APPENDIX B:

CATALOG OF TRINITY COUNTY CULVERTS LOCATED ON FISH-BEARING STREAM REACHES

NOTE: This catalog contains two pages for each stream crossing inventoried. The first page consists of location information, site-specific data, habitat notes, and a map. The second page has inlet and outlet photographs, with the inlet photo on the left side (or top) and the outlet photo on either the right side or bottom. The sites are ordered by the ID numbers assigned in the Final Report, starting with the Trinity River watershed, then the Mad River, followed by the Eel River. In each watershed, the sites are numbered generally from west to east in an upstream direction, and from lowermost to uppermost road/stream intersection within a watershed.

For proposal development purposes, 8.5" x 11" full-scale USGS 7.5 Series copies are available on request.

Site ID #1: Unnamed tributary/South Fork Road; South Fork Trinity River; Trinity River

Ranking: #36 = Low-Priority

Location: Road ID #447; County Map Sheet #4. USGS Quad: Hennessy Peak. T5N, R5E, Section 1. Lat/Long: 40° 50' 16.84" 123° 33' 45.12" Milepost = 6.9 miles

Culvert Type: Circular, SSP. **Corrugations:** 2-2/3" x ¹/₂" **Dimensions:** diameter = 3.5' **Length:** 49.3' **Slope:** 13.89%

Modifications: None. Rustline Height: 0.7' Average Active Channel Width: 5.9'

Fill Estimate: 231 cubic yards Overall condition: Fair, culvert has abraded bottom.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a two-year recurrence interval. South Fork Road is overtopped on approximately a two-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles.

Additional Road Crossings: Downstream, none. Upstream, none within the limited fish-bearing reach.

Habitat: Quantity = approximately 500' of potential fish-bearing habitat upstream of South Fork Road. Quality = Poor. No formal CDFG or USFS habitat or fisheries surveys were available for this un-named tributary. When surveyed on 6/13/01, the channel was dry and appeared to be questionable as far as supporting anadromous fish.

Preferred Treatment: When crossing is due for replacement (or fails) replace with a properly-sized embedded circular SSP pipe or an open-bottom arch set on concrete footings. Lack of upstream fisheries benefit makes this site a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #2: Slide Creek/Lower South Fork Road; South Fork Trinity River; Trinity River

Ranking: #42 = Low-Priority

Location: Road ID #311; County Map Sheet #5. USGS Quad: Sims Mountain. T3N, R6E, Section 4. Lat/Long: $40^{\circ} 40' 5.28'' 123^{\circ} 30' 19.80''$ Milepost = 7.1 miles to Hyampom Rd.

Culvert Type: Circular, CSP. Corrugations: 2-2/3" x 1/2" Dimensions: diameter = 6.3' Length: 80.4'

Slope: 14.32% Modifications: None. Rustline Height: N/A Average Active Channel Width: 7.6'

Fill Estimate: 606 cubic yards Overall condition: Abraded.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a seven-year recurrence interval. Lower South Fork Road is overtopped on approximately a 12-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles.

Additional Road Crossings: Downstream, none. Upstream, none within the limited fish-bearing reach.

Habitat: Quantity = approximately 500' of potential fish-bearing habitat. Quality = Poor. No formal CDFG or USFS habitat or fisheries surveys were available for Slide Creek. The channel is confined and steeper shortly above South Fork Road. No fish were observed during the initial site visit. Many frogs (species unknown) were observed above and below the crossing when the site was surveyed on 5/22/01.

Preferred Treatment When crossing is due for replacement (or fails) replace with a properly-sized circular SSP pipe with grade control weirs or a bridge. The steep slope of the stream channel below the crossing would require a series of weirs to provide fish passage (if deemed necessary). Lack of upstream fisheries benefit makes this site a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog



Site ID #2: Slide Creek/Lower South Fork Road; Hayfork Creek; South Fork Trinity River; Trinity River

Site ID #3: Mill Creek/Lower South Fork Road; South Fork Trinity River; Trinity River

Ranking: #53 = Low-Priority

Location: Road ID #311; County Map Sheet #5. USGS Quad: Hyampom Mountain. T3N, R6E, Section 15. Lat/Long: 40° 38' 34.87" 123° 29' 29.67" Milepost = 4.6 miles to Hyampom Rd.

Culvert Type: Circular, SSP. Corrugations: 2-2/3" x 1/2" Dimensions: diameter = 8.0' Length: 50.7'

Slope: 1.07% Modifications: None. Rustline Height: 2.8' Average Active Channel Width: 13.0'

Fill Estimate: 456 cubic yards Overall condition: Fair, culvert floor is abraded.

Sizing: Undersized; HW/D = 1 on a storm flow with approximately a twelve-year recurrence interval. Lower South Fork Road is overtopped on approximately a thirty three-year storm flow.

Barrier Status: GREEN: the Green-Gray-Red filter determined this crossing meets passage criteria for all species of adult salmonids and all age classes of juveniles.

Additional Road Crossings: Downstream, none. Upstream, none within the limited fish-bearing reach.

Habitat: Quantity = approximately 1,800' of potential fish-bearing habitat. Quality = Poor. No formal CDFG or USFS habitat or fisheries surveys were available for Mill Creek. The channel is confined and steeper shortly above South Fork Road. Numerous young-of-year salmonids were observed swimming in and out of the culvert outlet during the initial site visit. Many frogs (species unknown) were also observed above and below the crossing when the site was surveyed on 5/22/01.

Preferred Treatment: When crossing is due for replacement (or fails) replace with a properly-sized embedded circular SSP pipe or an open-bottom arch set on concrete footings to maintain the GREEN status of this crossing. Lack of upstream fisheries benefit makes this site a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #4: Grassy Flat Creek/Hyampom Road; Hayfork Creek; South Fork Trinity River; Trinity River

Ranking: #26 = Low-Priority

Location: Road ID #301; County Map Sheet #5. USGS Quad: Halfway Ridge. T3N, R7E, Section 22. Lat/Long: 40° 37' 13.92" 123° 22' 22.53" Milepost = 3.2 miles to St. John Road.

Culvert Type: Circular, SSP. Corrugations: 2-2/3" x ¹/₂" Dimensions: diameter = 6.0' Length: 71.3'

Slope: 9.00% Modifications: None. Rustline Height: 2.7' Average Active Channel Width: 7.4'

Fill Estimate: 1,607 cubic yards **Overall condition:** Poor, rusted through – at low flow, all of the flow seeps through holes before reaching the culvert outlet.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a five-year recurrence interval. Hyampom Road is overtopped on approximately a 42-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles.

Additional Road Crossings: Downstream, USGS map indicates a stream crossing approximately 2,900' from Hyampom Road. Upstream, none within the limited fish-bearing reach.

Habitat: Quantity = approximately 3,800' of potential fish-bearing habitat. Quality = Poor. USFS surveyed about 200 yards of Grassy Flat Creek in 9/73. The channel was described as very rocky, steep and cascading. Boberg and Kenyon (1979) listed Grassy Flat Creek as supporting resident coastal rainbow trout. During the initial site visit on 5/22/01 no fish were observed, however numerous Pacific giant salamanders were observed in the stream channel upstream and downstream of Hyampom Road.

Preferred Treatment: When crossing is due for replacement (or fails) replace with a properly-sized circular SSP pipe with grade control weirs or a bridge. The steep slope of the stream channel below the crossing would require a series of weirs to provide fish passage (if deemed necessary). Lack of upstream fisheries benefit makes this site a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #5: Jud Creek/Hyampom Road; Hayfork Creek; South Fork Trinity River; Trinity River

Ranking: #30 = Low-Priority

Location: Road ID #301; County Map Sheet #5. USGS Quad: Halfway Ridge. T3N, R8E, Section 33. Lat/Long: 40° 35' 48.55" 123° 16' 49.50" Milepost = 8.3 miles to Highway 3.

Culvert Type: Circular, SSP. Corrugations: 2-2/3" x ¹/₂" Dimensions: diameter = 5.0' Length: 61.4'

Slope: 7.52% Modifications: None. Rustline Height: none apparent.

Average Active Channel Width: 9.5' Fill Estimate: 621 cubic yards Overall condition: Good.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a three-year recurrence interval. Hyampom Road is overtopped on approximately a seven-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles.

Additional Road Crossings: Downstream, none. Upstream, the USGS map indicates a stream crossing approximately 2,600' above Hyampom Road. The 1985 USFS survey noted an abandoned diversion dam about 1,000' upstream of Hyampom Road, the current status of this dam is unknown

Habitat: Quantity = approximately 5,000' of potential fish-bearing habitat upstream of Hyampom Road. Quality = Poor. USFS surveyed 1.5 miles of Jud Creek on 7/15/85 by G.Rensink and P. Renoud. The habitat was described as fair to poor for salmonids. The pools and riffles were highly embedded with sand and silt. Boberg and Kenyon (1979) listed Jud Creek as supporting resident coastal rainbow trout. During the initial site visit on 5/23/01 no fish were observed.

Preferred Treatment: When crossing is due for replacement (or fails) replace with a properly-sized circular SSP pipe with grade control weirs or a bridge. The steep drop of the stream channel below the crossing would require a series of weirs to provide fish passage (if deemed necessary). The minimal fisheries benefit of restoring access to Jud Creek makes this site a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #6: Kingsbury Gulch #1/Riverview Road; Hayfork Creek; South Fork Trinity River; Trinity River

Ranking: #8 = High-Priority

Location: Road ID #344; County Map Sheet #9. USGS Quad: Hayfork. T31N, R12W, Section 11. Lat/Long: $40^{\circ} 33' 2.74" 123^{\circ} 11' 9.41"$ Milepost = 0.2 miles to Highway 3.

Culvert Type: LB= pipe arch, SSP; RB= circular pipe, SSP **Corrugations:** both pipes = 2-2/3" x $\frac{1}{2}$ "

Dimensions: LB= 4.0' rise x 5.8' span; RB= Diameter = 3.5' Lengths: 40.3'

Slopes: LB=2.66%; RB=4.27% Modifications: None. Rustline Height: LB = 0.9'; RB = 1.4'

Average Active Channel Width: 7.8' Fill Estimate: 196 cubic yards Overall condition: Poor, both pipes are abraded, slightly crushed and slumping.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a two-year recurrence interval. Riverview Road is overtopped on approximately a three-year storm flow.

Barrier Status: LB= **GREY**: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. RB= **RED**: The Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles.

Additional Road Crossings: Downstream, none. Upstream, the USGS map indicates at least four road crossings within the fish-bearing stream reach: box culvert under Hayfork Airport ($\approx 2,100^{\circ}$); arch culvert under Morgan Hill Road ($\approx 2,600^{\circ}$); crossing on USFS road (≈ 3.1 miles); and crossing on USFS road (≈ 4.3 miles).

Habitat: Quantity = approximately 7.9 miles of potential fish-bearing habitat. Quality = Fair, due to impacts from past mining and timber harvest activities. A USFS memo for a 1991 Kingsbury timber sale noted that Kingsbury Gulch is utilized by steelhead, resident coastal rainbow trout and speckled dace. No descriptions of habitat other than a riparian zone dominated by hardwoods with a shade canopy of 82%.

Preferred Treatment: Replace with a properly-sized open-bottom arch set on concrete footings or a bridge.



APPENDIX B: Trinity County Culvert Catalog



Site ID #7: Kingsbury Gulch #2/Morgan Hill Road; Hayfork Creek; South Fork Trinity River; Trinity River

Ranking: #10 = High-Priority

Location: Road ID #319; County Map Sheet #9. USGS Quad: Hayfork. T31N, R12W, Section 12. Lat/Long: 40° 32' 46.45" 123° 10' 51.37" Milepost = 0.5 miles to Highway 3.

Culvert Type: Open Arch, SSP with a concrete floor Corrugations: N/A

Dimensions: Rise= 5.0'; Span= 11.9' Length: 28.5' Slope: 1.68%

Modifications: Wooden offset baffles 0.6' high. Four placed on LB perpendicular to flow, three on RB diagonal to flow - angled in a downstream direction. NOTE: the diagonal baffles are placed improperly and probably increase velocities through culvert. Trash rack at inlet of culvert.

Rustline Height: None apparent Average Active Channel Width: 11.9' Fill Estimate: 104 cubic yards

Overall condition: Fair, culvert is abraded.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a three-year recurrence interval. Morgan Hill Road is overtopped on approximately a three-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles.

Additional Road Crossings: Downstream, box culvert under Hayfork Airport ($\approx 500^{\circ}$) and County culverts at Riverview Road ($\approx 2,600^{\circ}$). Upstream, the USGS map indicates two stream crossings within the fish-bearing stream reach: USFS road (≈ 3.1 miles upstream); and USFS road (≈ 4.3 miles upstream).

