Craven Soil and Water Conservation District
302 Industrial Drive - New Bern, NC 28562 - Phone (252) 637-2547 - Fax (252) 514-2009

June 23, 2015

Stream Debris Removal Contractors:

Notice is hereby given that Craven County is soliciting contractors and professional firms to perform the removal of stream debris in Core Creek and Flat Swamp. The planned work area for Core Creek, approximately 13.2 miles, begins at the Neuse River and ends at the northern boundary of the Core Creek Drainage District. The planned work area for Flat Swamp, approximately 5 miles, begins at Core Creek and ends at the location referenced on the Project Map.

Please reference the following important documents:

- Project Map
- Scope of Work
- Woody Debris Removal Guidelines titled "Incremental Effects of Large Woody Debris Removal on Physical Aquatic Habitat".
- Project Bid Sheet

The Scope of Work describes the State requirements for receiving payment for completed work. Craven County will be the contractor on this document however you should reference it to understand how the payment process works and note other items that will be required should you be awarded the contract.

Work must be completed according to the Woody Debris Removal Guidelines, starting on page B-1 of the attached document titled "Incremental Effects of Large Woody Debris Removal on Physical Aquatic Habitat". Craven County will require that the debris removed be placed a minimum of 20 feet from the edge of the stream and on the same side that it originated.

Core Creek is our priority project area with Flat Swamp being the secondary project area. Submit separate bids for each project area. Bids must clearly state the total price for completing each project area, NOT a price per foot. Lengths referenced in this notice and on the Project Map are approximate and will not be used to determine payment or project completion.

Time Frame- Target Start Date - October 1, 2015
Project Completion Deadline - February 15, 2016

Project Bid Sheets must be received by 5:00 pm on July 10, 2015, 2015. Send project bid sheets to, Craven Soil and Water Conservation District, 302 Industrial Drive, New Bern, NC 28562. Please include copies of reference letters or other documentation of prior work experience. Questions should be directed to Patrick Baker at 252-633-0397 or 252-637-5247, ext. 3.

SCOPE OF WORK

STREAM DEBRIS REMOVAL PROJECT

_____ (the "CONTRACTOR") will complete stream debris removal activities including cutting and removing downed trees, broken tops, and woody debris that impede or potentially impede water flow in the streams and tributaries described in the application submitted by the CONTRACTOR.

The CONTRACTOR will ensure that all required permits are secured for each site before any work proceeds for that site.

The CONTRACTOR will ensure that it follows the Woody Debris Removal Guidelines to manage all woody debris removed from streams. These guidelines can be downloaded at http://www.ncwater.org/Financial_Assistance/Minimum%20Criteria%20-%20Incremental%20Effects%20of%20LWD%20Removal%201992.pdf

REPORTING

The CONTRACTOR will submit quarterly progress reports, with each report due on or before the last day of April, July, October, and January, continuing until the project is complete and final project report is approved. The quarterly progress report is required even if no activity has occurred for the quarter and no reimbursement is requested for the quarter.

The quarterly and final report shall include a narrative summary of the work completed each quarter and for the project to date and a summary of cash and in-kind expenditures for the quarter and total project. Although the CONTRACTOR is not required to provide cash nor in-kind match for the project, the report should also include the total cash and in-kind match contribution provided by the CONTRACTOR.

INVOICING and PAYMENTS

The CONTRACTOR shall submit a quarterly invoice on the Stream Debris Removal Project Invoice Form indicating total cash and in-kind expenditures for the quarter and for the total project and indicating the amount requested for reimbursement each quarter.

Ten percent (10%) of the contract amount will be withheld until all final work is complete and all reports and work has been satisfactorily completed.

Staff from the Division of Soil and Water Conservation or its designated agent will conduct a site visit and approve the work completed and submitted for reimbursement prior to releasing any payment to the CONTRACTOR. The Division must satisfactorily determine that all work has been completed in accordance with the Woody Debris Removal Guidelines.

US Army Corps of Engineers

ENVIRONMENTAL LABORATORY

ENVIRONMENTAL IMPACT
RESEARCH PROGRAM

TECHNICAL REPORT EL-92-35

INCREMENTAL EFFECTS OF LARGE WOODY DEBRIS REMOVAL ON PHYSICAL AQUATIC HABITAT

by

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Environmental Laboratory

DEPARTMENT OF THE ARMY
Waterways Experiment Station, Corps of Engineers
3909 Halls Ferry Road, Vicksburg, Mississippi 39180-6199

November 1992

Final Report

Prepared for DEPARTMENT OF THE ARMY
US Army Corps of Engineers
Washington, DC 20314-1000

Under EIRP Work Unit 32555

PART V: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

LWD plays an important role as a component of aquatic habitat. Although LWD enters food webs as it decays, the major importance of debris lies in its structural characteristics and the way it influences channel flow patterns. Physical processes associated with debris in streams include the formation of pools and retention of fine sediment and organic matter.

