

Appendix E.

Information on selected culverts

CROSSING CL003

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: Clear Ck.
 Latitude: 45.1441781312 Longitude: -122.2971133494
 Ownership: USA

Road: unknown
 Elevation: 2842 ft
 Survey date: 06/11/2002

Crossing Description

Type: round culvert
 Condition: unknown
 Diameter: 24.0 in
 Length: 41.3 ft
 Crossing slope: 5.5 %
 Avg. embedded: no material
 Inlet design: non-mitered
 Backwater drop: +2.2 ft
 Inlet elev: +0.4 ft
 Avg. fill height: 7.0 ft
 Road width: 20.0 ft
 Road armor: cobble



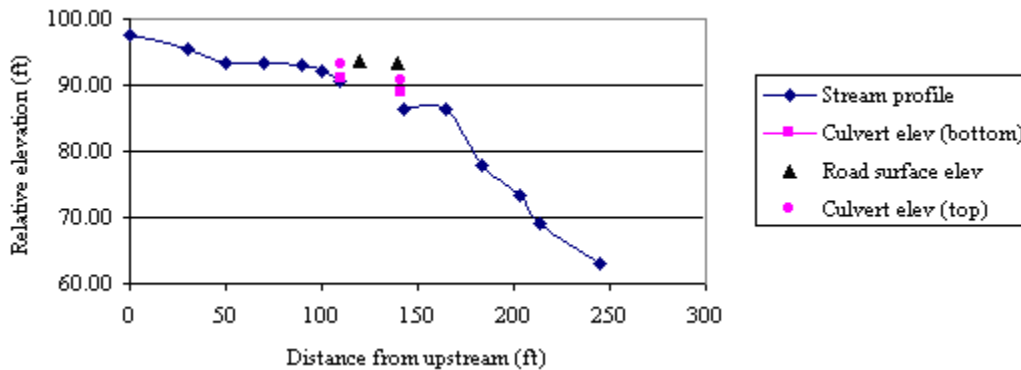
Habitat Description

Channel habitat type: Very steep headwater
 Avg. channel slope: 12.6%
 Distance from Clackamas R.: 30.3 miles
 Dominant channel substrate: boulder - cobble

Catchment acreage: 212.0
 Avg. bankfull width: 16.6 ft
 Upstream fish-bearing length: 1.2 miles

Comments: No bedrock, poorly implemented overflow dip.

Profile



Prioritization and Cost Information

Fish passage: no	Habitat priority: 41	Habitat and cost priority: 66
Fix solution: Open slab	Span: 25.0 ft	Material: concrete
Design \$5,000	Materials \$129,800	Install \$22,600
	Contingencies \$47,220	Total \$204,620.00

CROSSING CL006

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Clear Ck. Road: unknown
 Latitude: 45.1474873652 Longitude: -122.2787532469 Elevation: 2566 ft
 Ownership: USA Survey date: 06/11/2002

Crossing Description

Type: round culvert
 Condition: +5.0 years left
 Diameter: 31.0 in
 Length: 75.0 ft
 Crossing slope: 1.8 %
 Avg. embedded: no material
 Inlet design: non-mitered
 Backwater drop: + 3.2 ft
 Inlet elev: -0.6 ft
 Avg. fill height: 16.4 ft
 Road width: 21.0 ft



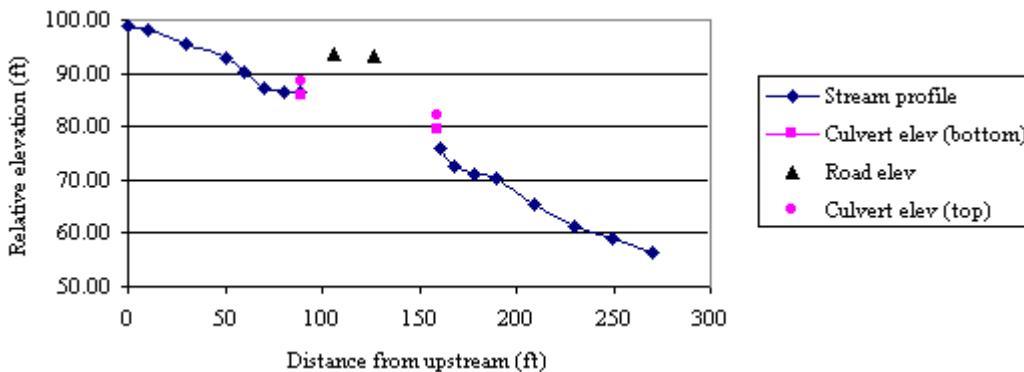
Habitat Description

Channel habitat type: very steep headwater
 Catchment acreage: 215
 Avg. channel slope: 8.2%
 Avg. bankfull width: 12.5 ft
 Dist from Clackamas R.: 29.9 miles
 Upstream fish-bearing length: 1691.6 ft
 Dominant channel substrate: boulder - cobble



Comments: A 40 ft waterfall 250 ft upstream of inlet. *Solution* - Culvert had marginal jump + slope plus length over 50 ft. 15 ft wide with dirt piled on vs. bridge 60 ft in long.

Profile



Prioritization and Cost Information

Fish passage: no	Habitat priority: 69	Habitat and cost priority: 76
Fix solution: Open slab	Span: 20.0 ft	Material: concrete
Design \$5,000	Materials \$94,800	Install \$22,600
Contingencies \$35,370	Total \$157,770.00	

CROSSING CL007

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: Clear Ck.
 Latitude: 45.1475040715 Longitude: -122.2950909717
 Ownership: USA

Road: USFS 45
 Elevation: 2582 ft
 Survey date: 06/11/2002

Crossing Description

Type: round culvert
 Condition: +10.0 years left
 Diameter: 55.0 in
 Length: 81.1 ft
 Crossing slope: 9.4 %
 Avg. embedded: no material
 Inlet design: non-mitered
 Backwater drop: + 1.4 ft
 Inlet elev: +0.1 ft
 Avg. fill height: 16.8 ft
 Road width: 21.0 ft



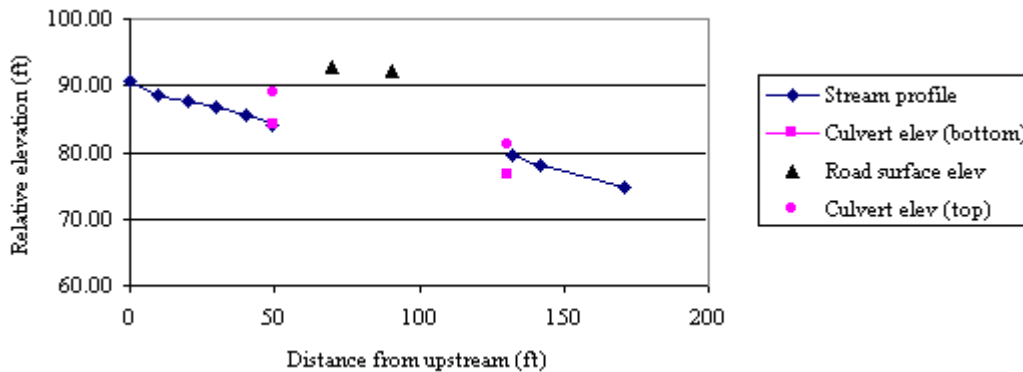
Habitat Description

Channel habitat type: Steep narrow valley
 Avg. channel slope: 6.6%
 Distance from Clackamas R.: 30.0 miles
 Dominant channel substrate: boulder

Catchment acreage: 499.0
 Avg. bankfull width: 12.0 ft
 Upstream fish-bearing length: 2.0 miles

Comments: 20 ft waterfall downstream 40 ft. Irregular bedrock showing. Upstream profile ends at bedrock sill.

Profile



Prioritization and Cost Information

Fish passage: no	Habitat priority: 35	Habitat and cost priority: 53
Fix solution: Open slab	Span: 20.0 ft	Material: concrete
Design \$5,000	Materials \$94,800	Install \$22,600
Contingencies \$35,370		Total \$157,770.00

CROSSING CL016

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: Little Clear Ck.
 Latitude: 45.1759829726 Longitude: -122.3250458985
 Ownership: Private

Road: off Elwood
 Elevation: 1523 ft
 Survey date: 06/13/2002

Crossing Description

Type: round culvert
 Condition: +20.0 years left
 Diameter: 54.0 in
 Length: 51.3 ft
 Crossing slope: 4.4 %
 Avg. embedded: no material
 Inlet design: mitered
 Backwater drop: +1.5 ft
 Inlet elev: -1.3 ft
 Avg. fill height: 13.1 ft
 Road width: 15.1 ft
 Road armor: boulder / cobble

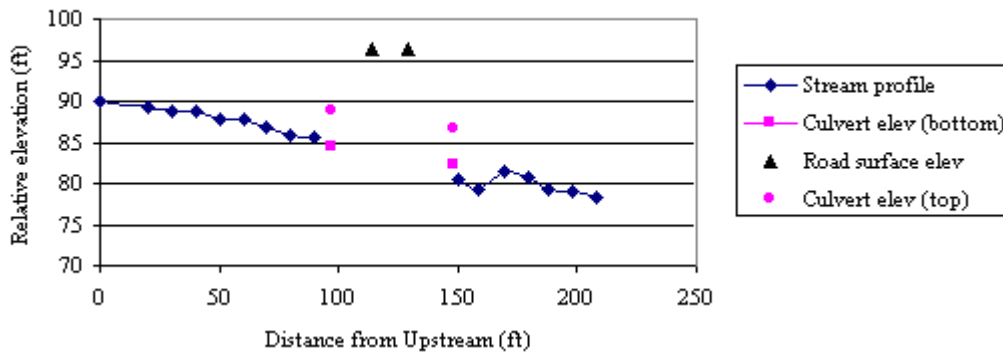


Habitat Description

Channel habitat type: moderate gradient, moderately confined
 Catchment acreage: 1,407
 Avg. channel slope: 5.5%
 Avg. bankfull width: 11.1 ft
 Dist from Clackamas R.: 25.7 miles
 Upstream fish-bearing length: 3.9 miles
 Dominant channel substrate: boulder - cobble

Comments: No bedrock showing. Fish observed in drop pool. Tributary junction 400 ft upstream.

Profile



Prioritization and Cost Information

Fish passage: no	Habitat priority: 23	Habitat and cost priority: 11
Fix solution: culvert w/ simulated streambed	Span: 12.0 ft	Material: metal
Design \$2,200 Materials \$10,000	Install \$5,050 Contingencies \$5,175	Total \$22,425.00

CROSSING CL023

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek

Stream: T Clear Ck.

Road: private

Latitude: 45.196502028

Longitude: -122.2762697925

Elevation: 1557 ft

Ownership: Private

Survey date: 06/19/2002

Crossing Description

Type: pipe arch

Condition: unknown

Diameter: 33.0 x 49.0 in

Length: unknown

Crossing slope: unknown

Avg. embedded: 30.3%

Type of embedding: simulated streambed

Embedded material: boulder/cobble

Inlet design: non-mitered



Habitat Description

Channel habitat type: moderate gradient, moderately confined

Catchment acreage: 328

Dist from Clackamas R.: 27.8 miles

Upstream fish-bearing length: 4775.6 ft

Dominant channel substrate: none recorded

Prioritization and Cost Information

Fish passage: yes

Habitat priority: not ranked

Habitat and cost priority: not ranked

Fix solution: none necessary

CROSSING CL030 / CV6684

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Clear Ck.
 Latitude: 45.2111015789 Longitude: -122.2761328576
 Ownership: County

Road: Hillockburn
 Elevation: 1414 ft
 Survey date: 06/12/2002

Crossing Description

Type: round culvert
 Condition: 10.0 years left
 Diameter: 24.0 in
 Length: 74.0 ft
 Crossing slope: 0.4 %
 Backwater drop: + 1.3 ft
 Inlet elev: +0.4 ft
 Avg. fill height: 7.6 ft



Habitat Description

Channel habitat type: Moderate gradient, moderately confined Catchment acreage: 145.0
 Avg. channel slope: 4.9% Avg. bankfull width: 4.0 ft
 Distance from Clackamas R.: 26.9 miles Upstream fish-bearing length: 1022 ft
 Dominant channel substrate: none recorded

Comments: Heavy debris at inlet. Moss on downstream scour plate. Wide valley. Culvert transverse to road. There were nine road measurements. *Solution* - Extreme length. Pipe arch or round with 71 ft long. County estimate based on box culvert.

Prioritization and Cost Information

Fish passage: no		Habitat priority: 66		Habitat and cost priority: 71	
Fix solution: culvert w/ simulated streambed		Span: 5.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$95,000.00	

CROSSING CL035 / CV6702

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: unknown
 Latitude: 45.2190745212 Longitude: -122.3643849495
 Ownership: County

Road: S.Highland 211 Intersection
 Elevation: 988 ft
 Survey date: 06/12/2002

Crossing Description

Type: round culvert
 Condition: 5.0 years left
 Diameter: 24.0 in
 Length: 42.0 ft
 Crossing slope: 0.8 %
 Backwater drop: + 0.1 ft



Habitat Description

Channel habitat type: Moderate gradient, moderately confined Catchment acreage: 2.0
 Avg. channel slope: 2.4% Avg. bankfull width: 4.0 ft
 Distance from Clackamas R.: 21.1 miles Upstream fish-bearing length: 0.0 ft
 Dominant channel substrate: none recorded

Comments: Flat with probable fish passage. Inlet was very channelized coming out of culvert crossing 211. Outlet looked good.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: not ranked		Habitat and cost priority: not ranked	
Fix solution: culvert w/ simulated streambed		Span: 4.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$45,000.00	

CROSSING CL035A

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: unknown Road: 211
 Latitude: 45.2189667 Longitude: -122.3642 Elevation: 989 ft
 Ownership: County Survey date: 06/12/2002

Crossing Description

Type: round culvert
 Condition: 5.0 years left
 Diameter: 36.0 in
 Length: 62.0 ft
 Crossing slope: unknown



Habitat Description

Channel habitat type: Moderate gradient, moderately confined Catchment acreage: 74.0
 Avg. channel slope: 3.7% Avg. bankfull width: not available
 Distance from Clackamas R.: 21.1 miles Upstream fish-bearing length: 0.0 ft
 Dominant channel substrate: none recorded

Comments: Slight rust, can't be probed. Property owner on outlet has it partially blocked with large rocks, because of pond. Still draining and causing no problems. *Solution* - Culvert slope not determined by county crew but considered moderate with some backwatering. Round culvert, embedded inlet and outlet and allow natural fill. 62 ft long. County box culvert estimate will probably be about \$70,000.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: not ranked		Habitat and cost priority: not ranked	
Fix solution: culvert w/ simulated streambed		Span: 5.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$70,000.00	

CROSSING CL036

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Little Clear Ck. Road: Brenton
 Latitude: 45.2190974354 Longitude: -122.3350573362 Elevation: 973 ft
 Ownership: Private Survey date: 06/28/2002

Crossing Description

Type: round culvert
 Condition: +10.0 years left
 Diameter: 48.0 in
 Length: 53.0 ft
 Crossing slope: 10.6 %
 Avg. embedded: no material
 Inlet design: non-mitered
 Backwater drop: +1.3 ft
 Inlet elev: +0.1 ft
 Avg. fill height: 11.0 ft
 Road width: 11.0 ft
 Road armor: gravel

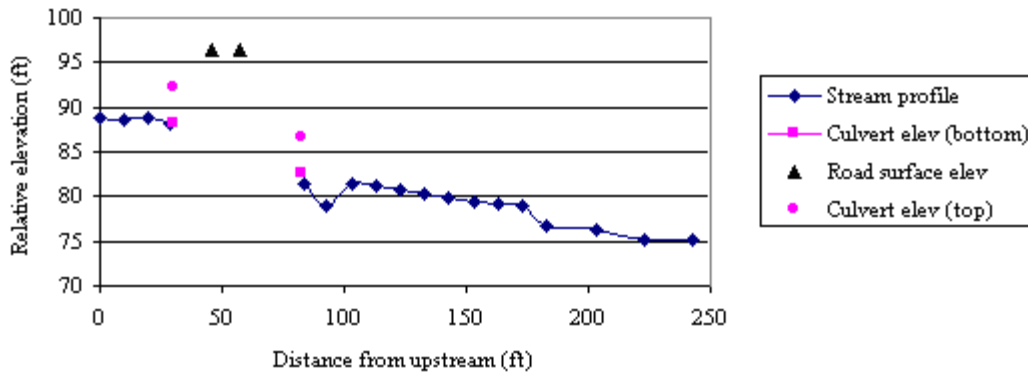


Habitat Description

Channel habitat type: Moderate gradient, confined Catchment acreage: 839.0
 Avg. channel slope: 4.0% Avg. bankfull width: 16.5 ft
 Distance from Clackamas R.: 22.5 miles Upstream fish-bearing length: 1.4 miles
 Dominant channel substrate: cobble - gravel

Comments: Bedrock lip 5.5 ft from inlet. 8 inch tall step. Extends 6 ft upstream before going subsurface again.

Profile



Prioritization and Cost Information

Fish passage: no	Habitat priority: 33	Habitat and cost priority: 52
Fix solution: Open slab	Span: 25.0 ft	Material: concrete
Design \$5,000	Materials \$92,400	Install \$24,640
	Contingencies \$36,612	Total \$158,652.00

CROSSING CL038 / CV6658

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: unknown Road: unknown
 Latitude: 45.2206658931 Longitude: -122.2909252676 Elevation: 1268 ft
 Ownership: County Survey date: 06/28/2002

Crossing Description

Type: round culvert
 Condition: unknown
 Diameter: 36.0 in
 Length: 40.0 ft
 Crossing slope: 1.0 %
 Backwater drop: + 1.2 ft
 Avg. fill height: 4.5 ft



Habitat Description

Channel habitat type: Moderate gradient, moderately confined Catchment acreage: 820.0
 Avg. channel slope: not available Avg. bankfull width: 8.0 ft
 Distance from Clackamas R.: 24.9 miles Upstream fish-bearing length: 2.4 miles
 Dominant channel substrate: none recorded

Comments: No upstream elevations taken. Inlet has pond draining into creek. Inlet has water coming in at joint and needs to be reset. Llamas grazing. *Solution* - Even though in slope range for partial barrier, it is concrete and would have excessive velocities at moderate length (40 ft). Pipe arch, 40 ft long. County culvert estimate based on open box.

