BIOLOGICAL SYSTEMS
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December 6, 2011

Via email: (b) (6)

Mr. (b) (6)
U.S. Army Corps of Engineers
Louisville District Regulatory Office
848 Sassafras Creek Road
Sassafras, KY 41759

RE: Nally & Hamilton Enterprises, Inc. / LRL-2006-00340 / KDNR # 860-0404/
Carr Fork / 2011 Mitigation Monitoring Report / BSC# 211046

(b) (6):

The following mitigation monitoring report for the referenced permit is submitted on behalf of Nally & Hamilton Enterprises, Inc. for your review.

If you have any questions please feel free to contact me.

Sincerely,

Invalid signature

X

Shaun R. Laungani
Project Manager / Scientist

BIOLOGICAL SYSTEMS CONSULTANTS, INC.

Nally & Hamilton Enterprises, Inc.
2011 Mitigation Monitoring Report
LRL-2006-00327, KDNR 860-0404
USACE Louisville District
BSC # 211046

P.O. Box 54954
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US Army Corp of Engineers
CWA Section 404
2011 Mitigation Monitoring Report

Prepared For:

Nally & Hamilton Enterprises, Inc.
P.O. Box 2323
London, KY 40741

Applicable To:

USACE # LRL-2006-00327
Kentucky Department for
Natural Resources SMCRA Permit # 860-0404

December 6th, 2011

By:

Biological Systems Consultants, Inc.
P.O. Box 54954
Lexington, KY 40555-4954

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1.0 Project Overview

LRL-2006-00327, KDNR 860-0404 was assessed on August 17th and September 7th, 2011 by Biological Systems Consultants, Inc. on behalf of the permittee, Nally & Hamilton Enterprises Inc., for the purposes of providing assessment of mitigation to the U.S. Army Corps of Engineers (USACE) of the referenced permit. The Clean Water Act Section 404 permit was authorized August, 2007 and modified March 16, 2011. The permit was issued for the purpose of coal resource extraction. Table 1 illustrates the type and length of aquatic resources impacted.

Table 1. Aquatic Resources Impacted

FACILITY ID	LENGTH (ft)	STREAM TYPE
HF-1	1,621	Ephemeral
	400	Intermittent
	200	Perennial
HF1corridor	111	Perennial
Pond 1	299	Perennial
Pond 1A	358	Perennial
HF-2	2,491	Ephemeral
	400	Intermittent
HF 1 corridor	99	Intermittent
Pond 2	340	Perennial
Pond 2A	370	Perennial
TOTAL	**6,689**	

The mitigation includes stream channel construction for the top and right side of HF-1, HF-2, Pond 1, Pond 1A, Pond 2, Pond 2A and drainage corridors after pond removal.

The project area is located in Knott County, approximately 0.5 miles south of community of Littcarr. Both hollow fill and sediment control ponds are located in unnamed tributaries to Carr Creek Lake. The project location is illustrated in Appendix A. The mitigation areas are delineated on the mitigation monitoring map (Appendix B).

Areas still under use of the operation such as ponds and corridors and HF2, which is under maintenance construction, could not be assessed for a rapid bioassessment (RBP) score.

2.0 Mitigation Requirements

The mitigation plan has a purpose of achieving no net loss of stream function and is projected with a 30 year maturity life and to be measured by stream criteria as summarized in Table 2. The plan proposed the following mitigation:

1) stream channel restoration of the top and right side drain of both HF-1 and 2
2) stream channel restoration for Pond 1, 1A, 2, 2A and drainage corridors between the fills and ponds, following pond removal.

3) Following stream channel construction and groundcover vegetation a sixty foot wide riparian corridor on each side of the stream planted with trees species listed in the mitigation plan

2.1 Mitigation Status

All permitted facilities were constructed in 2006-2007. The hollow-fill mitigation construction areas were completed in 2010. The mitigation area of HF1 was assessed and currently has RBP score of 83. Due to record high rainfall amounts in July 2011, maintenance of the HF 2 mitigation areas was needed improve bank stabilization and in-stream structures. HF 2 maintenance construction is currently in progress, expected completion in early 2012. Drainage corridor and pond restoration activities will commence when final certification is granted by Kentucky Department of Natural Resources with regard to the SMCRA permit.

