

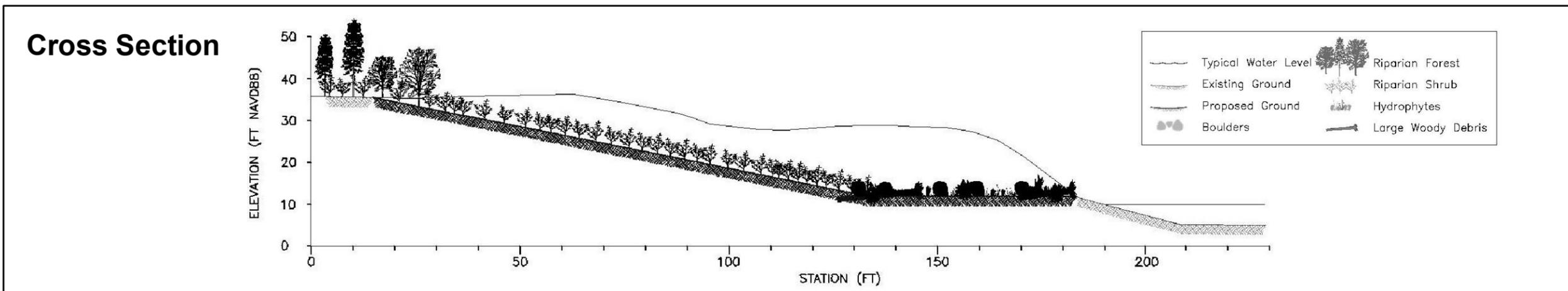
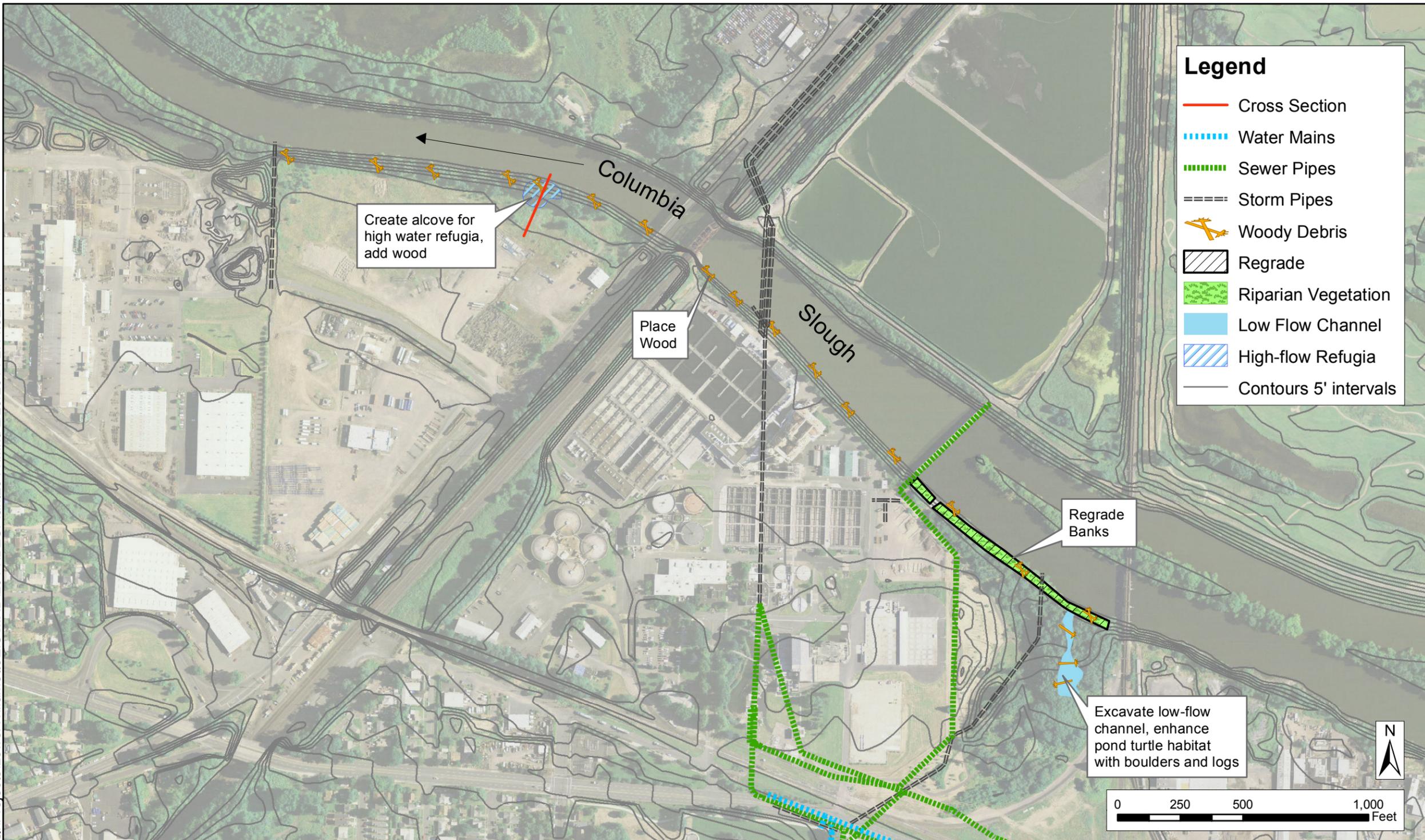
Appendix G-1 – Final Array Conceptual Plans

BES Plant

Lower Willamette Ecosystem Restoration Project Conceptual Restoration Plan



US Army Corps
of Engineers®
Portland District
BUILDING STRONG.



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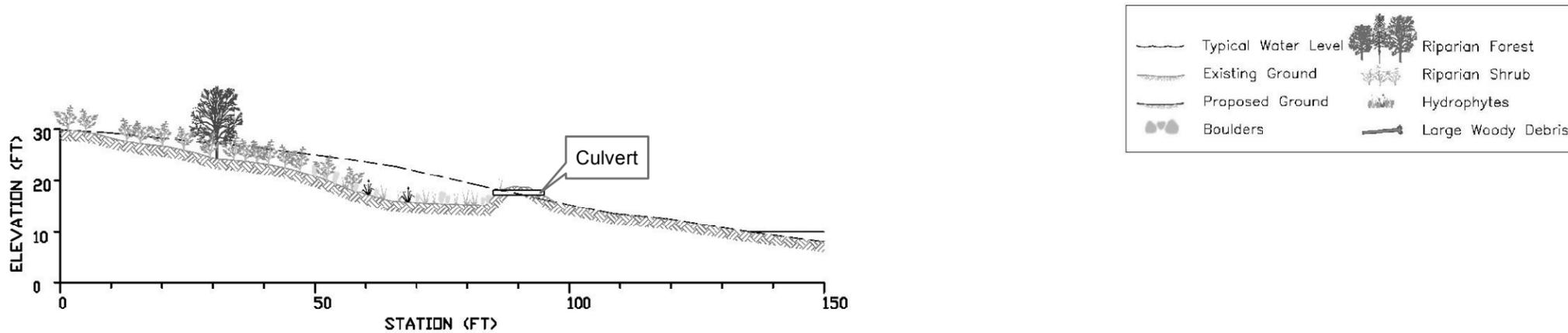
Cathedral Park

Lower Willamette Ecosystem Restoration Project Conceptual Restoration Plan

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Cross Section

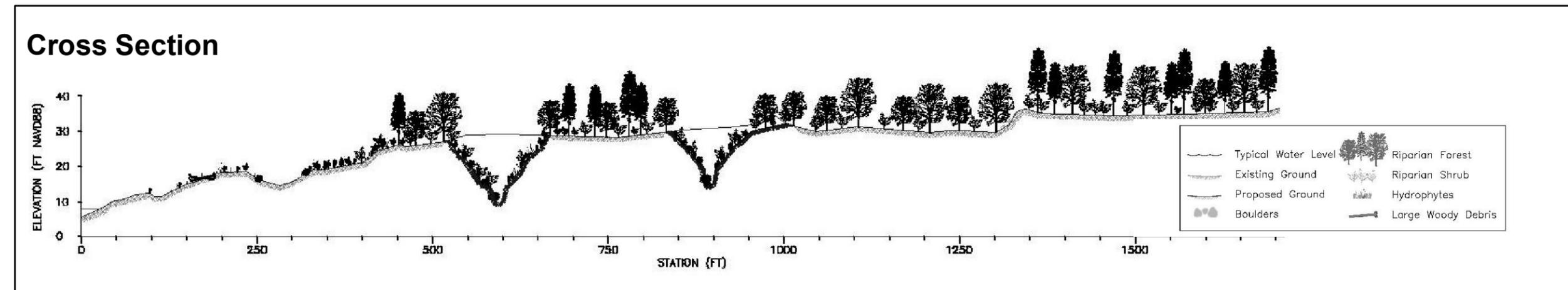


Kelley Point Park

Lower Willamette Ecosystem Restoration Project Conceptual Restoration Plan



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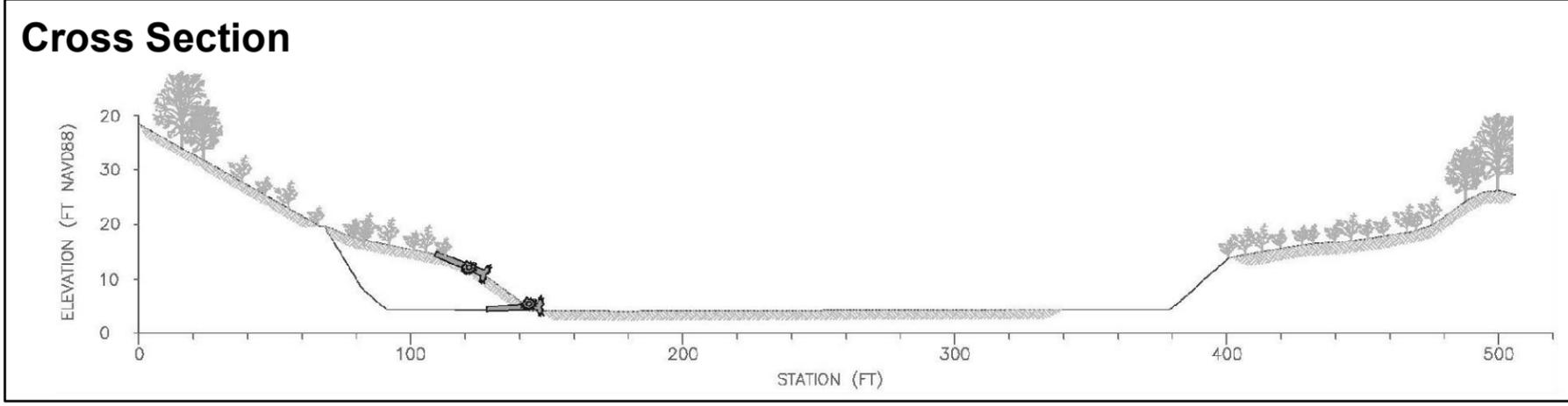
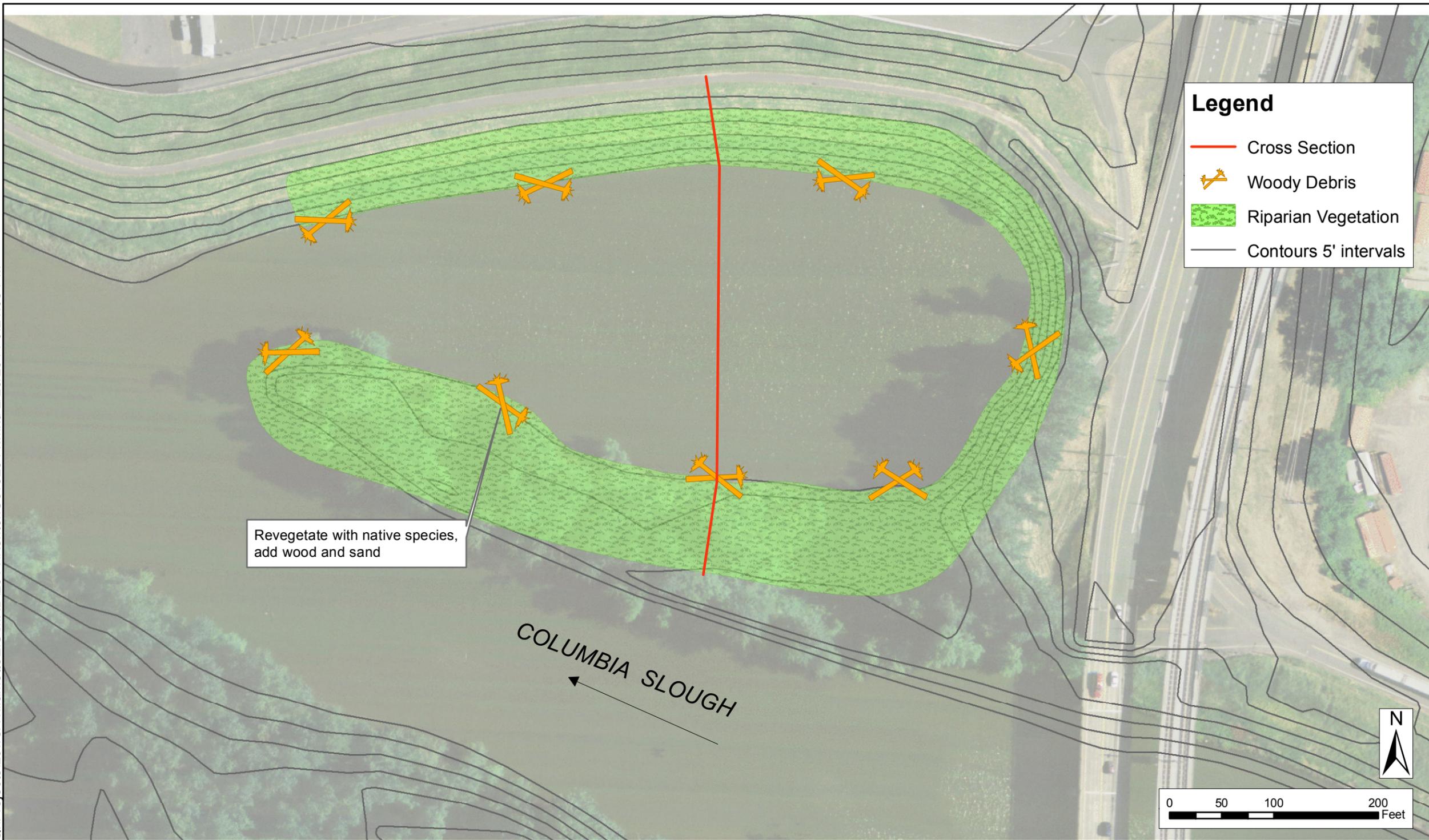
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Kenton Cove

