



Appendix G
Conceptual Design and Cost Estimates

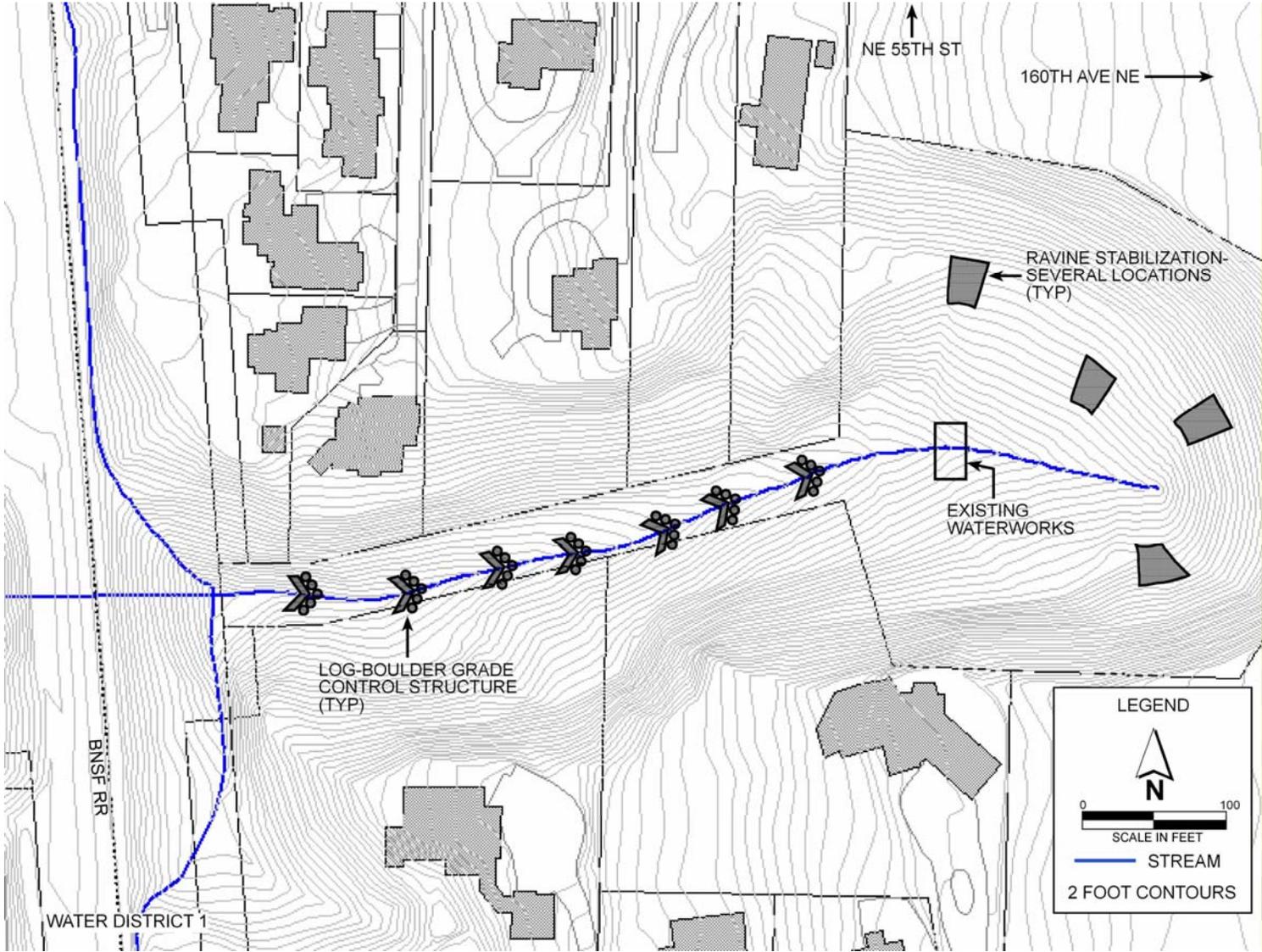
PROJECT SUMMARY SHEET

Urban Drainage – Central Houghton Park Site Erosion Control

Problem Description:	Erosion occurring at springs in steep ravine. Sedimentation in channel on property, and downstream to Carillon Creek.
Project Description:	Stabilize eroding areas in ravine. Provide in-stream sediment control structures.
Design Assumptions:	This estimate does not include geotechnical engineering such as retaining walls or other structural slope stabilization methods.
Project Benefits:	Project will reduce sediment supply downstream to Carillon Creek.
Estimated Project Cost:	\$188,000
Associated Projects:	N/A

PROJECT SKETCH

Urban Drainage – Central Houghton Park Site Erosion Control



PROJECT COST ESTIMATE

Urban Drainage – Central Houghton Park Site Erosion Control

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT: Urban Drainage – Central Houghton Park Site Erosion Control			BY: E. Nelson		
Project ID: CA-1			CHECKED BY:		
City CIP ID: N/A			DATE: 4/5/05		
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
2	CLEARING AND GRUBBING	1.00	AC	\$5,500.00	\$5,500.00
169	REVEGETATION (RIPARIAN CORRIDOR)	1.00	AC	\$32,780.85	\$32,780.85
173	LOG BOULDER GRADE CONTROL STRUCTURE (includes installation)	7	EA	\$2,000.00	\$14,000.00
179	TEMPORARY BYPASS	1	LS	\$ 10,000.00	\$10,000.00
132	SILT FENCE	1,000	LF	\$ 7.80	\$7,800.00
Subtotal: Construction Elements					\$ 70,081
<i>Required Ancillary Items</i>					
178	DEWATERING	10%			\$ 7,008
180	EROSION & SEDIMENTATION CONTROL	10%	(See Note 3)		\$ 7,008
182	TRAFFIC CONTROL	0%	(See Note 4)		\$ -
184	CONTINGENCY	20%			\$ 14,016
Subtotal: Construction + Ancillary					\$ 98,113
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 9,811
Subtotal: Construction + Ancillary + Mobilization					\$ 107,925
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%			\$ 9,497
	ENGINEERING/LEGAL/ADMIN	35%			\$ 37,774
	CONSTRUCTION MANAGEMENT	20%			\$ 21,585
	PERMITTING	10%			\$ 10,792
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 187,573
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,				\$ -
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT				\$ -
	CONDEMNATION				\$ -
	CONTINGENCY				\$ -
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 188,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.					
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.					

PROJECT SUMMARY SHEET

Cochran Springs Creek - Culvert Improvement at Lake Washington Boulevard and Sediment Control Downstream of Lake Washington Boulevard

Problem Description: The culvert and channel at Lake Washington Boulevard were evaluated for fish passage and flood conveyance (Penhelligon Associates 2000). Under existing conditions, a high spot in the channel downstream of the culvert results in backwater conditions and sedimentation at the culvert. This presents an ongoing maintenance task for City crews. The backwater condition may impede the culvert's capacity to convey large peak events. However, the backwater also creates conditions that allow fish passage at the culvert (as long as the culvert is maintained to remove sediment).

Additionally, sediment deposition downstream of Lake Washington Boulevard may increase the risk of overbank flooding water in the Yarrow Bay business park.

Project Description: The preferred alternative identified by Penhelligon for improving this culvert would address both fish passage and flood conveyance, by (1) replacing the Lake Washington Boulevard culvert with a box culvert, (2) regrading the channel to remove the downstream control point, and (3) including habitat structures and streamside vegetation to improve habitat conditions. The budget estimate for this project is based on these actions.

Sand in the stream appears to originate from springs and upwelling, as opposed to large-scale bank erosion. Culvert design should be analyzed to ensure that sediment accumulation will not continue to impede the culvert. In addition to culvert improvements, sediment passage at the culvert could be increased by flattening the channel grade upstream of the culvert and increasing the grade through the culvert.

