flow	0	Urb Strm Wtr Pipe	0

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	1	0

Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M10** Segment: **A** Completion Date: **August 18, 2009**

Organization: **Lewis Creek Association** Observers: **KLU, MI** Why Not assessed: **impounded** Rain: **Yes**

Segment Length (ft): **1,016** Segment Location: **Downstream end of reach representing approximate former mill pond extent and current**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Flow Status**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	126	0
height	9	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Steep	Very Steep
Continuous w/	Sometimes	Never
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft) **440**

Width Determination **Estimated**

Confinement Type **Narrow**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **0**

2.2 Max Depth (ft) **0.00**

2.3 Mean Depth (ft) **0.00**

2.4 Floodprone Width (ft) **0**

Notes:

Segment comprises approx length of impoundment effects from downstream Scott Pond Dam, as observed November 2006. Inferred location of former mill pond, when dam was historically higher in elevation. See Phase 2 report.

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **0.00** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **0.00**

2.7 Entrenchment Ratio **0.00**

2.8 Incision Ratio **0.00**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity

2.10 Riffles Type

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Silt/Clay Present?

Detritus **0** %

Large Woody **0**

2.13 Average Largest Particle on

Bed **0.0**

Bar **0.0**

2.14 Stream Type

Stream Type:

Bed Material:

Subclass Slope:

Bed Form:

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Mix	Mix
Consistency	Cohesive	Cohesive
Lower		
Material Type	Mix	Mix
Consistency	Cohesive	Cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	0	254
Erosion Height (ft)	0.00	5.00
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin

Bank Canopy	Left	Right
Canopy %	0	0

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	None	None
W less than 25	0	0

Buffer Veg. Type	Left	Right
Dominant	Shrubs/Saplin	Shrubs/Saplin
Sub-dominant	Herbaceous	Herbaceous

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Shrubs/Saplin	Shrubs/Saplin
Sub-dominant	None	None
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps	Abundant
4.2 Adjacent Wetlands	Abundant
4.3 Flow Status	Moderate
4.4 # of Debris Jams	0
4.5 Flow Regulation Type	None
Flow Regulation Use	
Impoundments	
Impoundmt. Location	
4.6 Up/Down strm flow reg	Down Stream
(old) Upstrm Flow Reg	

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	0	0

Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M10** Segment: **B** Completion Date: **August 18, 2009**

Organization: **Lewis Creek Association** Observers: **KLU, MI** Why Not assessed: Rain: **Yes**

Segment Length (ft): **3,535** Segment Location: **From downstream of RB sand / gravel quarry downstream past Barlow hay field to approx**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Very Steep	Very Steep
Continuous w/	Never	Never
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft)	460
Width Determination	Estimated
Confinement Type	Narrow
Rock Gorge?	No
Human-caused Change?	No

Step 2. Stream Channel

2.1 Bankfull Width	86
2.2 Max Depth (ft)	3.90
2.3 Mean Depth (ft)	2.60
2.4 Floodprone Width (ft)	228

Notes:

Segment receives Prindle Brook (aka Pease Bk, T1) along RB near upstream end of segment. Minimal encroachments. Hay field along RB corridor was developed circa 1980, based on historic photo review. Downstream R-o-R flow regulation is Scott Pond Dam.

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln	6.20 ft.
Human Elev Floodpln	0.00 ft.
2.6 Width/Depth Ratio	32.88
2.7 Entrenchment Ratio	2.67
2.8 Incision Ratio	1.59
Human Elevated Inc Rat	0.00
2.9 Sinuosity	Moderate
2.10 Riffles Type	Complete
2.11 Riffle/Step Spacing (ft)	490

2.12 Substrate Composition

Bedrock	0%
Boulder	10%
Cobble	37%
Coarse Gravel	12%
Fine Gravel	14%
Sand	9%
Silt and smaller	18%

Silt/Clay Present?	No
Detritus	1 %
# Large Woody	1

2.13 Average Largest Particle on

Bed	120.0	mm
Bar	56.0	mm

2.14 Stream Type

Stream Type:	C
Bed Material:	Gravel
Subclass Slope:	None
Bed Form:	Riffle-Pool
Field Measured Slope:	

2.15 Reference Stream Type (if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Mix	Mix
Consistency	Cohesive	Non-cohesive
Lower		
Material Type	Mix	Mix
Consistency	Cohesive	Non-cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	312	60
Erosion Height (ft)	3.66	4.60
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Coniferous	Coniferous

Bank Canopy	Left	Right
Canopy %	51-75	51-75
Mid-Channel Canopy	Open	

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	None	0-25
W less than 25	0	1,225

Buffer Veg. Type	Left	Right
Dominant	Coniferous	Mixed Trees
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Forest
Sub-dominant	None	Hay
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps	Abundant
4.2 Adjacent Wetlands	Minimal
4.3 Flow Status	Moderate
4.4 # of Debris Jams	0
4.5 Flow Regulation Type	None
Flow Regulation Use	
Impoundments	
Impoundmt. Location	
4.6 Up/Down strm flow reg	Down Stream
(old) Upstrm Flow Reg	

4.9 # of Beaver Dams	0
Affected Length (ft)	0

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	1	1

Diagonal	Delta	Island
1	0	1

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
3	0	0	1

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal	No
5.5 Straightening	Straightening
Straightening Length:	1,026
5.5 Dredging	None

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Phase 2 Segment Summary

March 3, 2010 SGAT Version: 4.56

Reach # M10 Segment: C Completion Date: November 15, 2006
Observers: B Oshea, T Baines (11/06) Why Not assessed: Rain: Yes
Segment Location: Mid-reach section of narrower valley confinement extending approx 2700 ft upstream of RB

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**
1.2 Alluvial Fan **None**
1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Very Steep	Extremely
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features
Valley Width (ft) **240**
Width Determination **Estimated**
Confinement Type **Semi-confined**
Rock Gorge? **No**
Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **91**
2.2 Max Depth (ft) **4.78**
2.3 Mean Depth (ft) **3.18**
2.4 Floodprone Width (ft) **200**

Notes:

Original August 2001 assessment of this segment by VTDEC RMP - including 5 cross sections and Longitudinal Profile. Assessment updated with observations from Nov 2006, relying on a riffle cross section from 2001. Segment is Semi-confined and

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **7.37** ft.
Human Elev Floodpln **0.00** ft.
2.6 Width/Depth Ratio **28.77**
2.7 Entrenchment Ratio **2.19**
2.8 Incision Ratio **1.54**
Human Elevated Inc Rat **0.00**
2.9 Sinuosity **Moderate**
2.10 Riffles Type **Complete**
2.11 Riffle/Step Spacing (ft) **330**
2.12 Substrate Composition

Bedrock	0%
Boulder	9%
Cobble	18%
Coarse Gravel	16%
Fine Gravel	10%
Sand	43%
Silt and smaller	4%

Silt/Clay Present? **No**
Detritus **5** %
Large Woody **4**
2.13 Average Largest Particle on
Bed **120.0** mm
Bar **56.0** mm

2.14 Stream Type
Stream Type: **B**
Bed Material: **Gravel**
Subclass Slope: **c**
Bed Form: **Riffle-Pool**
Field Measured Slope:
2.15 Reference Stream Type
(if different from Phase 1)
B 4 c Riffle-Pool

3.3 old	Amount	Mean Height
Failures	One	46.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks
Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Mix	Mix
Consistency	Cohesive	Cohesive
Lower		
Material Type	Mix	Mix
Consistency	Non-cohesive	Non-cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	41	335
Erosion Height (ft)	10.00	2.46
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Coniferous	Coniferous

Bank Canopy	Left	Right
Canopy %	76-100	51-75
Mid-Channel Canopy	Open	

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	None	None
W less than 25	0	0

Buffer Veg. Type	Left	Right
Dominant	Coniferous	Coniferous
Sub-dominant	None	None

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Forest
Sub-dominant	None	Commercial
Mass Failures	0	284
Height	0	46
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Abundant**
4.2 Adjacent Wetlands **Minimal**
4.3 Flow Status **Moderate**
4.4 # of Debris Jams **0**
4.5 Flow Regulation Type **None**
Flow Regulation Use
Impoundments
Impoundmt. Location
4.6 Up/Down strm flow reg **Down Stream**
(old) Upstrm Flow Reg

4.9 # of Beaver Dams **0**
Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	0	4

Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**
5.5 Straightening **None**
Straightening Length: **0**
5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek** | **Phase 2 Segment Summary** | March 3, 2010 SGAT Version: 4.56

Stream: **Lewis Creek** Reach # **M10** Segment: **D** Completion Date: **August 18, 2009**

Organization: **Lewis Creek Association** Observers: **KLU, MI (8/09); B Oshea, T** Why Not assessed: Rain: **Yes**

Segment Length (ft): **4,868** Segment Location: **Mid-reach section extending approx 4800 feet downstream of point where Roscoe Rd pulls**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	**0**	**0**
height	**0**	**0**
Roads	**742**	**0**
height	**20**	**0**
Railroads	**0**	**0**
height	**0**	**0**
Improved Paths	**0**	**0**
height	**0**	**0**
Development	**318**	**0**

1.4 Adjacent Side	Left	Right
Hillside Slope	**Very Steep**	**Very Steep**
Continuous w/	**Sometimes**	**Sometimes**
W/in 1 Bankfill	**Sometimes**	**Sometimes**
Texture	**Not Evalua**	**Not Evalua**

1.5 Valley Features

Valley Width (ft) **430**

Width Determination **Estimated**

Confinement Type **Narrow**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **112**

2.2 Max Depth (ft) **3.40**

2.3 Mean Depth (ft) **1.95**

2.4 Floodprone Width (ft) **800**

Notes:

Original Nov 2006 assessment updated with limited observations and a cross section in August 2009. Valley width is quite variable, ranging generally from Semi-confined to Broad, averaging Narrow. One very short section mid-segment is apparently narrowly-

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **5.40** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **57.44**

2.7 Entrenchment Ratio **7.14**

2.8 Incision Ratio **1.59**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Moderate**

2.10 Riffles Type **Complete**

2.11 Riffle/Step Spacing (ft) **330**

2.12 Substrate Composition

Bedrock	**0** %
Boulder	**8** %
Cobble	**42** %
Coarse Gravel	**28** %
Fine Gravel	**6** %
Sand	**8** %
Silt and smaller	**8** %

Silt/Clay Present? **No**

Detritus **2** %

Large Woody **18**

2.13 Average Largest Particle on

Bed **120.0** **mm**

Bar **56.0** **mm**

2.14 Stream Type

Stream Type: **C**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type (if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	**None**	**0.00**
Gullies	**None**	**0.00**

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	**Mix**	**Mix**
Consistency	**Non-cohesive**	**Non-cohesive**
Lower		
Material Type	**Mix**	**Mix**
Consistency	**Cohesive**	**Cohesive**
Bank Erosion	Left	Right
Erosion Length (ft)	**309**	**167**
Erosion Height (ft)	**2.20**	**2.41**
Revetmt. Type	**None**	**None**
Revetmt. Length (ft)	**0**	**0**
Near Bank Veg. Type	Left	Right
Dominant	**Coniferous**	**Coniferous**
Sub-dominant	**Herbaceous**	**Herbaceous**
Bank Canopy	Left	Right
Canopy %	**51-75**	**51-75**

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	**>100**	**>100**
Sub-dominant	**None**	**None**
W less than 25	**209**	**0**
Buffer Veg. Type	Left	Right
Dominant	**Coniferous**	**Coniferous**
Sub-dominant	**Shrubs/Saplin**	**Shrubs/Saplin**

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	**Forest**	**Forest**
Sub-dominant	**Shrubs/Saplin**	**Shrubs/Saplin**
Mass Failures	**0**	**0**
Height	**0**	**0**
Gullies	**0**	
Length	**0**	
Height	**0.00**	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps	**Abundant**
4.2 Adjacent Wetlands	**Minimal**
4.3 Flow Status	**Moderate**
4.4 # of Debris Jams	**0**
4.5 Flow Regulation Type	**None**
Flow Regulation Use	
Impoundments	
Impoundmt. Location	
4.6 Up/Down strm flow reg	**Down Stream**
(old) Upstrm Flow Reg	

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
3	**0**	**0**

Diagonal	Delta	Island
0	**0**	**0**

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
1	**0**	**0**	**0**

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	**0**	**No**

5.4 Stream Ford or Animal **No**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M10** Segment: **E** Completion Date: **August 19, 2009**

Organization: **Lewis Creek Association** Observers: **KLU, MI (8/09); B Oshea, T** Why Not assessed: Rain: **Yes**

Segment Length (ft): **1,149** Segment Location: **From Sequin covered bridge to a point approx 1200 ft downstream, along Roscoe Road.**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Corridor Encroachment**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	321	0
height	8	0
Roads	1,110	0
height	7	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	220	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Very Steep	Very Steep
Continuous w/	Never	Sometimes
W/in 1 Bankfill	Never	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft) **160**

Width Determination **Estimated**

Confinement Type **Narrowly**

Rock Gorge? **No**

Human-caused Change? **Yes**

Step 2. Stream Channel

2.1 Bankfull Width **64**

2.2 Max Depth (ft) **3.80**

2.3 Mean Depth (ft) **3.00**

2.4 Floodprone Width (ft) **480**

Notes:

Original Nov 2006 assessment updated with observations and cross section in Aug 2009. House or barn visible in LB corridor on 1995 ortho - absent in 2003. Road ditches along southeast side road drain to Lewis Ck via LB trib culvert under road. Low-profile berm

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **5.50** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **21.17**

2.7 Entrenchment Ratio **7.56**

2.8 Incision Ratio **1.45**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Low**

2.10 Riffles Type **Complete**

2.11 Riffle/Step Spacing (ft) **400**

2.12 Substrate Composition

Bedrock	0%
Boulder	7%
Cobble	44%
Coarse Gravel	25%
Fine Gravel	6%
Sand	9%
Silt and smaller	9%

Silt/Clay Present? **Yes**

Detritus **1** %

Large Woody **7**

2.13 Average Largest Particle on

Bed **250.0** mm

Bar **N/A** mm

2.14 Stream Type

Stream Type: **C**

Bed Material: **Cobble**

Subclass Slope: **None**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type (if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Mix	Mix
Consistency	Cohesive	Cohesive
Lower		
Material Type	Mix	Mix
Consistency	Cohesive	Cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	239	172
Erosion Height (ft)	3.33	3.73
Revetmt. Type	Multiple	None
Revetmt. Length (ft)	149	0

Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Deciduous	Deciduous

Bank Canopy	Left	Right
Canopy %	1-25	51-75

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	0-25	>100
Sub-dominant	None	None
W less than 25	635	0

Buffer Veg. Type	Left	Right
Dominant	Herbaceous	Mixed Trees
Sub-dominant	Deciduous	Herbaceous

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Pasture	Forest
Sub-dominant	Residential	Hay
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **None**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **0**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	0	0

Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**

5.5 Straightening **Straightening**

Straightening Length: **762**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M10** Segment: **F** Completion Date: **August 19, 2009**

Organization: **Lewis Creek Association** Observers: **KLU, MI (8/09); B Oshea, T** Why Not assessed: **bedrock gorge** Rain: **Yes**

Segment Length (ft): **564** Segment Location: **Upstream 500+ ft of reach dominated by bedrock controls, including small waterfall**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Grade Controls**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	82	0
height	7	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	54

1.4 Adjacent Side	Left	Right
Hillside Slope	Very Steep	Extremely
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Always	Always
Texture	Bedrock	Bedrock

1.5 Valley Features

Valley Width (ft) **130**

Width Determination **Estimated**

Confinement Type **Narrowly**

Rock Gorge? **Yes**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **0**

2.2 Max Depth (ft) **0.00**

2.3 Mean Depth (ft) **0.00**

2.4 Floodprone Width (ft) **0**

Notes:

Original Nov 2006 assessment of this segment, updated with August 2009 observations. Historic grist mill and possible dam / mill pond at bedrock falls upstream of Seguin covered bridge according to Beers Atlas. Seguin covd bridge constr c1850

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **0.00** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **0.00**

2.7 Entrenchment Ratio **0.00**

2.8 Incision Ratio **0.00**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity

2.10 Riffles Type

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Silt/Clay Present?

Detritus **0** %

Large Woody **0**

2.13 Average Largest Particle on

Bed **0.0**

Bar **0.0**

2.14 Stream Type

Stream Type: **B**

Bed Material: **Bedrock**

Subclass Slope: **c**

Bed Form: **Step-Pool**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

B 1 c Step-Pool

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Mix	Mix
Consistency	Cohesive	Cohesive
Lower		
Material Type	Mix	Mix
Consistency	Cohesive	Cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	0	0
Erosion Height (ft)	0.00	0.00
Revetmt. Type	None	Rip-Rap
Revetmt. Length (ft)	0	44

Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Shrubs/Saplin	Deciduous

Bank Canopy	Left	Right
Canopy %	26-50	76-100

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	51-100	>100
Sub-dominant	26-50	None
W less than 25	0	0

Buffer Veg. Type	Left	Right
Dominant	Herbaceous	Deciduous
Sub-dominant	Deciduous	Shrubs/Saplin

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Forest
Sub-dominant	Shrubs/Saplin	None
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **None**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **0**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.7 StormwaterInputs

Field Ditch	0	Road Ditch	3
Other	0	Tile Drain	0
Overland Flow	0	Urb Strm Wtr Pipe	0

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	0	0

Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M11** Segment: **0** Completion Date: **October 18, 2004**

Organization: **Lewis Creek Association** Observers: **KLU, EE (SMRC)** Why Not assessed: Rain: **Yes**

Segment Length (ft): **3,341** Segment Location: **From Cedar Brook confluence downstream to the Charlotte town line, just upstream of**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **None**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	0

1.4 Adjacent Side	Left	Right
Hillside Slope	**Very Steep**	**Hilly**
Continuous w/	**Sometimes**	**Sometimes**
W/in 1 Bankfill	**Sometimes**	**Sometimes**
Texture	**Not Evalua**	**Not Evalua**

1.5 Valley Features

Valley Width (ft) **500**

Width Determination **Estimated**

Confinement Type **Broad**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **67**

2.2 Max Depth (ft) **4.60**

2.3 Mean Depth (ft) **3.48**

2.4 Floodprone Width (ft) **1,600**

Notes:

Valley confinement gradually narrows with distance downstream to bedrock-controlled valley pinch point - varies from Very Broad to Semi-confined, with an average of Broad. One channel-spanning bedrock exposure observed near the upstream end of the reach.

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **7.20** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **19.25**

2.7 Entrenchment Ratio **23.88**

2.8 Incision Ratio **1.57**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Moderate**

2.10 Riffles Type **Complete**

2.11 Riffle/Step Spacing (ft) **840**

2.12 Substrate Composition

Bedrock	3%
Boulder	5%
Cobble	29%
Coarse Gravel	24%
Fine Gravel	6%
Sand	33%
Silt and smaller	0%

Silt/Clay Present? **No**

Detritus **3** %

Large Woody **19**

2.13 Average Largest Particle on

Bed **250.0** **mm**

Bar **3.0** **mm**

2.14 Stream Type

Stream Type: **C**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	**None**	**0.00**
Gullies	**None**	**0.00**

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	**Sand**	**Sand**
Consistency	**Non-cohesive**	**Non-cohesive**
Lower		
Material Type	**Mix**	**Mix**
Consistency	**Cohesive**	**Cohesive**

Bank Erosion	Left	Right
Erosion Length (ft)	**803**	**549**
Erosion Height (ft)	**7.01**	**7.69**
Revetmt. Type	**None**	**None**
Revetmt. Length (ft)	**0**	**0**

Near Bank Veg. Type	Left	Right
Dominant	**Herbaceous**	**Herbaceous**
Sub-dominant	**Deciduous**	**Deciduous**

Bank Canopy	Left	Right
Canopy %	**76-100**	**26-50**

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	**>100**	**0-25**
Sub-dominant	**51-100**	**>100**
W less than 25	**0**	**1,574**

Buffer Veg. Type	Left	Right
Dominant	**Mixed Trees**	**Herbaceous**
Sub-dominant	**None**	**Mixed Trees**

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	**Forest**	**Hay**
Sub-dominant	**None**	**Forest**
Mass Failures	**0**	**0**
Height	**0**	**0**
Gullies	**0**	
Length	**0**	
Height	**0.00**	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Abundant**

4.2 Adjacent Wetlands **None**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **1**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.9 # of Beaver Dams **1**

Affected Length (ft) **1,200**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
1	1	1
Diagonal	**Delta**	**Island**
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Phase 2 Segment Summary

Reach # T2.01 | Observers: BOS, TB | Segment Location: Forested downstream-most reach of Cedar Brook which joins the Lewis Creek at the reach

March 3, 2010 SGAT Version: 4.56
Segment: 0 | Why Not assessed: | Completion Date: November 14, 2006
Rain: Yes

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **None**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Very Steep	Very Steep
Continuous w/	Always	Always
W/in 1 Bankfill	Always	Always
Texture	Mixed	Mixed

1.5 Valley Features

Valley Width (ft) **65**
Width Determination **Estimated**
Confinement Type **Semi-confined**
Rock Gorge? **No**
Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **15**
2.2 Max Depth (ft) **2.20**
2.3 Mean Depth (ft) **1.30**
2.4 Floodprone Width (ft) **30**

Notes:

Assessment updated in November 2006; original assessment by VTDEC/LCA in 2001 focused on select section of the reach. Bedrock grade controls. Waterfall indexed is actually a 450 ft long section of bedrock cascade stream type with an approximate

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **2.20** ft.
Human Elev Floodpln **0.00** ft.
2.6 Width/Depth Ratio **11.62**
2.7 Entrenchment Ratio **1.99**
2.8 Incision Ratio **1.00**
Human Elevated Inc Rat **0.00**
2.9 Sinuosity **Low**
2.10 Riffles Type **Complete**
2.11 Riffle/Step Spacing (ft) **10**

2.12 Substrate Composition

Bedrock	0%
Boulder	50%
Cobble	40%
Coarse Gravel	0%
Fine Gravel	0%
Sand	10%
Silt and smaller	0%

Silt/Clay Present? **No**
Detritus **5** %
Large Woody **22**

2.13 Average Largest Particle on

Bed	200.0	mm
Bar	N/A	mm

2.14 Stream Type

Stream Type: **B**
Bed Material: **Cobble**
Subclass Slope: **None**
Bed Form: **Step-Pool**
Field Measured Slope:

2.15 Reference Stream Type (if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks
Typical Bank Slope **Moderate**

Bank Texture	Left	Right
Upper		
Material Type	Boulder/Cobbl	Boulder/Cobbl
Consistency	Non-cohesive	Non-cohesive
Lower		
Material Type	Boulder/Cobbl	Boulder/Cobbl
Consistency	Non-cohesive	Non-cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	29	60
Erosion Height (ft)	3.00	4.00
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Coniferous	Coniferous
Sub-dominant	None	None

Bank Canopy	Left	Right
Canopy %	76-100	76-100

Mid-Channel Canopy **Closed**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	None	None
W less than 25	0	0

Buffer Veg. Type	Left	Right
Dominant	Coniferous	Coniferous
Sub-dominant	None	None

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Forest
Sub-dominant	None	None
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Abundant**
4.2 Adjacent Wetlands **Minimal**
4.3 Flow Status **Moderate**
4.4 # of Debris Jams **2**
4.5 Flow Regulation Type **None**
Flow Regulation Use
Impoundments
Impoundmt. Location
4.6 Up/Down strm flow reg **None**
(old) Upstrm Flow Reg

4.9 # of Beaver Dams **2**
Affected Length (ft) **750**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
1	0	0

Diagonal	Delta	Island
0	0	2

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
4	0	0	1

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**
5.5 Straightening **None**
Straightening Length: **0**
5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M12** Segment: **A** Completion Date: **October 18, 2004**

Organization: **Lewis Creek Association** Observers: **KLU, EE** Why Not assessed: **beaver dam** Rain: **Yes**

Segment Length (ft): **3,632** Segment Location: **Downstream quarter of the reach from Baldwin Rd bridge to the Cedar Brook confluence.**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Flow Status**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Very Steep	Steep
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft) **310**

Width Determination **Estimated**

Confinement Type **Semi-confined**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **0**

2.2 Max Depth (ft) **0.00**

2.3 Mean Depth (ft) **0.00**

2.4 Floodprone Width (ft) **0**

Notes:

Beaver-impounded segment. One intact beaver dam at the segment mid-point, impacting approx 1620 ft channel. Second beaver dam (in downstream reach M11) with impoundment effects extending upstream into M12-A. Possible short length of straightening

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **0.00** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **0.00**

2.7 Entrenchment Ratio **0.00**

2.8 Incision Ratio **0.00**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity

2.10 Riffles Type

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Silt/Clay Present?

Detritus **0** %

Large Woody **0**

2.13 Average Largest Particle on

Bed **0.0**

Bar **0.0**

2.14 Stream Type

Stream Type: **E**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Dune-Ripple**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Undercut**

Bank Texture	Left	Right
Upper		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive
Lower		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	271	630
Erosion Height (ft)	7.00	7.00
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Shrubs/Saplin	Coniferous

Bank Canopy	Left	Right
Canopy %	1-25	0
Mid-Channel Canopy		Open

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	None	0-25
W less than 25	0	1,129

Buffer Veg. Type	Left	Right
Dominant	Coniferous	Shrubs/Saplin
Sub-dominant	Herbaceous	Herbaceous

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Shrubs/Saplin
Sub-dominant	Shrubs/Saplin	Crop
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Minimal**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **0**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.9 # of Beaver Dams **1**

Affected Length (ft) **1,620**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
1	0	0

Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**

5.5 Straightening **Straightening**

Straightening Length: **338**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Phase 2 Segment Summary

Reach # M12 Segment: B
Observers: KLU (SMRC), Carrie & Dave
Segment Location: Short section upstream of Baldwin Road crossing.

March 3, 2010 SGAT Version: 4.56
Completion Date: October 21, 2004
Why Not assessed:
Rain: Yes

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation: **Channel Dimensions**
1.2 Alluvial Fan: **None**
1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	75

1.4 Adjacent Side	Left	Right
Hillside Slope	Extremely	Steep
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Always	Always
Texture	Not Evalua	Not Evalua

1.5 Valley Features
Valley Width (ft): 216
Width Determination: Estimated
Confinement Type: Semi-confined
Rock Gorge?: No
Human-caused Change?: No

Step 2. Stream Channel

2.1 Bankfull Width: 59
2.2 Max Depth (ft): 4.20
2.3 Mean Depth (ft): 3.34
2.4 Floodprone Width (ft): 120

Notes:

Short subreach of alternate reference stream type, that appears to have undergone a vertical stream type departure (from C to Bc). Historic incision may have been post-glacial rather than ocurring in historic times (last 300 years). Bridge crossing (Baldwin Rd) is

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln: 7.20 ft.
Human Elev Floodpln: 0.00 ft.
2.6 Width/Depth Ratio: 17.75
2.7 Entrenchment Ratio: 2.02
2.8 Incision Ratio: 1.71
Human Elevated Inc Rat: 0.00
2.9 Sinuosity: Low
2.10 Riffles Type: Eroded
2.11 Riffle/Step Spacing (ft): 0
2.12 Substrate Composition

Bedrock	0%
Boulder	7%
Cobble	43%
Coarse Gravel	14%
Fine Gravel	13%
Sand	23%
Silt and smaller	0%

Silt/Clay Present?: Yes
Detritus: 5 %
Large Woody: 4
2.13 Average Largest Particle on

Bed	300.0	mm
Bar	N/A	mm

2.14 Stream Type
Stream Type: B
Bed Material: Gravel
Subclass Slope: c
Bed Form: Plane Bed
Field Measured Slope:
2.15 Reference Stream Type
(if different from Phase 1)
C 4 Non Riffle-Pool

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	One	5.00

Step 3. Riparian Features

3.1 Stream Banks
Typical Bank Slope: Moderate

Bank Texture	Left	Right
Upper		
Material Type	Mix	Mix
Consistency	Cohesive	Cohesive
Lower		
Material Type	Mix	Mix
Consistency	Cohesive	Cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	161	0
Erosion Height (ft)	8.00	0.00
Revetmt. Type	Rip-Rap	Rip-Rap
Revetmt. Length (ft)	72	88

Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Deciduous	Deciduous

Bank Canopy	Left	Right
Canopy %	51-75	26-50
Mid-Channel Canopy	Open	

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	0-25
Sub-dominant	26-50	51-100
W less than 25	314	772

Buffer Veg. Type	Left	Right
Dominant	Mixed Trees	Shrubs/Saplin
Sub-dominant	None	Deciduous

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Hay
Sub-dominant	Residential	Forest
Mass Failures	0	0
Height	0	0
Gullies	1	
Length	0	
Height	5.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps: None
4.2 Adjacent Wetlands: None
4.3 Flow Status: Moderate
4.4 # of Debris Jams: 0
4.5 Flow Regulation Type: None
Flow Regulation Use
Impoundments
Impoundmt. Location
4.6 Up/Down strm flow reg: None
(old) Upstrm Flow Reg

4.9 # of Beaver Dams: 0
Affected Length (ft): 0

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	0	0

Diagonal	Delta	Island
0	1	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal: No
5.5 Straightening: Straightening
Straightening Length: 437
5.5 Dredging: None

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Phase 2 Segment Summary

Reach # M12 | Observers: KLU (SMRC), Carrie & Dave | Segment Location: 1.8 mile segment downstream of Pond Brook confluence.

