SUMMIT ENGINEERING, INC.

APR 7 2011

March 31, 2011

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By

Mr. (b) (6)(b) (6)
U.S. Army Corps of Engineers
Eastern Kentucky Regulatory Office
845 Sassafras Creek Road
Sassafras, KY 41759

RE: Enterprise Mining Company, LLC
KDNR Permit No: 860-0453 (formerly KDNR Permit No. 860-0406)
USACE ID # LRL-2004-00320
Unnamed Tributary of Madden Fork Mitigation Site
Construction Report

Mr. (b) (6)

On behalf of Enterprise Mining Company, LLC, please find enclosed the Construction Report for the mitigation requirements related to the above-referenced project. This project involves the restoration and enhancement of an Unnamed Tributary of Madden Fork of Irishman Creek in Knott County, Kentucky as part of the Section 404 permitting process.

After you have reviewed the report, please notify me of any copies or additional information you may need for your records or for the distribution to other agencies. If you have any questions regarding this project or require any additional information, please contact me at (606) 432-1447 ext. 309 or e-mail me at mhamilton@summit-engr.com.

Sincerely,

Misty D. Hamilton

Misty D. Hamilton
Biologist

c: file
Enclosures

March 2011

CONSTRUCTION REPORT
UNNAMED TRIBUTARY OF MADDEN FORK

Enterprise Mining Company, LLC
KDNR PERMIT NO. 860-0453 (formerly 860-0406)
USACE ID # LRL-2004-00320

Prepared for:

Enterprise Mining Company, LLC
5703 Crutchfield Drive
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Prepared by:

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131 Summit Drive
Pikeville, KY 41501
Telephone: (606) 432-1447

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ENTERPRISE MINING COMPANY, LLC
KDNR PERMIT NO. 860-0453 (formerly 860-0406)
USACE ID # LRL-2004-00320

UNNAMED TRIBUTARY OF MADDEN FORK

1.0 Project Overview

Enterprise Mining Company, LLC (Enterprise) has been charged with performing stream restoration and enhancement work as part of a compensatory mitigation package approved by the U.S. Army Corps of Engineers (COE) for Diamond May Coal Company's KDNR Permit No. 860-0406 (transferred to KDNR Permit No. 860-0453). A detailed work plan for all mitigation was outlined in the Compensatory Mitigation Plan prepared by Summit Engineering, Inc. of Pikeville, Kentucky. The mitigation performed for the Unnamed Tributary of Madden Fork will serve to mitigate losses associated with this project.

In-kind mitigation for both temporary and permanent impacts will consist of an on-site stream restoration and enhancement project located in an Unnamed Tributary of Madden Fork of Irishman Creek of Carr Fork of the North Fork Kentucky River in Knott County, Kentucky. Stream restoration and enhancement was proposed for approximately 515 linear feet of the Unnamed Tributary of Madden Fork. Both temporary (Pond 27) and permanent (Valley Fill 7) impacts will be mitigated by restoration and enhancement of stream in the location of Pond 27 and in the location of a previously-existing embankment in the Unnamed Tributary of Madden Fork.

As part of the overall mitigation plan for KDNR Permit No. 860-0453 (formerly KDNR Permit No. 860-0406), Enterprise proposed the use of the East Kentucky Stream Assessment Protocol (EKSAP) to establish the pre and post-mitigation function for the restored stream. The total pre-mining Ecological Integrity Unit (EIU) value of the impacted streams was 182.0 based on EII scores calculated at several points along the stream reach. The post-mitigation goal is to produce an EII rating of 0.48, resulting in an EIU value of 247.2, a net increase of 65.2 EIU's. The EIU gain for the Unnamed Tributary of Madden Fork as proposed will serve to completely mitigate losses associated with this project.

Summit Engineering, Inc. (Summit) was contracted to perform inspection of field construction of the plan implemented by Enterprise. Construction began at the most upstream portion of the channel, and continued downstream to the end of the mitigation reach. During construction activities and after stream construction was complete, Summit personnel visited the site to inspect stream gradient, enhancements (pools, riffles, etc.), and other stream characteristics. After initial inspection, Enterprise made any changes required, Summit personnel conducted a final inspection, and construction was determined to be complete.

This report is being presented to document construction activities and to provide a plan for future monitoring activities for the duration of the period of liability. Portions of this report have been restated verbatim from the Compensatory Mitigation Plan to ensure accuracy.

See Appendix A for photos of the site both immediately after construction and four months post construction. See Appendix B for the location of the mitigation site as well as the plan view, profile, and cross-sections of the mitigation channel as constructed.

2.0 Goals of the Mitigation Project

Following are the primary goals of restoration and enhancement within the mitigation reach:

- Improve aquatic biodiversity within the watershed;
- Reduce sediment loading by watershed improvements and improving bank stability;
- Restore riparian functions.

3.0 Existing Site Description

This Unnamed Tributary is a first order ephemeral / intermittent tributary of Madden Fork of Irishman Creek of Carr Fork of the North Fork Kentucky River and a regulated jurisdictional stream based on the presence of an ordinary high water mark. Prior to the commencement of work on KDNR Permit No. 860-0453 (previously KDNR Permit No. 860-0406), the watershed had been previously impacted by one hollow fill, two sediment ponds, and a storage area composed of sediment dipped from the two ponds. Initial habitat evaluations were conducted in 2003 by Summit Engineering, Inc. personnel. See the table below for RBP habitat scores measured at several locations within the stream, along with EII scores for both pre- and post-mining conditions. No RBP Score was available for the proposed location of Valley Fill 7 due to previous impacts. The average specific conductivity at the site was 732 µS/cm.