In addition to the work recommended by Penhelligon, a berm should be considered on the left bank of the stream along to prevent flooding of the business park. The berm should be set back from the stream bank as far as possible. Although there is existing vegetation in the riparian zone, additional enhancement planting should be included.

Design Assumptions: Planting along approximately 525 feet of channel, 55 feet each side; with existing vegetation. Assume planting is necessary in approximately 50 percent of this area. A temporary or permanent easement would be needed from private property owners on each side of the stream. No costs for easements are included. Construction of a berm may require an individual Corps permit.

Project Benefits: Improving fish passage at the culvert will allow access to approximately 375 feet of breeding and rearing habitat. Increasing the culvert's flow capacity will reduce the risk of flooding on Lake Washington Boulevard.

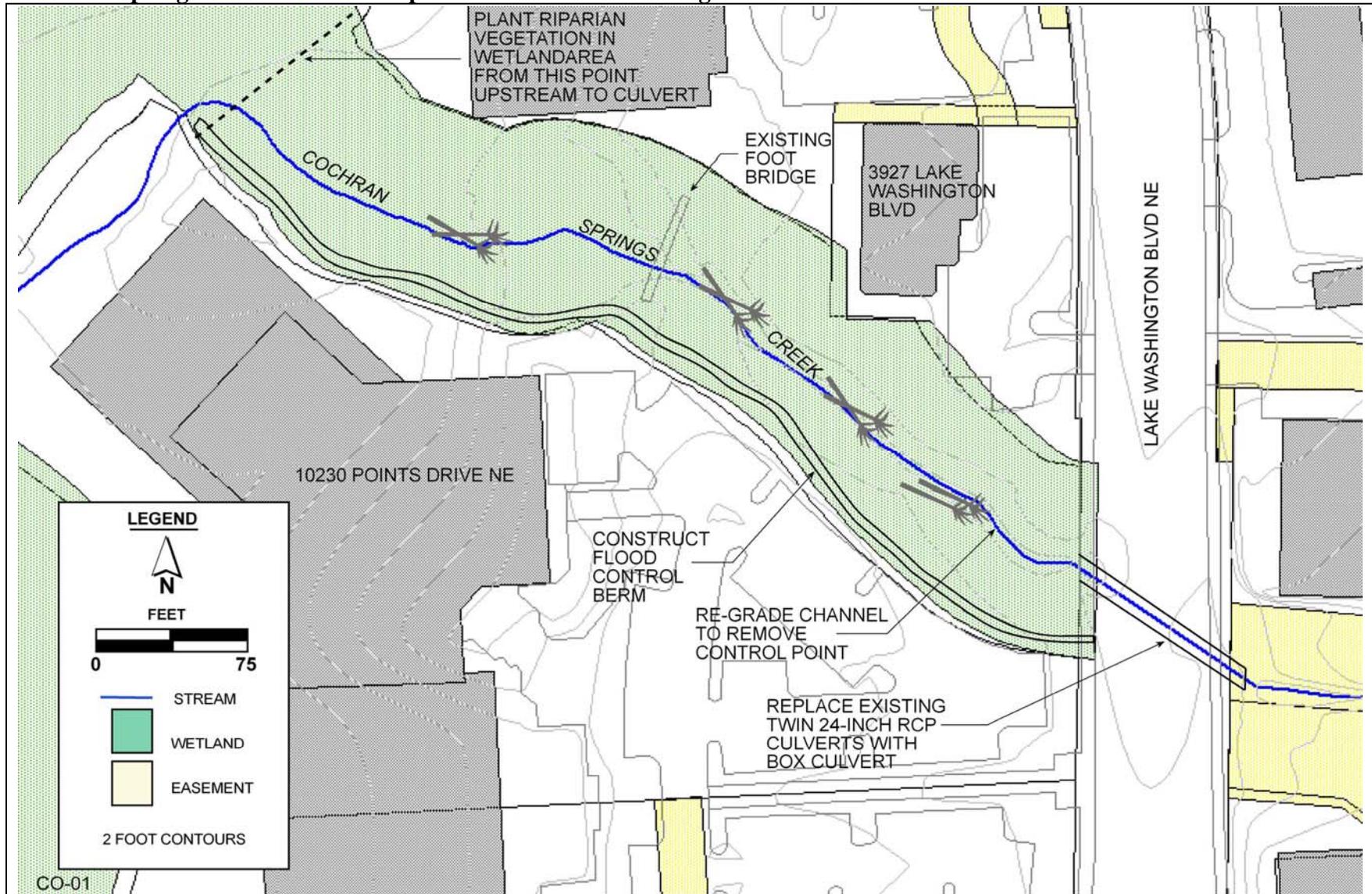
Estimated Project Cost: \$845,000

Note: This estimate is considerably higher than the Penhellagon 2000 estimate. That estimate, covering culvert replacement, channel regrading, and habitat improvements, was \$280,000; adjusted to 2004 dollars, this is \$312,000. The larger estimate of \$845,000 is mostly due to higher assumed unit prices and a larger contingency, but also includes the flood control berm and riparian planting.

Associated Projects: N/A

PROJECT SKETCH

Cochran Springs Creek - Culvert Improvement at Lake Washington Boulevard



PROJECT COST ESTIMATE

Cochran Springs Creek - Culvert Improvement at Lake Washington Boulevard

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT: Cochran Springs Cr. - culvert improvement and sediment control		BY: K. Ludwa			
Project ID: CO-01		CHECKED BY:			
City CIP ID: N/A		DATE: 4/30/2004			
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
1	CLEARING AND GRUBBING	50,000	SF	\$1.00	\$50,000.00
26	COMMON EXCAVATION {QTY < 1000}	200	CY	\$29.50	\$5,900.55
34	STREAM GRAVEL (1.7 TON PER CY)	150	TN	\$39.34	\$5,900.55
36	RIPRAP, LIGHT LOOSE (1.6 TON PER CY)	5	TN	\$52.45	\$262.25
129	EROSION CONTROL, HYDRO-SEEDING {QTY >= 5000}	22,000	SF	\$0.16	\$3,605.89
17	SAW ASPHALT CONCRETE FULL DEPTH	200	LF	\$4.92	\$983.43
5	REMOVE PAVEMENT	250	SY	\$21.85	\$5,463.48
43.1	PAVMT PATCH, ASPH CONC	1,800	SF	\$10.00	\$18,000.00
96.1	REINF. CONC. BOX CULVERT 72-INCH X 60-INCH	115	LF	\$1,200.00	\$138,000.00
179	TEMPORARY BYPASS	1	LS	\$18,000.00	\$18,000.00
172	LARGE WOODY DEBRIS	8	EA	\$874.16	\$6,993.25
27	STRUCTURE EXCAVATION	450	CY	\$31.69	\$14,259.67
169	REVEGETATION (RIPARIAN CORRIDOR)	0.65	AC	\$32,780.85	\$21,307.55
Subtotal: Construction Elements					\$ 288,677
<i>Required Ancillary Items</i>					
178	DEWATERING	10%			\$ 28,868
180	EROSION & SEDIMENTATION CONTROL	20%	(See Note 3)		\$ 57,735
182	TRAFFIC CONTROL	5%	(See Note 4)		\$ 14,434
184	CONTINGENCY	30%			\$ 86,603
Subtotal: Construction + Ancillary					\$ 476,316
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 47,632
Subtotal: Construction + Ancillary + Mobilization					\$ 523,948
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%			\$ 46,107
	ENGINEERING/LEGAL/ADMIN	25%			\$ 130,987
	CONSTRUCTION MANAGEMENT	20%			\$ 104,790
	PERMITTING	7.5%			\$ 39,296
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 845,128
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,				\$ -
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT				\$ -
	CONDEMNATION				\$ -
	CONTINGENCY				\$ -
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 845,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.					
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.					

