

Deer Brook Georgia, Vermont

Deer Brook in Georgia, Vermont has been found to be impaired by sediment and stormwater as measured by the biological community of the stream. There are at least 30 significant discharges to the stream from the developed lands of Georgia. The largest discharge to the stream is area #17 and the eroded gully at the outfall of the drainage. The State of Vermont and the Friends of North Lake Champlain are working together on a project to address the runoff problems in this drainage area. In addition under General Permit 3-9050 3 parcels in the lower watershed will have to implement or improve their existing stormwater discharges by 2028. Two retrofits in the Georgia Stormwater Master Plan for drainage areas 29-34 covering one parcel were identified and are shown in this report.

The recommended course of action is to install stormwater treatment structures that control both the water quality volume and the channel protection volume from stormwater discharges. Maps showing the location of drainage area #17 and a table and map listing the 16 >3 acre-discharges are provided. The implementation of stormwater treatment practices and gully erosion control in drainage area #17 will result in a significant reduction of sediment and phosphorus. The implementation of all 16 retrofits would reduce sediment to the brook by about 18%.

Addressing these discharges of stormwater to the brook will reduce contamination and stream channel erosion. It will help prevent the stream from becoming listed as stormwater impaired on the state of Vermont's 303d list of impaired waters which will lead to the requirement for the Town to create and implement a total maximum daily load (TMDL) to restore the water quality. It will also reduce phosphorus currently being discharged to the Lamoille River and Lake Champlain.

Macroinvertebrate Site Summary

Location: Deer Brook	Location ID: 501822
Town: Georgia	Bio Site ID: 460600000014
Description: Located below DEE Road down into ravine about 1/2mi, just below groundwater flux from Georgia Whey Plant, in a small cobble dominated riffle.	WBID: VT07-03
Stream Type: Hybrid Low Gradient	

Date	Density	EOT Richness	BCG Intolerant Richness	PMA-O	B.I.	Amphipod + Isopod - Hyallela	EOT/EOT +C	PPCS-F	Sensitive COTE%	Shredders / Collector	IBI Score	Community Assessment
10/24/1994	148	3.0	3.0	20.7	3.60	0.0	0.125	0.292	0.000	0.667	22	
10/9/2013	472	15.0	13.0	57.2	5.17	0.0	0.112	0.485	1.977	0.102	31	G-Fair
10/9/2013	456	13.0	14.0	56.5	5.20	0.0	0.115	0.511	1.754	0.125	32	
IBI 5	≥ 500	≥ 15	≥ 14	≥ 75	≤ 4	0	≥ 0.5	≥ 0.57	≥ 28	≥ 0.5		
IBI 4	≥ 400	≥ 13	≥ 11	≥ 65	≤ 5	≤ 1	≥ 0.38	≥ 0.49	≥ 20	≥ 0.35		
IBI 3	≥ 300	≥ 11	≥ 9	≥ 55	≤ 6	≤ 5	≥ 0.26	≥ 0.41	≥ 13	≥ 0.2		
IBI 2	≥ 200	≥ 7	≥ 5	≥ 45	≤ 6.5	≤ 25	≥ 0.13	≥ 0.36	≥ 5	≥ 0.1		
IBI 1	≥ 0	≥ 0	≥ 0	≥ 0	>6.5	>25	≥ 0	≥ 0	≥ 0	≥ 0		

Macroinvertebrate Site Summary

Location: Deer Brook	Location ID: 522734
Town: Georgia	Bio Site ID: 460600000018
Description: Parked in back lot of 'Interstate Auto Service' and followed ridge behind shed along gully to stream. Site just below a stormwater gully.	WBID: VT07-03
Stream Type: Warm Water Medium Gradient	