March 3, 2010 SGAT Version: 4.56
Segment: C | Why Not assessed: beaver dam
Completion Date: October 21, 2004 | Rain: Yes

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Flow Status**
1.2 Alluvial Fan **None**
1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Very Steep	Steep
Continuous w/	Never	Never
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features
Valley Width (ft) **850**
Width Determination **Estimated**
Confinement Type **Very Broad**
Rock Gorge? **No**
Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **0**
2.2 Max Depth (ft) **0.00**
2.3 Mean Depth (ft) **0.00**
2.4 Floodprone Width (ft) **0**

Notes:

Wetland-dominated segment; extensive impoundment by beaver dam. Two neck cutoffs historically - reavealed by comparison of topo map to current planform. Recent avulsion has shifted the position of the Pond Brook confluence at the upstream end of the

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **0.00** ft.
Human Elev Floodpln **0.00** ft.
2.6 Width/Depth Ratio **0.00**
2.7 Entrenchment Ratio **0.00**
2.8 Incision Ratio **0.00**
Human Elevated Inc Rat **0.00**
2.9 Sinuosity
2.10 Riffles Type
2.11 Riffle/Step Spacing (ft) **0**
2.12 Substrate Composition

Silt/Clay Present?
Detritus **0** %
Large Woody **0**
2.13 Average Largest Particle on
Bed **0.0**
Bar **0.0**

2.14 Stream Type
Stream Type:
Bed Material:
Subclass Slope:
Bed Form:
Field Measured Slope:
2.15 Reference Stream Type
(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	Multiple	12.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks
Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive
Lower		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	1,925	1,886
Erosion Height (ft)	7.00	7.00
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin

Bank Canopy	Left	Right
Canopy %	0	0
Mid-Channel Canopy	Open	

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	51-100	None
W less than 25	123	0

Buffer Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Shrubs/Saplin	Forest
Sub-dominant	Forest	Shrubs/Saplin
Mass Failures	158	0
Height	12	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Abundant**
4.2 Adjacent Wetlands **Abundant**
4.3 Flow Status **Moderate**
4.4 # of Debris Jams **0**
4.5 Flow Regulation Type **None**
Flow Regulation Use
Impoundments
Impoundmt. Location
4.6 Up/Down strm flow reg **None**
(old) Upstrm Flow Reg

4.9 # of Beaver Dams **1**
Affected Length (ft) **7,200**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
1	2	0

Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	2	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**
5.5 Straightening **None**
Straightening Length: **0**
5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek** | **Phase 2 Segment Summary** | March 3, 2010 SGAT Version: 4.56

Stream: **Pond Brook** Reach # **T3.01** Segment: **A** Completion Date: **September 8, 2008**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC); JC (MMI)** Why Not assessed: Rain: **No**

Segment Length (ft): **3,199** Segment Location: **From farm road culvert crossing downstream to confluence with Lewis Creek at the**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	**0**	**0**
height	**0**	**0**
Roads	**605**	**0**
height	**7**	**0**
Railroads	**0**	**0**
height	**0**	**0**
Improved Paths	**0**	**0**
height	**0**	**0**
Development	**0**	**0**

1.4 Adjacent Side	Left	Right
Hillside Slope	**Steep**	**Steep**
Continuous w/	**Sometimes**	**Never**
W/in 1 Bankfill	**Sometimes**	**Never**
Texture	**Not Evalua**	**Not Evalua**

1.5 Valley Features

Valley Width (ft) **350**

Width Determination **Estimated**

Confinement Type **Very Broad**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **24**

2.2 Max Depth (ft) **3.60**

2.3 Mean Depth (ft) **2.25**

2.4 Floodprone Width (ft) **580**

Notes:

Updated Dec 2008, relying primarily on field observations and additional cross sections collected in Sept 2008 to support original October 2004 assessment. Lower half of subreach of E-dune/ripple reference stream type, that has not undergone recent

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **3.60** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **10.44**

2.7 Entrenchment Ratio **24.68**

2.8 Incision Ratio **1.00**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **High**

2.10 Riffles Type **Not Applicable**

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Bedrock	**0** %
Boulder	**0** %
Cobble	**1** %
Coarse Gravel	**18** %
Fine Gravel	**12** %
Sand	**37** %
Silt and smaller	**32** %

Silt/Clay Present? **Yes**

Detritus **10** %

Large Woody **9**

2.13 Average Largest Particle on

Bed **N/A**

Bar **N/A**

Not Evaluated

2.14 Stream Type

Stream Type: **E**

Bed Material: **Sand**

Subclass Slope: **None**

Bed Form: **Dune-Ripple**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

E 5 Non Dune-Ripple

3.3 old	Amount	Mean Height
Failures	**None**	**0.00**
Gullies	**None**	**0.00**

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	**Sand**	**Sand**
Consistency	**Cohesive**	**Cohesive**
Lower		
Material Type	**Silt**	**Silt**
Consistency	**Cohesive**	**Cohesive**

Bank Erosion	Left	Right
Erosion Length (ft)	**849**	**703**
Erosion Height (ft)	**4.97**	**5.00**
Revetmt. Type	**None**	**None**
Revetmt. Length (ft)	**0**	**0**

Near Bank Veg. Type	Left	Right
Dominant	**Herbaceous**	**Herbaceous**
Sub-dominant	**Bare**	**Bare**

Bank Canopy	Left	Right
Canopy %	**0**	**0**

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	**>100**	**>100**
Sub-dominant	**26-50**	**None**
W less than 25	**93**	**0**

Buffer Veg. Type	Left	Right
Dominant	**Herbaceous**	**Herbaceous**
Sub-dominant	**Coniferous**	**Coniferous**

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	**Shrubs/Saplin**	**Shrubs/Saplin**
Sub-dominant	**Forest**	**Forest**
Mass Failures	**0**	**0**
Height	**0**	**0**
Gullies	**0**	
Length	**0**	
Height	**0.00**	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Abundant**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **4**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
1	**10**	**3**
Diagonal	**Delta**	**Island**
0	**1**	**0**

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	**1**	**0**	**1**

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	**0**	**No**

5.4 Stream Ford or Animal **No**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek**

Phase 2 Segment Summary

March 3, 2010 SGAT Version: 4.56

Stream: **Pond Brook** Reach # **T3.01** Segment: **B** Completion Date: **September 8, 2008**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC); JC (MMI)** Why Not assessed: Rain: **No**

Segment Length (ft): **1,840** Segment Location: **In pasture and hay fields, mid-segment, ending near farm road culvert crossing.**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	**0**	**0**
height	**0**	**0**
Roads	**347**	**0**
height	**7**	**0**
Railroads	**0**	**0**
height	**0**	**0**
Improved Paths	**0**	**0**
height	**0**	**0**
Development	**0**	**54**

1.4 Adjacent Side	Left	Right
Hillside Slope	**Steep**	**Steep**
Continuous w/	**Never**	**Never**
W/in 1 Bankfill	**Never**	**Never**
Texture	**Not Evalua**	**Not Evalua**

1.5 Valley Features

Valley Width (ft) **550**

Width Determination **Estimated**

Confinement Type **Very Broad**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **30**

2.2 Max Depth (ft) **3.30**

2.3 Mean Depth (ft) **1.85**

2.4 Floodprone Width (ft) **625**

Notes:

Updated Dec 2008, relying primarily on field observations and additional cross sections collected in Sept 2008 to support original October 2004 assessment. Upper half of subreach of E-dune/ripple reference stream type, that has undergone substantial

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **4.70** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **16.42**

2.7 Entrenchment Ratio **20.57**

2.8 Incision Ratio **1.42**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Low**

2.10 Riffles Type **Sedimented**

2.11 Riffle/Step Spacing (ft) **100**

2.12 Substrate Composition

Bedrock	**0** %
Boulder	**0** %
Cobble	**1** %
Coarse Gravel	**31** %
Fine Gravel	**20** %
Sand	**11** %
Silt and smaller	**37** %

Silt/Clay Present? **Yes**

Detritus **3** %

Large Woody **4**

2.13 Average Largest Particle on

Bed **32.0** **mm**

Bar **42.0** **mm**

2.14 Stream Type

Stream Type: **C**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

E 4 Non Dune-Ripple

3.3 old	Amount	Mean Height
Failures	**None**	**0.00**
Gullies	**None**	**0.00**

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	**Sand**	**Sand**
Consistency	**Non-cohesive**	**Non-cohesive**
Lower		
Material Type	**Silt**	**Silt**
Consistency	**Cohesive**	**Cohesive**
Bank Erosion	Left	Right
Erosion Length (ft)	**453**	**258**
Erosion Height (ft)	**3.95**	**4.00**
Revetmt. Type	**None**	**Rip-Rap**
Revetmt. Length (ft)	**0**	**63**
Near Bank Veg. Type	Left	Right
Dominant	**Herbaceous**	**Herbaceous**
Sub-dominant	**Bare**	**Bare**
Bank Canopy	Left	Right
Canopy %	**0**	**0**
Mid-Channel Canopy		**Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	**0-25**	**>100**
Sub-dominant	**26-50**	**0-25**
W less than 25	**726**	**138**
Buffer Veg. Type	Left	Right
Dominant	**Herbaceous**	**Herbaceous**
Sub-dominant	**Shrubs/Saplin**	**Shrubs/Saplin**

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	**Pasture**	**Shrubs/Saplin**
Sub-dominant	**Shrubs/Saplin**	**Hay**
Mass Failures	**0**	**0**
Height	**0**	**0**
Gullies		**0**
Length		**0**
Height		**0.00**

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Abundant**

4.2 Adjacent Wetlands **Abundant**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **1**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.7 StormwaterInputs

Field Ditch	**0**	Road Ditch	**0**
Other	**0**	Tile Drain	**1**
Overland Flow	**0**	Urb Strm Wtr Pipe	**0**

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
1	**5**	**4**
Diagonal	**Delta**	**Island**
4	**0**	**0**

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
2	**0**	**0**	**0**

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	**0**	**No**

5.4 Stream Ford or Animal **No**

5.5 Straightening **Straightening**

Straightening Length: **1,381**

5.5 Dredging **Dredging**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Phase 2 Segment Summary

Reach # T3.01 Segment: C
Observers: KLU (SMRC); JC (MMI)
Segment Location: Upstream half of the reach; spans Silver Street.

March 3, 2010 SGAT Version: 4.56
Completion Date: September 8, 2008
Why Not assessed:
Rain: No

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation: **Channel Dimensions**
1.2 Alluvial Fan: **None**
1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	464	0
height	12	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	281	68

1.4 Adjacent Side	Left	Right
Hillside Slope	Steep	Steep
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features
Valley Width (ft): **200**
Width Determination: **Estimated**
Confinement Type: **Narrow**
Rock Gorge?: **No**
Human-caused Change?: **No**

Step 2. Stream Channel

2.1 Bankfull Width: **41**
2.2 Max Depth (ft): **2.30**
2.3 Mean Depth (ft): **1.40**
2.4 Floodprone Width (ft): **130**

Notes:

Updated in Dec 2008, relying primarily on field observations and additional cross sections collected in Sept 2008, to supplement original Oct 2004 assessment. Roads indexed in the segment include Silver Street which crosses the channel at an

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln: **2.30** ft.
Human Elev Floodpln: **0.00** ft.
2.6 Width/Depth Ratio: **29.29**
2.7 Entrenchment Ratio: **3.17**
2.8 Incision Ratio: **1.00**
Human Elevated Inc Rat: **0.00**
2.9 Sinuosity: **Moderate**
2.10 Riffles Type: **Complete**
2.11 Riffle/Step Spacing (ft): **190**
2.12 Substrate Composition

Bedrock	0%
Boulder	0%
Cobble	16%
Coarse Gravel	27%
Fine Gravel	17%
Sand	7%
Silt and smaller	33%

Silt/Clay Present?: **Yes**
Detritus: **2** %
Large Woody: **26**
2.13 Average Largest Particle on

Bed	138.0	mm
Bar	34.0	mm

2.14 Stream Type
Stream Type: **C**
Bed Material: **Gravel**
Subclass Slope: **None**
Bed Form: **Riffle-Pool**
Field Measured Slope:
2.15 Reference Stream Type
(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks
Typical Bank Slope: **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Mix	Mix
Consistency	Cohesive	Cohesive
Lower		
Material Type	Boulder/Cobbl	Boulder/Cobbl
Consistency	Non-cohesive	Non-cohesive
Bank Erosion	Left	Right
Erosion Length (ft)	178	546
Erosion Height (ft)	3.01	3.10
Revetmt. Type	Rip-Rap	Rip-Rap
Revetmt. Length (ft)	246	197
Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin
Bank Canopy	Left	Right
Canopy %	51-75	51-75
Mid-Channel Canopy	Open	

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	None	0-25
W less than 25	180	503
Buffer Veg. Type	Left	Right
Dominant	Mixed Trees	Mixed Trees
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Forest
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps: **Abundant**
4.2 Adjacent Wetlands: **Minimal**
4.3 Flow Status: **Moderate**
4.4 # of Debris Jams: **3**
4.5 Flow Regulation Type: **None**
Flow Regulation Use
Impoundments
Impoundmt. Location
4.6 Up/Down strm flow reg: **None**
(old) Upstrm Flow Reg
4.7 StormwaterInputs

Field Ditch	0	Road Ditch	0
Other	1	Tile Drain	0
Overland Flow	0	Urb Strm Wtr Pipe	0

4.9 # of Beaver Dams: **1**
Affected Length (ft): **10**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
6	9	3
Diagonal	**Delta**	**Island**
4	0	1

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
5	1	0	3

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
2	0	No

5.4 Stream Ford or Animal: **No**
5.5 Straightening: **Straightening**
Straightening Length: **146**
5.5 Dredging: **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek** | **Phase 2 Segment Summary** | March 3, 2010 SGAT Version: 4.56

Stream: **Lewis Creek** Reach # **M13** Segment: **A** Completion Date: **October 21, 2004**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC), Carrie & Dave** Why Not assessed: **beaver dam** Rain: **Yes**

Segment Length (ft): **3,802** Segment Location: **From Silver Street crossing to Pond Bk confluence.**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Steep	Steep
Continuous w/	Never	Sometimes
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft) **530**

Width Determination **Estimated**

Confinement Type **Broad**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **0**

2.2 Max Depth (ft) **0.00**

2.3 Mean Depth (ft) **0.00**

2.4 Floodprone Width (ft) **0**

Notes:

Negligible encroachments, development. Segment not assessed due to extensive beaver-dam impoundments. Subreach of reference E4-dune/ripple channel. Dominantly fallow fields, with short section of horse pasture within the LB corridor near the

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **0.00** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **0.00**

2.7 Entrenchment Ratio **0.00**

2.8 Incision Ratio **0.00**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity

2.10 Riffles Type

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Silt/Clay Present?

Detritus **0** %

Large Woody **33**

2.13 Average Largest Particle on

Bed **0.0**

Bar **0.0**

2.14 Stream Type

Stream Type: **E**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Dune-Ripple**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

E 4 Non Dune-Ripple

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Sand	Sand
Consistency	Cohesive	Cohesive
Lower		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	681	731
Erosion Height (ft)	7.27	7.00
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	None	None

Bank Canopy	Left	Right
Canopy %	0	0

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	0-25	None
W less than 25	413	0

Buffer Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Shrubs/Saplin	Shrubs/Saplin
Sub-dominant	Pasture	None
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Minimal**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **0**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.9 # of Beaver Dams **3**

Affected Length (ft) **2,950**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
5	1	0

Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	1

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**

5.5 Straightening **Straightening**

Straightening Length: **1,734**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M13** Segment: **B** Completion Date: **June 15, 2005**

Organization: **Lewis Creek Association** Observers: **KLU, EE (SMRC)** Why Not assessed: Rain: **Yes**

Segment Length (ft): **4,042** Segment Location: **From Lewis Creek Rd downstream to Silver Street bridge.**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	93	88

1.4 Adjacent Side	Left	Right
Hillside Slope	Very Steep	Hilly
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft) **300**

Width Determination **Estimated**

Confinement Type **Narrow**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **56**

2.2 Max Depth (ft) **2.90**

2.3 Mean Depth (ft) **1.88**

2.4 Floodprone Width (ft) **180**

Notes:

Bank armoring at the Silver Street bridge crossing. Hay fields in the RB corridor and LB corridor. Stormwater inputs along RB downstream of the bridge. Straightening possible in vicinity of the bridge crossing. LB delta of fine sediments at the confluence of

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **5.40** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **29.89**

2.7 Entrenchment Ratio **3.20**

2.8 Incision Ratio **1.86**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Low**

2.10 Riffles Type **Complete**

2.11 Riffle/Step Spacing (ft) **450**

2.12 Substrate Composition

Bedrock	0%
Boulder	8%
Cobble	37%
Coarse Gravel	20%
Fine Gravel	14%
Sand	21%
Silt and smaller	0%

Silt/Clay Present? **No**

Detritus **2** %

Large Woody **4**

2.13 Average Largest Particle on

Bed **250.0** mm

Bar **N/A** mm

2.14 Stream Type

Stream Type: **C**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type (if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Mix	Mix
Consistency	Cohesive	Cohesive
Lower		
Material Type	Mix	Mix
Consistency	Cohesive	Cohesive
Bank Erosion	Left	Right
Erosion Length (ft)	94	98
Erosion Height (ft)	5.00	5.00
Revetmt. Type	Rip-Rap	Rip-Rap
Revetmt. Length (ft)	165	100
Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Coniferous Shrubs/Saplin	
Bank Canopy	Left	Right
Canopy %	76-100	26-50
Mid-Channel Canopy	Open	

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	0-25
Sub-dominant	0-25	>100
W less than 25	760	1,788
Buffer Veg. Type	Left	Right
Dominant	Mixed Trees	Shrubs/Saplin
Sub-dominant	Shrubs/Saplin	Mixed Trees

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Hay
Sub-dominant	Hay	Forest
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Abundant**

4.2 Adjacent Wetlands **Minimal**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **0**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.7 StormwaterInputs

Field Ditch	0	Road Ditch	1
Other	0	Tile Drain	0
Overland Flow	0	Urb Strm Wtr Pipe	0

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	0	0

Diagonal	Delta	Island
0	1	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
2	0	No

5.4 Stream Ford or Animal **No**

5.5 Straightening **Straightening**

Straightening Length: **594**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M14** Segment: **0** Completion Date: **November 29, 2006**

Organization: **Lewis Creek Association** Observers: **SH, Peter, KU** Why Not assessed: Rain: **No**

Segment Length (ft): **3,003** Segment Location: **Reach is parallel to Lewis Creek Road, east of intersection with Silver Street, and crosses**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **None**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	**0**	**0**
height	**0**	**0**
Roads	**3,003**	**0**
height	**12**	**0**
Railroads	**0**	**0**
height	**0**	**0**
Improved Paths	**0**	**0**
height	**0**	**0**
Development	**645**	**50**

1.4 Adjacent Side	Left	Right
Hillside Slope	**Steep**	**Very Steep**
Continuous w/	**Sometimes**	**Sometimes**
W/in 1 Bankfill	**Always**	**Always**
Texture	**Bedrock**	**Not Evalua**

1.5 Valley Features

Valley Width (ft) **188**

Width Determination **Estimated**

Confinement Type **Semi-confined**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **52**

2.2 Max Depth (ft) **3.30**

2.3 Mean Depth (ft) **2.47**

2.4 Floodprone Width (ft) **78**

Notes:

November 2006 assessment (including cross sections) updates a 10/12/2001 original Phase 2 assessment. Overall, reach is dominated by cobbles; at representative cross section, bedrock dominated. Bedform is more planebed in short sections of channel

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **3.30** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **21.05**

2.7 Entrenchment Ratio **1.50**

2.8 Incision Ratio **1.00**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Low**

2.10 Riffles Type **Complete**

2.11 Riffle/Step Spacing (ft) **200**

2.12 Substrate Composition

Bedrock	**58** %
Boulder	**3** %
Cobble	**9** %
Coarse Gravel	**13** %
Fine Gravel	**4** %
Sand	**13** %
Silt and smaller	**0** %

Silt/Clay Present? **No**

Detritus **10** %

Large Woody **8**

2.13 Average Largest Particle on

Bed **600.0** mm

Bar **N/A** mm

2.14 Stream Type

Stream Type: **B**

Bed Material: **Cobble**

Subclass Slope: **c**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	**None**	**0.00**
Gullies	**None**	**0.00**

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Moderate**

Bank Texture	Left	Right
Upper		
Material Type	**Mix**	**Mix**
Consistency	**Cohesive**	**Cohesive**
Lower		
Material Type	**Mix**	**Mix**
Consistency	**Cohesive**	**Cohesive**

Bank Erosion	Left	Right
Erosion Length (ft)	**0**	**0**
Erosion Height (ft)	**0.00**	**0.00**
Revetmt. Type	**Rip-Rap**	**Rip-Rap**
Revetmt. Length (ft)	**47**	**126**

Near Bank Veg. Type	Left	Right
Dominant	**Deciduous**	**Deciduous**
Sub-dominant	**Herbaceous**	**Herbaceous**

Bank Canopy	Left	Right
Canopy %	**51-75**	**51-75**

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	**>100**	**51-100**
Sub-dominant	**None**	**0-25**
W less than 25	**141**	**1,175**

Buffer Veg. Type	Left	Right
Dominant	**Mixed Trees**	**Deciduous**
Sub-dominant	**None**	**Shrubs/Saplin**

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	**Forest**	**Forest**
Sub-dominant	**None**	**Residential**
Mass Failures	**0**	**0**
Height	**0**	**0**

Gullies **0**

Length **0**

Height **0.00**

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Minimal**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **1**

4.5 Flow Regulation Type **Small**

Flow Regulation Use **Other**

Impoundments **None**

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg **None**

4.7 StormwaterInputs

Field Ditch	**0**	Road Ditch	**2**
Other	**1**	Tile Drain	**0**
Overland Flow	**1**	Urb Strm Wtr Pipe	**0**

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	**1**	**0**

Diagonal	Delta	Island
1	**2**	**1**

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	**0**	**0**	**1**

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	**0**	**No**

5.4 Stream Ford or Animal **No**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M15** Segment: **A** Completion Date: **November 29, 2006**

Organization: **Lewis Creek Association** Observers: **KLU, BOS** Why Not assessed: Rain: **No**

Segment Length (ft): **6,162** Segment Location: **Extends from just above the Monkton / Hinesburg line downstream to the end of the reach**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	605	0
height	9	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	426	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Steep	Steep
Continuous w/	Sometimes	Never
W/in 1 Bankfill	Sometimes	Never
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft) **750**

Width Determination **Estimated**

Confinement Type **Very Broad**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **45**

2.2 Max Depth (ft) **6.80**

2.3 Mean Depth (ft) **4.20**

2.4 Floodprone Width (ft) **900**

Notes:

November 2006 assessment updates the original August 2001 VTDEC/LCA assessment which focused on select sections only. Lewis Creek Rd encroaches on floodplain within downstream 10% of the segment; not substantial enough to constitute

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **6.80** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **10.71**

2.7 Entrenchment Ratio **20.00**

2.8 Incision Ratio **1.00**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Moderate**

2.10 Riffles Type **Not Applicable**

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Bedrock	0%
Boulder	0%
Cobble	0%
Coarse Gravel	8%
Fine Gravel	47%
Sand	45%
Silt and smaller	0%

Silt/Clay Present? **Yes**

Detritus **5** %

Large Woody **42**

2.13 Average Largest Particle on

Bed **50.0** mm

Bar **24.0** mm

2.14 Stream Type

Stream Type: **E**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

E 4 Non Riffle-Pool

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive
Lower		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	2,060	1,352
Erosion Height (ft)	3.00	3.26
Revetmt. Type	None	Rip-Rap
Revetmt. Length (ft)	0	279

Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin

Bank Canopy	Left	Right
Canopy %	1-25	1-25
Mid-Channel Canopy	Open	

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	None	None
W less than 25	0	105

Buffer Veg. Type	Left	Right
Dominant	Deciduous	Deciduous
Sub-dominant	Coniferous	Shrubs/Saplin

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Forest
Sub-dominant	None	Shrubs/Saplin
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Abundant**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **4**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.9 # of Beaver Dams **2**

Affected Length (ft) **4**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
9	23	5
Diagonal	**Delta**	**Island**
0	0	1

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
6	1	1	1

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**

5.5 Straightening **Straightening**

Straightening Length: **1,916**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M15** Segment: **B** Completion Date: **November 29, 2006**

Organization: **Lewis Creek Association** Observers: **KLU, BOS** Why Not assessed: Rain: **No**

Segment Length (ft): **3,989** Segment Location: **From Hollow Brook confluence downstream under the Tyler Bridge Road bridge to a point**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	**0**	**0**
height	**0**	**0**
Roads	**165**	**0**
height	**7**	**0**
Railroads	**0**	**0**
height	**0**	**0**
Improved Paths	**0**	**0**
height	**0**	**0**
Development	**167**	**65**

1.4 Adjacent Side	Left	Right
Hillside Slope	**Hilly**	**Steep**
Continuous w/	**Never**	**Never**
W/in 1 Bankfill	**Sometimes**	**Never**
Texture	**Not Evalua**	**Not Evalua**

1.5 Valley Features

Valley Width (ft) **1,400**

Width Determination **Estimated**

Confinement Type **Very Broad**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **57**

2.2 Max Depth (ft) **2.80**

2.3 Mean Depth (ft) **1.60**

2.4 Floodprone Width (ft) **460**

Notes:

November 2006 assessment updates the original August 2001 VTDEC/LCA assessment which focused on select sections only. Left-bank driveway (Cobble Creek Nursery) encroaches on floodplain for very short distance just upstream of the Tyler

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **4.60** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **35.81**

2.7 Entrenchment Ratio **8.03**

2.8 Incision Ratio **1.64**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Moderate**

2.10 Riffles Type **Complete**

2.11 Riffle/Step Spacing (ft) **300**

2.12 Substrate Composition

Bedrock	**0** %
Boulder	**0** %
Cobble	**6** %
Coarse Gravel	**42** %
Fine Gravel	**15** %
Sand	**37** %
Silt and smaller	**0** %

Silt/Clay Present? **Yes**

Detritus **5** %

Large Woody **49**

2.13 Average Largest Particle on

Bed **60.0** **mm**

Bar **60.0** **mm**

2.14 Stream Type

Stream Type: **C**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type (if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	**None**	**0.00**
Gullies	**One**	**4.00**

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	**Sand**	**Sand**
Consistency	**Non-cohesive**	**Non-cohesive**
Lower		
Material Type	**Gravel**	**Gravel**
Consistency	**Non-cohesive**	**Non-cohesive**

Bank Erosion	Left	Right
Erosion Length (ft)	**954**	**783**
Erosion Height (ft)	**3.07**	**3.19**
Revetmt. Type	**None**	**Rip-Rap**
Revetmt. Length (ft)	**0**	**48**

Near Bank Veg. Type	Left	Right
Dominant	**Herbaceous**	**Herbaceous**
Sub-dominant	**Deciduous**	**Deciduous**

Bank Canopy	Left	Right
Canopy %	**26-50**	**26-50**

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	**>100**	**>100**
Sub-dominant	**None**	**None**
W less than 25	**498**	**153**

Buffer Veg. Type	Left	Right
Dominant	**Mixed Trees**	**Mixed Trees**
Sub-dominant	**Shrubs/Saplin**	**Shrubs/Saplin**

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	**Forest**	**Forest**
Sub-dominant	**Crop**	**None**
Mass Failures	**0**	**0**
Height	**0**	**0**
Gullies	**1**	
Length	**75**	
Height	**4.00**	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Abundant**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **2**

4.5 Flow Regulation Type **Small**

Flow Regulation Use **Other**

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.7 StormwaterInputs

Field Ditch	**1**	Road Ditch	**0**
Other	**0**	Tile Drain	**0**
Overland Flow	**0**	Urb Strm Wtr Pipe	**0**

4.9 # of Beaver Dams **1**

Affected Length (ft) **2**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
1	**9**	**3**
Diagonal	**Delta**	**Island**
1	**1**	**1**

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
4	**0**	**1**	**1**

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
1	**0**	**No**

5.4 Stream Ford or Animal **No**

5.5 Straightening **Straightening**

Straightening Length: **2,121**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Phase 2 Segment Summary

March 3, 2010 SGAT Version: 4.56

Reach # M16 Segment: 0 Completion Date: June 24, 2005
Observers: KLU Why Not assessed: Rain: Yes
Segment Location: West of Route 116, from Mitch Kelly farm at M16S1 confluence downstream to Hollow Brook

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **None**
1.2 Alluvial Fan **None**
1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Hilly	Hilly
Continuous w/	Sometimes	Never
W/in 1 Bankfill	Sometimes	Never
Texture	Not Evalua	Not Evalua

1.5 Valley Features
Valley Width (ft) **800**
Width Determination **Estimated**
Confinement Type **Very Broad**
Rock Gorge? **No**
Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **56**
2.2 Max Depth (ft) **6.20**
2.3 Mean Depth (ft) **2.80**
2.4 Floodprone Width (ft) **640**

Notes:

updated in Jan 2008 to 2007 protocols by SMRC, relying on original Aug 2001 data (DEC, LCA), and 2005 data and Ph3 (SMRC). Three riffle cross sections and pebble counts added to Ph2 worksheet from June 2005 Ph3 assessment. Step 2 relies on

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **7.20** ft.
Human Elev Floodpln **0.00** ft.
2.6 Width/Depth Ratio **20.00**
2.7 Entrenchment Ratio **11.43**
2.8 Incision Ratio **1.16**
Human Elevated Inc Rat **0.00**
2.9 Sinuosity **High**
2.10 Riffles Type **Complete**
2.11 Riffle/Step Spacing (ft) **190**
2.12 Substrate Composition

Bedrock	0%
Boulder	0%
Cobble	0%
Coarse Gravel	7%
Fine Gravel	50%
Sand	33%
Silt and smaller	10%

Silt/Clay Present? **Yes**
Detritus **5** %
Large Woody **9**
2.13 Average Largest Particle on

Bed	20.0	mm
Bar	22.0	mm

2.14 Stream Type
Stream Type: **C**
Bed Material: **Gravel**
Subclass Slope: **None**
Bed Form: **Riffle-Pool**
Field Measured Slope:
2.15 Reference Stream Type
(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks
Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Sand	Sand
Consistency	Cohesive	Cohesive
Lower		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	1,257	2,848
Erosion Height (ft)	5.87	6.00
Revetmt. Type	Other	Other
Revetmt. Length (ft)	380	835

Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Deciduous	Deciduous

Bank Canopy	Left	Right
Canopy %	1-25	1-25

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	26-50	26-50
Sub-dominant	0-25	0-25
W less than 25	1,961	2,514

Buffer Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Deciduous	Deciduous

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Pasture	Pasture
Sub-dominant	Forest	Crop
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**
4.2 Adjacent Wetlands **Minimal**
4.3 Flow Status **Moderate**
4.4 # of Debris Jams **0**
4.5 Flow Regulation Type **None**
Flow Regulation Use
Impoundments **None**
Impoundmt. Location
4.6 Up/Down strm flow reg **None**
(old) Upstrm Flow Reg **None**

4.9 # of Beaver Dams **1**
Affected Length (ft) **1**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
2	2	0

Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
3	1	1	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **Yes**
5.5 Straightening **None**
Straightening Length: **0**
5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M17** Segment: **A** Completion Date: **September 21, 2002**

Organization: **Lewis Creek Association** Observers: **LU, LD** Why Not assessed: Rain: **Yes**

Segment Length (ft): **3,446** Segment Location: **Downstream segment; on Kelly farm west of Route 116.**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Banks and Buffers**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	63

1.4 Adjacent Side	Left	Right
Hillside Slope	**Very Steep**	**Steep**
Continuous w/	**Sometimes**	**Never**
W/in 1 Bankfill	**Sometimes**	**Never**
Texture	**Mixed**	**Not Evalua**

1.5 Valley Features

Valley Width (ft) **500**

Width Determination **Estimated**

Confinement Type **Very Broad**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **37**

2.2 Max Depth (ft) **5.90**

2.3 Mean Depth (ft) **10.90**

2.4 Floodprone Width (ft) **1,330**

Notes:

Updated to 2007 methods, relying on 9/21/2002 assessment data from LCA/SMRC. Original bankfull elevation was underestimated (and therefore incision ratio was overestimated). Also revised from a reference C channel to a reference E stream

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **7.40** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **3.35**

2.7 Entrenchment Ratio **36.44**

2.8 Incision Ratio **1.25**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **High**

2.10 Riffles Type **Complete**

2.11 Riffle/Step Spacing (ft) **160**

2.12 Substrate Composition

Bedrock	0%
Boulder	0%
Cobble	0%
Coarse Gravel	0%
Fine Gravel	60%
Sand	40%
Silt and smaller	0%

Silt/Clay Present? **Yes**

Detritus **5** %

Large Woody **0**

2.13 Average Largest Particle on

Bed **4.0** **mm**

Bar **N/A** **mm**

2.14 Stream Type

Stream Type: **E**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type (if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	**None**	**0.00**
Gullies	**None**	**0.00**

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	**Sand**	**Sand**
Consistency	**Non-cohesive**	**Non-cohesive**
Lower		
Material Type	**Silt**	**Silt**
Consistency	**Cohesive**	**Cohesive**

Bank Erosion	Left	Right
Erosion Length (ft)	**607**	**489**
Erosion Height (ft)	**4.36**	**4.46**
Revetmt. Type	**None**	**Rip-Rap**
Revetmt. Length (ft)	**0**	**394**

Near Bank Veg. Type	Left	Right
Dominant	**Herbaceous**	**Herbaceous**
Sub-dominant	**Pasture**	**Pasture**

Bank Canopy	Left	Right
Canopy %	**1-25**	**0**

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	**0-25**	**0-25**
Sub-dominant	**>100**	**None**
W less than 25	**2,100**	**2,621**

Buffer Veg. Type	Left	Right
Dominant	**Deciduous**	**Herbaceous**
Sub-dominant	**Herbaceous**	**None**

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	**Forest**	**Pasture**
Sub-dominant	**Pasture**	**None**
Mass Failures	**152**	**0**
Height	**61**	**0**
Gullies	**0**	
Length	**0**	
Height	**0.00**	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Minimal**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **2**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments **None**

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg **None**

4.9 # of Beaver Dams **3**

Affected Length (ft) **700**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
1	1	0

Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
1	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **Yes**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Phase 2 Segment Summary

Reach # M17 | Observers: KLU | Segment Location: From 1000 ft downstream of States Prison Hollow Ext bridge to Kelly Farm.