Lower Willamette Ecosystem Restoration Project Conceptual Restoration Plan



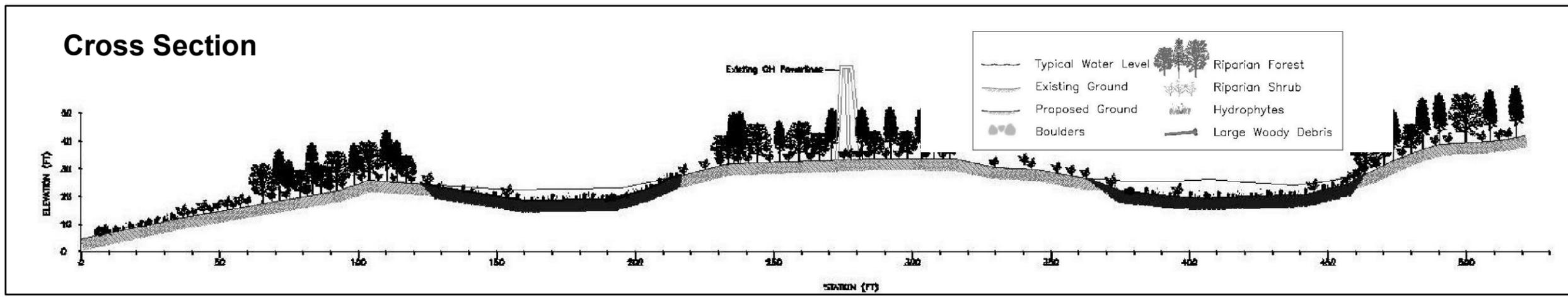
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Oaks Crossing/ Sellwood Riverfront Park

Lower Willamette Ecosystem Restoration Project Conceptual Restoration Plan



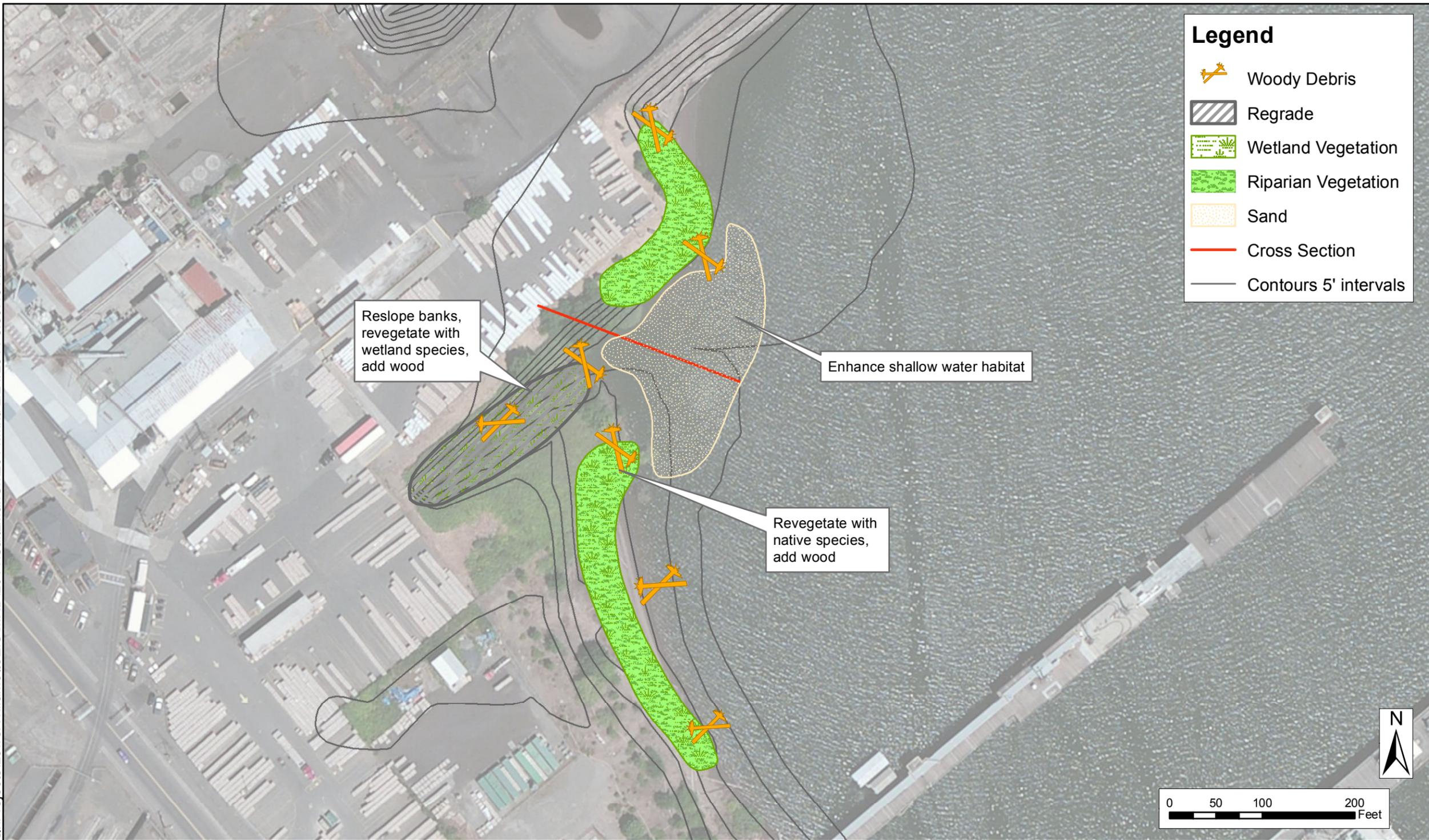
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Saltzman Creek

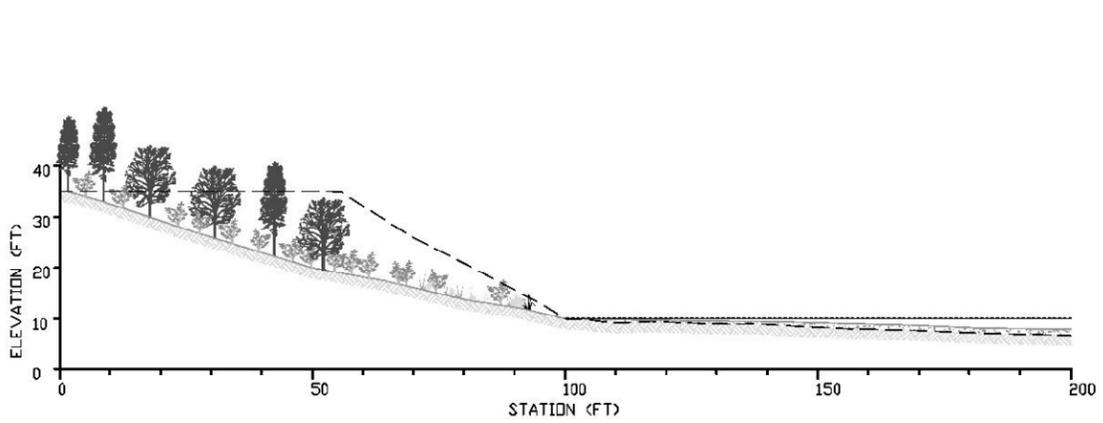
Lower Willamette Ecosystem Restoration Project Conceptual Restoration Plan

Legend

-  Woody Debris
-  Regrade
-  Wetland Vegetation
-  Riparian Vegetation
-  Sand
-  Cross Section
-  Contours 5' intervals



Cross Section

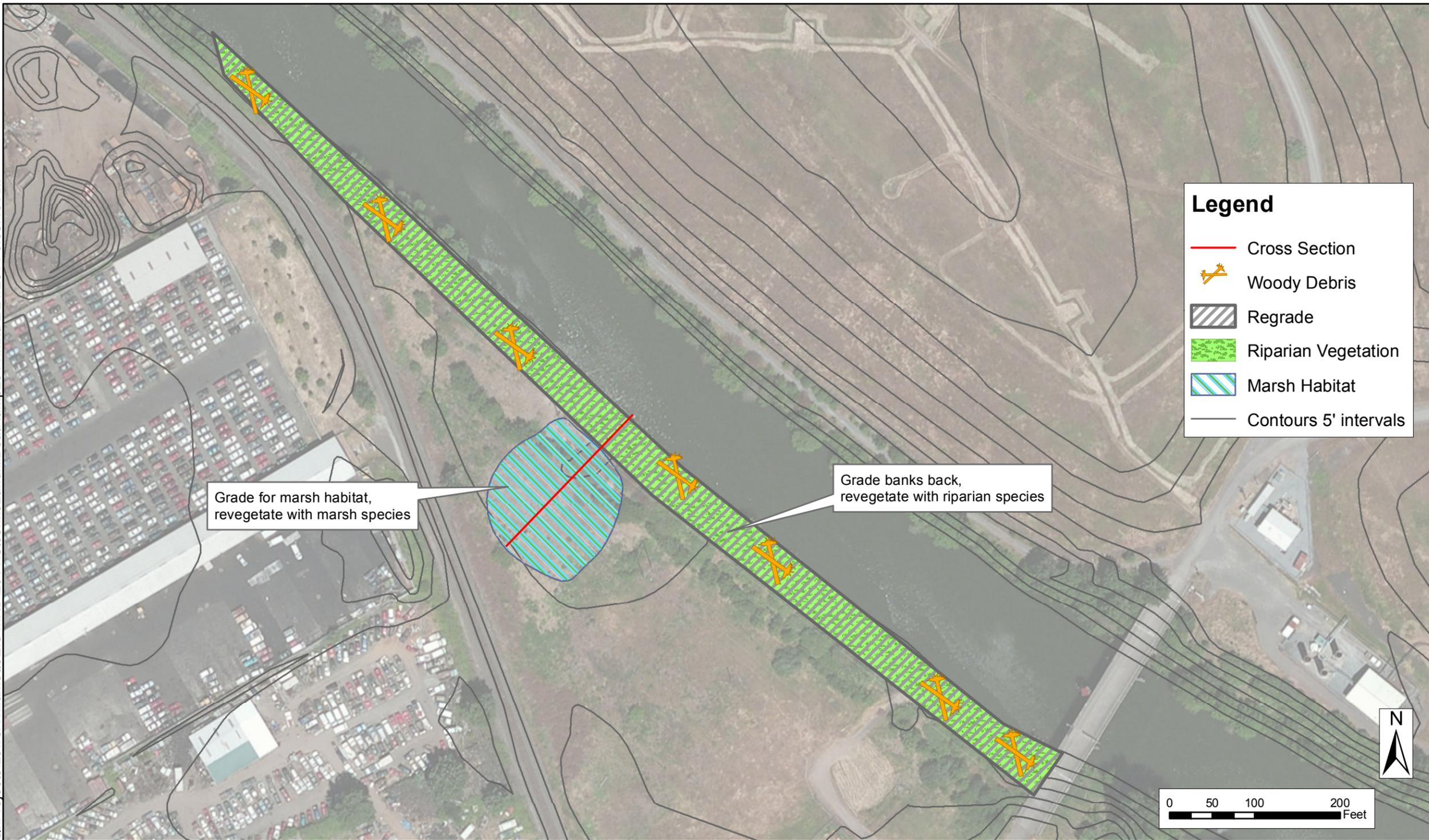


-  Typical Water Level
-  Existing Ground
-  Proposed Ground
-  Boulders
-  Riparian Forest
-  Riparian Shrub
-  Hydrophytes
-  Large Woody Debris