PROJECT SUMMARY SHEET

Citywide – Regional detention in Forbes and/or Juanita Basins

Problem Description:	The City of Kirkland is being further developed and redeveloped resulting in increased impervious surfaces. Increases in impervious surfaces result in increased runoff volumes and higher peak flows. The City is required to minimize impacts resulting from such development by providing flow control for increased runoff that is associated with more impervious surface area. The City may also choose to mitigate for existing high flows from development that occurred prior to current stormwater regulations. Lack of flow control results in such issues as habitat degradation, flooding and degraded water quality.
Project Description:	The City is developing a watershed-based policy of regional versus on-site flow control. A regional detention facility would consist of a large pond or similar structure that serves a large area of new or modified development within a watershed. The facility may be a flow through facility or off-line from the natural surface water flow paths. On-site detention would involve smaller facilities located at the source of development. Both types of detention may or may not include water quality treatment components. On-going HSPF (Hydrologic Simulation Program Fortran) modeling will help to evaluate options for regional or on-site detention.
Project Alternatives:	On-site detention, including LID (low impact development) options are being considered.
Design Considerations:	Land availability for large regional facilities, water quality treatment needs, maintenance requirements, cost, who will pay for the facilities (developers or public via surface water fees), location of where facilities are most needed based on future land uses (HSPF modeling).
Project Benefits:	Improved aquatic habitat in local streams, flood control, and possibly dual use amenities (dry stormwater ponds as ball fields, etc.).
Estimated Project Cost:	\$1,500,000 allocated. Individual project costs to be determined.
Associated Projects:	N/A

PROJECT SKETCH

Citywide – Regional Detention in Forbes and/or Juanita Basins

PROJECT COST ESTIMATE

Citywide – Regional Detention in Forbes and/or Juanita Basins

PROJECT SUMMARY SHEET

Citywide – Fund for replacement of aging/failing infrastructure

Problem Description:	The City's surface water infrastructure is in varying states of functionality due to different ages and conditions of use. Replacement of aging infrastructure while still functional but near the end of its expected life span could reduce the need for emergency repairs and facilitate improvements in conveyance capacity to meet existing and future needs.
Project Description:	This fund will finance the replacement of infrastructure as needs arise on an on-going basis. Replacement projects will be identified through video inspection of system.
Project Alternatives:	N/A
Design Assumptions:	N/A
Project Benefits:	Setting aside funds to replace infrastructure on an on-going basis will reduce the need for emergency funds when aging infrastructure fails.
Estimated Project Cost:	\$500,000 per year
Associated Projects:	N/A

Project ID: CW-2

City CIP: N/A

Kirkland Stream Inventory and Habitat Evaluation Report

PROJECT SUMMARY SHEET

Forbes Creek – 108th Ave NE Fish Passage Improvements and Roadway Drainage

Problem Description: **Roadway Flooding:** Although the 108th Avenue NE road bed is elevated above the adjacent stream and wetlands, the curbs on both sides of the road appear to prevent street runoff from draining to the stream. During heavy rains, standing water occurs on the road to the depth of the curbs (approximately 1 foot deep).

Fish Passage: Existing dual 36-inch corrugated metal pipe culverts, 45 feet long, are at a 1.1 % slope. WDFW considers a culvert slope ≥ 1.0 % to be a barrier to fish passage. Additionally, 108th Ave NE is located at a grade-break; the channel slope upstream of 108th Ave is approximately 2.4 percent, and the slope downstream is 1.0 percent. Therefore, the culverts are located in a depositional area of Forbes Creek resulting in one of the two culverts filling with sediment, additionally restricting fish passage.

Project Description: **Roadway Flooding:** The roadway flooding can be alleviated with curb cuts on each side of the road at the low point(s) in the road.

Fish Passage: Raise road and replacing dual culverts with a single 6-foot bottomless arch culvert. Upstream projects should reduce sedimentation (sedimentation basin downstream of Forbes Creek Drive and projects FO-05 and FO-07). However, sedimentation at this culvert should be monitored. If necessary, additional grade control structures can be added upstream of 108th Ave. NE (not currently included in this project).

Design Assumptions: Installation of the arch culvert may require raising a short section of the road to provide clearance over the culvert. This is not included in the project budget.

Project Benefits: **Roadway Drainage Improvements:** Improving road drainage will reduce the occurrence of standing water on the road.

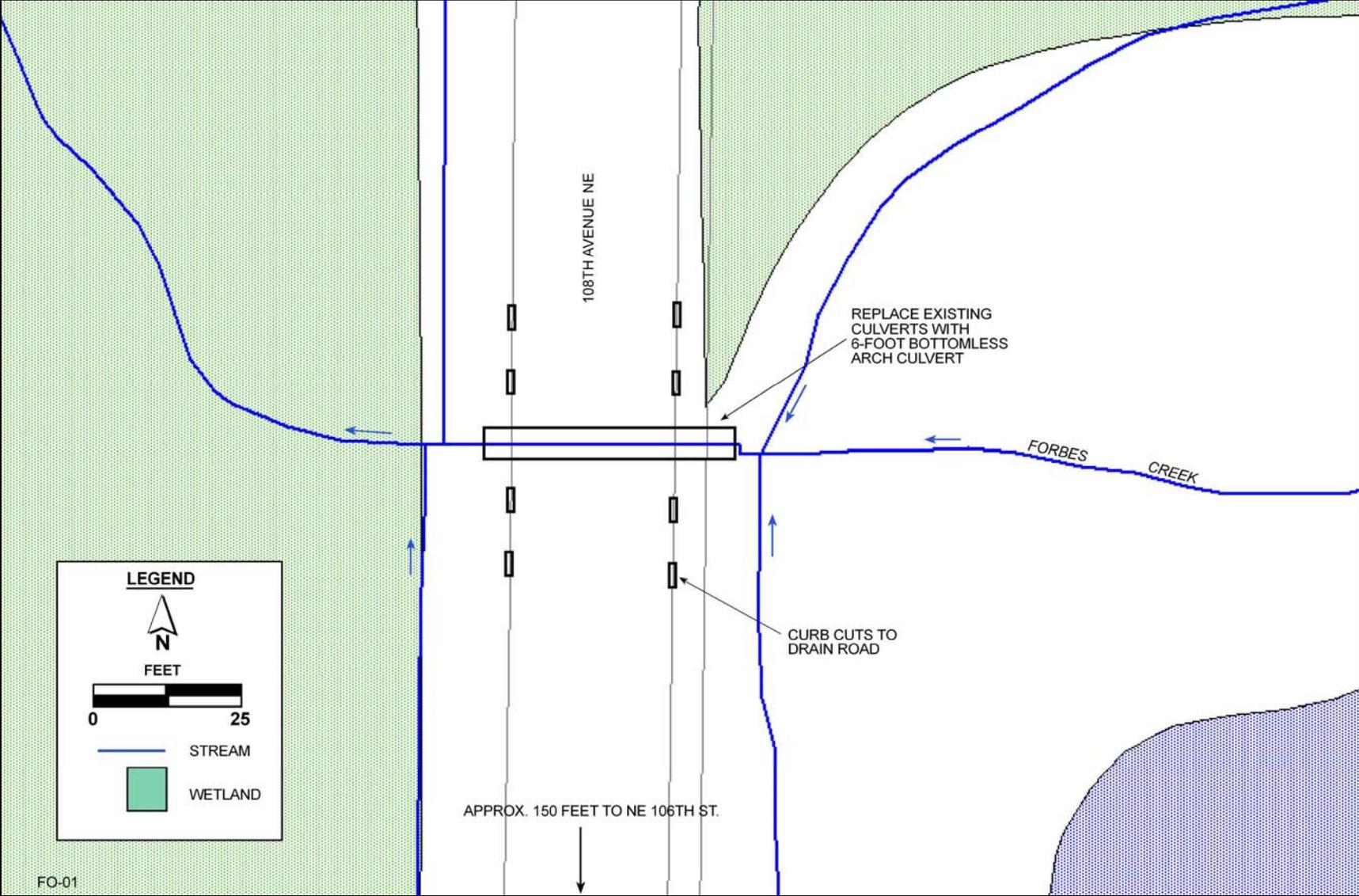
Fish Passage: Bottomless arch culvert will allow for unencumbered anadromous fish passage to approximately 4000 feet of suitable breeding and rearing habitat (additional upstream habitat may be accessed if the culverts under BNSF tracks and office building parking lot are removed or replaced to improve fish passage). Sediment passage through the culvert will be improved.