March 3, 2010 SGAT Version: 4.56
Segment: B | Why Not assessed: | Completion Date: September 10, 2007 | Rain: Yes

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation: **Banks and Buffers**
1.2 Alluvial Fan: **None**
1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	40

1.4 Adjacent Side	Left	Right
Hillside Slope	Extremely	Extremely
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features
Valley Width (ft): 650
Width Determination: Estimated
Confinement Type: Very Broad
Rock Gorge?: No
Human-caused Change?: No

Step 2. Stream Channel

2.1 Bankfull Width: 34
2.2 Max Depth (ft): 6.90
2.3 Mean Depth (ft): 4.96
2.4 Floodprone Width (ft): 340

Notes:

Segment updated with observations on 9/10/2007, relying on cross sections from 9/21/2002. Original assessment underestimated bankfull elevation (and overestimated incision). Stream type and condition have been updated accordingly.

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln: 6.90 ft.
Human Elev Floodpln: 0.00 ft.
2.6 Width/Depth Ratio: 6.79
2.7 Entrenchment Ratio: 10.09
2.8 Incision Ratio: 1.00
Human Elevated Inc Rat: 0.00
2.9 Sinuosity: Oxbows
2.10 Riffles Type: Complete
2.11 Riffle/Step Spacing (ft): 150
2.12 Substrate Composition

Bedrock	0%
Boulder	0%
Cobble	0%
Coarse Gravel	0%
Fine Gravel	60%
Sand	40%
Silt and smaller	0%

Silt/Clay Present?: Yes
Detritus: 5 %
Large Woody: 12
2.13 Average Largest Particle on

Bed	4.0	mm
Bar	10.0	mm

2.14 Stream Type
Stream Type: E
Bed Material: Gravel
Subclass Slope: None
Bed Form: Riffle-Pool
Field Measured Slope:
2.15 Reference Stream Type
(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks
Typical Bank Slope: Steep

Bank Texture	Left	Right
Upper		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive
Lower		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	1,317	1,495
Erosion Height (ft)	4.18	4.43
Revetmt. Type	Rip-Rap	Rip-Rap
Revetmt. Length (ft)	275	54

Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	None	None

Bank Canopy	Left	Right
Canopy %	0	0

Mid-Channel Canopy: Open

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	None	None
W less than 25	189	0

Buffer Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	None	None

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Shrubs/Saplin	Shrubs/Saplin
Sub-dominant	Forest	Forest
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps: Abundant
4.2 Adjacent Wetlands: Abundant
4.3 Flow Status: Moderate
4.4 # of Debris Jams: 2
4.5 Flow Regulation Type: None
Flow Regulation Use
Impoundments: None
Impoundmt. Location
4.6 Up/Down strm flow reg: None
(old) Upstrm Flow Reg: None

4.9 # of Beaver Dams: 6
Affected Length (ft): 1,750

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
8	12	3

Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
2	2	1	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal: No
5.5 Straightening: Straightening
Straightening Length: 863
5.5 Dredging: None

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M17** Segment: **C** Completion Date: **September 10, 2007**

Organization: **Lewis Creek Association** Observers: **KLU** Why Not assessed: Rain: **Yes**

Segment Length (ft): **2,005** Segment Location: **Upstream segment from base of bedrock gorge along States Prison Hollow Road, crossing**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**

1.2 Alluvial Fan **Yes**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	**311**	**335**
height	**5**	**4**
Roads	**925**	**872**
height	**6**	**5**
Railroads	**0**	**0**
height	**0**	**0**
Improved Paths	**0**	**0**
height	**0**	**0**
Development	**395**	**43**

1.4 Adjacent Side	Left	Right
Hillside Slope	**Very Steep**	**Very Steep**
Continuous w/	**Sometimes**	**Never**
W/in 1 Bankfill	**Sometimes**	**Never**
Texture	**Not Evalua**	**Not Evalua**

1.5 Valley Features

Valley Width (ft) **450**

Width Determination **Estimated**

Confinement Type **Broad**

Rock Gorge? **No**

Human-caused Change? **yes**

Step 2. Stream Channel

2.1 Bankfull Width **34**

2.2 Max Depth (ft) **3.50**

2.3 Mean Depth (ft) **2.89**

2.4 Floodprone Width (ft) **660**

Notes:

Updated with observations and repeat cross section 9/10/2007; relying also on observations from 2002 and from 9/18/2007 during landowner outreach. "Alluvial fan" was selected to capture the significant slope change (from approx 7% to less than 2%)

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **4.90** ft.

Human Elev Floodpln **5.10** ft.

2.6 Width/Depth Ratio **11.66**

2.7 Entrenchment Ratio **19.58**

2.8 Incision Ratio **1.40**

Human Elevated Inc Rat **1.46**

2.9 Sinuosity **Low**

2.10 Riffles Type **Complete**

2.11 Riffle/Step Spacing (ft) **116**

2.12 Substrate Composition

Bedrock	**0** %
Boulder	**0** %
Cobble	**5** %
Coarse Gravel	**39** %
Fine Gravel	**20** %
Sand	**34** %
Silt and smaller	**2** %

Silt/Clay Present? **No**

Detritus **5** %

Large Woody **9**

2.13 Average Largest Particle on

Bed **64.0** mm

Bar **N/A** mm

2.14 Stream Type

Stream Type: **C**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

C 4 Non Riffle-Pool

3.3 old	Amount	Mean Height
Failures	**None**	**0.00**
Gullies	**None**	**0.00**

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	**Mix**	**Mix**
Consistency	**Cohesive**	**Cohesive**
Lower		
Material Type	**Silt**	**Silt**
Consistency	**Cohesive**	**Cohesive**

Bank Erosion	Left	Right
Erosion Length (ft)	**162**	**270**
Erosion Height (ft)	**3.00**	**3.00**
Revetmt. Type	**None**	**Rip-Rap**
Revetmt. Length (ft)	**0**	**198**

Near Bank Veg. Type	Left	Right
Dominant	**Herbaceous**	**Herbaceous**
Sub-dominant	**Deciduous**	**Deciduous**

Bank Canopy	Left	Right
Canopy %	**51-75**	**1-25**

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	**>100**	**0-25**
Sub-dominant	**51-100**	**26-50**
W less than 25	**94**	**551**

Buffer Veg. Type	Left	Right
Dominant	**Deciduous**	**Deciduous**
Sub-dominant	**Coniferous**	**Herbaceous**

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	**Forest**	**Hay**
Sub-dominant	**None**	**Residential**
Mass Failures	**0**	**0**
Height	**0**	**0**
Gullies	**0**	
Length	**0**	
Height	**0.00**	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Minimal**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **2**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments **None**

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg **None**

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
1	**1**	**1**
Diagonal	**Delta**	**Island**
1	**0**	**0**

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
2	**0**	**0**	**0**

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	**0**	**No**

5.4 Stream Ford or Animal **No**

5.5 Straightening **With Windrowing**

Straightening Length: **1,287**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M18** Segment: **0** Completion Date: **August 10, 2002**

Organization: **Lewis Creek Association** Observers: **Staci Pomeroy, B. Eliason, Joe** Why Not assessed: Rain: **No**

Segment Length (ft): **1,446** Segment Location: **From States Prison Hollow Road crossing downstream to States Prison Hollow Road**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **None**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	**140**	**0**
height	**4**	**0**
Roads	**1,397**	**42**
height	**0**	**0**
Railroads	**0**	**0**
height	**0**	**0**
Improved Paths	**0**	**0**
height	**0**	**0**
Development	**217**	**242**

1.4 Adjacent Side	Left	Right
Hillside Slope	**Extremely**	**Steep**
Continuous w/	**Sometimes**	**Sometimes**
W/in 1 Bankfill	**Always**	**Always**
Texture	**Mixed**	**Mixed**

1.5 Valley Features

Valley Width (ft) **120**

Width Determination **Measured**

Confinement Type **Semi-confined**

Rock Gorge? **Yes**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **50**

2.2 Max Depth (ft) **4.50**

2.3 Mean Depth (ft) **3.90**

2.4 Floodprone Width (ft) **110**

Notes:

Features indexed and DMS records updated in Jan 2008 by SMRC, relying on original 2002 Ph2 data. Select features updated based on limited field observations: 7/7/2007 (armored sites of mass failures from repair of washed out road, stormwater road culverts)

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **4.50** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **12.82**

2.7 Entrenchment Ratio **2.20**

2.8 Incision Ratio **1.00**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Low**

2.10 Riffles Type **Complete**

2.11 Riffle/Step Spacing (ft) **30**

2.12 Substrate Composition

Bedrock	**50** %
Boulder	**20** %
Cobble	**15** %
Coarse Gravel	**5** %
Fine Gravel	**5** %
Sand	**5** %
Silt and smaller	**0** %

Silt/Clay Present? **No**

Detritus **10** %

Large Woody **20**

2.13 Average Largest Particle on

Bed **3.5** **inches**

Bar **N/A** **inches**

2.14 Stream Type

Stream Type: **B**

Bed Material: **Boulder**

Subclass Slope: **a**

Bed Form: **Step-Pool**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	**None**	**0.00**
Gullies	**None**	**0.00**

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	**Mix**	**Mix**
Consistency	**Cohesive**	**Cohesive**
Lower		
Material Type	**Bedrock**	**Bedrock**
Consistency	**Cohesive**	**Cohesive**

Bank Erosion	Left	Right
Erosion Length (ft)	**194**	**0**
Erosion Height (ft)	**3.00**	**0.00**
Revetmt. Type	**Rip-Rap**	**None**
Revetmt. Length (ft)	**69**	**0**

Near Bank Veg. Type	Left	Right
Dominant	**Deciduous**	**Coniferous**
Sub-dominant	**None**	**None**

Bank Canopy	Left	Right
Canopy %	**76-100**	**76-100**

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	**51-100**	**>100**
Sub-dominant	**0-25**	**0-25**
W less than 25	**324**	**148**

Buffer Veg. Type	Left	Right
Dominant	**Deciduous**	**Coniferous**
Sub-dominant	**Coniferous**	**Mixed Trees**

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	**Forest**	**Forest**
Sub-dominant	**None**	**None**
Mass Failures	**93**	**0**
Height	**30**	**0**
Gullies	**0**	
Length	**0**	
Height	**0.00**	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **None**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **2**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.7 StormwaterInputs

Field Ditch	**0**	Road Ditch	**5**
Other	**0**	Tile Drain	**0**
Overland Flow	**0**	Urb Strm Wtr Pipe	**0**

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	**0**	**0**

Diagonal	Delta	Island
0	**0**	**1**

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
1	**0**	**0**	**1**

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	**0**	**No**

5.4 Stream Ford or Animal **No**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Phase 2 Segment Summary

March 3, 2010 SGAT Version: 4.56

Reach # M19 Segment: A Completion Date: October 16, 2002

Observers: SP, SH, KLU, Steve, Ethan, Nel Why Not assessed: Rain: Yes

Segment Location: Downstream portion of reach at Cota Ballfields off States Prison Hollow Road.

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	34	0
height	8	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	341	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Very Steep	Steep
Continuous w/	Never	Never
W/in 1 Bankfill	Never	Never
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft) **875**

Width Determination **Estimated**

Confinement Type **Very Broad**

Rock Gorge? **No**

Human-caused Change? **yes**

Step 2. Stream Channel

2.1 Bankfull Width **27**

2.2 Max Depth (ft) **4.58**

2.3 Mean Depth (ft) **3.35**

2.4 Floodprone Width (ft) **300**

Notes:

Assessment (updated 2007) relies on Phase 3 longitudinal profile, cross sections and pebble counts completed by VTDEC in Oct 2002, as well as field observations from 9/18/2001, 6/13/2002 (training day), and other limited field visits 2003 to 2007. States

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **5.38** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **8.00**

2.7 Entrenchment Ratio **11.19**

2.8 Incision Ratio **1.17**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **High**

2.10 Riffles Type **Complete**

2.11 Riffle/Step Spacing (ft) **280**

2.12 Substrate Composition

Bedrock	0%
Boulder	0%
Cobble	1%
Coarse Gravel	29%
Fine Gravel	32%
Sand	32%
Silt and smaller	6%

Silt/Clay Present? **Yes**

Detritus **5** %

Large Woody **0**

2.13 Average Largest Particle on

Bed **0.0**

Bar **0.0**

Not Evaluated

2.14 Stream Type

Stream Type: **E**

Bed Material: **Gravel**

Subclass Slope: **c**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

E 4 c Riffle-Pool

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Sand	Sand
Consistency	Non-cohesive	Non-cohesive
Lower		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive
Bank Erosion	Left	Right
Erosion Length (ft)	579	463
Erosion Height (ft)	4.75	4.62
Revetmt. Type	None	Rip-Rap
Revetmt. Length (ft)	0	445
Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin
Bank Canopy	Left	Right
Canopy %	26-50	1-25
Mid-Channel Canopy		Open

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	26-50
Sub-dominant	None	51-100
W less than 25	0	0
Buffer Veg. Type	Left	Right
Dominant	Shrubs/Saplin	Shrubs/Saplin
Sub-dominant	Herbaceous	Herbaceous

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Shrubs/Saplin	Residential
Sub-dominant	None	Shrubs/Saplin
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps	Minimal
4.2 Adjacent Wetlands	Minimal
4.3 Flow Status	Moderate
4.4 # of Debris Jams	0
4.5 Flow Regulation Type	None
Flow Regulation Use	
Impoundments	None
Impoundmt. Location	
4.6 Up/Down strm flow reg	None
(old) Upstrm Flow Reg	None

4.9 # of Beaver Dams	1
Affected Length (ft)	100

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
2	5	0
Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**

5.5 Straightening **Straightening**

Straightening Length: **372**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Phase 2 Segment Summary

March 3, 2010 SGAT Version: 4.56

Reach # M19 Segment: B Completion Date: September 18, 2001

Observers: SP, SH, Christa, Mike, KLU Why Not assessed: Rain: No

Segment Location: From farm bridge at upstream end of reach to Cota Ballfields; west of Route 116 and

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	1,693	1,335
height	15	5
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	72

1.4 Adjacent Side	Left	Right
Hillside Slope	Very Steep	Extremely
Continuous w/	Never	Sometimes
W/in 1 Bankfill	Never	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft) **980**

Width Determination **Estimated**

Confinement Type **Very Broad**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **33**

2.2 Max Depth (ft) **3.10**

2.3 Mean Depth (ft) **2.19**

2.4 Floodprone Width (ft) **150**

Notes:

Relied on field observations, longitudinal profile, cross sections and pebble counts from Sept 2001 assessment (VTDEC) to update to 2007 protocols; also supplemented with limited field observations of the segment from 2002 - 2007 (SMRC). Route 116

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **3.90** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **15.16**

2.7 Entrenchment Ratio **4.52**

2.8 Incision Ratio **1.26**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Low**

2.10 Riffles Type **Complete**

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Bedrock	0%
Boulder	0%
Cobble	6%
Coarse Gravel	33%
Fine Gravel	24%
Sand	31%
Silt and smaller	6%

Silt/Clay Present? **Yes**

Detritus **5** %

Large Woody **0**

2.13 Average Largest Particle on

Bed **0.0**

Bar **0.0**

Not Evaluated

2.14 Stream Type

Stream Type: **C**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Sand	Sand
Consistency	Non-cohesive	Non-cohesive
Lower		
Material Type	Gravel	Gravel
Consistency	Non-cohesive	Non-cohesive
Bank Erosion	Left	Right
Erosion Length (ft)	1,181	548
Erosion Height (ft)	3.48	4.17
Revetmt. Type	Rip-Rap	Multiple
Revetmt. Length (ft)	841	1,207
Near Bank Veg. Type	Left	Right
Dominant	Deciduous	Deciduous
Sub-dominant	Herbaceous	Herbaceous
Bank Canopy	Left	Right
Canopy %	26-50	26-50

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	26-50	26-50
Sub-dominant	>100	>100
W less than 25	286	1,150
Buffer Veg. Type	Left	Right
Dominant	Deciduous	Deciduous
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Crop	Crop
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin
Mass Failures	0	0
Height	0	0

Gullies **0**

Length **0**

Height **0.00**

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Minimal**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **1**

4.5 Flow Regulation Type **Small**

Flow Regulation Use **Other**

Impoundments **None**

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg **None**

4.9 # of Beaver Dams **4**

Affected Length (ft) **300**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
3	17	0
Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	1	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **Yes**

5.5 Straightening **Straightening**

Straightening Length: **6,408**

5.5 Dredging **Gravel Mining**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M20** Segment: **A** Completion Date: **November 7, 2006**

Organization: **Lewis Creek Association** Observers: **KLU, BOS** Why Not assessed: Rain: **No**

Segment Length (ft): **2,294** Segment Location: **Downstream half of reach, which crosses under Parsonage Road bridge and ends upstream**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	174	0
height	8	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	73

1.4 Adjacent Side	Left	Right
Hillside Slope	Extremely	Steep
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft) **510**

Width Determination **Estimated**

Confinement Type **Very Broad**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **49**

2.2 Max Depth (ft) **2.80**

2.3 Mean Depth (ft) **2.23**

2.4 Floodprone Width (ft) **114**

Notes:

Cross section repeated and visual observations recorded in November 2006 to update an assessment originally conducted in July of 2002. A short section of Parsonage Road passes parallel to the Creek within the right-bank corridor, but not significant enough

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **5.30** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **21.88**

2.7 Entrenchment Ratio **2.34**

2.8 Incision Ratio **1.89**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Moderate**

2.10 Riffles Type **Sedimented**

2.11 Riffle/Step Spacing (ft) **225**

2.12 Substrate Composition

Bedrock	0%
Boulder	5%
Cobble	39%
Coarse Gravel	28%
Fine Gravel	16%
Sand	12%
Silt and smaller	0%

Silt/Clay Present? **No**

Detritus **5** %

Large Woody **4**

2.13 Average Largest Particle on

Bed **9.0** **inches**

Bar **5.4** **inches**

2.14 Stream Type

Stream Type: **C**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Sand	Sand
Consistency	Non-cohesive	Non-cohesive
Lower		
Material Type	Gravel	Gravel
Consistency	Non-cohesive	Non-cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	206	261
Erosion Height (ft)	4.00	4.93
Revetmt. Type	Rip-Rap	None
Revetmt. Length (ft)	207	0

Near Bank Veg. Type	Left	Right
Dominant	Deciduous	Deciduous
Sub-dominant	Herbaceous	Herbaceous

Bank Canopy	Left	Right
Canopy %	51-75	51-75

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	0-25	>100
Sub-dominant	26-50	0-25
W less than 25	602	360

Buffer Veg. Type	Left	Right
Dominant	Deciduous	Deciduous
Sub-dominant	Herbaceous	None

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Hay	Forest
Sub-dominant	Pasture	Crop
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **None**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **0**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments **None**

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg **None**

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	3	0

Diagonal	Delta	Island
2	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
1	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **Yes**

5.5 Straightening **Straightening**

Straightening Length: **1,532**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M20** Segment: **B** Completion Date: **November 7, 2006**

Organization: **Lewis Creek Association** Observers: **KU, BOS** Why Not assessed: Rain: **No**

Segment Length (ft): **1,738** Segment Location: **Forested upstream half of M20 from confluence of High Knob tributary (T6) downstream to**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	402	0
height	2	0
Development	0	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Steep	Steep
Continuous w/	Never	Sometimes
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft) **270**

Width Determination **Estimated**

Confinement Type **Narrow**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **52**

2.2 Max Depth (ft) **2.40**

2.3 Mean Depth (ft) **1.55**

2.4 Floodprone Width (ft) **61**

Notes:

Cross section repeated and visual observations recorded in November 2006 to update an assessment originally conducted in July of 2002. Improved path along right bank appears to be 4-wheeler trail and may be used for occasional access to RB field further

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **6.20** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **33.23**

2.7 Entrenchment Ratio **1.18**

2.8 Incision Ratio **2.58**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Moderate**

2.10 Riffles Type **Sedimented**

2.11 Riffle/Step Spacing (ft) **225**

2.12 Substrate Composition

Bedrock	0%
Boulder	10%
Cobble	53%
Coarse Gravel	22%
Fine Gravel	3%
Sand	12%
Silt and smaller	0%

Silt/Clay Present? **No**

Detritus **2** %

Large Woody **6**

2.13 Average Largest Particle on

Bed **350.0** mm

Bar **N/A** mm

2.14 Stream Type

Stream Type: **F**

Bed Material: **Cobble**

Subclass Slope: **c**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Moderate**

Bank Texture	Left	Right
Upper		
Material Type	Gravel	Gravel
Consistency	Non-cohesive	Non-cohesive
Lower		
Material Type	Boulder/Cobbl	Boulder/Cobbl
Consistency	Non-cohesive	Non-cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	0	0
Erosion Height (ft)	0.00	0.00
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Coniferous	Coniferous
Sub-dominant	None	None

Bank Canopy	Left	Right
Canopy %	76-100	76-100

Mid-Channel Canopy **Closed**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	None	26-50
W less than 25	0	0

Buffer Veg. Type	Left	Right
Dominant	Coniferous	Coniferous
Sub-dominant	None	None

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Forest
Sub-dominant	None	Crop
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps	Minimal
4.2 Adjacent Wetlands	Minimal
4.3 Flow Status	Moderate
4.4 # of Debris Jams	1
4.5 Flow Regulation Type	None
Flow Regulation Use	
Impoundments	None
Impoundmt. Location	
4.6 Up/Down strm flow reg	None
(old) Upstrm Flow Reg	None

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
1	5	0

Diagonal	Delta	Island
3	1	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
1	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**

5.5 Straightening **Straightening**

Straightening Length: **690**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M21** Segment: **A** Completion Date: **November 7, 2006**

Organization: **Lewis Creek Association** Observers: **KLU, BOS** Why Not assessed: Rain: **Yes**

Segment Length (ft): **1,280** Segment Location: **Short section of semi-confined channel alongside Camp Common Ground, crossing under**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	335	0
height	7	0
Development	0	67

1.4 Adjacent Side	Left	Right
Hillside Slope	Steep	Steep
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Always	Always
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft) **80**

Width Determination **Measured**

Confinement Type **Semi-confined**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **31**

2.2 Max Depth (ft) **3.60**

2.3 Mean Depth (ft) **2.56**

2.4 Floodprone Width (ft) **65**

Notes:

Cross section measured in Sept of 2002. Reviewed in Sept 2007 (SMRC) and bankfull elevation raised consistent with field observations during bankfull event on 5/19/2006. Improved path along right bank is located downstream of Tatro Road crossing,

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **5.10** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **12.19**

2.7 Entrenchment Ratio **2.08**

2.8 Incision Ratio **1.42**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Low**

2.10 Riffles Type **Not Applicable**

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Bedrock	0%
Boulder	10%
Cobble	45%
Coarse Gravel	30%
Fine Gravel	10%
Sand	5%
Silt and smaller	0%

Silt/Clay Present? **Yes**

Detritus **0** %

Large Woody **0**

2.13 Average Largest Particle on

Bed **0.0**

Bar **N/A**

Not Evaluated

2.14 Stream Type

Stream Type: **B**

Bed Material: **Cobble**

Subclass Slope: **c**

Bed Form: **Plane Bed**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

B 3 c Plane Bed

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Moderate**

Bank Texture	Left	Right
Upper		
Material Type	Boulder/Cobbl	Boulder/Cobbl
Consistency	Non-cohesive	Non-cohesive
Lower		
Material Type	Boulder/Cobbl	Boulder/Cobbl
Consistency	Non-cohesive	Non-cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	0	0
Erosion Height (ft)	0.00	0.00
Revetmt. Type	Rip-Rap	Rip-Rap
Revetmt. Length (ft)	57	58

Near Bank Veg. Type	Left	Right
Dominant	Deciduous	Deciduous
Sub-dominant	None	None

Bank Canopy	Left	Right
Canopy %	51-75	51-75

Mid-Channel Canopy **Closed**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	26-50	>100
Sub-dominant	None	None
W less than 25	0	0

Buffer Veg. Type	Left	Right
Dominant	Mixed Trees	Mixed Trees
Sub-dominant	None	None

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Forest
Sub-dominant	Hay	None
Mass Failures	0	44
Height	0	12
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Minimal**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **1**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.7 StormwaterInputs

Field Ditch	0	Road Ditch	1
Other	0	Tile Drain	0
Overland Flow	1	Urb Strm Wtr Pipe	0

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	0	0

Diagonal	Delta	Island
0	1	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	1	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M21** Segment: **B** Completion Date: **November 7, 2006**

Organization: **Lewis Creek Association** Observers: **KLU, BOS** Why Not assessed: Rain: **Yes**

Segment Length (ft): **3,118** Segment Location: **Downstream of Meadow Lark Lane crossing extending to Camp Common Ground.**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	102	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Hilly	Hilly
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft) **500**

Width Determination **Estimated**

Confinement Type **Very Broad**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **35**

2.2 Max Depth (ft) **3.50**

2.3 Mean Depth (ft) **2.40**

2.4 Floodprone Width (ft) **94**

Notes:

Cross section repeated and visual observations recorded in November 2006 to update an assessment originally conducted in Sept of 2002. New development (residential home) within right bank corridor as of 2006 at downstream end of segment. 4-wheeler

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **5.20** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **14.75**

2.7 Entrenchment Ratio **2.66**

2.8 Incision Ratio **1.49**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Moderate**

2.10 Riffles Type **Complete**

2.11 Riffle/Step Spacing (ft) **200**

2.12 Substrate Composition

Bedrock	0%
Boulder	13%
Cobble	16%
Coarse Gravel	23%
Fine Gravel	14%
Sand	34%
Silt and smaller	0%

Silt/Clay Present? **No**

Detritus **20** %

Large Woody **12**

2.13 Average Largest Particle on

Bed **250.0** **mm**

Bar **60.0** **mm**

2.14 Stream Type

Stream Type: **C**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive
Lower		
Material Type	Sand	Sand
Consistency	Non-cohesive	Non-cohesive
Bank Erosion	Left	Right
Erosion Length (ft)	650	953
Erosion Height (ft)	5.12	3.75
Revetmt. Type	None	Rip-Rap
Revetmt. Length (ft)	0	128
Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Coniferous	Coniferous
Bank Canopy	Left	Right
Canopy %	1-25	1-25

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	None	0-25
W less than 25	0	543
Buffer Veg. Type	Left	Right
Dominant	Mixed Trees	Mixed Trees
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Forest
Sub-dominant	None	Crop
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Abundant**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **6**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
1	13	2
Diagonal	Delta	Island
2	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
1	3	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **Yes**

5.5 Straightening **Straightening**

Straightening Length: **618**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Lewis Creek** Reach # **M22** Segment: **0** Completion Date: **August 29, 2002**

Organization: **Lewis Creek Association** Observers: **DF/CF/MI/KU/SP** Why Not assessed: Rain: **No**

Segment Length (ft): **7,944** Segment Location: **From upstream of Hillsboro Road crossing, downstream under Route 116, Meadowlark**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **None**

1.2 Alluvial Fan **Yes**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	**425**	**0**
height	**5**	**0**
Roads	**1,061**	**0**
height	**7**	**0**
Railroads	**0**	**0**
height	**0**	**0**
Improved Paths	**0**	**0**
height	**0**	**0**
Development	**163**	**219**

1.4 Adjacent Side	Left	Right
Hillside Slope	**Extremely**	**Steep**
Continuous w/	**Never**	**Never**
W/in 1 Bankfill	**Never**	**Sometimes**
Texture	**Not Evalua**	**Not Evalua**

1.5 Valley Features

Valley Width (ft) **680**

Width Determination **Estimated**

Confinement Type **Very Broad**

Rock Gorge? **No**

Human-caused Change? **Yes**

Step 2. Stream Channel

2.1 Bankfull Width **35**

2.2 Max Depth (ft) **2.14**

2.3 Mean Depth (ft) **1.50**

2.4 Floodprone Width (ft) **400**

Notes:

Updated to 2007 protocols including FIT in Jan 2008 by SMRC, relying on 2002 Ph2 reach-wide observations and limited 2005 observations. Route 116 parallels the reach, causing HCCVW, but not substantial enough to change confinement (Very Broad). Four

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **3.51** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **23.53**

2.7 Entrenchment Ratio **11.33**

2.8 Incision Ratio **1.64**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Low**

2.10 Riffles Type **Complete**

2.11 Riffle/Step Spacing (ft) **250**

2.12 Substrate Composition

Bedrock	**0** %
Boulder	**1** %
Cobble	**30** %
Coarse Gravel	**39** %
Fine Gravel	**15** %
Sand	**15** %
Silt and smaller	**0** %

Silt/Clay Present? **No**

Detritus **10** %

Large Woody **1**

2.13 Average Largest Particle on

Bed **4.0** **inches**

Bar **4.0** **inches**

2.14 Stream Type

Stream Type: **C**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	**None**	**0.00**
Gullies	**None**	**0.00**

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	**Sand**	**Sand**
Consistency	**Non-cohesive**	**Non-cohesive**
Lower		
Material Type	**Gravel**	**Gravel**
Consistency	**Non-cohesive**	**Non-cohesive**

Bank Erosion	Left	Right
Erosion Length (ft)	**1,871**	**1,449**
Erosion Height (ft)	**3.23**	**3.08**
Revetmt. Type	**Rip-Rap**	**Rip-Rap**
Revetmt. Length (ft)	**739**	**260**

Near Bank Veg. Type	Left	Right
Dominant	**Herbaceous**	**Herbaceous**
Sub-dominant	**Shrubs/Saplin**	**Shrubs/Saplin**

Bank Canopy	Left	Right
Canopy %	**1-25**	**1-25**

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	**0-25**	**0-25**
Sub-dominant	**26-50**	**>100**
W less than 25	**2,113**	**2,682**

Buffer Veg. Type	Left	Right
Dominant	**Deciduous**	**Deciduous**
Sub-dominant	**Shrubs/Saplin**	**Shrubs/Saplin**

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	**Hay**	**Shrubs/Saplin**
Sub-dominant	**Crop**	**Hay**
Mass Failures	**0**	**43**
Height	**0**	**9**
Gullies	**0**	
Length	**0**	
Height	**0.00**	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Minimal**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **0**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments **None**

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg **None**

4.7 StormwaterInputs

Field Ditch	**0**	Road Ditch	**0**
Other	**0**	Tile Drain	**0**
Overland Flow	**1**	Urb Strm Wtr Pipe	**0**

4.9 # of Beaver Dams **4**

Affected Length (ft) **203**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
1	**15**	**0**

Diagonal	Delta	Island
1	**1**	**0**

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
13	**0**	**0**	**0**

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
2	**0**	**No**

5.4 Stream Ford or Animal **Yes**

5.5 Straightening **With Windrowing**

Straightening Length: **3,906**

5.5 Dredging **Dredging**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek** | **Phase 2 Segment Summary** | March 3, 2010 | SGAT Version: 4.56

Stream: **Lewis Creek** | Reach # **M23** | Segment: **0** | Completion Date: **July 8, 2008**

Organization: **Lewis Creek Association** | Observers: **KLU (SMRC); JC (MMI)** | Why Not assessed: | Rain: **Yes**

Segment Length (ft): **4,505** | Segment Location: **Flows to the southwest along Ireland Road passing intersection with Meehan Rd.**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **None**

1.2 Alluvial Fan **Yes**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	**710**	**0**
height	**7**	**0**
Roads	**2,114**	**0**
height	**10**	**0**
Railroads	**0**	**0**
height	**0**	**0**
Improved Paths	**0**	**0**
height	**0**	**0**
Development	**316**	**14**

1.4 Adjacent Side	Left	Right
Hillside Slope	**Very Steep**	**Extremely**
Continuous w/	**Sometimes**	**Sometimes**
W/in 1 Bankfill	**Sometimes**	**Sometimes**
Texture	**Not Evalua**	**Not Evalua**

1.5 Valley Features

Valley Width (ft) **180**

Width Determination **Estimated**

Confinement Type **Narrow**

Rock Gorge? **No**

Human-caused Change? **Yes**

Step 2. Stream Channel

2.1 Bankfull Width **32**

2.2 Max Depth (ft) **1.90**

2.3 Mean Depth (ft) **1.13**

2.4 Floodprone Width (ft) **38**

Notes:

Original 2002 assessment updated in July 2008. Valley confinement varies from SC to VB, but averages Narrow. Ireland Rd encroaches along LB, causing reduction in valley width, but still unconfined overall. Bedrock offers lateral grade control within the

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **7.50** ft.