A summary of the mitigation plan success criteria compared to the 2011 assessment of HF1 is presented in Table 2.

Table 2. Monitoring parameters, success standards, method of determination and 2011 monitoring result

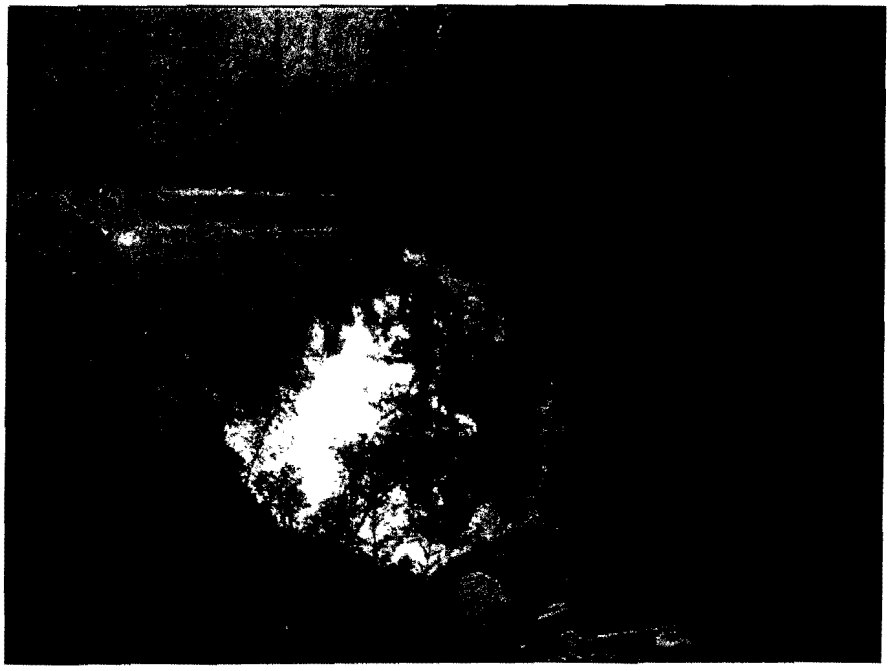
Parameter / Observation	Success Standards	Method of Determination	2011 Assessment HF 1 (Year 1)	Projected Scores (Year 5)
Water Quality			**Field Measurement**	
Field pH	Report Only	Field Meter	pH (S.U.) 8.28	N/A
Specific Conductance	Report Only	Field Meter	1481 µS/cm	N/A
Dissolved Oxygen	Report Only	Field Meter	8.54 mg/L	N/A
Habitat Assessment			**Score**	
Epifaunal Substrate	Minimum 70% favorable substrate	Pebble count; estimate of available	9	13
Embeddedness	Maximum 20% embeddedness	Pebble count; measure embeddedness	7	17
Velocity / Depth Regime	Maintain step-pool or fiddle-pool sequences similar to approved plans	Longitudinal profile	11	10
Sediment Deposition	Little or no enlargement of islands or point bars and <5% of the bottom affected by sediment deposition	Pebble counts in pools	6	17
Channel Flow Status	Maintain width/depth ratio similar to accordance with plans	Determine from X-sections	11	17
Channel Alteration	Maintain minimal channelization similar to approved plans	Longitudinal profile; X-sections	1	15

Frequency of Riffles	Maintain step-pool or riffle-pool sequences similar to approved plans	Longitudinal profile	11	20
Bank Stability	Banks stable	Bank Erosion Index; Observe density & depth of plant roots near bank shear stress	16	18
Vegetative Protection	Approved width or riparian zone planted with minimum 300 stems/ acre surviving	Measure replanted width; estimated stem count	7*	12
Riparian Zone	Riparian zone with a variety of species alive and healthy	Measure replanted width; estimated stem count	2*	14
*HF -1 riparian corridor tree planting not completed yet, planting width and stem count could not be assessed				