Habitat: Quantity = approximately 7.4 miles of potential fish-bearing habitat. Quality = Fair, due to impacts from past mining and timber harvest activities. A USFS memo for a 1991 Kingsbury timber sale noted that Kingsbury Gulch is utilized by steelhead, resident coastal rainbow trout and speckled dace. No descriptions of habitat other than a riparian zone dominated by hardwoods with a shade canopy of 82%.

Preferred Treatment: Replace with a properly-sized open-bottom arch set on concrete footings or a bridge.



APPENDIX B: Trinity County Culvert Catalog



Site ID #7: Kingsbury Gulch #2/Morgan Hill Road; Hayfork Creek; South Fork Trinity River; Trinity River

APPENDIX B: Trinity County Culvert Catalog

Site ID #8: Donaldson Creek/Big Creek Road; Big Creek; Hayfork Creek; South Fork Trinity River; Trinity River Ranking: #22 = Low-Priority

Location: Road ID #324; County Map Sheet #5. USGS Quad: Hayfork Bally. T32N, R11W, Section 7. Lat/Long: 40° 38' 1.17" 123° 09' 42.43" Milepost = 6.1 miles.

Culvert Type: Circular, SSP Corrugations: N/A Dimensions: Diameter = 5.0' Length: 58.5'

Slope: 4.48% Modifications: None. Rustline Height: 1.1' Average Active Channel Width: 7.9'

Width: 11.9' Fill Estimate: 805 cubic yards Overall condition: Good.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a six-year recurrence interval. Big Creek Road is overtopped on approximately a 20-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. Steep slope (4.5%) and drop at outlet are the features creating the migration barrier.

Additional Road Crossings: Downstream, none. Upstream, none within the fish-bearing stream reach.

Habitat: Quantity = approximately 1.3 miles of potential fish-bearing habitat. Quality = Fair. USFS surveys conducted in 7/72 and 10/82 that covered lower 1.2 miles. Both surveys noted excessively embedded substrate in spawning areas. The 1982 survey noted about 35 log jams, several with drops greater than four feet. Few fish were observed on either survey. No fish were observed when the crossing was surveyed on 6/7/01.

Preferred Treatment: When crossing is due for replacement (or fails) replace with a properly-sized openbottom arch set on concrete footings or a bridge. Because of the large drop at the outlet, a series of boulder weirs may be required to minimize the head-cutting of the upstream channel.



Site ID #8: Donaldson Creek/Big Creek Road; Big Creek; Hayfork Creek; South Fork Trinity River; Trinity River



APPENDIX B: Trinity County Culvert Catalog

Site ID #9: Little Barker Creek/Barker Creek Road; Barker Creek; Hayfork Creek; South Fork Trinity River; Trinity River Ranking: #23 = High-Priority

Location: Road ID #331; County Map Sheet #5. USGS Quad: Hayfork Summit. T32N, R11W, Section 28. Lat/Long: 40° 35' 56.98" 123° 06' 20.00" Milepost = 1.9 miles.

Culvert Type: Circular, SSP Corrugations: 2-2/3" x ¹/₂" Dimensions: Diameter = 5.0' Length: 56.7'

Slope: 4.23% Modifications: None. Rustline Height: 1.5' Average Active Channel Width: 5.2'

Fill Estimate: 574 cubic yards Overall condition: Good.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a five-year recurrence interval. Barker Creek Road is overtopped on approximately an 18-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. Steep slope (4.2%) was the main feature creating the migration barrier.

Additional Road Crossings: Downstream, the USGS map indicates two stream crossings (2,600' and 4,000' from Barker Creek Road crossing). From the USFS 1986 survey it appears these are privately-maintained crossings. Upstream, none within the fish-bearing stream reach.

Habitat: Quantity = approximately 1.5 miles of potential fish-bearing habitat upstream of Barker Creek Road. Quality = Fair. USFS surveyed Little Barker Creek in 1/30/86 from the Barker Creek Road culvert to 1.5 miles upstream. Habitat was described as fair-to-good with numerous small pools formed by woody debris jams and boulders. Spawning habitat and rearing habitat was common, but no fish or redds were observed. No fish were observed when the crossing was surveyed on 6/7/01.

Preferred Treatment: When crossing is due for replacement (or fails) replace with a properly-sized openbottom arch set on concrete footings or a bridge. The privately-owned crossings below the county-maintained site should be assessed for fish passage prior to treating the Barker Creek Road crossing.



APPENDIX B: Trinity County Culvert Catalog

Site ID #9: Little Barker Creek/Barker Creek Road; Barker Creek; Hayfork Creek; South Fork Trinity River; <u>Trinity River</u>



APPENDIX B: Trinity County Culvert Catalog

Site ID #10: Duncan Creek/Summit Creek Road; Carr Creek; Hayfork Creek; South Fork Trinity River; Trinity River Ranking: #51 = Low-Priority

Location: Road ID #329; County Map Sheet #5. USGS Quad: Hayfork Summit. T31N, R11W, Section 2. Lat/Long: $40^{\circ} 34' 17.86'' 123^{\circ} 04' 08.18''$ Milepost = 1.8 miles.

Culvert Type: Two Pipes, Circular, SSP **Corrugations:** 2-2/3" x $\frac{1}{2}$ " **Dimensions:** Diameters = 5.0'

Lengths: LB=38.0; RB=40.1' Slope: LB=3.11%; RB=1.15% Modifications: None.

Rustline Height: LB=1.0'; RB=1.6' Average Active Channel Width: 7.1' Fill Estimate: 207 cubic yards **Overall condition:** Fair – abraded.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a four-year recurrence interval. Summit Creek Road is overtopped on approximately an eight-year storm flow.

Barrier Status: LB= **RED**: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. RB= **GREY**: the Green-Gray-Red filter determined this culvert meets passage criteria on 80% of migration flows for adult salmonids and 25% of migration flows for juveniles.

Additional Road Crossings: Downstream, USGS map indicates no additional crossings. Upstream, USGS map shows four stream crossings ($\approx 2,000^{\circ}, 3,800^{\circ}, 4,600^{\circ}$ and 5,000' from Summit Creek Road) and a reservoir on the LB fork of Duncan Creek ($\approx 6,200^{\circ}$ from Summit Road). USFS survey (6/74) identified a culvert on Willow Gulch that probably blocked fish migration ($\approx 2,300^{\circ}$ from Summit Creek Road).

Habitat: Quantity = approximately 4.8 miles of potential fish-bearing habitat. Quality = Fair. USFS survey conducted in 6/74 from confluence with Carr Creek to approximately six miles upstream. Pools were small (\approx three feet in diameter) and infrequent in the lower and middle reaches, but common in the upper reach. Riparian canopy was medium to dense. Spawning areas were infrequent, yet in good condition. Steelhead fry were "common to abundant" in lower and middle reaches. During initial site visit on 6/7/01, several young-of-year were observed above and below the Summit Creek Road culvert.

Preferred Treatment: When crossing is due for replacement (or fails) replace with a properly-sized openbottom arch set on concrete footings or a bridge. This site should be periodically inspected because of its sizing - nearby landowners commented that culverts were overtopped annually by winter storm flows.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #11: Summit Creek/Summit Creek Road; Hayfork Creek; South Fork Trinity River; Trinity River

Ranking: #27 = Low-Priority

Location: Road ID #329; County Map Sheet #5. USGS Quad: Hayfork Summit. T32N, R10W, Section 33. Lat/Long: 40° 35' 25.80" 123° 00' 38.72" Milepost = 5.2 miles to Highway 3.

Culvert Type: Circular, SSP Corrugations: 2-2/3" x ¹/₂" Dimensions: Diameter = 4.0' Length: 53.0'

Slope: 8.30% Modifications: None. Rustline Height: 0.9' Average Active Channel Width: 5.7'

Fill Estimate: 221 cubic yards Overall condition: Fair – culvert floor is abraded.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a seven-year recurrence interval. Summit Creek Road is overtopped on approximately a 12-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles.

Additional Road Crossings: Downstream, USGS map indicates three additional crossings (\approx 1,600', 1.2 miles, and 2.2 miles from Summit Creek Road culvert) Two were un-improved fords on Summit Creek Road (at 1.2 and 2.2 miles). Upstream, none appear on USGS map within the limited fish-bearing reach above Summit Creek Road culvert.

Habitat: Quantity = approximately 2,400 of potential fish-bearing habitat. Quality = Poor. USFS surveys conducted on 6/6/74 and 3/26/97. Both surveys described the habitat immediately upstream of the Summit Creek Road culvert as the "Summit Creek fire area" and rated the habitat as "in poor condition". In 1997, the 31 pools identified within upper Summit Creek had an average residual depth of 0.8'. Overall, the channel was highly aggraded with fine substrate resulting from a host of past land-use activities. Excessive erosion was probably compounded by the fire too.

Preferred Treatment: When crossing is due for replacement (or fails) replace with an embedded properlysized circular SSP pipe or a pipe-arch set on concrete footings. Lack of upstream fisheries benefit makes this site a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #12: Carrier Gulch/Wildwood Road; Hayfork Creek; South Fork Trinity River; Trinity River

Ranking: #31 = Low-Priority

Location: Road ID #302; County Map Sheet #5. USGS Quad: Hayfork Summit. T31N, R11W, Section 15. Lat/Long: $40^{\circ} 30' 58.87''$ 123° 05' 08.89'' Milepost = 3.9 miles.

Culvert Type: Circular, SSP **Corrugations:** 6" x 2" **Dimensions:** Diameter = 7.5' Length: 40.5'

Slope: 3.26% Modifications: None. Rustline Height: 1.7' Average Active Channel Width: 3.5'

Fill Estimate: 227 cubic yards Overall condition: Abraded.

Sizing: Undersized; HW/D = 1 on a storm flow with approximately a 24-year recurrence interval. Wildwood Road is overtopped on approximately a 154-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles.

Additional Road Crossings: Downstream, none. Upstream,

Habitat: Quantity = approximately 13,200' of potential fish-bearing habitat. Quality = Poor. No formal CDFG or USFS habitat or fisheries surveys were available for Carrier Gulch. Channel is quite small and confined with limited pools for rearing. During the initial site survey on 6/7/01 about 10 juvenile salmonids (young-of-year and several 1+) were observed in a pool approximately 75 feet upstream of the culvert.

Preferred Treatment: When crossing is due for replacement (or fails) replace with an embedded properlysized circular SSP pipe or an open-bottom arch set on concrete footings. Lack of upstream fisheries benefit makes this site a poor candidate for replacement with restoration funds.





APPENDIX B: Trinity County Culvert Catalog

Site ID #13: Hall City Creek/Wildwood Road; Hayfork Creek; South Fork Trinity River; Trinity River

Ranking: #16 = Moderate-Priority

Location: Road ID #302; County Map Sheet #5. USGS Quad: Dubakella Mountain. T29N, R11W, Section 1. Lat/Long: $40^{\circ}240^{\circ} 0.66^{\circ}$ 123° 03' 17.96" Milepost = 15.1 miles.

Culvert Type: 2 Pipe Arches, SSP Corrugations: 2-2/3" x 1/2" Dimensions: Rises=3.3'; Spans=5.5'

Lengths: 41.0' Slopes: LB=2.05%; RB=3.95% Modifications: None. Rustline Height: LB = 0.8'; RB = 0.6'.

Average Active Channel Width: 5.5' Fill Estimate: 119 cubic yards Overall condition: Poor, both pipes rusted through.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a four-year recurrence interval. Wildwood Road is overtopped on approximately a five-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles.

Additional Road Crossings: Downstream, none. Upstream, the USGS map indicates an unimproved road or trail crosses Hall City Creek near the potential limit of anadromy (≈ 2.4 miles from Wildwood Road).

Habitat: Quantity = approximately 3.4 miles of potential fish-bearing habitat upstream of Wildwood Road. Quality = Fair to poor. No formal CDFG or USFS habitat or fisheries surveys were available for Hall City Creek – including the Boberg and Kenyon (1979) fish distribution table. The channel is quite small and confined with limited pools for rearing. During the initial site survey on 6/7/01 no fish were observed in the channel on either side of the crossing. Water diversion pipes were present in the stream channel – appeared to be unscreened.

Preferred Treatment: Both pipe arches are in poor condition and together are undersized. The crossing is due for replacement and should be upgraded with a properly-sized embedded circular SSP pipe or an open-bottom arch set on concrete footings. Lack of knowledge regarding upstream fisheries benefit renders this site a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog

Site ID #13: Hall City Creek/Wildwood Road; Hayfork Creek; South Fork Trinity River; Trinity River



APPENDIX B: Trinity County Culvert Catalog

Site ID #14: Sharber Creek/Fountain Ranch Road; Trinity River Ranking: #18 = Moderate-Priority

NOTE: This crossing is not a Trinity County-maintained structure.

