

REFERENCE REACH FIELD FORM
STREAM CHANNEL CLASSIFICATION LEVEL II

STREAM TYPE: C3? F3

STREAM NAME: Black Creek DRAINAGE AREA: 27.8 sq. miles BASIN NAME: Genesee River

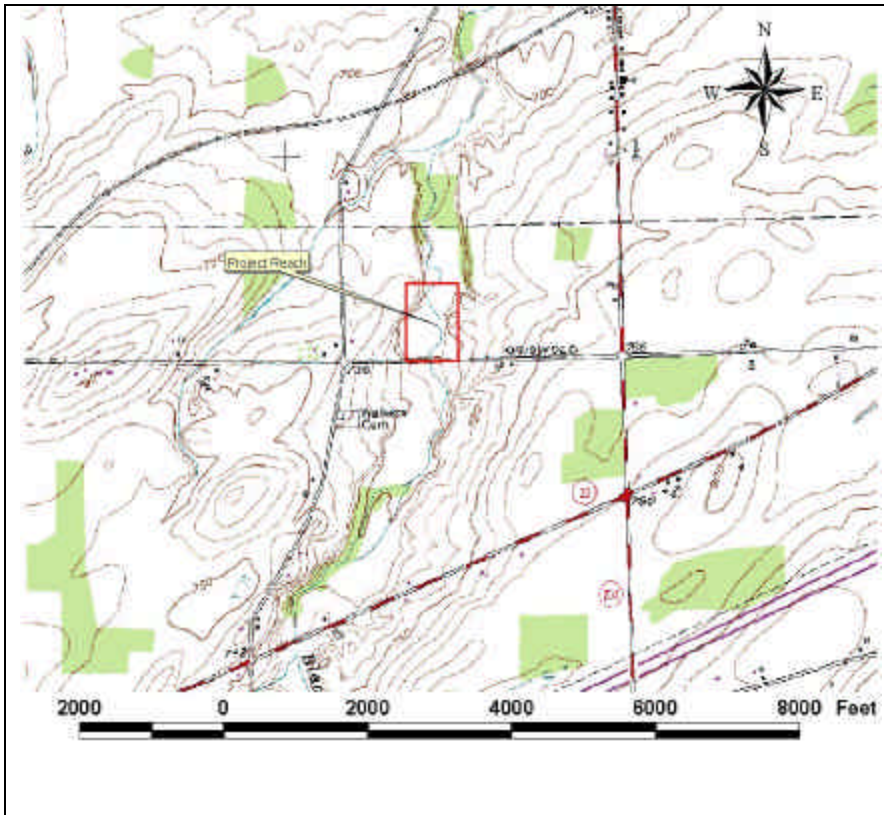
OBSERVERS: J. Hauber, F. Reese, C. Rigerman DATE: 10/29/2004

Hilton loam, 0-3% slope	<u>0.20</u>
Schoharie soils, eroded, 20-40% slope	0.49
Oatka silty clay loam	0.49
Teel silt loam	0.43

LOCATION: Black Creek at Griswold Road, Town of Byron, Genesee County, Sites B42 and B43 Latitude 43-02-03 Longitude 78-04-33

Mapped Soil Type(s) K Factor 0.43

Bankfull WIDTH	30.32 ft	Ft.(W _{bkf})	Bankfull MAX>DEPTH	2.08	Ft.(d _{max})	Channel SLOPE	0.0046 (measured)	Ft/Ft		%
Bankfull Mean DEPTH	1.55	Ft.(d _{bkf})	Flood Prone Area WIDTH	500	Ft.(W _{FP})	Valley SLOPE		Ft/Ft		%
WIDTH/DEPTH Ratio	19.56		ENTRENCHMENT Ratio	16		SINUOSITY (Stream Dist/Valley Dist.)		1.27		
Channel MATERIALS: (Pebble Count)			D50	75	mm	D84	110	mm		



Site Location Map – Black Creek at Griswold Road, Town of Byron



2002 Air Photo, Black Creek at Griswold Road



Photo 1. View of project site showing exposed soil on high, undercut bank at outside edge of meander, near Station 4+00, looking northeasterly. Bare soil at photo right is due to mechanical vegetation clearing.



Photo 2. View of exposed soil along west bank of creek at Station 2+10, looking south. Bank height is approximately 2-2.5 feet above water level.