3.0 Photographic Documentation

Assessment Site HF-1: facing southeast

Assessment Site HF-1: facing northwest



Assessment Site Pond #1: facing west

Assessment Site HF#2: facing south

Assessment Site Pond #2: facing northwest

4.0 Conclusions

The project mitigation goals and objectives are not yet complete. This is the second year of annual mitigation monitoring for LRL-2006-00327, KDNR 860-0404. Hollow-fill mitigation areas are in Year 1 of mitigation, while pond and drainage corridor mitigation has not begun. After pond removal and restoration, assessment of these mitigation areas will be monitored and included in the annual report. The mitigation areas have evidence of bankfull flows and appear to have the adequate hydrology and structure to become successful mitigation areas. The parameter scores existing in the HF 1, which is in the first year, following construction, the site is trending toward success of achieving the success criteria as illustrated in Table 2. Maintenance and construction activities will be documented and reported in each annual report.

4.1 Maintenance and Enhancement

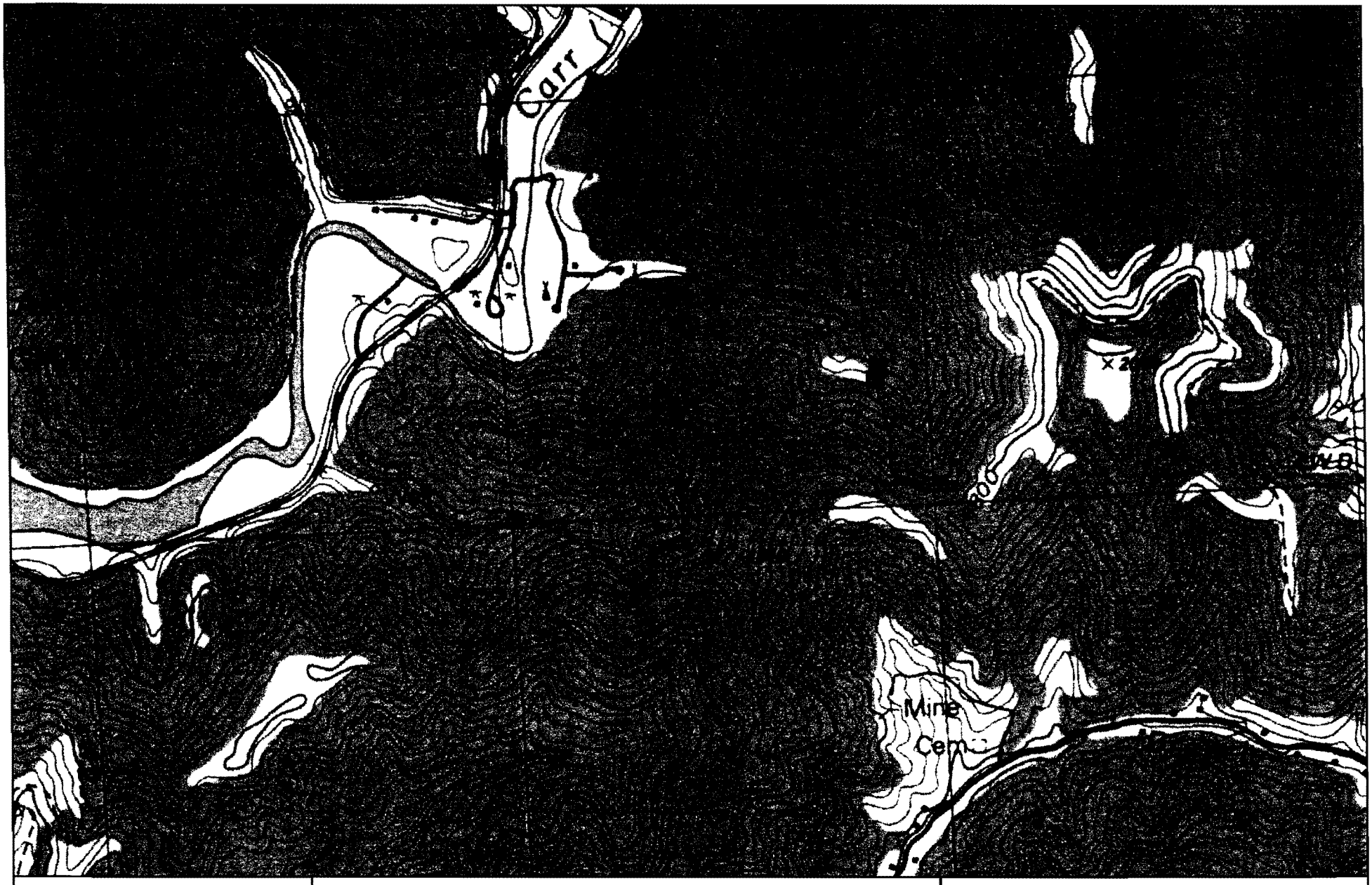
Maintenance activities are currently being completed for the HF#2 mitigation area. Following the use of equipment, revegetation of the riparian corridor will control sedimentation in the mitigation area. To adaptively manage the mitigation site for the purpose of meeting the mitigation plan success criteria, the following recommendations are provided:

1) Tree planting in a 60 foot wide buffer on each side of the HF 1 and HF 2 mitigation channels is to begin growth of a canopy cover.

2) Secured placement of large woody debris in riffle segments of mitigation channels perpendicular to the stream banks to provide substrate suitable for aquatic organisms.

APPENDIX A

Project Location Map



Legend

- Assessment Sites
- Mitigation Site Perimeter

BIOLOGICAL SYSTEMS
CONSULTANTS, INC.

0 500 1,000 2,000 Feet

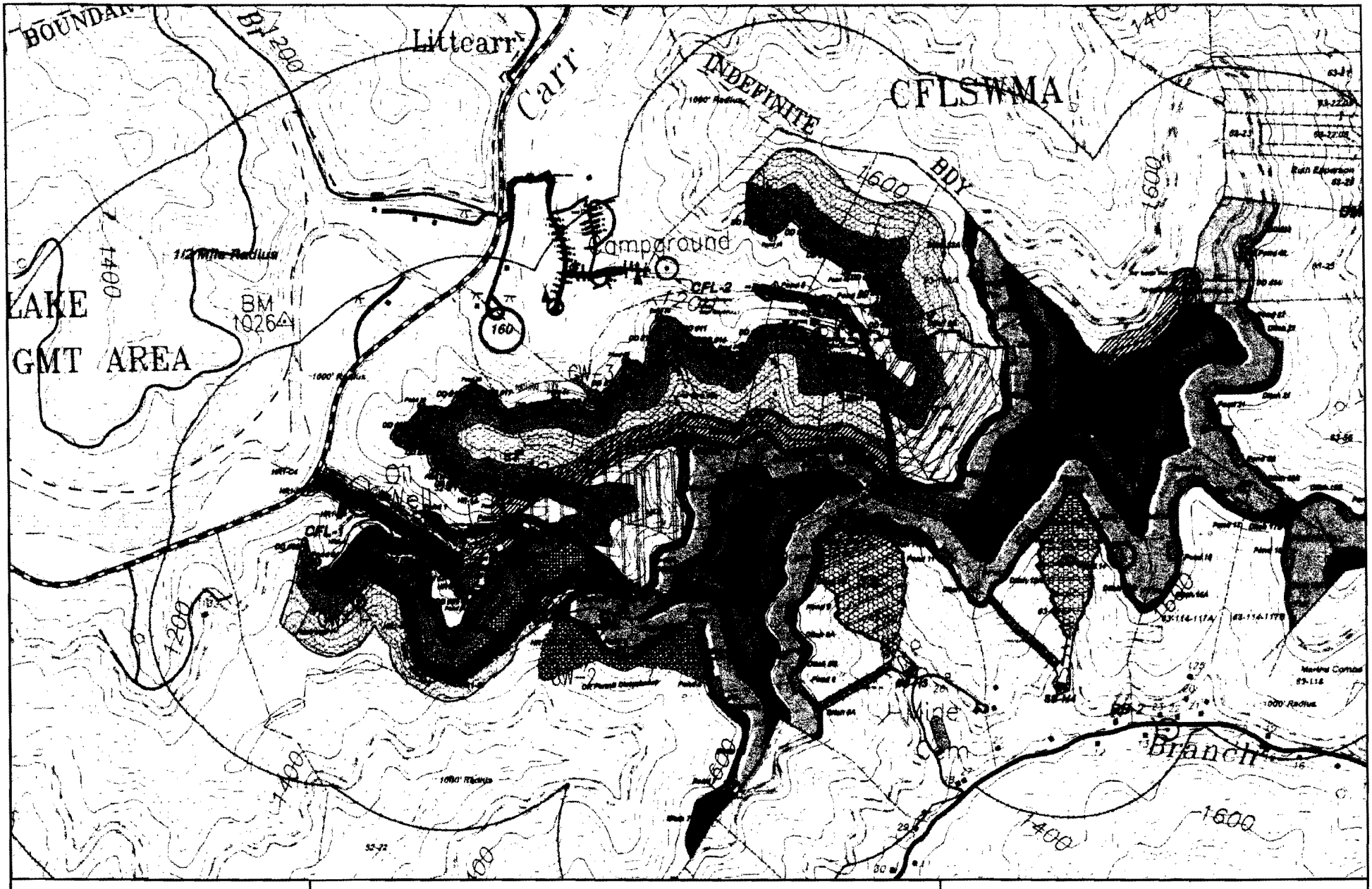
N

1 inch = 1,000 feet

DRAWING NAME: Project Location Map
CLIENT: Nally & Hamilton Enterprises, Inc.
LRL 2006-327 | KDNR#: 860-0404
PROJECT#: 211046
DRAWN BY: ARB **CHECKED BY:** SRL
DATE: 8/25/2011
SCALE: 12,000

APPENDIX B

Mitigation Monitoring Map



Legend

- Assessment Sites
- Mitigation Site Perimeter

BIOLOGICAL SYSTEMS
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0 500 1,000 2,000 Feet

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DRAWING NAME: Mitigation Monitoring Map
CLIENT: Nally & Hamilton Enterprises, Inc.