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St. Johns Landfill Boat Launch

Lower Willamette Ecosystem Restoration Project Conceptual Restoration Plan



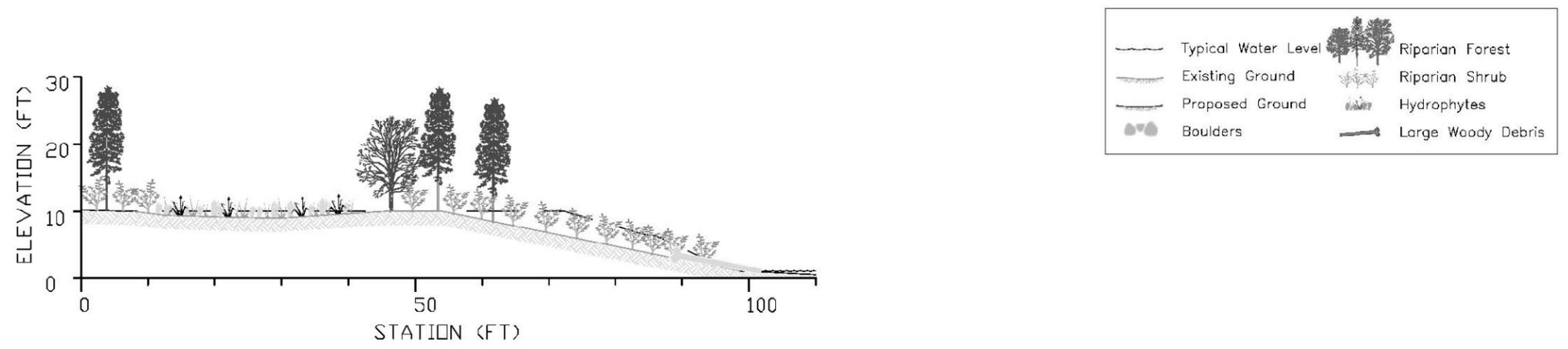
Legend

- Cross Section
- Woody Debris
- Regrade
- Riparian Vegetation
- Marsh Habitat
- Contours 5' intervals

Grade for marsh habitat, revegetate with marsh species

Grade banks back, revegetate with riparian species

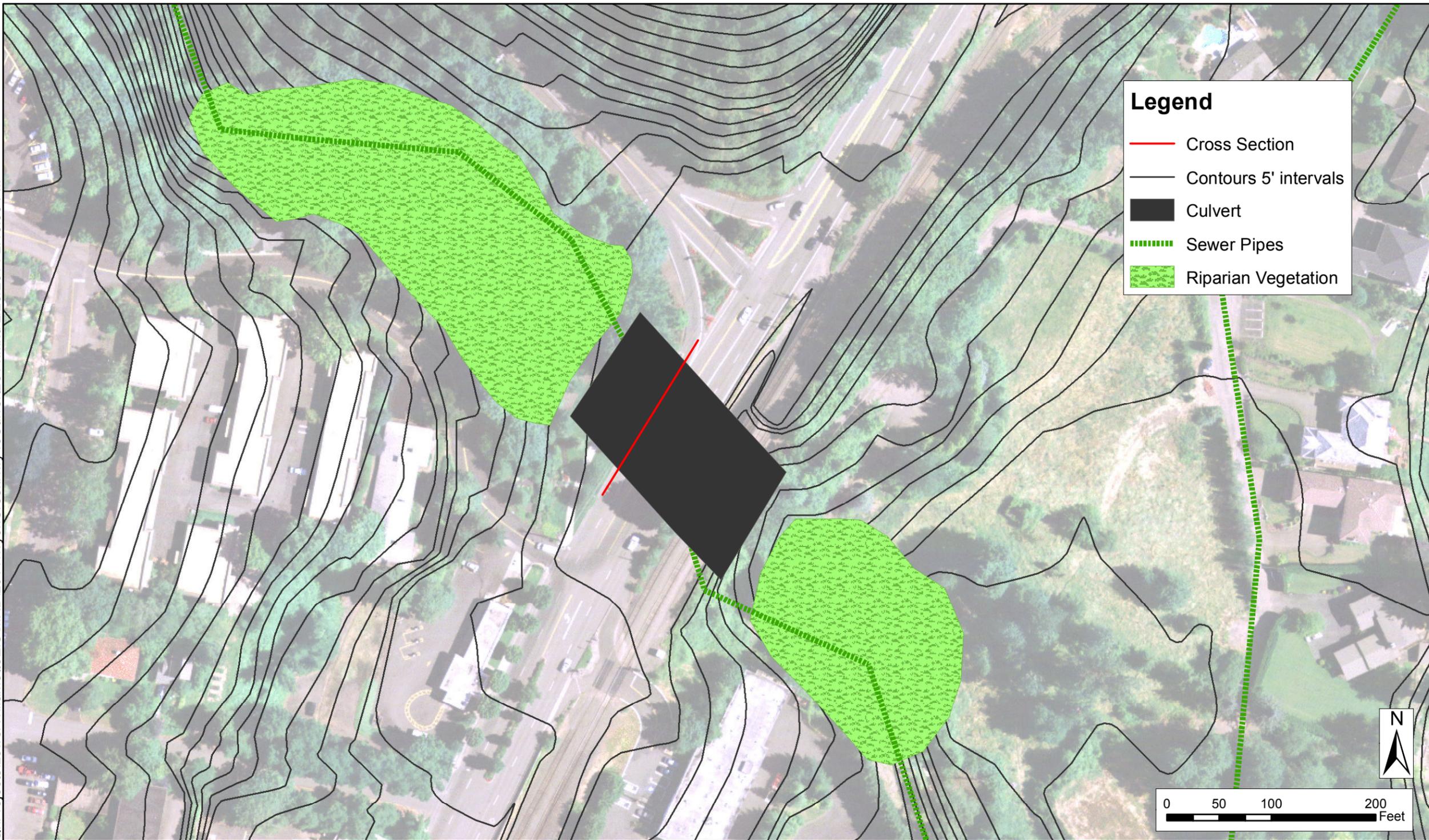
Cross Section



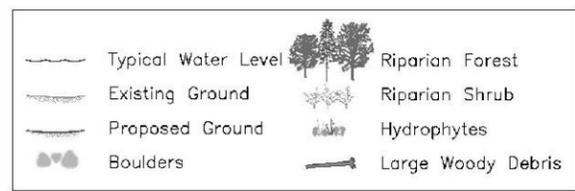
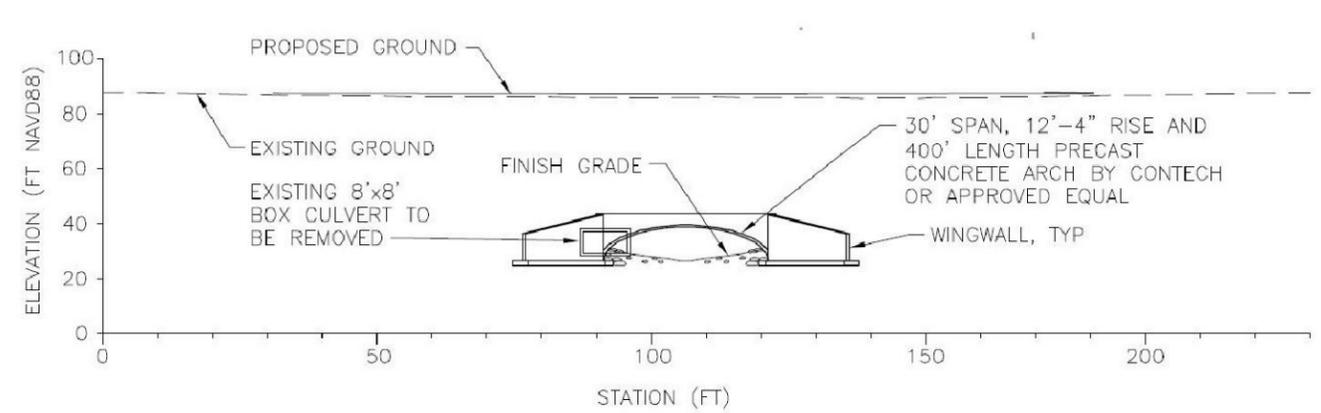
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Tryon Creek Highway 43 Culvert

Lower Willamette Ecosystem Restoration Project Conceptual Restoration Plan



Cross Section



Appendix G-2 – Other Sites Eliminated from the Planning Process

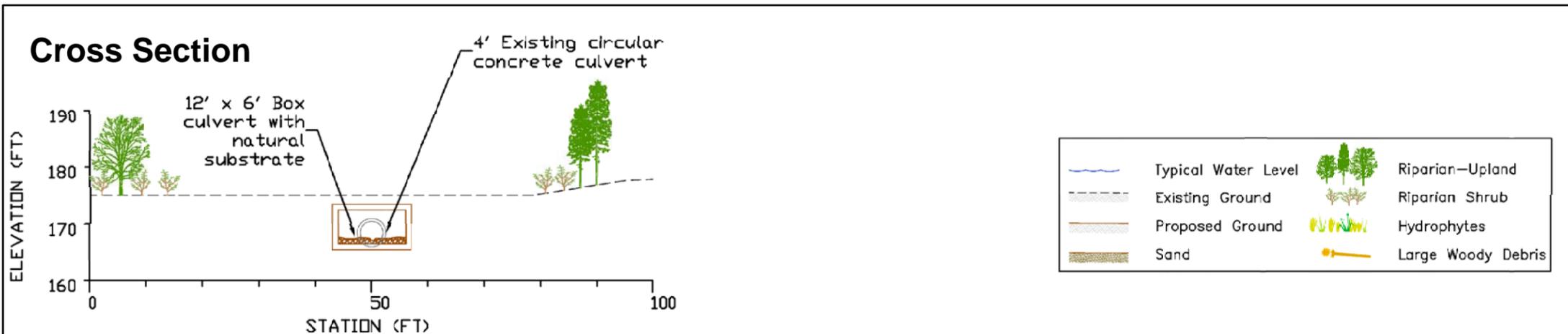
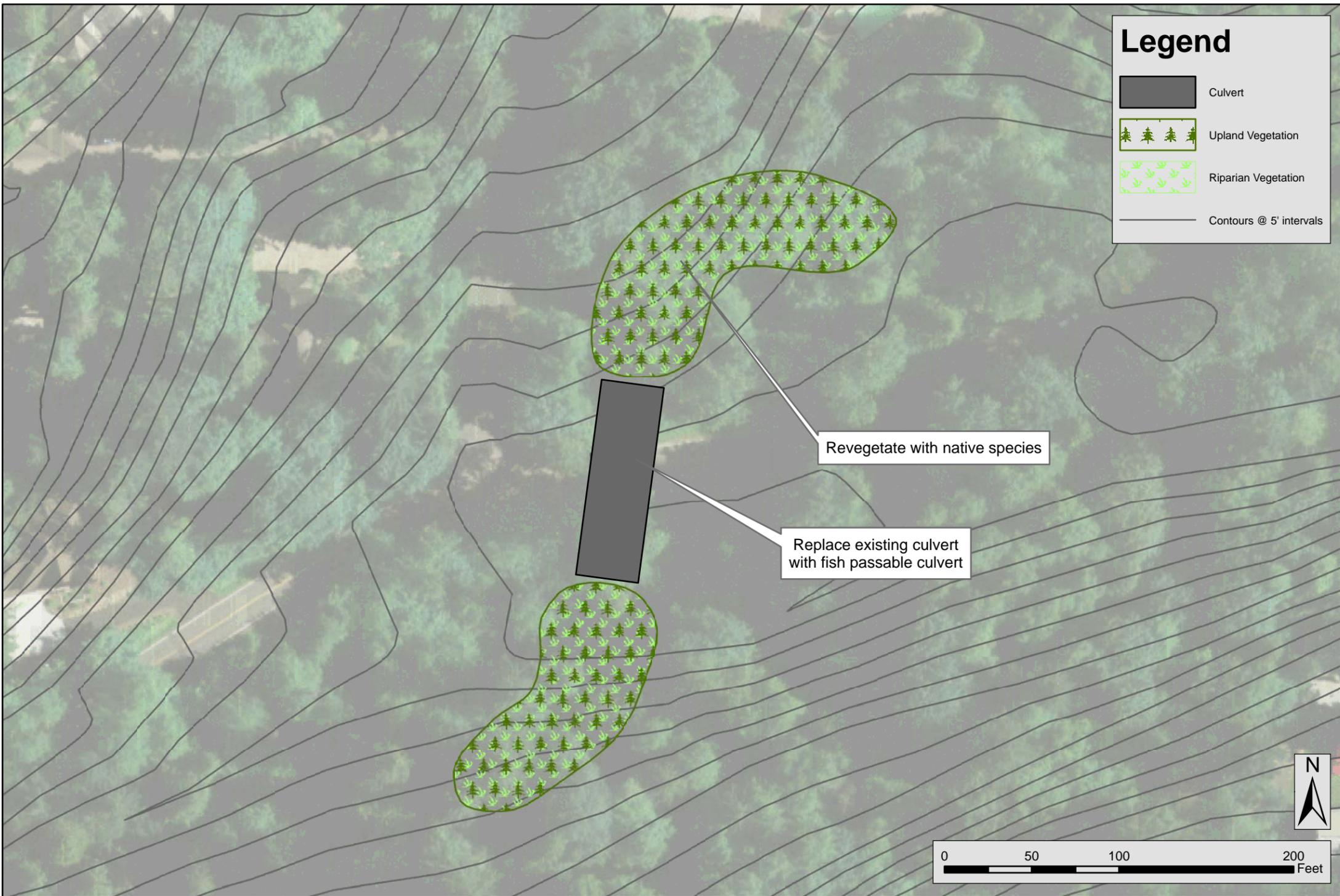
Arnold Creek Culvert Replacement

