Attachment 1 – Project Elements Narrative

Ryan Creek Migration Barrier Removal Project
Progress Report No. 3
Reporting Period: *April 1, 2011 – September 30, 2011*

Project Manager, Alex Straessle of Mendocino County DOT, at outlet of the concrete box culvert on Ryan Creek Road – October 24, 2010

NOAA Open Rivers Initiative
Grant No. NA10NMF4630221

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Project Summary

The purpose of the Ryan Creek Migration Barrier Removal Project was to provide for full passage of all life stages of coho and Chinook salmon known to utilize the downstream reach of Ryan Creek (threatened SONCC coho salmon ESU and California Coastal Chinook salmon ESU); threatened Northern California steelhead DPS and Pacific lamprey to the natural limits of anadromy in Ryan Creek. This portion of the project, replacing the concrete box culvert on Ryan Creek Road, is the result of a six-year coordinated effort between the Mendocino County Department of Transportation, the Coastal Conservancy, the California Department of Fish and Game, the NOAA Restoration Center and the Five Counties Salmonid Conservation Program (5C). Additional objectives included eliminating the potential for 7,975 cubic yards sediment to deliver to the downstream reach of Ryan Creek and Outlet Creek; improving flow capacity to accommodate the 100-year flows; restoring natural channel flow and sediment transport; and improving instream habitat with large woody debris (LWD). Future upstream projects include replacing and/or modifying the culverts at the crossings of State Highway 101 on North Fork Ryan Creek and mainstem Ryan Creek (vice South Fork Ryan Creek) and either replacing or decommissioning a private driveway crossing on the mainstem. These projects are expected to be completed in the next two to three years, dependent on completion of designs and the success of funding procurement and inter-agency cooperation efforts between Caltrans, the California Department of Fish and Game (DFG), Mendocino County and the 5C Program. When these additional upstream projects are completed, access to approximately 3 miles of spawning and rearing habitat will have been restored for the species listed above and overall stream function will be improved. Replacing the County road crossing has allowed access to 1,000 feet of upstream rearing and spawning habitat and the upstream LWD placed in the mainstem will decrease water temperatures and provide summer refugia by providing additional instream cover; will promote scour and increase the size and complexity of existing pools; will increase macroinvertebrate habitat and production and will increase channel complexity, diversity and pool frequency by decreasing stream velocity at a localized level.

Crossing design was completed by engineering staff at the Mendocino County Department of Transportation (DOT); Alex Straessle and Howard Dashiell. NOAA engineering staff Margaret Tauzer provided comments on crossing design, engineered streambed material and LWD placement downstream of the crossing. Prunuske Chatham, Inc. completed the upstream LWD design and construction. Crossing construction was contracted to Wylatti Resource Management, Inc. of Covelo, California. Aquatic species relocation was completed by Scott Harris and other DFG biologists. 5C program staff facilitated project design with the County, procured design and construction funding, procured required permits, secured landowner access agreements, assisted with construction management and BMP monitoring for the crossing replacement and LWD installation, and will continue to coordinate and conduct the post-project revegetation effort and monitoring with DFG and Mendocino County.

The project was funded by several partners in addition to the NOAA Open Rivers Initiative including DFG's Fisheries Restoration Grant Program via a 5C Program grant (geotechnical investigation, partial design elements) and a construction grant to Mendocino County DOT; the Coastal Conservancy (permitting, partial design & construction); and Mendocino County in kind funding. The NOAA Open

Rivers Initiative award is contributing primarily to crossing construction, upstream LWD installation and the comprehensive physical and biological effectiveness monitoring.

Project Design and Permitting Summary

Refer to Progress Report No. 1 and No. 2 for an accounting of all design and permitting work. The project was also funded by the DFG's Fisheries Restoration Grant Program (FRGP). Projects funded under the FRGP receive Section 404 and Section 401 coverage under the Regional General Permit that the Army Corps of Engineers holds for the FRGP. The RGP No.12 includes a NOAA Biological Opinion for TES species and Essential Fish Habitat; USFWS concurrence that funded projects are not likely to adversely affect threatened and endangered species such as the northern spotted owl, marbled murrelet and California red-legged frog given that proper Limited Operating Periods (LOPs) are adhered to. As the project also received state funds, CEQA is required and DFG is the lead agency. The mitigated negative declaration that the Ryan Creek project falls under was prepared by DFG and filed with the State Clearinghouse on January 27, 2011. It can be accessed at the following link: http://www.ceqanet.ca.gov/ProjDocList.asp?ProjectPK=602801. The Mendocino County Department of Transportation secured a Streambed Alteration Agreement for crossing replacement from DFG in March 2011 and the 5C Program secured a separate Agreement from DFG for the LWD installation in July 2011.