Prioritization and Cost Information

Fish passage: no		Habitat priority: 22		Habitat and cost priority: 45	
Fix solution: culvert w/ simulated streambed		Span: 8.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$203,000.00	

CROSSING CL042

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek

Stream: Swagger Ck.

Road: Private

Latitude: 45.2257376695

Longitude: -122.3771899929

Elevation: 893 ft

Ownership: Private

Survey date: 06/25/2002

Crossing Description

Type: round culvert
 Condition: +10.0 years left
 Diameter: 48.0 in
 Length: 22.0 ft
 Crossing slope: 2.1 %
 Avg. embedded: no material
 Inlet design: non-mitered
 Backwater drop: +0.2 ft
 Inlet elev: -0.1 ft
 Avg. fill height: 7.2 ft
 Road width: 10.0 ft
 Road armor: cobble

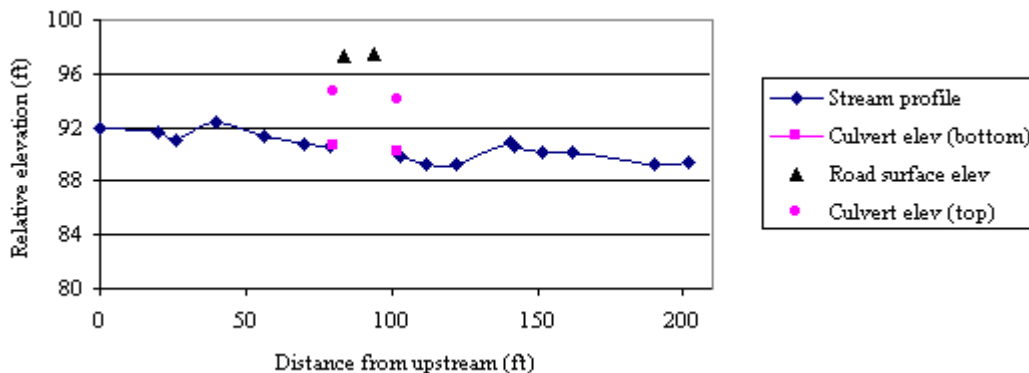


Habitat Description

Channel habitat type: moderate gradient, confined
 Catchment acreage: 2,556
 Avg. channel slope: 1.3%
 Avg. bankfull width: 9.6 ft
 Dist from Clackamas R.: 20.8 miles
 Upstream fish-bearing length: 3.2 miles
 Dominant channel substrate: cobble / gravel / fine

Comments: Culvert is fortified with a buttress of cement bags. *Solution* - Has maintenance issues. Pipe arch 30 ft long, embedded.

Profile



Prioritization and Cost Information

Fish passage: partial

Habitat priority: 17

Habitat and cost priority: 7

Fix solution: culvert w/ simulated streambed

Span: 10.0 ft

Material: metal

Design \$2,200

Materials \$5,670

Install \$5,050

Contingencies \$3,876

Total \$16,796.00

CROSSING CL045

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Little Cedar
 Latitude: 45.2276509291 Longitude: -122.2933433804
 Ownership: County

Road: Habelt
 Elevation: 1172 ft
 Survey date: 06/19/2002

Crossing Description

Type: round culvert
 Condition: 10.0 years left
 Diameter: 36.0 in
 Length: 42.0 ft
 Crossing slope: 0.1 %
 Backwater drop: + 0.2 ft
 Avg. fill height: 5.8 ft



Habitat Description

Channel habitat type: Low gradient, moderately confined
 Avg. channel slope: 2.0%
 Distance from Clackamas R.: 24.4 miles
 Dominant channel substrate: none recorded

Catchment acreage: 365.0
 Avg. bankfull width: 6.0 ft
 Upstream fish-bearing length: 1457 ft

Comments: Water trough fenced off for cows. *Solution* - Some velocity through the culvert and near the fringe of jump height for partial block. Pipe arch, 42 ft long, embedded. County culvert estimate based on open box.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: 43		Habitat and cost priority: 48	
Fix solution: culvert w/ simulated streambed		Span: 7.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$71,500.00	

CROSSING CL046

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: Little Cedar Ck.
 Latitude: 45.2295600984 Longitude: -122.3226387756
 Ownership: County

Road: Hillockburn
 Elevation: 1004 ft
 Survey date: 06/12/2002

Crossing Description

Type: box culvert
 Condition: 10.0 years left
 Diameter: 72.0 x 96.0 in
 Length: 66.0 ft
 Crossing slope: 0.9 %
 Backwater drop: + 0.2 ft
 Inlet elev: +0.3 ft
 Avg. fill height: 19.8 ft



Habitat Description

Channel habitat type: low gradient, moderately confined
 Catchment acreage: 2,431
 Avg. channel slope: 2.4%
 Avg. bankfull width: 15.0 ft
 Dist from Clackamas R.: 22.8 miles
 Upstream fish-bearing length: 4.8 miles
 Dominant channel substrate: none recorded

Comments: Sheeting occurring on concrete bottom. There are a couple of streams coming in at inlet end.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: 20		Habitat and cost priority: 60	
Fix solution: culvert w/ simulated streambed		Span: 15.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$443,000.00	

CROSSING CL046B

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: Little Cedar Ck. Road: 211
 Latitude: 45.229551035 Longitude: -122.3222808437 Elevation: 1006 ft
 Ownership: Private Survey date: 06/12/2002

Crossing Description

Type: round culvert
 Condition: +20.0 years left
 Diameter: 72.0 in
 Length: 24.9 ft
 Crossing slope: 1.6 %
 Avg. embedded: no material
 Inlet design: not available
 Backwater drop: + 0.3 ft
 Inlet elev: -0.1 ft
 Avg. fill height: 7.5 ft
 Road width: 13.0 ft
 Road armor: gravel

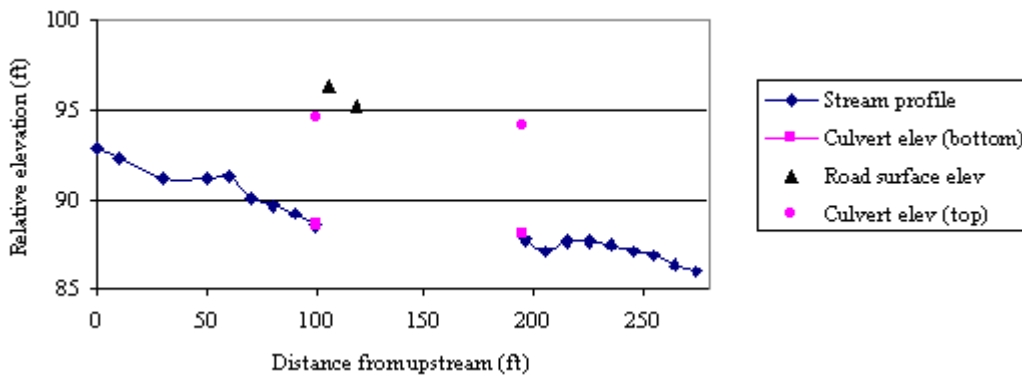


Habitat Description

Channel habitat type: low gradient, moderately confined
 Catchment acreage: 2,428
 Avg. channel slope: 3.3%
 Avg. bankfull width: 14.0 ft
 Dist from Clackamas R.: 22.8 miles
 Upstream fish-bearing length: 4.8 miles
 Dominant channel substrate: bedrock / boulder / cobble

Comments: Two barrels, same size. Staked as CL045b.
 Bedrock regularly showing. Bridge is 116 ft downstream.

Profile



Prioritization and Cost Information

Fish passage: partial	Habitat priority: 21	Habitat and cost priority: 34
Fix solution: Open slab	Span: 15.0 ft	Material: concrete
Design \$5,000	Materials \$60,600	Install \$22,290
Contingencies \$26,577	Total \$114,467.00	

CROSSING CL047

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: Swagger Ck. Road: Private
 Latitude: 45.2306816929 Longitude: -122.3821482648 Elevation: 957 ft
 Ownership: Private Survey date: 06/20/2002

Crossing Description

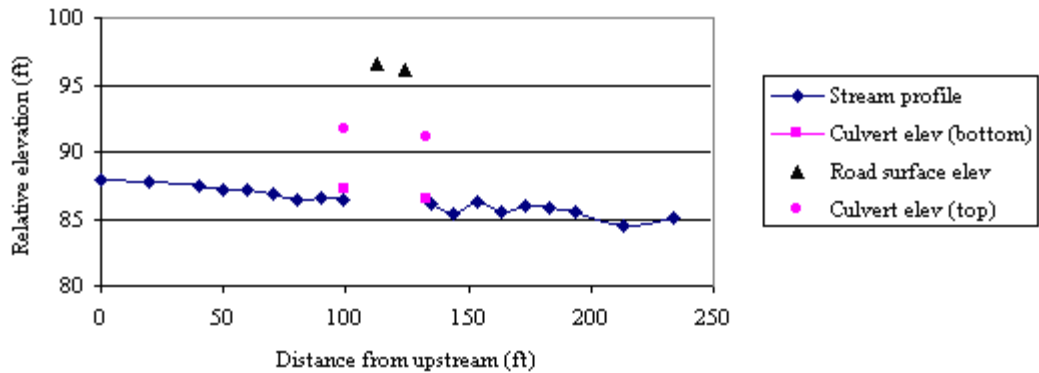
Type: round culvert Condition: +10.0 years left
 Diameter: 55.0 in Length: 33.4 ft
 Crossing slope: 2.1% Avg. embedded: no
 Inlet design: non-mitered
 Backwater drop: +0.3 ft Inlet elev: +0.7 ft
 Avg. fill height: 9.6 ft Road width: 11.0 ft
 Road armor: boulder / cobble

Habitat Description

Channel habitat type: Moderate gradient, moderately confined Catchment acreage: 1045.0
 Avg. channel slope: 1.2% Avg. bankfull width: 10.1 ft
 Distance from Clackamas R.: 21.3 miles Upstream fish-bearing length: 1.4 miles
 Dominant channel substrate: cobble

Comments: Road low point is 30 ft downhill from culvert crossing.

Profile



Prioritization and Cost Information

Fish passage: partial	Habitat priority: 31	Habitat and cost priority: 14
Fix solution: culvert w/ simulated streambed	Span: 12.0 ft	Material: metal
Design \$2,200	Materials \$7,150	Install \$5,050 Contingencies \$4,320
Total \$18,720.00		

CROSSING CL051

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek	Stream: T Clear Ck.	Road: private
Latitude: 45.2457171909	Longitude: -122.4061216137	Elevation: 1098 ft
Ownership: Private		Survey date: 06/20/2002

Crossing Description

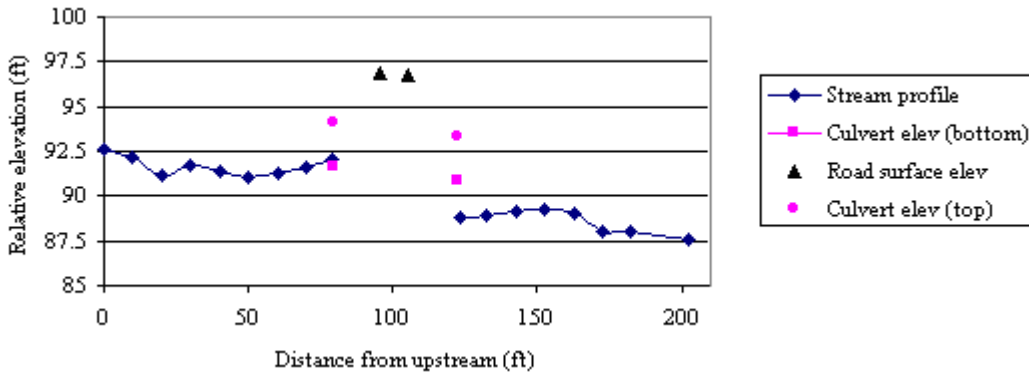
Type: round culvert	Condition: +5.0 years left
Diameter: 30.0 in	Length: 42.6 ft
Crossing slope: 1.9%	Avg. embedded: no
Inlet design: non-mitered	
Backwater drop: + 5.7 ft	Inlet elev: - 0.4 ft
Avg. fill height: 4.4 ft	Road width: 10.0 ft
Road armor: fine	

Habitat Description

Channel habitat type: Moderate gradient, moderately confined	Catchment acreage: 329.0
Avg. channel slope: 2.5%	Avg. bankfull width: 5.5 ft
Distance from Clackamas R.: 18.8 miles	Upstream fish-bearing length: 2999 ft
Dominant channel substrate: cobble - gravel - fine	

Comments: Not fish passable. *Solution* - Combination of slope, drop and length creates fish passage problems. Round culvert sunken into streambed, 40 ft long. Control elevation with culvert embedding.

Profile



Prioritization and Cost Information

Fish passage: no		Habitat priority: 57		Habitat and cost priority: 33	
Fix solution: culvert w/ simulated streambed		Span: 6.0 ft		Material: metal	
Design \$2,200	Materials \$3,300	Install \$5,050	Contingencies \$3,165	Total \$13,715.00	

CROSSING CL052

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Clear Ck. Road: Upper Highland
 Latitude: 45.2473826338 Longitude: -122.4012880148 Elevation: 1061 ft
 Ownership: County Survey date: 06/26/2002

Crossing Description

Type: round culvert Condition: 9.0 years left
 Diameter: 54.0 in Length: 54.0 ft
 Crossing slope: 1.5%
 Backwater drop: + 0.8 ft
 Avg. fill height: 7.6 ft

Habitat Description

Channel habitat type: Moderate gradient, moderately confined Catchment acreage: 409.0
 Avg. channel slope: not available Avg. bankfull width: 6.0 ft
 Distance from Clackamas R.: 18.5 miles Upstream fish-bearing length: 4514 ft
 Dominant channel substrate: none recorded

Comments: Dry channel, no fish. Up elev not taken due to brush. Inlet shoulder is washing into stream.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: 49		Habitat and cost priority: 62	
Fix solution: culvert w/ simulated streambed		Span: 6.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$92,000.00	

CROSSING CL053A

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek

Stream: Guttridge Ck.

Road: Private

Latitude: 45.247842619

Longitude: -122.3603020016

Elevation: 582 ft

Ownership: Private

Survey date: 06/18/2002

Crossing Description

Type: round culvert
 Condition: +5.0 years left
 Diameter: 34.0 in
 Length: 20.5 ft
 Crossing slope: 6.6 %
 Avg. embedded: no material
 Inlet design: non-mitered
 Backwater drop: + 0.2 ft
 Inlet elev: -0.2 ft
 Avg. fill height: 4.5 ft
 Road width: 13.0 ft
 Road armor: fine



Habitat Description

Channel habitat type: Moderately steep, narrow valley

Catchment acreage: 337.0

Avg. channel slope: 5.6%

Avg. bankfull width: 8.0 ft

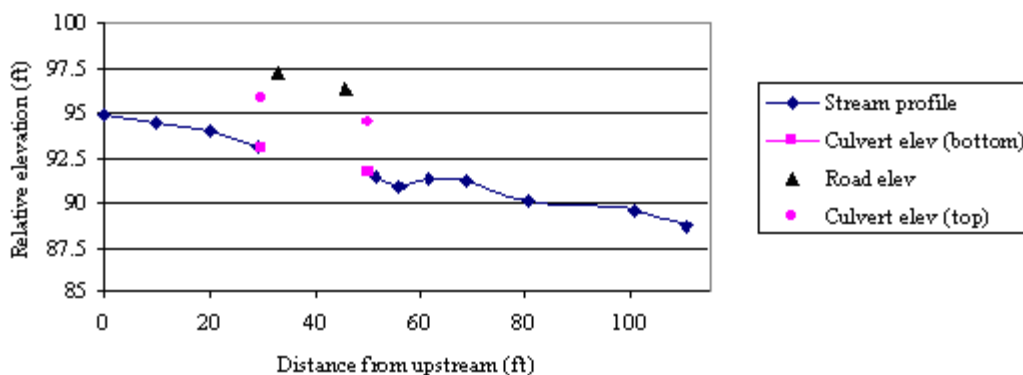
Distance from Clackamas R.: 18.5 miles

Upstream fish-bearing length: 2829 ft

Dominant channel substrate: boulder - cobble

Comments: Eight inch trout in downstream pool below outlet. Rust in culvert. *Solution* - Short Culvert and backs water up at higher flows. Embedded pipe arch. 21 ft long.

Profile



Prioritization and Cost Information

Fish passage: partial

Habitat priority: 63

Habitat and cost priority: 41

Fix solution: culvert w/ simulated streambed

Span: 8.0 ft

Material: metal

Design \$2,200

Materials \$3,207

Install \$5,050

Contingencies \$3,137

Total \$13,594.00

CROSSING CL057 / CV4860

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T of T of Little Clear Ck.