Lower Willamette Ecosystem Restoration General Investigation Phase II



Cost Estimate

Line Item	Quantity	Units	Unit Cost	Cost
Site Preparation	1	LS	\$ 67,866	\$ 67,866
Traffic Control	1	LS	\$ 100,000	\$ 100,000
Utilities	1	LS	\$ 80,000	\$ 80,000
Demolition	1	LS	\$ 4,000	\$ 4,000
Replace Arnold Street Culvert	80	LF	\$ 2,800	\$ 224,000
Plant Riparian Vegetation	0.10	AC	\$ 12,000	\$ 1,240
Plant Upland Vegetation	0.10	AC	\$ 9,500	\$ 981
General Markups	1	LS	\$ 349,004	\$ 349,004
Total Cost				\$ 827,091



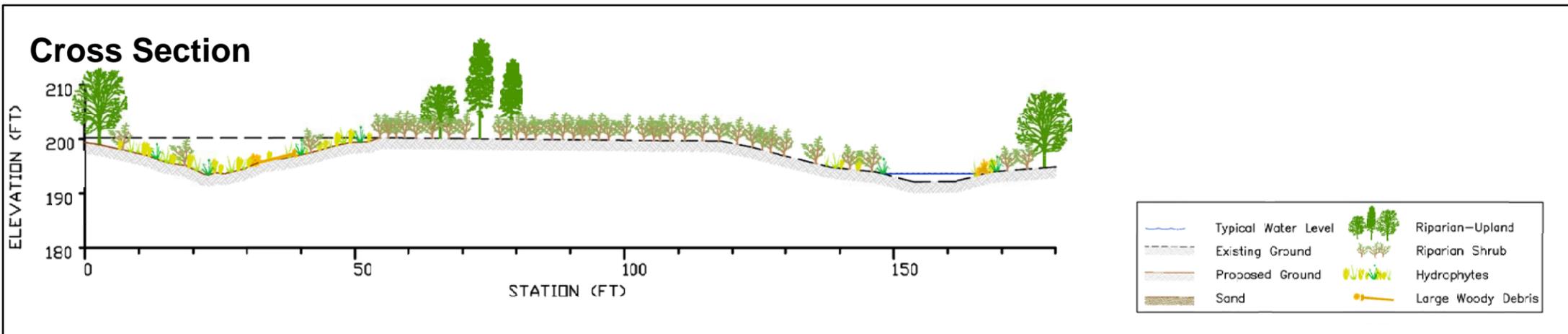
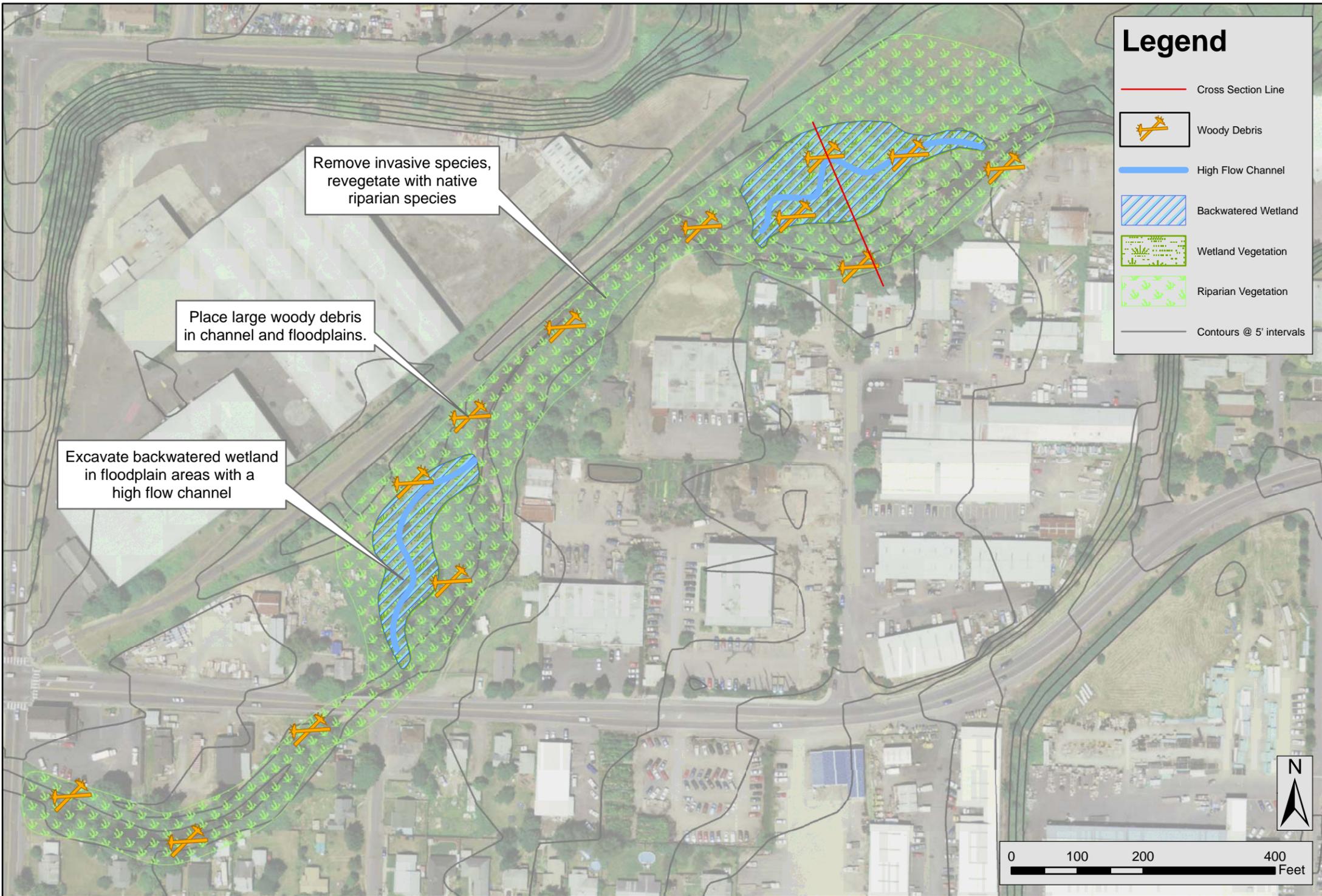
Bell Station

Lower Willamette Ecosystem Restoration General Investigation Phase II



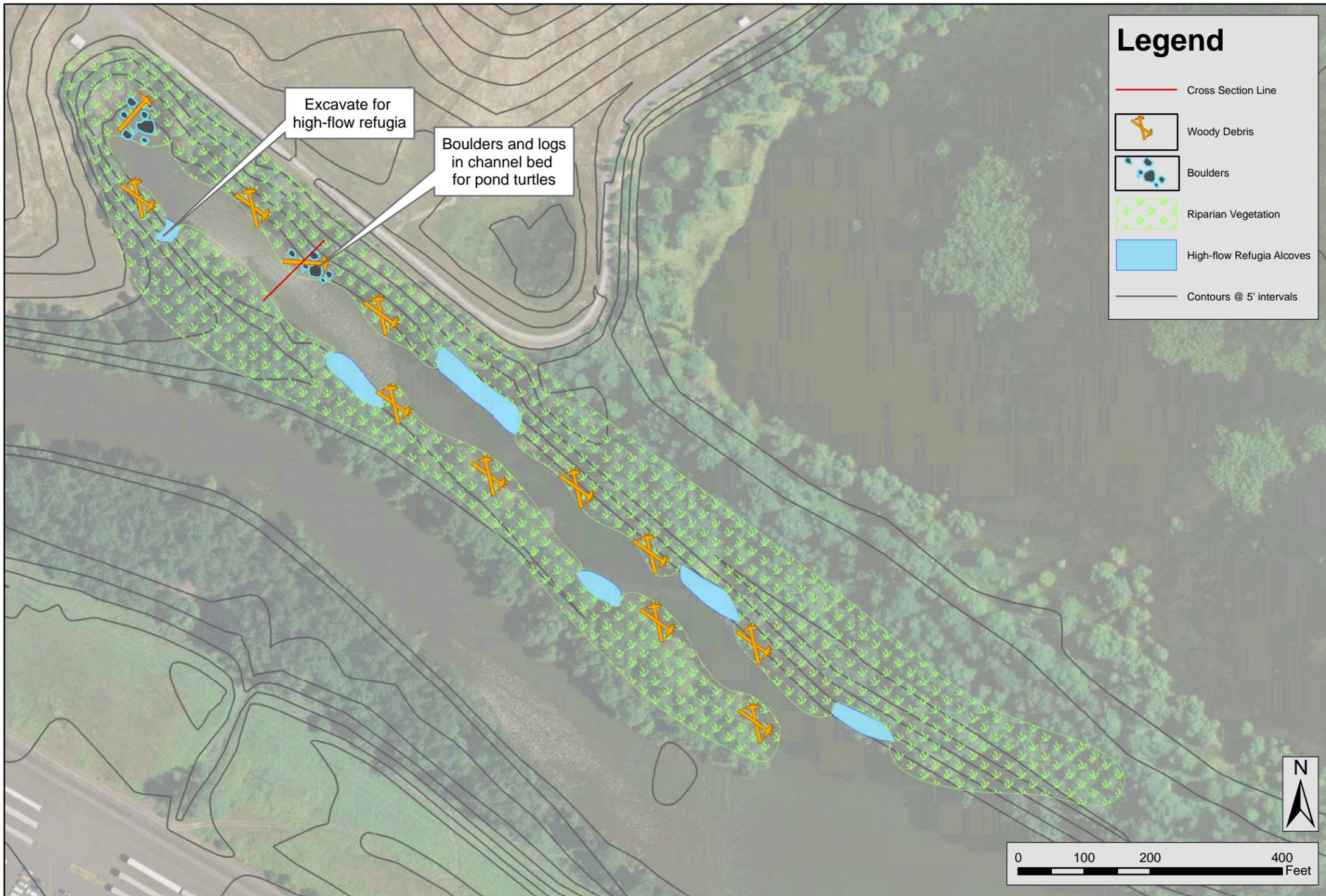
Cost Estimate

Line Item	Quantity	Units	Unit Cost	Cost
Site Preparation	1	LS	\$ 66,003	\$ 66,003
Excavate and Haul	4,127	CY	\$ 25	\$ 103,167
Plant Wetland Vegetation	1.3	AC	\$ 15,000	\$ 19,184
Plant Riparian Vegetation	6.4	AC	\$ 12,000	\$ 76,860
Place Large Woody Debris	26	EA	\$ 800	\$ 20,800
General Markups	1	LS	\$ 208,790	\$ 208,790
Total Cost				\$ 494,803



Blind Slough

Lower Willamette Ecosystem Restoration General Investigation Phase II

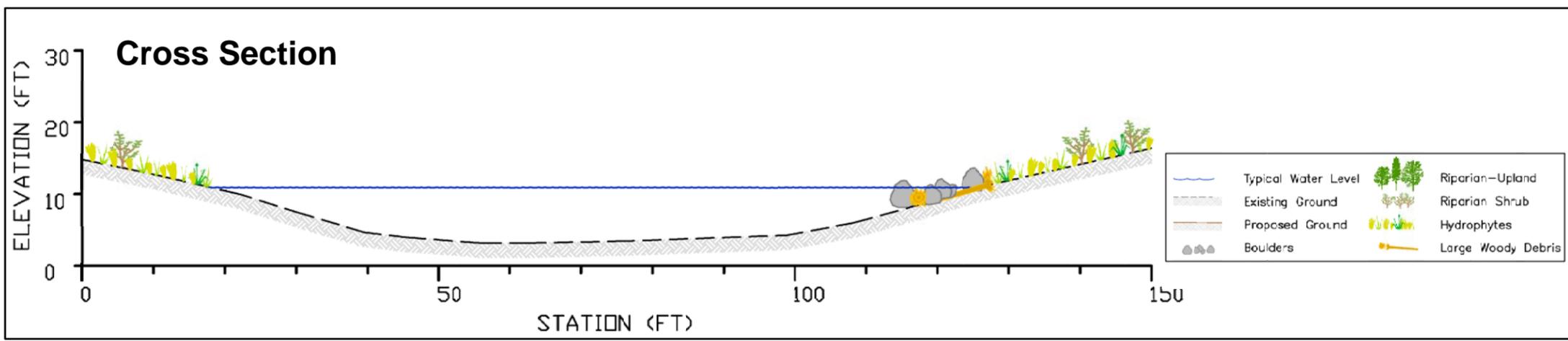


Legend

- Cross Section Line
- Woody Debris
- Boulders
- Riparian Vegetation
- High-flow Refugia Alcoves
- Contours @ 5' intervals

