

# Update on the Martinez Crossing

Prepared by François Christen and Pacific Watershed Associates

August 2015

# Background

- Where is the crossing located?
  - At the first dip just after you take Nash Mill Road after turning off of Hwy. 128,
- When was it built?
  - In 1970 as best we can tell; aerial photographs however show a crossing at this location as early as the 1950s.
- Who built it?
  - Wilbur Nash who developed the Nash Ranch subdivision.
- The NRRRA Board has been concerned about the culvert for many years and decided to hire Pacific Watershed Associates (PWA) to develop a plan that would meet the California Department of Fish & Wildlife requirements to bring the culvert up to modern standards.

# The Partially Collapsed Culvert



# Why should we be concerned with the Martinez crossing?

- The culvert is undersized by modern standards
  - Caltrans and other road building agencies install culverts today that can withstand large storms that occur roughly every 100 years,
  - Our consultants, Pacific Watershed Associates, calculate that we would need a culvert that is eight (8) feet in diameter to handle the water that might run off in a 100-year storm,
  - The existing culvert at the Martinez crossing is only four (4) feet in diameter,
    - A four-foot culvert has an area of 12.6 square feet while a eight-foot culvert has an area of 50.2 square feet,
    - Therefore a eight-foot culvert has roughly **four** times the area of a four-foot culvert, and can therefore carry four times as much water,
  - Moreover, the existing culvert is partially collapsed; that means that the culvert **CANNOT** handle as much water as an intact four-foot culvert could handle.

# The Consequences if the Culvert Fails

- The failure of the culvert would have severe consequences for both full- and part-time of Clow Ridge and Nash Mill Road,
- The road would be closed, perhaps for a long time, because resources for repair may not be available after a major storm that would affect a wide area; permanent repairs would have to wait until after the rainy season according to CDF&W regulations,
- Full-time residents would be particularly inconvenienced because they need the road to go out to:
  - Buy food and other household supplies
  - Got to work
  - Go to school—over 20 children need to get to school
  - Need propane and other deliveries
  - Visit doctors—sick and older people need to visit their doctor
- Failure of the culvert would potentially result in the delivery of roughly 9,000 cubic yards of sediment to valuable salmon habitat in Mill Creek,
- All members of the Road Association would have to bear the costs of repairs--including the additional cost of temporary repairs--to allow vehicles to cross,
- Pacific Watershed Associates estimates that it would cost \$436,327 (roughly \$3,600 per property owner) to replace the culvert to meet the current standards set by the Department of Fish and Wildlife (details given in Appendix A), and these costs would have to be borne by the members of the Road Association.

# The Risk

- The risk of culvert failure is very low in any given year, but the risk is NOT zero ,
  - By way of analogy, the risk is very low of dying in a car accident on any given car trip; nevertheless, people wear seat belts *just in case* because the risks of dying in a car accident over a lifetime of driving is 1 in 100,
- Just as you wear a seat belt every day when you drive, it would be beneficial to proactively repair the culvert because over time the culvert is likely to fail.

# Benefits of Repairing Before a Failure

- The cost to property owners would be reduced because the Road Association would seek out a grant from a government agency that would likely pay 80-90% of the cost,
  - With a grant, the out-of-pocket costs to owners would be much lower for (10-20% of the total cost of the project, and no emergency repair costs),
- Residents, particularly permanent residents, would not be inconvenienced by an emergency repair.



# PWA's Proposed Plan

- Removal of the existing undersized and damaged culvert and installation of an 8 ft. diameter and 140 ft. long culvert, capable of surviving a 100-year storm,
- This would require excavation of ~875 linear feet of stream channel, installation of a 3,330 cubic yard fill with the 8 ft. diameter corrugated metal pipe (CMP), and storage of approximately 7,000 cubic yards of the removed sediments on the proximal areas of Nash Mill Road,
- Approximately 860 cubic yards of removed sediment may need to be trucked to a nearby property for disposal or placed on Nash Mill Road much further away from the crossing than the bulk of the material.
- Drainage improvements would be made to the road adjacent to the crossing.



# Side Benefits

- PWA estimated that in the event of a catastrophic failure, up to ~8,890 cubic yards of sediment could be sent downstream into Mill Creek,
- PWA also estimates that repairing the culvert would prevent approximately 630 cubic yards of chronic sediment from Nash Mill Road to be deposited in Wallace Creek (the intermittent stream that the culvert serves) per decade.

# Resources for Grants

- The Mendocino County Resource Conservation District can help us find an agency to fund our work,
- Funding agencies might include the Department of Fish and Wildlife, the State Water Resources Conservation Board, and others may be willing to fund the project, probably with a contribution from the NRRA.

# Next Steps

- We would require permission from the property owner to do the work, and also the approval of nearby property owners to let us store excavated materials on their land,
- We would also need to identify agencies who might give us a grant; the Department of Fish and Wildlife does provide grants to reduce the amount of silt in Mill Creek,
- Need to identify resources that can help us with proposal writing,
- Let the Board how you would like it to proceed. Send an email to the Board at [nrraoffice@gmail.com](mailto:nrraoffice@gmail.com) or contact an NRRA Board member.

APPENDIX

# NUMBERS BREAKDOWN

# Budget Estimate

<b>Item Description</b>	<b>Total Cost</b>
• Heavy Equipment Mobilization and Demobilization	\$5,100
• Water Diversion and PG&E Power Pole Relocation	\$63,530
• Channel Restoration, Crossing Removal, Materials Transport and Storage, and Nash Mill Road Upgrading	\$229,455
• Martinez Crossing Rebuild, Culvert and Riprap Installation	\$64,167
• Erosion Control (materials and labor)	\$6,780
• Revegetation (materials and labor)	\$2,800
• Permitting (assumes grant or permit coordination process is in place)	\$5,000
• Martinez Domestic Water Infrastructure Replacement and permitting, and Boondoggle Cr. Culvert Upgrade	\$21,995
• Technical Oversight of Construction (including required grant monitoring and reporting)	\$37,500
• Total Construction Cost	\$436,327

# Graded Materials

<b>Graded Materials</b>	<b>Volume (yd<sup>3</sup>)</b>
• Sediment and road fill to be excavated	10,340
• Design crossing backfill	3,330
• Sediment to be permanently removed from the channel	7,010
• Exported sediment to be stored locally on Nash Mill Road	6,150
• Exported sediment requiring off-site disposal	860

# Equipment

<b>Equipment Type</b>	<b>Hours</b>	<b>Prevailing Wage Rate (\$/hr)</b>
• Excavator	269	190
• Bulldozer	345	175
• Off-Highway Dump Truck	436	210
• Roller/Compactor	120	170
• Water Truck	120	150
• Grader	6	175
• Lowboy	29	150
• Labor	235	90
• Totals	1,560	-