Assessment Site	Average RBP Score	Pre-mining EII Score	Post-mining EII Score
Pond 27	123	0.22	0.10
Valley Fill 7	N/A	0.10	0.00

The existing riparian zone of the Unnamed Tributary of Madden Fork consisted of species such as American Beech (*Fagus grandifolia*) and Tulip Poplar (*Liriodendron tulipifera*).

4.0 Mitigation Work Plan

This mitigation plan proposed restoration and enhancement of 515 linear feet of stream in the Unnamed Tributary, an ephemeral / intermittent tributary of Madden Fork. The total pre-mining Ecological Integrity Unit (EIU) value of the impacted streams is 182.0 based on EII scores calculated at several points along the stream reach. The post-mitigation goal is to produce an EII rating of 0.48, resulting in an EIU value of 247.2, a net increase of 65.2 EIU's.

4.1 Guidelines and Goals

The mitigation work plan contains the following guidelines and goals for stream restoration and enhancement:

- The goal of this on-site mitigation is to construct a stream system that mimics the step-pool sequences of natural streams as much as topography and project goals allow.

- The gradient of the reconstructed channel will depend on the topography of the mined area. It is important to note that the gradient of the stream determines the rate at which the water in the stream channel flows, which affects a variety of biotic and abiotic stream characteristics.

- It is important for a stream to have appropriately sized and mixed cobble and boulders for substrate. Although the most effective way to accomplish this is to conserve and stockpile substrate from the stream that will be impacted, it is very difficult to do so. In this particular stream, a variety of shot rock sizes that are readily available from existing stockpiles or from adjacent active mining operations will be used.

- The following minimum rock sizes were calculated using SEDCAD 4™ design program for the areas where substrate particles are present.

Channel I.D.	D50 (inches)
Pond 27	6.0

- Only native materials (stone and wood) should be used for stream reconstruction purposes. Avoid artificial channel linings such as concrete or quarry rock, which is uniform in size, shape, and distribution.

- Sediments shall be removed from the stream channel to the greatest extent possible. The presence of some soil and sand is acceptable. Restoration work should proceed in a downstream direction to avoid sediment transport into restored reaches. Any sediment transport area (between the hollow fill and pond) must be removed or stabilized prior to restoration of the pond removal area downstream.

- The use of in-stream habitat structures is somewhat limited in these steep slope step-pool and cascade-pool streams. Alternating plunge pools and steps, created from boulders, cobble, and large woody debris is the most practical type of enhancement feature to be constructed in the proposed stair-step, tumbling flow channels. Ribs of large rock placed across the stream will help establish grade control, reduce bank erosion, and ultimately result in a stable channel. This type of structure functions to (1) maintain a downstream scour hole for aquatic habitat, and (2) dissipate stream energy. Steps shall be constructed along the restored channel at a spacing of approximately every 4 bankfull widths.

4.2 Riparian Zone Revegetation Plan

The Mitigation Work Plan details the Riparian Zone Revegetation Plan as follows:

The riparian zone of a headwater stream functions as the donor of nutrients, water, and sediment. Riparian vegetation functions as a regulator of light and temperature for the stream channel and as a food source for aquatic organisms in the form of leaves and woody debris. A permanent vegetated buffer zone shall be maintained and/or re-established along the stream banks for all disturbed areas within 50 feet of the stream. Woody vegetation species shall be added or replaced where necessary to meet this requirement.

- A ground cover shall be established by planting a minimum of four of the following species:

Rice cutgrass	Mannagrass
Spangle grass	Redtop
Barnyard grass	Alsike clover
Switchgrass	Annual rye
Wild rye	Deertongue grass
Panic grass	

- A minimum of four tree species from the following list shall be planted:

Pin oak	Shellbark hickory
Cherrybark oak	Bur oak
Swamp chestnut oak	Red maple
Green ash	Sycamore

- A minimum of three shrub species from the following list shall be planted:

Deciduous holly	Silky dogwood
Persimmon	Gray dogwood
Spice bush	American plum
Viburnums	Elderberry

- Tree and shrub species shall be alive and healthy at the end of the 5-year monitoring period and exhibit signs of normal growth. The overall density, condition, and growth form of the tree and shrub species shall indicate a high probability of continued growth and development beyond the applicant's period of liability.

- The use of native soils and subsoils, rather than alternate mediums, will be used within the restored riparian zone. Within the pond areas, original soil materials will be used within the 50 feet buffer on either side of the restored stream channel.

5.0 Completed Mitigation Work

Mitigation construction was conducted during the fall and winter of 2010 by Enterprise Mining, LLC personnel, with field visits and inspection conducted by Summit Engineering, Inc. Construction on the entire mitigation length (515 linear feet) has been completed. See Appendix A for photos of the site both immediately after construction and four months post construction, and Appendix B for the plan view, profile, and cross-sections of the mitigation channel as constructed.

