AQUATIC RESOURCES MANAGEMENT, LLC

December 19, 2011

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

2009 - 1696

Re: DNR# 813-0357

Dear Reviewer,

Please find enclosed one (1) original copy of the First Year Monitoring report for the Big Laurel Branch Reach 06 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,

Nick Baker
Vice President and Environmental Scientist

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YEAR ONE MONITORING REPORT
UNITED STATES CORPS OF ENGINEERS
Big Laurel Branch Reach 06
KDNR PERMIT NO. 813-0357

Laurel Mountain Resources, LLC.

Prepared:
December 19, 2011

Prepared by:

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Laurel Mountain Resources, LLC Big Laurel Branch Reach 06 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 Laurel Mountain Resources, LLC (LMR) Big Laurel Branch Reach 06 Mitigation site. This USACE permit (ID # 200001696) is an Individual Permit associated with LMR KDSMRE Permit # 813-0357 (previously 813-0306). Aquatic Resources Management is the agent responsible for conducting the monitoring reports on behalf of LMR. The inspection date of the field visit was conducted on 10 November 2011.

Purpose of the Approved Project

This mitigation project was conducted in order to offset stream impacts associated with LMR's 813-0357 mining project. Stream impacts occurred from the surface mining method of extraction of coal reserves. Two hollow fills were necessitated at this project to control sediment runoff, impacting 3,516 linear feet of ephemeral stream and 2,765 linear feet of intermittent stream. The Big Laurel Branch mitigation provided for the associated impacts to this permitting action equates to 5,214 linear feet intermittent stream mitigation, approximately 2,260 linear feet are complete at this time.

Site Location

The Big Laurel Sue Branch is located approximately 2.5 miles east of the intersection of Highway 30 and Highway 542 in Breathitt County Kentucky. The

latitude and longitude of the project is 37° 35' 32.31" and -83° 8' 38.22" respectively. Big Laurel Branch is located on Big Caney Creek of Quicksand Creek in the North Fork of the Kentucky River watershed Hydrologic Unit Code (HUC) 05100201.

Mitigation Commencement and Completion Dates

Construction on Big Laurel Branch was started in the fall and winter of 2010. Construction began downstream and worked upstream, where construction was suspended due to weather. Construction of the remaining mitigation will be conducted in 2012.

Performance Standards

After one full growing season of construction completion all performance standards are being met. 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 and improvements to damaged stream enhancement structures to achieve full potential of the mitigation reach. These problems will be corrected during the dormant season of this year. After transplanting trees and completing the described construction, LMR 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, described maintenance, and construction will be performed by LMR to meet performance standards. The Rapid Bioassessment Protocol demonstrates trends toward the stated mitigation goals in table 1, at this time individual scores are not available and progress will be judged by the aggregate score.

Table 1.

Little Sue Branch Reach 11 Mitigation Monitoring						
RPB Habitat Parameters	Pre-mitigation	Year One	Year Two	Year Three	Year Four	Predicted Five Year
Epifaunal Substrate	NA	15				NA
Embeddedness	NA	14				NA
Velocity/Depth Regime	NA	10				NA

Sediment Deposition	NA	14				NA
Channel Flow Status	NA	15				NA
Channel Alteration	NA	15				NA
Frequency of Riffles	NA	14				NA
Bank Stability (both)	NA	12				NA
Veg. Protection (both)	NA	14				NA
Riparian Width (both)	NA	14				NA
Total Habitat Score	109	137				140

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.

The Big Laurel 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. LMR was able to remedy impacts by dredging, 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. Rock cross vanes were installed at the beginning and end of each segment to increase sediment transport, and create macroinvertebrate habitat. Natural stream enhancement structures including boulder clusters and log sills were added to provide additional stability and habitat.

Pictures of the mitigation site are illustrating the past and 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). The only part of the mitigation that is not meeting the stated standards is the riparian survival rate, damaged stream enhancement structure, and remaining construction as aforementioned.

Figure 1. Big Laurel Branch Reach 06 11/10/11
Pic. 818 Facing Upstream, 37.59705, -83.14500

Figure 2. Big Laurel Branch Reach 06 11/10/11
Pic. 819 Facing Upstream, 37.59658, -83.14519

Figure 3. Big Laurel Branch Reach 06 11/10/11
Pic. 822 Facing Upstream, 37.59461, -83.14457

Figure 4. Big Laurel Branch Reach 06 11/10/11 Pic. 823 Facing Upstream, 37.59394, -83.14427

Figure 5. Big Laurel Branch Reach 06 11/10/11
Pic. 824 Facing Upstream, 37.59325, -83.14413

Figure 6. Big Laurel Branch Reach 06 11/10/11 Pic. 825 Facing Upstream, 37.59267, -83.14403

Conclusions