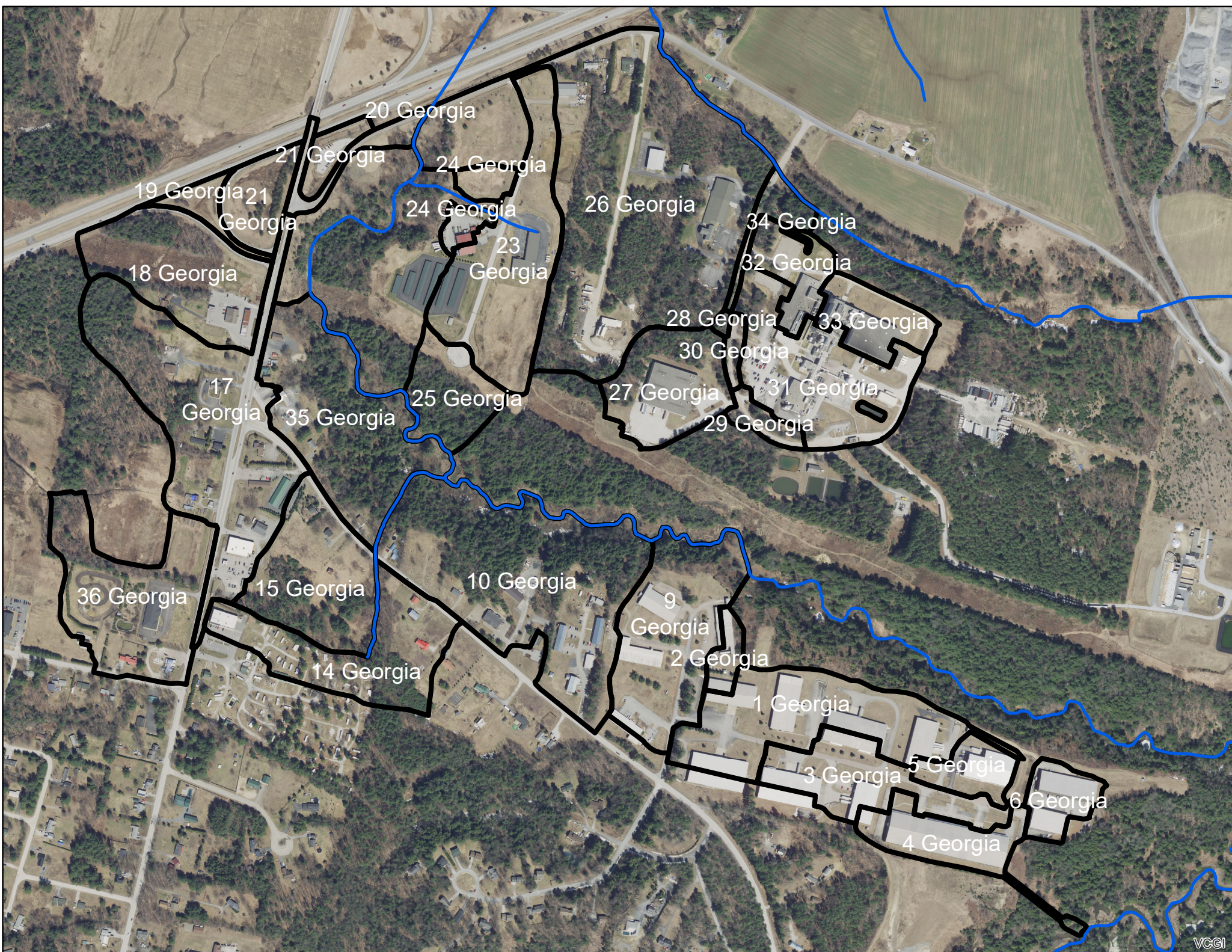
Date	Density	Richness	EPT Richness	PMA-O	B.I.	Oligo.	EPT/EPT + Chiro	PPCS-F	Community Assessment
9/23/2019	2844	39.0	9.0	62.9	4.99	2.95	0.76	0.58	Fair
Full Support	≥ 300	≥ 30	≥ 16	≥ 45	≤ 5.4	≤ 12	≥ 0.45	≥ 0.4	
Indeterminate	≥ 250	≥ 28	≥ 15	≥ 40	≤ 5.65	≤ 14.5	≥ 0.43	≥ 0.35	
Non-Support	< 250	< 28	< 15	< 40	> 5.65	> 14.5	< 0.43	< 0.35	

*Scoring Guidelines for Stream Type WWMG and WQ Class B(2).