Latitude: 45.2594679874 Longitude: -122.4180095157

Ownership: County

Road: Lower Highland

Elevation: 1093 ft

Survey date: 07/16/2002

Crossing Description

Type: round culvert
 Condition: 7.0 years left
 Diameter: 36.0 in
 Length: 56.0 ft
 Crossing slope: 0.7 %
 Backwater drop: + 0.4 ft
 Avg. fill height: 8.5 ft



Habitat Description



Channel habitat type: moderate gradient, moderately confined
 Catchment acreage: 147
 Dist from Clackamas R.: 16.1 miles
 Upstream fish-bearing length: 874.9 ft
 Dominant channel substrate: none recorded

Comments: No flow for long time. Little discernable channel. Small private slab culvert approx. 12 ft up drainage. No fish likely in this reach. Up elevation measured only at inlet of an upstream pond. Ford just upstream before pond. Down elevation only in scour pool. *Solution* - Concrete culvert marginal, adult fish passage low priority. Embedded round culvert, 56 ft long. Require profile data to verify slope and width.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: 70		Habitat and cost priority: 67	
Fix solution: culvert w/ simulated streambed		Span: 5.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$46,000.00	

CROSSING CL058A

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Moiser Ck & pond Road: NA
 Latitude: 45.2622 Longitude: -122.4401166667 Elevation: 1061 ft
 Ownership: Private Survey date: 07/10/2002

Crossing Description

Type: round culvert
 Condition: unknown
 Diameter: 6.0 in
 Length: 18.0 ft
 Crossing slope: 3.2 %
 Avg. embedded: no material
 Inlet design: non-mitered
 Backwater drop: + 0.5 ft
 Inlet elev: +0.1 ft
 Avg. fill height: 2.0 ft
 Road armor: not available



Habitat Description

Channel habitat type: none available
 Catchment acreage: 0
 Dist from Clackamas R.: 16.4 miles
 Upstream fish-bearing length: 0.0 ft
 Dominant channel substrate: fine

Comments: Inlet on tributary. Outlet on pond. *Solution -* Culvert too small for passage if fish present. No stream gradient because inlet was pond and outlet right on mouth of stream. Sink round culvert into streambed with level, material controlling pond placed at 4% gradient, 20 ft length.

Prioritization and Cost Information

Fish passage: no		Habitat priority: not ranked		Habitat and cost priority: not ranked	
Fix solution: culvert w/ simulated streambed		Span: 4.0 ft		Material: metal	
Design \$2,200	Materials \$1,580	Install \$5,050	Contingencies \$2,649	Total \$11,479.00	

CROSSING CL058B

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Moiser
 Latitude: 45.2622509667 Longitude: -122.4398802247
 Ownership: Private

Road: Lower Highland
 Elevation: 1062 ft
 Survey date: 07/10/2002

Crossing Description

Type: round culvert
 Condition: +5.0 years left
 Diameter: 24.0 in
 Length: 30.0 ft
 Crossing slope: 0.9 %
 Avg. embedded: 8.3%
 Type of embedding: simulated streambed
 Embedded material: fines
 Inlet design: non-mitered
 Backwater drop: - 0.2 ft
 Inlet elev: +0.1 ft
 Avg. fill height: 2.8 ft
 Road width: 11.0 ft

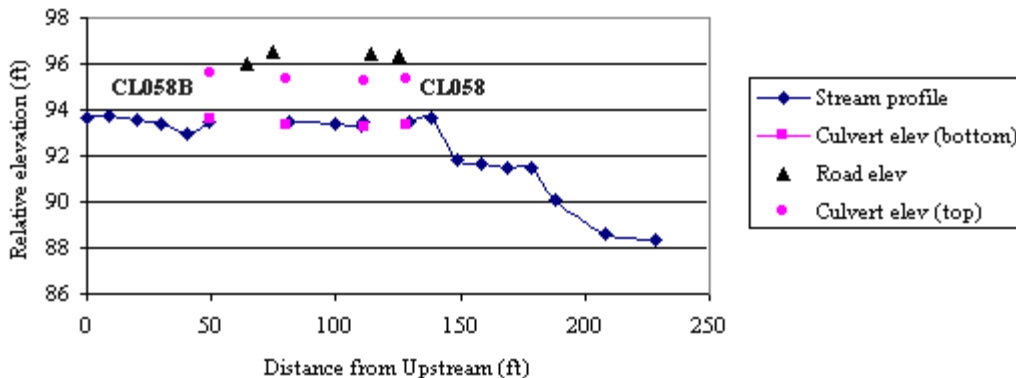


Habitat Description

Channel habitat type: moderate gradient, moderately confined
 Catchment acreage: 229
 Avg. channel slope: 0.2%
 Avg. bankfull width: 3.1 ft
 Dist from Clackamas R.: 16.4 miles
 Upstream fish-bearing length: 3791.7 ft
 Dominant channel substrate: none recorded

Comments: Landowner says she had fish in creek historically. *Solution* - Much of downstream end of culvert is backwatered. Embedded round culvert 40 ft long.

Profile



Prioritization and Cost Information

Fish passage: partial	Habitat priority: 52	Habitat and cost priority: 29
Fix solution: culvert w/ simulated streambed	Span: 4.0 ft	Material: metal
Design \$2,200	Materials \$2,740	Install \$5,050
Contingencies \$2,997		Total \$12,987.00

CROSSING CL060 / CV4850

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: Mosier Ck.
 Latitude: 45.2618269103 Longitude: -122.4587102911
 Ownership: County

Road: Lower Highland
 Elevation: 949 ft
 Survey date: 06/26/2002

Crossing Description

Type: round culvert
 Condition: 4.0 years left
 Diameter: 36.0 in
 Length: 75.0 ft
 Crossing slope: 1.1 %
 Backwater drop: + 3.5 ft
 Avg. fill height: 23.3 ft



Habitat Description

Channel habitat type: steep narrow valley
 Catchment acreage: 231
 Avg. bankfull width: 8.0 ft
 Dist from Clackamas R.: 16.1 miles
 Upstream fish-bearing length: 1935.7 ft
 Dominant channel substrate: none recorded

Comments: 4th and 9th joint has water coming in. Can see rebar at joints where concrete has been washed away. *Solution* - Concrete culvert combined with near limits of downstream jump and a tough approach. Pipe arch or round culvert with 75 ft length.

Prioritization and Cost Information

Fish passage: no		Habitat priority: 36		Habitat and cost priority: 50	
Fix solution: culvert w/ simulated streambed		Span: 8.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$115,000.00	

CROSSING CL064 / CV4858

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Little Clear Ck. Road: S. Lower Highland
Latitude: 45.2621588014 Longitude: -122.4258825017 Elevation: 1055 ft
Ownership: County Survey date: 06/20/2002

Crossing Description

Type: round culvert Condition: 7.0 years left
Diameter: 30.0 in Length: 40.0 ft
Crossing slope: 0.5%
Backwater drop: + 1.0 ft Inlet elev: + 0.3 ft
Avg. fill height: 5.1 ft

Habitat Description

Channel habitat type: Moderate gradient, moderately confined Catchment acreage: 219.0
Avg. channel slope: not available Avg. bankfull width: not available
Distance from Clackamas R.: 16.2 miles Upstream fish-bearing length: 3706 ft
Dominant channel substrate: none recorded

Comments: Scour pool elevations only. Did not go into brush.

Prioritization and Cost Information

Fish passage: partial	Habitat priority: 53		Habitat and cost priority: 46	
Fix solution: culvert w/ simulated streambed	Span: 5.0 ft	Material: metal		
Design NA	Materials NA	Install NA	Contingencies NA	Total \$36,000.00

CROSSING CL065

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek	Stream: T Little Clear Ck.	Road: Viola Welch
Latitude: 45.2637488549	Longitude: -122.4243527267	Elevation: 1031 ft
Ownership: County		Survey date: 06/20/2002

Crossing Description

Type: pipe arch	Condition: 10.0 years left
Diameter: 28.0 x 42.0 in	Length: 43.0 ft
Crossing slope: 0.8%	
Backwater drop: +0.5 ft	
Avg. fill height: 5.1 ft	

Habitat Description

Channel habitat type: Moderate gradient, moderately confined	Catchment acreage: 238.0
Avg. channel slope: 2.6%	Avg. bankfull width: 7.0 ft
Distance from Clackamas R.: 16.0 miles	Upstream fish-bearing length: 4446 ft
Dominant channel substrate: none recorded	

Comments: Looks like a barrier to fish passage.

Prioritization and Cost Information

Fish passage: partial	Habitat priority: 37	Habitat and cost priority: 47
Fix solution: culvert w/ simulated streambed	Span: 7.0 ft	Material: metal
Design NA	Materials NA	Install NA
	Contingencies NA	Total \$87,000.00

CROSSING CL066 / CV4851

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek	Stream: Moiser Ck.	Road: Lower Highland
Latitude: 45.2626133808	Longitude: -122.4500622752	Elevation: 999 ft
Ownership: County		Survey date: 06/26/2002

Crossing Description

Type: round culvert
 Condition: 10.0 years left
 Diameter: 30.0 in
 Length: 59.0 ft
 Crossing slope: 0.5 %
 Backwater drop: + 0.7 ft
 Avg. fill height: 11.3 ft



Habitat Description

Channel habitat type: low gradient, small floodplain
 Catchment acreage: 125
 Avg. channel slope: 1.3%
 Avg. bankfull width: 7.0 ft
 Dist from Clackamas R.: 16.0 miles
 Upstream fish-bearing length: 667.8 ft
 Dominant channel substrate: none recorded

Comments: Inlet two pieces of 6 ft concrete, then turns to rock and back to concrete.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: 71		Habitat and cost priority: 64	
Fix solution: culvert w/ simulated streambed		Span: 7.0 ft		Material: metal	
Design \$3,500	Materials \$10,220	Install \$6,700	Contingencies \$6,126	Total \$26,546.00	

CROSSING CL067

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek

Stream: Moiser Ck.

Road: BLM trail

Latitude: 45.267655476

Longitude: -122.4530302462

Elevation: 834 ft

Ownership: BLM

Survey date: 07/09/2002

Crossing Description

Type: round culvert
 Condition: +10.0 years left
 Diameter: 48.0 in
 Length: 70.0 ft
 Crossing slope: 8.5 %
 Avg. embedded: no material
 Inlet design: non-mitered
 Backwater drop: +1.7 ft
 Inlet elev: +0.3 ft
 Avg. fill height: 9.0 ft
 Road width: 20.0 ft
 Road armor: gravel

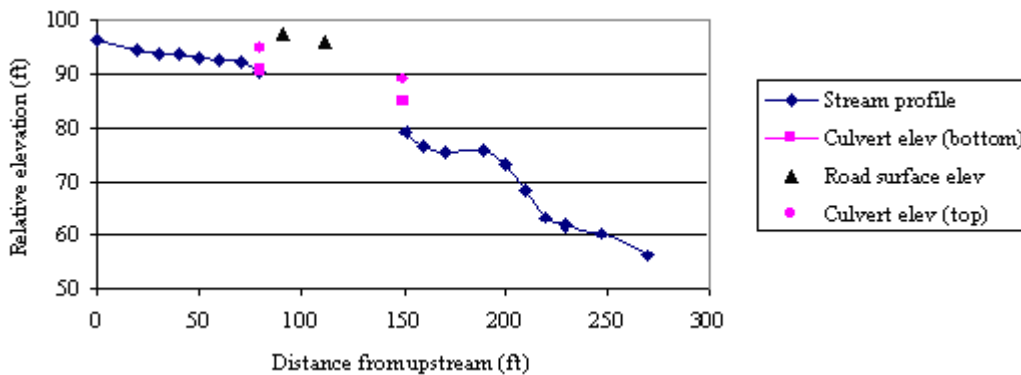


Habitat Description

Channel habitat type: moderately steep, narrow valley
 Catchment acreage: 334
 Avg. channel slope: 13.3%
 Avg. bankfull width: 6.4 ft
 Dist from Clackamas R.: 15.5 miles
 Upstream fish-bearing length: 4784.9 ft
 Dominant channel substrate: cobble / gravel

Comments: Bedrock/boulder step cascade on downstream side. Likely fish barrier.

Profile



Prioritization and Cost Information

Fish passage: no	Habitat priority: 12	Habitat and cost priority: 26
Fix solution: Open slab	Span: 12.0 ft	Material: concrete
Design \$5,000	Materials \$72,400	Install \$25,300
Contingencies \$30,810	Total \$133,510.00	

CROSSING CL068

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: Moiser Ck.
 Latitude: 45.2676219342 Longitude: -122.4515771806
 Ownership: BLM

Road: BLM trail
 Elevation: 843 ft
 Survey date: 07/09/2002

Crossing Description

Type: round culvert
 Condition: +10.0 years left
 Diameter: 60.0 in
 Length: 91.2 ft
 Crossing slope: 7.4 %
 Avg. embedded: no material
 Inlet design: non-mitered
 Backwater drop: +1.9 ft
 Inlet elev: -0.5 ft
 Avg. fill height: 16.8 ft
 Road width: 16.0 ft
 Road armor: cobble / gravel



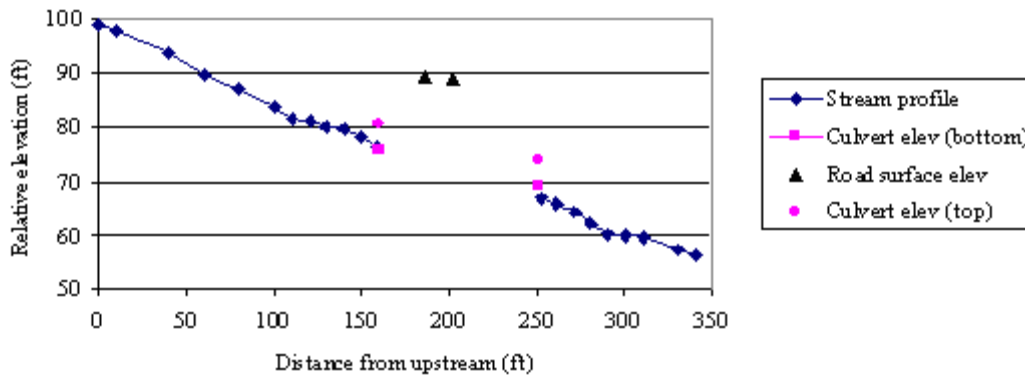
Habitat Description

Channel habitat type: moderately steep, narrow valley
 Catchment acreage: 645
 Avg. channel slope: 13.1%
 Avg. bankfull width: 10.1 ft
 Dist from Clackamas R.: 15.6 miles
 Upstream fish-bearing length: 1.8 miles
 Dominant channel substrate: bedrock / boulder / cobble



Comments: Saw fish in upstream pool.

Profile



Prioritization and Cost Information

Fish passage: no	Habitat priority: 8	Habitat and cost priority: 24
Fix solution: Open slab	Span: 25.0 ft	Material: concrete
Design \$5,000	Materials \$129,800	Install: \$22,600 Contingencies: \$47,220
		Total \$204,620.00

CROSSING CL069A

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: Clear Ck.
 Latitude: 45.2696749508 Longitude: -122.3802990193
 Ownership: Private

Road: Private
 Elevation: 470 ft
 Survey date: 06/18/2002

Crossing Description

Type: ford
 Material: concrete
 Span: 13.0
 Length: 73
 Bed material downstream: bedrock / boulder
 Bed material upstream: bedrock / boulder
 Surface condition: good
 Jump: 1.58 ft

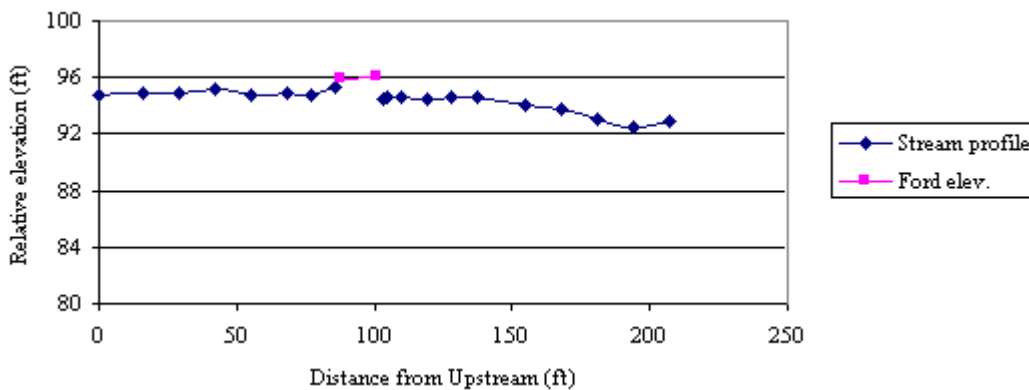


Habitat Description

Channel habitat type: low gradient, moderately confined
 Catchment acreage: 25,089
 Avg. channel slope: 0.9%
 Avg. bankfull width: 39.5 ft
 Dist from Clackamas R.: 16.1 miles
 Upstream fish-bearing length: 56.7 miles
 Dominant channel substrate: none recorded

Comments: One rut on right bank upstream end.

Profile



Prioritization and Cost Information

Fish passage: partial	Habitat priority: 2	Habitat and cost priority: 2
Fix solution: roughened channel	Span: 10.0 ft	Material: rock w/ concrete sides
Design \$2,000	Materials \$0	Install \$3,730
	Contingencies \$1,719	Total \$7,449.00

CROSSING CL069C

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Clear Ck. Road: Private
 Latitude: 45.2633206832 Longitude: -122.3775240911 Elevation: 518 ft
 Ownership: Private Survey date: 06/18/2002

Crossing Description

Type: pipe arch
 Condition: +5.0 years left
 Diameter: 38.4 x 75.0 in
 Length: 20.0 ft
 Crossing slope: 7.9 %
 Avg. embedded: no material
 Inlet design: non-mitered
 Backwater drop: +0.1 ft
 Inlet elev: -0.3 ft
 Avg. fill height: -0.6 ft
 Road width: 14.0 ft

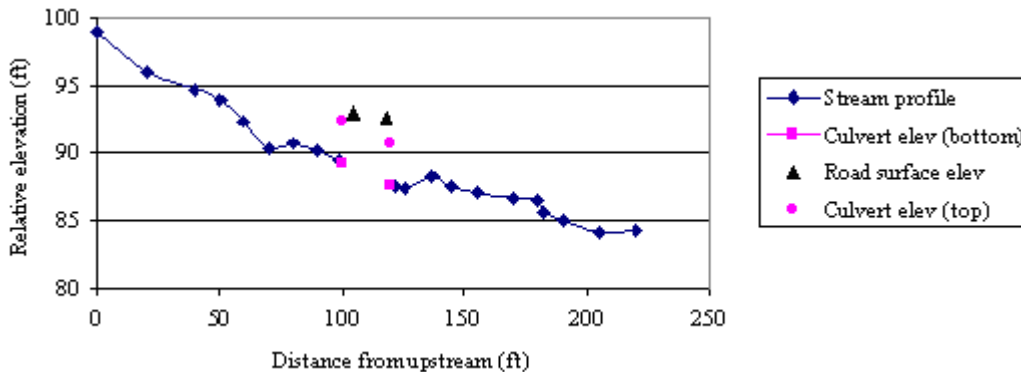


Habitat Description

Channel habitat type: moderately steep, narrow valley
 Catchment acreage: 510
 Avg. channel slope: 3.2%
 Avg. bankfull width: 9.1 ft
 Dist from Clackamas R.: 16.7 miles
 Upstream fish-bearing length: 1.3 miles
 Dominant channel substrate: bedrock

Comments: Very low overhead cover. Less than 1 ft. *Solution* - May get a few strong adults through due to short length. Pipe arch embedded, 20 ft long.