Human Elev Floodpln **8.40** ft.

2.6 Width/Depth Ratio **28.32**

2.7 Entrenchment Ratio **1.19**

2.8 Incision Ratio **3.95**

Human Elevated Inc Rat **4.42**

2.9 Sinuosity **Low**

2.10 Riffles Type **Eroded**

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Bedrock	**0** %
Boulder	**36** %
Cobble	**12** %
Coarse Gravel	**22** %
Fine Gravel	**11** %
Sand	**19** %
Silt and smaller	**0** %

Silt/Clay Present? **No**

Detritus **3** %

Large Woody **34**

2.13 Average Largest Particle on

Bed **523.0** **mm**

Bar **216.0** **mm**

2.14 Stream Type

Stream Type: **F**

Bed Material: **Gravel**

Subclass Slope: **b**

Bed Form: **Plane Bed**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	**None**	**0.00**
Gullies	**None**	**0.00**

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	**Gravel**	**Gravel**
Consistency	**Non-cohesive**	**Non-cohesive**
Lower		
Material Type	**Boulder/Cobbl**	**Boulder/Cobbl**
Consistency	**Non-cohesive**	**Non-cohesive**

Bank Erosion	Left	Right
Erosion Length (ft)	**478**	**454**
Erosion Height (ft)	**3.13**	**3.42**
Revetmt. Type	**Rip-Rap**	**None**
Revetmt. Length (ft)	**63**	**0**

Near Bank Veg. Type	Left	Right
Dominant	**Deciduous**	**Coniferous**
Sub-dominant	**Coniferous**	**Deciduous**

Bank Canopy	Left	Right
Canopy %	**51-75**	**76-100**

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	**26-50**	**>100**
Sub-dominant	**0-25**	**0-25**
W less than 25	**1,451**	**101**

Buffer Veg. Type	Left	Right
Dominant	**Mixed Trees**	**Coniferous**
Sub-dominant	**Shrubs/Saplin**	**Deciduous**

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	**Forest**	**Forest**
Sub-dominant	**Residential**	**Residential**
Mass Failures	**0**	**0**
Height	**0**	**0**
Gullies	**0**	
Length	**0**	
Height	**0.00**	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Abundant**

4.2 Adjacent Wetlands **None**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **3**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.7 StormwaterInputs

Field Ditch	**0**	Road Ditch	**2**
Other	**0**	Tile Drain	**0**
Overland Flow	**5**	Urb Strm Wtr Pipe	**0**

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
3	**2**	**13**

Diagonal	Delta	Island
3	**1**	**0**

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
4	**0**	**0**	**0**

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
2	**0**	**No**

5.4 Stream Ford or Animal **Yes**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek**

Phase 2 Segment Summary

March 3, 2010 SGAT Version: 4.56

Stream: **High Knob Brook** Reach # **T6.01** Segment: **0** Completion Date: **September 24, 2008**

Organization: **Lewis Creek Association** Observers: **j.clark, s.pytlik** Why Not assessed: Rain: **No**

Segment Length (ft): **5,649** Segment Location: **From the bottom of the gorge upstream of Freedom Acres (private road) to the confluence**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **None**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	485	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Extremely	Extremely
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Mixed	Cobble

1.5 Valley Features

Valley Width (ft) **155**

Width Determination **Estimated**

Confinement Type **Broad**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **23**

2.2 Max Depth (ft) **1.80**

2.3 Mean Depth (ft) **1.11**

2.4 Floodprone Width (ft) **155**

Notes:

Reach typically riffle- pool, but does have short sections of exposed bedrock and gorge area as a sub-dominant stream type. No sections long enough to segment out. Quarry on right near top of bank is active and has recently expanded towards stream -no

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **1.90** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **20.42**

2.7 Entrenchment Ratio **6.84**

2.8 Incision Ratio **1.06**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Low**

2.10 Riffles Type **Complete**

2.11 Riffle/Step Spacing (ft) **125**

2.12 Substrate Composition

Bedrock	0%
Boulder	3%
Cobble	17%
Coarse Gravel	40%
Fine Gravel	10%
Sand	13%
Silt and smaller	17%

Silt/Clay Present? **Yes**

Detritus **5** %

Large Woody **27**

2.13 Average Largest Particle on

Bed **257.0** **mm**

Bar **320.0** **mm**

2.14 Stream Type

Stream Type: **C**

Bed Material: **Gravel**

Subclass Slope: **b**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	One	10.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Moderate**

Bank Texture	Left	Right
Upper		
Material Type	Sand	Sand
Consistency	Cohesive	Cohesive
Lower		
Material Type	Gravel	Gravel
Consistency	Cohesive	Cohesive
Bank Erosion	Left	Right
Erosion Length (ft)	188	231
Erosion Height (ft)	3.03	2.81
Revetmt. Type	Rip-Rap	None
Revetmt. Length (ft)	58	0
Near Bank Veg. Type	Left	Right
Dominant	Coniferous	Coniferous
Sub-dominant	Deciduous	Deciduous
Bank Canopy	Left	Right
Canopy %	76-100	76-100
Mid-Channel Canopy	Closed	

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	None	None
W less than 25	499	0
Buffer Veg. Type	Left	Right
Dominant	Coniferous	Coniferous
Sub-dominant	Deciduous	Deciduous

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Forest
Sub-dominant	Residential	Industrial
Mass Failures	37	0
Height	10	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps	Minimal
4.2 Adjacent Wetlands	Minimal
4.3 Flow Status	Moderate
4.4 # of Debris Jams	7
4.5 Flow Regulation Type	None
Flow Regulation Use	
Impoundments	None
Impoundmt. Location	
4.6 Up/Down strm flow reg	None
(old) Upstrm Flow Reg	None

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
4	8	29
Diagonal	Delta	Island
3	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
4	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
1	0	No

5.4 Stream Ford or Animal **Yes**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek** **Phase 2 Segment Summary** March 3, 2010 SGAT Version: 4.56

Stream: **High Knob Brook** Reach # **T6.02** Segment: **A** Completion Date: **November 6, 2008**

Organization: **Lewis Creek Association** Observers: **J.Clark, R.Schiff** Why Not assessed: **bedrock gorge** Rain: **No**

Segment Length (ft): **760** Segment Location: **Bedrock gorge between Big Hollow Road and Freedom Acres private Road**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Grade Controls**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Extremely	Extremely
Continuous w/	Always	Always
W/in 1 Bankfill	Always	Always
Texture	Bedrock	Bedrock

1.5 Valley Features

Valley Width (ft) **10**

Width Determination **Measured**

Confinement Type **Narrowly**

Rock Gorge? **Yes**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **0**

2.2 Max Depth (ft) **0.00**

2.3 Mean Depth (ft) **0.00**

2.4 Floodprone Width (ft) **0**

Notes:

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **0.00** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **0.00**

2.7 Entrenchment Ratio **0.00**

2.8 Incision Ratio **0.00**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity

2.10 Riffles Type

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Silt/Clay Present?

Detritus **0** %

Large Woody **0**

2.13 Average Largest Particle on

Bed **0.0**

Bar **0.0**

2.14 Stream Type

Stream Type:

Bed Material:

Subclass Slope:

Bed Form:

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Bedrock	Bedrock
Consistency	Cohesive	Cohesive
Lower		
Material Type	Bedrock	Bedrock
Consistency	Cohesive	Cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	0	0
Erosion Height (ft)	0.00	0.00
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Coniferous	Coniferous
Sub-dominant		

Bank Canopy	Left	Right
Canopy %	76-100	76-100

Mid-Channel Canopy **Closed**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant		
W less than 25	0	0

Buffer Veg. Type	Left	Right
Dominant	Coniferous	Coniferous
Sub-dominant	Mixed Trees	Mixed Trees

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Forest
Sub-dominant		
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **None**

4.2 Adjacent Wetlands **None**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **0**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments **None**

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg **None**

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	0	0

Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	

5.4 Stream Ford or Animal **No**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek** | **Phase 2 Segment Summary** | March 3, 2010 SGAT Version: 4.56

Stream: **High Knob Brook** Reach # **T6.02** Segment: **B** Completion Date: **November 6, 2008**

Organization: **Lewis Creek Association** Observers: **j.clark, r.schiff** Why Not assessed: Rain: **No**

Segment Length (ft): **1,094** Segment Location: **Start of bedrock grade control down to end of bedrock gorge, in between Big Hollow Road**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Grade Controls**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Extremely	Extremely
Continuous w/	Always	Always
W/in 1 Bankfill	Always	Always
Texture	Silt/Clay	Bedrock

1.5 Valley Features

Valley Width (ft) **26**

Width Determination **Measured**

Confinement Type **Narrowly**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **21**

2.2 Max Depth (ft) **1.80**

2.3 Mean Depth (ft) **1.34**

2.4 Floodprone Width (ft) **26**

Notes:

Narrow valley, lots of grade control. No encroachments.

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **1.90** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **15.30**

2.7 Entrenchment Ratio **1.27**

2.8 Incision Ratio **1.06**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Low**

2.10 Riffles Type **Complete**

2.11 Riffle/Step Spacing (ft) **90**

2.12 Substrate Composition

Bedrock	13%
Boulder	9%
Cobble	18%
Coarse Gravel	29%
Fine Gravel	13%
Sand	13%
Silt and smaller	6%

Silt/Clay Present? **No**

Detritus **2** %

Large Woody **15**

2.13 Average Largest Particle on

Bed **256.0** **mm**

Bar **256.0** **mm**

2.14 Stream Type

Stream Type: **B**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Step-Pool**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Undercut**

Bank Texture	Left	Right
Upper		
Material Type	Bedrock	Silt
Consistency	Cohesive	Non-cohesive
Lower		
Material Type	Gravel	Gravel
Consistency	Non-cohesive	Non-cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	0	0
Erosion Height (ft)	0.00	0.00
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Coniferous	Coniferous
Sub-dominant	Deciduous	Deciduous

Bank Canopy	Left	Right
Canopy %	76-100	76-100

Mid-Channel Canopy **Closed**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	None	None
W less than 25	0	0

Buffer Veg. Type	Left	Right
Dominant	Coniferous	Coniferous
Sub-dominant	Deciduous	Deciduous

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Forest
Sub-dominant	None	None
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Minimal**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **3**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments **None**

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg **None**

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
1	0	8

Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek** | **Phase 2 Segment Summary** | March 3, 2010 SGAT Version: 4.56

Stream: **High Knob Brook** Reach # **T6.03** Segment: **A** Completion Date: **November 6, 2008**

Organization: **Lewis Creek Association** Observers: **j.clark, s.bonney, r.schiff** Why Not assessed: Rain: **Yes**

Segment Length (ft): **2,068** Segment Location: **Downstream end of last field on left bank, downstream from Big Hollow Road to the start of**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Very Steep	Very Steep
Continuous w/	Never	Never
W/in 1 Bankfill	Never	Never
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft) **610**

Width Determination **Measured**

Confinement Type **Very Broad**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **19**

2.2 Max Depth (ft) **1.60**

2.3 Mean Depth (ft) **1.28**

2.4 Floodprone Width (ft) **49**

Notes:

Downstream end of reach transitions to confined valley with bedrock control. Last few hundred feet are locally wider with lots of gravel aggradation. Also forest changes to mature conifers.

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **2.00** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **14.53**

2.7 Entrenchment Ratio **2.62**

2.8 Incision Ratio **1.25**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Moderate**

2.10 Riffles Type **Sedimented**

2.11 Riffle/Step Spacing (ft) **75**

2.12 Substrate Composition

Bedrock	0%
Boulder	1%
Cobble	24%
Coarse Gravel	51%
Fine Gravel	14%
Sand	10%
Silt and smaller	0%

Silt/Clay Present? **No**

Detritus **5** %

Large Woody **19**

2.13 Average Largest Particle on

Bed **241.0** **mm**

Bar **226.0** **mm**

2.14 Stream Type

Stream Type: **C**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Undercut**

Bank Texture	Left	Right
Upper		
Material Type	Sand	Sand
Consistency	Non-cohesive	Non-cohesive
Lower		
Material Type	Gravel	Gravel
Consistency	Non-cohesive	Non-cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	0	0
Erosion Height (ft)	0.00	0.00
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Coniferous	Coniferous
Sub-dominant	Deciduous	Deciduous

Bank Canopy	Left	Right
Canopy %	76-100	76-100

Mid-Channel Canopy **Closed**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	26-50
Sub-dominant	None	>100
W less than 25	0	116

Buffer Veg. Type	Left	Right
Dominant	Coniferous	Mixed Trees
Sub-dominant	Deciduous	Herbaceous

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Forest
Sub-dominant	None	Pasture
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Minimal**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **4**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments **None**

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg **None**

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
3	6	7

Diagonal	Delta	Island
3	1	1

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
1	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
1	0	No

5.4 Stream Ford or Animal **No**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek** | **Phase 2 Segment Summary** | March 3, 2010 SGAT Version: 4.56

Stream: **High Knob Brook** Reach # **T6.03** Segment: **B** Completion Date: **August 29, 2008**

Organization: **Lewis Creek Association** Observers: **j.clark, s.bonney** Why Not assessed: Rain: **Yes**

Segment Length (ft): **1,370** Segment Location: **Along back pasture between Butler Pond and High Knob, after end of straightened section**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Extremely	Steep
Continuous w/	Never	Never
W/in 1 Bankfill	Never	Never
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft) **380**

Width Determination **Measured**

Confinement Type **Very Broad**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **13**

2.2 Max Depth (ft) **1.40**

2.3 Mean Depth (ft) **1.17**

2.4 Floodprone Width (ft) **29**

Notes:

Inactive pasture, currently have one old horse. No traces of horse near channel. Tractor ford looks seldom used.

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **1.80** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **10.90**

2.7 Entrenchment Ratio **2.31**

2.8 Incision Ratio **1.29**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **High**

2.10 Riffles Type **Complete**

2.11 Riffle/Step Spacing (ft) **90**

2.12 Substrate Composition

Bedrock	0%
Boulder	0%
Cobble	14%
Coarse Gravel	58%
Fine Gravel	19%
Sand	9%
Silt and smaller	0%

Silt/Clay Present? **No**

Detritus **2** %

Large Woody **5**

2.13 Average Largest Particle on

Bed **7.9** **inches**

Bar **5.7** **inches**

2.14 Stream Type

Stream Type: **E**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

E 4 Non Riffle-Pool

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Undercut**

Bank Texture	Left	Right
Upper		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive
Lower		
Material Type	Gravel	Gravel
Consistency	Non-cohesive	Non-cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	154	218
Erosion Height (ft)	3.78	3.13
Revetmt. Type	Other	None
Revetmt. Length (ft)	62	0

Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Deciduous
Sub-dominant	Shrubs/Saplin	Herbaceous

Bank Canopy	Left	Right
Canopy %	26-50	76-100

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	26-50	>100
Sub-dominant	0-25	26-50
W less than 25	0	0

Buffer Veg. Type	Left	Right
Dominant	Herbaceous	Deciduous
Sub-dominant	Shrubs/Saplin	Herbaceous

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Pasture	Pasture
Sub-dominant	Forest	Forest
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps	Minimal
4.2 Adjacent Wetlands	Minimal
4.3 Flow Status	Moderate
4.4 # of Debris Jams	1
4.5 Flow Regulation Type	None
Flow Regulation Use	
Impoundments	None
Impoundmt. Location	
4.6 Up/Down strm flow reg	None
(old) Upstrm Flow Reg	None

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
1	8	6
Diagonal	Delta	Island
4	1	1

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
2	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **Yes**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek**

Phase 2 Segment Summary

March 3, 2010 SGAT Version: 4.56

Stream: **Unnamed Trib to High Knob** Reach # **T6.3S1.01** Segment: **0** Completion Date: **November 6, 2008**

Organization: **Lewis Creek Association** Observers: **j.clark, r.schiff** Why Not assessed: Rain: **No**

Segment Length (ft): **1,568** Segment Location: **Downstream of Brown Hill Road Crossing to Beginning of field before confluence with High**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **None**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	**742**	**0**
height	**3**	**0**
Roads	**0**	**0**
height	**0**	**0**
Railroads	**0**	**0**
height	**0**	**0**
Improved Paths	**0**	**0**
height	**0**	**0**
Development	**163**	**0**

1.4 Adjacent Side	Left	Right
Hillside Slope	**Very Steep**	**Flat**
Continuous w/	**Always**	**Always**
W/in 1 Bankfill	**Always**	**Always**
Texture	**Mixed**	**Mixed**

1.5 Valley Features

Valley Width (ft) **1,400**

Width Determination **Measured**

Confinement Type **Very Broad**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **13**

2.2 Max Depth (ft) **1.30**

2.3 Mean Depth (ft) **1.00**

2.4 Floodprone Width (ft) **495**

Notes:

Channel appears to have been moved from mid-filed to edge of valley relatively recently. Bed covered in loose till. Appears to have been a heacut travel up through and stop at the Brown Hill Road culvert upstream of reach. Short berm on right for part of reach.

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **1.40** ft.

Human Elev Floodpln **2.40** ft.

2.6 Width/Depth Ratio **12.50**

2.7 Entrenchment Ratio **39.58**

2.8 Incision Ratio **1.08**

Human Elevated Inc Rat **1.85**

2.9 Sinuosity **Low**

2.10 Riffles Type **Sedimented**

2.11 Riffle/Step Spacing (ft) **38**

2.12 Substrate Composition

Bedrock	**0** %
Boulder	**1** %
Cobble	**40** %
Coarse Gravel	**33** %
Fine Gravel	**17** %
Sand	**9** %
Silt and smaller	**0** %

Silt/Clay Present? **No**

Detritus **5** %

Large Woody **6**

2.13 Average Largest Particle on

Bed **7.6** **inches**

Bar **5.8** **inches**

2.14 Stream Type

Stream Type: **C**

Bed Material: **Gravel**

Subclass Slope: **b**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	**None**	**0.00**
Gullies	**None**	**0.00**

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Undercut**

Bank Texture	Left	Right
Upper		
Material Type	**Silt**	**Silt**
Consistency	**Non-cohesive**	**Non-cohesive**
Lower		
Material Type	**Mix**	**Mix**
Consistency	**Non-cohesive**	**Non-cohesive**

Bank Erosion	Left	Right
Erosion Length (ft)	**261**	**305**
Erosion Height (ft)	**3.00**	**2.69**
Revetmt. Type	**None**	**None**
Revetmt. Length (ft)	**0**	**0**

Near Bank Veg. Type	Left	Right
Dominant	**Deciduous**	**Herbaceous**
Sub-dominant	**Coniferous**	**Deciduous**

Bank Canopy	Left	Right
Canopy %	**76-100**	**26-50**

Mid-Channel Canopy **Closed**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	**>100**	**0-25**
Sub-dominant	**51-100**	**26-50**
W less than 25	**0**	**718**

Buffer Veg. Type	Left	Right
Dominant	**Mixed Trees**	**Herbaceous**
Sub-dominant	**None**	**Mixed Trees**

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	**Forest**	**Pasture**
Sub-dominant	**Residential**	**Crop**
Mass Failures	**0**	**0**
Height	**0**	**0**

Gullies **0**

Length **0**

Height **0.00**

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **None**

4.2 Adjacent Wetlands **None**

4.3 Flow Status **Low**

4.4 # of Debris Jams **2**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments **None**

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg **None**

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
3	**4**	**6**

Diagonal	Delta	Island
0	**0**	**0**

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	**0**	**0**	**0**

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
2	**0**	**No**

5.4 Stream Ford or Animal **No**

5.5 Straightening **With Windrowing**

Straightening Length: **1,372**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Phase 2 Segment Summary

Reach # T6.04 Segment: A
Observers: j.clark, m.lyttle
Segment Location: tractor crossing at beginning of straightening along feild, across field to treeline at

March 3, 2010 SGAT Version: 4.56
Completion Date: August 29, 2008
Why Not assessed:
Rain: Yes

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation: **Subreach**
1.2 Alluvial Fan: **None**
1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Flat	Steep
Continuous w/	Never	Sometimes
W/in 1 Bankfill	Never	Always
Texture	Not Evalua	Boulder

1.5 Valley Features
Valley Width (ft): 1,080
Width Determination: Measured
Confinement Type: Very Broad
Rock Gorge?: No
Human-caused Change?: No

Step 2. Stream Channel

2.1 Bankfull Width: 13
2.2 Max Depth (ft): 1.65
2.3 Mean Depth (ft): 1.23
2.4 Floodprone Width (ft): 287

Notes:

This is a subreach, with an E type channel versus the C type channel reference for the reach and upstream section. The valley width greatly increases. This reach was extensively straightened historically.

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln: 1.65 ft.
Human Elev Floodpln: 0.00 ft.
2.6 Width/Depth Ratio: 10.81
2.7 Entrenchment Ratio: 21.58
2.8 Incision Ratio: 1.00
Human Elevated Inc Rat: 0.00
2.9 Sinuosity: Low
2.10 Riffles Type: Sedimented
2.11 Riffle/Step Spacing (ft): 33
2.12 Substrate Composition

Bedrock	0%
Boulder	0%
Cobble	0%
Coarse Gravel	2%
Fine Gravel	92%
Sand	5%
Silt and smaller	1%

Silt/Clay Present?: Yes
Detritus: 1 %
Large Woody: 3
2.13 Average Largest Particle on

Bed	256.0	mm
Bar	72.0	mm

2.14 Stream Type
Stream Type: E
Bed Material: Gravel
Subclass Slope: None
Bed Form: Riffle-Pool
Field Measured Slope:
2.15 Reference Stream Type
(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks
Typical Bank Slope: Steep

Bank Texture	Left	Right
Upper		
Material Type	Boulder/Cobbl	Boulder/Cobbl
Consistency	Cohesive	Cohesive
Lower		
Material Type	Sand	Sand
Consistency	Cohesive	Cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	0	0
Erosion Height (ft)	0.00	0.00
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Deciduous
Sub-dominant	Pasture	Herbaceous

Bank Canopy	Left	Right
Canopy %	1-25	76-100
Mid-Channel Canopy		Open

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	0-25	51-100
Sub-dominant	None	None
W less than 25	0	0

Buffer Veg. Type	Left	Right
Dominant	Herbaceous	Deciduous
Sub-dominant	None	Shrubs/Saplin

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Pasture	Forest
Sub-dominant	None	Pasture
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps: None
4.2 Adjacent Wetlands: None
4.3 Flow Status: Moderate
4.4 # of Debris Jams: 0
4.5 Flow Regulation Type: None
Flow Regulation Use
Impoundments: None
Impoundmt. Location
4.6 Up/Down strm flow reg: None
(old) Upstrm Flow Reg: None

4.9 # of Beaver Dams: 0
Affected Length (ft): 0

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
2	2	1

Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal: Yes
5.5 Straightening: Straightening
Straightening Length: 481
5.5 Dredging: None

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek**

Phase 2 Segment Summary

March 3, 2010 SGAT Version: 4.56

Stream: **High Knob Brook** Reach # **T6.04** Segment: **B** Completion Date: **August 20, 2008**

Organization: **Lewis Creek Association** Observers: **j.clark, m.lyttle** Why Not assessed: Rain: **Yes**

Segment Length (ft): **2,263** Segment Location: **Includes both channel along both homes upstream of Brown Hill Crossing downs to tractor**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Subreach**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	**0**	**0**
height	**0**	**0**
Roads	**199**	**745**
height	**6**	**6**
Railroads	**0**	**0**
height	**0**	**0**
Improved Paths	**0**	**0**
height	**0**	**0**
Development	**157**	**33**

1.4 Adjacent Side	Left	Right
Hillside Slope	**Hilly**	**Hilly**
Continuous w/	**Sometimes**	**Sometimes**
W/in 1 Bankfill	**Sometimes**	**Sometimes**
Texture	**Boulder**	**Boulder**

1.5 Valley Features

Valley Width (ft) **390**

Width Determination **Measured**

Confinement Type **Very Broad**

Rock Gorge? **No**

Human-caused Change? **Yes**

Step 2. Stream Channel

2.1 Bankfull Width **18**

2.2 Max Depth (ft) **1.35**

2.3 Mean Depth (ft) **1.18**

2.4 Floodprone Width (ft) **29**

Notes:

Two channel constrictions. Channel narrows near homes when buffer is encroached upon by lawn.

K.Underwood, 3/3/10: Revised segment sensitivity from High to Very High due to

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **2.45** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **14.83**

2.7 Entrenchment Ratio **1.66**

2.8 Incision Ratio **1.81**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Low**

2.10 Riffles Type **Complete**

2.11 Riffle/Step Spacing (ft) **68**

2.12 Substrate Composition

Bedrock	**0** %
Boulder	**0** %
Cobble	**2** %
Coarse Gravel	**58** %
Fine Gravel	**34** %
Sand	**5** %
Silt and smaller	**1** %

Silt/Clay Present? **Yes**

Detritus **3** %

Large Woody **8**

2.13 Average Largest Particle on

Bed	**362.0**	**mm**
Bar	**107.0**	**mm**

2.14 Stream Type

Stream Type: **B**

Bed Material: **Gravel**

Subclass Slope: **c**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type (if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	**None**	**0.00**
Gullies	**None**	**0.00**

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Undercut**

Bank Texture	Left	Right
Upper		
Material Type	**Boulder/Cobbl**	**Boulder/Cobbl**
Consistency	**Cohesive**	**Cohesive**
Lower		
Material Type	**Boulder/Cobbl**	**Boulder/Cobbl**
Consistency	**Cohesive**	**Cohesive**

Bank Erosion	Left	Right
Erosion Length (ft)	**93**	**0**
Erosion Height (ft)	**2.36**	**0.00**
Revetmt. Type	**Rip-Rap**	**Rip-Rap**
Revetmt. Length (ft)	**113**	**151**

Near Bank Veg. Type	Left	Right
Dominant	**Deciduous**	**Deciduous**
Sub-dominant	**Lawn**	**Lawn**

Bank Canopy	Left	Right
Canopy %	**26-50**	**76-100**

Mid-Channel Canopy **Closed**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	**>100**	**>100**
Sub-dominant	**0-25**	**0-25**
W less than 25	**359**	**0**

Buffer Veg. Type	Left	Right
Dominant	**Deciduous**	**Deciduous**
Sub-dominant	**Herbaceous**	**Herbaceous**

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	**Forest**	**Forest**
Sub-dominant	**Residential**	**Residential**
Mass Failures	**0**	**0**
Height	**0**	**0**
Gullies	**0**	
Length	**0**	
Height	**0.00**	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Minimal**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **1**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments **None**

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg **None**

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
5	**3**	**5**
Diagonal	**Delta**	**Island**
2	**0**	**1**

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	**0**	**0**	**0**

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	**0**	**No**

5.4 Stream Ford or Animal **No**

5.5 Straightening **Straightening**

Straightening Length: **1,095**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek** | **Phase 2 Segment Summary** | March 3, 2010 SGAT Version: 4.56

Stream: **High Knob Brook** Reach # **T6.05** Segment: **A** Completion Date: **August 26, 2008**

Organization: **Lewis Creek Association** Observers: **r.schiff, j.clark** Why Not assessed: Rain: **No**

Segment Length (ft): **3,858** Segment Location: **Upstream of 1127 Big Hollow Road to the next home on right, approximately half way to**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Depositional Features**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Very Steep	Steep
Continuous w/	Sometimes	Never
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft)	300
Width Determination	Measured
Confinement Type	Very Broad
Rock Gorge?	No
Human-caused Change?	No

Step 2. Stream Channel

2.1 Bankfull Width	20
2.2 Max Depth (ft)	1.10
2.3 Mean Depth (ft)	0.87
2.4 Floodprone Width (ft)	28

Notes:

Migration is common in this reach in the form of braiding, avulsions, and floodchutes. Widening is occuring in locations, possibly not well captured at the representative cross section.

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln	1.30 ft.
Human Elev Floodpln	0.00 ft.
2.6 Width/Depth Ratio	22.87
2.7 Entrenchment Ratio	1.43
2.8 Incision Ratio	1.18
Human Elevated Inc Rat	0.00
2.9 Sinuosity	Moderate
2.10 Riffles Type	Sedimented
2.11 Riffle/Step Spacing (ft)	200

2.12 Substrate Composition

Bedrock	0%
Boulder	0%
Cobble	9%
Coarse Gravel	24%
Fine Gravel	53%
Sand	13%
Silt and smaller	0%

Silt/Clay Present?	No
Detritus	5 %
# Large Woody	38

2.13 Average Largest Particle on

Bed	5.1	inches
Bar	4.1	inches

2.14 Stream Type

Stream Type:	B
Bed Material:	Gravel
Subclass Slope:	c
Bed Form:	Riffle-Pool
Field Measured Slope:	

2.15 Reference Stream Type (if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Sand	Sand
Consistency	Non-cohesive	Non-cohesive
Lower		
Material Type	Gravel	Gravel
Consistency	Non-cohesive	Non-cohesive
Bank Erosion	Left	Right
Erosion Length (ft)	0	0
Erosion Height (ft)	0.00	0.00
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0
Near Bank Veg. Type	Left	Right
Dominant	Deciduous	Deciduous
Sub-dominant	Coniferous	Coniferous
Bank Canopy	Left	Right
Canopy %	76-100	76-100
Mid-Channel Canopy	Closed	

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant		
W less than 25	0	0
Buffer Veg. Type	Left	Right
Dominant	Deciduous	Deciduous
Sub-dominant	Coniferous	Coniferous

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Forest
Sub-dominant	Residential	Residential
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps	Abundant
4.2 Adjacent Wetlands	Abundant
4.3 Flow Status	Moderate
4.4 # of Debris Jams	11
4.5 Flow Regulation Type	None
Flow Regulation Use	
Impoundments	None
Impoundmt. Location	
4.6 Up/Down strm flow reg	None
(old) Upstrm Flow Reg	None

4.9 # of Beaver Dams	0
Affected Length (ft)	0

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
11	18	11
Diagonal	**Delta**	**Island**
4	0	5

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
4	0	1	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal	No
5.5 Straightening	None
Straightening Length:	0
5.5 Dredging	None

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Phase 2 Segment Summary

Reach # T6.05 Observers: r.schiff, j.clark Segment Location: Upstream of tributary and Stokes Hill Road down to just upstream of home on rigth

March 3, 2010 SGAT Version: 4.56
Segment: B Why Not assessed:
Completion Date: August 26, 2008
Rain: No

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation: **Depositional Features**
1.2 Alluvial Fan: **None**
1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	496	312
height	12	10
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	376	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Very Steep	Hilly
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features
Valley Width (ft): 165
Width Determination: Measured
Confinement Type: Very Broad
Rock Gorge?: No
Human-caused Change?: Yes

Step 2. Stream Channel

2.1 Bankfull Width: 15
2.2 Max Depth (ft): 1.10
2.3 Mean Depth (ft): 0.50
2.4 Floodprone Width (ft): 58

Notes:

Extreme upstream end (approximately 250 feet) in beaver influenced wetland area, very similar to T6.06A. Historic straightening along almost entire reach, either on right or left valley wall.

