

**Preliminary Assessment Results and Prioritization**  
**VT116 Culvert AOP Assessment Study**  
**Hinesburg, Vermont**  
**(with notes from 3/23/2012 meeting and design flow)**

LocalID	SgaID	VTrans Milepost (miles)	Drainage Area (square miles)	Stream Order (Strahler)	Structure Type	Structure Length (ft)	Channel Bankfull Width (ft)*	Structure Width / Channel Width (%)	Culvert Outlet Type	Outlet Drop Height (ft)	Fill over Upstream end of Pipe (feet)	AOP Coarse Screen	Retrofit Potential	GC SCREEN	AOP / Habitat Notes	Structure Condition Notes	AOP Priority #	Structural Priority #	GC Priority #	Constructability	Meeting Notes	50-Year Design Flow (cfs)	Method
1	500116000104072	6.86	0.0	0	24" round RCP	40	3	40	At Grade	0	4	GRAY	MLL	LEMON LIME	Limited fish habitat. Road ditch upstream	Good condition.	19	20	18	High		44	BPR Method
1b	500116000204072	6.71	0.2	0	4.3' x 3.2' concrete box	41	7	33	Free Fall	2.5	3	RED	LLL	ORANGE	Good habitat potential upstream. Steep cobble stream in wooded corridor.	Moderate condition. Wingwalls and culvert at outlet have spalling, some gaps in wall joints.	7	4	3	Moderate for replacement. Large expensive structure.	Poured in the 1930-40's, rould require federal dollars and an estimated \$75-100,000. Vtrans would just repair, discussed additional structure.	52	Average
1c	500116000304072	6.54	0.1	0	24" round CMP	42	5	17	Entirely Backwatered	0	6	GRAY	LLL	ORANGE	Limited habitat potential. Two wetland areas upstream with little concentrated flow.	Poor condition. Severely rusted with many holes in lower half.	14	1	7	High		33	BPR Method
2	500116000404072	6.41	0.0	0	30" round CMP	45	3	31	Entirely Backwatered	0	5	GRAY	MLL	LEMON LIME	Limited habitat potential. Has defined channel and wooded corridor, but small drainage area.	Appears good, but full of sediment so hard to estimate.	17	14	17	High		21	BPR Method
3	500116000004072	6.24	0.9	2	42" round CMP	50	10	35	Free Fall	0.9	7	ORANGE	MLL	YELLOW	Good habitat potential. Downstream channel needs buffer. Upstream in wooded corridor.	Moderate condition. Some sagging in roof, erosion on embankment.	2	11	6	High		167	Average
4	200116000004072	5.49	0.3	3	4' x 2.5' concrete box	37	10	40	Entirely Backwatered	0	5	GRAY	MLL	LEMON LIME	Good habitat potential. Upstream wooded buffer, gravel channel. Downstream no buffer, mowed through commercial area.	Poor condition. Concrete spalling on roof, at seams, on wingwalls, and header.	10	3	16	Low. Expensive concrete structure. Located at busy intersection.	Hold off on this structure. Intersection work and possible road widening is expected in near future including bike path in summer 2012.	95	Average
5	200116000104072	5.41	0.0	1	18" round RCP	50	3	17	Cascade	0	3	GRAY	LLL	ORANGE	Limited fish habitat. Wetland conditions with little concentrated flow.	Poor condition. Concrete eroded, exposing rebar. Headwall crooked and broken. Gaps between sections. Downstream section broken.	18	2	9	High		27	BPR Method
6	300211002804071	5.05	7.4	2	7' x 4' concrete box	30	10	70	Entirely Backwatered	0	3	GRAY	MML	YELLOW	Patrick Brook. Good habitat potential. Wooded buffer, large drainage area.	Moderate Condition. Floor and lower seams scoured and cracked. Otherwise ok condition.	4	6	11	Low. Expensive concrete structure.	Hold off on this structure. Possible road widening associated with work at Commerse Street.	689	Average
7	300211002704071	4.78	7.2	4	16' x 5.5' bridge opening	45	20.6	78	N/A	N/A	N/A	N/A	N/A	N/A	Patrick Canal. Good habitat potential. Adjacent dam may block fish.	Good condition, what is visible above backwater.	22	22	21	N/A		640	Average
8	200116000204072	4.66	0.1	2	36" round CMP	104	5	23	Free Fall	2.1	3	RED	LLL	ORANGE	Moderate habitat potential. Defined channel between and behind homes.	Moderate condition. Leaking joints and some rust. Angle piece on end.	12	10	5	High		124	BPR Method