Location: Road ID #445; County Map Sheet #4. USGS Quad: Salyer. T6N, R5E, Section 13. Lat/Long: 40°53' 50.52" 123° 33' 54.68" Milepost = 1.6 miles.

Culvert Type: Circular, SSP Corrugations: 2-2/3" x 1/2" Dimensions: Diameter=6.0' Length: 62.8'

Slope: 3.96% Modifications: Wooden weir wall 3.5' high, placed at culvert inlet for water diversion.

Rustline Height: entire pipe was rusted. Average Active Channel Width: 12.1'

Fill Estimate: 395 cubic yards Overall condition: Fair, pipe was rusted and abraded – no holes worn through.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a two-year recurrence interval. Fountain Ranch Road is overtopped on approximately a two-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. The steep slope ($\approx 4\%$) probably creates excessive velocities at most migration flows. The splash board placed across the culvert inlet is definitely blocking fish migration, however it is not known if this board is in place during the winter migration period.

Additional Road Crossings: Downstream, none. Upstream, no additional crossings are present on the USGS map within the limit of anadromy.

Habitat: Quantity = approximately 4,100' of potential fish-bearing habitat is located upstream of Fountain Ranch Road. Quality = Fair to good. No formal CDFG or USFS habitat or fisheries surveys were available for Sharber Creek. Sharber Creek was included on the Boberg and Kenyon (1979) fish distribution table as supporting populations of resident rainbow trout and steelhead. Unconfirmed reports of juvenile coho salmon in Sharber Creek were recently brought to the County's attention (Lancaster, pers. comm.).

Preferred Treatment: When crossing is due for replacement (or fails), the landowner should replace with a properly-sized embedded circular SSP pipe or an open-bottom arch set on concrete footings. The appropriate agencies should work with the landowner to develop a fish-friendly (and legal) water diversion.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #15: Hawkins Creek #1/Hawkins Bar Road; Trinity River Ranking: #24 = Low-Priority

Location: Road ID #456; County Map Sheet #9. USGS Quad: Salyer. T6N, R6E, Section 20. Lat/Long: 40°52' 44.11" 123° 31' 18.71" Milepost = 0.2 miles to Big Oak Road.

Culvert Type: Two Pipes, Circular, SSP Corrugations: 2-2/3" x 1/2" Dimensions: Diameters=5.0'

Lengths: LB=81.1'; RB=80.8' Slopes: LB=5.41%; RB= 5.15% Modifications: None.

Rustline Height: LB = 1.7'; RB = 1.8' Average Active Channel Width: 5.1'

Fill Estimate: 1,255 cubic yards Overall condition: Fair, both pipes were abraded.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a three-year recurrence interval. Hawkins Bar Road is overtopped on approximately a ten-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles.

Additional Road Crossings: Downstream, none apparent on USGS map. Upstream, USGS indicates three upstream crossings: Hawkins Creek #2/Flame Tree Road (\approx 3,400' from Hawkins Bar Road); then crossings approximately 4,900' and 6,900' upstream from Hawkins Bar Road – ownership is unknown.

Habitat: Quantity = 7,400' of potential fish-bearing habitat upstream of Hawkins Bar Road. However, current upper limit is at 3,500' because of a concrete diversion dam with no fish ladder immediately upstream of Flame Tree Road. Quality = Poor. No formal CDFG or USFS habitat or fisheries surveys were available for Hawkins Creek. Hawkins Creek was included on the Boberg and Kenyon (1979) fish distribution table as supporting only populations of resident rainbow trout. During the initial site survey on 6/13/01, several young-of-year salmonids were observed in an isolated pool upstream of the crossing. The natural channel below Hawkins Bar Road is steep and confined with several large $(4^{2} - 6^{2})$ drops over boulders and bedrock.

Preferred Treatment: When crossing is due for replacement (or fails), replace with a properly-sized circular SSP pipe with a series of grade control weirs (to minimize head cutting of channel. Lack of upstream fisheries benefit and high cost of treatment renders it a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #16: Hawkins Creek #2/Flame Tree Road; Trinity River Ranking: #25 = Low-Priority

Location: Road ID #461; County Map Sheet #9. USGS Quad: Salyer. T6N, R6E, Section 21. Lat/Long: $40^{\circ}52'$ 35.80" $123^{\circ}3'$ 46.67" Milepost = 0.00 miles.

Culvert Type: Circular, SSP Corrugations: 2-2/3" x ¹/₂" Dimensions: Diameter=6.0' Length: 101.2'

Slope: 7.70% Modifications: Manmade low head dam upstream across entire channel, 2.07' tall.

Rustline Height: 1.8' Average Active Channel Width: 8.4' Fill Estimate: 2,074 cubic yards

Overall condition: Poor, culvert floor is rusted through.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a two-year recurrence interval. Flame Tree Road is overtopped on approximately a six-year storm flow. Steep slope and perched outlet are the crossing's features that block fish migration.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles.

Additional Road Crossings: Downstream, USGS map indicates one crossing at Hawkins Bar Road (\approx 3,400' from Flame Tree Road). Upstream, USGS map indicates two crossings approximately 1,500' and 3,500' from Flame Tree Road – however, diversion dam just above Flame Tree Road has no fish passage facilities.

Habitat: Quantity = approximately 4,000' of potential fish-bearing habitat. However, current upper limit is probably less than 100' above this crossing because of a concrete diversion dam with no fish ladder immediately upstream of Flame Tree Road. Quality = Poor. No formal CDFG or USFS habitat or fisheries surveys were available for Hawkins Creek. Hawkins Creek was included on the Boberg and Kenyon (1979) fish distribution table as supporting only populations of resident rainbow trout. During the initial site survey on 6/13/01no salmonids were observed in the channel adjacent to this crossing.

Preferred Treatment: When crossing is due for replacement (or fails) replace with a properly-sized circular SSP pipe with a series of grade control weirs - to minimize head cutting of channel. Lack of upstream fisheries benefit and high cost of treatment renders it a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #17: Bell Creek/Denny Road; New River; Trinity River Ranking: #34 = Low-Priority

Location: Road ID #402; County Map Sheet #4. USGS Quad: Denny. T6N, R7E, Section 7. Lat/Long: 40°54' 10.91" 123° 26'34.56" Milepost = 11.9 miles.

Culvert Type: LB=Circular, SSP; RB=Pipe Arch, SSP Corrugations: 6" x 2"

Dimensions: LB diameter= 4.5'; RB rise=5.2'; span=7.65' Lengths: LB=76.3'; RB=77.4'

Slopes: LB=7.71%; RB=4.34% Modifications: None. Rustline Height: LB = 2.1; RB = 2.4'

Average Active Channel Width: 9.8' Fill Estimate: 559 cubic yards Overall condition: LB = Good; RB = Fair, culvert floor is abraded.

Sizing: Extremely undersized; LB pipe + RB pipe = HW/D = 1 on a storm flow with approximately a four-year recurrence interval. Denny Road is overtopped on approximately a nine-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles.

Additional Road Crossings: Downstream, none. Upstream, none within the limited fish-bearing reach.

Habitat: Quantity = approximately 1,300' of potential fish-bearing habitat upstream of Denny Road. Quality = Poor. USFS surveyed Bell Creek on 10/17/74 and described the habitat as in fair to good condition, but limited in fisheries benefit due to its overall steep slope ($\approx 10\%$), multiple log jams, and limited spawning habitat. Pools were formed primarily by boulders and bedrock. Bell Creek was included on the Boberg and Kenyon (1979) fish distribution table as supporting only populations of resident rainbow trout. During the initial site survey on 5/30/01young-of-year and 1+ salmonids were observed in the crossing's outlet pool.

Preferred Treatment: When crossing is due for replacement (or fails) replace with an embedded properlysized circular SSP pipe or an open-bottom arch set on concrete footings. Lack of upstream fisheries benefit makes this site a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #18: Panther Creek #1/Denny Road; New River; Trinity River Ranking: #48 = Low-Priority

Location: Road ID #402; County Map Sheet #4. USGS Quad: Denny. T6N, R7E, Section 7. Lat/Long: 40°54' 30.12" 123° 25' 42.54" Milepost = 14.2 miles.

Culvert Type: Pipe Arch, SSP **Corrugations:** 6" x 2" **Dimensions:** Rise = 8.1'; Span = 13.0'

Length: 60.4' Slope: 6.24% inlet to break; 18.60% break to outlet

Modifications: None. Rustline Height: 0.7' Average Active Channel Width: 15.2'

Fill Estimate: 1,558 cubic yards Overall condition: Fair, culvert floor is abraded.

Sizing: Undersized; HW/D = 1 on a storm flow with approximately an 11-year recurrence interval. Denny Road is overtopped on approximately a 118-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. Steep slope and excessive drop at outlet over boulders and riprap are the crossing's features that create a migration barrier.

Additional Road Crossings: Downstream, USGS map indicates none. Upstream, none within the limited fishbearing stream reach.

Habitat: Quantity = approximately 500' of potential fish-bearing habitat upstream of the Denny Road. Quality = Poor. USFS surveyed Panther Creek on 10/15/74 from the mouth to 1.25 miles upstream. Several barriers were noted below Denny Road, including a 25' drop over bedrock and boulders. Panther Creek was included on the Boberg and Kenyon (1979) fish distribution table as supporting only populations of resident rainbow trout. A USFS Stream Condition Inventory (SCI) form was completed on 6/29/00 - only 16 juvenile salmonids were observed in the steep reach surveyed. During the initial site survey on 5/30/01 about 10-15 salmonids (young-of-year and 1+) were observed in the channel upstream of this crossing.

Preferred Treatment: Periodically inspect culvert for condition and performance. When crossing is due for replacement (or fails) replace with a properly-sized circular SSP pipe with downstream grade-control weirs. Lack of upstream fisheries benefit and potential natural barriers downstream make this site a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog


APPENDIX B: Trinity County Culvert Catalog

Site ID #19: Quinby Creek/Denny Road; New River; Trinity River Ranking: #15 = Moderate-Priority

Location: Road ID #402; County Map Sheet #4. USGS Quad: Denny. T7N, R7E, Section 28. Lat/Long: 40°57' 11.03" 123° 23' 14.41" Milepost = 19.2 miles.

Culvert Type: Two Pipes, Circular, SSP Corrugations: 6" x 2" Dimensions: Diameters=12.5'

Lengths: LB= 126.5; RB=126.0' Slopes: LB=4.34%; RB=4.58% Modifications: None.

Rustline Height: LB = 2.7' and RB = 2.75' Average Active Channel Width: 15.3'

Fill Estimate: 6,594 cubic yards Overall condition: LB = Fair, culvert floor is abraded; RB = Good.

Sizing: Undersized; HW/D = 1 on a storm flow with approximately a 29-year recurrence interval. Denny Road is overtopped on more than a 250-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. Steep slope within both culverts and excessive drop at outlet are the crossing's features that create a migration barrier.

Additional Road Crossings: Downstream, none appear on USGS map. Upstream, USGS map indicates at least three upstream crossings that most likely USFS-maintained. These are located approximately 2.3, 2.6, and 3.3 miles upstream of the Denny Road.

Habitat: .Quantity = approximately 3.8 miles of potential fish-bearing habitat upstream of the Denny Road. Quality = Good. No formal CDFG or USFS habitat or fisheries surveys were available for Quinby Creek. Quinby Creek was included on the Boberg and Kenyon (1979) fish distribution table as supporting only populations of resident rainbow trout. During the initial site survey on 5/30/01no salmonids were observed in the channel adjacent to this crossing. Conducting further investigation into Quinby Creek's potential fisheries benefits is recommended prior to developing proposals for submission to fisheries restoration funding sources.

Preferred Treatment: Periodically inspect culvert for condition and performance. When crossing is due for replacement (or fails) replace with a properly-sized open-bottom arch set on concrete footings or a bridge.



APPENDIX B: Trinity County Culvert Catalog

Site ID #19: Quinby Creek/Denny Road; New River; Trinity River



APPENDIX B: Trinity County Culvert Catalog

Site ID #20: Unnamed Tributary/Underwood Mountain Road; Trinity River Ranking: #38 = Low-Priority

Location: Road ID #417; County Map Sheet #4. USGS Quad: Ironside Mountain. T5N, R6E, Section 14. Lat/Long: $40^{\circ}48^{\circ}11.71^{\circ}$ 123° 28' 53.55" Milepost = 0.0 miles.