Replacing the 10-foot wide, 6-foot tall, 82-foot long concrete box culvert set at 2.73% slope with a downstream apron and concrete wing-walls with a 20-foot wide, 10-foot tall, 82-foot long open-bottom, manufactured concrete arch structure with a natural bottom (engineered streambed material) was determined the most appropriate based on the geotechnical analysis and meeting the intended purpose of allowing full upstream/downstream species, flow and sediment movement. This design also allows for better conveyance of the100-year flow (906 cfs) and maintains the existing location of the road and adjacent driveways. Other considered design options included retrofitting the concrete box culvert with baffles; modifying and/or removing the broken concrete apron at the outlet to improve the outlet leap; and decommissioning the crossing. These options would not meet all of the design criteria for fish and flow passage as well as natural stream simulation aside from decommissioning. Decommissioning was not a viable option due to fire access and maintaining the road as a potential detour for Highway 101. The proposed structure would meet the 2001 National Marine Fisheries Service (NMFS) and 2002 CDFG Guidelines for adult and juvenile passage and is 1.5 times the active channel width of 13 feet.

Projects Elements Narrative for the Reporting Period

From April 1, 2011 through September 30, 2011 project elements included:

- Construction bid period, bid opening and contract award;
- Landowner outreach;
- Procurement of streambed alteration agreement for LWD installation;
- Aquatic species relocation;
- Replacement of stream crossing, upstream LWD installation, preliminary revegetation and

installation of erosion control measures;

- Monitoring.

Construction Bid Period, Bid Opening and Contract Award

Straessle prepared the bid package for the stream crossing replacement, including all technical specifications and plans during Reporting Period No. 2. The bid period for this project began on May 2 and closed on May 31, 2011. Bids were opened at 2:00 pm on May 31. The Engineer's estimate was $835,000. The high bid was $866,002.83 and the low bid was $537,295.50. The low bidder was Wylatti Resource Management of Covelo, California. The Mendocino County Board of Supervisor's awarded the project to Wylatti Resource Management in June 2011.

Landowner Outreach

This project was conducted with the full support of the following landowners along Ryan Creek: John Hamman and Clarence Rhine; Jewel and Bob Gardner; Hortencia and Isidro Juarez; and Michael Schuette. Jordan began landowner outreach for this project, and the upstream Caltrans and private driveway crossings, in 2005 and has continued to contact and update the landowners on project plans and anticipated start dates for construction. Straessle also worked closely with the landowners prior to and during construction in 2011, notably the Gardner property as the majority of fill material and equipment was stored on their property throughout construction (above photo). All landowners have continually expressed their support for the project. Landowner access agreements that permit access for Mendocino County staff and contractors, 5C Program staff and consultants, and the regulatory and granting agency staff were secured in June 2011. These agreements also allow for material storage, heavy equipment access and storage, and long term monitoring. These agreements are available for review and contained within the project record.

Procurement of Streambed Alteration Agreement for LWD Installation

A Streambed Alteration Agreement for replacing the stream crossing was secured by Straessle during Reporting Period No. 2. As crossing replacement was proposed within the County's right-of-way and LWD installation was adjacent private lands, separate permits were secured. The 5C program, having worked with the adjacent landowners and a consultant on the LWD design and construction, secured the

Streambed Alteration Agreement in July 2011. Attachment 3 consists of the Streambed Alteration Agreement notification application. It outlines the purpose of the LWD installation, and all BMPs during installation. The finalized permit is contained within the project record and available upon request.

Aquatic Species Relocation

Fish Relocation was conducted on July 13, 14, and 18, 2011 by Scott Harris (DFG fishery biologist) and other DFG biologists. Prior to relocation, flowing, fine-meshed block nets were set across the North Fork Ryan Creek stream channel and at the mainstem channel upstream of the construction area and approximately 100 feet downstream of the construction area to prevent aquatic-dependent species from entering the worksite during construction. All nets were cleaned of leaf debris throughout construction. Attachment 1 details the fish relocation process and results. Table 1 below provides a summary of species capture, including non-fish species. Photos of relocation efforts were taken, however, have not been received to date from DFG. Photos of the relocation efforts will be added to the project photo log when they are received. After relocation, Wylatti installed the clean water bypass (see photos below).