Profile



Prioritization and Cost Information

Fish passage: no	Habitat priority: 40	Habitat and cost priority: 17
Fix solution: culvert w/ simulated streambed	Span: 10.0 ft	Material: metal
Design \$3,500	Materials \$3,900	Install \$3,850
	Contingencies \$3,375	Total \$14,625.00

CROSSING CL069D

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Clear Ck. Road: Private
 Latitude: 45.2626998219 Longitude: -122.3722815179 Elevation: 602 ft
 Ownership: Private Survey date: 06/18/2002

Crossing Description

Type: log culvert
 Condition: +0.0 years left
 Diameter: unavailable
 Length: 46.5 ft
 Crossing slope: 2.5 %
 Avg. embedded: unknown
 Type of embedding: simulated streambed
 Embedded material: gravel/fines
 Inlet design: not available
 Avg. fill height: 2.9 ft
 Road width: 18.0 ft
 Road armor: fine

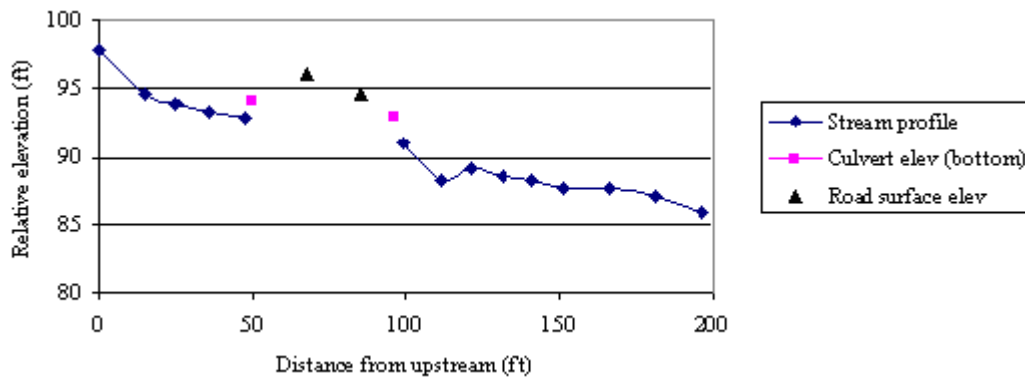


Habitat Description

Channel habitat type: Moderately steep, narrow valley Catchment acreage: 472.0
 Avg. channel slope: 6.1% Avg. bankfull width: 7.4 ft
 Distance from Clackamas R.: 16.9 miles Upstream fish-bearing length: 1.0 miles
 Dominant channel substrate: fine

Comments: Log box w/ lots of blackberries. Structure size indeterminate. Passes fish on natural bed. *Solution* - Near failure. Pipe arch. Low headroom. Embed upstream and downstream, 47 ft long.

Profile



Prioritization and Cost Information

Fish passage: partial	Habitat priority: 56	Habitat and cost priority: 39
Fix solution: culvert w/ simulated streambed	Span: 8.0 ft	Material: metal
Design \$3,500 Materials \$6,433	Install \$5,275 Contingencies \$4,562	Total \$19,770.00

CROSSING CL069E

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Clear Ck.
 Latitude: 45.262061747 Longitude: -122.366205471
 Ownership: Private

Road: Private
 Elevation: 705 ft
 Survey date: 06/18/2002

Crossing Description

Type: pipe arch
 Number of culverts at crossing: 2
 Condition: +0.0 years left
 Diameter: 36.0 x 50.4 in
 Length: 30.0 ft
 Crossing slope: 10.8 %
 Avg. embedded: no material
 Inlet design: non-mitered
 Backwater drop: - 0.6 ft
 Inlet elev: +0.5 ft
 Avg. fill height: 3.0 ft
 Road width: 9.0 ft



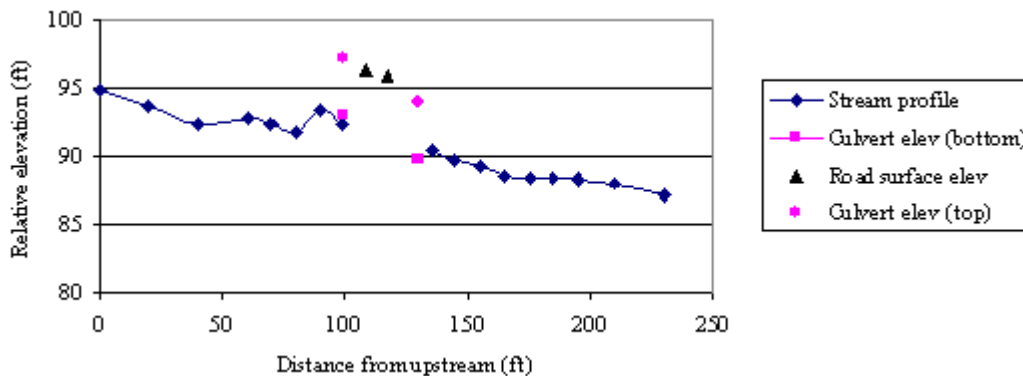
Habitat Description

Channel habitat type: moderately steep, narrow valley
 Catchment acreage: 385
 Avg. channel slope: 4.0%
 Avg. bankfull width: 6.7 ft
 Dist from Clackamas R.: 17.3 miles
 Upstream fish-bearing length: 3814.0 ft
 Dominant channel substrate: gravel / fine



Comments: One of two culverts. Neither culvert is corrugated. 8 ft between culverts. Only one has a chance of passing fish. *Solution* - Near failure. Pipe arch. Low headroom. Embed upstream and downstream, 30 ft long.

Profile



Prioritization and Cost Information

Fish passage: partial	Habitat priority: 59	Habitat and cost priority: 42
Fix solution: culvert w/ simulated streambed	Span: 8.0 ft	Material: metal
Design \$3,500	Materials \$4,290	Install \$4,800
Contingencies \$3,777	Total \$16,367.00	

CROSSING CL069F

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Clear Ck.
 Latitude: 45.2613043259 Longitude: -122.3610982009
 Ownership: Private

Road: Private
 Elevation: 815 ft
 Survey date: 06/18/2002

Crossing Description

Type: round culvert
 Condition: +5.0 years left
 Diameter: 26.0 in
 Length: 22.5 ft
 Crossing slope: 10.1 %
 Avg. embedded: no material
 Inlet design: not available
 Backwater drop: + 0.3 ft
 Inlet elev: -0.3 ft
 Avg. fill height: 2.6 ft
 Road width: 16.0 ft
 Road armor: gravel / fine



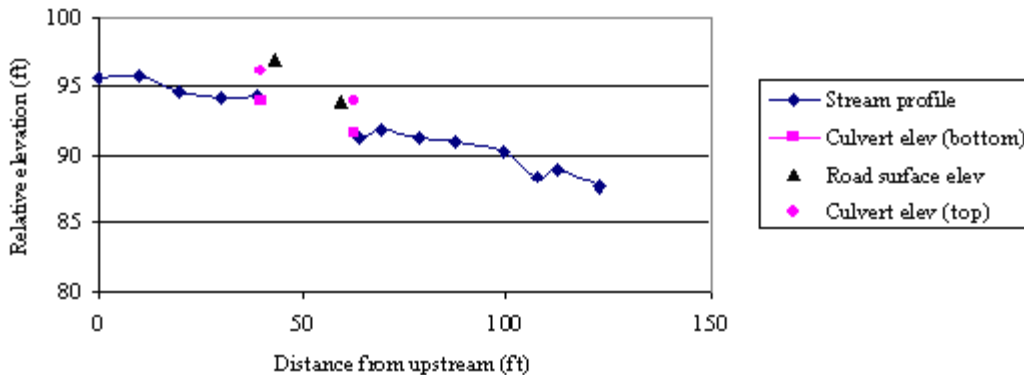
Habitat Description

Channel habitat type: Moderately steep, narrow valley
 Avg. channel slope: 6.5%
 Distance from Clackamas R.: 17.5 miles
 Dominant channel substrate: fine - hard clay

Catchment acreage: 292.0
 Avg. bankfull width: 6.7 ft
 Upstream fish-bearing length: 2393 ft

Comments: 1500 ft below dam for pond.

Profile



Prioritization and Cost Information

Fish passage: no	Habitat priority: 68	Habitat and cost priority: 44
Fix solution: culvert w/ simulated streambed	Span: 8.0 ft	Material: metal
Design \$3,500 Materials \$3,695	Install \$4,235 Contingencies \$3,429	Total \$14,859.00

CROSSING CL076

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek

Stream: Moiser Ck.

Road: Private

Latitude: 45.2885031971

Longitude: -122.4255600908

Elevation: 375 ft

Ownership: Private

Survey date: 06/19/2002

Crossing Description

Type: bridge

Type: metal I-beam

Span: 45 ft

Footing: stable



Habitat Description

Channel habitat type: low gradient, medium floodplain

Catchment acreage: 2,873

Dist from Clackamas R.: 13.1 miles

Upstream fish-bearing length: 7.2 miles

Dominant channel substrate: none recorded

Prioritization and Cost Information

Fish passage: yes

Habitat priority: 0

Habitat and cost priority: 0

Fix solution: none necessary

CROSSING CL079

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek
 Latitude: 45.2911231424
 Ownership: County

Stream: Tennings Ck.
 Longitude: -122.3969234789

Road: Clear Ck.
 Elevation: 410 ft
 Survey date: 07/16/2002

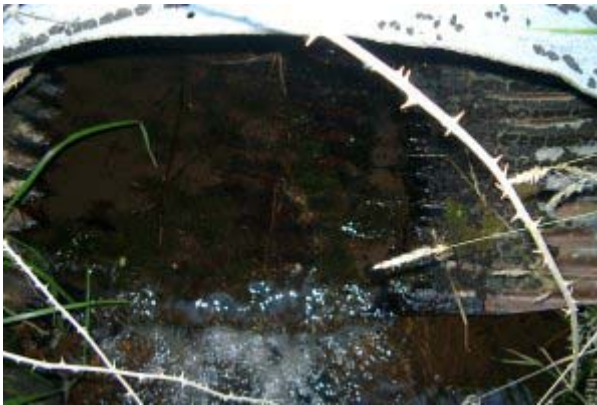
Crossing Description

Type: pipe arch
 Condition: 1.0 years left
 Diameter: 36.0 x 60.0 in
 Length: 37.0 ft
 Crossing slope: 0.1 %
 Backwater drop: +1.2 ft
 Inlet elev: +0.0 ft
 Avg. fill height: 3.8 ft



Habitat Description

Channel habitat type: ditch
 Catchment acreage: 330
 Avg. bankfull width: 4.0 ft
 Dist from Clackamas R.: 14.0 miles
 Upstream fish-bearing length: 4211.7 ft
 Dominant channel substrate: none recorded



Comments: 6 inch drop into low flow culvert at outlet. Did not measure upstream in blackberries. Fish passage culvert. The culvert would be sufficient if separation wasn't happening on the outfall. Some scouring at outfall. Seed rocks were placed in the culvert.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: 18		Habitat and cost priority: 15	
Fix solution: culvert w/ simulated streambed		Span: 5.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$47,500.00	

CROSSING CL083 / CV5176

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek	Stream: T Clear Ck.	Road: Redland
Latitude: 45.2996841633	Longitude: -122.4049512048	Elevation: 428 ft
Ownership: County		Survey date: 06/28/2002

Crossing Description

Type: pipe arch
 Condition: 6.0 years left
 Diameter: 32.0 x 48.0 in
 Length: 67.0 ft
 Crossing slope: 0.1 %
 Backwater drop: + 1.2 ft
 Inlet elev: +0.2 ft
 Avg. fill height: 5.2 ft



Habitat Description

Channel habitat type: Moderate gradient, headwater	Catchment acreage: 341.0
Avg. channel slope: 4.3%	Avg. bankfull width: 5.0 ft
Distance from Clackamas R.: 13.0 miles	Upstream fish-bearing length: 4331 ft
Dominant channel substrate: none recorded	

Comments: Blackberries. Bedrock at outlet and inlet. Natural fish barrier below. High velocity stream and culvert.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: 28		Habitat and cost priority: 32	
Fix solution: culvert w/ simulated streambed		Span: 6.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$56,000.00	

CROSSING CL084

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Clear Ck. Road: Clear Ck. Rd.
 Latitude: 45.2980136596 Longitude: -122.4080723297 Elevation: 360 ft
 Ownership: County Survey date: 06/26/2002

Crossing Description

Type: pipe arch
 Condition: 10.0 years left
 Diameter: 36.0 x 60.0 in
 Length: 40.0 ft
 Crossing slope: 2.0 %
 Backwater drop: + 1.8 ft
 Avg. fill height: 4.6 ft



Habitat Description



Channel habitat type: moderately steep, narrow valley
 Catchment acreage: 431
 Avg. channel slope: 3.9%
 Avg. bankfull width: 6.0 ft
 Dist from Clackamas R.: 12.8 miles
 Upstream fish-bearing length: 1.1 miles
 Dominant channel substrate: none recorded

Comments: Natural fish barrier below. Could probably make this a passable culvert by backwatering with some weirs. Scouring on outlet end. *Solution* - Because of moderate length and moderate jump and slope this would probably not provide adult fish passage. Round culvert, embedded 45 ft long, placed at 3.5% grade. County estimate based on open box culvert.

Prioritization and Cost Information

Fish passage: no		Habitat priority: 51		Habitat and cost priority: 59	
Fix solution: culvert w/ simulated streambed		Span: 7.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$72,500.00	

CROSSING CL087

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: unknown Road: unknown
Latitude: 45.3033291125 Longitude: -122.3933869322 Elevation: 682 ft
Ownership: County Survey date: No field survey

Crossing Description

Type: round culvert Condition: unknown
Diameter: 24.0 in Length: 61.0 ft
Crossing slope: 0.4%
Backwater drop: + 1.0 ft Inlet elev: - 0.7 ft
Avg. fill height: 10.0 ft

Habitat Description

Channel habitat type: Moderately steep, narrow valley Catchment acreage: 143.0
Avg. channel slope: 6.5% Avg. bankfull width: 5.0 ft
Distance from Clackamas R.: 13.7 miles Upstream fish-bearing length: 462. ft
Dominant channel substrate: none recorded

Comments: Fish barrier at tributary mouth. Inlet is a sculptured stream w/ponds. Outlet has a walking path 60 ft downstream. *Solution* - Doubtful adult fish passage because of large jump along with long length. Round culvert, embedded 65 ft long, placed at 6% slope. County estimate based on open box culvert.

Prioritization and Cost Information

Fish passage: no	Habitat priority: 38	Habitat and cost priority: 51
Fix solution: culvert w/ simulated streambed	Span: 6.0 ft	Material: metal
Design NA	Materials NA	Install NA
	Contingencies NA	Total \$100,000.00

CROSSING CL088

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: Little Clear Ck. Road: Redland
 Latitude: 45.3051214505 Longitude: -122.4264558086 Elevation: 347 ft
 Ownership: County Survey date: 06/28/2002

Crossing Description

Type: box culvert
 Condition: 7.0 years left
 Diameter: 144.0 x 144.0 in
 Length: 72.0 ft
 Crossing slope: 3.1 %
 Avg. fill height: 19.0 ft



Habitat Description

Channel habitat type: Low gradient, large floodplain Catchment acreage: 5705.0
 Avg. channel slope: 0.7% Avg. bankfull width: 28.0 ft
 Distance from Clackamas R.: 11.7 miles Upstream fish-bearing length: 14.7 miles
 Dominant channel substrate: none recorded

Comments: High velocity culvert. Concrete bottom creating sheeting. *Solution* - Concrete culvert has higher velocities at lower slopes. May consider in short-term a baffle retrofit with a downstream backwater control backwater. County estimate.

Prioritization and Cost Information

Fish passage: no		Habitat priority: 3		Habitat and cost priority: 18	
Fix solution: bridge		Span: 40.0 ft		Material: concrete/metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$605,000.00	

CROSSING CL089

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: unknown Road: unknown
Latitude: 45.3151233894 Longitude: -122.4066850363 Elevation: 596 ft
Ownership: County Survey date: No field survey

Crossing Description

Type: round culvert Condition: 6.0 years left
Diameter: 24.0 in Length: 29.0 ft
Crossing slope: 0.6%
Backwater drop: +0.1 ft Inlet elev: +0.1 ft
Avg. fill height: 3.2 ft

Habitat Description

Channel habitat type: Moderately steep, narrow valley Catchment acreage: 132.0
Avg. channel slope: 1.7% Avg. bankfull width: not available
Distance from Clackamas R.: 11.2 miles Upstream fish-bearing length: 122. ft
Dominant channel substrate: none recorded

Comments: Natural fish barrier below. No fish. No water. Culvert goes from field to field.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: 50		Habitat and cost priority: 49	
Fix solution: culvert w/ simulated streambed		Span: 5.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$44,500.00	

CROSSING CL095 / CV5045

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek	Stream: T Clear Ck.	Road: Mattoon
Latitude: 45.3197458423	Longitude: -122.4170105177	Elevation: 374 ft
Ownership: County		Survey date: 06/26/2002

Crossing Description

Type: pipe arch
 Condition: 6.0 years left
 Diameter: 28.0 x 44.4 in
 Length: 84.0 ft
 Crossing slope: 0.9 %
 Backwater drop: + 1.6 ft
 Inlet elev: +0.2 ft
 Avg. fill height: 5.0 ft



Habitat Description

Channel habitat type: ditch
 Catchment acreage: 244
 Avg. channel slope: 4.4%
 Dist from Clackamas R.: 10.5 miles
 Upstream fish-bearing length: 3392.3 ft
 Dominant channel substrate: none recorded

Comments: Dam downstream. *Solution* - Because of the moderate drop and slope along with long length adult fish passage unlikely. Round culvert, embedded, 85 ft long, placed at 4%. County culvert estimate based on open box culvert.

