HERRERA
ENVIRONMENTAL
CONSULTANTS

March 22, 2006

Randel Perry
Seattle District Corps of Engineers, Regulatory Branch
P.O. Box 3755
Seattle, WA 98124-3755

2200 Sixth Avenue
Suite 1100
Seattle
Washington
98121

(206) 441-9080
FAX 441-9108

101 E Broadway
Suite 610
Missoula
Montana
59802

(406) 721-4204
FAX 721-4232

322 NW Fifth Avenue
Suite 315
Portland
Oregon
97209

(503) 228-4301
FAX 228-3373

435 Holgerson Road
Sequim
Washington
98382

(360) 683-9109
FAX 683-3671

Subject: Addendum to the Biological Assessment for the Skagit Environmental Bank Habitat Restoration Project
Reference 200600098, Clear Valley Environmental Farm

Dear Mr. Perry:

In response to your biological evaluation review of the *Biological Assessment—Skagit Environmental Bank Habitat Restoration Project* submitted to the United States Army Corps of Engineers in November 2005, we have prepared the enclosed addendum to address your comments and supply all of the information requested.

Each comment identified in your Memorandum for the Record (Reference Number 200600098) is addressed individually in the enclosed addendum.

Sincerely,

Herrera Environmental Consultants, Inc.

Daniel Weiss
Biologist

Enclosure: *Biological Assessment Addendum—Skagit Environmental Bank Habitat Restoration Project*

cc: Clear Valley Environmental Farm, LLC
Herrera Environmental Consultants, project file

BIOLOGICAL ASSESSMENT ADDENDUM

Skagit Environmental Bank Habitat Restoration Project Skagit County, Washington

Prepared for

Clear Valley Environmental Farm, LLC
Sustainable Environment, LLC
9 Teaberry Lane
Tiburon, California 94920

Prepared by

Herrera Environmental Consultants, Inc.
2200 Sixth Avenue, Suite 1100
Seattle, Washington 98121
Telephone: 206/441-9080

March 22, 2006

Introduction

This addendum to the *Biological Assessment—Skagit Environmental Bank Habitat Restoration Project* (Herrera 2005) is submitted in support of the U.S. Army Corps of Engineers Section 404 permit application, the Washington Department of Ecology Section 401 water quality certification, and the Mitigation Bank Review Team (MBRT) review. The addendum addresses each individual comment identified in the Corps of Engineers Memorandum for the Record dated February 17, 2006 (Reference Number 200600098). The following additions shall be incorporated into the biological assessment submitted to the Corps in November 2005.

A. Project Description/Construction Description

The project description for the proposed restoration project is supplemented with the following information:

Size and Description of Piles

Wooden piles will be driven into both the stream bank and the stream channel at the locations of the four proposed engineered logjams. These piles will all be natural, untreated wooden piles created by sharpening the tips of logs (from natural trees) acquired to construct the logjams. No metal, steel, or non-wood piles will be used in construction of the engineered logjams during the proposed restoration project.

The piles will range in diameter from small 4-inch pin piles to larger piles ranging in diameter from 12 inches to 18 inches. The small pin piles will be driven by hand, whereas the larger piles will be placed into pre-excavated holes or trenches, and then driven into the substrate using the bucket of a backhoe or, if required, a vibratory pile driver.

Figure 1 shows an example of the wooden pile types used in the construction of an engineered logjam similar to those proposed for the Skagit Environmental Bank habitat restoration project in the Nookachamps Creek system.

Vegetation Monitoring

Vegetation monitoring will be conducted for at least the first 5 years following completion of the proposed planting at the proposed project site. If required by the Corps, the project proponents will extend vegetation monitoring to 10 years following completion of planting. Annual monitoring reports will be submitted to the Corps, the Washington Department of Ecology, and Skagit County.

Figure 1. Example of an engineered logjam constructed on Skookum Creek, near Shelton, Washington.

Vegetation Planting Plan

Detailed planting plans will be submitted to the Corps for review prior to any proposed planting at the habitat restoration site.