5.1 Stream Bank Stabilization

A variety of bank stabilization measures were installed in conjunction with restoring stable grades for stream banks. The stabilization measures primarily utilized are commonly termed "bioengineering" materials, including native woody plants and natural biodegradable materials (rootwads, wood logs, boulders, etc.). These types of materials provide a soft, flexible and ecologically beneficial alternative to the more traditional engineering approaches to bank stabilization. The stream restoration and enhancement plan used the following types of materials to stabilize stream banks in areas where needed:

- Variously-sized boulders to provide temporary and permanent protection of exposed soils on regraded stream banks until woody and herbaceous plant covers are well established.

- Seeding of re-graded/disturbed stream banks with a seed mix comprised of a nurse crop of appropriate grasses and other herbaceous vegetation.

5.2 Natural Stream Enhancement Structures

The bank stabilization measures described above should also improve the quality of the stream habitat. Reducing the rate of bank erosion and sedimentation will improve water quality and stream bottom habitats. As woody vegetation becomes established on the banks and matures, it will serve to provide cover for aquatic organisms, contribute particulate organic materials to the detrital food chain of the stream, and shade the stream, thereby maintaining lower water temperatures.

In addition to these habitat improvements, structural habitat improvement features have also been incorporated in the stream restoration and enhancement design and include the following structures:

- Boulder Clusters – Placement of boulders in the stream channel will diversify the stream bottom habitat and provide controlled scour and depositional zones at appropriate locations in the stream channel. Random boulders were constructed with rock from areas adjacent to the streambed, and are one to two feet in diameter. The placement of the boulders will diversify stream flow patterns and provide additional habitat for the biological community.

- Cross Vanes – Cross vanes were constructed within the bankfull cross-sectional area of the stream reach and are located in transitional areas between bends of streams. Cross vanes may be constructed of rock from within the stream channel and adjacent areas when practicable. Shot rock from the mining area may be used if it is non-toxic/non-acidic. Additionally, wood may be used to construct the cross vanes. The construction of a cross vane will flush sediment away from the substrate within the streambed and provide pool areas and vertical drops rather than a uniform stream depth. Cross vanes also reduce excess erosion of the stream banks by reducing the stream's velocity before it enters a bend.

- Single Deflectors – Single log deflectors help maintain a narrow and deeper low-flow channel cross-section in wider sections of stream.

- Logs Sills – Log sills placed in shallow riffles, straight reaches, and meanders are designed to create plunge pool formations below the structure. These structures are commonly constructed using a single log notched in the middle and placed within the channel. Typically log sills are anchored into place using steel rods.

- Step Pools – Steps were constructed within the stream channel to create zones in which sediment will be trapped in order to prevent sediment loading from occurring throughout the stream.

- Root Wads – An occasional small root wad was used. Root wads provide immediate bank stabilization, protect the toe of the bank slope, and provide shelter for aquatic species. Root wads collect sediment and debris that will enhance bank structure over time. Bank materials are installed to provide cover and to protect unstable banks by diverting rapidly flowing waters away from those areas more prone to erode. These materials are generally placed along the outside bend of a meander and anchored in place to prevent scouring behind or underneath them.

- Rock Riffles – Riffles were created utilizing a mixture of one-half inch to six-inch diameter stones made of local rock. In construction of rock riffles, the riffle bed is first prepared, with larger bedding stone being "worked-in" by backhoe bucket or "walked-in" by equipment treads or tires.

5.3 Riparian Zone Revegetation

The riparian zones established along the stream will extend 50 feet from the edge of the low flow channel on each side and consist of vegetative types as indicated in the Compensatory Mitigation Plan. A continuous corridor of native grass, shrub, and tree communities will be established along the stream channel. Groundcover was planted as soon as practicable after stream bank construction, and consisted of an even mix of Annual Rye, Wild Rye, Deertongue Grass, and Redtop. Shrubs and trees will be planted in the next available planting season.

6.0 Success Criteria

During the final year of the five year monitoring period, Enterprise will perform a final investigation to demonstrate replacement of lost aquatic functional values. Project success will be based upon attainment of the predicted increases in aquatic functional values.

Should mitigated channel conditions indicate a loss or failure to attain projected increases of aquatic functional values, contingency plans will be employed to ensure replacement of all lost aquatic functional values.

Success standards for all on-site mitigation areas will be based upon attainment of the RBP habitat parameter values to be in-place at the end of the five year monitoring period. The total predicted RBP habitat values to be in-place at the end of the five year monitoring period are described in the table below. It will be acceptable for an individual habitat parameter to be less than predicted as long the resulting loss is offset by an unpredicted gain in one or more other parameters. Increase in RBP habitat value will be verified through field investigations.

Segment	Length	Immediately After		At Maturity	
		EII	EIU	EII	EIU
UT of Madden Fork	515	0.43	221.45	0.48	247.20

In addition, the Compensatory Mitigation Plan calls for the following mitigation success goals:

Parameter / Observation	Success Standard	Method Of Determination
Macroinvertebrates	Report only	Benthic survey
Field pH	Report only	Field meter
Specific conductance	Report only	Field meter
Dissolved oxygen	Report only	Field meter
Epifaunal substrate	Min. 70% favorable substrate	Pebble count; estimate of available cover
Embeddedness	Max. 20% embeddedness	Pebble count; measure embeddedness
Velocity / Depth regime	Maintain step-pool or riffle-pool sequences in accordance with as-built	Longitudinal profile
Sediment deposition	Little or no enlargement of islands or point bars and <5% of the bottom affected by sediment deposition	Pebble count in pools
Channel flow status	Maintain width/depth ratio in accordance with as-built	Determine from x-sections
Channel alteration	Maintain minimal channelization in accordance with as-built	Longitudinal profiles; x-sections
Frequency of riffles	Maintain step-pool or riffle-pool sequences in accordance with as-built	Longitudinal profile
Bank stability	Banks stable	Bank Erosion Index; observe density and depth of plant roots, near bank shear stress
Vegetative protection	Approved width of riparian zone planted with minimum 300 stems per acre surviving	Measure replanted width; estimated stem count
Riparian zone	Riparian zone with a variety of species alive and healthy	Measure replanted width; estimated stem count

7.0 Mitigation Monitoring Plan

Following completion of mitigation operations, Enterprise will begin a five-year annual monitoring and management plan. The monitoring and management plan will evaluate the success of the mitigation work and will allow for any necessary adjustments to assure success of the mitigation site.

Short term plans for all mitigation sites are limited to achieving the required improvement and/or attainment of performance standards and aquatic functions as described within this application.

7.1 Monitoring Methods

An annual site visit will be conducted in order to determine the progress of the mitigation project. This site visit will include the following:

- RBP habitat assessments, to be compared to the pre-work habitat values
- photographic documentation of stream bank stabilization measures, enhancement structures, riparian vegetation, etc.
- benthic macroinvertebrate survey

In addition to the habitat evaluations and macroinvertebrate surveys, visual identification of any conditions requiring additional maintenance or management activities will be conducted.

7.2 Annual Reporting

Annual monitoring reports will be submitted to the Louisville District Office of the COE no later than December 31 of the year following completion of mitigation measures. Monitoring reports will, at a minimum, include the following information:

- a restatement of the compensation site plan goals, objectives, and performance standards
- a site map and/ or plan view drawings depicting the location of photographs and data collection points
- a description of any management activities and/or corrective measures that were implemented during the previous year
- identification of any structural failures or external disturbances on the site
- an assessment of the presence and level of occurrence of invasive species
- an assessment of the degree to which performance standards are being met
- proposed corrective actions to improve attainment of performance standards if necessary
- a narrative summary of the results and conclusions of the monitoring

These investigations will be utilized to demonstrate successful channel mitigation efforts and document the achievement of predicted functional values. Should channel mitigation conditions indicate failure to attain performance standards and replace lost functional values, contingency plans will be employed.

APPENDIX A
SITE PHOTOS

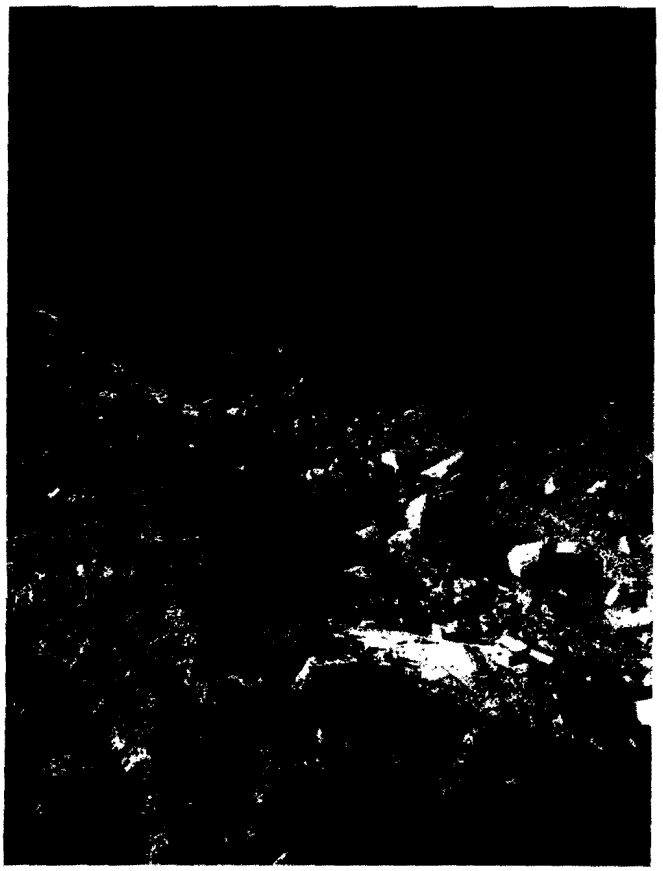
UT of Madden Fork - Photos Taken Immediately After Construction - November 12, 2010