Culvert Type: Circular, SSP Corrugations: 2-2/3" x 1/2" Dimensions: Diameter= 4.0' Length: 65.9'

Slope: 9.26% Modifications: None. Rustline Height: 0.70' Average Active Channel Width: 6.2'

Fill Estimate: 552 cubic yards Overall condition: Fair, culvert floor is abraded.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a two-year recurrence interval. Underwood Mountain Road is overtopped on approximately a three-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. The culvert's steep slope and the drop over riprap at the outlet (see photo) are the crossing's main features that create a migration barrier.

Additional Road Crossings: Downstream, none appear on USGS map. Upstream, none appear on USGS map.

Habitat: Quantity = less than 500' of potential fish-bearing habitat. Quality = Poor. No formal CDFG or USFS habitat or fisheries surveys were available for this unnamed tributary. During the initial site survey on 6/8/01 no salmonids were observed in the channel adjacent to this crossing. The channel is steep on both sides of Underwood Mountain Road. It is doubtful steelhead could access this tributary due to the steep slope, plus it appears the channel's flow is diverted into two ponds at Burnt Ranch Station (see map).

Preferred Treatment: Periodically inspect culvert for condition and performance. When crossing is due for replacement (or fails) replace with a properly-sized circular SSP pipe with downstream grade-control weirs. Lack of upstream fisheries benefit and potential natural barriers downstream make this site a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #21: Barney Gulch/East Fork Road; East Fork of the North Fork Trinity; North Fork of the Trinity; Trinity River Ranking: #14 = Moderate-Priority

Location: Road ID #421; County Map Sheet #4. USGS Quad: Dedrick. T34N, R11W, Section 4. Lat/Long: $40^{\circ}49'$ 17.62" 123° 07' 25.36" Milepost = 4.4 miles.

Culvert Type: Circular, SSP Corrugations: 2-2/3" x $\frac{1}{2}$ " Dimensions: Diameter= 5' at the inlet; 6' at the outlet

Length: 45.1' **Slope:** 5.50% inlet to break; 10.22% break to outlet **Modifications:** One pipe placed inside the other. The 5' pipe was placed inside the 6' pipe at the inlet.

Rustline Height: 1.4' Average Active Channel Width: 5.0' Fill Estimate: 410 cubic yards

Overall condition: Fair, culvert floor is abraded.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a three-year recurrence interval. East Fork Road is overtopped on approximately a nine-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. The culvert's steep slope and the drop over riprap and bedrock at the outlet (see photo) are the crossing's main features that create a migration barrier.

Additional Road Crossings: Downstream, none. Upstream, none appear on the USGS quad map

Habitat: Quantity = approximately 2.2 miles of potential fish-bearing habitat upstream of East Fork Road. Quality = Fair. No formal CDFG or USFS habitat or fisheries surveys were available for this unnamed tributary. During the initial site survey on 6/8/01 no salmonids were observed in the channel adjacent to this crossing –the channel was dry, with isolated pools downstream of East Fork Road. Although documented fisheries information is lacking, Barney Gulch should be considered potentially important spawning and rearing habitat for wild stocks of summer-run and winter-run steelhead (Everest, pers. comm.). Conducting further investigation into Barney Gulch's potential fisheries benefits is recommended.

Preferred Treatment: Periodically inspect culvert for condition and performance. When crossing is due for replacement (or fails) replace with a properly-sized SSP culvert or a bridge. Grade-control weirs may be required to minimize head-cutting of the upstream channel.



APPENDIX B: Trinity County Culvert Catalog

Site ID #21: Barney Gulch/East Fork Road; East Fork of the North Fork Trinity; North Fork of the Trinity; Trinity River



APPENDIX B: Trinity County Culvert Catalog

Site ID #22: Conner Creek #1/Conner Creek Road; Trinity River Ranking: #9 = High-Priority

Location: Road ID #449; County Map Sheet #7. USGS Quad: Dedrick. T33N, R11W, Section 2. Lat/Long: 40°45' 4.74" 123° 04' 52.65" Milepost = 0.1 miles to Red Hill Road.

Culvert Type: Box, Concrete Corrugations: Smooth Dimensions: Height=5.75'; Width=14.3'

Length: 17.9' **Slope:** 2.07% **Modifications:** Three offset baffles, 1' high, and half way across culvert. Plugged with debris and not functional.

Rustline Height: Not applicable Average Active Channel Width: 11.5' Fill Estimate: 79 cubic yards

Overall condition: Fair, floor is worn on 2" - 4" on LB side.

Sizing: Undersized; HW/D = 1 on a storm flow with approximately a 14-year recurrence interval. Conner Creek Road is overtopped on approximately an 18-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. The outlet pool is created by a rock/boulder weir with a drop greater than two feet. If properly maintained, the offset baffles probably improve passage conditions, but when plugged the LB half of the culvert experiences sheet flow with excessive velocities.

Additional Road Crossings: Downstream, three private crossings are indicated on the USGS map ($\approx 300^{\circ}$, 2,400^{\circ}, and 4,300^{\circ} from Conner Creek Road. Status of these crossings = unknown. Upstream, county-maintained culvert at Red Hill Road is approximately 1,100^{\circ} from Conner Creek Road.

Habitat: Quantity = approximately 1.8 miles of potential fish-bearing habitat. Quality = Good. USFS habitat surveys conducted on 8/16/74 and 5/15/80. Steelhead were presumed to use the lower 1.5 miles of creek, with suitable spawning areas located primarily in the lower mile. Pools were numerous and formed mostly by boulder and bedrock. Conner Creek has a dense riparian zone of mixed hardwoods and conifers. Habitat in the lower USFS steelhead spawning survey conducted on 3/25/80 – no evidence of spawning was observed. Approximately 2,300' above Red Hill Road, the channel steepens to an average slope of nearly 6% until the limit of anadromy at 8-10%. No fish were observed during site survey on 5/10/01, water temperature was $11^{\circ}C$ at 1:20 PM.

Preferred Treatment: Replace with a properly-sized open-bottom arch set on concrete footings or a bridge. The status of the downstream crossings should be assessed prior to treating the county-maintained culvert.



APPENDIX B: Trinity County Culvert Catalog

Site ID #22: Conner Creek #1/Conner Creek Road; Trinity River



APPENDIX B: Trinity County Culvert Catalog

Site ID #23: Conner Creek #2/Red Hill Road; Trinity River Ranking: #13 = High-Priority

Location: Road ID #415; County Map Sheet #7. USGS Quad: Dedrick. T33N, R11W, Section 2. Lat/Long: 40°45' 2.12" 123° 05' 3.84" Milepost = 2.4 miles.

Culvert Type: Circular, SSP Corrugations: 6" x 2" Dimensions: Diameter=10.2' Length: 66.5'

Slope: 3.17% Modifications: Ten steel ramp baffles, offset from each other. Rustline Height: 2.2'

Average Active Channel Width: 11.5' Fill Estimate: 779 cubic yards Overall condition: Good.

Sizing: Undersized; HW/D = 1 on a storm flow with approximately a 19-year recurrence interval. Red Hill Road is overtopped on approximately 43-year storm flow.

Barrier Status: GREY: the FishXing software estimated that this crossing meets passage criteria for adult salmonids on approximately 45% of migration flows and fails to meet criteria on entire range of migration flows for all age classes of juveniles (and resident trout too).

Additional Road Crossings: Downstream, four crossings: county-maintained crossing at Conner Creek Road and three privately-maintained crossings ($\approx 1,100^{\circ}, 1,400^{\circ}, 3,500^{\circ}$, and 5,400' from Red Hill Road). Upstream, USGS map indicates none within the fish-bearing stream reach.

Habitat: Quantity = approximately 1.6 miles of potential fish-bearing habitat. Quality = USFS habitat surveys conducted on 8/16/74 and 5/15/80. Steelhead were presumed to use the lower 1.5 miles of creek, with suitable spawning areas located primarily in the lower mile. Pools were numerous and formed mostly by boulder and bedrock. Conner Creek has a dense riparian zone of mixed hardwoods and conifers. Habitat in the lower USFS steelhead spawning survey conducted on 3/25/80 – no evidence of spawning was observed. Approximately 2,300' above Red Hill Road, the channel steepens to an average slope of nearly 6% until the limit of anadromy at 8-10%. No fish were observed during site survey on 5/10/01, water temperature was 11° C at 1:20 PM.

Preferred Treatment: Replace with a properly-sized open-bottom arch set on concrete footings or a bridge. The status of the downstream privately-maintained crossings should be assessed prior to treating the county-maintained culvert. Past stream surveys also identified several defunct diversion structures – if feasible, a current survey should be conducted to determine the status of these structures and any current diversions.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #24: Conrad Gulch/Canyon Creek Road; Canyon Creek; Trinity River Ranking: #21 = Moderate-Priority

Location: Road ID #401; County Map Sheet #4. USGS Quad: Dedrick. T34N, R11W, Section 24. Lat/Long: 40°47' 39.12" 123° 03' 20.51" Milepost = 5.7 miles.

Culvert Type: Circular, SSP Corrugations: 2-2/3" x 1/2" Dimensions: Diameter=6.0' Length: 60.6'

Slope: 3.37% Modifications: None. Rustline Height: 1.1' Average Active Channel Width: 6.7'

Fill Estimate: 439 cubic yards Overall condition: Fair, culvert floor is abraded.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately an eight-year recurrence interval. Canyon Creek Road is overtopped on approximately a 19-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles.

Additional Road Crossings: Downstream, none. Upstream, none within the fish-bearing stream reach.

Habitat: Quantity = approximately 4,900' of potential fish-bearing habitat upstream of Canyon Creek Road. Quality = Fair. No formal CDFG or USFS habitat or fisheries surveys were available for Conrad Gulch. During the initial site survey on 5/14/01 no salmonids were observed in the channel adjacent to this crossing. The water temperature was cool = 14° C at 1:30 PM with an air temp = 34° C. Although documented fisheries information is lacking, Conrad Gulch should be considered potentially important spawning and rearing habitat for wild stocks of summer-run and winter-run steelhead (Everest, pers. comm.). Conducting further investigation into Conrad Gulch's potential fisheries benefits is recommended.

Preferred Treatment: Periodically inspect culvert for condition and performance. When crossing is due for replacement (or fails) replace with a properly-sized open-bottom arch set on concrete footings or a bridge. All fish-bearing crossings along Canyon Creek Road should be improved to pass salmonids if major road work is ever scheduled for Canyon Creek Road. Cumulatively; Conrad, Rarick, and Gwin Gulches total nearly 2.1 miles of potential anadromous habitat.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #25: Rarick Gulch/Canyon Creek Road; Canyon Creek; Trinity River

Ranking: #20 = Moderate-Priority

Location: Road ID #401; County Map Sheet #4. USGS Quad: Dedrick. T34N, R11W, Section 13. Lat/Long: 40°48' 12.15" 123° 03' 32.10" Milepost = 6.2 miles.

Culvert Type: Circular, SSP Corrugations: 2-2/3" x 1/2" Dimensions: Diameter=6.0' Length: 78.4'

Slope: 11.29% Modifications: None. Rustline Height: 2.3' Average Active Channel Width: 11.8'

Fill Estimate: 2,110 cubic yards Overall condition: Fair, culvert floor is abraded.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a five-year recurrence interval. Canyon Creek Road is overtopped on approximately a 16-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. The steep slope (> 11%) is the crossing's main feature that creates a migration barrier due to excessive velocities.

Additional Road Crossings: Downstream, none. Upstream, none within the limited fish-bearing stream reach.

Habitat: Quantity = 1,900° of potential fish-bearing habitat upstream of Canyon Creek Road, then channel steepens quickly to over 12%. Quality = Fair. No formal CDFG or USFS habitat or fisheries surveys were available for Rarick Gulch. During the initial site survey on 5/14/01 no salmonids were observed in the channel adjacent to this crossing. The water temperature on 5/15/01 was cool = 9°C at 4:00 PM. Although documented fisheries information is lacking, Rarick Gulch should be considered potentially important spawning and rearing habitat for wild stocks of summer-run and winter-run steelhead (Everest, pers. comm.). Conducting further investigation into Rarick Gulch's potential fisheries benefits is recommended.

Preferred Treatment: Periodically inspect culvert for condition and performance. When crossing is due for replacement (or fails) replace with a properly-sized open-bottom arch set on concrete footings or a bridge. All fish-bearing crossings along Canyon Creek Road should be improved to pass salmonids if major road work is ever scheduled for Canyon Creek Road. Cumulatively; Conrad, Rarick, and Gwin Gulches total nearly 2.1 miles of potential anadromous habitat.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #26: Gwin Gulch/Canyon Creek Road; Canyon Creek; Trinity River Ranking: #32 = Low-Priority

Location: Road ID #401; County Map Sheet #4. USGS Quad: Dedrick. T34N, R11W, Section 12. Lat/Long: 40°49' 13.23" 123° 03' 26.09" Milepost = 7.5 miles.