Cost Estimate

Line Item	Quantity	Units	Unit Cost	Cost
Site Preparation	1	LS	\$ 45,144	\$ 45,144
Excavate and Haul	1,257	CY	\$ 25	\$ 31,417
Plant Riparian Vegetation	8.4	AC	\$ 12,000	\$ 100,263
Place Large Woody Debris	22	EA	\$ 800	\$ 17,600
Place Boulders	15	TN	\$ 80	\$ 1,200
General Markups	1	LS	\$ 142,805	\$ 142,805
Total Cost				\$ 338,429



Legend

- Typical Water Level
- Existing Ground
- Proposed Ground
- Boulders
- Riparian-Upland
- Riparian Shrub
- Hydrophytes
- Large Woody Debris

Boones Ferry Culvert Replacement

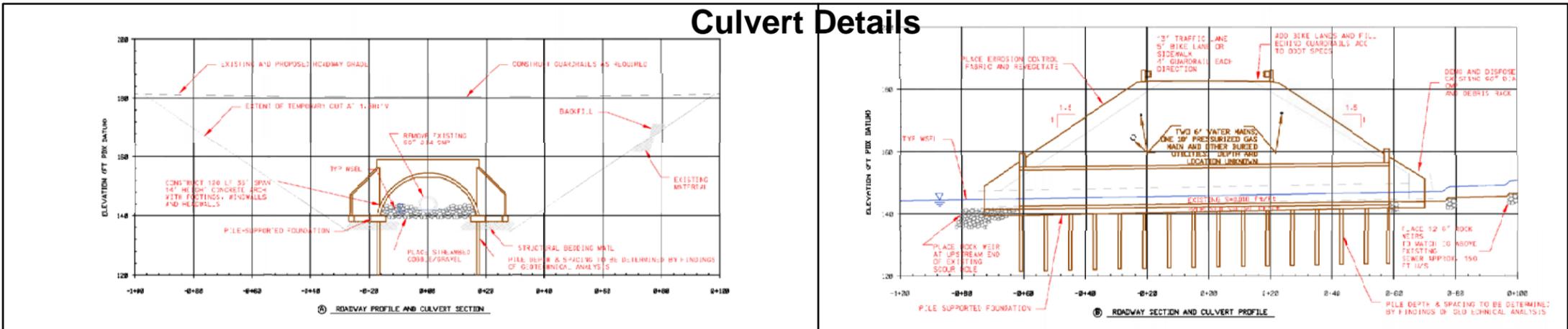
Lower Willamette Ecosystem Restoration General Investigation Phase II



Cost Estimate

Line Item	Quantity	Units	Unit Cost	Cost
Site Preparation	1	LS	\$ 216,284	\$ 216,284
Traffic Control	1	LS	\$ 300,000	\$ 300,000
Utilities	1	LS	\$ 200,000	\$ 200,000
Demolition	1	LS	\$ 25,000	\$ 25,000
Replace Culvert	120	LF	\$ 5,600	\$ 672,000
Plant Riparian Vegetation	2.3	AC	\$ 12,000	\$ 27,320
Plant Upland Vegetation	2.3	AC	\$ 9,500	\$ 21,628
Place Boulders	100	TN	\$ 80	\$ 8,000
General Markups	1	LS	\$ 1,067,429	\$ 1,067,429
Total Cost				\$ 2,537,661

Culvert Details



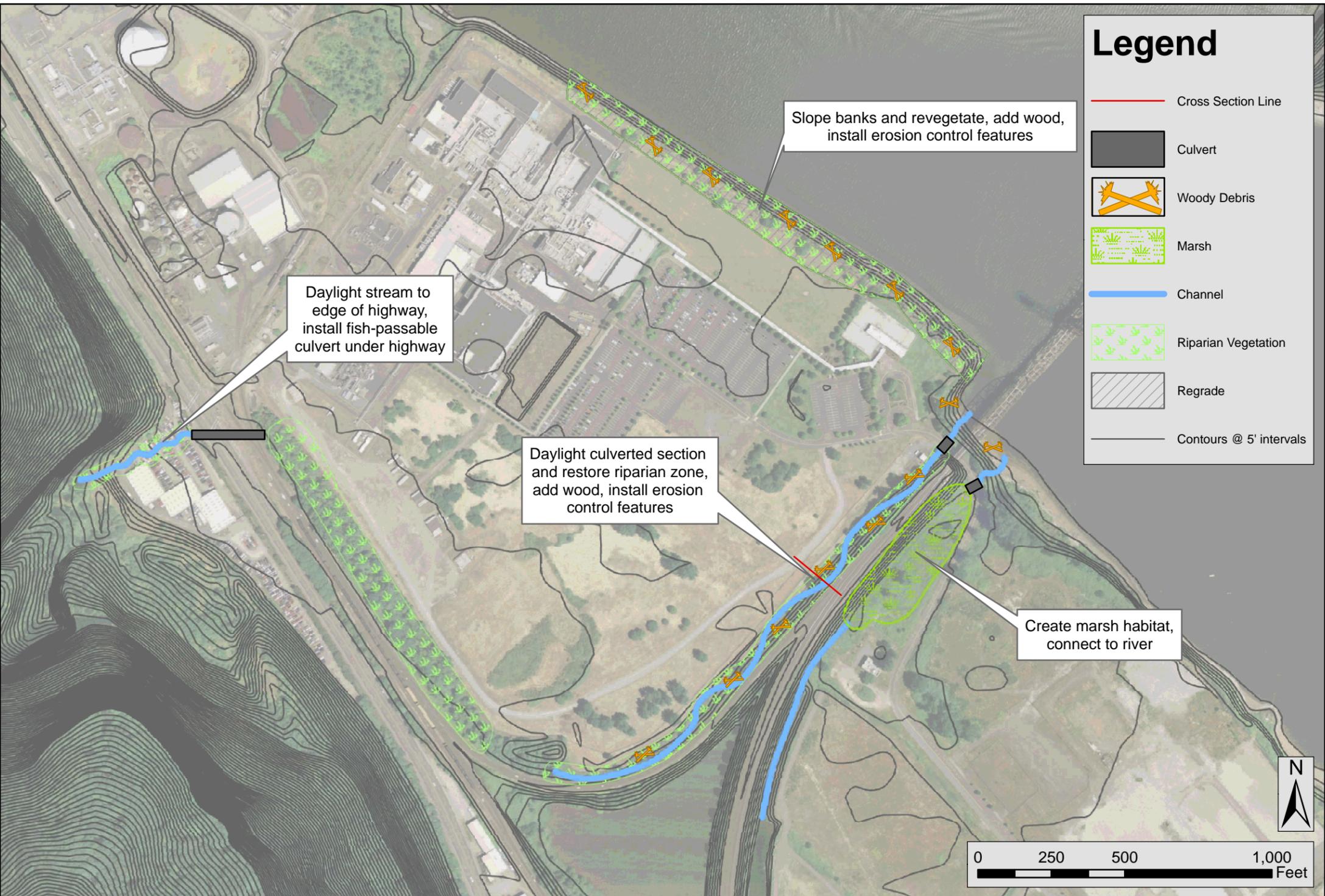
Doane Creek

Lower Willamette Ecosystem Restoration General Investigation Phase II



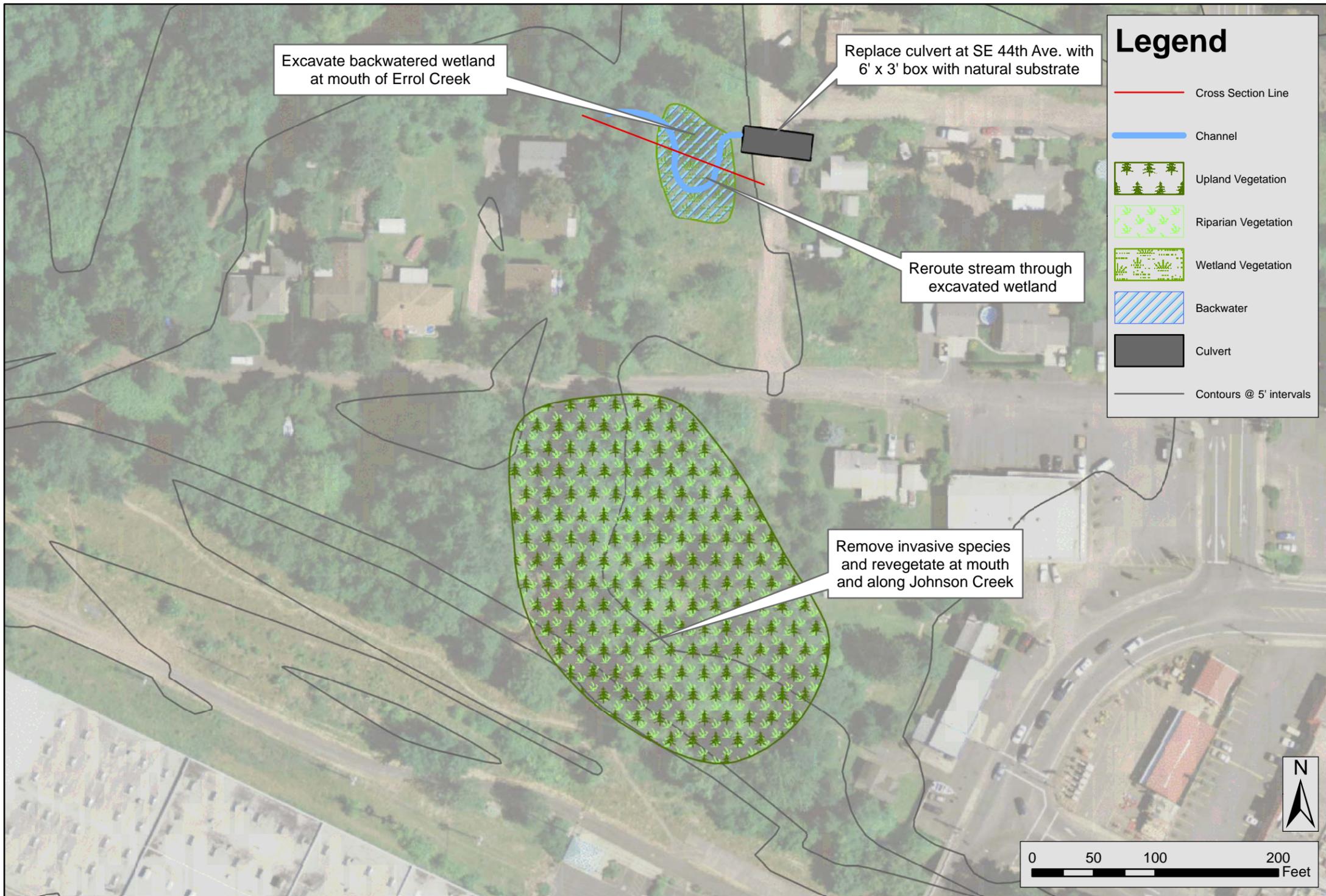
Cost Estimate

Line Item	Quantity	Units	Unit Cost	Cost
Site Preparation	1	LS	\$ 950,156	\$ 950,156
Traffic Control	1	LS	\$ 300,000	\$ 300,000
Utilities	1	LS	\$ 200,000	\$ 200,000
Demolition	1	LS	\$ 25,000	\$ 25,000
Temporary Shoo-Fly Bedding, Ties, and Track	1	LS	\$ 300,000	\$ 300,000
Replace Highway 30 Culvert	120	LF	\$ 1,000	\$ 120,000
Construct Two Culverts	250	LF	\$ 2,800	\$ 700,000
Cut Back Willamette River Bank	100	LF	\$ 800	\$ 80,000
Erosion control fabric	138,296	CY	\$ 12	\$ 1,659,556
Excavate Channel	186,700	SF	\$ 1	\$ 186,700
Plant Wetland Vegetation	14,326	CY	\$ 25	\$ 358,152
Plant Riparian Vegetation	2.2	AC	\$ 15,000	\$ 32,953
Place Large Woody Debris	10.5	AC	\$ 12,000	\$ 125,825
General Markups	30	EA	\$ 800	\$ 24,000
	1	LS	\$ 3,695,509	\$ 3,695,509
Total Cost				\$ 8,757,850