Log Sill

Cross Vane

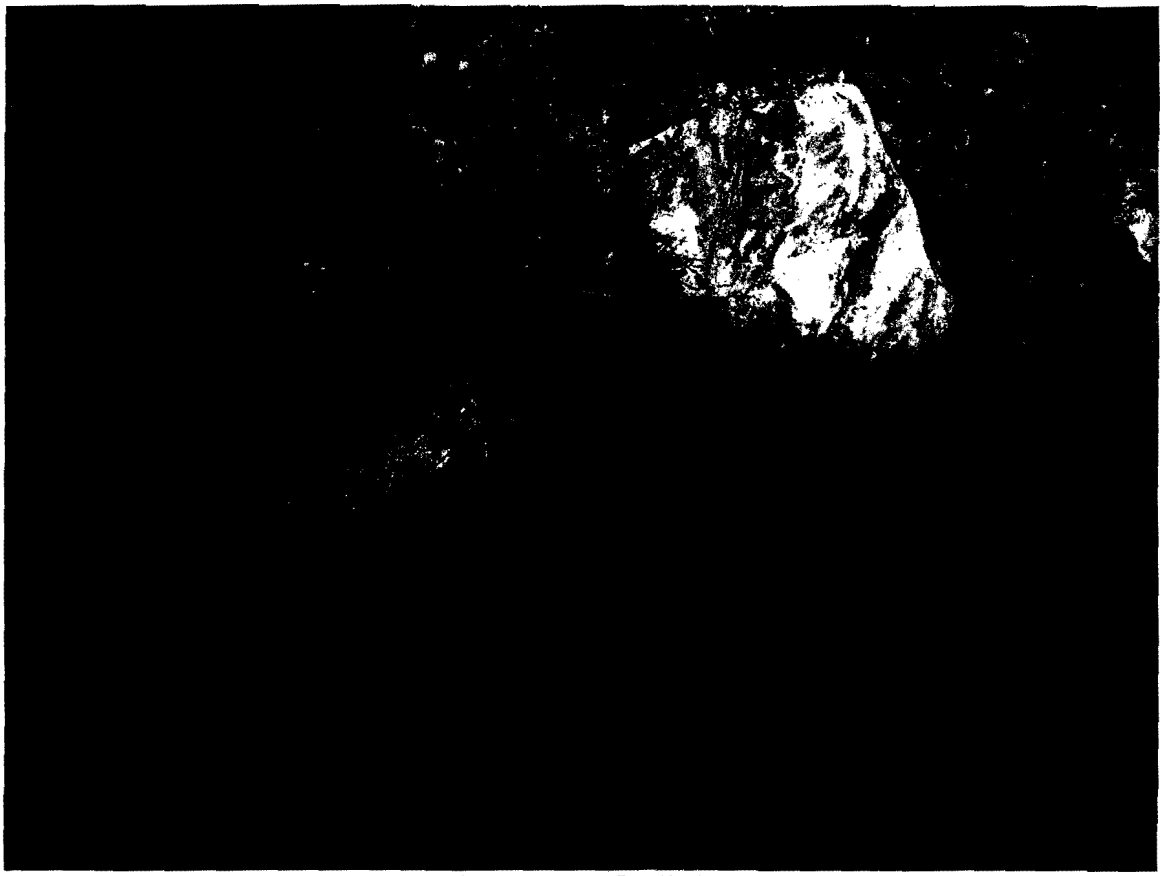
UT of Madden Fork - Photos Taken Immediately After Construction - November 12, 2010

Rock Riffle 1

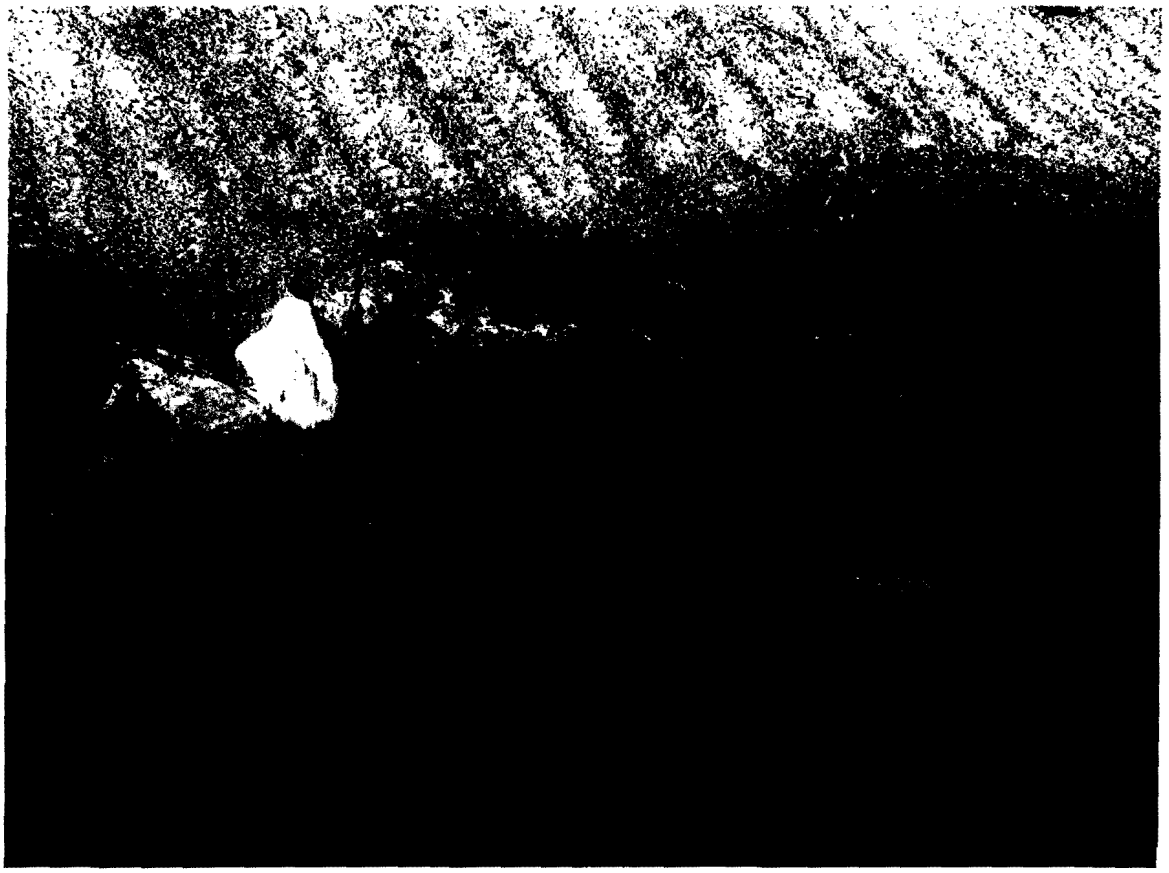


Rock Riffle 2

UT of Madden Fork - Photos Taken Immediately After Construction - November 12, 2010