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln: 1.20 ft.
Human Elev Floodpln: 0.00 ft.
2.6 Width/Depth Ratio: 29.00
2.7 Entrenchment Ratio: 4.00
2.8 Incision Ratio: 1.09
Human Elevated Inc Rat: 0.00
2.9 Sinuosity: Low
2.10 Riffles Type: Sedimented
2.11 Riffle/Step Spacing (ft): 45
2.12 Substrate Composition

Bedrock	0%
Boulder	0%
Cobble	23%
Coarse Gravel	48%
Fine Gravel	21%
Sand	7%
Silt and smaller	0%

Silt/Clay Present?: No
Detritus: 5 %
Large Woody: 6
2.13 Average Largest Particle on

Bed	5.7	inches
Bar	6.6	inches

2.14 Stream Type
Stream Type: C
Bed Material: Gravel
Subclass Slope: None
Bed Form: Riffle-Pool
Field Measured Slope:
2.15 Reference Stream Type
(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks
Typical Bank Slope: Steep

Bank Texture	Left	Right
Upper		
Material Type	Sand	Sand
Consistency	Non-cohesive	Non-cohesive
Lower		
Material Type	Gravel	Gravel
Consistency	Non-cohesive	Non-cohesive
Bank Erosion	Left	Right
Erosion Length (ft)	82	104
Erosion Height (ft)	2.55	2.98
Revetmt. Type	Multiple	Rip-Rap
Revetmt. Length (ft)	137	59
Near Bank Veg. Type	Left	Right
Dominant	Deciduous	Deciduous
Sub-dominant	Coniferous	Herbaceous
Bank Canopy	Left	Right
Canopy %	76-100	51-75

Mid-Channel Canopy: Closed

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	None	0-25
W less than 25	110	170
Buffer Veg. Type	Left	Right
Dominant	Deciduous	Deciduous
Sub-dominant	Coniferous	Coniferous

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Forest
Sub-dominant	Residential	Residential
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps: Minimal
4.2 Adjacent Wetlands: Abundant
4.3 Flow Status: Moderate
4.4 # of Debris Jams: 0
4.5 Flow Regulation Type: None
Flow Regulation Use
Impoundments: None
Impoundmt. Location
4.6 Up/Down strm flow reg: None
(old) Upstrm Flow Reg: None
4.7 StormwaterInputs

Field Ditch	0	Road Ditch	1
Other	0	Tile Drain	0
Overland Flow	0	Urb Strm Wtr Pipe	2

4.9 # of Beaver Dams: 0
Affected Length (ft): 0

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
1	10	10
Diagonal	**Delta**	**Island**
3	1	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
1	0	No

5.4 Stream Ford or Animal: No
5.5 Straightening: Straightening
Straightening Length: 1,888
5.5 Dredging: None

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek** | **Phase 2 Segment Summary** | March 3, 2010 SGAT Version: 4.56

Stream: **High Knob Brook** Reach # **T6.06** Segment: **A** Completion Date: **August 20, 2008**

Organization: **Lewis Creek Association** Observers: **j.clark, m.lyttle** Why Not assessed: Rain: **Yes**

Segment Length (ft): **2,887** Segment Location: **Starting downstream of the first tributary upstream of Dugway Lane down to upstream of**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Corridor Encroachment**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	1,791	0
height	10	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	333	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Extremely	Extremely
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Gravel

1.5 Valley Features

Valley Width (ft) **240**

Width Determination **Measured**

Confinement Type **Very Broad**

Rock Gorge? **No**

Human-caused Change? **Yes**

Step 2. Stream Channel

2.1 Bankfull Width **15**

2.2 Max Depth (ft) **1.90**

2.3 Mean Depth (ft) **1.22**

2.4 Floodprone Width (ft) **240**

Notes:

Multiple beaver dams - only active ones included in FIT, many more breached or historic. Channel flow path differs from VHD and USGS mapping at Dugway Road home. Channel flows under road for approximately 200 feet and crosses back. Tributary T6.6S1

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **1.90** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **12.11**

2.7 Entrenchment Ratio **16.25**

2.8 Incision Ratio **1.00**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Moderate**

2.10 Riffles Type **Sedimented**

2.11 Riffle/Step Spacing (ft) **60**

2.12 Substrate Composition

Bedrock	0%
Boulder	0%
Cobble	5%
Coarse Gravel	47%
Fine Gravel	26%
Sand	2%
Silt and smaller	20%

Silt/Clay Present? **Yes**

Detritus **5** %

Large Woody **9**

2.13 Average Largest Particle on

Bed **128.0** **mm**

Bar **139.0** **mm**

2.14 Stream Type

Stream Type: **E**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type (if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Undercut**

Bank Texture	Left	Right
Upper		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive
Lower		
Material Type	Gravel	Gravel
Consistency	Cohesive	Cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	0	0
Erosion Height (ft)	0.00	0.00
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin

Bank Canopy	Left	Right
Canopy %	1-25	1-25
Mid-Channel Canopy	Open	

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	None	26-50
W less than 25	0	0

Buffer Veg. Type	Left	Right
Dominant	Shrubs/Saplin	Shrubs/Saplin
Sub-dominant	Mixed Trees	Mixed Trees

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Shrubs/Saplin	Shrubs/Saplin
Sub-dominant	Residential	Residential
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Abundant**

4.2 Adjacent Wetlands **Abundant**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **0**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments **None**

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg **None**

4.9 # of Beaver Dams **6**

Affected Length (ft) **910**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	7	4
Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	2

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
1	0	No

5.4 Stream Ford or Animal **No**

5.5 Straightening **With Windrowing**

Straightening Length: **448**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek** | **Phase 2 Segment Summary** | March 3, 2010 | SGAT Version: 4.56

Stream: **High Knob Brook** | Reach # **T6.06** | Segment: **B** | Completion Date: **August 5, 2008**

Organization: **Lewis Creek Association** | Observers: **r.schiff, j.clark, n.sibley** | Why Not assessed: | Rain: **Yes**

Segment Length (ft): **3,677** | Segment Location: **Most upstream home along Big Hollow Road down to behind home and barn on right**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Corridor Encroachment**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	2,285	0
height	9	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	686	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Extremely	Extremely
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Gravel

1.5 Valley Features

Valley Width (ft) **258**

Width Determination **Measured**

Confinement Type **Very Broad**

Rock Gorge? **No**

Human-caused Change? **Yes**

Step 2. Stream Channel

2.1 Bankfull Width **8**

2.2 Max Depth (ft) **0.90**

2.3 Mean Depth (ft) **0.61**

2.4 Floodprone Width (ft) **51**

Notes:

New culvert after initial assessment took place behind home and barn near downstream end of reach. Much of this reach is open cow pasture, cows have complete access. Segment assessed during high flows, some bars and bed features may have been

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **1.10** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **12.62**

2.7 Entrenchment Ratio **6.64**

2.8 Incision Ratio **1.22**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Low**

2.10 Riffles Type **Sedimented**

2.11 Riffle/Step Spacing (ft) **100**

2.12 Substrate Composition

Bedrock	0%
Boulder	0%
Cobble	29%
Coarse Gravel	21%
Fine Gravel	48%
Sand	3%
Silt and smaller	0%

Silt/Clay Present? **No**

Detritus **2** %

Large Woody **0**

2.13 Average Largest Particle on

Bed **99.0** mm

Bar **N/A** mm

2.14 Stream Type

Stream Type: **E**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Gravel	Gravel
Consistency	Cohesive	Cohesive
Lower		
Material Type	Sand	Sand
Consistency	Cohesive	Cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	0	0
Erosion Height (ft)	0.00	0.00
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Pasture	Pasture
Sub-dominant	Herbaceous	Herbaceous

Bank Canopy	Left	Right
Canopy %	1-25	1-25

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	0-25	0-25
Sub-dominant	51-100	26-50
W less than 25	2,779	2,783

Buffer Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Pasture	Pasture
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Abundant**

4.3 Flow Status **High**

4.4 # of Debris Jams **0**

4.5 Flow Regulation Type **Small Run of**

Flow Regulation Use **Recreation**

Impoundments **Small**

Impoundmt. Location **In Reach**

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg **Run-of-river**

4.7 StormwaterInputs

Field Ditch	0	Road Ditch	2
Other	0	Tile Drain	0
Overland Flow	0	Urb Strm Wtr Pipe	0

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
1	0	0
Diagonal	**Delta**	**Island**
0	0	4

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	2

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **Yes**

5.5 Straightening **Straightening**

Straightening Length: **182**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek** **Phase 2 Segment Summary** March 3, 2010 SGAT Version: 4.56

Stream: **High Knob Brook** Reach # **T6.06** Segment: **C** Completion Date: **August 5, 2008**

Organization: **Lewis Creek Association** Observers: **j.clark, r.schiff, n.sibley** Why Not assessed:**wetland** Rain: **Yes**

Segment Length (ft): **1,918** Segment Location: **Most upstream segment, upstream of last home on Big Hollow Road**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Other Reason**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	**0**	**0**
height	**0**	**0**
Roads	**1,918**	**0**
height	**6**	**0**
Railroads	**0**	**0**
height	**0**	**0**
Improved Paths	**0**	**0**
height	**0**	**0**
Development	**115**	**0**

1.4 Adjacent Side	Left	Right
Hillside Slope	**Extremely**	**Extremely**
Continuous w/	**Never**	**Never**
W/in 1 Bankfill	**Never**	**Never**
Texture	**Not Evalua**	**Not Evalua**

1.5 Valley Features

Valley Width (ft) **258**

Width Determination **Measured**

Confinement Type **Very Broad**

Rock Gorge? **No**

Human-caused Change? **Yes**

Step 2. Stream Channel

2.1 Bankfull Width **0**

2.2 Max Depth (ft) **0.00**

2.3 Mean Depth (ft) **0.00**

2.4 Floodprone Width (ft) **0**

Notes:

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **0.00** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **0.00**

2.7 Entrenchment Ratio **0.00**

2.8 Incision Ratio **0.00**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity

2.10 Riffles Type

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Silt/Clay Present?

Detritus **0** %

Large Woody **0**

2.13 Average Largest Particle on

Bed **0.0**

Bar **0.0**

2.14 Stream Type

Stream Type:

Bed Material:

Subclass Slope:

Bed Form:

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	**None**	**0.00**
Gullies	**None**	**0.00**

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope

Bank Texture	Left	Right
Upper		
Material Type		
Consistency		
Lower		
Material Type		
Consistency		

Bank Erosion	Left	Right
Erosion Length (ft)	**0**	**0**
Erosion Height (ft)	**0.00**	**0.00**
Revetmt. Type	**None**	**None**
Revetmt. Length (ft)	**0**	**0**

Near Bank Veg. Type	Left	Right
Dominant	**Herbaceous**	**Herbaceous**
Sub-dominant		

Bank Canopy	Left	Right
Canopy %	**0**	**0**
Mid-Channel Canopy		**Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	**>100**	**26-50**
Sub-dominant		**51-100**
W less than 25	**0**	**0**

Buffer Veg. Type	Left	Right
Dominant	**Herbaceous**	**Herbaceous**
Sub-dominant	**Coniferous**	

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	**Forest**	**Residential**
Sub-dominant		
Mass Failures	**0**	**0**
Height	**0**	**0**
Gullies		**0**
Length		**0**
Height		**0.00**

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Abundant**

4.2 Adjacent Wetlands **Abundant**

4.3 Flow Status **High**

4.4 # of Debris Jams **0**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments **None**

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	**0**	**0**

Diagonal	Delta	Island
0	**0**	**0**

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	**0**	**0**	**0**

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	**0**	

5.4 Stream Ford or Animal **Yes**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek**

Phase 2 Segment Summary

March 3, 2010 SGAT Version: 4.56

Stream: **Hollow Brook** Reach # **T4.01** Segment: **A** Completion Date: **August 18, 2008**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC); JC (MMI)** Why Not assessed: Rain: **No**

Segment Length (ft): **4,415** Segment Location: **Downstream half of reach from wetlands downstream to confluence with Lewis Creek at top**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	289	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Hilly	Hilly
Continuous w/	Never	Never
W/in 1 Bankfill	Never	Never
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft) **950**

Width Determination **Estimated**

Confinement Type **Very Broad**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **31**

2.2 Max Depth (ft) **2.45**

2.3 Mean Depth (ft) **1.25**

2.4 Floodprone Width (ft) **1,040**

Notes:

Updated in Dec 2008 relying primarily on August 2008 field observations and additional cross sections to supplement original assessment in July and Sept of 2002. Wetlands (NWI) and hydric soils mapped contiguous to the channel. Several

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **2.45** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **25.12**

2.7 Entrenchment Ratio **33.12**

2.8 Incision Ratio **1.00**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **High**

2.10 Riffles Type **Not Applicable**

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Bedrock	0%
Boulder	0%
Cobble	1%
Coarse Gravel	59%
Fine Gravel	20%
Sand	20%
Silt and smaller	0%

Silt/Clay Present? **Yes**

Detritus **2** %

Large Woody **18**

2.13 Average Largest Particle on

Bed **N/A**

Bar **N/A**

Not Evaluated

2.14 Stream Type

Stream Type: **C**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Dune-Ripple**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

E 4 Non Dune-Ripple

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Sand	Sand
Consistency	Non-cohesive	Non-cohesive
Lower		
Material Type	Silt	Silt
Consistency	Cohesive	Cohesive
Bank Erosion	Left	Right
Erosion Length (ft)	239	61
Erosion Height (ft)	3.20	4.00
Revetmt. Type	Rip-Rap	Rip-Rap
Revetmt. Length (ft)	30	53
Near Bank Veg. Type	Left	Right
Dominant	Herbaceous	Herbaceous
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin
Bank Canopy	Left	Right
Canopy %	1-25	1-25
Mid-Channel Canopy	Open	

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	0-25	0-25
W less than 25	264	286
Buffer Veg. Type	Left	Right
Dominant	Shrubs/Saplin	Shrubs/Saplin
Sub-dominant	Deciduous	Deciduous

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Shrubs/Saplin	Shrubs/Saplin
Sub-dominant	Forest	Forest
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Abundant**

4.2 Adjacent Wetlands **Abundant**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **6**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.9 # of Beaver Dams **2**

Affected Length (ft) **202**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
3	17	1

Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
4	0	1	3

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
1	0	No

5.4 Stream Ford or Animal **Yes**

5.5 Straightening **Straightening**

Straightening Length: **232**

5.5 Dredging **Dredging**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek**

Phase 2 Segment Summary

March 3, 2010 SGAT Version: 4.56

Stream: **Hollow Brook** Reach # **T4.01** Segment: **B** Completion Date: **August 18, 2008**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC); JC (MMI)** Why Not assessed: Rain: **No**

Segment Length (ft): **5,235** Segment Location: **From Hinesburg sand and gravel quarry along Hinesburg Hollow Rd, crossing under Rt 116,**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**

1.2 Alluvial Fan **Yes**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	**791**	**125**
height	**5**	**4**
Roads	**1,021**	**0**
height	**7**	**0**
Railroads	**0**	**0**
height	**0**	**0**
Improved Paths	**0**	**0**
height	**0**	**0**
Development	**238**	**178**

1.4 Adjacent Side	Left	Right
Hillside Slope	**Steep**	**Hilly**
Continuous w/	**Sometimes**	**Sometimes**
W/in 1 Bankfill	**Sometimes**	**Sometimes**
Texture	**Not Evalua**	**Not Evalua**

1.5 Valley Features

Valley Width (ft) **850**

Width Determination **Estimated**

Confinement Type **Very Broad**

Rock Gorge? **No**

Human-caused Change? **Yes**

Step 2. Stream Channel

2.1 Bankfull Width **33**

2.2 Max Depth (ft) **1.90**

2.3 Mean Depth (ft) **0.85**

2.4 Floodprone Width (ft) **940**

Notes:

Updated in Dec 2008 relying primarily on August 2008 field observations and additional cross sections to supplement original assessment in July and Sept of 2002. Upstream end of reach represents a transition to Very Broad confinement,

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **2.80** ft.

Human Elev Floodpln **3.30** ft.

2.6 Width/Depth Ratio **38.24**

2.7 Entrenchment Ratio **28.92**

2.8 Incision Ratio **1.47**

Human Elevated Inc Rat **1.74**

2.9 Sinuosity **Moderate**

2.10 Riffles Type **Sedimented**

2.11 Riffle/Step Spacing (ft) **120**

2.12 Substrate Composition

Bedrock	**0** %
Boulder	**0** %
Cobble	**43** %
Coarse Gravel	**38** %
Fine Gravel	**11** %
Sand	**8** %
Silt and smaller	**0** %

Silt/Clay Present? **No**

Detritus **2** %

Large Woody **48**

2.13 Average Largest Particle on

Bed	**135.0**	**mm**
Bar	**220.0**	**mm**

2.14 Stream Type

Stream Type: **C**

Bed Material: **Gravel**

Subclass Slope: **None**

Bed Form: **Plane Bed**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	**Multiple**	**26.50**
Gullies	**None**	**0.00**

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Undercut**

Bank Texture	Left	Right
Upper		
Material Type	**Gravel**	**Gravel**
Consistency	**Non-cohesive**	**Non-cohesive**
Lower		
Material Type	**Gravel**	**Gravel**
Consistency	**Non-cohesive**	**Non-cohesive**

Bank Erosion	Left	Right
Erosion Length (ft)	**736**	**791**
Erosion Height (ft)	**3.24**	**2.78**
Revetmt. Type	**Multiple**	**Multiple**
Revetmt. Length (ft)	**259**	**232**

Near Bank Veg. Type	Left	Right
Dominant	**Deciduous**	**Deciduous**
Sub-dominant	**Coniferous**	**Coniferous**

Bank Canopy	Left	Right
Canopy %	**76-100**	**76-100**

Mid-Channel Canopy **Closed**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	**>100**	**>100**
Sub-dominant	**0-25**	**0-25**
W less than 25	**1,350**	**1,455**

Buffer Veg. Type	Left	Right
Dominant	**Deciduous**	**Deciduous**
Sub-dominant	**Coniferous**	**Coniferous**

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	**Forest**	**Forest**
Sub-dominant	**Residential**	**Hay**
Mass Failures	**77**	**0**
Height	**30**	**0**
Gullies	**0**	
Length	**0**	
Height	**0.00**	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps	**Abundant**
4.2 Adjacent Wetlands	**Minimal**
4.3 Flow Status	**Moderate**
4.4 # of Debris Jams	**4**
4.5 Flow Regulation Type	**None**
Flow Regulation Use	
Impoundments	
Impoundmt. Location	
4.6 Up/Down strm flow reg	**None**
(old) Upstrm Flow Reg	

4.9 # of Beaver Dams	**0**
Affected Length (ft)	**0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
6	**15**	**7**

Diagonal	Delta	Island
3	**1**	**0**

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
9	**0**	**0**	**0**

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
6	**0**	**No**

5.4 Stream Ford or Animal **Yes**

5.5 Straightening **Straightening**

Straightening Length: **1,112**

5.5 Dredging **Dredging**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek**

Phase 2 Segment Summary

March 3, 2010 SGAT Version: 4.56

Stream: **Hollow Brook** Reach # **T4.02** Segment: **A** Completion Date: **October 10, 2008**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC); JC (MMI)** Why Not assessed: Rain: **Yes**

Segment Length (ft): **4,509** Segment Location: **From LB residences downstream along the north side of Hinesburg Hollow Rd to the sand**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	**0**	**0**
height	**0**	**0**
Roads	**4,118**	**0**
height	**9**	**0**
Railroads	**0**	**0**
height	**0**	**0**
Improved Paths	**0**	**0**
height	**0**	**0**
Development	**424**	**94**

1.4 Adjacent Side	Left	Right
Hillside Slope	**Extremely**	**Very Steep**
Continuous w/	**Sometimes**	**Sometimes**
W/in 1 Bankfill	**Sometimes**	**Sometimes**
Texture	**Not Evalua**	**Not Evalua**

1.5 Valley Features

Valley Width (ft) **120**

Width Determination **Estimated**

Confinement Type **Narrow**

Rock Gorge? **No**

Human-caused Change? **Yes**

Step 2. Stream Channel

2.1 Bankfull Width **24**

2.2 Max Depth (ft) **2.50**

2.3 Mean Depth (ft) **1.70**

2.4 Floodprone Width (ft) **45**

Notes:

Updated in Dec 2008 relying primarily on field observations and additional cross sections gathered in August and October 2008, to supplement original July 2005 assessment. Reference valley confinement varies from SC to BD, averaging BD. Where the channel

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **5.70** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **14.35**

2.7 Entrenchment Ratio **1.84**

2.8 Incision Ratio **2.28**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Low**

2.10 Riffles Type **Eroded**

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Bedrock	**0** %
Boulder	**27** %
Cobble	**36** %
Coarse Gravel	**14** %
Fine Gravel	**11** %
Sand	**12** %
Silt and smaller	**0** %

Silt/Clay Present? **No**

Detritus **2** %

Large Woody **12**

2.13 Average Largest Particle on

Bed **300.0** mm

Bar **118.0** mm

2.14 Stream Type

Stream Type: **B**

Bed Material: **Cobble**

Subclass Slope: **None**

Bed Form: **Plane Bed**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	**Multiple**	**12.00**
Gullies	**None**	**0.00**

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	**Gravel**	**Gravel**
Consistency	**Non-cohesive**	**Non-cohesive**
Lower		
Material Type	**Gravel**	**Gravel**
Consistency	**Non-cohesive**	**Non-cohesive**

Bank Erosion	Left	Right
Erosion Length (ft)	**695**	**499**
Erosion Height (ft)	**3.24**	**2.90**
Revetmt. Type	**Rip-Rap**	**Rip-Rap**
Revetmt. Length (ft)	**955**	**71**

Near Bank Veg. Type	Left	Right
Dominant	**Deciduous**	**Deciduous**
Sub-dominant	**Shrubs/Saplin**	**Coniferous**

Bank Canopy	Left	Right
Canopy %	**76-100**	**76-100**

Mid-Channel Canopy **Closed**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	**0-25**	**>100**
Sub-dominant	**51-100**	**26-50**
W less than 25	**2,153**	**1,516**

Buffer Veg. Type	Left	Right
Dominant	**Deciduous**	**Deciduous**
Sub-dominant	**Shrubs/Saplin**	**Coniferous**

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	**Forest**	**Forest**
Sub-dominant	**Residential**	**None**
Mass Failures	**80**	**190**
Height	**4**	**14**
Gullies	**0**	
Length	**0**	
Height	**0.00**	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **None**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **2**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.7 StormwaterInputs

Field Ditch	**0**	Road Ditch	**3**
Other	**0**	Tile Drain	**0**
Overland Flow	**0**	Urb Strm Wtr Pipe	**0**

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	**2**	**7**

Diagonal	Delta	Island
3	**0**	**0**

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
3	**0**	**0**	**0**

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	**0**	**No**

5.4 Stream Ford or Animal **Yes**

5.5 Straightening **Straightening**

Straightening Length: **2,827**

5.5 Dredging **Dredging**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek**

Phase 2 Segment Summary

March 3, 2010 SGAT Version: 4.56

Stream: **Hollow Brook** Reach # **T4.02** Segment: **B** Completion Date: **October 10, 2008**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC); JC (MMI)** Why Not assessed: Rain: **Yes**

Segment Length (ft): **1,746** Segment Location: **From triple-culvert driveway crossing downstream to LB residential buildings.**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Subreach**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	1,451	0
height	12	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	720	51

1.4 Adjacent Side	Left	Right
Hillside Slope	Very Steep	Very Steep
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft) **70**

Width Determination **Measured**

Confinement Type **Semi-confined**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **29**

2.2 Max Depth (ft) **2.20**

2.3 Mean Depth (ft) **1.32**

2.4 Floodprone Width (ft) **59**

Notes:

Original July 2005 assessment updated with repeat assessment, including additional cross sections, in Oct 2008. Subreach of alternate stream type - Bc. Valley width varies from Narrowly-confined to Semi-confined. Valley side slopes (high terraces) comprised of

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **3.10** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **21.98**

2.7 Entrenchment Ratio **2.03**

2.8 Incision Ratio **1.41**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **Moderate**

2.10 Riffles Type **Complete**

2.11 Riffle/Step Spacing (ft) **100**

2.12 Substrate Composition

Bedrock	0%
Boulder	13%
Cobble	48%
Coarse Gravel	29%
Fine Gravel	4%
Sand	6%
Silt and smaller	0%

Silt/Clay Present? **No**

Detritus **10** %

Large Woody **1**

2.13 Average Largest Particle on

Bed **456.0** **mm**

Bar **175.0** **mm**

2.14 Stream Type

Stream Type: **B**

Bed Material: **Cobble**

Subclass Slope: **c**

Bed Form: **Riffle-Pool**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

B 3 c Riffle-Pool

3.3 old	Amount	Mean Height
Failures	One	15.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Mix	Mix
Consistency	Cohesive	Cohesive
Lower		
Material Type	Boulder/Cobbl	Boulder/Cobbl
Consistency	Non-cohesive	Non-cohesive
Bank Erosion	Left	Right
Erosion Length (ft)	346	90
Erosion Height (ft)	3.31	2.00
Revetmt. Type	Other	None
Revetmt. Length (ft)	88	0
Near Bank Veg. Type	Left	Right
Dominant	Shrubs/Saplin	Shrubs/Saplin
Sub-dominant	Deciduous	Deciduous
Bank Canopy	Left	Right
Canopy %	51-75	51-75
Mid-Channel Canopy	Closed	

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	51-100	>100
Sub-dominant	0-25	0-25
W less than 25	887	466
Buffer Veg. Type	Left	Right
Dominant	Shrubs/Saplin	Shrubs/Saplin
Sub-dominant	Deciduous	Deciduous

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Residential	Shrubs/Saplin
Sub-dominant	Shrubs/Saplin	Forest
Mass Failures	0	37
Height	0	15
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Minimal**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **0**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.7 StormwaterInputs

Field Ditch	0	Road Ditch	0
Other	0	Tile Drain	0
Overland Flow	2	Urb Strm Wtr Pipe	0

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
2	3	2
Diagonal	**Delta**	**Island**
1	0	3

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
6	0	0	2

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
1	0	No

5.4 Stream Ford or Animal **No**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek** | **Phase 2 Segment Summary** | March 3, 2010 SGAT Version: 4.56

Stream: **Hollow Brook** Reach # **T4.02** Segment: **C** Completion Date: **October 10, 2008**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC); JC (MMI)** Why Not assessed: **beaver dam** Rain: **Yes**

Segment Length (ft): **764** Segment Location: **Uppermost 764 ft, upstream of triple-culvert driveway crossing.**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Flow Status**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	164	0
height	8	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Very Steep	Very Steep
Continuous w/	Never	Never
W/in 1 Bankfill	Never	Never
Texture	Not Evalua	Not Evalua

1.5 Valley Features

Valley Width (ft) **380**

Width Determination **Estimated**

Confinement Type **Broad**

Rock Gorge? **No**

Human-caused Change? **Yes**

Step 2. Stream Channel

2.1 Bankfull Width **0**

2.2 Max Depth (ft) **0.00**

2.3 Mean Depth (ft) **0.00**

2.4 Floodprone Width (ft) **0**

Notes:

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **0.00** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **0.00**

2.7 Entrenchment Ratio **0.00**

2.8 Incision Ratio **0.00**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity

2.10 Riffles Type

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Silt/Clay Present?

Detritus **0** %

Large Woody **0**

2.13 Average Largest Particle on

Bed **0.0**

Bar **0.0**

2.14 Stream Type

Stream Type:

Bed Material:

Subclass Slope:

Bed Form:

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Mix	Mix
Consistency	Cohesive	Cohesive
Lower		
Material Type	Boulder/Cobbl	Boulder/Cobbl
Consistency	Non-cohesive	Non-cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	0	0
Erosion Height (ft)	0.00	0.00
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Shrubs/Saplin	Shrubs/Saplin
Sub-dominant	Herbaceous	Herbaceous

Bank Canopy	Left	Right
Canopy %	1-25	1-25

Mid-Channel Canopy **Open**

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	51-100	51-100
W less than 25	190	0

Buffer Veg. Type	Left	Right
Dominant	Deciduous	Shrubs/Saplin
Sub-dominant	Shrubs/Saplin	Herbaceous

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Shrubs/Saplin
Sub-dominant	Shrubs/Saplin	Forest
Mass Failures	0	0
Height	0	0

Gullies **0**

Length **0**

Height **0.00**

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **None**

4.2 Adjacent Wetlands **Abundant**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **0**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.9 # of Beaver Dams **2**

Affected Length (ft) **375**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	0	0

Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	

5.4 Stream Ford or Animal **No**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek** **Phase 2 Segment Summary** March 3, 2010 SGAT Version: 4.56

Stream: **Unnamed Trib to Hollow Brook** Reach # **T4.3S6.01** Segment: **A** Completion Date: **September 5, 2001**

Organization: **Lewis Creek Association** Observers: **SP, SH, JT, EL, MI** Why Not assessed: Rain: **Yes**

Segment Length (ft): **4,840** Segment Location: **From Mason Hill N. Rd downstream along Big Hollow Rd to confluence with Lewis Creek**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Property Access**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	**0**	**0**
height	**0**	**0**
Roads	**3,115**	**299**
height	**9**	**5**
Railroads	**0**	**0**
height	**0**	**0**
Improved Paths	**0**	**0**
height	**0**	**0**
Development	**853**	**370**

1.4 Adjacent Side	Left	Right
Hillside Slope	**Extremely**	**Extremely**
Continuous w/	**Sometimes**	**Sometimes**
W/in 1 Bankfill	**Sometimes**	**Sometimes**
Texture	**Not Evalua**	**Not Evalua**

1.5 Valley Features

Valley Width (ft) **25**

Width Determination **Estimated**

Confinement Type **Narrowly**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **19**

2.2 Max Depth (ft) **1.75**

2.3 Mean Depth (ft) **1.30**

2.4 Floodprone Width (ft) **20**

Notes:

Assessment data from 9/5/2001 (VTDEC/LCA) entered into 2007 database; select parameters not measured under protocols current at the time have blank fields in this 2007 database. 2007 update primarily conducted to clarify segmentation due to

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **1.75** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **14.62**

2.7 Entrenchment Ratio **1.05**

2.8 Incision Ratio **1.00**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity **High**

2.10 Riffles Type **Complete**

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Bedrock	**5** %
Boulder	**20** %
Cobble	**30** %
Coarse Gravel	**15** %
Fine Gravel	**15** %
Sand	**15** %
Silt and smaller	**0** %

Silt/Clay Present? **No**

Detritus **0** %

Large Woody **0**

2.13 Average Largest Particle on

Bed **24.0** **inches**

Bar **10.0** **inches**

2.14 Stream Type

Stream Type: **A**

Bed Material: **Cobble**

Subclass Slope: **None**

Bed Form: **Step-Pool**

Field Measured Slope:

2.15 Reference Stream Type (if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	**None**	**0.00**
Gullies	**None**	**0.00**

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	**Mix**	**Mix**
Consistency	**Cohesive**	**Cohesive**
Lower		
Material Type	**Mix**	**Mix**
Consistency	**Cohesive**	**Cohesive**
Bank Erosion	Left	Right
Erosion Length (ft)	**319**	**0**
Erosion Height (ft)	**4.75**	**0.00**
Revetmt. Type	**None**	**None**
Revetmt. Length (ft)	**0**	**0**
Near Bank Veg. Type	Left	Right
Dominant	**Deciduous**	**Deciduous**
Sub-dominant	**None**	**None**
Bank Canopy	Left	Right
Canopy %	**76-100**	**76-100**
Mid-Channel Canopy	**Closed**	

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	**26-50**	**>100**
Sub-dominant	**0-25**	**0-25**
W less than 25	**1,268**	**1,105**
Buffer Veg. Type	Left	Right
Dominant	**Mixed Trees**	**Mixed Trees**
Sub-dominant	**None**	**None**

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	**Forest**	**Forest**
Sub-dominant	**Residential**	**Residential**
Mass Failures	**0**	**0**
Height	**0**	**0**
Gullies	**0**	
Length	**0**	
Height	**0.00**	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **Minimal**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **5**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.7 StormwaterInputs

Field Ditch	**0**	Road Ditch	**5**
Other	**0**	Tile Drain	**0**
Overland Flow	**0**	Urb Strm Wtr Pipe	**0**

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
3	**3**	**0**
Diagonal	**Delta**	**Island**
0	**0**	**0**

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
3	**0**	**0**	**0**

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	**0**	**No**

5.4 Stream Ford or Animal **No**

5.5 Straightening **Straightening**

Straightening Length: **1,574**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Project: **Lewis Creek** **Phase 2 Segment Summary** March 3, 2010 SGAT Version: 4.56

Stream: **Unnamed Trib to Hollow Brook** Reach # **T4.3S6.01** Segment: **B** Completion Date: **September 5, 2001**

Organization: **Lewis Creek Association** Observers: **SP, SH** Why Not assessed: **no property access** Rain: **Yes**

Segment Length (ft): **2,905** Segment Location: **Upstream portion of reach above Mason Hill N Rd.**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	**0**	**0**
height	**0**	**0**
Roads	**2,128**	**0**
height	**9**	**0**
Railroads	**0**	**0**
height	**0**	**0**
Improved Paths	**0**	**0**
height	**0**	**0**
Development	**0**	**155**

1.4 Adjacent Side	Left	Right
Hillside Slope		
Continuous w/		
W/in 1 Bankfill		
Texture		

1.5 Valley Features

Valley Width (ft) **0**

Width Determination

Confinement Type

Rock Gorge?

