

# EROSION PREVENTION AND SEDIMENT CONTROL NARRATIVE

## DESCRIPTION OF PROJECT

This project involves the reconstruction of a culvert over the Beaver Meadow Brook. The project is on VT Route 17, a paved, Major Collector state highway, in the unincorporated gore of Buel's Gore. The existing culvert will be replaced by a box culvert.

Total roadway work is approximately 100 feet. The limits of construction do not approach any buildings or other structures. No "Threatened & Endangered Species," Wetlands, or Historic Resources have been identified in the project area.

It is anticipated that this project will last one construction season.

Total disturbed area (excluding waste, borrow and staging areas):  
0.25 ha (0.62 ac.)

## SITE INVENTORY & ANALYSIS

### OFF SITE DRAINAGE CHARACTERISTICS:

The property surrounding the project site consists of well established vegetation, moderate to steeply sloping, mixed softwood and hardwood forest with well defined drainage ways. Due to the nature of the surrounding terrain, runoff water entering the project site will be primarily limited to that which is conveyed along roadway ditches, and that which follows VT Route 17 along the 14% grade at the end of the project limits. The current roadway ditches are not well defined and are not lined with stone.

### DRAINAGE, WATERWAYS, BODIES OF WATER:

Beaver Meadow Brook is located in the project area. There are no other water bodies or wetlands within the project area. The Beaver Meadow Brook is classified as hilly to mountainous, sinuous and containing a streambed of mostly cobbles and gravel. The contributing drainage area at the bridge crossing is 0.93 sq. mi.

### TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:

The topography of the project site is mountainous and wooded with VT Route 17 following parallel to Beaver Meadow Brook which is contained by steep river banks along each side. Development along VT Route 17 consists of a mix of permanent and seasonal residences, none of which exist near the project limits. Overhead utility service follows along VT Route 17.

### VEGETATION:

A mix of hardwood and softwood trees of all sizes exist along VT Route 17. No fields or other agricultural crops exist near the project. Impacts to vegetation will be limited to that which are affected by the construction of the new culvert.

Following construction of the new culvert, the temporary culvert and roadway will be removed, vegetation reestablished with standard seed & mulch practices.

### SOILS:

The Soil Conservation Service has mapped the soils throughout Chittenden County. The soil type identified for this project site is Peru extremely stony loam. This soil type is described as "...Slopes range from 100 to 1000 feet in length...The hazard of water erosion is slight where this soil is vegetated and very severe where it is not. Surface runoff is rapid. The soils have a layer of very fine sandy loam or silty loam or are gravelly or sandy loam.

The listed Soil Erodibility Coefficient (K-value) for this soil type is 0.20. Generally, K-values indicate the following: 0.0 - 0.23 = low erodibility; 0.24 - 0.36 = moderate erodibility; 0.37 and higher = higher erodibility.

### SENSITIVE RESOURCE AREAS:

No "Threatened & Endangered Species" have been identified within the project limits and there will be no adverse effect to Historic or Archaeological features. Beaver Meadow Brook is the only identified resource and being a steep, high gradient stream, there are no wetlands within the vicinity of the project.

### PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES:

Disturbance of soils near natural or man-made waterways consists of that which is necessary to construct a new box culvert and subsequent headwalls as well as the removal of the existing crossing.

## TEMPORARY EROSION PREVENTION & SEDIMENT CONTROL

### TEMPORARY EROSION PREVENTION MEASURES TO BE UTILIZED INCLUDE:

"Project Demarcation Fencing," denoted -PDF- on the plans, to delineate the limits the contractor can access with construction equipment. This measure limits the area that can be disturbed and exposed to erosion.

Seed and mulch will be used on slopes flatter than or equal to 3:1. Seeding and biodegradable erosion control matting, or an equivalent product, will be utilized on all slopes steeper than 3:1 that are not lined with stone fill. Areas at stations 42+00 - 44+00 RT and 40+50 - 43+75 LT will require this technique. These slopes shall be stabilized within 48 hours of reaching final grade or during intermittent phases of construction activity.

Tracking of all exposed slopes, combined with temporary mulching, will also be utilized on a regular basis. Any slopes to be exposed for several days prior to final grading shall be tracked and mulched. The forecast of rainfall events shall also trigger protection of exposed slopes.