Log Deflector with Root Wad



Boulder Lining

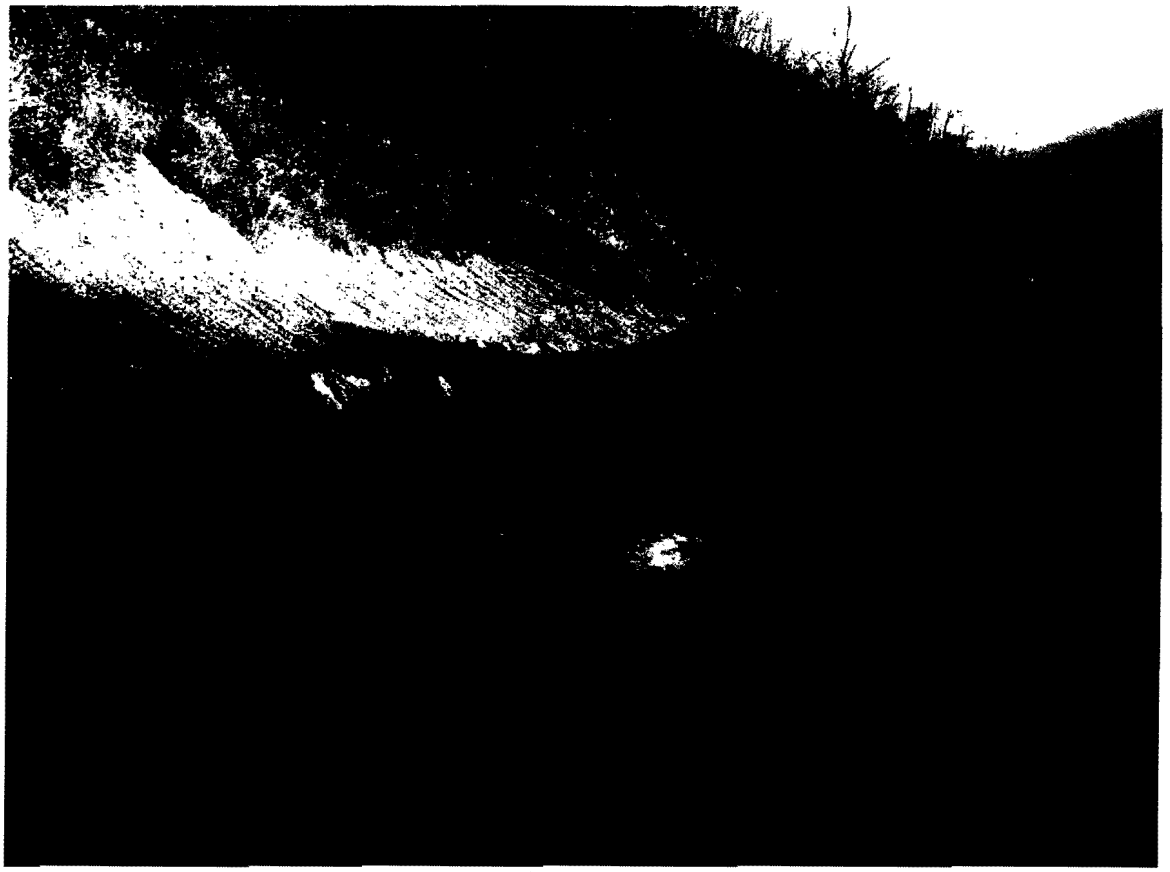
UT of Madden Fork - Photos Taken Immediately After Construction - November 12, 2010

Step Pool

Step Pool 2

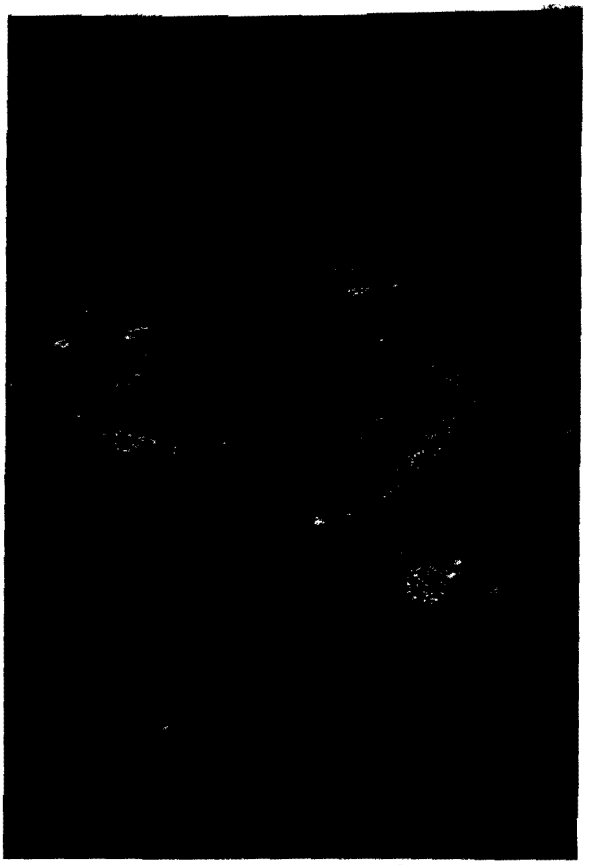
UT of Madden Fork - Photos Taken Immediately After Construction - November 12, 2010