E. Effects of the Action (Effects Analysis)

The analyses of potential effects on Endangered Species Act (ESA) listed fish species presented in the *Biological Assessment—Skagit Environmental Bank Habitat Restoration Project* are supplemented with the following information addressing potential impacts resulting from pile driving in the stream banks and stream channels.

Direct Adverse Effects

As described in the biological assessment (Herrera 2005), a fish handling plan will be prepared and implemented by (or under the direct supervision of) a qualified fisheries biologist, with support from the contractor during all in-channel work throughout the duration of the project.

Engineered logjam grade control structures will be constructed along the main stem and the east fork of Nookachamps Creek. Grade control construction activities will be performed during the low-flow season within the approved work window, for the protection of the identified fish species.

Within the project area and during construction, fish species that are protected under the Endangered Species Act are expected to potentially occur only within the east fork of Nookachamps Creek. They are not expected to be present in the main stem of Nookachamps Creek due to summer water quality conditions (i.e., high temperature and low dissolved oxygen concentration) and limited through-flow in this stream reach, factors that may limit fish passage.

Bull Trout

Bull trout are not expected to be present in the vicinity of pile driving activities associated with construction of the engineered logjams at the site because of the stream diversion and fish removal proposed at each logjam location. As described in the biological assessment, the upstream and downstream extent of the stream diversion areas will be isolated using fish block nets, and the area within the block nets will be seined to remove and relocate all fish that are present. A bulk bag dam will be installed downstream of the upper fish block net, with a pump inlet between the bulk bag dam and the fish block net. A second bulk bag dam will be installed at the downstream end of the work area, upstream of the downstream fish block dam, to isolate the logjam construction area. Finally, streamflow from upstream of the bulk bag dam will be diverted around the work area diversion channels to an energy dissipater downstream.

If bull trout are present in the system during project construction, they will be excluded from the immediate construction area (where piles will be driven) and are expected to avoid the vicinity

during pile driving. Habitat within the project action area in the Nookachamps Creek main stem and east fork offers refuge where bull trout can avoid pile-driving noise detected outside the fish exclusion locations.

Underwater noise associated with pile driving will be limited, because only wooden piles are being used and these piles will be driven into the stream banks and channels using the back side of a backhoe bucket or a vibratory pile driver. Driving wooden piles has been shown to generate lower decibel levels than driving steel piles (Laughlin undated). In addition, driving piles using methods other than a hydraulic impact hammer pile driver reduces the decibel levels associated with driving piles.

The potential effects of pile driving on bull trout due to noise (and its associated pressure) will be further reduced through the air buffer created by deploying the bulk bag dams excluding most of the stream water from the logjam work areas. Noise and vibration from pile driving will be reduced when the sound vibrations travel through the air before reaching the water outside the bulk bag dam. This will function much like the bubble curtain methods used to reduce the sound impacts of pile driving at sites where the work area cannot be isolated from the surrounding water body.

Chinook Salmon

The potential impacts described above for bull trout also apply to chinook salmon and their prey. However, chinook salmon are not expected to be present on the project site during in-water construction activities. Nonetheless, implementation of the best management practices (BMPs) described in the project description section will likely reduce any adverse impacts on chinook salmon.

Steelhead Trout

The potential impacts described above for bull trout also apply to steelhead and their prey. As with bull trout, implementation of the BMPs described in the project description section will likely reduce any adverse impacts on steelhead. Impacts on individual steelhead trout are expected to result primarily from potential fish handling activities and therefore will not affect the populations or suitable habitat of Puget Sound steelhead.

Beneficial Effects

The proposed project will restore reaches of the main stem and east fork of Nookachamps Creek and their associated palustrine, riverine, and floodplain wetlands. A major component of the proposed restoration project is the construction of engineered logjams using large woody debris and wooden piles within the Nookachamps Creek main stem and east fork.