Table 1. Aquatic Species Relocation Results, Ryan Creek Migration Barrier Removal Project, July 2011

Location in Relation to Crossing	Coho young-of-year	Steelhead range of age classes	Pacific lamprey Adults / ammocoetes	California roach	Salamander larva	Rough-skinned newt	Signal crayfish
Downstream	440	307	4 / 33	1	70	5	17
Upstream	0	52	0				
TOTAL	**440**	**359**	**37**	**1**	**70**	**5**	**17**

Replacement of Stream crossing, Upstream LWD Installation, Preliminary Revegetation and Installation of Erosion Control Measures

Stream Crossing Replacement

Straessle managed all stream crossing construction work that was completed by Wylatti. Daily logs (55 total) were kept from Monday July 18 through Friday September 30 during the reporting period and are available in the project record. Prior to the following described construction activities, the coffer dam, screened pumps and clean water bypass culverts (several 6 to 8" flexible plastic pipes) were installed to route flow through the concrete box culvert and construction zone (photo at left). The outlet pool was pumped down in stages during and after the various fish relocation efforts. Water was pumped to a vegetated flat area

downstream of the crossing. The following summarizes key construction period activities:

July 18 - July 26: Installation of signage at intersections with Highway 101 that through-access would be closed on Ryan Creek Road and contacts with landowners. Worker's rights, pay dates, health and safety information, and project information was posted on site (job board) throughout construction. Discussion and review of Water Control Pollution Prevention Program with contract foreman and crew; installation of BMPs (silt fencing, straw bales, dust abatement guidelines); vegetation and tree removal from roadfill and along upstream reach for LWD installation/access; and pumping down the outlet pool to allow for final fish relocation effort (18th). All water quality measures described in the project plans and permits were installed to protect water quality against any accidental sediment, oil or petroleum discharge into the stream. The majority of the conifer and hardwood trees removed from the roadfill were utilized in the upstream LWD installation. Material was stockpiled along the bank of Ryan Creek upstream. Temporary relocation of overhead phone and electric lines was completed on July 19. Photos below show vegetation removal.

July 27 - August 3: Fill and structural excavation and endhauling concrete and rebar off site for disposal; fill material stored on site. Continued dust abatement activities and final pumping down of outlet pool (water was pumped to downstream vegetated flat areas at least 50 feet from the stream; daily reports state that filtration working well with no delivery to the stream). Checked for stranded species during this final pumping phase and moved three salamanders, four crayfish and one dragonfly larvae downstream of lower fish screen; no fish were observed.

August 4 – August 10: Foundation/footing staking and grade control surveying by Pope Engineering; noted that south and north side fill embankments were composed of loose 6" minus rock. Foundation excavation and forming. Endhauling of excess fill and material. Discovery that bedrock is at higher elevation than anticipated near upstream end. Scott Harris (DFG) site visit on August 9 to check clean water bypass outfall and fish screens. Photos at right and below demonstrate the foundation excavation process and start of spread footing trenches. Though water is shown in the footing trenches, the clean water bypass of streamflow from upstream continued to function and outflow from the bypass culverts was always clear (Straessle, Harris personal communications). Pooling water was continuously pumped from the trenches to the flat vegetated areas downstream.

August 11 – August 31: Excavation of wingwall footings; preparing and installing spread footing and wingwall footing formwork and rebar; pouring spread footings; delivery and installation of flowable fill for wingwalls. Noted close proximity of right bank upstream wingwall excavation to North Fork Ryan Creek – Scott Harris was contacted and asked to move the North Fork Ryan Creek fish screen further upstream. Added additional sumps to manage the subsurface creek flow from the North Fork into the worksite; concrete pumps (Castle Concrete) on site to pour footings. Harris conducted site visits on August 15 and August 30. Straessle continuously inspecting and having Wylatti update as needed all BMPs (concrete washout areas, straw bales, silt fencing, removal of concrete pieces from excavation). Straessle also inspecting forms and rebar of footings and wingwalls prior to pours. Several concrete pours for footings, wingwalls throughout the period and curing time. From August 29 through September 2, the upstream LWD structures were placed at Sites 2 through 8 (see Attachment 3) by Prunuske Chatham, Inc. Attachment 4 contains photos of the pre-installation conditions in the upstream reach. Photos of the LWD installation and post-project condition will be submitted with the next Progress Report. LWD Site #1 and the downstream LWD structure were placed by Wylatti construction as those were included in the County crossing contract work (see photos below during September 6th timeframe).


