



AQUATIC RESOURCES MANAGEMENT, LLC

December 19, 2011

United States Army Corps of Engineers
Louisville District
845 Sassafras Creek Road
Sassafras, KY 41759-8806



Re: DNR# 813-0315, LRL-2006-1518-ODM

Dear Reviewer,

Please find enclosed one (1) original copy of the First Year Monitoring report for the Cave Branch Unnamed Tributary Mitigation site.

Should you require any more information upon your review of this package or require a site visit feel free to contact me at 859-388-9595 or by e-mail at nbaker@aquaticresources.us.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Nick Baker'.

Nick Baker
Vice President and Environmental Scientist

YEAR ONE MONITORING REPORT
UNITED STATES CORPS OF ENGINEERS
Cave Branch Mitigation
KDNR PERMIT NO. 813-0315

ICG Hazard, LLC.

A SUBSIDIARY OF:



Prepared:
December 19, 2011

Prepared by:



**Aquatic Resources
Management**

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ICG Hazard, LLC Cave Branch Unnamed Tributary Mitigation Year One Monitoring Report

Project Overview

This report is to notify the United States Army Corps of Engineers (USACE) of the completion of one full growing season for the ICG Hazard, LLC (ICG) unnamed tributary of Cave Branch mitigation site. This USACE permit (# LRL-2006-1518-ODM) is an individual permit associated with ICG KDSMRE surface mining permit # 813-0315. Aquatic Resources Management is the agent responsible for conducting the monitoring reports on behalf of ICG. The inspection date of the field visit was conducted on **8 December, 2011**.

Purpose of the Approved Project

This mitigation project was conducted in order to offset stream impacts associated with ICG's 813-0315 mining project. Stream impacts occurred from the surface mining method of extraction of coal reserves. One hollow fill at this project was necessitated to control sediment runoff. Restoration performed at UT Cave Branch mitigates **losses of 345 linear feet from the hollow fill. The mitigation provided for the associated impacts to this permitting action equates to 964 linear feet of intermittent stream mitigation.**

Site Location

The unnamed tributary is located along Mary Flat Road, 0.1 miles northeast of the intersection of Mary Flat Road and Hobbs Cemetery Road, in Wolfe County Kentucky. The latitude and longitude of the project is 37° 39' 19.62" and 83° 32'

41.82" respectively. Unnamed tributary is located on Cave Branch of the North Fork of the Kentucky River watershed, Hydrologic Unit Code (HUC) 05100201.

Mitigation Commencement and Completion Dates

Construction on UT Cave Branch was started and completed in September 2010.

Performance Standards

After one full growing season of construction completion all performance standards are being met with the exception of the riparian width. The restoration activities have decreased the amount of sediment entering the stream from the past impacts, improved bank stability, created macroinvertebrate habitat, as well as achieved vertical and lateral channel stability. Further tree plantings are necessary along the riparian corridor to achieve full potential within the mitigation reach. These problems will be corrected in 2012. After transplanting additional trees, ICG will be meeting all of their performance standards.

Requirements

The requirements as stated in the approved Clean Water Act Section 404 permit are as follows; Mitigation efforts were implemented by the applicant using their own qualified equipment operators to conduct the mitigation plan under Best Management Practices. The stream morphology will be determined successful when the proposed structures are constructed in the approximate location proposed in this mitigation plan. Stream stability will be examined for successful erosion controls. The erosion controls will be considered successful if the stream and proposed stream structures are stable laterally and vertically. The limits of the mitigation sites will be delineated and flagged with surveyor's stake to indicate restored reaches.

The vegetation will be maintained at an 80% success rate for native species in the riparian corridors. It is also anticipated that natural succession of native species will occur on-site in the riparian zones. Non-native and invasive species will be kept to less than 20% overall on the project restoration area.

After stream restoration standards have been met for all areas, the applicant or consultant will be responsible for conducting annual monitoring reports to inform the Louisville District of the United States Army Corps of Engineers of progress. The applicant is obligated to maintain the project area mitigation by following requirements set forth by DSMRE and USACE. Monitoring and maintenance of the mitigation site will continue until final mitigation approval is achieved. The compensatory mitigation project site is successfully achieving the standards set forth in the approved USACE permit. As stated, the aforementioned tree plantings will be performed by ICG to meet performance standards. The Rapid Bioassessment Protocol demonstrates trends toward the stated mitigation goals in table 1.

Table 1.

Unnamed Tributary of Cave Branch Mitigation Monitoring						
UT Cave Branch Main Channel						
RPB Habitat Parameters	Pre-mitigation	Year One	Year Two	Year Three	Year Four	Predicted Five Year
Epifaunal Substrate	7	10				11
Embeddedness	8	10				12
Velocity/Depth Regime	7	10				11
Sediment Deposition	7	11				11
Channel Flow Status	7	14				11
Channel Alteration	8	10				12
Frequency of Riffles	8	13				12
Bank Stability (both)	10	12				14
Veg. Protection (both)	10	12				12

Riparian Width (both)	8	10				12
Total Habitat Score	80	112				118

Summary Data

The success of the project is based on the stabilization of the stream as well as the creation of macroinvertebrate habitat. The Pre-mitigation vs. year one post mitigation scores are listed in table 1 above. The table shows the general trend toward the stated goals in the compensatory mitigation plan.

UT Cave Branch restoration project had various challenges to overcome to ensure its success. The entrenched stream bed was causing unstable banks and the introduction of excess sediment. ICG was able to remedy impacts by restoring the natural pattern and profile, re-grading, planting native riparian species, and improving habitat to a minimum width of 50 feet beyond stream banks to create a continuous corridor along the channel. Log Structures were installed in the stream to naturally stabilize the channel and create macroinvertebrate habitat.

Pictures of the mitigation site illustrate the current conditions (Figures 1-6), as well as a map showing the locations of the photos (figure 7), and map depicting the site location (figure 8). Mitigation that is not meeting the stated standards is the riparian survival rate as aforementioned.



Figure 1. UT Cave Branch 12/08/11
Pic. 936 Facing Upstream, 37.65500, -83.54341



Figure 2. UT Cave Branch 12/08/11
Pic. 938 Facing Upstream, 37.65512, -83.54372



Figure 3. UT Cave Branch 12/08/11
Pic. 939 Facing Upstream, 37.65516, -83.54387



Figure 4. UT Cave Branch 12/08/11
Pic. 941 Facing Upstream, 37.65529, -83.54417



Figure 5. UT Cave Branch 12/08/11
Pic. 942 Facing Upstream, 37.65529, -83.54432



Figure 6. UT Cave Branch 12/08/11
Pic. 943 Facing Upstream, 37.65526, -83.54443

Conclusions

The UT Cave Branch mitigation site is meeting all performance standards with the exception of tree survival rate. ICG will return to the site and transplant more trees during the dormant season of 2012. Once the condition is corrected the ICG mitigation site will continue to trend toward the stated mitigation performance standards in the approved Clean Water Act section 404 permit.