Prioritization and Cost Information

Fish passage: no		Habitat priority: 60		Habitat and cost priority: 74	
Fix solution: culvert w/ simulated streambed		Span: 6.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$135,000.00	

CROSSING CL099 / CV5038

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Clear Ck. Road: Mattoon
 Latitude: 45.3316903045 Longitude: -122.4250519982 Elevation: 320 ft
 Ownership: County Survey date: 06/25/2002

Crossing Description

Type: pipe arch
 Condition: 10.0 years left
 Diameter: 34.5 x 57.0 in
 Length: 32.5 ft
 Crossing slope: 0.4 %
 Backwater drop: + 1.8 ft
 Inlet elev: -0.3 ft
 Avg. fill height: 7.8 ft



Habitat Description

Channel habitat type: moderate gradient, moderately confined
 Catchment acreage: 973
 Avg. channel slope: 3.6%
 Avg. bankfull width: 18.0 ft
 Dist from Clackamas R.: 9.1 miles
 Upstream fish-bearing length: 2.6 miles
 Dominant channel substrate: none recorded

Comments: Double culvert. Bedrock at outlet. Steelhead historically.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: 11		Habitat and cost priority: 36	
Fix solution: Open slab		Span: 25.0 ft		Material: concrete	
Design \$5,000	Materials \$92,400	Install \$24,640	Contingencies \$36,612	Total \$158,652.00	

CROSSING CL100

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Clear Ck.
 Latitude: 45.3307489063 Longitude: -122.4274157417
 Ownership: Private

Road: Priv. Cedarhurst
 Elevation: 290 ft
 Survey date: 07/11/2002

Crossing Description

Type: round culvert
 Number of culverts at crossing: 2
 Condition: +1.0 years left
 Diameter: 24.0 in
 Length: 50.5 ft
 Crossing slope: 2.9 %
 Avg. embedded: 30.0%
 Type of embedding: simulated streambed
 Embedded material: gravel
 Inlet design: non-mitered
 Backwater drop: +0.0 ft
 Inlet elev: +2.7 ft
 Avg. fill height: 3.5 ft
 Road width: 20.0 ft
 Road armor: fine

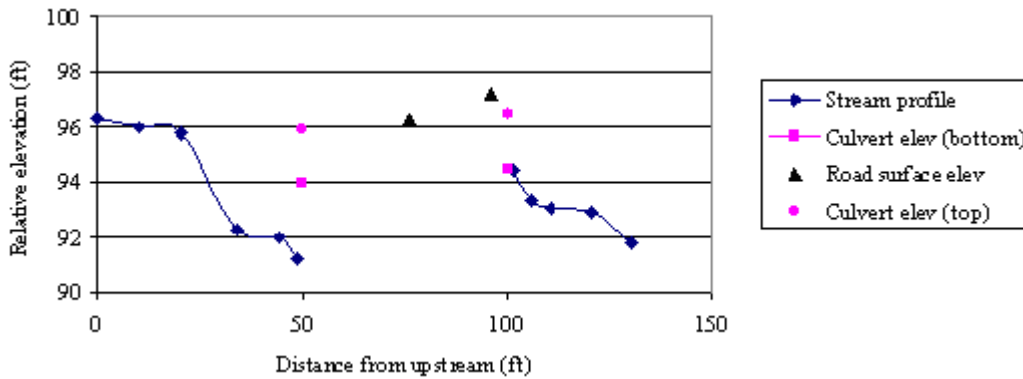


Habitat Description

Channel habitat type: moderate gradient, moderately confined
 Catchment acreage: 982
 Avg. channel slope: 3.5%
 Avg. bankfull width: 21.8 ft
 Dist from Clackamas R.: 9.0 miles
 Upstream fish-bearing length: 2.8 miles
 Dominant channel substrate: cobble

Comments: Extremely low use road (trail) that could be removed. Fish passing at high flow around side meandering channel. System works/responds well to wood. Upper culvert likely passes fish because of gradient and velocity.

Profile



Prioritization and Cost Information

Fish passage: partial	Habitat priority: 9	Habitat and cost priority: 4
Fix solution: removal	Span: ft	Material:

CROSSING CL101

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek

Stream: T Clear Ck.

Road: Sylvan

Latitude: 45.3304389393

Longitude: -122.4260634547

Elevation: 308 ft

Ownership: Private

Survey date: 06/26/2002

Crossing Description

Type: round culvert

Number of culverts at crossing: 4

Condition: +5.0 years left

Diameter: 30.0 in

Length: 41.0 ft

Crossing slope: 1.9 %

Avg. embedded: 24.0%

Type of embedding: sparse rock fill

Embedded material: cobble

Inlet design: non-mitered

Backwater drop: +0.3 ft

Inlet elev: +0.0 ft

Avg. fill height: 5.3 ft

Road width: 13.0 ft

Road armor: cobble / fine



Habitat Description

Channel habitat type: moderate gradient, moderately confined

Catchment acreage: 980

Avg. channel slope: 2.8%

Avg. bankfull width: 16.2 ft

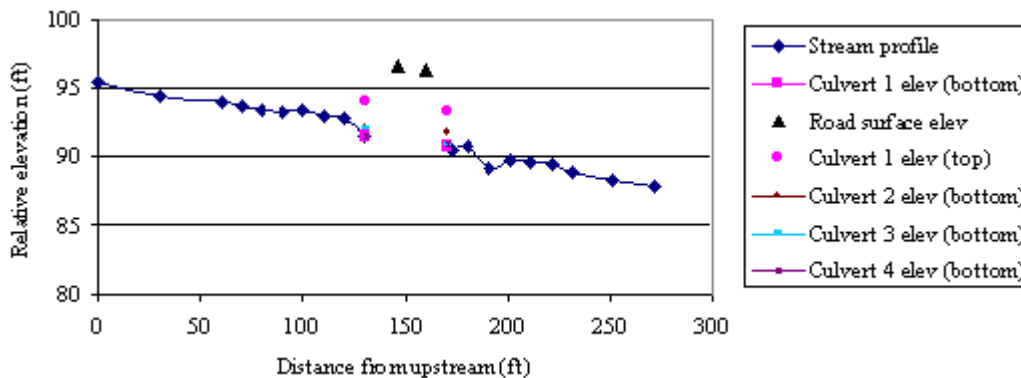
Dist from Clackamas R.: 9.0 miles

Upstream fish-bearing length: 2.7 miles

Dominant channel substrate: cobble / gravel

Comments: Four culverts. *Solution* - Probably a high priority culvert with CL100. No dirt on top. Very low cover, 15 ft width secondary road.

Profile



Prioritization and Cost Information

Fish passage: partial

Habitat priority: 10

Habitat and cost priority: 13

Fix solution: Open slab

Span: 25.0 ft

Material: concrete

Design \$5,000	Materials \$39,400	Install \$22,990	Contingencies \$20,217	Total \$87,607.00
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CROSSING CL106 / CV5226

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek	Stream: Bargefield Ck.	Road: Fishers Mill
Latitude: 45.336300396	Longitude: -122.44371753	Elevation: 284 ft
Ownership: County		Survey date: 06/20/2002

Crossing Description

Type: round culvert	Condition: 6.0 years left
Diameter: 60.0 in	Length: 41.0 ft
Crossing slope: 0.6%	
Backwater drop: +0.1 ft	Inlet elev: -0.1 ft
Avg. fill height: 6.8 ft	

Habitat Description

Channel habitat type: Low gradient, medium floodplain	Catchment acreage: 1803.0
Avg. channel slope: 0.5%	Avg. bankfull width: 12.5 ft
Distance from Clackamas R.: 7.9 miles	Upstream fish-bearing length: 4.0 miles
Dominant channel substrate: none recorded	

Comments: Upstream apparently a cow pasture with creek running through it. Downstream has cobbles and looks good. Small culvert making fast water.

Prioritization and Cost Information

Fish passage: partial	Habitat priority: 15	Habitat and cost priority: 27
Fix solution: culvert w/ simulated streambed	Span: 14.0 ft	Material: metal
Design NA	Materials NA	Install NA
	Contingencies NA	Total \$100,000.00

CROSSING CL108

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Clear Ck. Road: Private
 Latitude: 45.3366970168 Longitude: -122.4307468975 Elevation: 299 ft
 Ownership: Private Survey date: 07/12/2002

Crossing Description

Type: round culvert
 Condition: +5.0 years left
 Diameter: 36.0 in
 Length: 23.0 ft
 Crossing slope: 2.2 %
 Avg. embedded: no material
 Inlet design: non-mitered
 Backwater drop: + 0.8 ft
 Inlet elev: +0.0 ft
 Avg. fill height: 4.2 ft
 Road width: 14.0 ft
 Road armor: gravel / fine



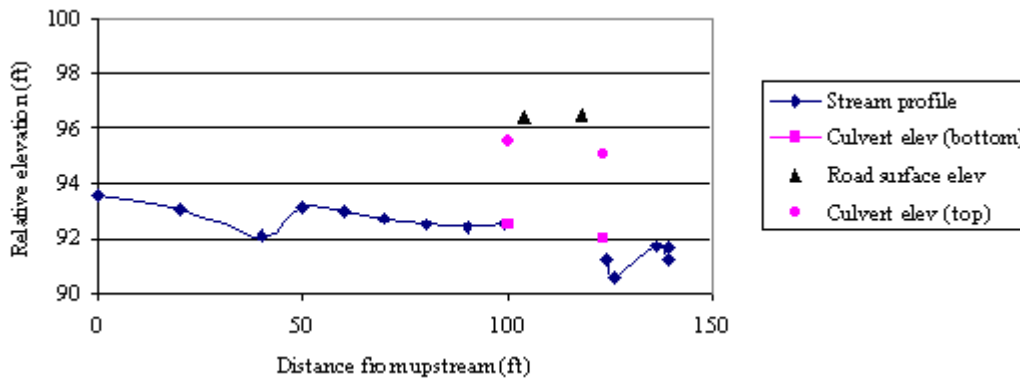
Habitat Description



Channel habitat type: moderate gradient, moderately confined
 Catchment acreage: 343
 Avg. channel slope: 1.4%
 Avg. bankfull width: 8.9 ft
 Dist from Clackamas R.: 8.4 miles
 Upstream fish-bearing length: 3676.7 ft
 Dominant channel substrate: gravel / fine

Comments: Fish in pool at outlet. Pond influence fish upstream of culvert. Channel influenced by ditching. Benchmark is not flagged w/ high flagging. Location is below the large Douglas-fir. *Solution* - Pond dam downstream probably blocks fish passage. Pipe arch, 25 ft long, embedded.

Profile



Prioritization and Cost Information

Fish passage: partial	Habitat priority: 39	Habitat and cost priority: 16
Fix solution: culvert w/ simulated streambed	Span: 9.0 ft	Material: metal

Design \$3,500 Materials \$4,395 Install \$4,235 Contingencies \$3,639 **Total \$15,769.00**

CROSSING CL108A

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: Pond Road: Dam
 Latitude: 45.33651667 Longitude: -122.4325167 Elevation: 289 ft
 Ownership: Private Survey date: 07/11/2002

Crossing Description

Type: round culvert
 Condition: +10.0 years left
 Diameter: 24.0 in
 Length: unknown
 Crossing slope: unknown
 Avg. embedded: no material
 Inlet design: non-mitered
 Road armor: fine



Habitat Description

Channel habitat type: moderate gradient, moderately confined
 Catchment acreage: 363
 Dist from Clackamas R.: 8.3 miles
 Upstream fish-bearing length: 4135.8 ft
 Dominant channel substrate: add type to list

Comments: Pond overflow culvert. 2:1 slope. 15 ft high berm. 120 ft wide. *Solution* - Pond dam, fish passage blockage likely. This would take considerable reworking of the dam face. Sixty ft long culvert with 10 baffles.

Prioritization and Cost Information

Fish passage: no	Habitat priority: 48	Habitat and cost priority: 40
Fix solution: culvert w/ baffle	Span: 5.0 ft	Material:
Design \$4,000 Materials \$8,980	Install \$9,100 Contingencies \$6,624	Total \$28,704.00

CROSSING CL109 / CV5032

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek	Stream: T Clear Ck.	Road: Mattoon
Latitude: 45.3372983423	Longitude: -122.4285709944	Elevation: 315 ft
Ownership: County		Survey date: 06/26/2002

Crossing Description

Type: round culvert
 Condition: 7.0 years left
 Diameter: 28.0 in
 Length: 30.0 ft
 Crossing slope: 3.1 %
 Backwater drop: + 1.5 ft
 Inlet elev: -0.2 ft
 Avg. fill height: 4.1 ft



Habitat Description

Channel habitat type: Moderate gradient, moderately confined	Catchment acreage: 331.0
Avg. channel slope: 4.5%	Avg. bankfull width: 8.0 ft
Distance from Clackamas R.: 8.5 miles	Upstream fish-bearing length: 3075 ft
Dominant channel substrate: none recorded	

Comments: 800 ft blockage pond downstream. Inlet looks good. *Solution* - Some embedding in culvert, adult passage likely. Pipe arch, embedded, 30 ft long. County estimate based on bridge design.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: 54		Habitat and cost priority: 72	
Fix solution: culvert w/ simulated streambed		Span: 8.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$203,000.00	

CROSSING CL113

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: unknown Road: unknown
 Latitude: 45.3432235682 Longitude: -122.4926921598 Elevation: 343 ft
 Ownership: County Survey date: No field survey

Crossing Description

Type: box culvert Condition: 10.0 years left
 Diameter: 24.0 x 60.0 in Length: 42.0 ft
 Crossing slope: 0.9%
 Backwater drop: + 0.2 ft
 Avg. fill height: 4.7 ft

Habitat Description

Channel habitat type: Low gradient, small floodplain Catchment acreage: 205.0
 Avg. channel slope: not available Avg. bankfull width: 4.0 ft
 Distance from Clackamas R.: 5.4 miles Upstream fish-bearing length: 434. ft
 Dominant channel substrate: none recorded

Comments: No fish. Dry channel. Culvert has a natural stream bottom w/rockslabs for a ceiling. Stream comes from Norman into culvert that crosses parking lot at Redland Gas Stn. Stream appears for 2 ft then goes into a culvert that dumps into a catch basin. Water drops about 1 ft.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: 58		Habitat and cost priority: 54	
Fix solution: culvert w/ simulated streambed		Span: 5.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$44,000.00	

CROSSING CL115 / CV5218

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: unknown Road: unknown
Latitude: 45.3454705936 Longitude: -122.4880388919 Elevation: 311 ft
Ownership: County Survey date: No field survey

Crossing Description

Type: box culvert Condition: 3.0 years left
Diameter: 36.0 x 36.0 in Length: 35.0 ft
Crossing slope: 0.7%
Backwater drop: + 0.4 ft
Avg. fill height: 5.3 ft

Habitat Description

Channel habitat type: Moderate gradient, moderately confined Catchment acreage: 270.0
Avg. channel slope: 1.0% Avg. bankfull width: 4.0 ft
Distance from Clackamas R.: 5.1 miles Upstream fish-bearing length: 1956 ft
Dominant channel substrate: none recorded

Comments: No fish. Dry channel. Concrete bottom creating sheeting. Homeowner said never seen fish.

Prioritization and Cost Information

Fish passage: partial	Habitat priority: 29	Habitat and cost priority: 30
Fix solution: culvert w/ simulated streambed	Span: 5.0 ft	Material: metal
Design NA	Materials NA	Install NA
	Contingencies NA	Total \$50,000.00

CROSSING CL116 / CV5219

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: unknown Road: unknown
Latitude: 45.3453137524 Longitude: -122.4839038518 Elevation: 313 ft
Ownership: County Survey date: No field survey

Crossing Description

Type: box culvert Condition: 3.0 years left
Diameter: 48.0 x 48.0 in Length: 36.0 ft
Crossing slope: 1.3%
Backwater drop: + 0.8 ft Inlet elev: + 0.8 ft
Avg. fill height: 6.4 ft

Habitat Description

Channel habitat type: Low gradient, moderately confined Catchment acreage: 446.0
Avg. channel slope: 2.1% Avg. bankfull width: 5.0 ft
Distance from Clackamas R.: 5.1 miles Upstream fish-bearing length: 1.5 miles
Dominant channel substrate: none recorded

Comments: No fish. Dry channel. Footings of culvert eroding. Concrete bottom pot hole and failing.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: 14		Habitat and cost priority: 12	
Fix solution: culvert w/ simulated streambed		Span: 6.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$50,000.00	

CROSSING CL118

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: unknown Road: Hattan
 Latitude: 45.3521350346 Longitude: -122.4912848111 Elevation: 310 ft
 Ownership: County Survey date: 06/26/2002

Crossing Description

Type: box culvert
 Condition: 4.0 years left
 Diameter: 24.0 x 36.0 in
 Length: 36.0 ft
 Crossing slope: 1.3 %
 Backwater drop: + 1.2 ft
 Avg. fill height: 8.7 ft



Habitat Description



Channel habitat type: moderate gradient, moderately confined
 Catchment acreage: 363
 Avg. channel slope: 2.9%
 Avg. bankfull width: 5.0 ft
 Dist from Clackamas R.: 4.8 miles
 Upstream fish-bearing length: 3277.0 ft
 Dominant channel substrate: none recorded

Comments: Barbed wire and blackberry mess. Runs into wetland in field. Runs from field to field. *Solution* - Because of concrete lining likely to have velocity problems. Round culvert, embedded, 40 ft long placed at stream grade. County estimate based on open box.