Human-caused Change?

Step 2. Stream Channel

2.1 Bankfull Width **0**

2.2 Max Depth (ft) **0.00**

2.3 Mean Depth (ft) **0.00**

2.4 Floodprone Width (ft) **0**

Notes:

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **0.00** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **0.00**

2.7 Entrenchment Ratio **0.00**

2.8 Incision Ratio **0.00**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity

2.10 Riffles Type

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Silt/Clay Present?

Detritus **0** %

Large Woody **0**

2.13 Average Largest Particle on

Bed **0.0**

Bar **0.0**

2.14 Stream Type

Stream Type:

Bed Material:

Subclass Slope:

Bed Form:

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	**None**	**0.00**
Gullies	**None**	**0.00**

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope

Bank Texture	Left	Right
Upper		
Material Type		
Consistency		
Lower		
Material Type		
Consistency		

Bank Erosion	Left	Right
Erosion Length (ft)	**0**	**0**
Erosion Height (ft)	**0.00**	**0.00**
Revetmt. Type	**None**	**None**
Revetmt. Length (ft)	**0**	**0**

Near Bank Veg. Type	Left	Right
Dominant		
Sub-dominant		

Bank Canopy	Left	Right
Canopy %		
Mid-Channel Canopy		

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant		
Sub-dominant		
W less than 25	**1,209**	**1,392**

Buffer Veg. Type	Left	Right
Dominant		
Sub-dominant		

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant		
Sub-dominant		
Mass Failures	**0**	**0**
Height	**0**	**0**
Gullies	**0**	
Length	**0**	
Height	**0.00**	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps

4.2 Adjacent Wetlands

4.3 Flow Status

4.4 # of Debris Jams **0**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **None**

(old) Upstrm Flow Reg

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	**0**	**0**
Diagonal	**Delta**	**Island**
0	**0**	**0**

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	**0**	**0**	**0**

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	**0**	

5.4 Stream Ford or Animal **No**

5.5 Straightening **Straightening**

Straightening Length: **1,480**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Phase 2 Segment Summary

Reach # T4.05 Segment: A Observers: KLU (SMRC), SHP (VTDEC)
Segment Location: Downstream end of reach alongside Lazy Brook mobile home park.

March 3, 2010 SGAT Version: 4.56
Completion Date: September 8, 2005
Why Not assessed:
Rain: No

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation: **Channel Dimensions**
1.2 Alluvial Fan: **Yes**
1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	437	0
height	7	0
Roads	562	0
height	7	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	476	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Very Steep	Very Steep
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features
Valley Width (ft): 250
Width Determination: Estimated
Confinement Type: Very Broad
Rock Gorge?: No
Human-caused Change?: Yes

Step 2. Stream Channel

2.1 Bankfull Width: 16
2.2 Max Depth (ft): 1.50
2.3 Mean Depth (ft): 1.00
2.4 Floodprone Width (ft): 20

Notes:

Updated Dec 2008 relying principally on Sept 2005 assessment, with some additional field observations and cross sections collected in July 2008. Subreach of broader valley confinement and reduced channel gradient ("alluvial fan"). Driveways providing access

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln: 3.60 ft.
Human Elev Floodpln: 7.30 ft.
2.6 Width/Depth Ratio: 16.40
2.7 Entrenchment Ratio: 1.22
2.8 Incision Ratio: 2.40
Human Elevated Inc Rat: 4.87
2.9 Sinuosity: Low
2.10 Riffles Type: Eroded
2.11 Riffle/Step Spacing (ft): 0
2.12 Substrate Composition

Bedrock	0%
Boulder	20%
Cobble	29%
Coarse Gravel	15%
Fine Gravel	20%
Sand	16%
Silt and smaller	0%

Silt/Clay Present?: No
Detritus: 2 %
Large Woody: 0
2.13 Average Largest Particle on

Bed	350.0	mm
Bar	N/A	mm

2.14 Stream Type
Stream Type: F
Bed Material: Gravel
Subclass Slope: a
Bed Form: Plane Bed
Field Measured Slope:
2.15 Reference Stream Type
(if different from Phase 1)
C 4 b Step-Pool

3.3 old	Amount	Mean Height
Failures	One	10.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks
Typical Bank Slope: Steep

Bank Texture	Left	Right
Upper		
Material Type	Gravel	Gravel
Consistency	Non-cohesive	Non-cohesive
Lower		
Material Type	Boulder/Cobbl	Boulder/Cobbl
Consistency	Non-cohesive	Non-cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	129	44
Erosion Height (ft)	3.00	8.00
Revetmt. Type	Rip-Rap	None
Revetmt. Length (ft)	232	0

Near Bank Veg. Type	Left	Right
Dominant	Deciduous	Coniferous
Sub-dominant	Coniferous	Deciduous

Bank Canopy	Left	Right
Canopy %	51-75	76-100

Mid-Channel Canopy: Closed

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	0-25	>100
Sub-dominant	>100	51-100
W less than 25	561	0

Buffer Veg. Type	Left	Right
Dominant	Coniferous	Coniferous
Sub-dominant	Deciduous	Deciduous

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Residential	Forest
Sub-dominant	Forest	None
Mass Failures	47	0
Height	10	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps: Minimal
4.2 Adjacent Wetlands: None
4.3 Flow Status: Moderate
4.4 # of Debris Jams: 0
4.5 Flow Regulation Type: None
Flow Regulation Use
Impoundments
Impoundmt. Location
4.6 Up/Down strm flow reg: None
(old) Upstrm Flow Reg
4.7 StormwaterInputs

Field Ditch	0	Road Ditch	0
Other	0	Tile Drain	0
Overland Flow	1	Urb Strm Wtr Pipe	0

4.9 # of Beaver Dams: 0
Affected Length (ft): 0

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	0	0

Diagonal	Delta	Island
0	1	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
1	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
1	0	No

5.4 Stream Ford or Animal: No
5.5 Straightening: Straightening
Straightening Length: 583
5.5 Dredging: None

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Phase 2 Segment Summary

Reach # T4.05 Segment: B Completion Date: September 8, 2005
Observers: KLU (SMRC), SHP (VTDEC) Why Not assessed: Rain: No
Segment Location: From bedrock gorge downstream to Lazy Brook Mobile Home Park

March 3, 2010 SGAT Version: 4.56

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**
1.2 Alluvial Fan **None**
1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Extremely	Extremely
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features
Valley Width (ft) **45**
Width Determination **Estimated**
Confinement Type **Narrowly**
Rock Gorge? **No**
Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **24**
2.2 Max Depth (ft) **1.70**
2.3 Mean Depth (ft) **0.99**
2.4 Floodprone Width (ft) **31**

Notes:

Channel is closely confined by steep, forested valley walls generally located within one bankfull width of the channel. Occasionally, narrow terraces are present along the side of the channel – usually at a thalweg height between 2 & 3 times the max

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **4.40** ft.
Human Elev Floodpln **0.00** ft.
2.6 Width/Depth Ratio **24.44**
2.7 Entrenchment Ratio **1.28**
2.8 Incision Ratio **2.59**
Human Elevated Inc Rat **0.00**
2.9 Sinuosity **Low**
2.10 Riffles Type **Complete**
2.11 Riffle/Step Spacing (ft) **75**
2.12 Substrate Composition

Bedrock	0%
Boulder	15%
Cobble	36%
Coarse Gravel	23%
Fine Gravel	22%
Sand	4%
Silt and smaller	0%

Silt/Clay Present? **No**
Detritus **3** %
Large Woody **24**
2.13 Average Largest Particle on

Bed	300.0	mm
Bar	N/A	mm

2.14 Stream Type
Stream Type: **F**
Bed Material: **Cobble**
Subclass Slope: **a**
Bed Form: **Step-Pool**
Field Measured Slope:
2.15 Reference Stream Type
(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	Multiple	53.33
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks
Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Mix	Mix
Consistency	Cohesive	Cohesive
Lower		
Material Type	Boulder/Cobbl	Boulder/Cobbl
Consistency	Non-cohesive	Non-cohesive
Bank Erosion	Left	Right
Erosion Length (ft)	268	389
Erosion Height (ft)	2.57	2.36
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0
Near Bank Veg. Type	Left	Right
Dominant	Coniferous	Coniferous
Sub-dominant	Deciduous	Deciduous
Bank Canopy	Left	Right
Canopy %	76-100	76-100
Mid-Channel Canopy	Closed	

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	None	None
W less than 25	0	0
Buffer Veg. Type	Left	Right
Dominant	Coniferous	Coniferous
Sub-dominant	Deciduous	Deciduous

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Forest
Sub-dominant	None	None
Mass Failures	84	76
Height	35	100
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Abundant**
4.2 Adjacent Wetlands **None**
4.3 Flow Status **Moderate**
4.4 # of Debris Jams **5**
4.5 Flow Regulation Type **None**
Flow Regulation Use
Impoundments
Impoundmt. Location
4.6 Up/Down strm flow reg **None**
(old) Upstrm Flow Reg

4.9 # of Beaver Dams **0**
Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
1	1	1
Diagonal	Delta	Island
0	2	1

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
2	0	0	1

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**
5.5 Straightening **None**
Straightening Length: **0**
5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Stream: **Hollow Brook** Reach # **T4.05** Segment: **C** Completion Date: **September 8, 2005**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC), SHP (VTDEC)** Why Not assessed: **bedrock gorge** Rain: **No**

Segment Length (ft): **750** Segment Location: **Bedrock gorge, mid-reach.**

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation **Channel Dimensions**

1.2 Alluvial Fan **None**

1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	0	0
height	0	0
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	0	0

1.4 Adjacent Side	Left	Right
Hillside Slope	Extremely	Extremely
Continuous w/	Always	Always
W/in 1 Bankfill	Always	Always
Texture	Bedrock	Bedrock

1.5 Valley Features

Valley Width (ft) **40**

Width Determination **Estimated**

Confinement Type **Narrowly**

Rock Gorge? **No**

Human-caused Change? **No**

Step 2. Stream Channel

2.1 Bankfull Width **0**

2.2 Max Depth (ft) **0.00**

2.3 Mean Depth (ft) **0.00**

2.4 Floodprone Width (ft) **0**

Notes:

Subreach of bedrock gorge.

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln **0.00** ft.

Human Elev Floodpln **0.00** ft.

2.6 Width/Depth Ratio **0.00**

2.7 Entrenchment Ratio **0.00**

2.8 Incision Ratio **0.00**

Human Elevated Inc Rat **0.00**

2.9 Sinuosity

2.10 Riffles Type

2.11 Riffle/Step Spacing (ft) **0**

2.12 Substrate Composition

Silt/Clay Present?

Detritus **0** %

Large Woody **0**

2.13 Average Largest Particle on

Bed **0.0**

Bar **0.0**

2.14 Stream Type

Stream Type: **B**

Bed Material: **Bedrock**

Subclass Slope: **a**

Bed Form: **Cascade**

Field Measured Slope:

2.15 Reference Stream Type

(if different from Phase 1)

3.3 old	Amount	Mean Height
Failures	None	0.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks

Typical Bank Slope **Steep**

Bank Texture	Left	Right
Upper		
Material Type	Mix	Mix
Consistency	Cohesive	Cohesive
Lower		
Material Type	Bedrock	Bedrock
Consistency	Cohesive	Cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	0	0
Erosion Height (ft)	0.00	0.00
Revetmt. Type	None	None
Revetmt. Length (ft)	0	0

Near Bank Veg. Type	Left	Right
Dominant	Bare	Bare
Sub-dominant	Coniferous	Coniferous

Bank Canopy	Left	Right
Canopy %	76-100	76-100
Mid-Channel Canopy	Closed	

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	51-100	None
W less than 25	0	0

Buffer Veg. Type	Left	Right
Dominant	Coniferous	Coniferous
Sub-dominant	None	None

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Forest
Sub-dominant	None	None
Mass Failures	0	0
Height	0	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps **Minimal**

4.2 Adjacent Wetlands **None**

4.3 Flow Status **Moderate**

4.4 # of Debris Jams **1**

4.5 Flow Regulation Type **None**

Flow Regulation Use

Impoundments

Impoundmt. Location

4.6 Up/Down strm flow reg **Up Stream**

(old) Upstrm Flow Reg

4.9 # of Beaver Dams **0**

Affected Length (ft) **0**

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
0	0	0

Diagonal	Delta	Island
0	0	0

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
0	0	0	0

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal **No**

5.5 Straightening **None**

Straightening Length: **0**

5.5 Dredging **None**

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

Phase 2 Segment Summary

Reach # T4.05 Segment: D Observers: KLU (SMRC), SHP (VTDEC)
Segment Location: From upstream reach break at Lincoln Hill Road crossing, downstream to bedrock gorge.

March 3, 2010 SGAT Version: 4.56
Completion Date: September 8, 2005
Why Not assessed:
Rain: No

QC Status - Staff: Provisional Cons

Step 1. Valley and Floodplain

1.1 Segmentation: **Channel Dimensions**
1.2 Alluvial Fan: **None**
1.3 Corridor Encroachments

Length (ft)	One	Both
Berms	0	0
height	0	0
Roads	179	359
height	15	7
Railroads	0	0
height	0	0
Improved Paths	0	0
height	0	0
Development	272	129

1.4 Adjacent Side	Left	Right
Hillside Slope	Steep	Steep
Continuous w/	Sometimes	Sometimes
W/in 1 Bankfill	Sometimes	Sometimes
Texture	Not Evalua	Not Evalua

1.5 Valley Features
Valley Width (ft): 150
Width Determination: Estimated
Confinement Type: Narrow
Rock Gorge?: No
Human-caused Change?: Yes

Step 2. Stream Channel

2.1 Bankfull Width: 19
2.2 Max Depth (ft): 1.60
2.3 Mean Depth (ft): 0.92
2.4 Floodprone Width (ft): 175

Notes:

Subreach of reference Cb channel in an otherwise Ba reach. Valley confinement varies from SC to BD, but averages Narrow. No significant human-caused change in valley width. Roads are driveways at grade which pass by channel for short distances.

Provisional *Step 2. (Contued)*

2.5 Aband. Floodpln: 2.50 ft.
Human Elev Floodpln: 0.00 ft.
2.6 Width/Depth Ratio: 20.98
2.7 Entrenchment Ratio: 9.07
2.8 Incision Ratio: 1.56
Human Elevated Inc Rat: 0.00
2.9 Sinuosity: Moderate
2.10 Riffles Type: Eroded
2.11 Riffle/Step Spacing (ft): 0
2.12 Substrate Composition

Bedrock	0%
Boulder	8%
Cobble	38%
Coarse Gravel	32%
Fine Gravel	8%
Sand	14%
Silt and smaller	0%

Silt/Clay Present?: No
Detritus: 2 %
Large Woody: 5
2.13 Average Largest Particle on

Bed	302.0	mm
Bar	N/A	mm

2.14 Stream Type
Stream Type: C
Bed Material: Gravel
Subclass Slope: b
Bed Form: Plane Bed
Field Measured Slope:
2.15 Reference Stream Type
(if different from Phase 1)
C 4 b Riffle-Pool

3.3 old	Amount	Mean Height
Failures	One	15.00
Gullies	None	0.00

Step 3. Riparian Features

3.1 Stream Banks
Typical Bank Slope: Steep

Bank Texture	Left	Right
Upper		
Material Type	Gravel	Gravel
Consistency	Non-cohesive	Non-cohesive
Lower		
Material Type	Gravel	Gravel
Consistency	Non-cohesive	Non-cohesive

Bank Erosion	Left	Right
Erosion Length (ft)	307	452
Erosion Height (ft)	2.94	2.23
Revetmt. Type	Rip-Rap	None
Revetmt. Length (ft)	113	0

Near Bank Veg. Type	Left	Right
Dominant	Deciduous	Deciduous
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin

Bank Canopy	Left	Right
Canopy %	76-100	76-100
Mid-Channel Canopy	Closed	

3.2 Riparian Buffer

Buffer Width	Left	Right
Dominant	>100	>100
Sub-dominant	0-25	0-25
W less than 25	741	394

Buffer Veg. Type	Left	Right
Dominant	Deciduous	Deciduous
Sub-dominant	Shrubs/Saplin	Shrubs/Saplin

3.3 Riparian Corridor

Corridor Land	Left	Right
Dominant	Forest	Forest
Sub-dominant	Residential	Residential
Mass Failures	28	0
Height	15	0
Gullies	0	
Length	0	
Height	0.00	

Step 4. Flow & Flow Modifiers

4.1 Springs / Seeps: Abundant
4.2 Adjacent Wetlands: Minimal
4.3 Flow Status: Moderate
4.4 # of Debris Jams: 3
4.5 Flow Regulation Type: Small Store
Flow Regulation Use: Other
Impoundments
Impoundmt. Location
4.6 Up/Down strm flow reg: None
(old) Upstrm Flow Reg
4.7 StormwaterInputs

Field Ditch	0	Road Ditch	1
Other	0	Tile Drain	0
Overland Flow	0	Urb Strm Wtr Pipe	0

4.9 # of Beaver Dams: 0
Affected Length (ft): 0

Step 5. Channel Bed and Planform Changes

5.1 Bar Types

Mid	Point	Side
1	1	1
Diagonal	**Delta**	**Island**
0	0	1

5.2 Other Features

Flood	Neck Cutoff	Avulsion	Braiding
1	0	0	1

5.3 Steep Riffles and Head Cuts

Steep Riffles	Head Cuts	Trib Rejuv.
0	0	No

5.4 Stream Ford or Animal: No
5.5 Straightening: None
Straightening Length: 0
5.5 Dredging: Dredging

Note: Step 1.6 - Grade Controls and Step 4.8 - Channel Constrictions are on The second page of this report - with Steps 6 through 7.

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Narrative:

Step 7. Rapid Geomorphic Assessment Data

Confinement Type

Channel Evolution Model
Channel Evolution Stage
Geomorphic Condition
Stream Sensitivity

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

Habitat Stream Condition

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**61.0**	**Yes**	**Yes**	**Yes**	**Yes**

Problem **None**

Narrative:

Step 7. Rapid Geomorphic Assessment Data

Confinement Type

Channel Evolution Model
Channel Evolution Stage
Geomorphic Condition
Stream Sensitivity

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

Habitat Stream Condition

Stream: **Lewis Creek** Reach # **M03** Segment: **0** Completion Date: **September 17,**

Organization: **Lewis Creek Association** Observers: **KLU, BOS** Rain: **Yes**

Segment Length (ft): **5,471** Segment Location: **From Greenbush Road downstream to the railroad bridge crossing.**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**93.0**	**Yes**	**Yes**	**No**	**Yes**
Problem	**None**				
Bridge	**70.0**	**Yes**	**No**	**No**	**Yes**
Problem	**None**				

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**18**	**None**	**No**
7.2 Channel Aggradation	**13**	**None**	**No**
7.3 Widening Channel	**16**		**No**
7.4 Change in Planform	**13**		**No**
Total Score	**60**		
Geomorphic Rating	**0.75**		

Channel Evolution Model **F**

Channel Evolution Stage **I**

Geomorphic Condition **Good**

Stream Sensitivity **High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **Low**

	Score
6.1 Epifaunal Substrate - Available Cover	**11**
6.2 Pool Substrate	**16**
6.3 Pool Variability	**5**
6.4 Sediment Deposition	**16**
6.5 Channel Flow Status	**16**
6.6 Channel Alteration	**11**
6.7 Channel Sinuosity	**10**
6.8 Bank Stability	**Left: 7 Right: 9**
6.9 Bank Vegetation Protection	**Left: 6 Right: 8**
6.10 Riparian Vegetation Zone Width	**Left: 4 Right: 4**
Total Score	**123**
Habitat Rating	**0.615**

Habitat Stream Condition **Fair**

Narrative:

Minor planform adjustment (flood chutes) with potential for avulsion and minor aggradation from instream and upstream sediment sources.

Stream: **Lewis Creek** Reach # **M04** Segment: **0** Completion Date: **September 25,**

Organization: **Lewis Creek Association** Observers: **KLU, EE** Rain: **Yes**

Segment Length (ft): **5,344** Segment Location: **From vicinity of Rt 7 crossing downstream to Greenbush Rd crossing.**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**16**	**None**	**No**
7.2 Channel Aggradation	**13**	**None**	**No**
7.3 Widening Channel	**13**		**No**
7.4 Change in Planform	**5**		**No**
Total Score	**47**		
Geomorphic Rating	**0.5875**		

Channel Evolution Model **D**

Channel Evolution Stage **IIc**

Geomorphic Condition **Fair**

Stream Sensitivity **Extreme**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **Low**

	Score
6.1 Epifaunal Substrate - Available Cover	**13**
6.2 Pool Substrate	**13**
6.3 Pool Variability	**10**
6.4 Sediment Deposition	**10**
6.5 Channel Flow Status	**18**
6.6 Channel Alteration	**18**
6.7 Channel Sinuosity	**13**
6.8 Bank Stability	**Left: 4 Right: 4**
6.9 Bank Vegetation Protection	**Left: 4 Right: 4**
6.10 Riparian Vegetation Zone Width	**Left: 9 Right: 9**
Total Score	**129**
Habitat Rating	**0.645**

Habitat Stream Condition **Good**

Narrative:

Moderate PF (migration, FCs); minor widening and min to moderate aggr local to DJs & LWD & tight bends. Regionally, aggr & PF in part due to decreasing gradient (decr sed transp capac) as channel transitions to Lk Champlain.

Stream: **Lewis Creek** Reach # **M05** Segment: **0** Completion Date: **September 25,**

Organization: **Lewis Creek Association** Observers: **KLU, EE** Rain: **Yes**

Segment Length (ft): **2,394** Segment Location: **Short channel section crossed by VT Route 7.**

1.6 Grade Controls

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken
Ledge	**Mid-segment**	**2.00**	**1.00**	**Yes**	**Yes**
Waterfall	**Mid-segment**	**3.00**	**1.00**	**Yes**	**Yes**

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Old	**62.5**	**Yes**	**Yes**	**Yes**	**Yes**

Problem **None**

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**10**	**None**	**Yes**
7.2 Channel Aggradation	**13**	**None**	**No**
7.3 Widening Channel	**10**		**Yes**
7.4 Change in Planform	**15**		**No**
Total Score	**48**		
Geomorphic Rating	**0.6**		

Channel Evolution Model **F**

Channel Evolution Stage **III**

Geomorphic Condition **Fair**

Stream Sensitivity **High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **High**

	Score
6.1 Epifaunal Substrate - Available Cover	**11**
6.2 Embeddedness	**16**
6.3 Velocity/Depth Patterns	**13**
6.4 Sediment Deposition	**16**
6.5 Channel Flow Status	**18**
6.6 Channel Alteration	**16**
6.7 Frequency of Riffles/Steps	**13**
6.8 Bank Stability	**Left: 7 Right: 9**
6.9 Bank Vegetation Protection	**Left: 9 Right: 9**
6.10 Riparian Vegetation Zone Width	**Left: 9 Right: 9**
Total Score	**155**
Habitat Rating	**0.775**

Habitat Stream Condition **Good**

Narrative:

Slight planform adjustment (meander migration) and aggradation are active in the reach. Moderate historic incision and widening.

Stream: **Lewis Creek** Reach # **M06** Segment: **0** Completion Date: **October 2, 2004**

Organization: **Lewis Creek Association** Observers: **KLU, EE** Rain: **Yes**

Segment Length (ft): **5,831** Segment Location: **From Old Hollow Rd crossing in North Ferrisburg village to the Route 7 crossing.**

1.6 Grade Controls

Type	Location	Total	Total Height Above Water	Photo Taken	GPS Taken
Ledge	**Mid-segment**	**1.00**	**1.00**	**No**	**No**

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**7**	**None**	**Yes**
7.2 Channel Aggradation	**8**	**None**	**No**
7.3 Widening Channel	**13**		**Yes**
7.4 Change in Planform	**8**		**No**
Total Score	**36**		
Geomorphic Rating	**0.45**		

Channel Evolution Model	**F**
Channel Evolution Stage	**III**
Geomorphic Condition	**Fair**
Stream Sensitivity	**High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **High**

	Score
6.1 Epifaunal Substrate - Available Cover	**15**
6.2 Embeddedness	**18**
6.3 Velocity/Depth Patterns	**15**
6.4 Sediment Deposition	**18**
6.5 Channel Flow Status	**18**
6.6 Channel Alteration	**11**
6.7 Frequency of Riffles/Steps	**16**
6.8 Bank Stability	**Left: 7 Right: 6**
6.9 Bank Vegetation Protection	**Left: 9 Right: 7**
6.10 Riparian Vegetation Zone Width	**Left: 9 Right: 9**
Total Score	**158**
Habitat Rating	**0.79**

Habitat Stream Condition **Good**

Narrative:

Planform adjustment is active including bifurcated channel becoming braided in one location, and a recent avulsion (post1995, pre2003). Minor to moderate (localized) aggradation. Historic incision and widening.

Stream: **Lewis Creek** Reach # **M07** Segment: **0** Completion Date: **November 16,**

Organization: **Lewis Creek Association** Observers: **Brendan OShea, Thomas Baines** Rain: **Yes**

Segment Length (ft): **9,124** Segment Location: **Largely forested reach from vicinity (south of) Spear Street and Guinea Rd intersection**

1.6 Grade Controls

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken
Waterfall	**Mid-segment**	**30.00**	**28.00**	**Yes**	
Waterfall	**Mid-segment**	**10.00**	**8.00**	**Yes**	

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**72.0**	**Yes**	**Yes**	**Yes**	**Yes**

Problem **None**

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Confined**

	Score	STD	Historic
7.1 Channel Degradation	**18**	**None**	**No**
7.2 Channel Aggradation	**17**	**None**	**No**
7.3 Widening Channel	**18**		**No**
7.4 Change in Planform	**18**		**No**
Total Score	**71**		
Geomorphic Rating	**0.8875**		

Channel Evolution Model **D**

Channel Evolution Stage **I**

Geomorphic Condition **Referenc**

Stream Sensitivity **High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **High**

	Score
6.1 Epifaunal Substrate - Available Cover	**16**
6.2 Embeddedness	**18**
6.3 Velocity/Depth Patterns	**18**
6.4 Sediment Deposition	**15**
6.5 Channel Flow Status	**18**
6.6 Channel Alteration	**18**
6.7 Frequency of Riffles/Steps	**18**
6.8 Bank Stability	**Left: 9 Right: 9**
6.9 Bank Vegetation Protection	**Left: 9 Right: 9**
6.10 Riparian Vegetation Zone Width	**Left: 9 Right: 9**
Total Score	**175**
Habitat Rating	**0.875**

Habitat Stream Condition **Referen**

Narrative:

None. Bedrock controls, well developed forested buffers.

Stream: **Lewis Creek** Reach # **M08** Segment: **0** Completion Date: **September 17,**

Organization: **Lewis Creek Association** Observers: **KLU, SHPytlik** Rain: **Yes**

Segment Length (ft): **6,484** Segment Location: **From 1/4 mile upstream of Quinlan Covered Bridge to nearly one mile downstream of**

1.6 Grade Controls

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken
Ledge	**Mid-segment**	**1.00**	**1.00**	**Yes**	**Yes**
Ledge	**Mid-segment**	**1.00**	**1.00**	**Yes**	**Yes**
Ledge	**Mid-segment**	**1.00**	**1.00**	**Yes**	**Yes**
Ledge	**Mid-segment**	**1.00**	**1.00**	**Yes**	**Yes**
Ledge	**Mid-segment**	**1.00**	**1.00**	**Yes**	**Yes**
Ledge	**Mid-segment**	**1.00**	**0.00**	**No**	**Yes**

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**69.2**	**Yes**	**Yes**	**Yes**	**Yes**

Problem **Deposition Above,Alignment**

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**18**	**None**	**No**
7.2 Channel Aggradation	**15**	**None**	**No**
7.3 Widening Channel	**15**		**No**
7.4 Change in Planform	**13**		**No**

Total Score **61**

Geomorphic Rating **0.7625**

Channel Evolution Model **D**

Channel Evolution Stage **I**

Geomorphic Condition **Good**

Stream Sensitivity **High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **High**

Habitat Stream Condition **Good**

Narrative:

Minor aggradation and planform adjustment (meander extension); localized widening (downstream of bridge) enhanced by ice jams. Vertical adjustments moderated by channel-spanning bedrock.

Stream: **Lewis Creek** Reach # **M09** Segment: **A** Completion Date: **September 17,**

Organization: **Lewis Creek Association** Observers: **KLU, SHPytlik** Rain: **Yes**

Segment Length (ft): **1,004** Segment Location: **From just below Scott Pond Dam to approximately 1/4 mile upstream of the Quinlan**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Confined**

	Score	STD	Historic
7.1 Channel Degradation	**3**	**B to F**	**Yes**
7.2 Channel Aggradation	**10**	**None**	**Yes**
7.3 Widening Channel	**9**		**Yes**
7.4 Change in Planform	**15**		**Yes**
Total Score	**37**		
Geomorphic Rating	**0.4625**		

Channel Evolution Model **F**

Channel Evolution Stage **II**

Geomorphic Condition **Fair**

Stream Sensitivity **Extreme**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

Habitat Stream Condition

Narrative:

Minor aggradation; historic widening and incision. Bc to F STD.

1.6 Grade Controls

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken
Dam	**Mid-segment**	**6.00**	**3.00**	**Yes**	**Yes**
Ledge	**Mid-segment**	**4.00**	**2.00**	**Yes**	**Yes**
Ledge	**Mid-segment**	**2.00**	**1.00**	**Yes**	**Yes**

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Other	**65.0**	**Yes**	**Yes**	**No**	**Yes**

Problem **Deposition Above**

Narrative:

Step 7. Rapid Geomorphic Assessment Data

Confinement Type

Channel Evolution Model
Channel Evolution Stage
Geomorphic Condition
Stream Sensitivity

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

Habitat Stream Condition

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Narrative:

Step 7. Rapid Geomorphic Assessment Data

Confinement Type

Channel Evolution Model
Channel Evolution Stage
Geomorphic Condition
Stream Sensitivity

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

Habitat Stream Condition

Stream: **Lewis Creek** Reach # **M10** Segment: **B** Completion Date: **August 18, 2009**

Organization: **Lewis Creek Association** Observers: **KLU, MI** Rain: **Yes**

Segment Length (ft): **3,535** Segment Location: **From downstream of RB sand / gravel quarry downstream past Barlow hay field to**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**8**	**None**	**Yes**
7.2 Channel Aggradation	**11**	**None**	**No**
7.3 Widening Channel	**10**		**No**
7.4 Change in Planform	**8**		**No**
Total Score	**37**		
Geomorphic Rating	**0.4625**		

Channel Evolution Model **F**

Channel Evolution Stage **III**

Geomorphic Condition **Fair**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

Habitat Stream Condition

Narrative:

Moderate planform adjust (FCs, braid, island, migr); min to mod aggrad (contributions from tribs, quarry/ mass failure). Hist incis, wid. Current floodplain widening mostly accomplished by PF change.