Estimated Project Cost: \$129,000

Associated Projects: Upstream projects to reduce sedimentation: Existing sedimentation basin downstream of Forbes Creek Drive, and Projects FO-05 and FO-07 (channel grade controls).

PROJECT SKETCH

Forbes Creek – 108th Ave NE Fish Passage Improvements and Roadway Drainage



FO-01

PROJECT COST ESTIMATE

Forbes Creek – 108th Ave NE Fish Passage Improvements and Roadway Drainage

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT: Forbes Cr. - 108th Avenue flooding and fish passage		BY: K. Ludwa			
Project ID: FO-01		CHECKED BY:			
City CIP ID: N/A		DATE: 4/21/2004			
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
6	REMOVE CURB AND GUTTER	50	LF	\$10.11	\$505.37
17	SAW ASPHALT CONCRETE FULL DEPTH	60	LF	\$4.92	\$295.03
5	REMOVE PAVEMENT	67	SY	\$21.85	\$1,464.21
7	REMOVE CULVERT	45	LF	\$13.11	\$590.06
94	CORRUGATED METAL PIPE ARCH 83"X 57" (EQUIV. DIA 72")	45	LF	\$360.59	\$16,226.52
43.1	PAVMT PATCH, ASPH CONC	600	SF	\$10.00	\$6,000.00
179	TEMPORARY BYPASS	1	LS	\$15,000.00	\$15,000.00
Subtotal: Construction Elements					\$ 40,081
<i>Required Ancillary Items</i>					
178	DEWATERING	10%			\$ 4,008
180	EROSION & SEDIMENTATION CONTROL	10%	(See Note 3)		\$ 4,008
182	TRAFFIC CONTROL	5%	(See Note 4)		\$ 2,004
184	CONTINGENCY	30%			\$ 12,024
Subtotal: Construction + Ancillary					\$ 62,126
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 6,213
Subtotal: Construction + Ancillary + Mobilization					\$ 68,338
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%			\$ 6,014
	ENGINEERING/LEGAL/ADMIN	50%			\$ 34,169
	CONSTRUCTION MANAGEMENT	20%			\$ 13,668
	PERMITTING	10%			\$ 6,834
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 129,023
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,				\$ -
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT				\$ -
	CONDEMNATION				\$ -
	CONTINGENCY				\$ -
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 129,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.					
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.					

PROJECT SUMMARY SHEET

Forbes Creek – NE 95th Street/126th Ave NE Flood Control

Problem Description: Water in channel backwaters upstream from NE 95th Street during storms, and minor flooding occurs, flooding in crawl space of 2nd residence south of intersection.

Project Description: Improvement of the NE 95th Street culvert is unlikely to reduce flooding because NE 95th Street has minimal clearance over the culvert, and backwatering also occurs in the wetland north of NE 95th Street. The most cost-effective solution appears to be raising the grade of a low area on affected property.

Project Alternatives

Instead of raising the whole low area on the flooded property, a berm could be constructed. This would be a less aesthetic solution. The berm would have to extend further upstream and downstream to ensure that water would not flow around the berm.

The culvert at NE 95th Street has been improved, which may partially alleviate flooding. However, backwatering also occurs upstream from the wetland north of NE 95th Street. Enlarging the channel in the wetland would help to reduce backwatering from the wetland; this would likely require ongoing control of the dense vegetation congesting the channels in the wetland. This is a less desirable solution because of the immediate and ongoing disturbance required in the wetland.

Detention facilities upstream of the flooded area (planned for NE 85th Street) may also partially reduce flooding. However, because the NE 85th Street detention only covers a portion of the basin, additional detention would be likely be required for the remainder of the contributing basin to effectively reduce flooding at this location.

Design Assumptions: Landscaping costs will be covered by property owner.

Project Benefits: Alleviation of flooding of residence crawl space.

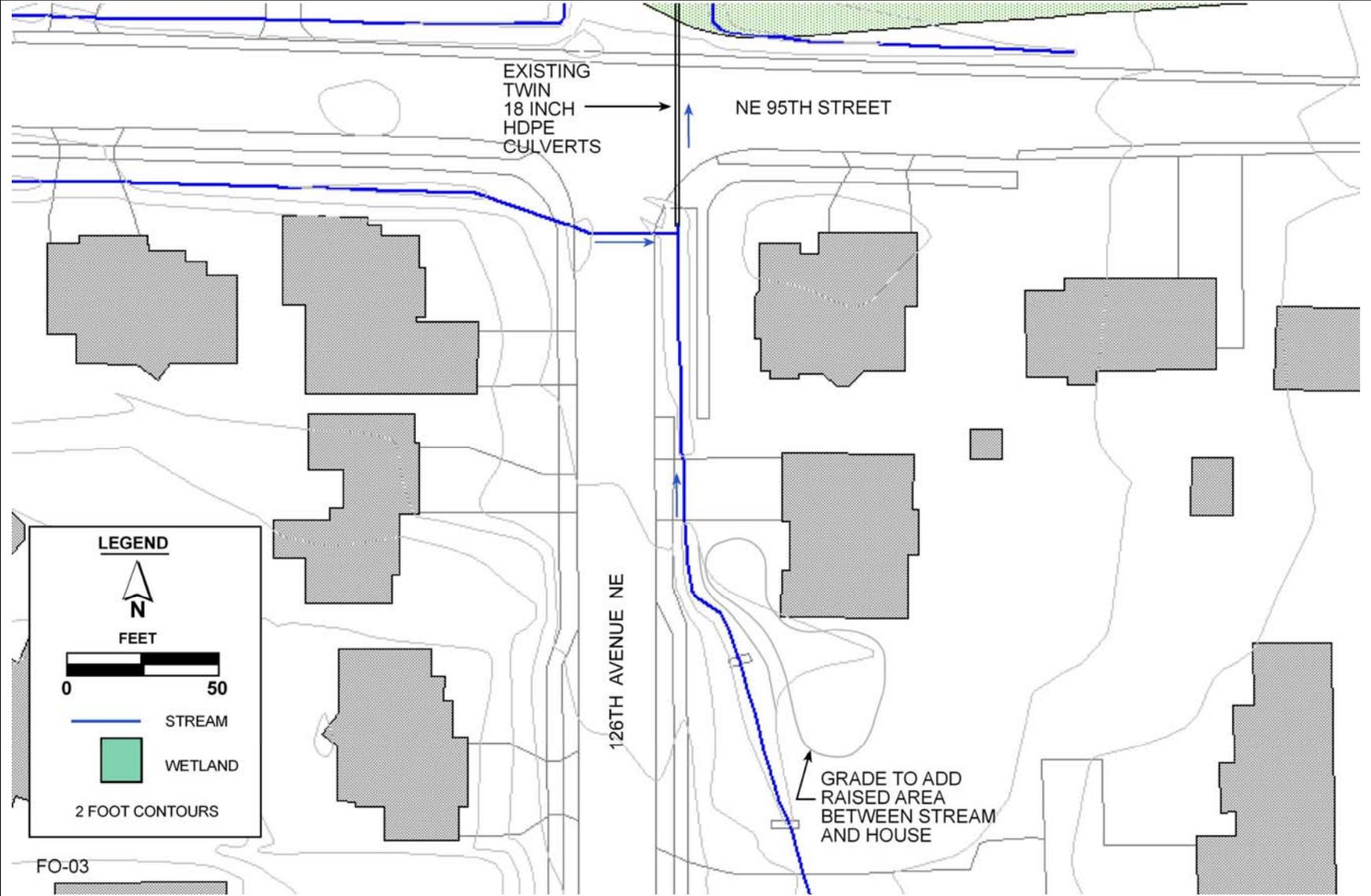
Estimated Project Cost: \$43,000

Associated Projects: Stormwater detention on NE 85th Street (to occur as an element of roadway improvements)