Step Pool 3

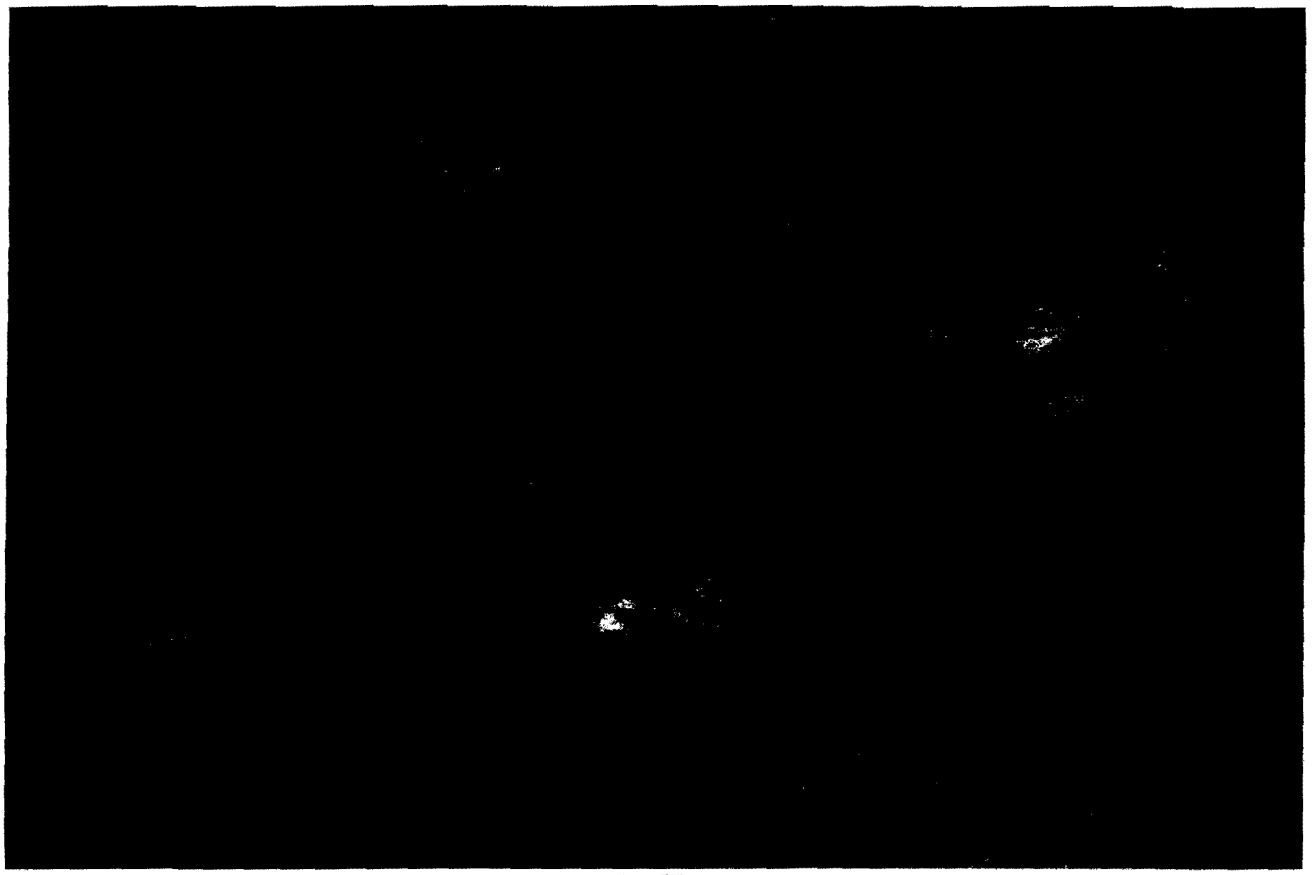


Regraded Banks - Riparian Zone

UT of Madden Fork - Photos Taken Four Months After Construction - March 7, 2011

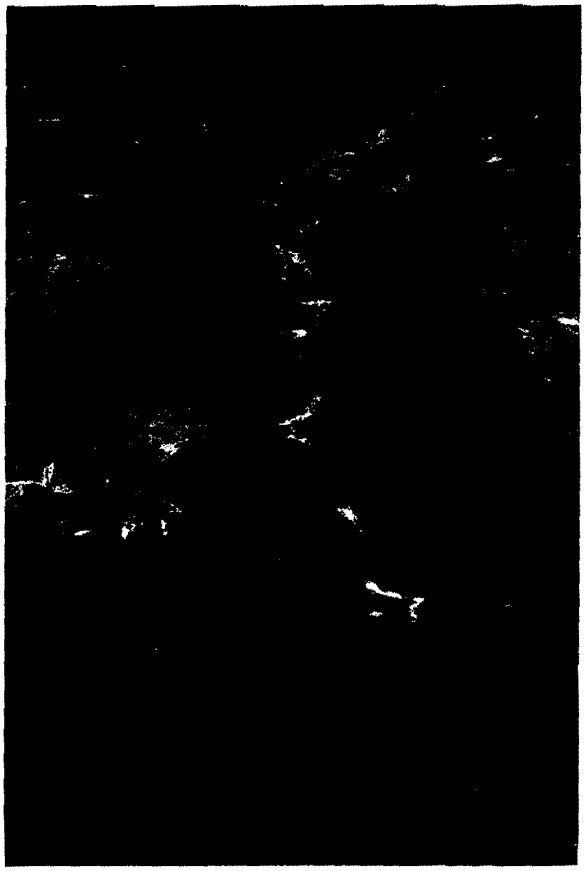


Rock Riffle and Step Pool 2



Log Sill

UT of Madden Fork - Photos Taken Four Months After Construction - March 7, 2011

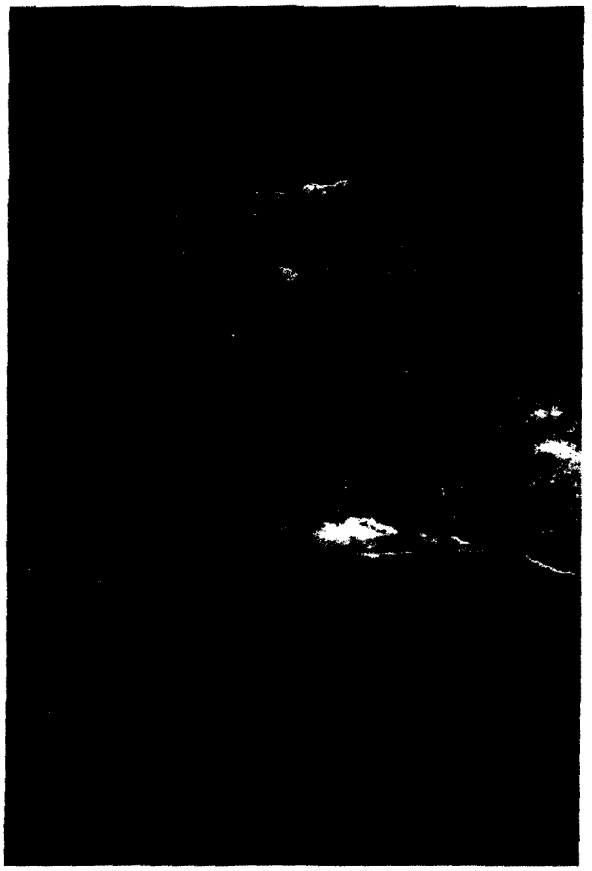


Step Pool Series

Rock Riffle

UT of Madden Fork - Photos Taken Four Months After Construction - March 7, 2011