Prioritization and Cost Information

Fish passage: no		Habitat priority: 24		Habitat and cost priority: 21	
Fix solution: culvert w/ simulated streambed		Span: 6.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$50,000.00	

CROSSING CL119

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek

Stream: T Clear Ck.

Road: McCubbin

Latitude: 45.3568143239

Longitude: -122.4694243577

Elevation: 249 ft

Ownership: County

Survey date: 06/28/2002

Crossing Description

Type: round culvert

Number of culverts at crossing: 2

Condition: 5.0 years left

Diameter: 36.0 in

Length: 81.0 ft

Crossing slope: 0.2 %

Backwater drop: - 0.7 ft

Avg. fill height: 21.5 ft



Habitat Description



Channel habitat type: moderate gradient, headwater

Catchment acreage: 459

Avg. channel slope: 3.2%

Avg. bankfull width: 15.0 ft

Dist from Clackamas R.: 5.6 miles

Upstream fish-bearing length: 4402.1 ft

Dominant channel substrate: none recorded

Comments: One of two culverts. One of two pipes has 20 ft of metal and then turns into concrete. Last section is failing. Not fish passable. *Solution* - Lack of backwatering creates depth issues during low flows. Pipe arch, embedded, 85 ft long. County estimate based on open bottom design.

Prioritization and Cost Information

Fish passage: partial

Habitat priority: 19

Habitat and cost priority: 57

Fix solution: culvert w/ simulated streambed

Span: 15.0 ft

Material: metal

Design NA

Materials NA

Install NA

Contingencies NA

Total \$443,500.00

CROSSING CL120 / CV3258

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek

Stream: T Clear Ck.

Road: Gerber

Latitude: 45.3664838498

Longitude: -122.4431879226

Elevation: 403 ft

Ownership: County

Survey date: 07/16/2002

Crossing Description

Type: round culvert

Number of culverts at crossing: 2

Condition: 4.0 years left

Diameter: 24.0 in

Length: 40.0 ft

Crossing slope: 0.5 %

Backwater drop: -0.9 ft

Inlet elev: -0.2 ft

Avg. fill height: 3.7 ft



Habitat Description

Channel habitat type: low gradient, small floodplain

Catchment acreage: 171

Avg. channel slope: 1.5%

Avg. bankfull width: 4.5 ft

Dist from Clackamas R.: 4.2 miles

Upstream fish-bearing length: 1774.4 ft

Dominant channel substrate: none recorded

Comments: 1 of 2 culverts. Barrels choked w/ grass. Rusted w/edge damage. Channel goes around bermed pond on side. Inlet water starts about 100 ft upstream.

Prioritization and Cost Information

Fish passage: partial

Habitat priority: 32

Habitat and cost priority: 35

Fix solution: culvert w/ simulated streambed

Span: 5.0 ft

Material: metal

Design NA

Materials NA

Install NA

Contingencies NA

Total \$69,500.00

CROSSING CL122 / CV3289

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Clear Ck. Road: Babler
 Latitude: 45.3694604493 Longitude: -122.4542685288 Elevation: 368 ft
 Ownership: County Survey date: 07/16/2002

Crossing Description

Type: pipe arch
 Condition: 10.0 years left
 Diameter: 48.0 x 60.0 in
 Length: 37.0 ft
 Crossing slope: 0.9 %
 Backwater drop: - 1.2 ft
 Inlet elev: +3.7 ft
 Avg. fill height: 1.1 ft



Habitat Description

Channel habitat type: Low gradient, small floodplain Catchment acreage: 429.0
 Avg. channel slope: not available Avg. bankfull width: 5.6 ft
 Distance from Clackamas R.: 3.6 miles Upstream fish-bearing length: 1.6 miles
 Dominant channel substrate: none recorded

Comments: Inlet too blocked by wall of blackberry to get photo. Pipe is in good shape, very shallow. Couldn't get to inlet portion of stream because completely covered with blackberries. *Solution* - Because of the high drop and the combination of moderate slope and length probably a complete blockage. Round culvert, embedded, 40 ft long, placed at stream grade. Require a profile to get placement info. County estimate based on open bottom design.

Prioritization and Cost Information

Fish passage: no		Habitat priority: 13		Habitat and cost priority: 19	
Fix solution: culvert w/ simulated streambed		Span: 6.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$85,500.00	

CROSSING CL123

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Clear Ck.
 Latitude: 45.3714578138 Longitude: -122.4675858294
 Ownership: Private

Road: Springwater
 Elevation: 291 ft
 Survey date: 07/10/2002

Crossing Description

Type: round culvert
 Condition: +20.0 years left
 Diameter: 36.0 in
 Length: 38.5 ft
 Crossing slope: 2.8 %
 Avg. embedded: no material
 Inlet design: non-mitered
 Backwater drop: + 0.1 ft
 Inlet elev: -0.1 ft
 Avg. fill height: 4.9 ft
 Road width: 14.0 ft
 Road armor: cobble / gravel



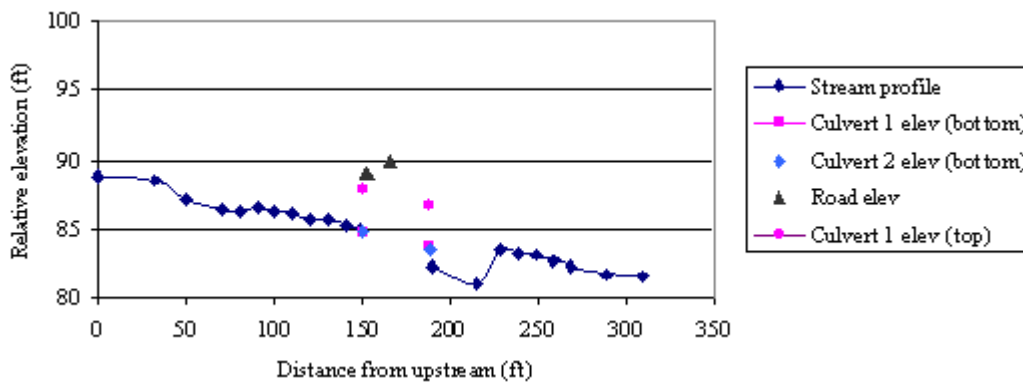
Habitat Description



Channel habitat type: moderate gradient, confined
 Catchment acreage: 733
 Avg. channel slope: 5.4%
 Avg. bankfull width: 7.7 ft
 Dist from Clackamas R.: 2.8 miles
 Upstream fish-bearing length: 2.3 miles
 Dominant channel substrate: cobble / gravel

Comments: 2 Culverts. Fish in downstream pool. Single channel: island and side channel are 3-4x width. Sediment fill behind culvert. *Solution* - Backwatering at higher flows negates some of the slope effects. Round culvert, embedded, 40 ft long.

Profile



Prioritization and Cost Information

Fish passage: partial	Habitat priority: 5	Habitat and cost priority: 6
Fix solution: culvert w/ simulated streambed	Span: 8.0 ft	Material: metal

CROSSING CL125

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek

Stream: Hattin Ck.

Road: Hattan Rd.

Latitude: 45.3748869409

Longitude: -122.4957200537

Elevation: 253 ft

Ownership: County

Survey date: 07/15/2002

Crossing Description

Type: round culvert
 Condition: unknown
 Diameter: 30.0 in
 Length: 52.0 ft
 Crossing slope: 0.4 %
 Inlet elev: -0.8 ft
 Avg. fill height: 8.2 ft



Habitat Description

Channel habitat type: Moderate gradient, moderately confined Catchment acreage: 211.0
 Avg. channel slope: 6.9% Avg. bankfull width: 6.0 ft
 Distance from Clackamas R.: 1.9 miles Upstream fish-bearing length: 2169 ft
 Dominant channel substrate: none recorded

Comments: Crossing runs into pond. ODFW allows owner to raise trout in it. Fish screens on both ends of pond. Outlet is underwater. Drains into pond. *Solution* - Minor drop at outlet that was unmeasured would impede fish passage. Round culvert, embedded, 55 ft long. County estimate based on open bottom design.

Prioritization and Cost Information

Fish passage: partial	Habitat priority: 27	Habitat and cost priority: 28
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Fix solution: culvert w/ simulated streambed	Span: 7.0 ft	Material: metal
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Design NA	Materials NA	Install NA	Contingencies NA	Total \$50,000.00
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CROSSING CL128

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek
 Latitude: 45.376101635
 Ownership: County

Stream: T Clear Ck.
 Longitude: -122.4764693835

Road: off Springwater
 Elevation: 218 ft
 Survey date: 07/30/2002

Crossing Description

Type: round culvert
 Condition: +10.0 years left
 Diameter: 66.0 in
 Length: 31.0 ft
 Crossing slope: -7.1 %
 Avg. embedded: no material
 Inlet design: non-mitered
 Backwater drop: +1.2 ft
 Inlet elev: -0.2 ft
 Avg. fill height: 7.4 ft
 Road armor: gravel



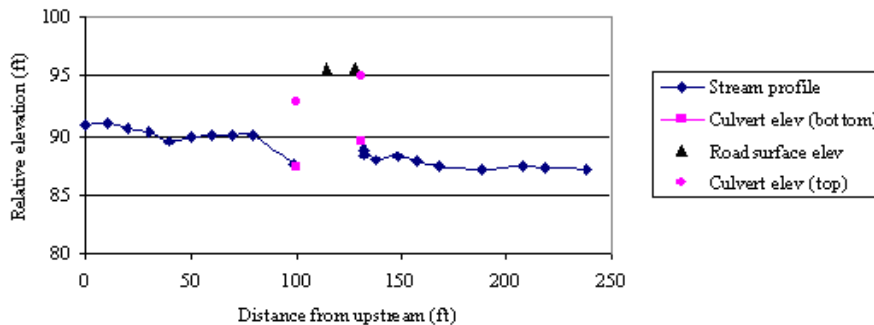
Habitat Description

Channel habitat type: moderate gradient, moderately confined
 Catchment acreage: 880
 Avg. channel slope: 1.6%
 Avg. bankfull width: 5.0 ft
 Dist from Clackamas R.: 2.2 miles
 Upstream fish-bearing length: 2.8 miles
 Dominant channel substrate: none recorded



Comments: Altered streambed for 6-7 feet downstream. Saw red-legged frog. *Solution* - Inverted slope and slack water creates passable conditions at least for adults. Round culvert, embedded, 31 ft long. Could also be retrofitted with downstream backwatering.

Profile



Prioritization and Cost Information

Fish passage: partial	Habitat priority: 30	Habitat and cost priority: 10
Fix solution: culvert w/ simulated streambed	Span: 6.0 ft	Material: metal
Design \$3,500	Materials \$4,099	Install \$4,325
Contingencies \$3,577	Total \$15,501.00	

CROSSING CL143

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Clear Ck. Road: unknown
 Latitude: 45.1443669449 Longitude: -122.2983083182 Elevation: 2857 ft
 Ownership: USA Survey date: 06/11/2002

Crossing Description

Type: Drop culvert
 Condition: unknown
 Diameter: 36.0 in
 Length: 44.2 ft
 Crossing slope: 18.1 %
 Avg. embedded: no material
 Inlet design: not available
 Backwater drop: + 1.4 ft
 Inlet elev: +0.7 ft
 Avg. fill height: 5.9 ft
 Road width: 24.5 ft

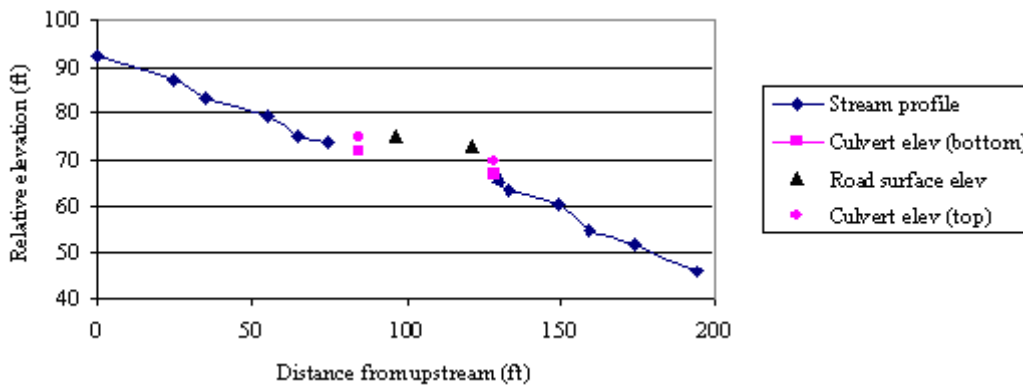


Habitat Description

Channel habitat type: very steep headwater
 Catchment acreage: 135
 Avg. channel slope: 24.2%
 Avg. bankfull width: 14.4 ft
 Dist from Clackamas R.: 30.3 miles
 Upstream fish-bearing length: 2532.7 ft
 Dominant channel substrate: boulder - cobble

Comments: Channel goes subsurface under a debris flow deposit at 85 ft. No bedrock visible. *Solution* - Standpipe inlet. Slab with dirt pile over, 30 ft long.

Profile



Prioritization and Cost Information

Fish passage: no	Habitat priority: 64	Habitat and cost priority: 69
Fix solution: Open slab	Span: 20.0 ft	Material: concrete
Design \$5,000	Materials \$32,400	Install \$22,990
	Contingencies \$18,117	Total \$78,507.00

CROSSING CL209

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: Clear Ck.
 Latitude: 45.3039579202 Longitude: -122.4195638625
 Ownership: Private

Road: Pipe in Clear Ck.
 Elevation: 337 ft
 Survey date: 07/03/2002

Crossing Description

Type: pipe in creek
 Condition: unknown
 Diameter: unavailable
 Length: unknown
 Crossing slope: unknown

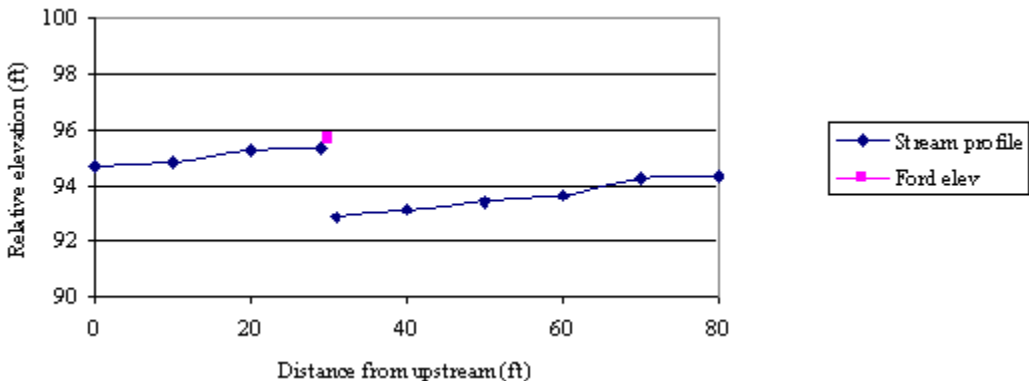


Habitat Description

Channel habitat type: low gradient, large floodplain
 Catchment acreage: 28,254
 Dist from Clackamas R.: 11.9 miles
 Upstream fish-bearing length: 64.6 miles
 Dominant channel substrate: none recorded

Comments: Rotweilers on shore. Measurements taken w/ clinometer and stadia rod.

Profile



Prioritization and Cost Information

Fish passage: partial	Habitat priority: 1	Habitat and cost priority: 1
Fix solution: roughened channel	Span: 10.0 ft	Material: rock w/ concrete sides
Design \$2,000 Materials \$0	Install \$3,730 Contingencies \$1,719	Total \$7,449.00

CROSSING CL211

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Foster Ck.
 Latitude: 45.2056714505 Longitude: -122.274200245
 Ownership: Private

Road: Private
 Elevation: 1451 ft
 Survey date: 06/25/2002

Crossing Description

Type: round culvert
 Condition: +1.0 years left
 Diameter: 36.0 in
 Length: 41.0 ft
 Crossing slope: 3.9 %
 Avg. embedded: no material
 Inlet design: non-mitered
 Backwater drop: + 0.7 ft
 Inlet elev: -0.3 ft
 Avg. fill height: 5.6 ft
 Road width: 10.0 ft
 Road armor: fine



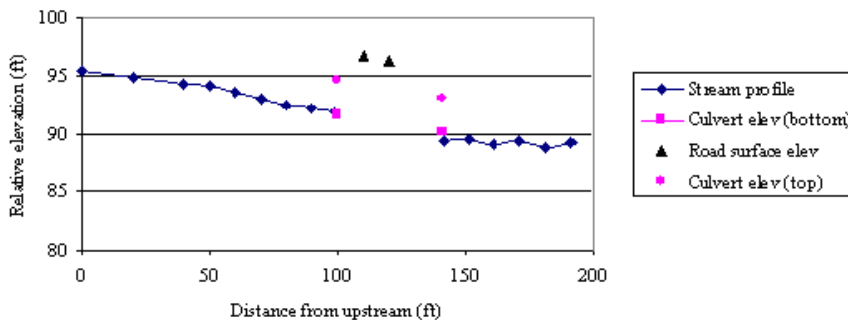
Habitat Description



Channel habitat type: moderate gradient, moderately confined
 Catchment acreage: 599
 Avg. channel slope: 5.6%
 Avg. bankfull width: 10.6 ft
 Dist from Clackamas R.: 27.1 miles
 Upstream fish-bearing length: 2.0 miles
 Dominant channel substrate: fine

Comments: Mitered on outlet. Partially collapsed and bent interior. Eroded around outlet. Number in field is CL150. **Solution** - Fairly high slope and moderate length and drop means unlikely fish passage for adults. Pipe arch, embedded, 41 ft long.