Watershed Number	Action List #	Proposed Action	Proposed or Existing Stormwater Treatment Practice	Permit Number	Watershed Area (Acres)	Percent Mapped Impervious Area (MIA)	Current BMP Sediment Reduction Credit	Sediment Load with Current Reductions (lbs)	Priority Action Sediment Reduction Credit	Sediment Load with Priority Action (lbs)	Phosphorus Load with Current Reductions (lbs)	Priority Action Phosphorus Reduction Credit	Phosphorus Load with Priority Action (lbs)	Water Quality Volume (Acre-Feet)
17 Georgia	1	Implement Deer Brook project: stabilize severe erosion at outfall and bring discharge up to current standards (1)	GW (3)/RS/DS/BRA/CB/GS/OF	6699-9015	21.25	31.15	0%	7746	80%	1549	19.37	60%	7.75	0.33
31 Georgia	4		CB/DW/GS/SB/ SWPPP	4519-9003	11.37	64.45	45%	4680	35%	3042	16.54	30%	11.58	0.36
9 Georgia			OF/SWPPP	4767-9003 /5014-9003	12.01	35.31	10%	4558	0%	4558	12.66	0%	12.66	0.22
4 Georgia			CB/GS	3855-9010	5.12	59.59	0%	4193	0%	4193	11.65	0%	11.65	0.18
36 Georgia			CB/GS/OF		12.21	27.67	0%	3901	0%	3901	10.84	0%	10.84	0.17
10 Georgia			OF		23.05	11.86	0%	3530	0%	3530	9.81	0%	9.81	0.15
35 Georgia			OF		14.29	8.66	0%	1840	80%	368	5.11	60%	2.04	0.08
18 Georgia			CB/OF		10.46	17.41	0%	2131	0%	2131	5.92	0%	5.92	0.09
20 Georgia			OF		1.95	63.07	0%	1727	80%	345	4.80	60%	1.92	0.07
14 Georgia	4		OF		9.84	12.61	0%	1568	80%	314	4.35	60%	1.74	0.07
32 Georgia	4		SB/OF		3.54	50.94	40%	1264	40%	759	4.39	35%	2.85	0.09
26 Georgia			GS/OF/SWPPP/GS/CR	3114-9015 /4585-9003 /4293-9010 /6362-9015	34.96	16.77	75%	1162	5%	1104	7.75	20%	6.20	0.20
33 Georgia	4		CB/GS/SB/SWPPP	4519-9003	3.96	51.26	45%	1102	35%	716	3.90	30%	2.73	0.09
15 Georgia			OF		9.70	6.24	0%	1095	0%	1095	3.04	0%	3.04	0.05
23 Georgia	4		CB/GS/WP/OF	3370-9010 /4926-9003	13.25	18.74	60%	763	20%	610	3.18	20%	2.54	0.08
34 Georgia			OF		1.80	33.10	0%	705	80%	141	1.96	60%	0.78	0.03
22 Georgia	4		GS	3370-9010	5.13	8.27	0%	647	80%	129	0.72	0%	0.72	0.03
21 Georgia			OF		5.23	18.53	40%	563	0%	563	2.08	0%	2.08	0.04
25 Georgia	4		OF		4.86	5.93	0%	540	80%	108	1.50	60%	0.60	0.02
2 Georgia			DW		1.36	50.60	57%	343	0%	343	1.15	0%	1.15	0.03
1 Georgia			CB/IB		12.62	50.07	95%	307	0%	307	3.41	0%	3.41	0.26
3 Georgia			CB/IB		7.18	59.39	95%	233	0%	233	2.59	0%	2.59	0.20
24 Georgia	4		WP/OF	3370-9010	2.13	29.91	60%	196	20%	157	0.82	20%	0.65	0.02
6 Georgia			IG/EDPMP/LS	3726-9015	2.78	83.96	95%	168	0%	168	1.87	0%	1.87	0.14
27 Georgia	4		CB/SB/IB/OF	3552-9010	7.32	39.05	95%	121	0%	121	1.34	0%	1.34	0.10
19 Georgia			OF		1.49	7.23	40%	95	0%	95	0.35	0%	0.35	0.01
5 Georgia			CB/IB		2.74	24.85	95%	26	0%	26	0.28	0%	0.28	0.02
30 Georgia	4		CB/DW	3420-9010	0.75	48.12	95%	20	0%	20	0.23	0%	0.23	0.02
29 Georgia	4		CB/DW		1.35	29.94	95%	20	0%	20	0.22	0%	0.22	0.02
28 Georgia	4		CB/DW		0.22	22.09	95%	2	0%	2	0.03	0%	0.03	0.00
Total								45244		30648			109.57	
NOTES														
(1) Deer Brook Gully Final Report estimates 19 lbs/TP and 53,000 lbs of sediment from outfall stabilization and implementation of STPs in watershed removes 19.28 lbs/TP and # lbs of sediment.														
(2) Assumes that GP 9050 will require upgrades for all Action list #4 drainages to at least 80 % sediment removal and 60% phosphorus removal.														