### TEMPORARY MEASURES TO CONTROL SEDIMENT TRANSPORT INCLUDE:

Silt fence will be installed a distance of 5'-10' from the toe of slopes to prevent sediment transport to down gradient areas. Each line of silt fence will be placed along the contour with ends turned slightly uphill to create a ponding effect should water try to run along the fencing and around the ends. The maximum slope length between separate runs of silt fence is 100'. Silt fence shall be installed prior to any upslope earthwork.

All measures shall be checked regularly for accumulation of sediment. Sediment build-up shall be removed when the level of sediment reaches one-half the height of the control measure. Sediments shall be disposed of in an approved area such that they will not be subject to erosion.

Temporary sediment settling basins may or may not be utilized on this project. If a settling basin is to be used for dewatering a cofferdam, it should be sized based upon the pumping rate and target particle size to be settled out for the project site. The follow sizing criteria is based upon a target particle size of 0.01 mm and is provided as general guidance. (See Sediment Settling Basin Sizing Criteria.)

### TEMPORARY STREAM RELOCATION

The temporary relocation of stream shall comply with the specification for item 614.10 Temporary Relocation of Stream.

## PERMANENT EROSION CONTROL MEASURES

### SEVERAL PERMANENT EROSION CONTROL MEASURES WILL BE UTILIZED:

Stone lining of the stream banks with Stone Fill, Type II as detailed in the plans. This stone will protect from stream bank erosion during design storm events.

Grass, or other suitable ground cover will be established outside of the roadway limits where stone lining has not been specified.

## GENERAL EROSION PREVENTION & SEDIMENT CONTROL GUIDELINES

The Erosion Prevention and Sediment Control Plans are meant as a guideline for preventing erosion and controlling sediment transport. The work outlined in this narrative consists of applying measures throughout the life of the project to control erosion and minimize the sedimentation of receiving waters. The measures include stabilization and structural practices, stormwater controls and other pollution prevention controls.

Coordinate the installation, use, and removal of erosion and sediment control measures with construction activities to ensure economical, effective and continuous erosion and sediment control. Employ temporary stabilization practices in incremental stages as construction proceeds. The contractor will use additional erosion control measures as necessitated by the sequence of construction and as directed by the Engineer. See section 105.23 of the Vermont AOT Standard Specifications for Construction, dated 2001.

Install all erosion prevention and sediment control measures as shown in the Erosion Prevention and Sediment Control Plan or as directed by the Engineer. Do not modify the type, size or location of any prevention or control practice without approval of the Engineer. Any changes shall be noted on the plans, in the weekly inspection report and reported to the appropriate authority in a timely manner. Inspect all control measures weekly and after each rainfall event. Repair measures promptly once damage is discovered.

Preventing initial soil erosion is much more effective than treating eroded sediment. Therefore, stabilize all disturbed areas promptly after

construction activity has temporarily or permanently ceased. Temporary vegetation shall be established if the area is to be without construction activity for a period of 14 days. Perimeter control measures shall be installed following clearing, but prior to the start of any grubbing or grading activity, install other temporary controls in incremental stages as construction proceeds.

Maintaining vegetated buffers along stream banks, wetlands or other sensitive areas is a crucial erosion and sediment control measure that should be established wherever possible.

Control only sediment-laden runoff generated by the project site. Collect and route clean offsite runoff around or through the project site using diversion berms, diversion channels, culverts and/or temporary pipes.

Do not allow construction equipment to operate on the down slope side of perimeter control measures.

## SEDIMENT SETTLING BASIN SIZING CRITERIA

PUMP FLOW RATE	REQUIRED SURFACE AREA	LENGTH = 2:1 WIDTH					
		L (ft)	W (ft)	L (m)	W (m)		
50	0.0032	595	55	35.0	17.0	10.6	5.3
100	0.0063	1200	111	49.0	24.5	15.0	7.5
150	0.0095	1776	165	59.6	29.8	18.2	9.1
200	0.0126	2368	220	68.8	34.4	21.0	10.5
250	0.0158	2970	276	77.0	38.5	23.4	11.7
300	0.0189	3560	330	84.4	42.2	25.8	12.9
350	0.0221	4155	386	91.2	45.6	27.8	13.9

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PROJECT NAME:	BUEL'S GORE		
PROJECT NUMBER:	STP ST CULV(1)		
FILE NAME:	/PW/04C138/s04C138en.xls	PLOT DATE:	05-APR-2006
PROJECT LEADER:	M. EVANS-MONGEON	DRAWN BY:	T. HUSK
DESIGNED BY:	W. FARLEY	CHECKED BY:	W. FARLEY
		SHEET	12 OF 30