Profile



Prioritization and Cost Information

Fish passage: no	Habitat priority: 25	Habitat and cost priority: 9
Fix solution: culvert w/ simulated streambed	Span: 11.0 ft	Material: metal
Design \$3,500	Materials \$7,605	Install \$4,800
Contingencies \$4,771	Total \$20,676.00	

CROSSING CL213

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Clear Ck.
 Latitude: 45.2029833334 Longitude: -122.27455
 Ownership: Private

Road: Private
 Elevation: 1504 ft
 Survey date: 06/25/2002

Crossing Description

Type: round culvert
 Number of culverts at crossing: 2
 Condition: +5.0 years left
 Diameter: 24.0 in
 Length: 25.0 ft
 Crossing slope: 3.0 %
 Avg. embedded: no material
 Inlet design: non-mitered
 Backwater drop: +0.3 ft
 Inlet elev: -0.5 ft
 Avg. fill height: 2.7 ft
 Road width: 12.0 ft
 Road armor: fine

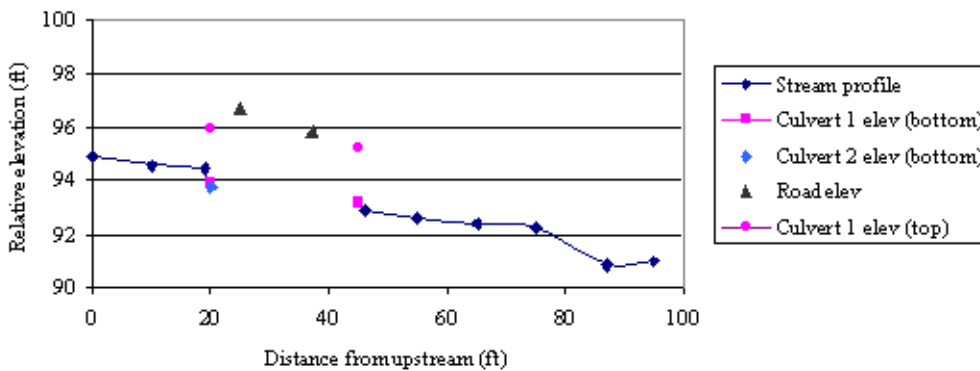


Habitat Description

Channel habitat type: moderate gradient, moderately confined
 Catchment acreage: 444
 Avg. channel slope: 4.2%
 Avg. bankfull width: 8.8 ft
 Dist from Clackamas R.: 27.3 miles
 Upstream fish-bearing length: 1.4 miles
 Dominant channel substrate: cobble / gravel

Comments: Double culvert, one that extends longer at outlet is dented at inlet. Number in field is CL152.

Profile



Prioritization and Cost Information

Fish passage: partial	Habitat priority: 44	Habitat and cost priority: 25
Fix solution: culvert w/ simulated streambed	Span: 9.0 ft	Material: metal
Design \$3,500 Materials \$5,010	Install \$4,800 Contingencies \$3,993	Total \$17,303.00

CROSSING CL214

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Clear Ck. Road: Private
 Latitude: 45.2026 Longitude: -122.2721333333 Elevation: 1512 ft
 Ownership: Private Survey date: 06/25/2002

Crossing Description

Type: round culvert
 Condition: +20.0 years left
 Diameter: 24.0 in
 Length: 20.3 ft
 Crossing slope: 3.0 %
 Avg. embedded: no material
 Inlet design: non-mitered
 Backwater drop: +0.2 ft
 Inlet elev: -0.0 ft
 Avg. fill height: 4.2 ft
 Road width: 11.0 ft
 Road armor: fine

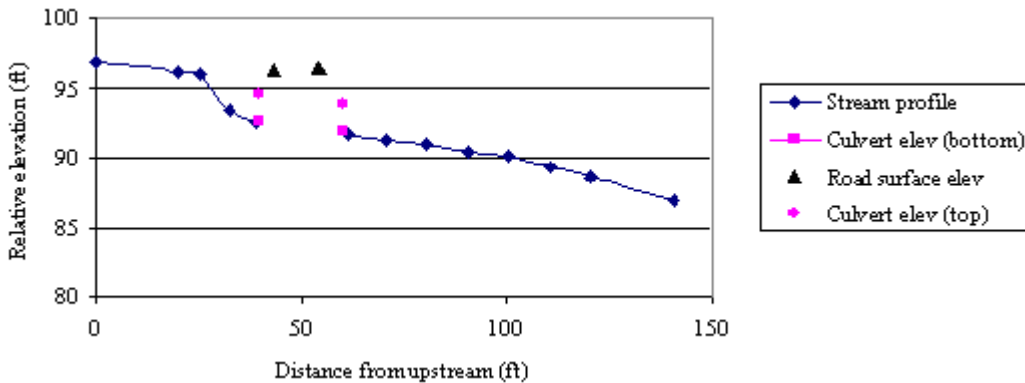


Habitat Description

Channel habitat type: moderate gradient, moderately confined
 Catchment acreage: 127
 Avg. channel slope: 7.1%
 Avg. bankfull width: 6.5 ft
 Dist from Clackamas R.: 27.3 miles
 Upstream fish-bearing length: 1378.0 ft
 Dominant channel substrate: gravel / fine

Comments: Bedrock streambed chute 11 ft upstream from inlet. Number in field is CL153.

Profile



Prioritization and Cost Information

Fish passage: partial	Habitat priority: 45	Habitat and cost priority: 22
Fix solution: culvert w/ simulated streambed	Span: 7.0 ft	Material: metal
Design \$3,500 Materials \$4,170	Install \$4,800 Contingencies \$3,741	Total \$16,211.00

CROSSING CL215

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Clear Ck.
 Latitude: 45.2021166667 Longitude: -122.2754
 Ownership: Private

Road: Private
 Elevation: 1519 ft
 Survey date: 06/25/2002

Crossing Description

Type: round culvert
 Number of culverts at crossing: 3
 Condition: +10.0 years left
 Diameter: 24.0 in
 Length: 20.5 ft
 Crossing slope: 4.9 %
 Avg. embedded: no material
 Inlet design: non-mitered
 Backwater drop: +0.1 ft
 Inlet elev: +0.0 ft
 Avg. fill height: 2.7 ft
 Road width: 10.0 ft
 Road armor: fine

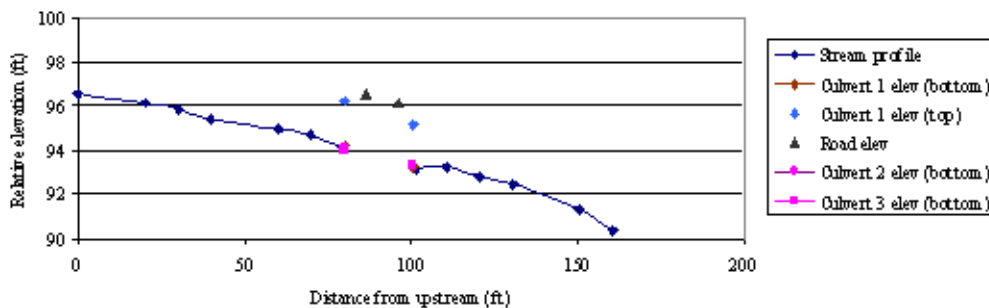


Habitat Description

Channel habitat type: moderate gradient, moderately confined
 Catchment acreage: 428
 Avg. channel slope: 3.9%
 Avg. bankfull width: 8.4 ft
 Dist from Clackamas R.: 27.4 miles
 Upstream fish-bearing length: 1.3 miles
 Dominant channel substrate: cobble

Comments: One of three culverts. Number in field is CL154.

Profile



Prioritization and Cost Information

Fish passage: no	Habitat priority: 46	Habitat and cost priority: 20
Fix solution: culvert w/ simulated streambed	Span: 9.0 ft	Material: metal
Design \$2,500 Materials \$3,834	Install \$3,850 Contingencies \$3,055	Total \$13,239.00

CROSSING CL216

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: Clear Ck.
 Latitude: 45.2790520104 Longitude: -122.381285124
 Ownership: Private

Road: Private
 Elevation: 406 ft
 Survey date: 06/25/2002

Crossing Description

Type: ford
 Material: concrete
 Span: 16.0
 Length: 72
 Bed material downstream: boulder / cobble
 Bed material upstream: boulder / cobble
 Surface condition: rutted
 Jump: 2.04 ft

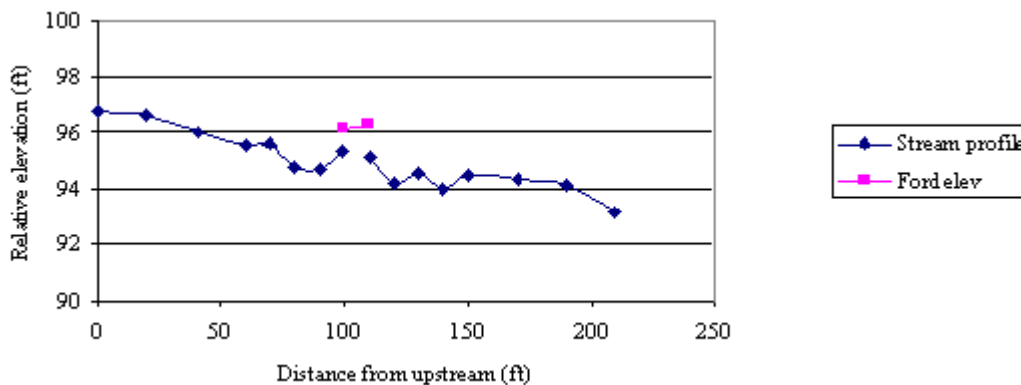


Habitat Description

Channel habitat type: moderate gradient, moderately confined
 Catchment acreage: 26,075
 Avg. channel slope: 1.8%
 Avg. bankfull width: 59.5 ft
 Dist from Clackamas R.: 15.3 miles
 Upstream fish-bearing length: 59.3 miles
 Dominant channel substrate: boulder - cobble

Comments: Cement spanners creating ridged ford. Number in field is CL155.

Profile



Prioritization and Cost Information

Fish passage: partial	Habitat priority: 4	Habitat and cost priority: 3
Fix solution: roughened channel	Span: 10.0 ft	Material: rock w/ concrete sides
Design \$2,000	Materials \$0	Install \$3,730
	Contingencies \$1,719	Total \$7,449.00

CROSSING CL217

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: Bargefield Ck.
 Latitude: 45.3346166667 Longitude: -122.4459833333
 Ownership: Private

Road: Private
 Elevation: 296 ft
 Survey date: 09/04/2002

Crossing Description

Type: round culvert
 Condition: +10.0 years left
 Diameter: 60.0 in
 Length: 30.5 ft
 Crossing slope: 0.0 %
 Avg. embedded: no material
 Inlet design: non-mitered
 Backwater drop: +0.9 ft
 Inlet elev: +0.1 ft
 Avg. fill height: 6.0 ft
 Road width: 15.0 ft
 Road armor: gravel

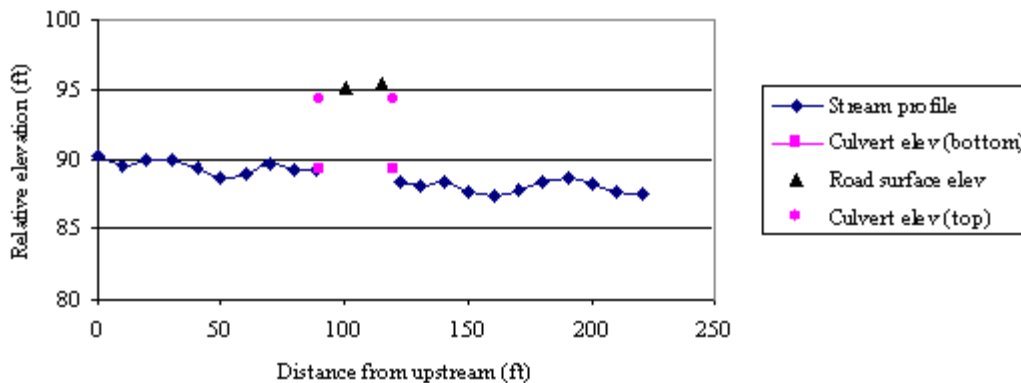


Habitat Description

Channel habitat type: Low gradient, medium floodplain Catchment acreage: 1660.0
 Avg. channel slope: 1.2% Avg. bankfull width: 9.6 ft
 Distance from Clackamas R.: 8.1 miles Upstream fish-bearing length: 3.8 miles
 Dominant channel substrate: gravel - fine

Comments: Culvert perched. Landowner interested in replacing. No number in field.

Profile



Prioritization and Cost Information

Fish passage: partial	Habitat priority: 16	Habitat and cost priority: 8
Fix solution: culvert w/ simulated streambed	Span: 10.0 ft	Material: metal
Design \$3,500 Materials \$6,000	Install \$4,800 Contingencies \$4,290	Total \$18,590.00

CROSSING CL219

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: T Clear Ck. Road: Private
 Latitude: 45.3280833334 Longitude: -122.4250333333 Elevation: 301 ft
 Ownership: Private Survey date: 09/13/2002

Crossing Description

Type: round culvert
 Condition: +10.0 years left
 Diameter: 24.0 in
 Length: 77.5 ft
 Crossing slope: 4.1 %
 Avg. embedded: no material
 Inlet design: non-mitered
 Backwater drop: +1.0 ft
 Inlet elev: +0.9 ft
 Avg. fill height: 4.0 ft
 Road width: 69.0 ft
 Road armor: gravel

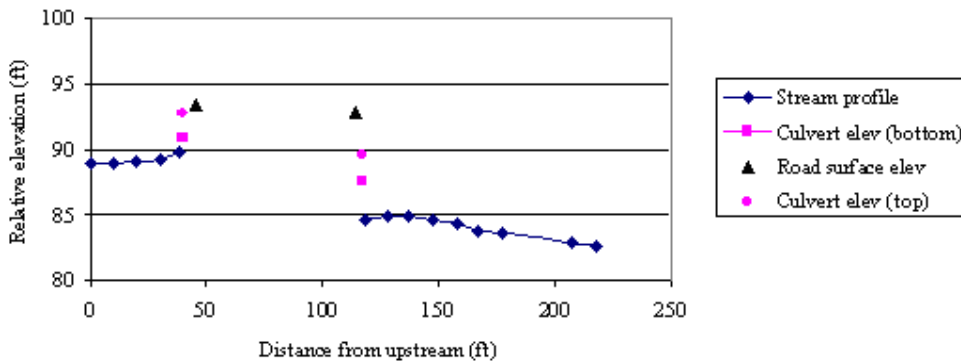


Habitat Description

Channel habitat type: none available
 Catchment acreage: 17
 Avg. channel slope: 2.0%
 Avg. bankfull width: 4.7 ft
 Dist from Clackamas R.: 9.2 miles
 Upstream fish-bearing length: 0.0 ft
 Dominant channel substrate: cobble / gravel

Comments: 2 culverts go under shop to upstream pond. One angles off toward slope and ditch along slope bottom. Covered by pole barn. Fish in outlet pool. Number in field is CL180.

Profile



Prioritization and Cost Information

Fish passage: no	Habitat priority: not ranked	Habitat and cost priority: not ranked
Fix solution: culvert w/ simulated streambed	Span: 6.0 ft	Material: metal
Design \$3,500 Materials \$9,880	Install \$5,750 Contingencies \$5,739	Total \$24,869.00

CROSSING CL220

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek

Stream: T Little Cedar

Road: Private

Latitude: 45.22625

Longitude: -122.28525

Elevation: 1293 ft

Ownership: Private

Survey date: 08/10/2002

Crossing Description

Type: round culvert

Condition: +10.0 years left

Diameter: 36.0 in

Length: 36.8 ft

Crossing slope: -0.1%

Avg. embedded: no

Inlet design: non-mitered

Backwater drop: + 2.6 ft

Inlet elev: + 0.0 ft

Avg. fill height: 3.6 ft

Road width: 11.0 ft

Road armor: fine

Habitat Description

Channel habitat type: none available

Catchment acreage: 145.0

Avg. channel slope: 2.7%

Avg. bankfull width: 6.4 ft

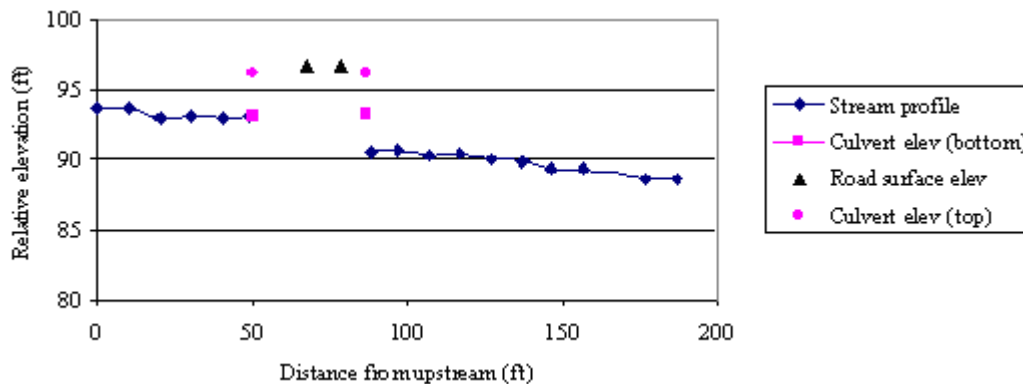
Distance from Clackamas R.: 24.9 miles

Upstream fish-bearing length: 0.0 ft

Dominant channel substrate: cobble - fine

Comments: Number in field is CL149.

Profile



Prioritization and Cost Information

Fish passage: partial

Habitat priority: 74

Habitat and cost priority: 58

Fix solution: culvert w/ simulated streambed

Span: 7.0 ft

Material: metal

Design \$2,500

Materials \$5,123

Install \$4,800

Contingencies \$3,727

Total \$16,150.00

CROSSING CL223

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek	Stream: unknown	Road: Lower Highland
Latitude: 45.2569566667	Longitude: -122.4197	Elevation: 1160 ft
Ownership: County		Survey date: 03/29/2001

Crossing Description

Type: round culvert	Condition: 7.0 years left
Diameter: 24.0 in	Length: 32.0 ft
Crossing slope: 0.7%	
Backwater drop: + 1.1 ft	Inlet elev: - 0.2 ft

Habitat Description

Channel habitat type: none available	Catchment acreage: 145.0
Avg. channel slope: not available	Avg. bankfull width: 3.0 ft
Distance from Clackamas R.: 16.4 miles	Upstream fish-bearing length: 0.0 ft
Dominant channel substrate: none recorded	

Comments: Outfall is very channeled and armored with rocking.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: 62		Habitat and cost priority: 55	
Fix solution: culvert w/ simulated streambed		Span: 4.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$36,000.00	

CROSSING CL224

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: unknown Road: Mattoon
Latitude: 45.3083616667 Longitude: -122.4095616667 Elevation: 667 ft
Ownership: County Survey date: 03/14/2001

Crossing Description

Type: round culvert Condition: 7.0 years left
Diameter: 30.0 in Length: 99.0 ft
Crossing slope: 1.4%

Avg. fill height: 8.0 ft

Habitat Description

Channel habitat type: none available Catchment acreage: 71.0
Avg. channel slope: 7.6% Avg. bankfull width: 6.0 ft
Distance from Clackamas R.: 12.6 miles Upstream fish-bearing length: 0.0 ft
Dominant channel substrate: none recorded

Comments: Pond 100 ft downstream.