Culvert Type: Circular, SSP Corrugations: 2-2/3" x ¹/₂" Dimensions: Diameter=12.0' Length: 120.3'

Slope: 5.95% Modifications: None. Rustline Height: 2.3' Average Active Channel Width: 17.1'

Fill Estimate: 5,677 cubic yards Overall condition: Good.

Sizing: Properly sized; HW/D = 1 on a storm flow with approximately a 211-year recurrence interval. Canyon Creek Road is overtopped with more than a 250-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. The culvert's steep slope and perched outlet are the crossing's features that create a migration barrier.

Additional Road Crossings: Downstream, none. Upstream, none within the limited fish-bearing stream reach.

Habitat: Quantity = approximately 2,600' of potential fish-bearing habitat upstream of Canyon Creek Road. Quality = Fair to good. No formal CDFG or USFS habitat or fisheries surveys were available for Gwin Gulch. Boberg and Kenyon (1979) list Gwin as supporting steelhead and resident rainbow populations. During the initial site survey on 5/14/01 no salmonids were observed in the channel adjacent to this crossing. The water temperature on 5/15/01 was cool = 8°C at 2:00 PM. Although documented fisheries information is lacking, Gwin Gulch should be considered potentially important spawning and rearing habitat for wild stocks of summerrun and winter-run steelhead (Everest, pers. comm.). Conducting further investigation into Gwin Gulch's potential fisheries benefits is recommended.

Preferred Treatment: Periodically inspect culvert for condition and performance. Modifying the existing culvert with either corner baffles or weirs within the culvert *and* a series of downstream grade-control weirs is recommended. A replacement is not warranted because the current culvert is properly sided and the large fill volume (>5,000 cubic yards) makes a replacement cost-prohibitive All fish-bearing crossings along Canyon Creek Road should be improved to pass salmonids if major road work is ever scheduled for Canyon Creek Road.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #27: McKinney Gulch/Red Hill Road; Trinity River Ranking: # 43 = Low-Priority

Location: Road ID #415; County Map Sheet #7. USGS Quad: Junction City. T33N, R11W, Section 12. Lat/Long: $40^{\circ}43' 43.47''$ 123° 03' 43.64'' Milepost = 200' to Dutch Creek Rd.

Culvert Type: Circular, Plastic Corrugations: Smooth Dimensions: Diameter=3.5' Length: 61.3'

Slope: 6.51% Modifications: None. Rustline Height: N/A Average Active Channel Width: 7.2'

Fill Estimate: 381 cubic yards Overall condition: Good.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a three-year recurrence interval. Red Hill Road is overtopped on approximately a seven-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. The culvert's steep slope and outlet drop onto riprap are the crossing's features that create a migration barrier.

Additional Road Crossings: Downstream, none. Upstream, none within the limited fish-bearing stream reach.

Habitat: Quantity = approximately 700' of potential fish-bearing habitat. Quality = Poor. No formal CDFG or USFS habitat or fisheries surveys were available for McKinney Gulch. During the initial site survey on 5/10/01 no salmonids were observed in the channel adjacent to this crossing. The water temperature on 5/15/01 was cool = 12° C at 4:45 PM. It is doubtful in McKinney Gulch is actually a fish-bearing stream due to its small size and steep channel.

Preferred Treatment: Periodically inspect culvert for condition and performance. When crossing is due for replacement (or fails) replace with a properly-sized embedded SSP culvert or an open-bottom arch set on concrete footings. The minimal fisheries benefit of restoring access to McKinney Gulch makes this site a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog

Site ID #27: McKinney Gulch/Red Hill Road; Trinity River



Site ID #28: Oregon Gulch/Sky Ranch Road; Trinity River Ranking: #4 = High-Priority

Location: Road ID #412; County Map Sheet #7. USGS Quad: Junction City. T33N, R10W, Section 18. Lat/Long: $40^{\circ}43'$ 19.50" 123° 02' 24.00" Milepost = 0.5 miles.

Culvert Type: Box, Concrete Corrugations: Smooth concrete floor Dimensions: 5.4' H x 8.0W'

Length: 31.3' Slope: 1.98% Modifications: None. Rustline Height: N/A

Average Active Channel Width: 13.4' Fill Estimate: 172 cubic yards Overall condition: Fair, culvert floor is abraded and concrete is worn down.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a three-year recurrence interval. Sky Ranch Road is overtopped on approximately a three-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles.

Additional Road Crossings: Downstream, none. Upstream, USGS map indicates at least five crossings: two CalTrans-maintained crossings on Highway 299 on Oregon Gulch tributaries (\approx 3,500 and 1.4 miles from Sky Ranch Road) and three privately-maintained crossings (\approx 1.5, 1.7, and 2.2 miles from Sky Ranch Road). The status of these five crossings is unknown.

Habitat: Quantity = approximately 5.3 miles of potential fish-bearing habitat upstream of Sky Ranch Road (3.2 miles in mainstem and 2.1 miles within five tributaries). Quality = Fair. No formal CDFG or USFS habitat or fisheries surveys were available for Oregon Gulch. Channel appears aggraded and unstable. Riparian is comprised predominantly of hardwoods. During the initial site survey on 5/10/01 no salmonids were observed in the channel adjacent to this crossing. The water temperature on 5/14/01 was cool = 13° C at 11:30 AM. Although no formal fisheries or habitat surveys were available, there has been both adult steelhead and coho salmon observed in lower Oregon Gulch during the winters of 2000-01 and 2001-02. In February of 2002, several adult steelhead were observed leaping unsuccessfully at the culvert outlet (Everest, pers. com.).

Preferred Treatment: Replace with a properly sized open-bottom arch (such as a Conspan® arch) set on footings or a bridge. NOTE: an Oregon Gulch replacement is slated for construction during summer of 2003.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #29: Soldier Creek #1/Evans Bar Road; Trinity River Ranking: #11 = High-Priority

Location: Road ID #414; County Map Sheet #7. USGS Quad: Junction City. T33N, R10W, Section 29. Lat/Long: 40°41' 25.04" 123° 01' 40.86" Milepost = 0.4 miles to Dutch Creek Road.

Culvert Type: Circular, SSP Corrugations: 2-2/3" x 1/2" Dimensions: Diameter= 8.0' Length: 30.2'

Slope: 2.98% Modifications: Four railroad rail baffles. Rustline Height: 2.3'

Average Active Channel Width: 14.2' Fill Estimate: 380 cubic yards Overall condition: Good.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a five-year recurrence interval. Evans Bar Road is overtopped on approximately a seven-year storm flow.

Barrier Status: GREY: FishXing software estimated this crossing meets passage criteria for all species of adult salmonids on approximately 22% of migration flows and fails to meet the passage criteria for all age classes of juveniles. The culvert's perched outlet that spills over riprap is the main feature that inhibits fish passage.

Additional Road Crossings: Downstream, none appear on USGS map, however Solider Creek goes subsurface through extensive mine tailings near its confluence with the Trinity River. Upstream, county-maintained crossing at Dutch Creek Road ($\approx 2,400$ ' from Evans Bar Road) and a USFS-maintained crossing, a pipe-arch with a perched outlet and ineffective baffles ($\approx 7,600$ ' from Evans Bar Road).

Habitat: Quantity = approximately 2.1 miles of potential fish-bearing habitat upstream of Evans Bar Road. Quality = Good. Several habitat surveys were conducted by USFS personnel (7/72, 3/80, 5/80, and 7/83). Overall, habitat conditions were described as "good" with a dense riparian zone, numerous pools formed primarily by bedrock and boulders, and cool water temperatures. Soldier Creek was noted for supporting populations of steelhead in the lower reach and resident rainbow in the upper reach – no comments regarding the presence of coho salmon, however there is no reason they could not utilize the creek for spawning and rearing. An un-screened water diversion is noted about 1.5 miles up Soldier Creek is noted in the 1972 and 1980 surveys – current status in unknown. Aggraded mining deposits near mouth may limit access from Trinity River.



Preferred Treatment: Replace with a properly sized open-bottom arch (such as a Conspan® arch) set on footings or a bridge.

APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #30: Soldier Creek #2/Dutch Creek Road; Trinity River Ranking: #12 = High-Priority

Location: Road ID #413; County Map Sheet #7. USGS Quad: Junction City. T33N, R10W, Section 30. Lat/Long: 40°41' 25.29" 123° 02' 10.09" Milepost = 0.2 mile to Evans Bar Road.

Culvert Type: Circular, SSP Corrugations: 2-2/3" x ¹/₂" Dimensions: Diameter = 8.0' Length: 51.2'

Slope: 3.46% Modifications: Four railroad rail baffles. Rustline Height: 2.5'

Average Active Channel Width: 11.9' Fill Estimate: 474 cubic yards Overall condition: Good.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a five-year recurrence interval. Dutch Creek Road is overtopped on approximately a six-year storm flow.

Barrier Status: GREY: FishXing estimated that this crossing meets passage criteria for all species of adult salmonids on approximately 13% of range of migration flows and fails to meet passage on all flows for all age classes of juveniles.

Additional Road Crossings: Downstream, county crossing at Evans Bar Road (\approx 2,400' from Dutch Creek Road). Upstream, a USFS-maintained pipe-arch with a perched outlet and ineffective baffles (\approx 5,200' from Evans Bar Road).

Habitat: Quantity = approximately 1.7 miles of potential fish-bearing habitat upstream of Dutch Creek Road. Quality = Good. Several habitat surveys were conducted by USFS personnel (7/72, 3/80, 5/80, and 7/83). Overall, habitat conditions were described as "good" with a dense riparian zone, numerous pools formed primarily by bedrock and boulders, and cool water temperatures. Soldier Creek was noted for supporting populations of steelhead in the lower reach and resident rainbow in the upper reach – no comments regarding the presence of coho salmon, however there is no reason they could not utilize the creek for spawning and rearing. An un-screened water diversion is noted about 1.5 miles up Soldier Creek is noted in the 1972 and 1980 surveys – current status in unknown. Aggraded mining deposits near mouth may limit access from Trinity River – this situation should be assessed prior to improving passage at the three upstream road crossings.

Preferred Treatment: Replace with a properly sized open-bottom arch (such as a Conspan® arch) set on footings or a bridge.



APPENDIX B: Trinity County Culvert Catalog

Site ID #30: Soldier Creek #2/Dutch Creek Road; Trinity River



APPENDIX B: Trinity County Culvert Catalog

Site ID #31: Maple Creek/Dutch Creek Road; Dutch Creek; Trinity River Ranking: #49= Low-Priority

Location: Road ID #413; County Map Sheet #5. USGS Quad: Junction City. T32N, R10W, Section 5. Lat/Long: $40^{\circ}39^{\circ}51.70^{\circ}$ 123° 01' 58.67" Milepost = 6.8 miles.

Culvert Type: Circular, CSP Corrugations: 2-2/3" x 1/2" Dimensions: Diameter= 4.3' Length: 40.8'

Slope: 3.97% Modifications: Six railroad rail baffles. Rustline Height: 0.7'

Average Active Channel Width: 10.1' Fill Estimate: 432 cubic yards Overall condition: Fair, abraded.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a four-year recurrence interval. Dutch Creek Road is overtopped on approximately an 18-year storm flow.

Barrier Status: GREY: FishXing estimated that this crossing meets passage criteria for all species of adult salmonids on approximately 42% of the range3 of migration flows and fails to meet passage criteria all age classes of juveniles over the entire range of migration flows.

Additional Road Crossings: Downstream, two low-water fords are located on Dutch Creek below the county crossing on Maple Creek ($\approx 4,600$ ' and 1.3 miles from Maple Creek crossing). Upstream, none are present within the limited fish-bearing reach upstream of Dutch Creek Road.

Habitat: Quantity = approximately 2,700' of potential fish-bearing habitat upstream of Dutch Creek Road. Quality = Poor. USFS surveyed Maple Creek in 1974 and 1980. Both surveys described the habitat for fish as poor due to the lack of pools and suitable spawning areas. The channel was highly aggraded with fine sediment, which was attributed to past mining activities. During the initial site survey on 5/11/01 no fish were observed in the channel and approximately 100' downstream of Dutch Creek Road a debris jam was noted with a drop of nearly six feet. Water temperature was 12° C at 4:00PM on 5/11/01.