From the habitat perspective, large woody debris, particularly in the form of logjams, is known to be a critical component of anadromous and high-value resident fish habitat that benefits fluvial

dynamics (see Figure 1). Also, a variety of aquatic species depend on the natural accumulation of snags, branches, and rootwads. When a tree or part of a tree falls into a stream, it has an immediate effect on the physical habitat. Once in the stream, a tree serves as an important part of the habitat, becoming a structuring factor enhancing habitat complexity. Large woody debris slows the streamflow, dissipates energy, traps sediment and organic matter, and creates microhabitats for fish and macroinvertebrates (Dolloff 1994).

Because this feature is closely linked to habitat requirements and food availability of salmonid fish species and aquatic invertebrates, the presence of woody debris is also of crucial importance for stream ecosystems.

Land use practices in the proposed habitat restoration bank area have resulted in the loss of large instream woody debris as well as its recruitment potential. Removal of instream woody debris typically results in habitat simplification, supporting fewer, smaller fish. More specifically, removal of large woody debris typically results in loss of pool habitat (Bilby 1984) and complexity (Lisle 1986), as well as lower fish numbers, average size, and biomass for salmonid fish species (Dolloff 1986; Coulston and Maughn 1983; Elliott 1986; Fausch and Northcote 1992).

Habitat simplification (e.g., simpler channels with fewer scour holes, eddies, and meanders) following timber harvest, and subsequent decreases in residual woody debris loading and input, also have been linked to long-term changes in the species composition (diversity) of fish communities, including shifts in dominance and the disappearance of formerly common species (Reeves et al. 1993).

Consequently, a reintroduction of large woody debris (particularly in the form of engineered logjams) in the Nookachamps Creek system will help to improve the now-declining salmon populations and improve the overall ecological conditions of the bank area. There are numerous benefits and advantages of strategic, well-designed logjam placement in rivers (including the associated wooden piles). These benefits include food web support, increased hyporheic connectivity and exchange, stream gravel sorting, creation of salmonid spawning, refuge habitat rehabilitation, bank protection, grade control, and debris retention.

Indirect Effects

Indirect effects are potential impacts caused by the proposed project that occur later in time, after the proposed action has been implemented. These effects are generally permanent.

No indirect effects are expected to result from the operation of the mitigation bank, specifically from the proposed driving of wooden piles associated with the construction of engineered logjams in the Nookachamps River system.

The project will not promote future development. Any potential adverse impacts are associated only with construction and will be temporary.

References

Bilby, R.E. 1984. Removal of Woody Debris May Affect Stream Channel Stability. J. For. 82:609–613.

Coulston, P.J. and O.E. Maughn. 1983. Effects of Removal of Instream Debris on Trout Populations. J. Elisha Mitchell Soc. 99:78–85.

Dolloff, C.A. 1986. Effects of Stream Cleaning on Juvenile Coho Salmon and Dolly Varden in Southeast Alaska. Trans. Am. Fish. Soc. 115:743–755.

Dolloff, C.A. 1994. Large Woody Debris—The Common Denominator for Integrated Environmental Management of Forest Streams. In: Implementing Integrated Environmental Management. John Cairns, Jr, Todd V. Crawford, and Hal Salwasser (eds.). 1994. Virginia Polytechnic Institute and State University, University Center for Environmental and Hazardous Materials Studies, Blacksburg, Virginia.

Elliott, S.T. 1986. Reduction of a Dolly Varden Population and Macrobenthos after Removal of Logging Debris. Trans. Am. Fish. Soc. 115:392–400.

Fausch, K.D. and T.G. Northcote. 1992. Large Woody Debris and Salmonid Habitat in a Small Coastal British Columbia Stream. Can. J. Fish. Aquat. Sci. 49:682–693.

Herrera. 2005. Biological Assessment—Skagit Environmental Bank Habitat Restoration Project. Prepared for Clear Valley Environmental Farm, Tiburon, California. Herrera Environmental Consultants, Inc., Seattle, Washington. October 31, 2005.