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PROJECT#: 211046
DRAWN BY: ARB CHECKED BY: SRL
DATE: 8/25/2011
SCALE: 12,000

APPENDIX C

High Gradient Stream Data Sheets

High Gradient Stream Data Sheet

STREAM NAME:	LOCATION:
STATION #: MILE:	BASIN/WATERSHED:
LAT: LONG.:	COUNTY: USGS 7.5 TOPO:
DATE: TIME: ☐AM ☑PM	INVESTIGATORS:

TYPE SAMPLE: θ P-CHEM θ Macroinvertebrate θ FISH θ BACT.

WEATHER:

Now	Past 24 hours
θ	θ Heavy rain
θ	θ Steady rain
θ	θ Intermittent showers
θ	θ Clear/sunny

Has there been a heavy rain in the last 7 days?
θ Yes θ No
Air Temperature ___ °C. Inches rainfall in past 24 hours ___ in.
___ % Cloud Cover

P-Chem: Temp(°C) D.O. (mg/l) %Saturation pH(S.U.) Cond. θ Grab

INSTREAM WATERSHED FEATURES:

Stream Width	ft
Range of Depth	ft
Average Velocity	ft/s
Discharge	cfs
Est. Reach Length	

LOCAL WATERSHED FEATUREES:
Predominant Surrounding Land Use:

θ Surface Mining	θ Construction	θ Forest
θ Deep Mining	θ Commercial	θ Pasture/Grazing
θ Oil Wells	θ Industrial	θ Silviculture
θ Land Disposal	θ Row Crops	θ Urban Runoff/Storm Sewers