Stream: **Lewis Creek** Reach # **M10** Segment: **C** Completion Date: **November 15,**

Organization: **Lewis Creek Association** Observers: **B Oshea, T Baines (11/06)** Rain: **Yes**

Segment Length (ft): **2,701** Segment Location: **Mid-reach section of narrower valley confinement extending approx 2700 ft upstream**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Confined**

	Score	STD	Historic
7.1 Channel Degradation	**9**	**None**	**Yes**
7.2 Channel Aggradation	**13**	**None**	**No**
7.3 Widening Channel	**13**		**Yes**
7.4 Change in Planform	**16**		**No**
Total Score	**51**		
Geomorphic Rating	**0.6375**		

Channel Evolution Model **F**

Channel Evolution Stage **IV**

Geomorphic Condition **Fair**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

Habitat Stream Condition

Narrative:

Minor aggradation. Historic (possibly post-glacial) incision; historic widening. Condition score (Fair) on cusp with Good.

Stream: **Lewis Creek** Reach # **M10** Segment: **D** Completion Date: **August 18, 2009**

Organization: **Lewis Creek Association** Observers: **KLU, MI (8/09); B Oshea, T Baines** Rain: **Yes**

Segment Length (ft): **4,868** Segment Location: **Mid-reach section extending approx 4800 feet downstream of point where Roscoe Rd**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**8**	**None**	**Yes**
7.2 Channel Aggradation	**11**	**None**	**No**
7.3 Widening Channel	**13**		**Yes**
7.4 Change in Planform	**11**		**No**

Total Score **43**

Geomorphic Rating **0.5375**

Channel Evolution Model **F**

Channel Evolution Stage **IV**

Geomorphic Condition **Fair**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

Habitat Stream Condition

Narrative:

Minor to mod aggr & PF (flood chutes). Historic (possibly post-glacial) incision. Historic widening.

Stream: **Lewis Creek** Reach # **M10** Segment: **E** Completion Date: **August 19, 2009**

Organization: **Lewis Creek Association** Observers: **KLU, MI (8/09); B Oshea, T Baines** Rain: **Yes**

Segment Length (ft): **1,149** Segment Location: **From Sequin covered bridge to a point approx 1200 ft downstream, along Roscoe**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**8**	**None**	**Yes**
7.2 Channel Aggradation	**14**	**None**	**No**
7.3 Widening Channel	**13**		**No**
7.4 Change in Planform	**13**		**Yes**
Total Score	**48**		
Geomorphic Rating	**0.6**		

Channel Evolution Model **F**

Channel Evolution Stage **II**

Geomorphic Condition **Fair**

Stream Sensitivity **High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

Habitat Stream Condition

Narrative:

Min to moderate aggrad, widening, PF change (partly resisted by cohesive banks, armoring, revetments). Hist incision, hist PF change (channelization). High potential for catastrophic adjustment.

Stream: **Lewis Creek** Reach # **M10** Segment: **F** Completion Date: **August 19, 2009**

Organization: **Lewis Creek Association** Observers: **KLU, MI (8/09); B Oshea, T Baines** Rain: **Yes**

Segment Length (ft): **564** Segment Location: **Upstream 500+ ft of reach dominated by bedrock controls, including small waterfall**

1.6 Grade Controls

Type	Location	Total	Total Height Above Water	Photo Taken	GPS Taken
Waterfall	**Mid-segment**	**8.00**	**7.00**	**Yes**	**Yes**
Ledge	**Mid-segment**	**1.00**	**0.00**	**Yes**	**No**

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bedrock	**25.0**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**Deposition Above,Scour Below**				
Bridge	**70.0**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**None**				

Narrative:

Step 7. Rapid Geomorphic Assessment Data

Confinement Type

Channel Evolution Model

Channel Evolution Stage

Geomorphic Condition **Good**

Stream Sensitivity

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

Habitat Stream Condition

Stream: **Lewis Creek** Reach # **M11** Segment: **0** Completion Date: **October 18, 2004**

Organization: **Lewis Creek Association** Observers: **KLU, EE (SMRC)** Rain: **Yes**

Segment Length (ft): **3,341** Segment Location: **From Cedar Brook confluence downstream to the Charlotte town line, just upstream of**

1.6 Grade Controls

Type	Location	Total	Total Height Above Water	Photo Taken	GPS Taken
Ledge	**Mid-segment**	**1.00**	**0.00**	**No**	**No**

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**8**	**None**	**Yes**
7.2 Channel Aggradation	**15**	**None**	**No**
7.3 Widening Channel	**10**		**No**
7.4 Change in Planform	**13**		**No**
Total Score	**46**		
Geomorphic Rating	**0.575**		

Channel Evolution Model **F**

Channel Evolution Stage **III**

Geomorphic Condition **Fair**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

Habitat Stream Condition

Narrative:

Historic incision; minor to moderate widening leading to apparent STD from E to C. Minor aggr local to DJs, beaver dams, and bedrock grade control.

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Narrative:

Step 7. Rapid Geomorphic Assessment Data

Confinement Type

Channel Evolution Model
Channel Evolution Stage
Geomorphic Condition **Good**
Stream Sensitivity

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

Habitat Stream Condition

Stream: **Lewis Creek** Reach # **M12** Segment: **B** Completion Date: **October 21, 2004**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC), Carrie & Dave Fenn** Rain: **Yes**

Segment Length (ft): **1,161** Segment Location: **Short section upstream of Baldwin Road crossing.**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**65.5**	**Yes**	**No**	**No**	**Yes**

Problem **Scour Below**

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**8**	**C to B**	**Yes**
7.2 Channel Aggradation	**15**	**None**	**No**
7.3 Widening Channel	**16**		**No**
7.4 Change in Planform	**16**		**Yes**
Total Score	**55**		
Geomorphic Rating	**0.6875**		

Channel Evolution Model **F**

Channel Evolution Stage **II**

Geomorphic Condition **Good**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

Habitat Stream Condition

Narrative:

Historic incision. Minor to negligible current adjustments. Lateral adjustments likely moderated by cohesive sediments in bed / banks. Locally, steeper gradient and partly entrenched condition (transport-dominated) have minimized aggradation.

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Narrative:

Step 7. Rapid Geomorphic Assessment Data

Confinement Type

Channel Evolution Model
Channel Evolution Stage
Geomorphic Condition
Stream Sensitivity

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

Habitat Stream Condition

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Narrative:

Step 7. Rapid Geomorphic Assessment Data

Confinement Type

Channel Evolution Model
Channel Evolution Stage
Geomorphic Condition **Fair**
Stream Sensitivity

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

Habitat Stream Condition

Stream: **Lewis Creek** Reach # **M13** Segment: **B** Completion Date: **June 15, 2005**

Organization: **Lewis Creek Association** Observers: **KLU, EE (SMRC)** Rain: **Yes**

Segment Length (ft): **4,042** Segment Location: **From Lewis Creek Rd downstream to Silver Street bridge.**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**84.0**	**Yes**	**No**	**No**	**Yes**

Problem **None**

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**7**	**None**	**Yes**
7.2 Channel Aggradation	**13**	**None**	**No**
7.3 Widening Channel	**11**		**Yes**
7.4 Change in Planform	**16**		**Yes**
Total Score	**47**		
Geomorphic Rating	**0.5875**		

Channel Evolution Model **F**

Channel Evolution Stage **II**

Geomorphic Condition **Fair**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

Habitat Stream Condition

Narrative:

Minor, localized aggradation. Historic incision and widening. Cohesive banks, bed have likely moderated widening, planform adjustment.

Stream: **Lewis Creek** Reach # **M14** Segment: **0** Completion Date: **November 29,**

Organization: **Lewis Creek Association** Observers: **SH, Peter, KU** Rain: **No**

Segment Length (ft): **3,003** Segment Location: **Reach is parallel to Lewis Creek Road, east of intersection with Silver Street, and**

1.6 Grade Controls

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken
Ledge	**Mid-segment**	**1.00**	**0.00**	**No**	
Ledge	**Mid-segment**	**1.00**	**0.00**	**Yes**	

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**41.0**	**Yes**	**No**	**Yes**	**Yes**
Problem	**Deposition Above,Scour Below**				

Narrative:
None.

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Confined**

	Score	STD	Historic
7.1 Channel Degradation	**18**	**None**	**No**
7.2 Channel Aggradation	**15**	**None**	**No**
7.3 Widening Channel	**15**		**No**
7.4 Change in Planform	**18**		**No**
Total Score	**66**		
Geomorphic Rating	**0.825**		

Channel Evolution Model **D**
Channel Evolution Stage **I**
Geomorphic Condition **Good**
Stream Sensitivity **Moderate**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **High**

	Score
6.1 Epifaunal Substrate - Available Cover	**8**
6.2 Embeddedness	**13**
6.3 Velocity/Depth Patterns	**11**
6.4 Sediment Deposition	**15**
6.5 Channel Flow Status	**18**
6.6 Channel Alteration	**18**
6.7 Frequency of Riffles/Steps	**17**
6.8 Bank Stability	**Left: 10 Right: 8**
6.9 Bank Vegetation Protection	**Left: 9 Right: 8**
6.10 Riparian Vegetation Zone Width	**Left: 10 Right: 7**
Total Score	**152**
Habitat Rating	**0.76**

Habitat Stream Condition **Good**

Stream: **Lewis Creek** Reach # **M15** Segment: **A** Completion Date: **November 29,**

Organization: **Lewis Creek Association** Observers: **KLU, BOS** Rain: **No**

Segment Length (ft): **6,162** Segment Location: **Extends from just above the Monkton / Hinesburg line downstream to the end of the**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**18**	**None**	**No**
7.2 Channel Aggradation	**10**	**None**	**No**
7.3 Widening Channel	**13**		**No**
7.4 Change in Planform	**8**		**No**
Total Score	**49**		
Geomorphic Rating	**0.6125**		

Channel Evolution Model **F**

Channel Evolution Stage **IV**

Geomorphic Condition **Fair**

Stream Sensitivity **Extreme**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **High**

	Score
6.1 Epifaunal Substrate - Available Cover	**15**
6.2 Embeddedness	**13**
6.3 Velocity/Depth Patterns	**13**
6.4 Sediment Deposition	**11**
6.5 Channel Flow Status	**15**
6.6 Channel Alteration	**9**
6.7 Frequency of Riffles/Steps	**16**
6.8 Bank Stability	**Left: 5 Right: 7**
6.9 Bank Vegetation Protection	**Left: 5 Right: 7**
6.10 Riparian Vegetation Zone Width	**Left: 10 Right: 9**
Total Score	**135**
Habitat Rating	**0.675**

Habitat Stream Condition **Good**

Narrative:

Moderate planform adjustment (flood chutes, meander extension & migration, recent avulsion) and aggradation in response to historic straightening and delivery of sediments from upstream sources (erosion, tributaries, stormwater inputs).

Stream: **Lewis Creek** Reach # **M15** Segment: **B** Completion Date: **November 29,**

Organization: **Lewis Creek Association** Observers: **KLU, BOS** Rain: **No**

Segment Length (ft): **3,989** Segment Location: **From Hollow Brook confluence downstream under the Tyler Bridge Road bridge to a**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**62.0**	**Yes**	**No**	**No**	**Yes**

Problem **Deposition Below**

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**16**	**None**	**Yes**
7.2 Channel Aggradation	**11**	**None**	**No**
7.3 Widening Channel	**10**		**No**
7.4 Change in Planform	**6**		**No**
Total Score	**43**		
Geomorphic Rating	**0.5375**		

Channel Evolution Model **F**

Channel Evolution Stage **IV**

Geomorphic Condition **Fair**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **High**

	Score
6.1 Epifaunal Substrate - Available Cover	**13**
6.2 Embeddedness	**10**
6.3 Velocity/Depth Patterns	**13**
6.4 Sediment Deposition	**6**
6.5 Channel Flow Status	**8**
6.6 Channel Alteration	**8**
6.7 Frequency of Riffles/Steps	**18**
6.8 Bank Stability	**Left: 6 Right: 7**
6.9 Bank Vegetation Protection	**Left: 6 Right: 6**
6.10 Riparian Vegetation Zone Width	**Left: 8 Right: 10**
Total Score	**119**
Habitat Rating	**0.595**

Habitat Stream Condition **Fair**

Narrative:

Moderate to major planform adjustment (recent avulsion, flood chutes, meander extension) and moderate widening and aggradation in response to historic channelization, recent avulsion, and delivery of sediments from upstream erosion and tributaries.

Stream: **Lewis Creek** Reach # **M16** Segment: **0** Completion Date: **June 24, 2005**

Organization: **Lewis Creek Association** Observers: **KLU** Rain: **Yes**

Segment Length (ft): **6,559** Segment Location: **West of Route 116, from Mitch Kelly farm at M16S1 confluence downstream to Hollow**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**16**	**None**	**Yes**
7.2 Channel Aggradation	**11**	**None**	**No**
7.3 Widening Channel	**6**		**No**
7.4 Change in Planform	**11**		**No**
Total Score	**44**		
Geomorphic Rating	**0.55**		

Channel Evolution Model **F**

Channel Evolution Stage **III**

Geomorphic Condition **Fair**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **High**

	Score
6.1 Epifaunal Substrate - Available Cover	**8**
6.2 Embeddedness	**11**
6.3 Velocity/Depth Patterns	**16**
6.4 Sediment Deposition	**15**
6.5 Channel Flow Status	**15**
6.6 Channel Alteration	**13**
6.7 Frequency of Riffles/Steps	**18**
6.8 Bank Stability	**Left: 7 Right: 4**
6.9 Bank Vegetation Protection	**Left: 7 Right: 4**
6.10 Riparian Vegetation Zone Width	**Left: 2 Right: 2**
Total Score	**122**
Habitat Rating	**0.61**

Habitat Stream Condition **Fair**

Narrative:

Active widening and planform adjustment. Minor degree of historic incision. Active incision moderated by cohesive soils, varved clays exposed at thalweg. VH sens due to STD, E to C str type.

Stream: **Lewis Creek** Reach # **M17** Segment: **A** Completion Date: **September 21,**

Organization: **Lewis Creek Association** Observers: **LU, LD** Rain: **Yes**

Segment Length (ft): **3,446** Segment Location: **Downstream segment; on Kelly farm west of Route 116.**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**25.5**	**No**	**No**	**Yes**	**Yes**

Problem **Scour Below**

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**15**	**None**	**Yes**
7.2 Channel Aggradation	**13**	**None**	**No**
7.3 Widening Channel	**15**		**No**
7.4 Change in Planform	**11**		**No**
Total Score	**54**		
Geomorphic Rating	**0.675**		

Channel Evolution Model **F**

Channel Evolution Stage **I**

Geomorphic Condition **Good**

Stream Sensitivity **High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **Low**

	Score
6.1 Epifaunal Substrate - Available Cover	**15**
6.2 Pool Substrate	**15**
6.3 Pool Variability	**11**
6.4 Sediment Deposition	**13**
6.5 Channel Flow Status	**16**
6.6 Channel Alteration	**16**
6.7 Channel Sinuosity	**12**
6.8 Bank Stability	**Left: 7 Right: 7**
6.9 Bank Vegetation Protection	**Left: 5 Right: 5**
6.10 Riparian Vegetation Zone Width	**Left: 4 Right: 1**
Total Score	**127**
Habitat Rating	**0.635**

Habitat Stream Condition **Fair**

Narrative:

Minor planform adjustment (meander extension and migration).

Stream: **Lewis Creek** Reach # **M17** Segment: **B** Completion Date: **September 10,**

Organization: **Lewis Creek Association** Observers: **KLU** Rain: **Yes**

Segment Length (ft): **8,552** Segment Location: **From 1000 ft downstream of States Prison Hollow Ext bridge to Kelly Farm.**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**18.0**	**Yes**	**No**	**Yes**	**Yes**
Problem	**Deposition Above,Scour Below**				

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**18**	**None**	**No**
7.2 Channel Aggradation	**11**	**None**	**No**
7.3 Widening Channel	**15**		**No**
7.4 Change in Planform	**8**		**No**
Total Score	**52**		
Geomorphic Rating	**0.65**		

Channel Evolution Model **F**

Channel Evolution Stage **IV**

Geomorphic Condition **Good**

Stream Sensitivity **High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **Low**

	Score
6.1 Epifaunal Substrate - Available Cover	**16**
6.2 Pool Substrate	**16**
6.3 Pool Variability	**13**
6.4 Sediment Deposition	**10**
6.5 Channel Flow Status	**13**
6.6 Channel Alteration	**13**
6.7 Channel Sinuosity	**11**
6.8 Bank Stability	**Left: 7 Right: 7**
6.9 Bank Vegetation Protection	**Left: 6 Right: 6**
6.10 Riparian Vegetation Zone Width	**Left: 10 Right: 10**
Total Score	**138**
Habitat Rating	**0.69**

Habitat Stream Condition **Good**

Narrative:

Moderate planform adjustment (meander extension, meander migration, neck cutoffs, flood chutes) and minor aggradation. Potential incis / wid in response to past channelization & armoring may have been moderated by cohesive soils, offset by aggrad.

Stream: **Lewis Creek** Reach # **M17** Segment: **C** Completion Date: **September 10,**

Organization: **Lewis Creek Association** Observers: **KLU** Rain: **Yes**

Segment Length (ft): **2,005** Segment Location: **Upstream segment from base of bedrock gorge along States Prison Hollow Road,**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**50.0**	**Yes**	**No**	**No**	**Yes**
Problem	**None**				
Old	**45.0**	**No**	**No**	**No**	**Yes**
Problem	**None**				

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**10**	**None**	**Yes**
7.2 Channel Aggradation	**15**	**None**	**No**
7.3 Widening Channel	**11**		**No**
7.4 Change in Planform	**13**		**Yes**
Total Score	**49**		
Geomorphic Rating	**0.6125**		
Channel Evolution Model	**F**		
Channel Evolution Stage	**III**		
Geomorphic Condition	**Fair**		
Stream Sensitivity	**Very High**		

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **High**

	Score
6.1 Epifaunal Substrate - Available Cover	**8**
6.2 Embeddedness	**13**
6.3 Velocity/Depth Patterns	**13**
6.4 Sediment Deposition	**13**
6.5 Channel Flow Status	**15**
6.6 Channel Alteration	**8**
6.7 Frequency of Riffles/Steps	**18**
6.8 Bank Stability	**Left: 8 Right: 7**
6.9 Bank Vegetation Protection	**Left: 8 Right: 6**
6.10 Riparian Vegetation Zone Width	**Left: 8 Right: 3**
Total Score	**128**
Habitat Rating	**0.64**
Habitat Stream Condition	**Fair**

Narrative:

Minor widening and planform adjustment in response to inferred historic channelization & incision. Bedrock grade controls in upstream reach would limit upstream migration of nick points. Wid moderated by cohesive soils and tree buffer (LB)

Stream: **Lewis Creek** Reach # **M18** Segment: **0** Completion Date: **August 10, 2002**

Organization: **Lewis Creek Association** Observers: **Staci Pomeroy, B. Eliason, Joe Z.** Rain: **No**

Segment Length (ft): **1,446** Segment Location: **From States Prison Hollow Road crossing downstream to States Prison Hollow Road**

1.6 Grade Controls

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken
Waterfall	**Mid-segment**	**20.00**	**19.00**	**No**	
Waterfall	**Mid-segment**	**15.00**	**14.00**	**No**	
Waterfall	**Mid-segment**	**5.00**	**4.00**	**No**	
Waterfall	**Mid-segment**	**20.00**	**19.00**	**No**	
Waterfall	**Mid-segment**	**5.00**	**4.00**	**No**	
Waterfall	**Mid-segment**	**5.00**	**4.00**	**No**	

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**75.0**	**No**	**No**	**No**	**Yes**
Problem	**None**				
Bridge	**60.0**	**Yes**	**No**	**No**	**Yes**
Problem	**None**				

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Confined**

	Score	STD	Historic
7.1 Channel Degradation	**18**	**None**	**No**
7.2 Channel Aggradation	**15**	**None**	**No**
7.3 Widening Channel	**13**		**No**
7.4 Change in Planform	**16**		**No**
Total Score	**62**		
Geomorphic Rating	**0.775**		

Channel Evolution Model **D**

Channel Evolution Stage **I**

Geomorphic Condition **Good**

Stream Sensitivity **Very Low**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **High**

	Score
6.1 Epifaunal Substrate - Available Cover	**15**
6.2 Embeddedness	**18**
6.3 Velocity/Depth Patterns	**18**
6.4 Sediment Deposition	**19**
6.5 Channel Flow Status	**19**
6.6 Channel Alteration	**19**
6.7 Frequency of Riffles/Steps	**20**
6.8 Bank Stability	**Left: 10 Right: 10**
6.9 Bank Vegetation Protection	**Left: 10 Right: 10**
6.10 Riparian Vegetation Zone Width	**Left: 8 Right: 10**
Total Score	**186**
Habitat Rating	**0.93**

Habitat Stream Condition **Referen**

Narrative:

None (minor adjustment). Bedrock offers grade control.

Stream: **Lewis Creek** Reach # **M19** Segment: **A** Completion Date: **October 16, 2002**

Organization: **Lewis Creek Association** Observers: **SP, SH, KLU, Steve, Ethan, Nel** Rain: **Yes**

Segment Length (ft): **2,808** Segment Location: **Downstream portion of reach at Cota Ballfields off States Prison Hollow Road.**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**18**	**None**	**No**
7.2 Channel Aggradation	**15**	**None**	**No**
7.3 Widening Channel	**16**		**No**
7.4 Change in Planform	**11**		**No**
Total Score	**60**		
Geomorphic Rating	**0.75**		

Channel Evolution Model **D**

Channel Evolution Stage **I**

Geomorphic Condition **Good**

Stream Sensitivity **High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **High**

	Score
6.1 Epifaunal Substrate - Available Cover	**8**
6.2 Embeddedness	**13**
6.3 Velocity/Depth Patterns	**13**
6.4 Sediment Deposition	**15**
6.5 Channel Flow Status	**18**
6.6 Channel Alteration	**13**
6.7 Frequency of Riffles/Steps	**13**
6.8 Bank Stability	**Left: 7 Right: 7**
6.9 Bank Vegetation Protection	**Left: 7 Right: 4**
6.10 Riparian Vegetation Zone Width	**Left: 10 Right: 5**
Total Score	**133**
Habitat Rating	**0.665**

Habitat Stream Condition **Good**

Narrative:

Minor to moderate planform adjustment (meander extension, meander translation). Segment is a response zone immediately upstream of bedrock grade control of the downstream bedrock gorge (reach M18).

Stream: **Lewis Creek** Reach # **M19** Segment: **B** Completion Date: **September 18,**

Organization: **Lewis Creek Association** Observers: **SP, SH, Christa, Mike, KLU** Rain: **No**

Segment Length (ft): **8,077** Segment Location: **From farm bridge at upstream end of reach to Cota Ballfields; west of Route 116 and**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**39.0**	**Yes**	**No**	**No**	**Yes**
Problem	**Deposition Above**				
Bridge	**49.0**	**Yes**	**No**	**No**	**Yes**
Problem	**None**				

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**13**	**None**	**Yes**
7.2 Channel Aggradation	**13**	**None**	**No**
7.3 Widening Channel	**13**		**No**
7.4 Change in Planform	**11**		**No**
Total Score	**50**		
Geomorphic Rating	**0.625**		

Channel Evolution Model **F**

Channel Evolution Stage **III**

Geomorphic Condition **Fair**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **High**

	Score
6.1 Epifaunal Substrate - Available Cover	**13**
6.2 Embeddedness	**13**
6.3 Velocity/Depth Patterns	**13**
6.4 Sediment Deposition	**11**
6.5 Channel Flow Status	**15**
6.6 Channel Alteration	**6**
6.7 Frequency of Riffles/Steps	**15**
6.8 Bank Stability	**Left: 7 Right: 8**
6.9 Bank Vegetation Protection	**Left: 6 Right: 6**
6.10 Riparian Vegetation Zone Width	**Left: 6 Right: 6**
Total Score	**125**
Habitat Rating	**0.625**

Habitat Stream Condition **Good**

Narrative:

Moderate planform adjustment (neck cutoff, meander extension) and minor aggradation in response to past channelization (more pronounced in downstream half of the segment, where channelized planform is no longer being actively maintained.

Stream: **Lewis Creek** Reach # **M20** Segment: **A** Completion Date: **November 7,**

Organization: **Lewis Creek Association** Observers: **KLU, BOS** Rain: **No**

Segment Length (ft): **2,294** Segment Location: **Downstream half of reach, which crosses under Parsonage Road bridge and ends**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**40.0**	**Yes**	**No**	**Yes**	**Yes**

Problem **Scour Below**

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**8**	**None**	**Yes**
7.2 Channel Aggradation	**11**	**None**	**No**
7.3 Widening Channel	**13**		**No**
7.4 Change in Planform	**8**		**No**
Total Score	**40**		
Geomorphic Rating	**0.5**		

Channel Evolution Model **F**

Channel Evolution Stage **IV**

Geomorphic Condition **Fair**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **High**

	Score
6.1 Epifaunal Substrate - Available Cover	**6**
6.2 Embeddedness	**8**
6.3 Velocity/Depth Patterns	**8**
6.4 Sediment Deposition	**10**
6.5 Channel Flow Status	**13**
6.6 Channel Alteration	**7**
6.7 Frequency of Riffles/Steps	**18**
6.8 Bank Stability	**Left: 8 Right: 7**
6.9 Bank Vegetation Protection	**Left: 7 Right: 7**
6.10 Riparian Vegetation Zone Width	**Left: 2 Right: 9**
Total Score	**110**
Habitat Rating	**0.55**

Habitat Stream Condition **Fair**

Narrative:

Moderate planform adjustment (flood chutes, meander migration) and minor aggradation in response to inferred historic channelization and incision. Upstream erosion and tributary sources contributing to aggradation.

Stream: **Lewis Creek** Reach # **M20** Segment: **B** Completion Date: **November 7,**

Organization: **Lewis Creek Association** Observers: **KU, BOS** Rain: **No**

Segment Length (ft): **1,738** Segment Location: **Forested upstream half of M20 from confluence of High Knob tributary (T6)**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**5**	**C to F**	**Yes**
7.2 Channel Aggradation	**10**	**None**	**No**
7.3 Widening Channel	**10**		**No**
7.4 Change in Planform	**13**		**Yes**
Total Score	**38**		
Geomorphic Rating	**0.475**		

Channel Evolution Model **F**

Channel Evolution Stage **II**

Geomorphic Condition **Fair**

Stream Sensitivity **Extreme**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **High**

	Score
6.1 Epifaunal Substrate - Available Cover	**10**
6.2 Embeddedness	**13**
6.3 Velocity/Depth Patterns	**13**
6.4 Sediment Deposition	**10**
6.5 Channel Flow Status	**13**
6.6 Channel Alteration	**9**
6.7 Frequency of Riffles/Steps	**16**
6.8 Bank Stability	**Left: 10 Right: 10**
6.9 Bank Vegetation Protection	**Left: 10 Right: 10**
6.10 Riparian Vegetation Zone Width	**Left: 10 Right: 9**
Total Score	**143**
Habitat Rating	**0.715**

Habitat Stream Condition **Good**

Narrative:

Moderate widening in response to inferred historic incision, moderated by well-developed forested buffers, coarse bed and bank materials. Moderate aggradation in response to upstream erosion and sedimentation from High Knob tributary.

Stream: **Lewis Creek** Reach # **M21** Segment: **A** Completion Date: **November 7,**

Organization: **Lewis Creek Association** Observers: **KLU, BOS** Rain: **Yes**

Segment Length (ft): **1,280** Segment Location: **Short section of semi-confined channel alongside Camp Common Ground, crossing**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**30.0**	**Yes**	**Yes**	**Yes**	**Yes**

Problem **None**

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Confined**

	Score	STD	Historic
7.1 Channel Degradation	**10**	**None**	**Yes**
7.2 Channel Aggradation	**13**	**None**	**No**
7.3 Widening Channel	**10**		**No**
7.4 Change in Planform	**13**		**No**
Total Score	**46**		
Geomorphic Rating	**0.575**		

Channel Evolution Model **F**

Channel Evolution Stage **III**

Geomorphic Condition **Fair**

Stream Sensitivity **High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **High**

	Score
6.1 Epifaunal Substrate - Available Cover	**8**
6.2 Embeddedness	**13**
6.3 Velocity/Depth Patterns	**8**
6.4 Sediment Deposition	**15**
6.5 Channel Flow Status	**13**
6.6 Channel Alteration	**15**
6.7 Frequency of Riffles/Steps	**3**
6.8 Bank Stability	**Left: 9 Right: 9**
6.9 Bank Vegetation Protection	**Left: 9 Right: 9**
6.10 Riparian Vegetation Zone Width	**Left: 5 Right: 9**
Total Score	**125**
Habitat Rating	**0.625**

Habitat Stream Condition **Fair**

Narrative:

Minor widening, historic incision. Well developed tree buffers on banks. Coarse material in bed and banks.

Stream: **Lewis Creek** Reach # **M21** Segment: **B** Completion Date: **November 7,**

Organization: **Lewis Creek Association** Observers: **KLU, BOS** Rain: **Yes**

Segment Length (ft): **3,118** Segment Location: **Downstream of Meadow Lark Lane crossing extending to Camp Common Ground.**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**8**	**None**	**Yes**
7.2 Channel Aggradation	**11**	**None**	**No**
7.3 Widening Channel	**13**		**No**
7.4 Change in Planform	**6**		**No**
Total Score	**38**		
Geomorphic Rating	**0.475**		

Channel Evolution Model **F**

Channel Evolution Stage **IV**

Geomorphic Condition **Fair**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **High**

	Score
6.1 Epifaunal Substrate - Available Cover	**8**
6.2 Embeddedness	**8**
6.3 Velocity/Depth Patterns	**11**
6.4 Sediment Deposition	**8**
6.5 Channel Flow Status	**8**
6.6 Channel Alteration	**10**
6.7 Frequency of Riffles/Steps	**16**
6.8 Bank Stability	**Left: 7 Right: 5**
6.9 Bank Vegetation Protection	**Left: 7 Right: 5**
6.10 Riparian Vegetation Zone Width	**Left: 10 Right: 8**
Total Score	**111**
Habitat Rating	**0.555**

Habitat Stream Condition **Fair**

Narrative:

Significant, recent planform adjustment (neck cutoffs, meander migration, meander translation, flood chute) and moderate aggradation in response to past channelization and upstream sediment sources. Aggradation enhanced locally by debris jams & LWD.