Laughlin, Jim. Undated. The Effects of Pile Driving on Fish and Wildlife. Washington State Department of Transportation, Seattle, Washington. Obtained March 13, 2006, from presentation slides posted on the WSDOT website: <http://www.wsdot.wa.gov/regions/Northwest/rp&s/environmental/aae/documents/PDF/29_Laughlin_Impacts%20of%20Pile%20Driving%20on%20Fish.pdf>.

Lisle, T. 1986. Effects of Woody Debris on Anadromous Salmonid Habitat, Prince of Wales Island, Southeast Alaska. N. Am. J. Fish. Manage. 6:538–550.

Reeves, G.H., F.H. Everest, and J.R. Sedell. 1993. Diversity of Juvenile Anadromous Salmonid Assemblages in Coastal Oregon Basins with Different Levels of Timber Harvest. Transactions of the American Fisheries Society 122(3)309–317.

APPENDIX A

Agency Correspondence

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

MAR 2 2006

Regulatory Branch

Herrera Environmental Consultants, Inc.
Mr. Jose Carrasquero
2200 Sixth Avenue
Suite 1100
Seattle, Washington 98121

Reference: 200600098
Clear Vally
Environmental Farm

Dear Mr. Carrasquero:

We have completed our review of the biological evaluation, dated October 2005 submitted as part of the Endangered Species Act (ESA) review for the proposed construction and operation of a wetland/habitat mitigation bank in waters of the United States near Mount Vernon, Skagit County, Washington.

Attached is a Memorandum for the Record outlining our comments and requested revisions to the BE. Please revise the BE accordingly and resubmit it for review within 30 days of the date of this letter. If we do not receive the information within this timeframe, we will cancel your permit application.

A copy of this correspondence with enclosure will be furnished to Clear Valley Environmental Farm, LLC care of Sustainable Environment, LLC at 9 Teaberry Lane, Tiburon, California 94290. If you have any questions or comments regarding the revisions to the BE, please contact me by telephone at (206) 764-6985 or by e-mail at Randel.J.Perry@nws02.usace.army.mil. Do not contact the BE Reviewer directly. As the Project Manager (for permit issuance), I will coordinate with the BE Reviewer as necessary.

Sincerely,

Randel Perry, Project Manager
Application Review Section

Enclosure

MEMORANDUM FOR THE RECORD (MFR) **CENWS-OD-RG**

Re: Endangered Species Biological Evaluation Review
Reference Number: 200600098
Applicant's Name: Clear Valley Environmental Farm
Project Manager: Gail Terzi
Date: February 17, 2006

We have completed our review of the Biological Evaluation (BE) prepared by Herrera Environmental Consultants, dated October, 2005, for the proposed mitigation bank for stream habitat at/near Mount Vernon, Washington.

Following are comments or requested revisions to the BE. Please submit an addendum or revise the BE accordingly and resubmit. Any comments or questions on the review shall be directed to the Regulatory Project Manager for this application.

Note to BE Preparer: When responding to the comments or questions below, please highlight changes in the text of at least one copy of the BE if you are re-submitting the entire document. Or, you may respond to each comment individually and resubmit as an addendum to be included with the BE you previously submitted. Either method will help facilitate the timely review of the BE by personnel of, or representatives for, the U.S. Army Corps of Engineers.

A. Project Description/Construction Description

What size piles will be driven? What material (e.g., wood, steel)? Will they be driven in the stream or confined to the bank?

Monitoring is generally required for at least 5 years and may be required for 10 years. Please confirm that monitoring reports will be submitted to the Corps annually for at least 5 years.

Please confirm that planting plans will be submitted to the Corps for approval prior to actual planting.

B. Action Area

This section is complete.

C. Species/Habitat Information

This section is complete.

D. Existing Environmental Conditions

This section is complete.

E. Effects Analysis

If the piles will be driven in the stream, please do an effects analysis on the listed fish species.

F. Conservation Measures
This section is complete.

G. Effects Determination
This section is complete.

H. Impact Reduction Measures
This section is complete.

I. Essential Fish Habitat
This section is complete.

2-21-06
Date

Marcy Reed
Marcy Reed, ESA Coordinator