Preferred Treatment: Periodically inspect culvert for condition and performance. When crossing is due for replacement (or fails) replace with a properly-sized circular SSP pipe with downstream grade-control weirs. Lack of upstream fisheries benefit makes this site a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #32: Middleton Gulch/Deerlick Springs Road; Browns Creek; Trinity River

Ranking: #33 = Low-Priority

Location: Road ID #335; County Map Sheet #1. USGS Quad: Hoosimbim Mountain. T31N, R9W, Section 7. Lat/Long: $40^{\circ}32^{\circ}54.79^{\circ}$ 122° 55' 43.99" Milepost = 5.7 miles.

Culvert Type: Two Pipes, Circular, SSP **Corrugations:** 2-2/3" x $\frac{1}{2}$ " **Dimensions:** Diameters = 4.0"

Lengths: 20.4' Slopes: LB = 3.48%; RB = 2.06% Modifications: None.

Rustline Heights: LB = 3.0'; RB = 2.5' Average Active Channel Width: 8.8' Fill Estimate: 149 cubic yards

Overall condition: Poor, both pipes were rusted through.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a three-year recurrence interval. Deerlick Springs Road is overtopped on approximately a five-year storm flow.

Barrier Status: LB = **RED**: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. RB = GREY: FishXing estimated that this culvert meets passage criteria for all species of adult salmonids on approximately 30% of expected migration flows and fails to meet passage criteria for all age classes of juveniles over entire range of migration flows.

Additional Road Crossings: Downstream, none. Upstream, none within the limited fish-bearing reach.

Habitat: Quantity = approximately 1,800' of potential fish-bearing habitat. NOTE: an additional 3,500' of moderately-sloped channel is located above the limit of anadromy set at the steep (>10%) reach located at 1,800'. Quality = Fair. Although no formal CDFG or USFS habitat or fisheries surveys were located, numerous young-of-year and several 1+ salmonids were observed above and below Deerlick Springs Road during the initial site survey. The surveyors described the habitat as "fair to good" with numerous pools above and below the culvert. The water temperature was 14°C at 1:30PM on 6/6/01 (air temp = 27° C).

Preferred Treatment: Periodically inspect culvert for condition and performance. When crossing is due for replacement (or fails) replace with a properly-sized embedded circular or oval SSP pipe. Lack of upstream fisheries benefit makes this site a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #33: Spring Gulch/Deerlick Springs Road; Browns Creek; Trinity River Ranking: #35 = Low-Priority

Location: Road ID #335; County Map Sheet #1. USGS Quad: Hoosimbim Mountain. T31N, R10W, Section 13. Lat/Long: $40^{\circ}32'$ 34.32" 122° 56' 2.86" Milepost = 6.3 miles.

Culvert Type: Two Pipes, Circular, SSP Corrugations: 2-2/3" x 1/2" Dimensions: Diameters= 3.0'

Lengths: 20.4' Slopes: LB=2.35%; RB=3.19% Modifications: None.

Rustline Heights: Both pipes = 0.5' **Average Active Channel Width:** 4.9'

Fill Estimate: 91 cubic yards Overall condition: Poor, both pipes rusted through.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a four-year recurrence interval. Deerlick Springs Road is overtopped on approximately a nine-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. The steeply sloped concrete outlet apron is the crossing's main feature that creates a migration barrier. Also, there is inadequate depth below the apron for fish to complete a successful leap attempt onto the apron.

Additional Road Crossings: Downstream, none indicated on USGS topographic map. Upstream, none within the limited fish-bearing reach.

Habitat: Quantity = approximately 500' of potential fish-bearing habitat. Quality = Poor. No fisheries or habitat surveys were available for Spring Creek. The stream channel is small and steep, with relatively few suitable pools for rearing or riffles/pool tails for spawning. No fish were observed during the initial site visit on 6/6/01.

Preferred Treatment: Periodically inspect culvert for condition and performance. When crossing is due for replacement (or fails) replace with a properly-sized circular SSP pipe with downstream grade-control weirs. Lack of upstream fisheries benefit makes this site a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog

Site ID #33: Spring Gulch/Deerlick Springs Road; Browns Creek; Trinity River



APPENDIX B: Trinity County Culvert Catalog

Site ID #34: Barleyfield Creek/Reading Creek Road; Reading Creek; Trinity River

Ranking: #37 = Low-Priority

Location: Road ID #338; County Map Sheet #1. USGS Quad: Hoosimbim Mountain. T32N, R9W, Section 33. Lat/Long: $40^{\circ}34' 42.38'' 122^{\circ} 53' 6.28''$ Milepost = 6.5 miles.

Culvert Type: Circular, CSP Corrugations: 2-2/3" x 1/2" Dimensions: Diameter= 4.0' Length: 40.2'

Slope: 8.03% Modifications: None. Rustline Heights: 1.0' Average Active Channel Width: 3.4'

Fill Estimate: 242 cubic yards Overall condition: Good.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a three-year recurrence interval. Reading Creek Road is overtopped on approximately a five-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. The culvert's steep slope is the crossing's main feature that creates a migration barrier for salmonids.

Additional Road Crossings: Downstream, none. Upstream, none within the limited fish-bearing reach.

Habitat: Quantity = approximately 1,900' of potential fish-bearing habitat. Quality = Poor. No fisheries or habitat surveys were available for Barleyfield Creek. The stream channel is small and steep, with relatively few suitable pools for rearing or riffles/pool tails for spawning. No fish were observed during the initial site visit on 6/6/01.

Preferred Treatment: Periodically inspect culvert for condition and performance. When crossing is due for replacement (or fails) replace with a properly-sized circular SSP pipe with downstream grade-control weirs. Lack of upstream fisheries benefit makes this site a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #35: Little Browns Creek/Roundy Road; Weaver Creek; Trinity River Ranking: #2 = High-Priority

Location: Road ID #232; County Map Sheet #2. USGS Quad: Rush Creek Lakes. T34N, R9W, Section 28. Lat/Long: $40^{\circ}46' 40.70''$ 122° 53' 34'' Milepost = 0.1 miles to Highway 3.

Culvert Type: Three Pipes, Circular, SSP Corrugations: 2-2/3" x 1/2" Dimensions: Diameters= 4.0'

Lengths: LB = 50.6'; Middle = 49.8; RB = 50.6' Slopes: LB = 3.60%; Middle = 3.98%; RB = 3.48%

Modifications: None. Rustline Heights: All three pipes = 1.0' Average Active Channel Width: 3.4'

Fill Estimate: 482 cubic yards Overall condition: Abraded.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a six-year recurrence interval. Roundy Road is overtopped on approximately a 17-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. The extremely perched outlets of all three culverts is the crossing's main feature that creates a migration barrier.

Additional Road Crossings: Downstream, five stream crossings: CalTrans Highway 3 – fully embedded SSP (\approx 1.3 miles); crossing – ownership and status unknown (\approx 3.2 miles); county-maintained bridge on Little Browns Creek Road (5.5 miles); county-maintained bridge on Browns Mountain Road (\approx 7.3 miles); and CalTrans Highway 299 (\approx 7.6 miles). Upstream, USFS-maintained crossing (\approx 3,400').

Habitat: Quantity = approximately 3.0 miles of potential fish-bearing habitat upstream of Roundy Road. Quality = Fair to good. Lower 2.5 miles surveyed by CDFG in spring of 1964. USFS survey conducted in 1978 covered 10.5 miles of channel. Habitat was rated as "good" for steelhead, in 1978 three age classes were sampled throughout Little Browns Creek. During the initial site visit on 5/15/01, young-of-year steelhead were observed only in the outlet pool and water temperature was 13°C at 10:00AM. In 2000 and 2001 young-of-year coho were sampled in Little Browns Creek by CDFG's SRAMP program.

Preferred Treatment: Replace with a properly-sized circular SSP pipe with grade control weirs or a bridge. The large drop at the current crossing's outlet would require a series of grade-control weirs to minimize the potentially excessive headwall cutting of the upstream channel.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #36: Middle Weaver Creek/Oregon Street; Weaver Creek; Trinity River Ranking: #29 = Low-Priority

Location: Road ID #225; County Map Sheet #8. USGS Quad: Weaverville. T33N, R10W, Section 12. Lat/Long: $40^{\circ}43^{\circ}55.17^{\circ}$ 122° 56' 23.09" Milepost = 0.1 miles to Highway 299.

Culvert Type: Pipe Arch, SSP **Corrugations:** 6" X 2" **Dimensions:** Rise = 10.2'; Span = 16.3'

Length: 91.0' Slope: 1.91% Modifications: None. Rustline Height: 0.7'

Average Active Channel Width: 8.4' – however banks are artificially constricted by walls and levees.

Fill Estimate: 628 cubic yards Overall condition: Fair, culvert floor is abraded.

Sizing: Slightly undersized; HW/D = 1 on a storm flow with approximately a 47-year recurrence interval. Oregon Street is overtopped on approximately a 60-year storm flow.

Barrier Status: GREY: FishXing estimated that this crossing meets passage criteria for all species of adult salmonids on approximately 35% of the range of migration flows and on less than 10% of migration flows for all juveniles. Lack of depth was the crossing's main feature flagged by FishXing, in reality the window of passage is much higher than the conservative minimum depth requirement for adult and juvenile passage.

Additional Road Crossings: Downstream, three bridges cross mainstem Weaver Creek approximately 3,900', 4.5 miles, and 5.3 miles from Oregon Street. Upstream, bridge on Forest avenue (1,050'); on Sidney Gulch = Highway 299 culvert ($\approx 2,400$ ') and County-maintained culvert on Memorial Drive ($\approx 3,000$ '); on Garden Gulch = Highway 299 culvert ($\approx 1,500$ ') and County-maintained culvert on Easter Avenue ($\approx 2,900$ ').

Habitat: Quantity = approximately 9.8 miles of potential fish-bearing habitat in several tributaries, including Sidney Gulch and Garden Gulch. Quality = overall, habitat is fair but highly variable ranging from a concrete storm ditch through Weaverville to upstream reaches with dense riparian areas, pools for rearing, and suitable spawning gravels. During initial site survey on 5/24/01, young-of-year and 1+ salmonids were observed in large numbers in pools and riffles above and below the crossing.

Preferred Treatment: None recommended at this point. Periodically inspect culvert for condition and performance. When crossing is due for replacement (or fails) replace with a properly-sized open-bottom arch set on concrete footings or a bridge.



APPENDIX B: Trinity County Culvert Catalog


APPENDIX B: Trinity County Culvert Catalog

Site ID #37: Sidney Gulch/Memorial Drive; Middle Weaver Creek; Weaver Creek; Trinity River Ranking: #6 = High-Priority

Location: Road ID #WVC40; County Map Sheet #8. USGS Quad: Weaverville. T33N, R10W, Section 12. Lat/Long: $40^{\circ}44' \cdot 11.22'' \cdot 122^{\circ} \cdot 56' \cdot 46.75''$ Milepost = 0.0 miles.

Culvert Type: Circular, SSP **Corrugations:** 2-2/3" x ¹/₂" **Dimensions:** Diameter= 6.8' **Length:** 87.7' **Slope:** 1.69% **Modifications:** None

Rustline Height: 0.7' Average Active Channel Width: 7.1' Fill Estimate: 766 cubic yards

Overall condition: Fair, bottom had rusted through and was repaired by pouring a concrete floor.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately an eight-year recurrence interval. Memorial Drive is overtopped on approximately an 18-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. The culvert's nearly 2% slope over a smooth concrete floor combined with a length of nearly 90 feet creates excessive velocities for successful upstream passage. The culvert has concrete aprons on both sides which compounds the existing passage problems.

Additional Road Crossings: Downstream, five crossings: culvert under Highway 299 ($\approx 600^{\circ}$), Countymaintained bridge at Forest Avenue, culvert at (Site #36) at Oregon Street ($\approx 1,900^{\circ}$) and three bridges cross Weaver Creek approximately 1.4 miles, 4.9 miles and 5.7 miles from Memorial Drive. Upstream, a USFSmaintained crossing approximately 1.2 miles from Memorial Drive.

Habitat: Quantity = approximately 2.1 miles of potential fish-bearing habitat upstream of Memorial Drive. Quality = overall, habitat is fair but highly variable ranging from a concrete storm ditch through Weaverville to upstream reaches with riparian areas, pools for rearing, and suitable spawning gravels. No formal CDFG or USFS habitat surveys were available for Sidney Gulch. On 12/13/01, a spawning survey documented 14 coho salmon redds in Sidney Gulch between Highway 299 and USFS road #33N42 – six redds were above Memorial Drive. During initial site survey on 5/24/01, no fish were observed above and below the crossing.