Prioritization and Cost Information

Fish passage: no		Habitat priority: 47		Habitat and cost priority: 56	
Fix solution: culvert w/ simulated streambed		Span: 6.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$101,000.00	

CROSSING CL225

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: unknown Road: Fellows
Latitude: 45.2906616667 Longitude: -122.4061833333 Elevation: 464 ft
Ownership: County Survey date: 03/12/2001

Crossing Description

Type: round culvert Condition: unknown
Diameter: 24.0 in Length: 34.0 ft
Crossing slope: 1.8%

Avg. fill height: 0.0 ft

Habitat Description

Channel habitat type: none available Catchment acreage: 42.0
Avg. channel slope: 0.0% Avg. bankfull width: 2.0 ft
Distance from Clackamas R.: 13.6 miles Upstream fish-bearing length: 0.0 ft
Dominant channel substrate: none recorded

Comments: Pipe half full. Drains into a wet area. Natural barrier downstream at entrance to Clear Creek. 42 acre drainage so deemed not a passage issue by county.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: 61		Habitat and cost priority: 61	
Fix solution: culvert w/ simulated streambed		Span: 4.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$45,500.00	

CROSSING CL226

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek	Stream: unknown	Road: Wallens
Latitude: 45.2500133334	Longitude: -122.3395283333	Elevation: 1116 ft
Ownership: County		Survey date: 03/12/2001

Crossing Description

Type: round culvert	Condition: unknown
Diameter: 30.0 in	Length: 68.0 ft
Crossing slope: 0.6%	

Avg. fill height: 4.2 ft

Habitat Description

Channel habitat type: none available	Catchment acreage: 82.0
Avg. channel slope: 0.0%	Avg. bankfull width: 6.0 ft
Distance from Clackamas R.: 19.7 miles	Upstream fish-bearing length: 0.0 ft
Dominant channel substrate: none recorded	

Comments: Pond downstream from culvert

Prioritization and Cost Information

Fish passage: no		Habitat priority: 73		Habitat and cost priority: 75	
Fix solution: culvert w/ simulated streambed		Span: 6.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$79,000.00	

CROSSING CL227

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek	Stream: unknown	Road: Hillockburn
Latitude: 45.2252833334	Longitude: -122.3213783333	Elevation: 1152 ft
Ownership: County		Survey date: 03/14/2001

Crossing Description

Type: round culvert/box	Condition: 1.0 years left
Diameter: 36.0 in	Length: 76.0 ft
Crossing slope: 1.7%	
Backwater drop: + 1.0 ft	
Avg. fill height: 8.0 ft	

Habitat Description

Channel habitat type: none available	Catchment acreage: 56.0
Avg. channel slope: 4.2%	Avg. bankfull width: 6.0 ft
Distance from Clackamas R.: 23.0 miles	Upstream fish-bearing length: 0.0 ft
Dominant channel substrate: none recorded	

Comments: Starts as 36 in pipe and ends as 36 in box culvert. Channeled into building, maybe well. Runs along 211. Recently chip sealed.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: 77		Habitat and cost priority: 77	
Fix solution: culvert w/ simulated streambed		Span: 6.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$135,000.00	

CROSSING CL228

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek	Stream: unknown	Road: Morgan
Latitude: 45.2213316667	Longitude: -122.33525	Elevation: 1068 ft
Ownership: County		Survey date: 03/15/2001

Crossing Description

Type: round culvert	Condition: 10.0 years left
Diameter: 24.0 in	Length: 40.0 ft
Crossing slope: 3.4%	

Avg. fill height: 4.2 ft

Habitat Description

Channel habitat type: none available	Catchment acreage: 40.0
Avg. channel slope: not available	Avg. bankfull width: 5.5 ft
Distance from Clackamas R.: 22.6 miles	Upstream fish-bearing length: 0.0 ft
Dominant channel substrate: none recorded	

Comments: Fairly steep ravine. Need outlet extended so that road can have shoulder.

Prioritization and Cost Information

Fish passage: partial	Habitat priority: 76	Habitat and cost priority: 63
Fix solution: culvert w/ simulated streambed	Span: 6.0 ft	Material: metal
Design \$2,500 Materials \$4,790	Install \$4,800 Contingencies \$3,627	Total \$15,717.00

CROSSING CL229

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek	Stream: unknown	Road: Skinner
Latitude: 45.2247966667	Longitude: -122.30641	Elevation: 1231 ft
Ownership: County		Survey date: 04/18/2001

Crossing Description

Type: round culvert	Condition: 5.0 years left
Diameter: 42.0 in	Length: 101.0 ft
Crossing slope: 0.7%	

Avg. fill height: 22.3 ft

Habitat Description

Channel habitat type: none available	Catchment acreage: 250.0
Avg. channel slope: not available	Avg. bankfull width: 10.0 ft
Distance from Clackamas R.: 23.9 miles	Upstream fish-bearing length: 0.0 ft
Dominant channel substrate: none recorded	

Comments: Outlet is too deep to shoot with laser. *Solution* - Partial information on slope data gives a stream with 1-2% grade on upstream side. Round culvert, embedded, 100 ft long, very high fill. County estimate based on open bottom design.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: 42		Habitat and cost priority: 65	
Fix solution: culvert w/ simulated streambed		Span: 10.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$194,500.00	

CROSSING CL230

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek	Stream: unknown	Road: Nawratil
Latitude: 45.2090633334	Longitude: -122.3074333333	Elevation: 1337 ft
Ownership: County		Survey date: 03/19/2001

Crossing Description

Type: round culvert	Condition: 5.0 years left
Diameter: 24.0 in	Length: 37.0 ft
Crossing slope: 0.5%	
Backwater drop: + 1.4 ft	
Avg. fill height: 5.7 ft	

Habitat Description

Channel habitat type: none available	Catchment acreage: 114.0
Avg. channel slope: 4.1%	Avg. bankfull width: 5.0 ft
Distance from Clackamas R.: 24.5 miles	Upstream fish-bearing length: 0.0 ft
Dominant channel substrate: none recorded	

Comments: Inlet has plywood in streambed. Outlet has armored shoulders next to creek.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: 72		Habitat and cost priority: 70	
Fix solution: culvert w/ simulated streambed		Span: 6.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$50,000.00	

CROSSING CL231

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: unknown Road: Upper Highland
Latitude: 45.2396516667 Longitude: -122.38829 Elevation: 1051 ft
Ownership: County Survey date: 03/14/2001

Crossing Description

Type: round culvert Condition: 9.0 years left
Diameter: 24.0 in Length: 45.0 ft
Crossing slope: 1.4%

Avg. fill height: 3.0 ft

Habitat Description

Channel habitat type: none available Catchment acreage: 60.0
Avg. channel slope: not available Avg. bankfull width: not available
Distance from Clackamas R.: 22.1 miles Upstream fish-bearing length: 0.0 ft
Dominant channel substrate: none recorded

Comments: Outlet flattens out and water goes subsurface.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: 75		Habitat and cost priority: 73	
Fix solution: culvert w/ simulated streambed		Span: 5.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$47,000.00	

CROSSING CL232 / CV5231

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: unknown Road: unknown
Latitude: 45.3385856282 Longitude: -122.4335904933 Elevation: 302 ft
Ownership: County Survey date: No field survey

Crossing Description

Type: round culvert Condition: unknown
Diameter: 24.0 in Length: 35.0 ft
Crossing slope: 0.1%
Backwater drop: + 0.2 ft
Avg. fill height: 4.1 ft

Habitat Description

Channel habitat type: Catchment acreage: 189.0
Avg. channel slope: 2.1% Avg. bankfull width: 3.0 ft
Distance from Clackamas R.: 8.3 miles Upstream fish-bearing length: 3719 ft
Dominant channel substrate: none recorded

Comments:

Prioritization and Cost Information

Fish passage: partial	Habitat priority: 26	Habitat and cost priority: 23
Fix solution: culvert w/ simulated streambed	Span: 4.0 ft	Material: metal
Design NA Materials NA	Install NA Contingencies NA	Total \$46,000.00

CROSSING CL233 / CV5232

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Clear Creek Stream: unknown Road: unknown
 Latitude: 45.338612177 Longitude: -122.4333891039 Elevation: 302 ft
 Ownership: County Survey date: No field survey

Crossing Description

Type: round culvert Condition: unknown
 Diameter: 24.0 in Length: 48.0 ft
 Crossing slope: 0.1%
 Backwater drop: + 1.0 ft
 Avg. fill height: 3.3 ft

Habitat Description

Channel habitat type: Catchment acreage: 189.0
 Avg. channel slope: 2.1% Avg. bankfull width: 3.0 ft
 Distance from Clackamas R.: 8.3 miles Upstream fish-bearing length: 3651 ft
 Dominant channel substrate: none recorded

Comments: Inlet is a ditch following Fischers Mill. Outlet is a trench through a field.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: 55		Habitat and cost priority: 31	
Fix solution: culvert w/ simulated streambed		Span: 4.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$13,655.00	

CROSSING FO001 / CV3244

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Foster Creek

Stream: Foster Ck.

Road: unknown

Latitude: 45.3803614717

Longitude: -122.4466693437

Elevation: 207 ft

Ownership: County

Survey date: No field survey

Crossing Description

Type: other

no crossing description available



Habitat Description

Channel habitat type: Moderate gradient, confined

Avg. channel slope: not available

Distance from Clackamas R.: 2363. ft

Dominant channel substrate: none recorded

Catchment acreage: 2086.0

Avg. bankfull width: not available

Upstream fish-bearing length: 4.5 miles

Comments: New Baker's Ferry replacement. No datasheet. Fish passable.

Prioritization and Cost Information

Fish passage: yes

Habitat priority: not ranked

Habitat and cost priority: not ranked

Fix solution: none necessary

CROSSING FO002

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Foster Creek
 Latitude: 45.3767617034
 Ownership: Private

Stream: Foster Ck.
 Longitude: -122.4415181564

Road: Gerber
 Elevation: 232 ft
 Survey date: 07/11/2002

Crossing Description

Type: Dam, irrigation
 Condition: unknown
 Diameter: unavailable
 Length: 11.0 ft
 Crossing slope: unknown
 Avg. embedded: unknown
 Inlet design: not available
 Backwater drop: +2.3 ft
 Inlet elev: +2.3 ft
 Road width: 16.5 ft
 Road armor: not available

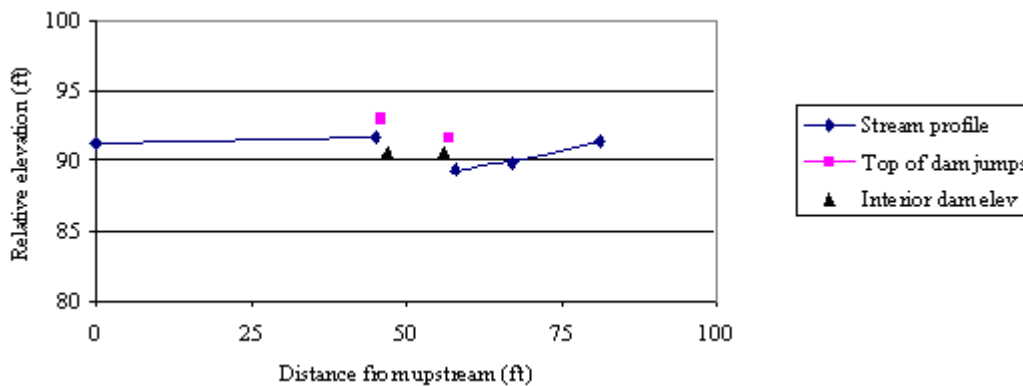


Habitat Description

Channel habitat type: low gradient, confined
 Catchment acreage: 1,962
 Avg. channel slope: 0.7%
 Avg. bankfull width: 17.0 ft
 Dist from Clackamas R.: 1.1 miles
 Upstream fish-bearing length: 4.0 miles
 Dominant channel substrate: fine

Comments: Total dam width 16.5 ft. See diagram for structure measurements.

Profile



Prioritization and Cost Information

Fish passage: partial	Habitat priority: 7	Habitat and cost priority: 5
Fix solution: fish ladder	Span: 7.0 ft	Material: concrete
Design \$4,500	Materials \$3,500	Install \$3,550
Contingencies \$3,465		Total \$15,015.00

CROSSING FO003 / CV3262

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Foster Creek Stream: Foster Ck. Road: Gerber
 Latitude: 45.3766175628 Longitude: -122.4421943441 Elevation: 236 ft
 Ownership: County Survey date: 07/11/2002

Crossing Description

Type: pipe arch
 Condition: 2.0 years left
 Diameter: 72.0 x 96.0 in
 Length: 105.0 ft
 Crossing slope: 0.3 %
 Avg. fill height: 31.0 ft



Habitat Description



Channel habitat type: low gradient, confined
 Catchment acreage: 1,963
 Avg. channel slope: 0.9%
 Avg. bankfull width: 25.0 ft
 Dist from Clackamas R.: 1.0 miles
 Upstream fish-bearing length: 4.0 miles
 Dominant channel substrate: none recorded

Comments: Inlet has log jam. Outlet has concrete slab creating sheeting. Saw lamprey that could not make it up culvert. *Solution* - Concrete sheet at outlet impedes migration. Because of the small capacity, retrofit options are limited but could work in this gradient range. County estimate.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: 6		Habitat and cost priority: 43	
Fix solution: bridge		Span: 30.0 ft		Material: varied	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$732,000.00	

CROSSING FO007 / CV3266

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Foster Creek Stream: Foster Ck. Road: Harding
 Latitude: 45.3701337304 Longitude: -122.4224057049 Elevation: 289 ft
 Ownership: County Survey date: 06/28/2002

Crossing Description

Type: pipe arch
 Condition: 10.0 years left
 Diameter: 54.0 x 72.0 in
 Length: 40.0 ft
 Crossing slope: 0.8 %
 Avg. fill height: 6.5 ft



Habitat Description

Channel habitat type: Low gradient, medium floodplain Catchment acreage: 1293.0
 Avg. channel slope: 1.5% Avg. bankfull width: 7.0 ft
 Distance from Clackamas R.: 2.5 miles Upstream fish-bearing length: 2.6 miles
 Dominant channel substrate: none recorded

Comments: Nice culvert with slow moving water.

Prioritization and Cost Information

Fish passage: partial		Habitat priority: 34		Habitat and cost priority: 38	
Fix solution: culvert w/ simulated streambed		Span: 7.0 ft		Material: metal	
Design NA	Materials NA	Install NA	Contingencies NA	Total \$74,500.00	

CROSSING FO011

Clear and Foster Creek 2002 Fish Passage Assessment

Watershed: Foster Creek Stream: T Foster Ck.
 Latitude: 45.3767 Longitude: -122.4399167
 Ownership: Private

Road: off Gerber
 Elevation: 242 ft
 Survey date: 07/11/2002

Crossing Description

Type: round culvert
 Condition: +10.0 years left
 Diameter: 25.0 in
 Length: 27.5 ft
 Crossing slope: 0.2 %
 Avg. embedded: no material
 Inlet design: non-mitered
 Backwater drop: +0.2 ft
 Inlet elev: +0.1 ft
 Avg. fill height: 5.7 ft
 Road width: 11.0 ft
 Road armor: fine



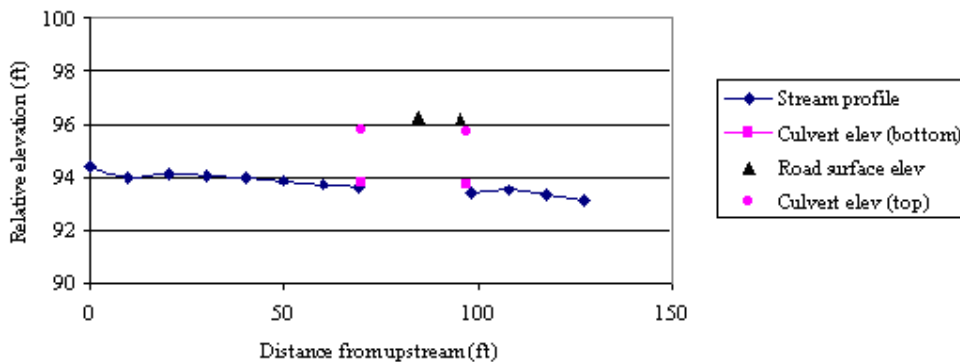
Habitat Description

Channel habitat type: none available
 Catchment acreage: 131
 Avg. channel slope: 1.0%
 Avg. bankfull width: 4.2 ft
 Dist from Clackamas R.: 1.2 miles
 Upstream fish-bearing length: 0.0 ft
 Dominant channel substrate: fine



Comments: Short profile. Impenetrable blackberry. Flat gradient and consistent channel form. Fish passable. *Solution*
 - Because of concrete lining likely to have velocity problems. Round culvert, embedded, 28 ft long.

Profile



Prioritization and Cost Information

Fish passage: partial	Habitat priority: 67	Habitat and cost priority: 37
Fix solution: culvert w/ simulated streambed	Span: 5.0 ft	Material: metal
Design \$2,500 Materials \$2,440	Install \$3,850 Contingencies \$2,637	Total \$11,427.00