Project FO-04, NE 86th/128th Avenue NE stream stabilization

PROJECT SKETCH

Forbes Creek – NE 95th/126th Ave NE Flood Control



PROJECT COST ESTIMATE

Forbes Creek – NE 95th/126th Ave NE Flood Control

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT: Forbes Creek - NE 95th/126th Ave NE flooding		BY: K. Ludwa			
Project ID: FO-03		CHECKED BY:			
City CIP ID: N/A		DATE: 4/21/2004			
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
2	CLEARING AND GRUBBING	0.05	AC	\$5,500.00	\$252.53
39	CONTROLLED DENSITY FILL	88	CY	\$103.81	\$9,134.93
26	COMMON EXCAVATION (QTY < 1000)	88	CY	\$29.50	\$2,596.24
136	SEEDED LAWN INSTALLATION (QTY < 10,000)	1,200	SF	\$0.66	\$786.74
Subtotal: Construction Elements					\$ 12,770
<i>Required Ancillary Items</i>					
178	DEWATERING	0%		\$	-
180	EROSION & SEDIMENTATION CONTROL	10%	(See Note 3)	\$	1,277
182	TRAFFIC CONTROL	0%	(See Note 4)	\$	-
184	CONTINGENCY	20%		\$	2,554
Subtotal: Construction + Ancillary					\$ 16,602
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%		\$	1,660
Subtotal: Construction + Ancillary + Mobilization					\$ 18,262
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%		\$	1,607
	ENGINEERING/LEGAL/ADMIN	85%		\$	15,522
	CONSTRUCTION MANAGEMENT	20%		\$	3,652
	PERMITTING	20%		\$	3,652
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 42,696
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,			\$	-
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT			\$	-
	CONDEMNATION			\$	-
	CONTINGENCY			\$	-
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 43,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.					
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.					

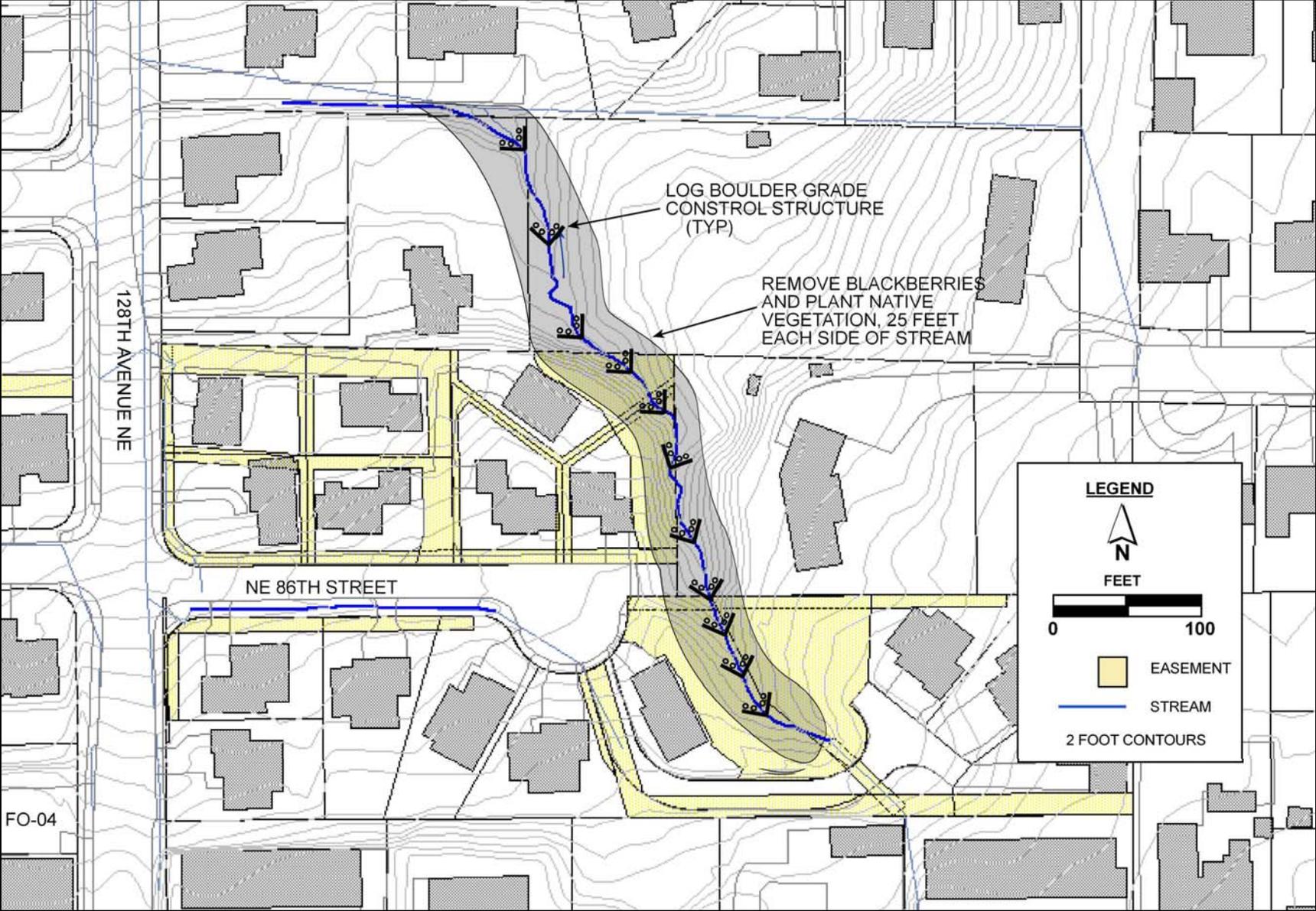
PROJECT SUMMARY SHEET

Forbes Creek - Streambank Stabilization @ NE 86th Street

Problem Description:	Uncontrolled flows from NE 85th Street causing erosion and downcutting in channel.
Project Description:	After stormwater detention has been completed on NE 85th Street, add log-boulder grade control structures, stabilize steep banks, and revegetate riparian zone. If necessary, add rock to stabilize channel (this reach does not appear to be fish bearing; the primary goal of this project is to protect downstream areas from sedimentation). Project will occur over approximately 500 feet of stream on private property.
Design Assumptions:	25-foot planting zone each side of stream. Some bank stabilization also included. Although an easement extends into the stream corridor at the midpoint of the project reach, access for this project would be more difficult than average, due to steep stream banks and because the project covers at least six properties. No easement costs are included, but the cost of all construction elements in the cost estimate has been increased by a factor of 1.5 to account for difficult access.
Project Benefits:	This project will reduce further downcutting, and will reduce a source of sediment to downstream areas.
Estimated Project Cost:	\$385,000
Associated Projects:	Stormwater detention on NE 85th Street (to occur as an element of roadway improvements).