Preferred Treatment: Replace with a properly sized open-bottom arch (such as a Conspan® arch) set on footings or a bridge.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #38: Garden Gulch/Easter Avenue; Middle Weaver Creek; Weaver Creek; Trinity River Ranking: #5 = High-Priority

Location: Road ID #WVC47; County Map Sheet #8. USGS Quad: Weaverville. T33N, R9W, Section 7. Lat/Long: $40^{\circ}44^{\circ}$ 16.50" 122° 56' 21.96" Milepost = 0.0 miles.

Culvert Type: Circular, SSP Corrugations: 2-2/3" x ¹/₂" Dimensions: Diameter= 6.0' Length: 60.6'

Slope: 3.91% Modifications: Smooth steel plates on bottom of culvert extends 2' up walls of entire pipe.

Rustline Height: None present Average Active Channel Width: 5.8' Fill Estimate: 513 cubic yards

Overall condition: Fair, floor is abraded and rusted through in several areas underneath the steel plates.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a four-year recurrence interval. Easter Avenue is overtopped on approximately a 10-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. The steep slope and steel plates within the culvert were the crossing's main feature that created a migration barrier.

Additional Road Crossings: Downstream, culvert underneath Highway 299 (\approx 1,300' from Easter Ave.) – is undersized, in poor condition, and is a migration barrier. Upstream, the USGS map indicates a crossing (\approx 2,400' from Easter Ave.) on an unpaved extension of Easter Ave. that is not on the Trinity Co. Road map.

Habitat: Quantity = approximately 2.3 miles of potential fish-bearing habitat upstream of Easter Avenue. Quality = Fair, habitat improves in the upper reaches above Weaverville. Downstream of Highway 299 the creek flows through a concrete channel for approximately 500' before it's confluence with Sidney Gulch's concrete channel. No formal CDFG or USFS habitat or fisheries surveys were available for Garden Gulch, however juvenile coho and steelhead have been captured by electrofishing in the lower 500' reach (Lancaster, pers. com.). During the initial site visit on 5/24/01, numerous juvenile fish were observed above and below the Easter Avenue culvert – these were most likely speckled dace.

Preferred Treatment: Replace with a properly sized open-bottom arch (such as a Conspan® arch) set on footings or a bridge. However, it is important that CalTrans address their barrier at Highway 299.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #39: East Branch Creek/East Weaver Creek Road; East Weaver Creek; Weaver Creek; Trinity River

Ranking: #7 = High-Priority

Location: Road ID #228; County Map Sheet #2. USGS Quad: Rush Creek Lakes. T34N, R9W, Section 29. Lat/Long: $40^{\circ}46'$ 14.36" 122° 55' 3.84" Milepost = 1.4 miles to Highway 3.

Culvert Type: Circular, SSP Corrugations: 2-2/3" x 1/2" Dimensions: Diameter = 8.3' Length: 60.4'

Slope: 5.08% Modifications: None. Rustline Height: 2.0' Average Active Channel Width: 14.1'

Fill Estimate: 592 cubic yards Overall condition: Fair, culvert floor is abraded and rusted.

Sizing: Undersized; HW/D = 1 on a storm flow with approximately a 10-year recurrence interval. East Weaver Creek Road is overtopped on approximately a 10-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. The steep slope through the culvert and the concrete apron are this crossing's main features that create a migration barrier.

Additional Road Crossings: Downstream, USGS map indicates six crossings: a bridge at Meadow Road (\approx 2,000'), Highway 3 bridge (\approx 1.6 miles), two bridges of unknown ownership (\approx 2.3 and 2.6 miles), bridge at Browns Ranch Road (\approx 2.9 miles), and Highway 299 bridge (\approx 3.8 miles). Upstream, USGS map indicates a crossing right at the upstream limit of anadromy (ownership is unknown).

Habitat: Quantity = approximately 1.2 miles of potential fish-bearing habitat upstream of East Weaver Creek Road. Quality = Fair. No formal CDFG or USFS habitat or fisheries surveys were available for East Branch, however East Weaver Creek supports steelhead and possibly runs of coho salmon in some years. Boberg and Kenyon (1979) listed East Branch Creek as supporting resident coastal rainbow trout. During the initial site visit on 5/15/01 no fish were observed and water temperature was 9°C at 8:30 AM.

Preferred Treatment: Replace with a properly sized open-bottom arch (such as a Conspan® arch) set on footings or a bridge.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #40: Trinity House Gulch/Browns Mountain Road; Trinity River Ranking: #47 = Low-Priority

Location: Road ID #222; County Map Sheet #1. USGS Quad: Lewiston. T33N, R9W, Section 22. Lat/Long: 40°42' 13.50" 122° 52' 10.48" Milepost = 4.3 miles to Little Browns Creek Road.

Culvert Type: Circular, CSP Corrugations: 2-2/3" x ¹/₂" Dimensions: Diameter= 6.2' Length: 39.8'

Slope: 11.41% Modifications: None. Rustline Height: 0.8' Average Active Channel Width: 7.0'

Fill Estimate: 180 cubic yards Overall condition: Good.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a six-year recurrence interval. Browns Mountain Road is overtopped on approximately a seven-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. The culvert's steep slope and drop over riprap at the outlet are this crossing's main features that create a migration barrier.

Additional Road Crossings: Downstream, none. Upstream, none within the limited fish-bearing stream reach.

Habitat: Quantity = approximately 600' of potential fish-bearing habitat upstream of Brown Mountain Road. Quality = Poor. No formal CDFG or USFS habitat or fisheries surveys were available for Trinity House Gulch. The channel upstream of Browns Mountain Road exceeds 10% less than a thousand feet upstream of Browns Mountain Road. During the initial site visit on 5/16/01 no fish were observed.



Site ID #40: Trinity House Gulch/Browns Mountain Road; Trinity River



APPENDIX B: Trinity County Culvert Catalog

Site ID #41: Alder Gulch/Goose Ranch Road; Trinity River Ranking: # 19 = Low-Priority

Location: Road ID #215; County Map Sheet #1. USGS Quad: Lewiston. T33N, R8W, Section 19. Lat/Long: 40°42' 17.50" 122° 48' 48.16" Milepost = 0.2 miles to Viola Lane.

Culvert Type: Circular, SSP Corrugations: 2-2/3" x 1/2" Dimensions: Diameter= 6.0' Length: 52.7'

Slope: 4.72% Modifications: None. Rustline Height: 1.0' Average Active Channel Width: 8.2'

Fill Estimate: 299 cubic yards Overall condition: Good.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a four-year recurrence interval. Goose Ranch Road is overtopped on approximately a four-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. The culvert's steep slope and perched outlet are this crossing's main features that create a migration barrier.

Additional Road Crossings: Downstream, none. Upstream, none within the fish-bearing stream reach – the channel splits and has two smaller channels flowing under Lewiston Road ($\approx 1,700$ ' from Goose Ranch Road); however these channels were considered too small to support anadromous fishes.

Habitat: Quantity = approximately 2,800' of potential fish-bearing habitat upstream of Goose Ranch Road. Quality = Poor. No formal CDFG or USFS habitat or fisheries surveys were available for Alder Gulch. The channel upstream of Goose Ranch Road splits into multiple small channels, several which appear to function more as storm runoff ditches. The two channels crossed by Lewiston Road were classified as non-fish bearing due to their small size. During the initial site visit on 5/15/01 no fish were observed on either side of Goose Ranch Road and the water temperature was 13° C at 3:00 PM.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #42: Deadwood Creek/Hatchery Road; Trinity River Ranking: #3 = High-Priority

Location: Road ID #211; County Map Sheet #1. USGS Quad: Lewiston. T33N, R8W, Section 17. Lat/Long: 40°43' 2.18" 122° 48' 02" Milepost = 75 feet.

Culvert Type: Circular, CSP Corrugations: 2-2/3" x 1/2" Dimensions: Diameter= 8.1' Length: 121.0'

Slope: 1.45% Modifications: None. Rustline Height: 1.0' Average Active Channel Width: 8.2'

Fill Estimate: 2,849 cubic yards Overall condition: Fair, culvert floor is abraded.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a three-year recurrence interval. Hatchery Road is overtopped on approximately a six-year storm flow.

Barrier Status: GREY: the FishXing software estimated that this crossing meets passage criteria for all species of adult salmonids over approximately 12% of the range of migration flows and on less than 5% of migration flows for all age classes of juveniles.

Additional Road Crossings: Downstream, none. Upstream, no crossings over Deadwood Creek – a BLM(?) road parallels the channel for most of its length.

Habitat: Quantity = approximately 2.0 miles of potential anadromous fish-bearing habitat upstream of Hatchery Road. A 10-12 foot high falls is the upper limit. Approximately 3.8 miles of resident trout habitat is located above the falls. Quality = Fair to good. Boberg and Kenyon (1979) list Deadwood Creek as supporting runs of steelhead and resident rainbow trout; however because of the creek's proximity to the Lewiston Hatchery and Dam it is likely utilized by coho salmon and chinook salmon too. Deadwood Creek was surveyed by USFS in 1978 and habitat was described as heavily impacted by mining, logging, and erosion from road along stream corridor. The 1978 survey stated that although habitat was channelized and embedded with fines, Deadwood Creek still supported "excellent anadromous and resident fisheries". During initial site visit on 5/15/01 numerous young-of-year and 1+ salmonids were observed in the outlet pool and several were observed upstream of Hatchery Road. Water temperature was 11°C at 12:30 PM.

Preferred Treatment: the best long-term solution is to replace with a properly sized open-bottom arch (such as a Conspan® arch) set on footings or a bridge. However, the large amount of road fill makes a full replacement expensive. The County should consider attempting to backwater the culvert with a series of downstream weirs.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #43: Olsen Creek/Mad River Road; Mad River Ranking: #40 = Low-Priority

Location: Road ID #501; County Map Sheet #5. USGS Quad: Sportshaven. T1N, R6E, Section 34. Lat/Long: 40°25' 29.05" 123° 28' 37.62" Milepost = 1.7 miles.

Culvert Type: Box, Concrete with open arch, SSP top.

Corrugations: Very rough – culvert floor embedded with cobbles and small boulders.

Dimensions: Rise= 5.5'; Span= 6.3' Length: 35.2' Slope: 1.85% Modifications: None.

Rustline Height: Not applicable Average Active Channel Width: 5.4' Fill Estimate: 242 cubic yards

Overall condition: Fair, sides were abraded.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a six-year recurrence interval. Mad River Road is overtopped on approximately a 13-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. The drop over rip rap at the outlet was the crossing's main feature that may inhibit fish migration.

Additional Road Crossings: Downstream, none. Upstream, the USGS map indicates a private road crossing approximately 1,000' from Mad River Road.

Habitat: Quantity = approximately 2,400' of potential fish-bearing habitat upstream of Mad River Road. Quality = Poor. No habitat or fisheries information was available for Olsen Creek. During the initial site visit on 6/15/01 no fish were observed in Olsen Creek, the creek was nearly dry, and the water temperature was 21° C at 5:30 PM.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #44: Cherry Glade Creek/Mad River Road; Mad River Ranking: #39 = Low-Priority

Location: Road ID #501; County Map Sheet #5. USGS Quad: Sportshaven. T1N, R6E, Section 35. Lat/Long: 40°24' 54.53" 123° 28' 18.82" Milepost = 2.4 miles.

Culvert Type: Circular, SSP Corrugations: smooth steel plates on culvert floor Dimensions: Diameter= 5.5'

Length: 61.5' Slope: 4.23% Modifications: Steel plate on culvert bottom extends 2' up from floor.

Rustline Height: Not apparent, was covered by steel plates Average Active Channel Width: 5.4'

Fill Estimate: 499 cubic yards **Overall condition:** Fair, culvert floor was abraded and rusted underneath steel plates.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a six-year recurrence interval. Mad River Road is overtopped on approximately a 10-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. The culvert's steep slope and smooth bottom are this crossing's main features that create a migration barrier.

Additional Road Crossings: Downstream, none. Upstream, the USGS map indicates a crossing approximately 1,100' from Mad River Road – ownership and status of this crossing were unknown.

Habitat: Quantity = approximately 2,500' of potential fish-bearing habitat upstream of Mad River Road. Quality = Poor. No habitat or fisheries information was available for Olsen Creek. During the initial site visit on 6/15/01 no fish were observed in Olsen Creek and the creek was nearly dry. The channel is narrow and steepened quickly above the Mad River Road crossing.



APPENDIX B: Trinity County Culvert Catalog

Site ID #44: Cherry Glade Creek/Mad River Road; Mad River



APPENDIX B: Trinity County Culvert Catalog

Site ID #45: Unnamed Tributary/Mad River Road; Mad River Ranking: #50 = Low-Priority

Location: Road ID #501; County Map Sheet #5. USGS Quad: Sportshaven. T1S, R6E, Section 2. Lat/Long: 40°24' 3.58" 123° 27' 30.80" Milepost = 4.2 miles.