9	200116000304072	3.92	0.1	1	36" round RCP	60	5	21	Partially Backwatered	0	3	GRAY	LLL	YELLOW	Limited habitat potential. Upstream channel is a ditch leading from a wetland with little concentrated flow.	Moderate condition. Riprap falling into ditch channel upstream. Recent HDPE extension on US.	13	5	12	High		124	BPR Method
10	200116000604072	3.73	0.3	2	36" round RCP	65	7	25	Entirely Backwatered	0	4	GRAY	LLL	YELLOW	Good habitat potential upstream. Both sides need additional buffers.	Good condition. Downstream end is CMP.	8	17	10	High		92	Average
10b	500116000504072	3.68	0.0	0	18" round RCP	57	1	13	Partially Backwatered	0	3	GRAY	LLL	LEMON LIME	No habitat potential. Low spot at base of cliffs.	Good condition. Downstream end is 24" CMP that is deformed.	20	15	19	High		2	BPR Method
11	200116000404072	3.54	0.1	1	18" round RCP	60	4	18	Partially Backwatered	0	3	GREEN	LLL	YELLOW	Limited habitat potential. Upstream is a mowed area with little concentrated flow.	Good condition. Downstream end is 24" CMP.	16	18	13	High		31	BPR Method
12	200116000504072	3.29	0.3	1	60" round CMP	65	10	50	Entirely Backwatered	0	3	GRAY	MML	GREEN	Good habitat potential. Upstream needs a buffer, but has a good channel.	Good condition. Some deformation at end.	9	13	20	Moderate for replacement. Large structure.		71	Average
13	300211002504071	3.17	3.2	3	2 x 10' arch pipes	52	22	179	At Grade	0	3	GRAY	HHH	LEMON LIME	Beecher Hill Brook. Good habitat potential. Large drainage area upstream.	Good condition. Scour at downstream end.	6	16	8	Low. Large Structures. Would require detour.		489	Average
14	200116000904072	2.73	0.7	3	48" round RCP	75	11	25	Cascade	1	3	GRAY	LLL	ORANGE	Good habitat potential. Upstream needs buffer. Other smaller pipe downstream.	Moderate condition. Embankment eroding. Sink hole at road edge at upstream end.	3	9	2	High	Vtrans to reset or replace. Downstream structure at Gilman Road OK. Talk with landowner about downstream farm crossing.	159	Average
15	200116000704072	1.47	0.2	1	36" round RCP	100	6	23	Cascade	2.4	16	GRAY	LLL	ORANGE	Moderate habitat potential. Another culvert upstream, then steep cobble forested channel.	Moderate condition. Asphalt liner worn off and some rust.	11	12	4	Low. Deep fill. Does have easy detour on Old Route 116.	Outlet improvements may be possible. Detour exists.	56	BPR Method
16	200116000804072	1.25	0.5	1	35" round CMP	95	10	19	Free Fall	1.2	7	RED	LLL	RED	Good upstream habitat. Wooded forest upstream.	Moderate condition. Some rust. Riprap failing. Headwall loose	1	7	1	High	Seek USFWS replacement funds.	118	Average
17	500116000604072	1.14	0.1	0	18" round RCP	50	4	8	Entirely Backwatered	0	3	GRAY	LLL	YELLOW	Limited fish habitat. Wetland conditions with little concentrated flow.	Moderate condition. Headwall broken and blocking inlet.	15	8	14	High		59	BPR Method
18	200116001004072	0.69	7.5	3	36' bridge	50	34	106	N/A	N/A	N/A	N/A	N/A	N/A	Hollow Brook. Good upstream habitat.	Moderate condition. Spalling concrete on rails and deck edge. Old footings causing constriction and erosion upstream.	21	21	22	N/A		1061	Average
19	200116001104072	0.15	0.8	3	42" round RCP	40	13	23	Entirely Backwatered	0	4	GREEN	LLL	LEMON LIME	Good upstream habitat. Sinuous channel in shrubby corridor.	Good condition. Hard to observe because full of water.	5	19	15	High		209	Average

NOTES:  
RCP = radial concrete pipe. CMP = corrugated metal pipe.  
AOP Coarse Screen: Green = Full AOP; Gray = reduced AOP; Red = No AOP.  
Retrofit Potential Screen: LLL = low for strong, moderate, and weak swimmers; MLL = medium for strong swimmers, and low for moderate and weak swimmers; MLL = medium for strong and moderate swimmers, and low for weak swimmers; HHH = high for strong, moderate, and weak swimmers  
Geomorph Compatability Screen: Green = fully compatible; Lemon lime = mostly compatible; Yellow = Partially compatible; Orange = mostly incompatible.  
\* Bankfull width measured in field and compared to Hydraulic Geometry Curve Estimates. Hydraulic Geometry Curve Estimates used where italicized.