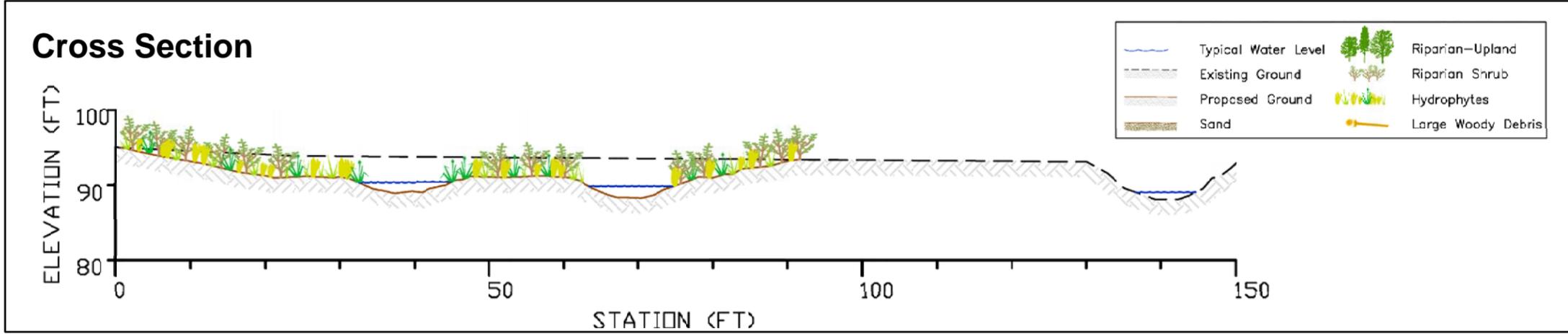
Errol Creek Confluence

Lower Willamette Ecosystem Restoration General Investigation Phase II



Cost Estimate

Line Item	Quantity	Units	Unit Cost	Cost
Site Preparation	1	LS	\$ 67,684	\$ 67,684
Replace Culvert	60	LF	\$ 2,800	\$ 168,000
Excavate and Haul	1,144	CY	25	28,593
Plant Wetland Vegetation	0.1	AC	\$ 15,000	\$ 1,660
Plant Riparian Vegetation	1.3	AC	\$ 12,000	\$ 15,271
Plant Upland Vegetation	1.3	AC	\$ 9,500	\$ 12,090
General Markups	1	LS	\$ 214,107	\$ 214,107
Total Cost				\$ 507,405



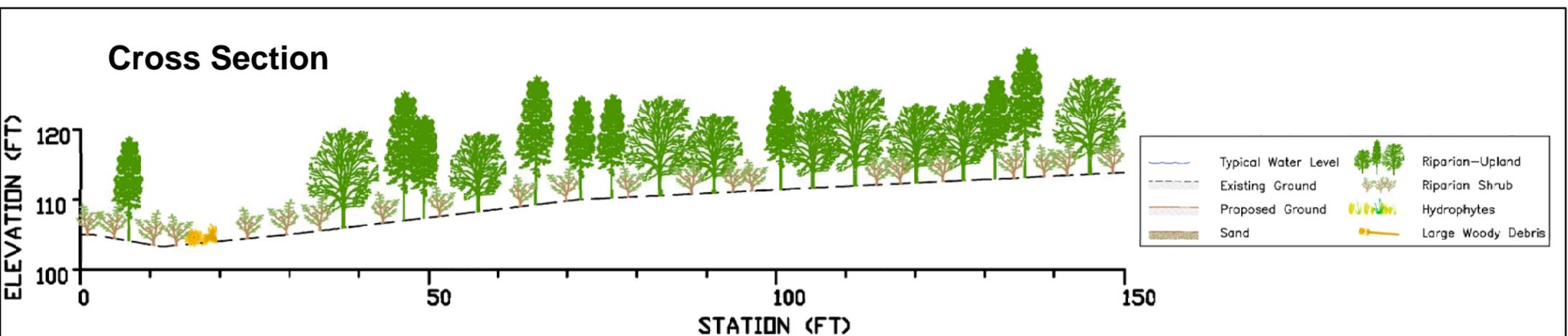
Errol Heights

Lower Willamette Ecosystem Restoration General Investigation Phase II



Cost Estimate

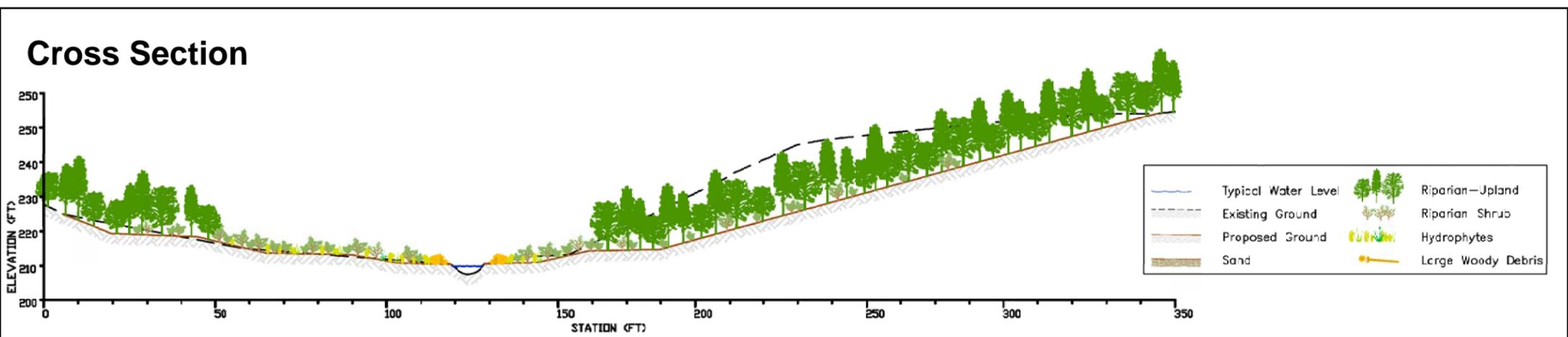
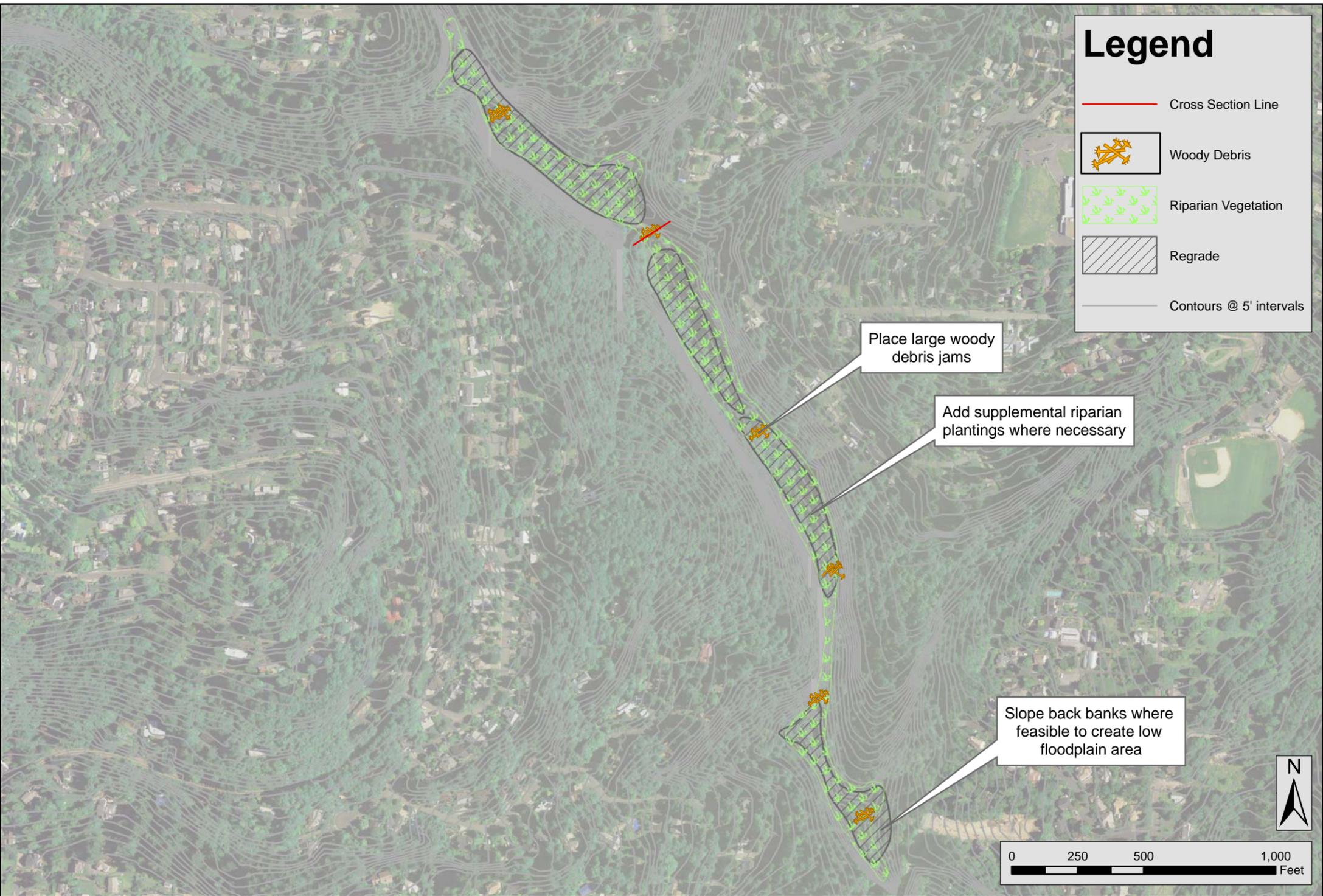
Line Item	Quantity	Units	Unit Cost	Cost
Site Preparation	1	LS	\$ 33,678	\$ 33,678
Plant Riparian Vegetation	4.9	AC	\$ 12,000	\$ 59,085
Plant Upland Vegetation	4.9	AC	\$ 9,500	\$ 46,776
Place Large Woody Debris	8	EA	\$ 800	\$ 6,400
General Markups	1	LS	\$ 106,535	\$ 106,535
Total Cost				\$ 252,474



Marshall Park Channel Restoration Lower Willamette Ecosystem Restoration General Investigation Phase II

Cost Estimate

Line Item	Quantity	Units	Unit Cost	Cost
Site Preparation	1	LS	\$ 395,191	\$ 395,191
Excavate and Haul	47,209	CY	\$ 1,180,215	\$ 1,180,215
Plant Riparian Vegetation	9.3	AC	\$ 12,000	\$ 111,490
Place Large Woody Debris	32	EA	\$ 800	\$ 25,600
General Markups	1	LS	\$ 1,250,122	\$ 1,250,122
Total Cost				\$ 2,962,617