PROJECT SKETCH

Forbes Creek - Streambank Stabilization @ NE 86th Street



PROJECT COST ESTIMATE

Forbes Creek - Streambank Stabilization @ NE 86th Street

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT: Forbes Creek - streambank stabilization @ NE 86th Street		BY: K. Ludwa			
Project ID: FO-04		CHECKED BY:			
City CIP ID: SD-0537		DATE: 4/21/2004			
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
2	CLEARING AND GRUBBING	0.23	AC	\$8,250.00	\$1,893.94
173	LOG-BOULDER GRADE CONTROL STRUCTURE (Includes installation)	11	EA	\$3,278.09	\$36,058.94
169	REVEGETATION (RIPARIAN CORRIDOR)	0.60	AC	\$49,171.28	\$29,502.77
170	BIOENGINEERING BANK STABILIZATION	350	LF	\$163.90	\$57,366.49
36	RIPRAP, LIGHT LOOSE (1.6 TON PER CY)	80	TN	\$78.67	\$6,293.92
179	TEMPORARY BYPASS	1	LS	\$12,000.00	\$12,000.00
<p>Note: Unit Costs for bioengineering bank stabilization and revegetation increased by a factor of 1.5 due to access limitations.</p>					
Subtotal: Construction Elements					\$ 143,116
<i>Required Ancillary Items</i>					
178	DEWATERING	0%		\$	-
180	EROSION & SEDIMENTATION CONTROL	15%	(See Note 3)	\$	21,467
182	TRAFFIC CONTROL	0%	(See Note 4)	\$	-
184	CONTINGENCY	30%		\$	42,935
Subtotal: Construction + Ancillary					\$ 207,518
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%		\$	20,752
Subtotal: Construction + Ancillary + Mobilization					\$ 228,270
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%		\$	20,088
	ENGINEERING/LEGAL/ADMIN	35%		\$	79,895
	CONSTRUCTION MANAGEMENT	20%		\$	45,654
	PERMITTING	5%		\$	11,414
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 385,320
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,			\$	-
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT			\$	-
	CONDEMNATION			\$	-
	CONTINGENCY			\$	-
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 385,000
Notes:					
<p>1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.</p> <p>2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.</p> <p>3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.</p> <p>4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.</p>					

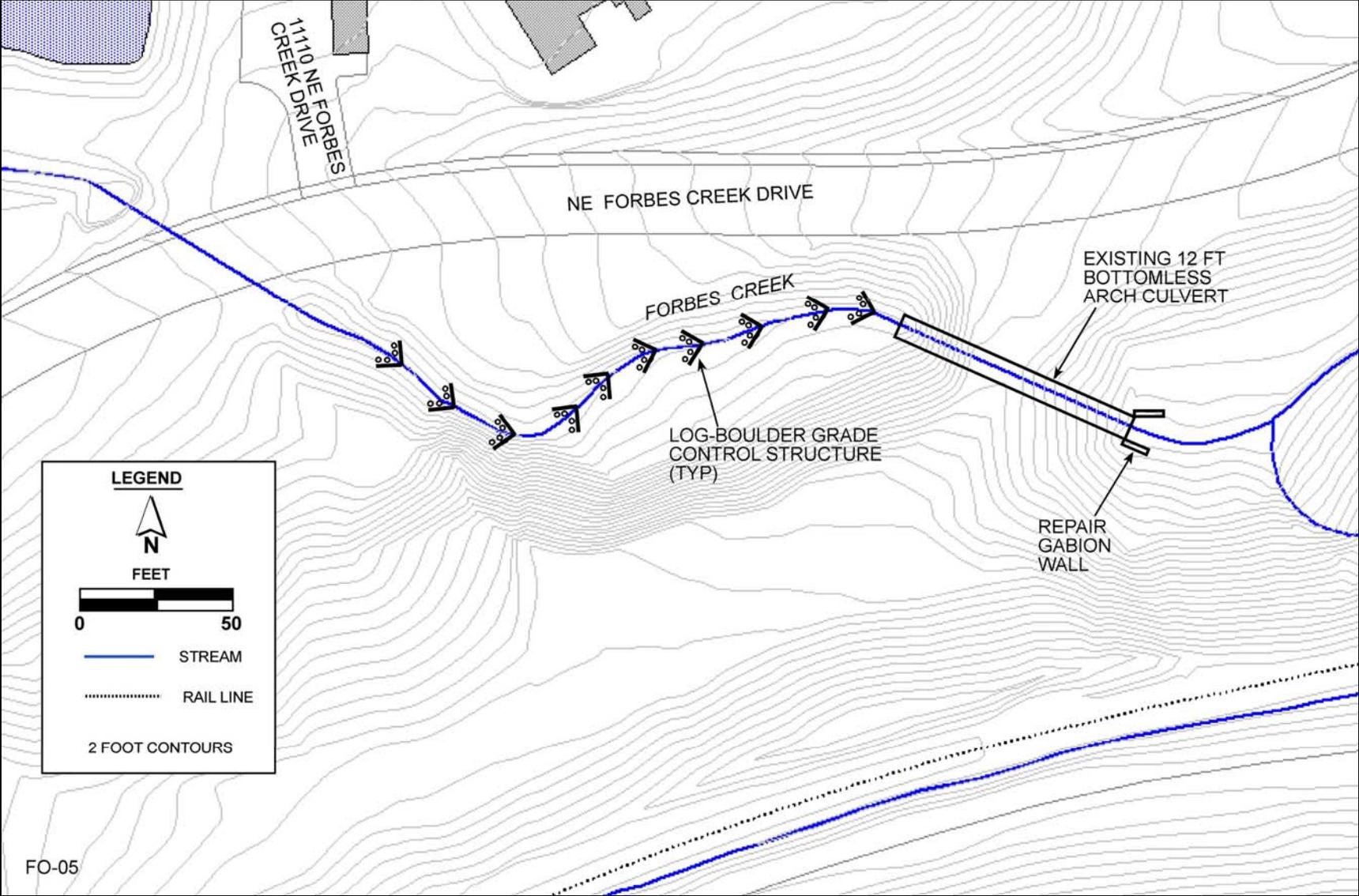
PROJECT SUMMARY SHEET

Forbes Creek -- Culvert Repair and Improvements

Problem Description:	A 12-foot-wide bottomless arch culvert conveys Forbes Creek under a King County sewer easement access road, approximately 145 yards upstream of Forbes Creek Drive. The culvert is in need of repair. The stream is eroding under the culvert footings. A hanging outfall at the downstream end of the culvert has created a fish blockage. The gabion walls on the upstream end of the culvert are collapsing.
Project Description:	Install log-boulder grade controls to promote channel aggradation up to and inside the culvert, aggraded gravel will protect the eroding footings. Repair gabion wall and stabilize adjacent streambanks. This would be the least expensive alternative (see other alternatives below).
Project Alternatives	<p>Alternative 1: Remove the stream crossing and culvert. Excavate to remove the existing arch culvert, footings, and gabions. Restore open channel. Construct new road to access the King County sewer easement, from 111th Ave NE (including a rail crossing).</p> <p>Alternative 2: Replace the culvert. Excavate to remove the existing arch culvert, footings, and gabions. Install new footings and box or arch culvert. Replace road embankment over culvert.</p>
Design Assumptions:	11 grade control weirs would be installed. 200 linear feet of bioengineered bank stabilization is included for areas that may need restoration. Crane is included as extra cost, due to access limitations on steep slope adjacent to Forbes Creek Drive.
Project Benefits:	This project will stabilize the culvert footings, improve fish passage, and stabilize the bank on the upstream end of the culvert.
Estimated Project Cost:	\$249,000
Associated Projects:	<p>Project FO-07, channel grade controls to reduce channel downcutting, improve floodplain connection, and improve fish passage upstream of the culvert.</p> <p>Downcutting is likely associated with increased peak flows and flow durations. Flow control improvements are highly recommended prior to this project.</p>