Stream: **Lewis Creek** Reach # **M22** Segment: **0** Completion Date: **August 29, 2002**

Organization: **Lewis Creek Association** Observers: **DF/CF/MI/KU/SP** Rain: **No**

Segment Length (ft): **7,944** Segment Location: **From upstream of Hillsboro Road crossing, downstream under Route 116, Meadowlark**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**36.5**	**Yes**	**No**	**No**	**Yes**
Problem	**None**				
Bridge	**29.6**	**Yes**	**No**	**Yes**	**Yes**
Problem	**Alignment**				
Bridge	**25.5**	**Yes**	**No**	**Yes**	**Yes**
Problem	**Scour Below**				

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**11**	**None**	**Yes**
7.2 Channel Aggradation	**11**	**None**	**No**
7.3 Widening Channel	**11**		**No**
7.4 Change in Planform	**8**		**No**
Total Score	**41**		
Geomorphic Rating	**0.5125**		

Channel Evolution Model **F**

Channel Evolution Stage **III**

Geomorphic Condition **Fair**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **High**

	Score
6.1 Epifaunal Substrate - Available Cover	**8**
6.2 Embeddedness	**13**
6.3 Velocity/Depth Patterns	**13**
6.4 Sediment Deposition	**10**
6.5 Channel Flow Status	**8**
6.6 Channel Alteration	**8**
6.7 Frequency of Riffles/Steps	**15**
6.8 Bank Stability	**Left: 6 Right: 7**
6.9 Bank Vegetation Protection	**Left: 6 Right: 7**
6.10 Riparian Vegetation Zone Width	**Left: 2 Right: 2**
Total Score	**105**
Habitat Rating	**0.525**

Habitat Stream Condition **Fair**

Narrative:

Moderate planform adjustment (meander extension and translation) and localized aggradation / widening (enhanced by beaver activity). Historic incision inferred as a result of straightening (especially in u/s half) and encroachment (berms, armoring).

Stream: **Lewis Creek** Reach # **M23** Segment: **0** Completion Date: **July 8, 2008**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC); JC (MMI)** Rain: **Yes**

Segment Length (ft): **4,505** Segment Location: **Flows to the southwest along Ireland Road passing intersection with Meehan Rd.**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**28.5**	**Yes**	**Yes**	**Yes**	**Yes**

Problem **None**

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**3**	**C to F**	**Yes**
7.2 Channel Aggradation	**11**	**None**	**No**
7.3 Widening Channel	**12**		**No**
7.4 Change in Planform	**13**		**No**
Total Score	**39**		
Geomorphic Rating	**0.4875**		

Channel Evolution Model **F**

Channel Evolution Stage **II**

Geomorphic Condition **Fair**

Stream Sensitivity **Extreme**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Narrative:

Moderate aggradation. Localized widening. Historic incision (Cb to F STD). Coarseness of bed and bank materials likely of glaciofluvial (kame terrace) origin may offer boundary resistance that has moderated widening, planform adjustment.

Stream: **Cedar Lake** Reach # **T2.01** Segment: **0** Completion Date: **November 14,**

Organization: **Lewis Creek Association** Observers: **BOS, TB** Rain: **Yes**

Segment Length (ft): **3,202** Segment Location: **Forested downstream-most reach of Cedar Brook which joins the Lewis Creek at the**

1.6 Grade Controls

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken
Waterfall	**Mid-segment**	**35.00**	**34.00**	**Yes**	
Ledge	**Mid-segment**	**2.00**	**1.00**	**Yes**	
Ledge	**Mid-segment**	**2.00**	**1.00**	**Yes**	

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bedrock	**16.0**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**None**				
Bedrock	**12.0**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**None**				
Bedrock	**14.0**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**None**				

Narrative:
None.

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Confined**

	Score	STD	Historic
7.1 Channel Degradation	**18**	**None**	**No**
7.2 Channel Aggradation	**18**	**None**	**No**
7.3 Widening Channel	**17**		**No**
7.4 Change in Planform	**17**		**No**
Total Score	**70**		
Geomorphic Rating	**0.875**		

Channel Evolution Model **D**
Channel Evolution Stage **I**
Geomorphic Condition **Referenc**
Stream Sensitivity **Moderate**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **High**

	Score
6.1 Epifaunal Substrate - Available Cover	**18**
6.2 Embeddedness	**15**
6.3 Velocity/Depth Patterns	**14**
6.4 Sediment Deposition	**15**
6.5 Channel Flow Status	**15**
6.6 Channel Alteration	**18**
6.7 Frequency of Riffles/Steps	**16**
6.8 Bank Stability	**Left: 9 Right: 9**
6.9 Bank Vegetation Protection	**Left: 10 Right: 10**
6.10 Riparian Vegetation Zone Width	**Left: 10 Right: 10**
Total Score	**169**
Habitat Rating	**0.845**

Habitat Stream Condition **Good**

Stream: **Pond Brook** Reach # **T3.01** Segment: **A** Completion Date: **September 8,**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC); JC (MMI)** Rain: **No**

Segment Length (ft): **3,199** Segment Location: **From farm road culvert crossing downstream to confluence with Lewis Creek at the**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**18**	**None**	**No**
7.2 Channel Aggradation	**11**	**None**	**No**
7.3 Widening Channel	**15**		**No**
7.4 Change in Planform	**10**		**No**
Total Score	**54**		
Geomorphic Rating	**0.675**		

Channel Evolution Model **F**

Channel Evolution Stage **I**

Geomorphic Condition **Good**

Stream Sensitivity **High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Narrative:

Moderate planform adjustment (meander extension, translation). Localized aggradation, enhanced by transitory beaver impoundments. Good floodplain access.

Stream: **Pond Brook** Reach # **T3.01** Segment: **B** Completion Date: **September 8,**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC); JC (MMI)** Rain: **No**

Segment Length (ft): **1,840** Segment Location: **In pasture and hay fields, mid-segment, ending near farm road culvert crossing.**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Culvert	**5.00**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**Scour Above,Scour Below,Alignment**				

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**10**	**None**	**Yes**
7.2 Channel Aggradation	**13**	**None**	**No**
7.3 Widening Channel	**8**		**Yes**
7.4 Change in Planform	**10**		**No**
Total Score	**41**		
Geomorphic Rating	**0.5125**		

Channel Evolution Model **F**

Channel Evolution Stage **III**

Geomorphic Condition **Fair**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Narrative:

Minor aggradation and moderate planform adjustment. Historic incision and historic widening associated with channelization / dredging that cut off several highly sinuous meanders. Channel adjustments likely moderated by cohesive soils, low gradient

Stream: **Pond Brook** Reach # **T3.01** Segment: **C** Completion Date: **September 8,**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC); JC (MMI)** Rain: **No**

Segment Length (ft): **4,363** Segment Location: **Upstream half of the reach; spans Silver Street.**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**23.0**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**Scour Below**				
Culvert	**15.5**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**Alignment**				

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**16**	**None**	**No**
7.2 Channel Aggradation	**11**	**None**	**No**
7.3 Widening Channel	**11**		**No**
7.4 Change in Planform	**10**		**No**
Total Score	**48**		
Geomorphic Rating	**0.6**		

Channel Evolution Model **F**

Channel Evolution Stage **I**

Geomorphic Condition **Fair**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Narrative:

Moderate planform adjustment (flood chutes, bifurcations). Moderate (localized) widening and aggradation. Good floodplain connection.

Stream: **Hollow Brook** Reach # **T4.01** Segment: **A** Completion Date: **August 18, 2008**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC); JC (MMI)** Rain: **No**

Segment Length (ft): **4,415** Segment Location: **Downstream half of reach from wetlands downstream to confluence with Lewis Creek**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**22.0**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**Scour Below,Alignment**				

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**16**	**None**	**No**
7.2 Channel Aggradation	**10**	**None**	**No**
7.3 Widening Channel	**8**		**Yes**
7.4 Change in Planform	**8**		**No**
Total Score	**42**		
Geomorphic Rating	**0.525**		

Channel Evolution Model **D**

Channel Evolution Stage **IIc**

Geomorphic Condition **Fair**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Narrative:

Moderate planform adjustment, widening, and aggradation, locally enhanced at beaver dam sites and debris jams. Cohesiveness of bed (e.g., varved clays) and low overall gradient may have moderated potential for incision.

Stream: **Hollow Brook** Reach # **T4.01** Segment: **B** Completion Date: **August 18, 2008**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC); JC (MMI)** Rain: **No**

Segment Length (ft): **5,235** Segment Location: **From Hinesburg sand and gravel quarry along Hinesburg Hollow Rd, crossing under Rt**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**47.0**	**Yes**	**Yes**	**No**	**Yes**
Problem	**Scour Below,Alignment**				
Bridge	**24.8**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**Deposition Above**				
Bridge	**12.9**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**None**				

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**6**	**None**	**Yes**
7.2 Channel Aggradation	**11**	**None**	**No**
7.3 Widening Channel	**7**		**No**
7.4 Change in Planform	**10**		**No**
Total Score	**34**		
Geomorphic Rating	**0.425**		

Channel Evolution Model **F**

Channel Evolution Stage **IV**

Geomorphic Condition **Fair**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Narrative:

Moderate planform adjustment and aggradation. Moderate degree of historic incision.

Stream: **Hollow Brook** Reach # **T4.02** Segment: **A** Completion Date: **October 10, 2008**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC); JC (MMI)** Rain: **Yes**

Segment Length (ft): **4,509** Segment Location: **From LB residences downstream along the north side of Hinesburg Hollow Rd to the**

1.6 Grade Controls

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken
Waterfall	**Mid-segment**	**25.00**	**24.00**	**Yes**	**Yes**
Ledge	**Mid-segment**	**1.00**	**1.00**	**No**	**Yes**

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**34.0**	**Yes**	**Yes**	**No**	**Yes**

Problem **Scour Below,Alignment**

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**3**	**C to B**	**Yes**
7.2 Channel Aggradation	**13**	**None**	**No**
7.3 Widening Channel	**16**		**No**
7.4 Change in Planform	**13**		**Yes**
Total Score	**45**		
Geomorphic Rating	**0.5625**		

Channel Evolution Model **F**

Channel Evolution Stage **II**

Geomorphic Condition **Fair**

Stream Sensitivity **High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Narrative:

Minor (localized) aggradation, widening, and planform adjustments. Historic incision.

Stream: **Hollow Brook** Reach # **T4.02** Segment: **B** Completion Date: **October 10, 2008**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC); JC (MMI)** Rain: **Yes**

Segment Length (ft): **1,746** Segment Location: **From triple-culvert driveway crossing downstream to LB residential buildings.**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Culvert	**15.0**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**Deposition Above,Scour Above,Scour**				

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Confined**

	Score	STD	Historic
7.1 Channel Degradation	**10**	**None**	**Yes**
7.2 Channel Aggradation	**13**	**None**	**No**
7.3 Widening Channel	**15**		**No**
7.4 Change in Planform	**11**		**No**
Total Score	**49**		
Geomorphic Rating	**0.6125**		
Channel Evolution Model	**F**		
Channel Evolution Stage	**II**		
Geomorphic Condition	**Fair**		
Stream Sensitivity	**High**		

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Narrative:

Historic incision. Moderate planform adjustments (flood chutes, bifurcation). Minor aggradation. Lateral adjustment moderated by revegetating buffers, occasional bedrock exposed in channel banks.

Stream: **Hollow Brook** Reach # **T4.02** Segment: **C** Completion Date: **October 10, 2008**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC); JC (MMI)** Rain: **Yes**

Segment Length (ft): **764** Segment Location: **Uppermost 764 ft, upstream of triple-culvert driveway crossing.**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Narrative:

Step 7. Rapid Geomorphic Assessment Data

Confinement Type

Channel Evolution Model

Channel Evolution Stage

Geomorphic Condition

Stream Sensitivity

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

Habitat Stream Condition

Stream: **Hollow Brook** Reach # **T4.05** Segment: **A** Completion Date: **September 8,**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC), SHP (VTDEC)** Rain: **No**

Segment Length (ft): **905** Segment Location: **Downstream end of reach alongside Lazy Brook mobile home park.**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**3**	**C to F**	**Yes**
7.2 Channel Aggradation	**15**	**None**	**No**
7.3 Widening Channel	**15**		**No**
7.4 Change in Planform	**13**		**Yes**
Total Score	**46**		
Geomorphic Rating	**0.575**		

Channel Evolution Model **F**

Channel Evolution Stage **II**

Geomorphic Condition **Fair**

Stream Sensitivity **Extreme**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Narrative:

None. Historic incision and channelization. Cb to Fa STD inferred.

Stream: **Hollow Brook** Reach # **T4.05** Segment: **B** Completion Date: **September 8,**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC), SHP (VTDEC)** Rain: **No**

Segment Length (ft): **1,851** Segment Location: **From bedrock gorge downstream to Lazy Brook Mobile Home Park**

1.6 Grade Controls

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken
Ledge	**Mid-segment**	**1.00**	**0.00**	**No**	**Yes**

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Confined**

	Score	STD	Historic
7.1 Channel Degradation	**5**	**B to F**	**Yes**
7.2 Channel Aggradation	**13**	**None**	**No**
7.3 Widening Channel	**10**		**Yes**
7.4 Change in Planform	**15**		**No**
Total Score	**43**		
Geomorphic Rating	**0.5375**		

Channel Evolution Model **F**

Channel Evolution Stage **II**

Geomorphic Condition **Fair**

Stream Sensitivity **Extreme**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Narrative:

Moderate aggradation localized to mass failure sites & debris jams. Minor planform adjustment (limited by close valley confinement). Historic incision inferred from occas. adjacent terraces w/in 2 to 3 x bankfull depth. See report, more discussion

1.6 Grade Controls

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken
Waterfall	**Mid-segment**	**2.00**	**1.00**	**Yes**	**Yes**
Waterfall	**Mid-segment**	**5.00**	**3.00**	**Yes**	**Yes**
Waterfall	**Mid-segment**	**40.00**	**40.00**	**Yes**	**Yes**

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Narrative:

Step 7. Rapid Geomorphic Assessment Data

Confinement Type

Channel Evolution Model
Channel Evolution Stage
Geomorphic Condition **Referenc**
Stream Sensitivity

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

Habitat Stream Condition

Stream: **Hollow Brook** Reach # **T4.05** Segment: **D** Completion Date: **September 8,**

Organization: **Lewis Creek Association** Observers: **KLU (SMRC), SHP (VTDEC)** Rain: **No**

Segment Length (ft): **4,373** Segment Location: **From upstream reach break at Lincoln Hill Road crossing, downstream to bedrock**

1.6 Grade Controls

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken
Dam	**Mid-segment**	**6.00**	**5.00**	**Yes**	**Yes**
Dam	**Mid-segment**	**3.00**	**2.00**	**Yes**	**Yes**

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Culvert	**4.00**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**Deposition Above,Deposition Below,Scour**				
Culvert	**5.00**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**Scour Below,Alignment**				
Bridge	**8.00**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**Deposition Above,Scour Below**				
Culvert	**2.00**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**Deposition Above,Scour Below**				

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**8**	**None**	**Yes**
7.2 Channel Aggradation	**10**	**None**	**No**
7.3 Widening Channel	**15**		**No**
7.4 Change in Planform	**11**		**No**
Total Score	**44**		
Geomorphic Rating	**0.55**		

Channel Evolution Model **F**

Channel Evolution Stage **III**

Geomorphic Condition **Fair**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Narrative:

Moderate aggradation, especially localized above impoundments. Minor to moderate planform adjustment (meander extension, flood chutes). Historic incision.

Stream: **Unnamed Trib to Hollow Brook** Reach # **T4.3S6.01** Segment: **A** Completion Date: **September 5,**

Organization: **Lewis Creek Association** Observers: **SP, SH, JT, EL, MI** Rain: **Yes**

Segment Length (ft): **4,840** Segment Location: **From Mason Hill N. Rd downstream along Big Hollow Rd to confluence with Lewis**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Culvert	**3.00**	**No**	**No**	**Yes**	**Yes**
Problem	**Deposition Below**				
Culvert	**0.00**	**No**	**No**	**Yes**	**Yes**
Problem	**None**				
Culvert	**0.00**	**No**	**No**	**Yes**	**Yes**
Problem	**None**				
Culvert	**4.00**	**No**	**No**	**Yes**	**Yes**
Problem	**Scour Above**				
Culvert	**6.00**	**No**	**No**	**Yes**	**Yes**
Problem	**None**				

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Confined**

	Score	STD	Historic
7.1 Channel Degradation	**18**	**None**	**No**
7.2 Channel Aggradation	**8**	**None**	**No**
7.3 Widening Channel	**13**		**No**
7.4 Change in Planform	**11**		**No**
Total Score	**50**		
Geomorphic Rating	**0.625**		

Channel Evolution Model **F**

Channel Evolution Stage **I**

Geomorphic Condition **Fair**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type **High**

	Score
6.1 Epifaunal Substrate - Available Cover	**8**
6.2 Embeddedness	**3**
6.3 Velocity/Depth Patterns	**8**
6.4 Sediment Deposition	**3**
6.5 Channel Flow Status	**8**
6.6 Channel Alteration	**9**
6.7 Frequency of Riffles/Steps	**18**
6.8 Bank Stability	**Left: 8 Right: 9**
6.9 Bank Vegetation Protection	**Left: 7 Right: 7**
6.10 Riparian Vegetation Zone Width	**Left: 4 Right: 8**
Total Score	**100**
Habitat Rating	**0.5**

Habitat Stream Condition **Fair**

Narrative:

Moderate aggradation from road sediment runoff, upstream pasturing, and high bank failures where stream impinges on valley walls. Widening moderated by reasonable-width forested buffers and coarsenes of bed and bank material.

Stream: **Unnamed Trib to Hollow Brook** Reach # **T4.3S6.01** Segment: **B** Completion Date: **September 5,**

Organization: **Lewis Creek Association** Observers: **SP, SH** Rain: **Yes**

Segment Length (ft): **2,905** Segment Location: **Upstream portion of reach above Mason Hill N Rd.**

1.6 Grade Controls

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Narrative:

Step 7. Rapid Geomorphic Assessment Data

Confinement Type

Channel Evolution Model

Channel Evolution Stage

Geomorphic Condition

Stream Sensitivity

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

Habitat Stream Condition

Stream: **High Knob Brook** Reach # **T6.01** Segment: **0** Completion Date: **September 24,**

Organization: **Lewis Creek Association** Observers: **j.clark, s.pytlik** Rain: **No**

Segment Length (ft): **5,649** Segment Location: **From the bottom of the gorge upstream of Freedom Acres (private road) to the**

1.6 Grade Controls

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken
Ledge	**Mid-segment**	**0.00**	**0.00**	**Yes**	
Ledge	**Mid-segment**	**3.00**	**2.00**	**Yes**	
Ledge	**Mid-segment**	**0.00**	**0.00**	**Yes**	
Ledge	**Mid-segment**	**2.00**	**2.00**	**Yes**	
Ledge	**Mid-segment**	**2.00**	**1.00**	**Yes**	
Ledge	**Mid-segment**	**0.00**	**0.00**	**No**	
Ledge	**Mid-segment**	**0.00**	**0.00**	**No**	

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bedrock	**25.0**	**Yes**	**Yes**	**No**	**Yes**
Problem	**Deposition Above**				
Culvert	**9.70**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**Deposition Above**				
Bedrock	**40.0**	**Yes**	**Yes**	**No**	**Yes**
Problem	**None**				
Culvert	**6.00**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**Deposition Above**				
Bedrock	**30.0**	**Yes**	**Yes**	**No**	**Yes**
Problem	**Deposition Above**				

Narrative:

Channel very stable due to bedrock outcroppings within reach.

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**19**	**None**	**No**
7.2 Channel Aggradation	**15**	**None**	**No**
7.3 Widening Channel	**17**		**No**
7.4 Change in Planform	**19**		**No**
Total Score	**70**		
Geomorphic Rating	**0.875**		

Channel Evolution Model **D**

Channel Evolution Stage **I**

Geomorphic Condition **Referenc**

Stream Sensitivity **High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Stream: **High Knob Brook** Reach # **T6.02** Segment: **A** Completion Date: **November 6,**

Organization: **Lewis Creek Association** Observers: **J.Clark, R.Schiff** Rain: **No**

Segment Length (ft): **760** Segment Location: **Bedrock gorge between Big Hollow Road and Freedom Acres private Road**

1.6 Grade Controls

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken
Ledge	**Mid-segment**	**3.00**	**1.00**	**Yes**	
Waterfall	**Mid-segment**	**9.00**	**6.00**	**Yes**	
Waterfall	**Mid-segment**	**8.00**	**4.00**	**Yes**	
Waterfall	**Mid-segment**	**9.00**	**8.00**	**Yes**	
Waterfall	**Mid-segment**	**7.00**	**5.00**	**Yes**	
Waterfall	**Mid-segment**	**7.00**	**6.00**	**Yes**	

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Narrative:

Step 7. Rapid Geomorphic Assessment Data

Confinement Type

Channel Evolution Model

Channel Evolution Stage

Geomorphic Condition

Stream Sensitivity

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

Habitat Stream Condition

Stream: **High Knob Brook** Reach # **T6.02** Segment: **B** Completion Date: **November 6,**

Organization: **Lewis Creek Association** Observers: **j.clark, r.schiff** Rain: **No**

Segment Length (ft): **1,094** Segment Location: **Start of bedrock grade control down to end of bedrock gorge, in between Big Hollow**

1.6 Grade Controls

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken
Ledge	**Mid-segment**	**2.00**	**1.00**	**Yes**	
Ledge	**Mid-segment**	**2.00**	**1.00**	**Yes**	
Ledge	**Mid-segment**	**3.00**	**1.00**	**Yes**	
Ledge	**Mid-segment**	**2.00**	**1.00**	**Yes**	

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Old	**21.0**	**Yes**	**Yes**	**No**	**Yes**

Problem **None**

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Confined**

	Score	STD	Historic
7.1 Channel Degradation	**18**	**None**	**No**
7.2 Channel Aggradation	**18**	**None**	**No**
7.3 Widening Channel	**18**		**No**
7.4 Change in Planform	**19**		**No**
Total Score	**73**		
Geomorphic Rating	**0.9125**		

Channel Evolution Model **D**

Channel Evolution Stage **I**

Geomorphic Condition **Referenc**

Stream Sensitivity **Moderate**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Narrative:

Narrow valley. channel with lots of grade control, very stable. Possibly no channel evolution model due to widespread grade control and confinement from bedrock outcrops.

Stream: **High Knob Brook** Reach # **T6.03** Segment: **A** Completion Date: **November 6,**

Organization: **Lewis Creek Association** Observers: **j.clark, s.bonney, r.schiff** Rain: **Yes**

Segment Length (ft): **2,068** Segment Location: **Downstream end of last field on left bank, downstream from Big Hollow Road to the**

1.6 Grade Controls

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken
Ledge	**Mid-segment**	**3.00**	**2.00**	**Yes**	
Ledge	**Mid-segment**	**1.00**	**0.00**	**Yes**	
Ledge	**Mid-segment**	**1.00**	**1.00**	**Yes**	
Ledge	**Mid-segment**	**2.00**	**1.00**	**Yes**	

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**13**	**None**	**Yes**
7.2 Channel Aggradation	**13**	**None**	**No**
7.3 Widening Channel	**13**		**No**
7.4 Change in Planform	**18**		**No**
Total Score	**57**		
Geomorphic Rating	**0.7125**		

Channel Evolution Model **F**

Channel Evolution Stage **III**

Geomorphic Condition **Fair**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Narrative:

Stable channel with grade control at downstream end, some historic incision, sedimentaion and steep riffles, sections with gravel aggradation

Stream: **High Knob Brook** Reach # **T6.03** Segment: **B** Completion Date: **August 29, 2008**

Organization: **Lewis Creek Association** Observers: **j.clark, s.bonney** Rain: **Yes**

Segment Length (ft): **1,370** Segment Location: **Along back pasture between Butler Pond and High Knob, after end of straightened**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**14**	**None**	**No**
7.2 Channel Aggradation	**13**	**None**	**No**
7.3 Widening Channel	**13**		**No**
7.4 Change in Planform	**14**		**No**
Total Score	**54**		
Geomorphic Rating	**0.675**		

Channel Evolution Model **F**

Channel Evolution Stage **I**

Geomorphic Condition **Good**

Stream Sensitivity **High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Narrative:

subreach E in C overall reach. Vertically stable reach - although some lateral migration.

Stream: **High Knob Brook** Reach # **T6.04** Segment: **A** Completion Date: **August 29, 2008**

Organization: **Lewis Creek Association** Observers: **j.clark, m.lyttle** Rain: **Yes**

Segment Length (ft): **644** Segment Location: **tractor crossing at beginning of straightening along feild, across field to treeline at**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**15**	**None**	**No**
7.2 Channel Aggradation	**11**	**None**	**No**
7.3 Widening Channel	**16**		**No**
7.4 Change in Planform	**18**		**No**
Total Score	**60**		
Geomorphic Rating	**0.75**		

Channel Evolution Model **F**

Channel Evolution Stage **I**

Geomorphic Condition **Good**

Stream Sensitivity **High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Narrative:

Although historically straightened this reach has maintained its reference E stream type.

Stream: **High Knob Brook** Reach # **T6.04** Segment: **B** Completion Date: **August 20, 2008**

Organization: **Lewis Creek Association** Observers: **j.clark, m.lyttle** Rain: **Yes**

Segment Length (ft): **2,263** Segment Location: **Includes both channel along both homes upstream of Brown Hill Crossing downs to**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**11.0**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**Deposition Above**				
Culvert	**9.00**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**None**				

Narrative:

Channel departed from C to B due to incision.

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**5**	**C to B**	**Yes**
7.2 Channel Aggradation	**17**	**None**	**No**
7.3 Widening Channel	**13**		**No**
7.4 Change in Planform	**16**		**No**
Total Score	**51**		
Geomorphic Rating	**0.6375**		

Channel Evolution Model **F**

Channel Evolution Stage **II**

Geomorphic Condition **Fair**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Stream: **High Knob Brook** Reach # **T6.05** Segment: **A** Completion Date: **August 26, 2008**

Organization: **Lewis Creek Association** Observers: **r.schiff, j.clark** Rain: **No**

Segment Length (ft): **3,858** Segment Location: **Upstream of 1127 Big Hollow Road to the next home on right, approximately half way**

1.6 Grade Controls

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken
Ledge	**Mid-segment**	**0.00**	**0.00**	**No**	

4.8 Channel Constrictions **None**

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**3**	**C to B**	**No**
7.2 Channel Aggradation	**3**	**None**	**No**
7.3 Widening Channel	**5**		**No**
7.4 Change in Planform	**10**		**No**
Total Score	**21**		
Geomorphic Rating	**0.2625**		

Channel Evolution Model	**F**
Channel Evolution Stage	**III**
Geomorphic Condition	**Poor**
Stream Sensitivity	**Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Narrative:

Channel is widening and aggrading with multiple floodchutes, avulsions and areas with multiple flow paths.

Stream: **High Knob Brook** Reach # **T6.05** Segment: **B** Completion Date: **August 26, 2008**

Organization: **Lewis Creek Association** Observers: **r.schiff, j.clark** Rain: **No**

Segment Length (ft): **2,378** Segment Location: **Upstream of tributary and Stokes Hill Road down to just upstream of home on rigth**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Culvert	**8.00**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**Deposition Above**				
Bridge	**8.00**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**None**				

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**13**	**None**	**Yes**
7.2 Channel Aggradation	**13**	**None**	**No**
7.3 Widening Channel	**13**		**No**
7.4 Change in Planform	**14**		**No**
Total Score	**53**		
Geomorphic Rating	**0.6625**		

Channel Evolution Model **F**

Channel Evolution Stage **I**

Geomorphic Condition **Good**

Stream Sensitivity **High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Narrative:

Channel experiencing moderate widening in locations and historically straightened, although relatively stable.

Stream: **High Knob Brook** Reach # **T6.06** Segment: **A** Completion Date: **August 20, 2008**

Organization: **Lewis Creek Association** Observers: **j.clark, m.lyttle** Rain: **Yes**

Segment Length (ft): **2,887** Segment Location: **Starting downstream of the first tributary upstream of Dugway Lane down to upstream**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Culvert	**5.00**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**Deposition Above,Alignment**				
Culvert	**5.50**	**Yes**	**Yes**	**Yes**	**Yes**
Problem	**Deposition Above,Scour Below,Alignment**				

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**16**	**None**	**No**
7.2 Channel Aggradation	**15**	**None**	**No**
7.3 Widening Channel	**17**		**No**
7.4 Change in Planform	**16**		**No**
Total Score	**64**		
Geomorphic Rating	**0.8**		

Channel Evolution Model	**F**
Channel Evolution Stage	**I**
Geomorphic Condition	**Good**
Stream Sensitivity	**High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Narrative:

Channel is stable with no adjustment process occuring. No signs of historic adjustment.

Stream: **High Knob Brook** Reach # **T6.06** Segment: **B** Completion Date: **August 5, 2008**

Organization: **Lewis Creek Association** Observers: **r.schiff, j.clark, n.sibley** Rain: **Yes**

Segment Length (ft): **3,677** Segment Location: **Most upstream home along Big Hollow Road down to behind home and barn on right**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Culvert	**3.00**	**Yes**	**Yes**	**Yes**	**Yes**

Problem **None**

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**11**	**None**	**No**
7.2 Channel Aggradation	**6**	**None**	**No**
7.3 Widening Channel	**13**		**No**
7.4 Change in Planform	**15**		**No**
Total Score	**45**		
Geomorphic Rating	**0.5625**		

Channel Evolution Model **F**

Channel Evolution Stage **III**

Geomorphic Condition **Fair**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Narrative:

moderate to high width to depth ratio for an E channel and aggradation occuring

Stream: **High Knob Brook** Reach # **T6.06** Segment: **C** Completion Date: **August 5, 2008**

Organization: **Lewis Creek Association** Observers: **j.clark, r.schiff, n.sibley** Rain: **Yes**

Segment Length (ft): **1,918** Segment Location: **Most upstream segment, upstream of last home on Big Hollow Road**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?

Narrative:

Step 7. Rapid Geomorphic Assessment Data

Confinement Type

Channel Evolution Model

Channel Evolution Stage

Geomorphic Condition

Stream Sensitivity

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

Habitat Stream Condition

Stream: **Unnamed Trib to High Knob** Reach # **T6.3S1.01** Segment: **0** Completion Date: **November 6,**

Organization: **Lewis Creek Association** Observers: **j.clark, r.schiff** Rain: **No**

Segment Length (ft): **1,568** Segment Location: **Downstream of Brown Hill Road Crossing to Beginning of field before confluence with**

1.6 Grade Controls **None**

Type	Location	Total	Total Height Above Water	Photo Taken	GPSTaken

4.8 Channel Constrictions

Type	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?
Bridge	**24.0**	**Yes**	**Yes**	**No**	**Yes**

Problem **None**

Step 7. Rapid Geomorphic Assessment Data

Confinement Type **Unconfined**

	Score	STD	Historic
7.1 Channel Degradation	**8**	**None**	**Yes**
7.2 Channel Aggradation	**9**	**None**	**No**
7.3 Widening Channel	**9**		**No**
7.4 Change in Planform	**13**		**No**
Total Score	**39**		
Geomorphic Rating	**0.4875**		

Channel Evolution Model **F**

Channel Evolution Stage **III**

Geomorphic Condition **Fair**

Stream Sensitivity **Very High**

Step 6. Rapid Habitat Assessment Data

Stream Gradient Type

	Score
6.1 Epifaunal Substrate - Available Cover	**0**
6.2 Embeddedness (high) Pool	**0**
6.3 Velocity/Depth Patterns (high)<br	**0**
6.4 Sediment Deposition	**0**
6.5 Channel Flow Status	**0**
6.6 Channel Alteration	**0**
6.7 Frequency of Riffles/Steps (high)<br	**0**
6.8 Bank Stability	**Left: 0 Right: 0**
6.9 Bank Vegetation Protection	**Left: 0 Right: 0**
6.10 Riparian Vegetation Zone Width	**Left: 0 Right: 0**
Total Score	**0**
Habitat Rating	**0**

Habitat Stream Condition

Narrative:

incising,aggrading and widening appears to have been a headcut travel through and stop at upstream culvert - this headcut is upstream of the top of the reach and identification is unclear due to culvert