Photo 3. Frequent bankfull flows have caused sloughing of west bank into formerly stable section of stream channel, causing formation of mid-channel bars. Diversion of current around the mid-channel bars contributes to bank undercutting and instability.



Photo 4. Scouring and undercutting have exposed root systems of numerous trees lining the stream channel.

Site Description: This project site extends from the Griswold Road bridge north along the Black Creek channel for a distance of approximately 1000 feet. Land use on the east side of the creek is residential. The lawn is cut up to the top of the stream bank with recent grading after trees were removed near Station 4+00 (Note Photo 1). Land use on the western side of the creek is predominantly pasture, with a woodlot located approximately 600 feet north of Griswold Road. None of the land immediately adjacent to the creek is cropped in this reach. High banks (4-7 feet) with undercut, exposed soils are located at the outside edges of the meanders. The extent of the exposed soil banks is shown in the aerial photograph. Cross sections were taken at five locations to characterize conditions within the reach. Bankfull flow at this site is estimated at approximately 200 cfs, based on channel cross section analysis. Channel slope is approximately 0.0046 over the project reach.

Statement of Problem: The stream channel appears to be downcutting actively at this site. Bank sloughing evident in Photo 3, exposed tree roots, and scoured, undercut outside meander banks all point to a channel in transition. Increased frequency of bankfull flows may contribute to the accelerated rate of channel degradation. Removal of woody vegetation from the top of bank on the east side of the channel has resulted in an accelerated rate of undercutting and bank erosion due to the loss of stabilizing plant roots. Channel currents are undercutting the east bank, causing significant soil erosion and increased channel deposition. Undercutting on the east side of the creek is creating a significant erosion hazard, and loss of property by adjacent landowner.

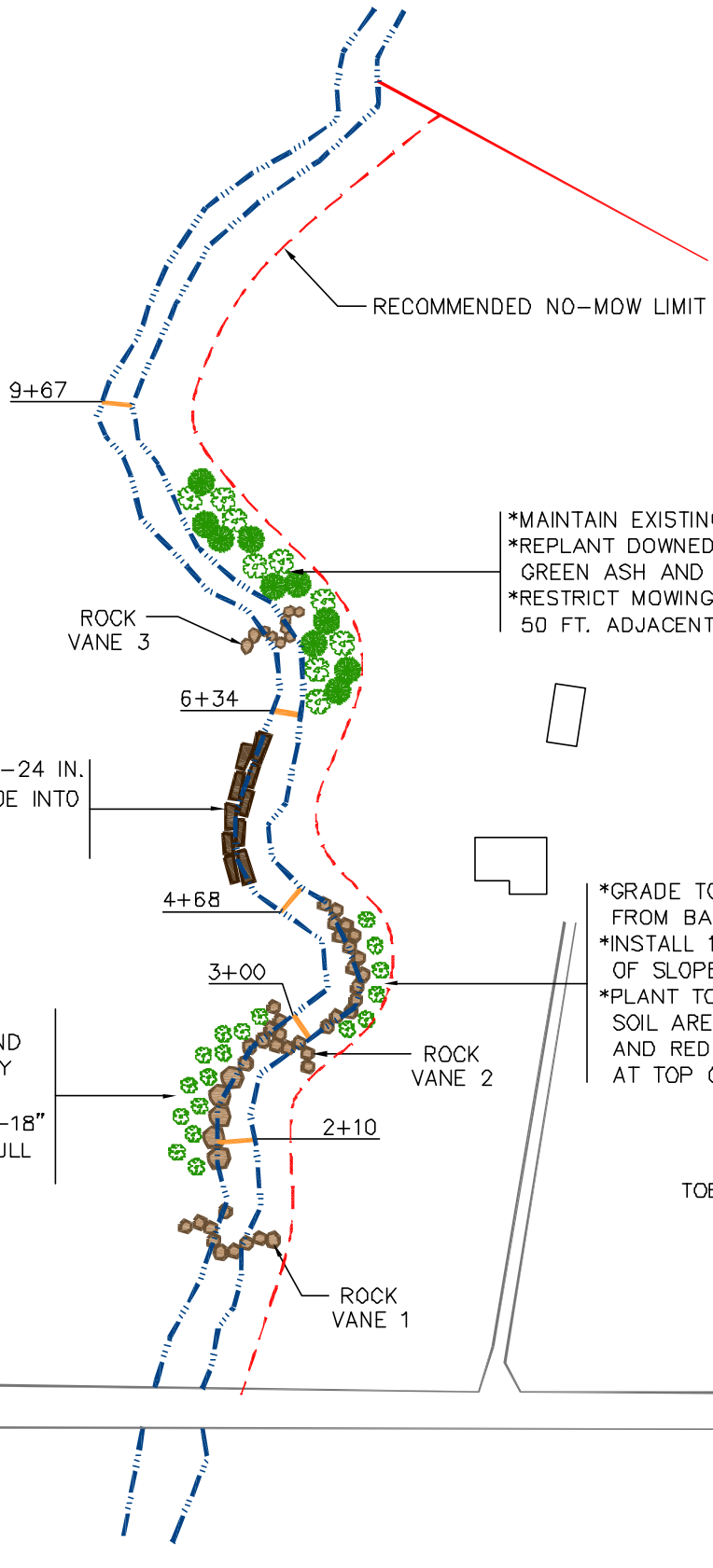
Proposed Restoration/Remediation Methods:

1. Re-establish shrubs and trees along channel banks to at least 30 feet from the top of bank.
2. Establish a “no-mow” zone within 30 feet of channel top of bank.
3. Place riprap (12-24 in. diameter rock) at base of highest eroding meander bank on east side of creek from approximately Station 3+00 to Station 4+90, and on the west side of the creek from approximately Station 2+00 to 3+00 to reduce undercutting by channel currents and high flows.
4. Embed available on-site downed timber as rootwads on the west bank between Station 2+00 and Station 3+00 (approximately). Root wads should deflect current away from outside edge of bank.
5. Utilize willow logs on west bank between Station 4+68 and Station 6+34 to stabilize this slumping bank.
6. Construct three rock cross vanes to hold the channel grade approximately at Stations 1+90, 3+10, and 7+00.

Cost Estimate:

Item	Unit	Unit cost (\$)	Extended cost (\$)
Rock rip rap	135 cy	46	6210
Rock vanes (3)	80 cy	46	3680
Root wads (on-site or nearby materials – cost is for labor & equipment)	1500/day	2	3000
Willow logs (on-site or nearby materials)	L.S.	1700	1700
Turbidity curtain	13.50 sy	30	405
Plantings	200	15	3000
Mobilization cost			500
Detailed site survey	L.S.	2000	2000
Plans and permits	L.S.	5000	5000
Estimated total cost			\$25495

Conceptual Plan Sheets/Standard Details



RECOMMENDED NO-MOW LIMIT

9+67

ROCK VANE 3

6+34

4+68

3+00

2+10

ROCK VANE 1

ROCK VANE 2

- *MAINTAIN EXISTING TREES.
- *REPLANT DOWNED TREES WITH GREEN ASH AND SILVER MAPLE.
- *RESTRICT MOWING FOR AT LEAST 50 FT. ADJACENT TO TOB.

- *SOAK WILLOW LOGS (12-24 IN. DIA.) IN WATER AND TOE INTO ERODING SLOPE.
- *BACK FILL AS NEEDED.

- *GRADE TO 1:2 SLOPE.
- *INSTALL ROOT WADS AND BOULDERS AT ORDINARY HIGH WATER MARK.
- *PLANT 2 ROWS OF 12"-18" SHRUBS ABOVE BANKFULL ELEVATION.

- *GRADE TOB BACK TO 1:2 SLOPE FROM BANKFULL HEIGHT
- *INSTALL 12-24 IN. ROCK AT TOE OF SLOPE UP TO BANKFULL HEIGHT
- *PLANT TOP OF BANK AND EXPOSED SOIL AREAS WITH LIVE WILLOW STAKES AND RED OR SUGAR MAPLE MAPLE AT TOP OF BANK.

TOB = TOP OF BANK



2230 PENFELD ROAD
PENFELD, NEW YORK 14526
TEL: 585.377.1450
FAX: 585.377.1266

BLACK CREEK AT GRISWOLD ROAD
TOWN OF BYRON, GENESEE COUNTY
CONCEPTUAL DESIGN

STREAM RESTORATION STUDY AREAS

P.N. 33802

DATE:	MARCH 2005
APPROX. SCALE:	1" = 150'
DRAWN :	DLS
CHECKED:	FAR