PROJECT SKETCH

Forbes Creek - Culvert Repair and Improvements



PROJECT COST ESTIMATE

Forbes Creek - Culvert Repair and Improvements

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT: Forbes Cr. - culvert improvements and repair		BY: K. Ludwa			
Project ID: FO-05		CHECKED BY:			
City CIP ID: N/A		DATE: 4/21/2004			
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
173	LOG-BOULDER GRADE CONTROL STRUCTURE (Includes installation)	11	EA	\$2,185.39	\$24,039.29
3	REMOVE AND REPLACE ROCKERY	15	CY	\$163.90	\$2,458.56
167	GABIONS (WITHOUT ROAD ACCESS)	15	CY	\$300.49	\$4,507.37
170	BIOENGINEERING BANK STABILIZATION	200	LF	\$109.27	\$21,853.90
176.1	CRANE, TRUCK MOUNTED HYD, 12 TON W/ OPERATOR	4	DAY	\$1,600.00	\$6,400.00
179	TEMPORARY BYPASS	1	LS	\$18,000.00	\$18,000.00
Crane is included as extra cost, due to access limitations on steep slopes.					
Subtotal: Construction Elements					\$ 77,259
<i>Required Ancillary Items</i>					
178	DEWATERING	0%			\$ -
180	EROSION & SEDIMENTATION CONTROL	20%	(See Note 3)		\$ 15,452
182	TRAFFIC CONTROL	5%	(See Note 4)		\$ 3,863
184	CONTINGENCY	30%			\$ 23,178
Subtotal: Construction + Ancillary					\$ 119,752
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 11,975
Subtotal: Construction + Ancillary + Mobilization					\$ 131,727
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%			\$ 11,592
	ENGINEERING/LEGAL/ADMIN	50%			\$ 65,863
	CONSTRUCTION MANAGEMENT	20%			\$ 26,345
	PERMITTING	10%			\$ 13,173
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 248,700
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,				\$ -
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT				\$ -
	CONDEMNATION				\$ -
	CONTINGENCY				\$ -
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 249,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.					
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.					

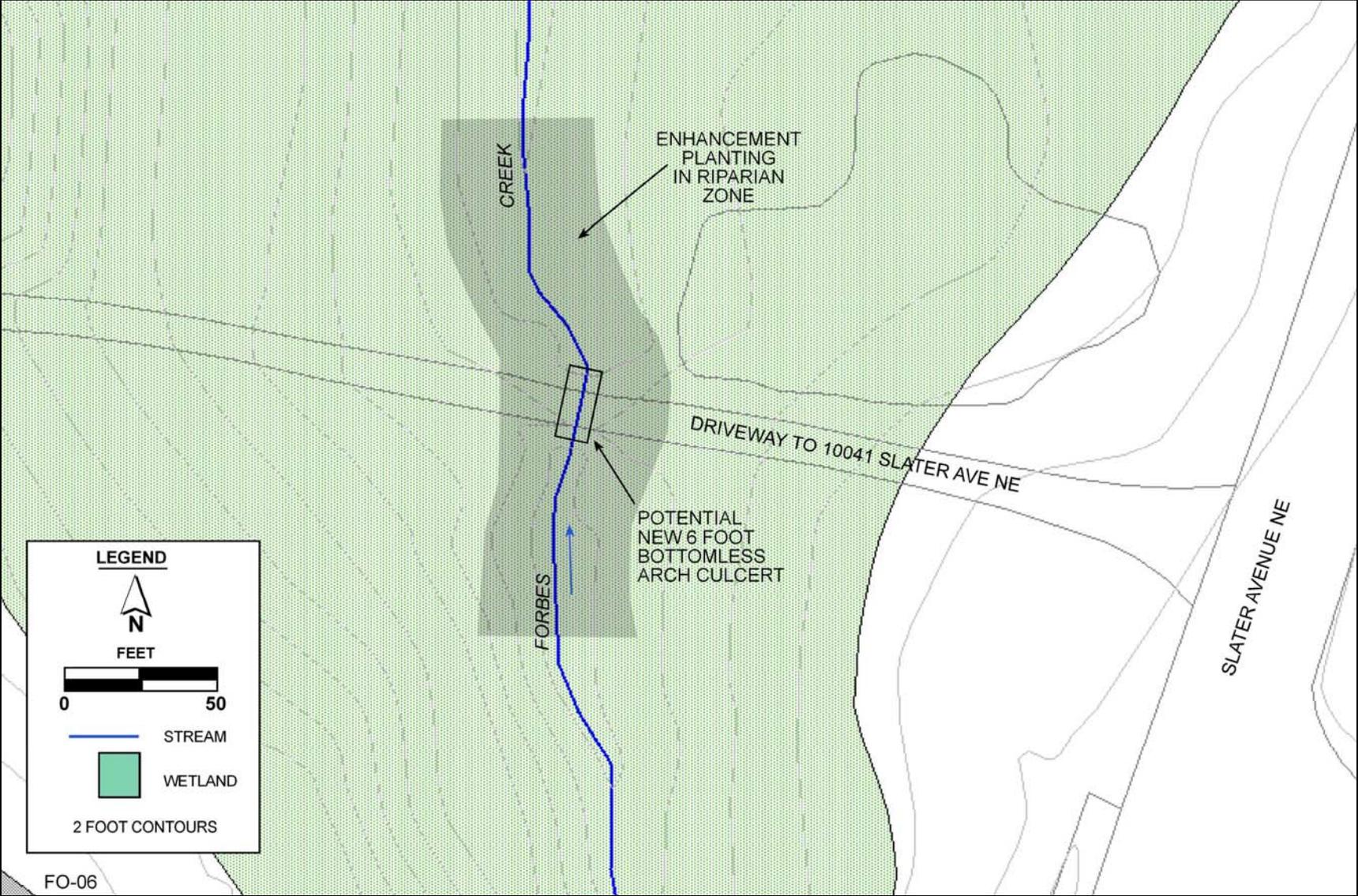
PROJECT SUMMARY SHEET

Forbes Creek – Driveway Crossing Repair at 10041 Slater Ave NE

Problem Description:	Private stream crossing is deteriorating. Crossing consists of fill over 3 culverts constructed of 50 gallon drums placed end to end. Additional deterioration of culvert may result in fish passage impediment.
Project Description:	Ideal crossing replacement would consist of a bottomless arch culvert.
Design Assumptions:	Replace with 6-foot equivalent diameter culvert. Replace existing crushed rock road surface with similar. Include riparian planting (25 feet each side of channel x 150-foot parcel length) as anticipated mitigation/permit condition.
Project Benefits:	This project will reduce the risk of fish passage impediment and/or flooding caused by the current deteriorated crossing.
Estimated Project Cost:	\$48,000
Associated Projects:	This project gains priority if fish passage is improved under Interstate 405.

PROJECT SKETCH

Forbes Creek – Driveway Crossing Repair at 10041 Slater Ave NE



PROJECT COST ESTIMATE

Forbes Creek – Driveway Crossing Repair at 10041 Slater Ave NE

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT: Forbes Cr. - driveway crossing repair		BY: K. Ludwa			
Project ID: FO-06		CHECKED BY:			
City CIP ID: N/A		DATE: 4/21/2004			
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
7	REMOVE CULVERT	15	LF	\$13.11	\$196.69
94	CORRUGATED METAL PIPE ARCH 83"X 57" (EQUIV. DIA 72")	15	LF	\$360.59	\$5,408.84
39	CONTROLLED DENSITY FILL	12	CY	\$103.81	\$1,245.67
31	CRUSHED SURFACE TOP COURSE	14	TN	\$32.78	\$458.93
169	REVEGETATION (RIPARIAN CORRIDOR)	0.17	AC	\$32,780.85	\$5,572.74
179	TEMPORARY BYPASS	1.00	LS	\$5,000.00	\$5,000.00
Subtotal: Construction Elements					\$ 17,883
<i>Required Ancillary Items</i>					
178	DEWATERING	0%		\$	-
180	EROSION & SEDIMENTATION CONTROL	10%	(See Note 3)	\$	1,788
182	TRAFFIC CONTROL	0%	(See Note 4)	\$	-
184	CONTINGENCY	20%		\$	3,577
Subtotal: Construction + Ancillary					\$ 23,248
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%		\$	2,325
Subtotal: Construction + Ancillary + Mobilization					\$ 25,573
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%		\$	2,250
	ENGINEERING/LEGAL/ADMIN	50%		\$	12,786
	CONSTRUCTION MANAGEMENT	20%		\$	5,115
	PERMITTING	10%		\$	2,557
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 48,281
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,			\$	-
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT			\$	-
	CONDEMNATION			\$	-
	CONTINGENCY			\$	-
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 48,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.					
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.					