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September 1 – September 6: Installation of engineered streambed material and shaping of channel bottom between footings. Onsite screening of larger material to generate fines and installation with excavator and shovels to fill interstitial spaces and voids. Jetting to compaction over a period of several days to seal the channel. Harris conducted site visit on September 2. Placed the downstream LWD structure and anchored with cables on September 6 (photos on next page).


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September 7 – September 21: Delivery of arch segments from National Span and crane access for McPherson Crane; arch segments set over a one-day period on September 8 (photos below) and secured. Wingwalls set and secured. Rock slope protection placed along wingwalls. Streambed material shaped and jetted again post arch installation. Structure backfilled in lifts and compacted. Straessle and other DOT staff conducted compaction monitoring and testing throughout. Harris conducted a site visit on September 12. Margaret Tauzer conducted a site visit on September 20 to inspect the downstream LWD structure and channel substrata. Power and phone lines relocated to original locations. Hauled excess spoils offsite.


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September 22 - September 30: Installed erosion control measures on fill faces and all other disturbed areas including hydroseeding and placement of coir logs and excess LWD material (~ 20 pieces) that were not used in the instream structures; installation of driveway culvert; removal of sumps and clean water bypass; reshaping, rocking and seeding disturbed areas around Gardner's property; rocking and paving the roadway surface. Native grass (California fescue, California brome, and Blue wildrye mix) was used for the hydroseeding mix and mulched with shredded certified weed-free straw. Additional revegetation work, including planting of riparian, conifer and hardwood seedlings will be completed within the next reporting period and purchased from one of the local landowners. The guardrail installation was started but not completed prior to the end of the reporting period. Straw bales and silt fencing removed and disposed of. The coffer dam was removed and flow was returned to the crossing on September 28. Inspections for stranded fish within the channel occurred throughout this process as flow returned slowly to the crossing reach and none were found. LWD was installed and anchored upstream of the crossing (could not be installed prior to removal of the coffer dam). The fish screens were removed on September 29. Other than completing the guardrail installation, installing the project signs and completing the more extensive revegetation work (during next reporting period), the construction phase is complete.


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Photo shows low flow channel through center of crossing (taken before removal of upstream coffer dam and bypass).

Monitoring

Photo Monitoring - A photo-monitoring program to track the project changes and effectiveness was developed and is being continually implemented. Photo documentation of pre- and post-project conditions is being completed. Photo monitoring during construction activities has also occurred (see above). Photo monitoring of spawning surveys, high and low flow events and physical monitoring will continue and will be reported in future Progress Reports and the Final Report.

Longitudinal Profile/Thalweg Monitoring - The pre-project longitudinal and thalweg surveys utilized for designing the new crossing and channel were completed in 2006 and additional data was added in 2010. A post-project profile will be taken immediately following project construction before fall rains and flows (currently scheduled for October 15). A third and fourth profile will be taken after the first and second winters (2012 and 2013). These surveys will demonstrate channel adjustments over time; however, large deviations from the natural channel gradient of 2% are not expected. The NOAA ORI post-project monitoring form contains physical and biological parameters that will be assessed between October 15,

2011 and March 31, 2012 and will be submitted with the next Progress Report.

Biological Monitoring - Spawning and presence/absence surveys will be conducted in fall 2011/winter 2012 and continued through January 2013, if not longer in order to correlate results with other monitoring that will be occurring at the upstream project sites. The initial survey data consists of 5C Migration Barrier Inventory data collected prior to the project and surveys completed by DFG staff. The aquatic species relocation data also provides a basined of use; though given the time of year, only coho young of year and juvenile age classes of steelhead were observed. The first post-project spawning survey is planned for November 2011, or during the first major rainfall events. The survey reach will be from the Highway 101 culverts to at least 200 feet downstream of the new crossing. The Mendocino County Department of Transportation will maintain the new crossing structure and roadway. During high rainfall/storm events, the structure will be inspected in a timely manner and debris will be removed as necessary (unlikely, given the sizing of the new crossing). The new structure will reduce culvert maintenance costs and emergency response time for the Department of Transportation maintenance crews and engineers.