Watershed boundary

Public Lands in blue
and Stormwater
Drainages in red in
Lower Deer Brook
Watershed

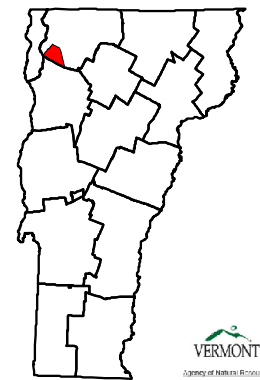
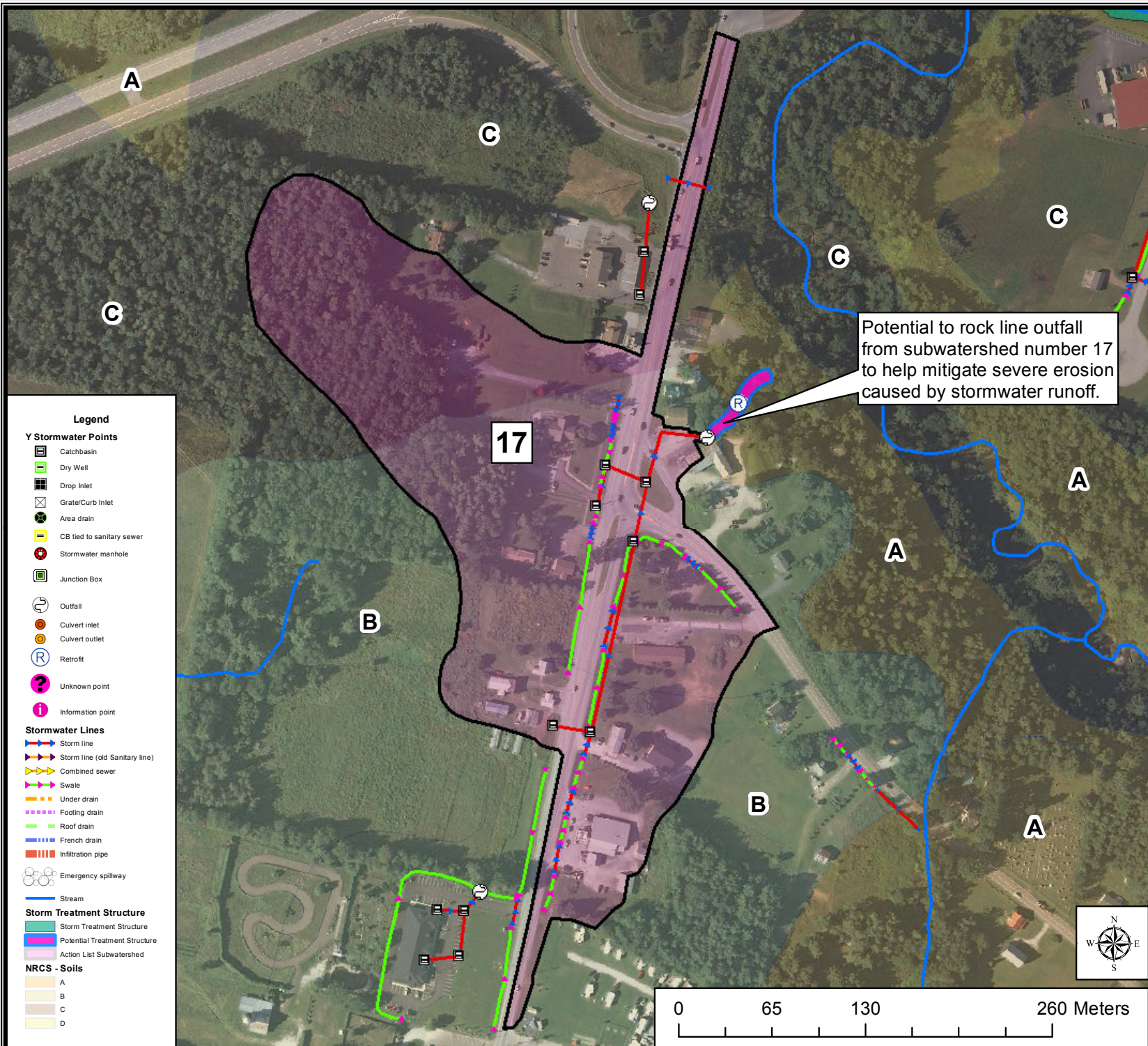