Culvert Type: Box, Concrete with open arch, CSP top. Corrugations: Smooth concrete

Dimensions: Rise = 4.2'; Span = 6.85' Length: 35.3' Slope: 2.72% Modifications: None.

Rustline Height: Not applicable with concrete walls. Average Active Channel Width: 5.4'

Fill Estimate: 188 cubic yards Overall condition: Fair, concrete was abraded and culvert floor was undercut on downstream end.

Sizing: Slightly undersized; HW/D = 1 on a storm flow with approximately a 37-year recurrence interval. Mad River Road is overtopped on more than a 250-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. The culvert's moderate slope, smooth floor, and perched outlet were this crossing's main features creating a migration barrier.

Additional Road Crossings: Downstream, none. Upstream, none.

Habitat: Quantity = approximately 700' of potential fish-bearing habitat upstream of Mad River Road. Quality = Poor. No habitat or fisheries information was available for this un-named tributary. During the initial site visit on 6/15/01 no fish were observed in this un-named tributary and the creek was dry. The channel is narrow and steepened quickly above the Mad River Road crossing.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #46: Black Lassic Creek/Van Duzen Road; Van Duzen River; Eel River Ranking: #52 = Low-Priority

Location: Road ID #511; County Map Sheet #6. USGS Quad: Ruth Lake. T1S, R6E, Section 27. Lat/Long: 40°21' 2.93" 123°29' 3.84" Milepost = 9.6 miles.

Culvert Type: Circular, SSP Corrugations: 6" x 2" Dimensions: Diameter= 13' Length: 142.5'

Slope: 6.08%

Modifications: Twenty steel plates on bottom of culvert. They are 0.6' feet wide, spaced 0.2' apart, extend 4.8' up the sides of the pipe, and run the entire length of the culvert.

Rustline Height: Not apparent with the steel plates. Average Active Channel Width: 8.8'

Fill Estimate: 3,611 cubic yards Overall condition: Good.

Sizing: Properly sized; HW/D = 1 on a storm flow with approximately a 243-year recurrence interval. Van Duzen Road is overtopped on more than a 250-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. The culvert's steep slope, steel-plated floor, and outlet drop onto rip rap are this crossing's features that create a migration barrier.

Additional Road Crossings: Downstream, none. Upstream, none within the limited fish-bearing stream reach.

Habitat: Quantity = approximately 800' of potential fish-bearing habitat upstream of the Van Duzen Road. Quality = Poor. No formal habitat or fisheries information was available for Black Lassic Creek. Boberg and Kenyon (1979) list Black Lassic as supporting resident rainbow trout. During the initial site visit on 6/15/01 no fish were observed and the water temperature was 13° C at 2:45 PM. The channel is narrow and steepened quickly above the Van Duzen Road crossing.

Preferred Treatment: Periodically inspect culvert for condition and performance. Lack of upstream fisheries benefit and the high cost of any improvements makes this site a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #47: Red Lassic Creek/Van Duzen Road; Van Duzen River; Eel River Ranking: #46 = Low-Priority

Location: Road ID #511; County Map Sheet #6. USGS Quad: Ruth Lake. T1S, R6E, Section 27. Lat/Long: 40°20' 34.70" 123°28' 33.42" Milepost = 10.4 miles.

Culvert Type: Circular, SSP Corrugations: 6" x 2" Dimensions: Diameter= 12' Length: 212.1'

Slope: 3.43% Modifications: Storm drain cut through top, 5' in diameter, and 18.6' from inlet.

Rustline Height: 0.3' Average Active Channel Width: 9.3' Fill Estimate: 10,095 cubic yards

Overall condition: Poor, culvert floor was rusted through.

Sizing: Properly sized; HW/D = 1 on a storm flow with approximately a 205-year recurrence interval. Van Duzen Road is overtopped on more than a 250-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. The culvert's moderately steep slope and the outlet drop over bedrock are this crossing's main features which create a migration barrier.

Additional Road Crossings: Downstream, none. Upstream, the USGS map indicates no crossings within the fish-bearing stream reach.

Habitat: Quantity = approximately 2,300' of potential fish-bearing habitat upstream of the Van Duzen Road. Quality = Poor. No formal habitat or fisheries information was available for Red Lassic Creek. During the initial site visit on 6/15/01 several 1+ trout were observed above the culvert and the water temperature was 10° C at 11:30 AM. The channel is narrow and steepened fairly quickly above the Van Duzen Road crossing.

Preferred Treatment: Periodically inspect culvert for condition and performance. Lack of upstream fisheries benefit and the high cost of any improvements makes this site a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #48: Mud Creek/Alder Point Bluff Road; South Dobbyn Creek; Dobbyn Creek; Eel River

Ranking: #35 = Low-Priority

Location: Road ID #516; County Map Sheet #6. USGS Quad: Alder Point. T3S, R6E, Section 17. Lat/Long: $40^{\circ}12' 11.88'' 123^{\circ} 31' 1.06''$ Milepost = 4.2 miles.

Culvert Type: Pipe Arch, SSP Corrugations: Culvert floor is smooth steel plates

Dimensions: Rise= 11.5'; Span= 19' Length: 67.0' Slope: 2.94%

Modifications: Smooth steel plates on the bottom of the culvert, probably to cover rust holes. The plates are being pried up.

Rustline Height: 3.3' Average Active Channel Width: 12.4' Fill Estimate: 1,122 cubic yards

Overall condition: Poor, culvert floor is rusted through and then covered with steel plates.

Sizing: Undersized; HW/D = 1 on a storm flow with approximately a 16-year recurrence interval. Alder Point Bluff Road is overtopped on approximately a 198-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. A lack of depth and the large drop over rip rap at the outlet are this crossing's main features which create a migration barrier.

Additional Road Crossings: Downstream, none. Upstream, the USGS map indicates none within the limited fish-bearing stream reach.

Habitat: Quantity = less than 500' of potential fish-bearing habitat upstream of Alder Point Bluff Road. Quality = Poor. No formal habitat or fisheries information was available for Red Lassic Creek. During the initial site visit on 6/14/01 no were observed and the water temperature was 16° C at 5:30 PM. The channel is narrow and steepened fairly quickly above the Alder Point Bluff Road crossing.

Preferred Treatment: Periodically inspect culvert for condition and performance. When crossing is due for replacement (or fails) replace with an embedded properly-sized circular SSP pipe, an open-bottom arch set on concrete footings, or a bridge. Lack of upstream fisheries benefit makes this site a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #49: Burgess Creek/Burgess Ranch Road; Hembry Creek; South Dobbyn Creek; Dobbyn Creek; Eel River

Ranking: #41 = Low-Priority

Location: Road ID #517; County Map Sheet #6. USGS Quad: Zenia. T3S, R6E, Section 22. Lat/Long: $40^{\circ}11'$ 24.27" 123° 29' 14.59" Milepost = 0.1 miles.

Culvert Type: Circular, SSP Corrugations: 2-2/3" x ¹/₂" Dimensions: Diameter = 8.0' Length: 50.8'

Slope: 0.77% inlet to break in slope; 22.10% from break in slope to outlet. Modifications: None.

Rustline Height: 1.6' Average Active Channel Width: 8.4' Fill Estimate: 445 cubic yards

Overall condition: Fair, culvert floor was abraded.

Sizing: Undersized; HW/D = 1 on a storm flow with approximately an 11-year recurrence interval. Burgess Ranch Road is overtopped on approximately a 23-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles.

Additional Road Crossings: Downstream, none. Upstream, none.

Habitat: Quantity = approximately 1,100' of potential fish-bearing habitat upstream of Burgess Ranch Road. Quality = Fair to poor. No formal habitat or fisheries information was available for Red Lassic Creek. During the initial site visit on 6/14/01 no were observed and the water temperature was 14° C at 4:00 PM. The channel is narrow and steepened fairly quickly above the Alder Point Bluff Road crossing. Due to the steep channel downstream of Burgess Ranch Road it is doubtful that steelhead could even migrate up to this crossing.

Preferred Treatment: Periodically inspect culvert for condition and performance. When crossing is due for replacement (or fails) replace with an embedded properly-sized circular SSP pipe or an open-bottom arch set on concrete footings. Lack of upstream fisheries benefit makes this site a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog

Site ID #49: Burgess Creek/Burgess Ranch Road; Hembry Creek; South Dobbyn Creek; Dobbyn Creek; Eel River



APPENDIX B: Trinity County Culvert Catalog

Site ID #50: Wilson Creek/Zenia Lake Mountain Road; North Fork Eel River; Eel River

Ranking: #28 = Low-Priority

Location: Road ID #503; County Map Sheet #6. USGS Quad: Lake Mountain. T5S, R7E, Section 21. Lat/Long: 40°00' 15.97" 123° 23' 21.58" Milepost =20.2 miles.

Culvert Type: Pipe Arch, SSP **Corrugations:** Culvert floor has smooth steel plates and walls have 6" x 2" corrugations

Dimensions: Rise= 6.4'; Span= 10.7' **Length:** 34.4' **Slope:** 5.29% **Modifications:** Steel plates extend 1.7' up culvert walls.

Rustline Height: None was apparent due to steel plates. Average Active Channel Width: 9.3'

Fill Estimate: 466 cubic yards Overall condition: Good.

Sizing: Extremely undersized; HW/D = 1 on a storm flow with approximately a six-year recurrence interval. Zenia Lake Mountain Road is overtopped on approximately a 71-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles.

Additional Road Crossings: Downstream, none. Upstream, USGS map indicates no crossings within the fishbearing stream reach.

Habitat: Quantity = approximately 7,200' of potential fish-bearing habitat upstream of Zenia Mountain Road. Quality = Poor. No formal habitat or fisheries information was available for Wilson Creek. During the initial site visit on 6/14/01 no were observed and the water temperature was 11° C at 11:30 AM. Due to the steep channel downstream of Zenia Mountain Road it is doubtful that steelhead could even migrate up to this crossing.

Preferred Treatment: Periodically inspect culvert for condition and performance. When crossing is due for replacement (or fails) replace with an embedded properly-sized circular SSP pipe or an open-bottom arch set on concrete footings. Lack of knowledge of upstream fisheries benefit and steep channel below the culvert makes this site a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog



APPENDIX B: Trinity County Culvert Catalog

Site ID #51: Panther Creek /Ruth Zenia Road; Bar Creek; West Fork Eel River; North Fork Eel River; Eel River

Ranking: #45 = Low-Priority

Location: Road ID #502; County Map Sheet #6. USGS Quad: Zenia. T2S, R6E, Section 36. Lat/Long: $40^{\circ}14'$ 35.50" $123^{\circ}27'6.06$ " Milepost = 17.0 miles.

Culvert Type: Circular, SSP Corrugations: 6" x 2" Dimensions: Diameter= 10' Length: 100.7'

Slope: 4.41% Modifications: None. Rustline Height: 2.8' Average Active Channel Width: 12.8'

Fill Estimate: 2,434 cubic yards Overall condition: Good.

Sizing: Undersized; HW/D = 1 on a storm flow with approximately a 28-year recurrence interval. Ruth Zenia Road is overtopped on more than a 250-year storm flow.

Barrier Status: RED: the Green-Gray-Red filter determined this crossing fails to meet passage criteria for all species of adult salmonids and all age classes of juveniles. The culvert's steep slope and perched outlet are this crossing's main features that create a migration barrier.

Additional Road Crossings: Downstream, none. Upstream, none within the limited fish-bearing stream reach.

Habitat: Quantity = approximately 2,600' of potential fish-bearing habitat upstream of the Ruth-Zenia Road. Quality = Poor. No formal habitat or fisheries information was available for Panther Creek. During the initial site visit on 6/15/01 no were observed and the water temperature was 9°C at 8:30 AM. Due to the steep channel downstream of Ruth-Zenia Road it is doubtful that steelhead could even migrate up to this crossing.

Preferred Treatment: Periodically inspect culvert for condition and performance. When crossing is due for replacement (or fails) replace with a properly-sized circular or arch SSP pipe. A series of grade control weirs is required to raise the outlet pool elevation – presence of bedrock may limit excavating down prior to installing the new culvert. Lack of knowledge of upstream fisheries benefit and steep channel below the culvert makes this site a poor candidate for replacement with restoration funds.



APPENDIX B: Trinity County Culvert Catalog

Site ID #51: Panther Creek /Ruth Zenia Road; Bar Creek; West Fork Eel River; North Fork Eel River; Eel River