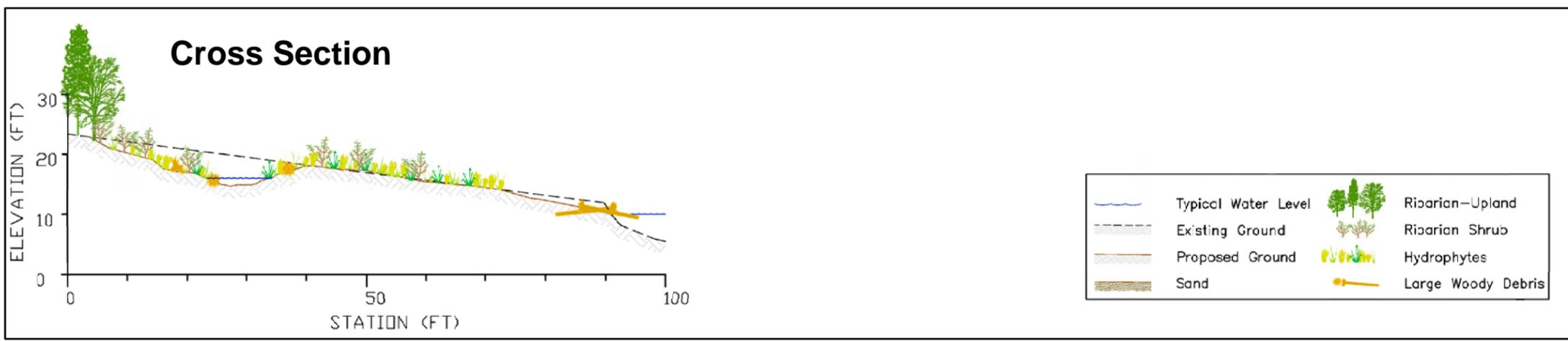
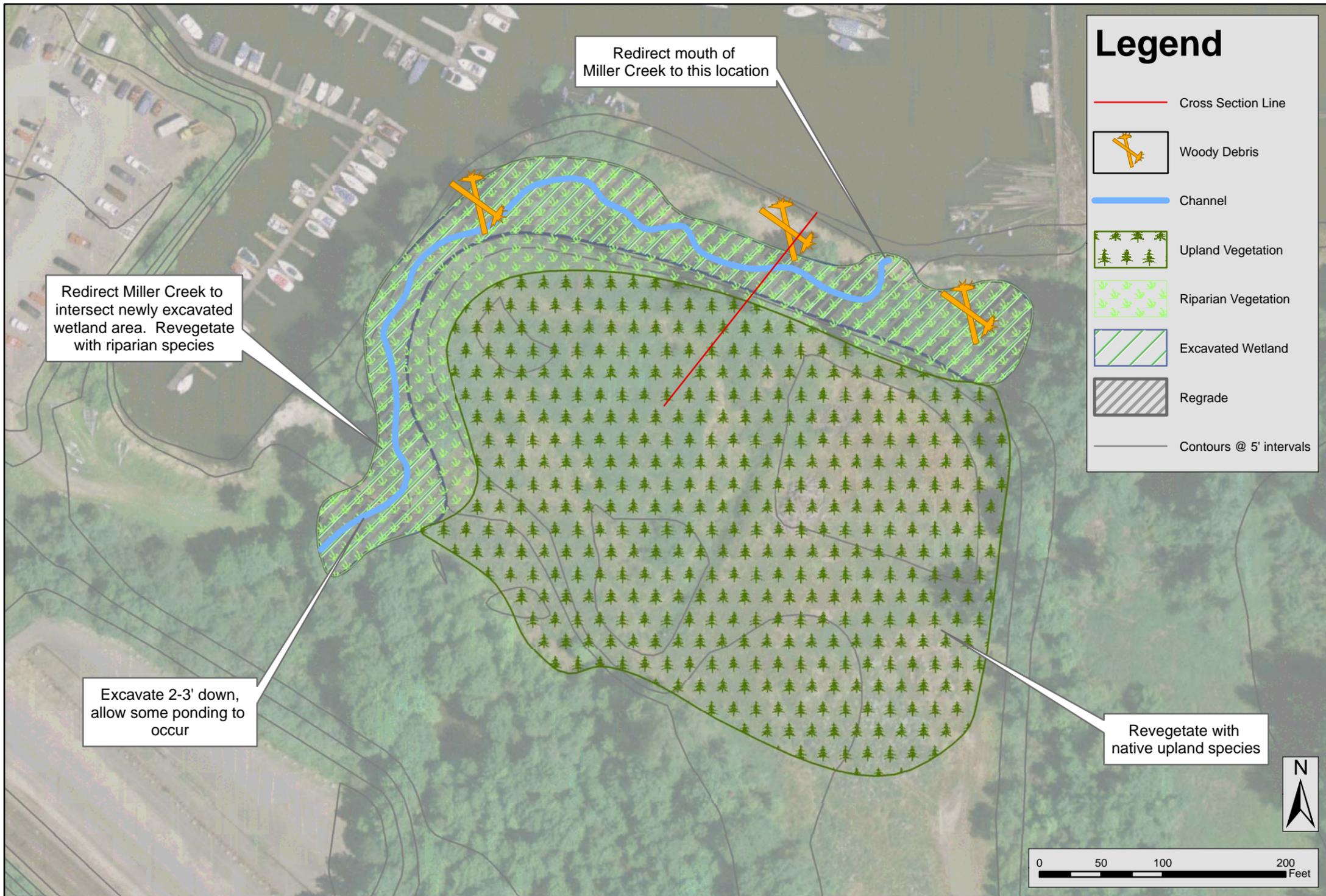
Miller Creek Confluence

Lower Willamette Ecosystem Restoration General Investigation Phase II



Cost Estimate

Line Item	Quantity	Units	Unit Cost	Cost
Site Preparation	1	LS	\$ 55,201	\$ 55,201
Excavate and Regrade Onsite	5,964	CY	\$ 10	\$ 59,637
Excavate and Haul	2,982	CY	\$ 25	\$ 74,546
Plant Riparian Vegetation	1.2	AC	\$ 12,000	\$ 14,709
Plant Upland Vegetation	3.2	AC	\$ 9,500	\$ 30,311
Place Large Woody Debris	6	EA	\$ 800	\$ 4,800
General Markups	1	LS	\$ 174,620	\$ 174,620
Total Cost				\$ 413,825



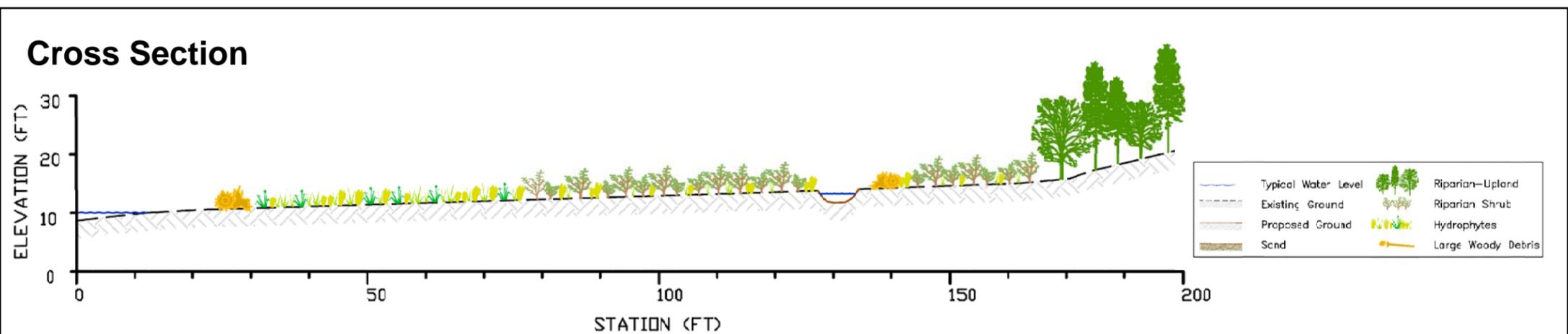
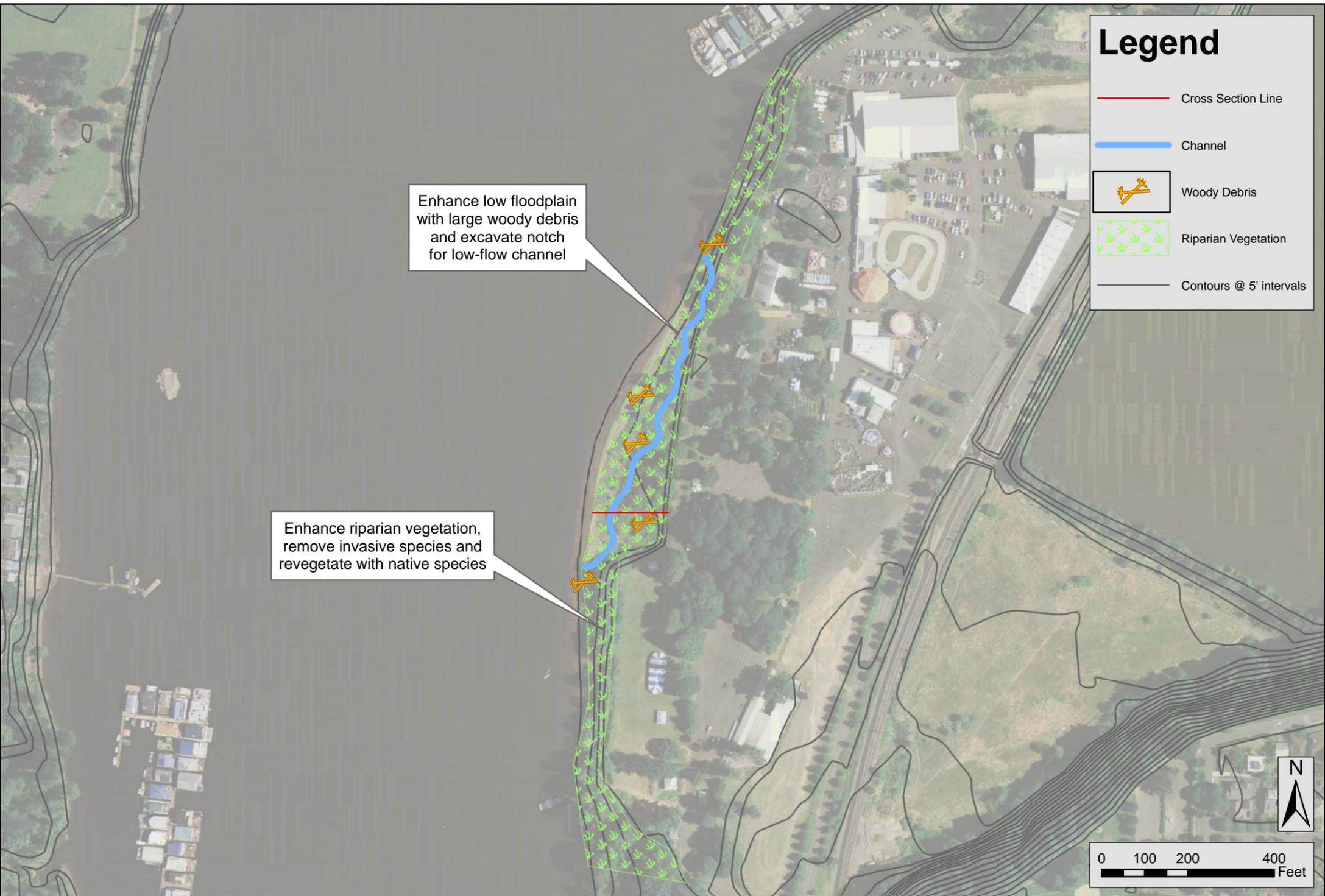
Oaks Amusement Park

Lower Willamette Ecosystem Restoration General Investigation Phase II



Cost Estimate

Line Item	Quantity	Units	Unit Cost	Cost
Site Preparation	1	LS	\$ 44,778	\$ 44,778
Excavate and Haul	3,627	CY	\$ 25	\$ 90,685
Plant Riparian Vegetation	4.2	AC	\$ 12,000	\$ 50,575
Place Large Woody Debris	10	EA	\$ 800	\$ 8,000
General Markups	1	LS	\$ 141,648	\$ 141,648
Total Cost				\$ 335,686



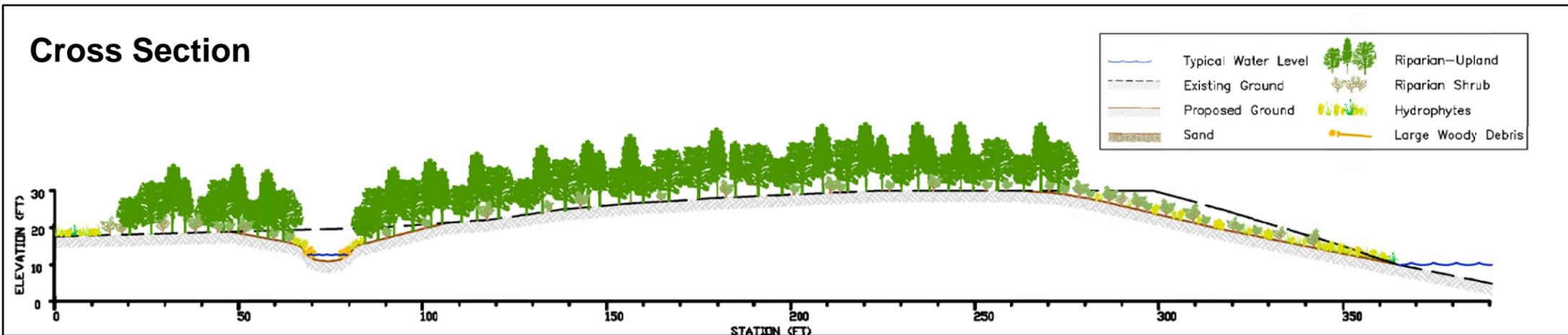
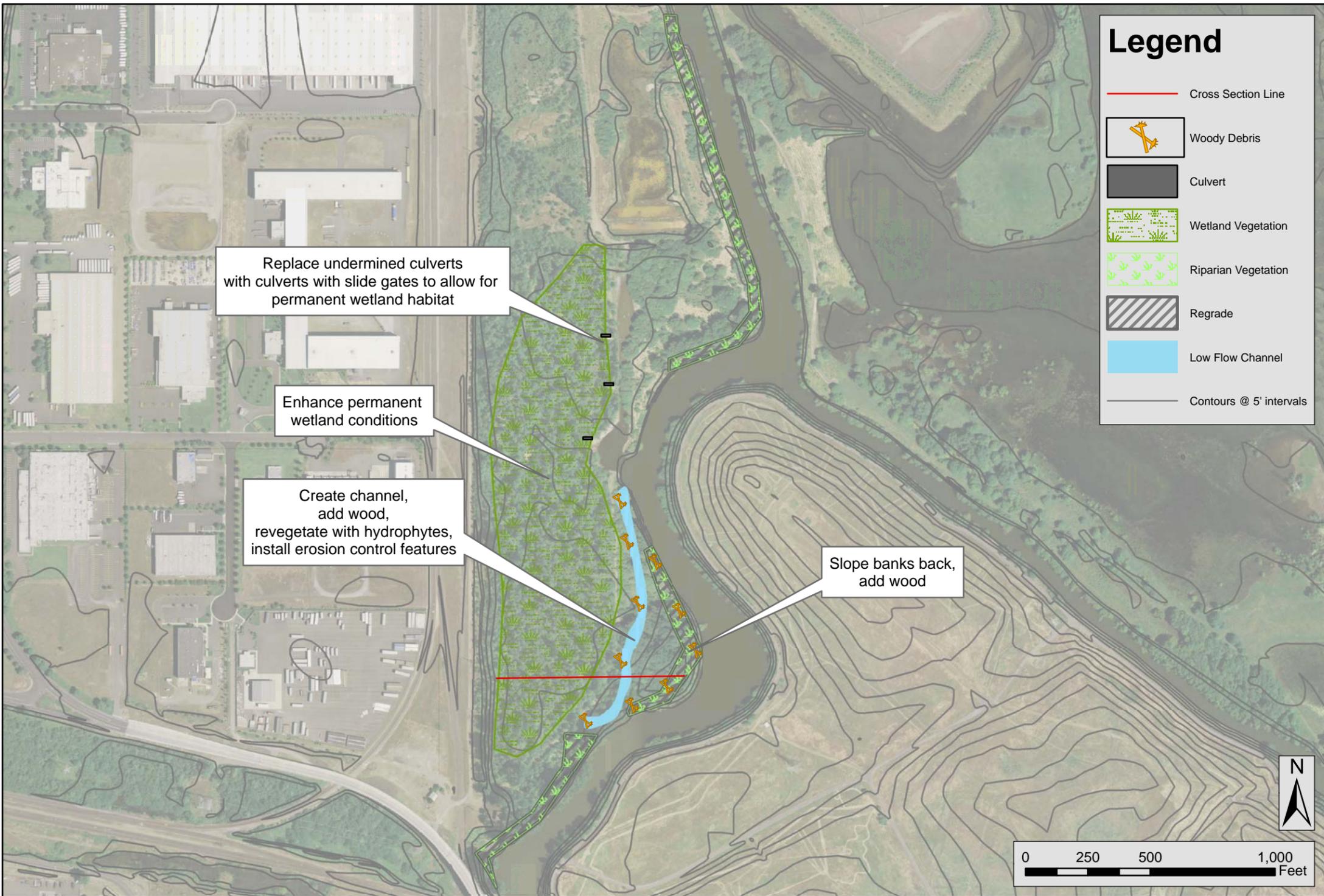
Ramsey Refugia