Hydraulic Structures:
θ Dams θ Bridge Abutments
θ Island θ Waterfalls
θ Other

Stream Flow:
θ Dry θ Pooled θ Low θ Normal
θ High θ Very Rapid or Torrential

Stream Type:
θ Perennial θ Intermittent
θ Ephemeral θ Seep

Riparian Vegetation: Dom. Tree/Shrub Taxa
Dominate Type:
θ Trees θ Shrubs
θ Grasses θ Herbaceous
Number of strata

Canopy Cover:
θ Fully Exposed (0-25%)
θ Partially Exposed (25-50%)
θ Partially Shaded (50-75%)
θ Fully Shaded (75-100%)

Channel Alterations:
θ Dredging
θ Channelization
(θ Full θ Partial)

Substrate θEst. θP.C.	Riffle ___%	Run ___%	Pool ___%
Silt/Clay (<0.06 mm)			
Sand (0.06 – 2 mm)			
Gravel (2-64 mm)			
Cobble (64 – 256 mm)			
Boulders (>256 mm)			
Bedrock			

Habitat Parameter	Condition Category: Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/ Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Velocity/Depth Regime	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Sow is < 0.3 m/s, deep is > 0.5 m.)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow-deep).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8.Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

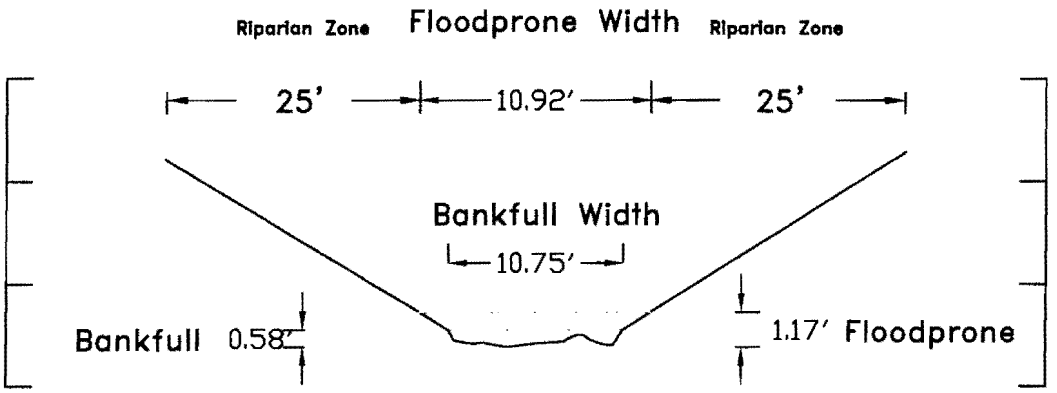
Total Score **NOTES/COMMENTS:**

APPENDIX D

Cross Section Drawings

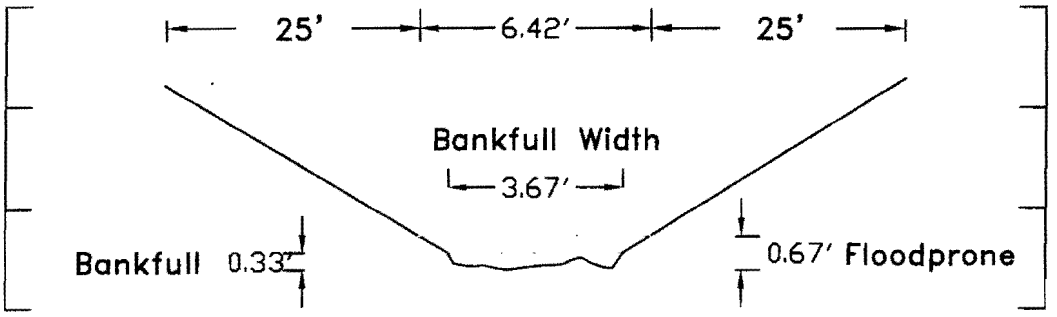
Cross Section #1 (HF2)

Existing stream cross-section



Cross Section #2 (HF1)

Existing stream cross-section



NOT TO SCALE

Nally & Hamilton Enterprises, Inc.
LRL-2006-00327
KDNR # 860-0404
Cross Section Drawings
11/30/11