Awareness of the adverse effects of complete LWD removal on channel stability and aquatic habitat has led to the development of guidelines for selective removal of LWD as a means of balancing habitat and conveyance objectives. These guidelines (Appendix A) involve the use of manual labor and small equipment to remove only the LWD that causes significant flow obstruction. Removal of bank vegetation and disturbance to stream habitats is minimized. Personnel within some Corps districts have already completed or are in the process of classifying the streams under their jurisdiction according to these guidelines. Use of these guidelines for project planning and design requires quantification of the hydraulic and environmental impacts of incremental LWD removal.

In this study, a simple method for quantifying LWD density and computing associated friction factors was developed and tested using data collected during an LWD removal project on the South Fork Obion River in western Tennessee. Physical conditions of both cleared and uncleared stream reaches were measured by collecting three types of data: LWD density, dye tracer tests (for computing reach mean hydraulic parameters), and physical habitat (depth, velocity, bed type, and cover) at selected transects. The LWD density was the important independent variable, while the dye tracer and physical habitat data were used to study macroscale and microscale effects of LWD, respectively. Macroinvertebrate samples were also collected at low flow conditions, and the results are presented in a companion report to this study (Payne and Miller in preparation).

Conclusions

Removal of LWD from the study reach decreased near-bank-full friction factor by about one third. Impacts on physical aquatic habitat at base flow

were measurable and statistically significant, even though the Stream Obstruction Removal Guidelines (IAFWA 1983) were applied throughout project planning and implementation. Benefits of proposed LWD removal projects should be carefully analyzed in light of costs and environmental impacts. Findings of this study generally agreed with work by others in different types of streams. The simple procedure developed in this study for quantifying LWD density and its effect on channel resistance may be used for environmental impact assessment and hydraulic engineering analyses. Considerable refinement and site-specific adaptation may be in order, however. The method for prediction of channel roughness coefficients does not account for local losses because of bends or flow expansion and contraction at bridges, debris dams, or riffles.

Recommendations

To refine the methodology used in this study, additional data should be collected from two more stream LWD removal projects. Streams with higher LWD density and different types of bed sediment from that encountered in this study would be preferable. Physical data should be collected over a range of flows varying from normal low-flow to bank-full conditions. Concurrent biological data should be collected at base flow. Data should be collected to document preproject and postproject conditions. Investigation of additional methods of determining LWD density, such as using video recorders or low altitude aerial photography to count and measure the LWD formations, is recommended.

APPENDIX B: BEST MANAGEMENT PRACTICES (BMPs) FOR SELECTIVE CLEARING AND SNAGGING*

Trees and brush that shade streams and stabilize the banks should not be disturbed. In new channel construction, existing trees and brush should be left in place along the tops of banks. No stream work, including bank clearing and excavation or removal of materials, "snags," or other channel obstructions, should be allowed except at specific locations where significant blockages in streams occur. Channel excavation and snag removal should be accomplished with the minimum streambank clearing needed to provide access to the stream and should not be undertaken unless it is absolutely necessary. The following BMPs prescribe the manner in which snag removal and stream channel clearing should be undertaken:

a. Practices for snagging.

(1) Logjam removal. Only those log accumulations that are obstructing flows to a degree that results in flooding or significant ponding or sediment deposition should be removed.

(2) Removal of other logs.

- Affixed logs. Isolated or single logs should not be disturbed if they are embedded, jammed, rooted, or waterlogged in the channel or the floodplain, if they are not subject to displacement by current, and if they are not presently blocking flows. Generally, embedded logs that are parallel to the channel are not considered to cause blockage problems and should not be removed. Affixed logs that are crossways to the flow of waters in the channel and are trapping debris to the extent that could result in significant flooding or sedimentation may be removed.
- Free logs. All logs that are not rooted, embedded, jammed, or sufficiently waterlogged to resist movement by stream currents may be removed from the channel.

(3) Protecting riparian vegetation. No rooted trees, whether alive or dead, should be cut unless:

- They are leaning over the channel at an angle greater than 30 deg of vertical and they are dead or severely undercut, or damaged root systems are relying upon adjacent vegetation for support and it appears they will fall into the channel within 1 year and create blockage to flows; or
- Their removal from the floodplain is required to secure access for equipment to a point where a significant blockage has been selected for removal.