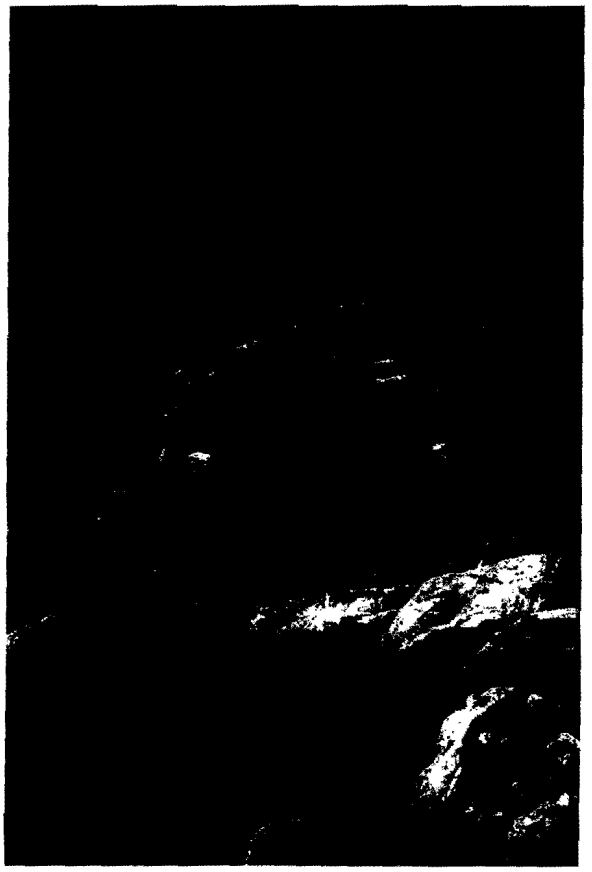
Step Pool 1



Step Pool 2

UT of Madden Fork - Photos Taken Four Months After Construction - March 7, 2011

Step Pool 3



Rock Riffle and Step Pool 1

UT of Madden Fork - Photos Taken Four Months After Construction - March 7, 2011

Cross Vane

Single Defector with Root Wad

UT of Madden Fork - Photos Taken Four Months After Construction - March 7, 2011

Boulder Lining

APPENDIX B
MAPS AND AS-BUILT DRAWINGS