Georgia

Action List 1
Subwatershed: 17

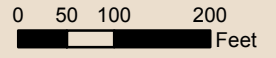
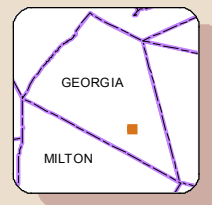
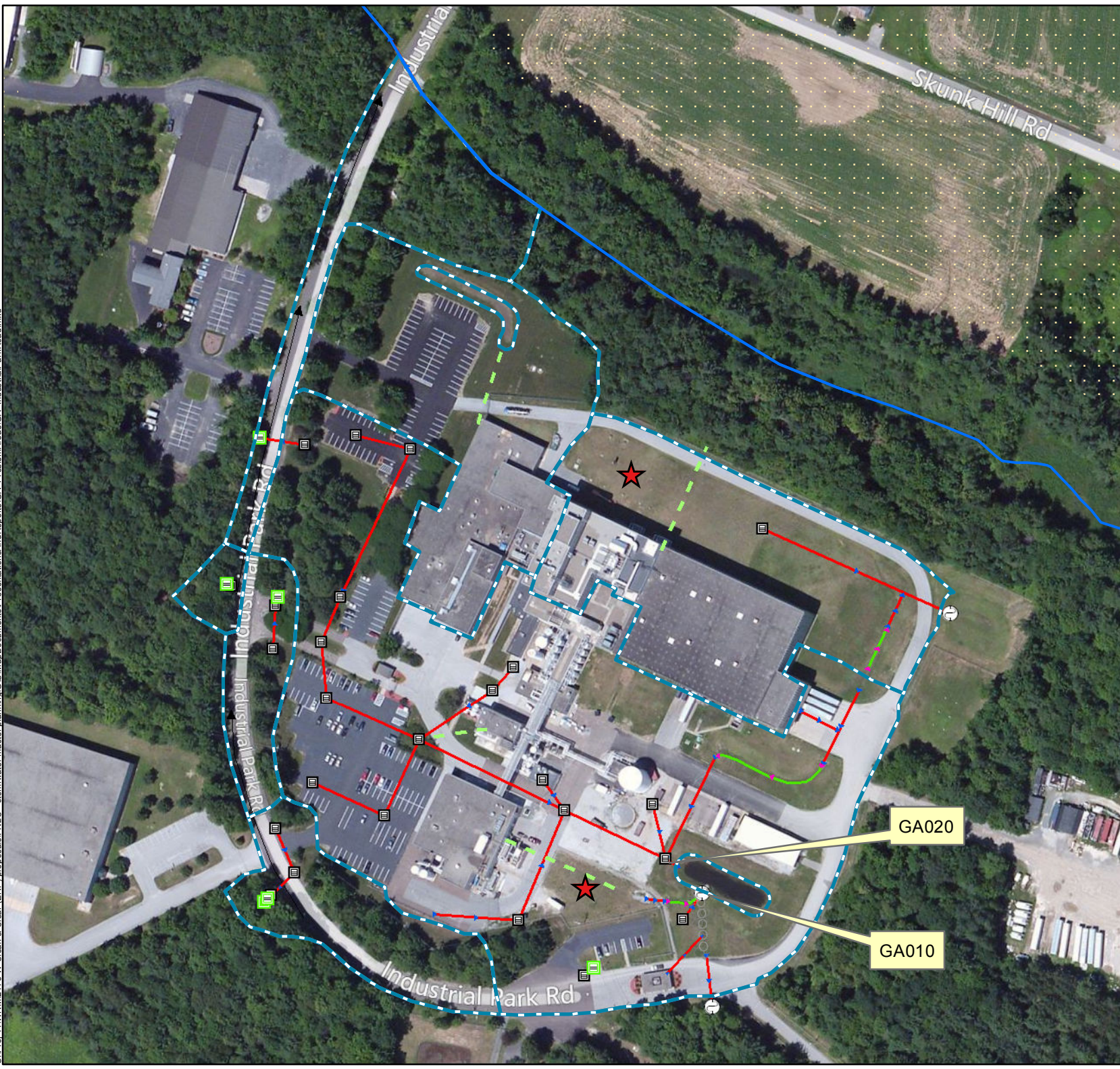
This map shows high priority subwatersheds which are ranked by connectedness, percent of impervious cover, field observations, and potential retrofit measures and locations.

The data shown on this map is only as accurate as the available sources and field observations allowed and should be used as a basic planning level tool only.



VTANR - DEC
Creator: Jim Pease, Collin Smythe
Date: 2/2/2012
Data Sources: Field data, Town and stormwater permit plans, existing GIS data, GPS data, municipal member knowledge, VTRANS roads data, VT Hydrography dataset, NRCS soils map
Imagery Source: Canadian Border Orthos (2008)

O:\Prof-11\WR\M2475-W_Clean & Clear (ERP)_proposals\FNL_C - stormwater_master_planning\GIS\Map Documents\Ppresentations\Reports\GA_ProblemAreas\GA_IndustrialParkRoad.mxd



Legend

- SW Treatment Opportunity
- River or Stream
- Drainage Area (23 Acres)
Erodible Soils (k > 0.17)
- Catchbasin
- Dry Well
- Outfall
- Storm line or culvert
- Swale
- Roof drain
- Emergency spillway
- Overland flow

Treatment Opportunity:
Evaluate opportunities for retrofitting existing stormwater management facilities (any basins) in the Georgia Industrial Park to improve performance; first step would be to assess frequency of overflow events.

Sources: Stormwater Infrastructure, Stormwater Subwatersheds: VT DEC; Problem Areas: Stone; Future Growth Areas: Town of Georgia 2011 Comprehensive Municipal Plan; Potential Erosion Areas: SSURGO; Hydrography, Roads: VCGI; Imagery: Bing Maps.



Georgia Industrial Park,
Deer Brook Watershed

Multiple

Georgia Stormwater
Management Planning