Lower Willamette Ecosystem Restoration General Investigation Phase II



Cost Estimate

Line Item	Quantity	Units	Unit Cost	Cost
Site Preparation	1	LS	\$199,327	\$199,327
Construct Culverts w/ Slide Gates	45	LF	\$400	\$18,000
Excavate and Regrade Onsite	16,557	CY	\$10	\$165,567
Excavate and Haul	4,589	CY	\$25	\$114,722
Erosion control fabric	44,703	SF	\$1	\$44,703
Plant Wetland Vegetation	17.4	AC	\$15,000	\$261,186
Plant Riparian Vegetation	3.7	AC	\$12,000	\$44,247
Place Large Woody Debris	20	EA	\$800	\$16,000
General Markups	1	LS	\$630,538	\$630,538
Total Cost				\$1,494,290



Smith and Bybee Lakes

Lower Willamette Ecosystem Restoration General Investigation Phase II



Cost Estimate

Line Item	Quantity	Units	Unit Cost	Cost
Site Preparation	1	LS	\$ 905,124	\$ 905,124
Plant Wetland Vegetation	201	AC	\$ 15,000	\$ 3,017,080
Place Large Woody Debris	44	EA	\$ 800	\$ 35,200
Place Boulders	40	TN	\$ 80	\$ 3,200
General Markups	1	LS	\$ 2,863,209	\$ 2,863,209
Total Cost				\$ 6,823,813



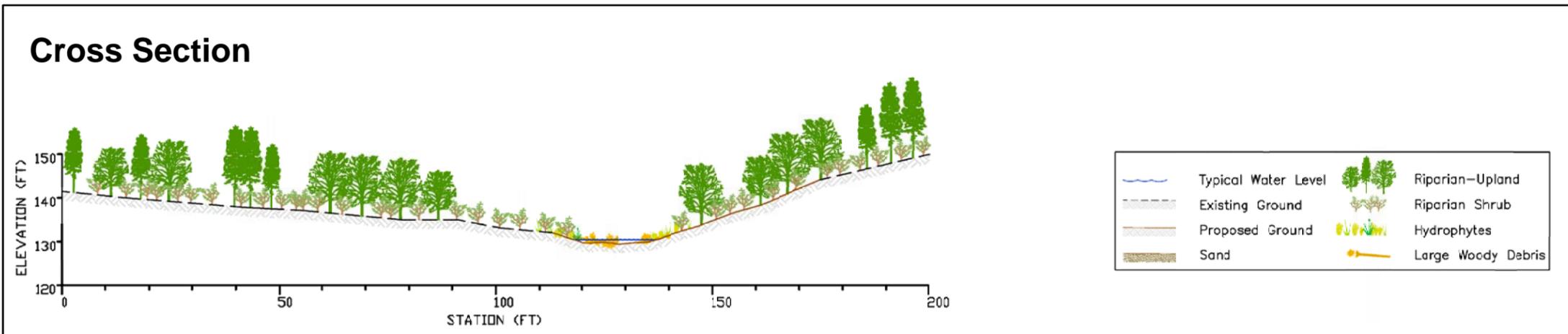
TCSNA Habitat Enhancement

Lower Willamette Ecosystem Restoration General Investigation Phase II



Cost Estimate

Line Item	Quantity	Units	Unit Cost	Cost
Site Preparation	1	LS	\$1,307,254	\$ 1,307,254
Replace Culvert	30	LF	\$ 300	\$ 9,000
Excavate and Haul	159,631	CY	\$ 25	\$ 3,990,767
Plant Riparian Vegetation	26.4	AC	\$ 12,000	\$ 316,948
Place Large Woody Debris	51	EA	\$ 800	\$ 40,800
General Markups	1	LS	\$4,135,281	\$ 4,135,281
Total Cost				\$ 9,800,050



Tryon Creek Confluence

Lower Willamette Ecosystem Restoration General Investigation Phase II

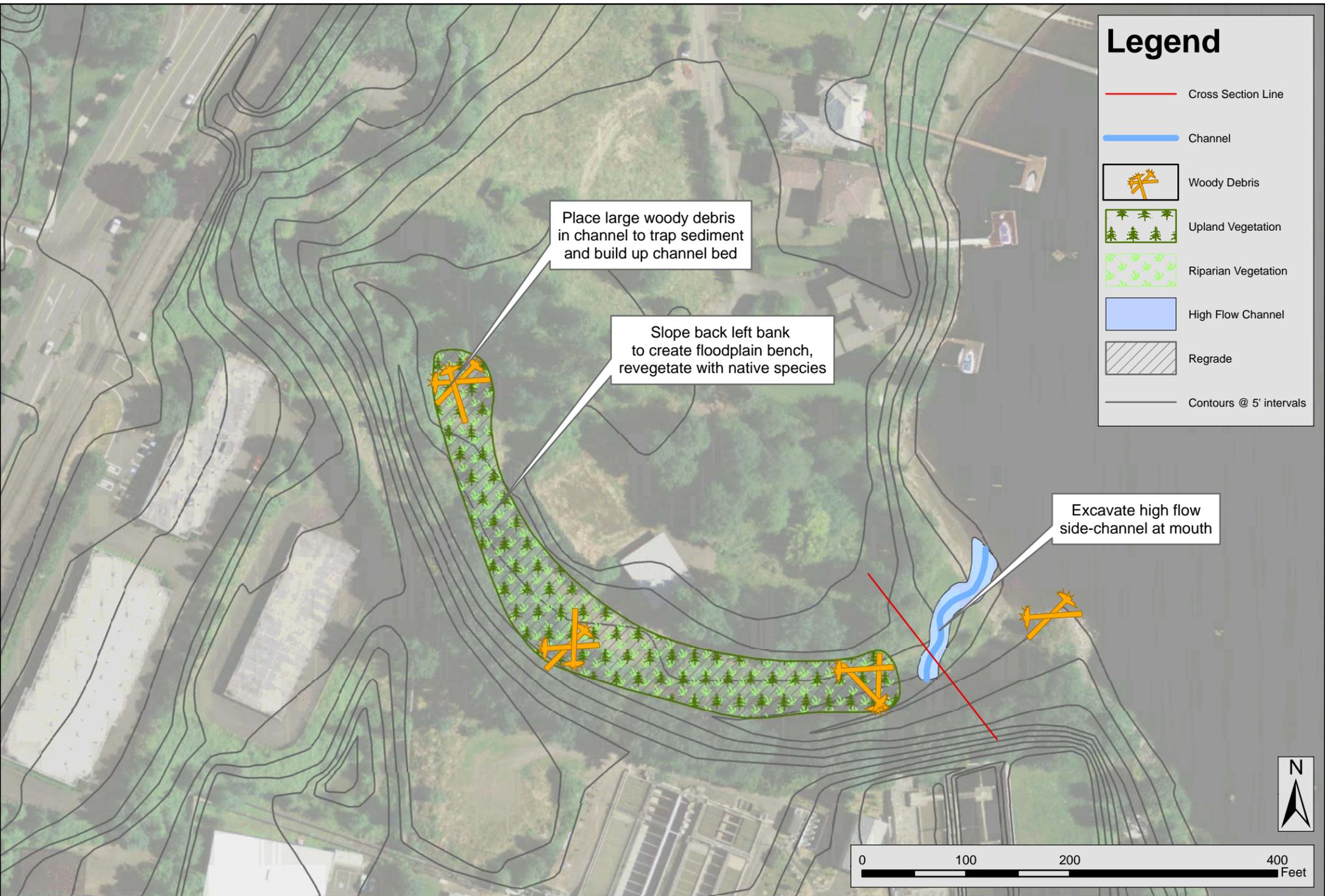


Cost Estimate

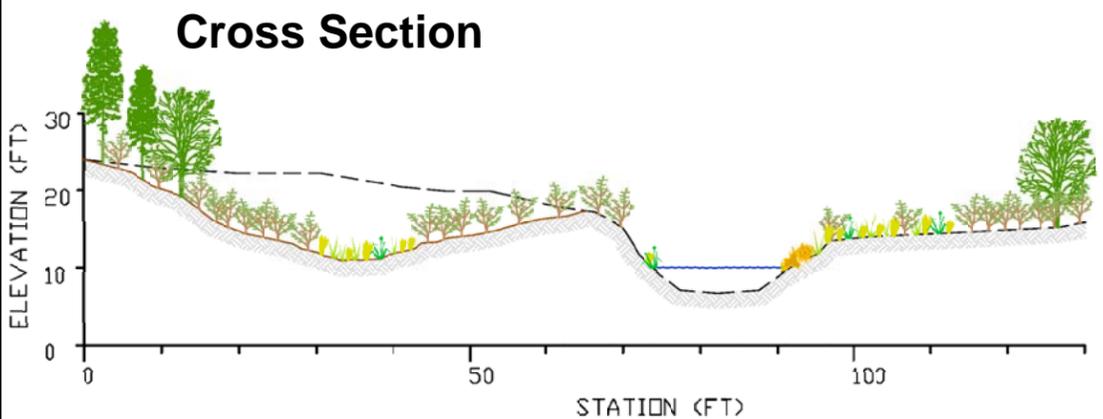
Line Item	Quantity	Units	Unit Cost	Cost
Site Preparation	1	LS	\$ 40,558	\$ 40,558
Excavate and Regrade Onsite	7,696	CY	\$ 10	\$ 76,960
Excavate and Haul	1,294	CY	\$ 25	\$ 32,341
Plant Riparian Vegetation	0.8	AC	\$ 12,000	\$ 9,540
Plant Upland Vegetation	0.8	AC	\$ 9,500	\$ 7,553
Place Large Woody Debris	11	EA	\$ 800	\$ 8,800
General Markups	1	LS	\$ 128,299	\$ 128,299
Total Cost				\$ 304,052

Legend

- Cross Section Line
- Channel
- Woody Debris
- Upland Vegetation
- Riparian Vegetation
- High Flow Channel
- Regrade
- Contours @ 5' intervals



Cross Section



- Typical Water Level
- Existing Ground
- Proposed Ground
- Sand
- Riparian-Upland
- Riparian Shrub
- Hydrophytes
- Large Woody Debris

West Lents

Lower Willamette Ecosystem Restoration General Investigation Phase II



Cost Estimate

Line Item	Quantity	Units	Unit Cost	Cost
Site Preparation	1	LS	\$ 60,768	\$ 60,768
Excavate High-Flow Channel	2,884	CY	\$ 25	\$ 72,111
Plant Riparian Vegetation	9.8	AC	\$ 12,000	\$ 117,649
Place Large Woody Debris	16	EA	\$ 800	\$ 12,800
General Markups	1	LS	\$ 192,229	\$ 192,229
Total Cost				\$ 455,557