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* Source: State of New York (1986). The citation for this reference is included with those following the main text of this report.

Trees selected for removal should be cut well above the base, leaving the stump and roots undisturbed. Procedures for removing the felled portion should be the same as for other logs as discussed below.

(4) Equipment for log removal. First consideration should be given to the use of hand-operated equipment to remove log accumulations. When the use of hand-operated equipment is infeasible, vehicular equipment should be used in accordance with the following guidelines:

- Water-based equipment (e.g., a crane or winch mounted on a small, shallow draft barge or other vessel) should be used for removing material from the stream. A small crawler tractor with winch or similar equipment may be used to remove debris from the channel to selected disposal points.
- When stream conditions are inadequate for the use of water-based equipment, the smallest feasible equipment with tracking systems that minimize ground disturbance should be specified for use. Larger equipment may be employed from nonwooded areas where cables could be stretched down to the channel to drag out materials to be removed.
- Access routes for equipment should be selected to minimize disturbance to existing floodplain vegetation, particularly in the riparian zone. Equipment should be selected which will require little or no tree removal in forested areas.

(5) Log disposal practices. All logs or trees designated for removal from a stream or floodplain should be removed or secured in such a manner as to preclude their reentry into the channel by floodwaters. Generally, they should be transported well away from the channel and floodway and positioned parallel to the stream channel so as to reduce flood flow impediment. When large numbers of logs are removed at one location (e.g., logjams), their use for firewood may be most appropriate. Burying of removed material should not be permitted.

b. Practices for stream channel clearing.

(1) Small debris accumulation. Small debris accumulations should be left undisturbed unless they are collected around a log or blockage that should be removed. (Small debris accumulations will not constitute a significant blockage to flows. Upon removal of logs and other blockages under these BMPs and the following completion of the project, the changed water velocities will remove and disperse these small debris accumulations so that no significant blockage of water flows will result.)

(2) Removal of sediment and soils. Major sediment plugs in the channel may be removed if they are presently blocking the channel to a degree that results in ponding and dispersed overland flow through poorly defined or nonexistent channels and, in the opinion of appropriate experts, will not be removed by natural stream or river forces after logs and other obstructions have been removed.

(3) Disposal of spoil material. Conventional excavating equipment may be required for sediment blockages. This equipment should be employed in a manner which will minimize environmental damages as follows:

- Access routes for equipment should be selected to minimize disturbance to existing floodplain vegetation, particularly in the riparian zone.
- Material disposal and necessary tree removal should be limited to one side of the original channel at any given location.
- To the maximum extent possible, excavating equipment should not be employed in the stream channel bed.
- Where feasible, excavated materials should be removed from the floodplain. If floodplain disposal is the only feasible alternative, the spoil material should be placed on the highest practical elevation and no material should be placed in any tributary or distributary channels which provide for ingress and egress of waters to and from the floodplain.
- No continuous spoil pile should be created. It is suggested that no pile exceed 50 ft in length or width and a gap of equal or greater length should be left between adjacent spoil piles.
- Spoil piles should be constructed as high as sediment properties allow.
- The placement of spoil material around the bases of mature trees should be avoided where possible.
- All disturbed areas should be reseeded or replanted with plant species which will stabilize soils and benefit fish and wildlife. Revegetation should be in accordance with County Soil and Water Conservation District recommendations.
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Core Creek & Flat Swamp Debris Removal

Neuse River

Start Work

Start Work

NC 55

Flat Swamp

Stop Work
35.250368, -77.349705

Neuse River

NC 55

Core Creek

Stop Work
35.207616, -77.291999

Core Creek Drainage District

Cove City

Core Creek

Core Creek Drainage District

OLD US 70

US 70

Core Creek Debris Removal Area (69,696', 13.2 miles)

Flat Swamp Debris Removal Area (26,521.44' , 5.023 miles)

Core Creek Project/Work Area (35131 Acres, 54.9 Sq Miles)

Flat Swamp Project/Work Area (7040 Acres, 11 Sq Miles)

Core Creek Drainage District

Citylimits

Residential Structures (Core Creek 1039, Flat Swamp 121)

Historical Loss Structures (Core Creek 2)

Number of Landowners (Core Creek 1809, Flat Swamp 170)

N

1 inch equals 1.1 miles

Craven County Geographic Information System June 2015

Craven County does not warrant the accuracy of the information shown on this map.

Project Bid Sheet

1) Bid Area #1 Core Creek – Total project price. $_____

2) Bid Area #2 Flat Swamp – Total project price. $_____

- Please include references or any other pertinent documentation.
- Also please include prior work experience.