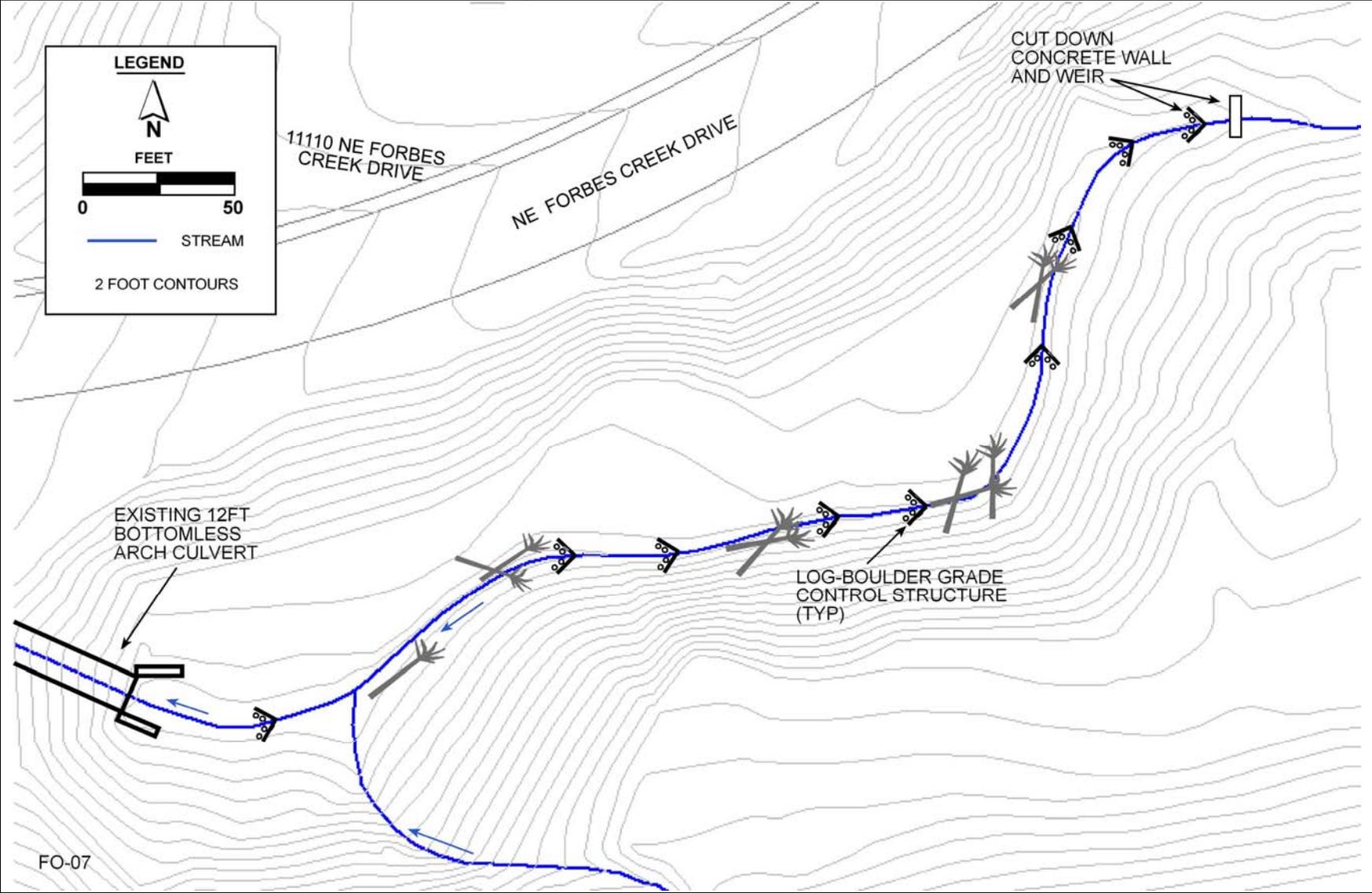
PROJECT SUMMARY SHEET

Forbes Creek – Channel Grade Controls and Riparian Reconnection

Problem Description:	<p>Channel downcutting: Downcutting box channel is dissociated with floodplain. The only pools in this reach are associated with buried remnant large wood, which is exposed as the channel downcuts.</p> <p>Fish blockage: A concrete wall of an old diversion dam drops 1.6 feet to a pool created by a second weir. From the second weir, the stream falls 1.8 feet to large rocks. Both drops have created a barrier to fish passage.</p>
Project Description:	Install log-boulder grade control structures in the channel, cut down height of weir and concrete wall, and install instream LWD habitat structures.
Design Assumptions:	Crane is included as extra cost, due to access limitations on steep slope adjacent to Forbes Creek Drive.
Project Benefits:	Installing weirs in the channel will cause aggradation to occur, raising the channel. This will induce greater interaction between the stream and the floodplain, allowing deposition of sediment in the floodplain. Cutting down the weir and concrete wall and raising the channel will reduce the drop, and improve fish passage. Installation of LWD will improve instream habitat.
Estimated Project Cost:	\$234,000
Associated Projects:	<p>FO-05, culvert repair and improvements immediately downstream of this project area.</p> <p>Downcutting is likely associated with increased peak flows and flow durations. Flow control improvements are highly recommended prior to this project.</p>

PROJECT SKETCH

Forbes Creek – Channel Grade Controls and Riparian Reconnection



PROJECT COST ESTIMATE

Forbes Creek – Channel Grade Controls and Riparian Reconnection

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT: Forbes Cr. - channel grade controls and riparian reconnection		BY: K. Ludwa			
Project ID: FO-07		CHECKED BY:			
City CIP ID: N/A		DATE: 4/21/2004			
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
173	LOG-BOULDER GRADE CONTROL STRUCTURE (Includes installation)	9	EA	\$2,185.39	\$19,668.51
5.1	REMOVE IN STREAM CONCRETE/ROCK STRUCTURE	2	CY	\$200.00	\$400.00
172	LARGE WOODY DEBRIS	11	EA	\$874.16	\$9,615.72
176.1	CRANE, TRUCK MOUNTED HYD, 12 TON W/ OPERATOR	2	DAY	\$1,600.00	\$3,200.00
170	BIOENGINEERING BANK STABILIZATION	200	LF	\$109.27	\$21,853.90
179	TEMPORARY BYPASS	1	LS	\$18,000.00	\$18,000.00
Crane is included as extra cost, due to access limitations on steep slopes.					
Subtotal: Construction Elements					\$ 72,738
<i>Required Ancillary Items</i>					
178	DEWATERING	0%		\$	-
180	EROSION & SEDIMENTATION CONTROL	20%	(See Note 3)	\$	14,548
182	TRAFFIC CONTROL	5%	(See Note 4)	\$	3,637
184	CONTINGENCY	30%		\$	21,821
Subtotal: Construction + Ancillary					\$ 112,744
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%		\$	11,274
Subtotal: Construction + Ancillary + Mobilization					\$ 124,019
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%		\$	10,914
	ENGINEERING/LEGAL/ADMIN	50%		\$	62,009
	CONSTRUCTION MANAGEMENT	20%		\$	24,804
	PERMITTING	10%		\$	12,402
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 234,147
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,			\$	-
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT			\$	-
	CONDEMNATION			\$	-
	CONTINGENCY			\$	-
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 234,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.					
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.					

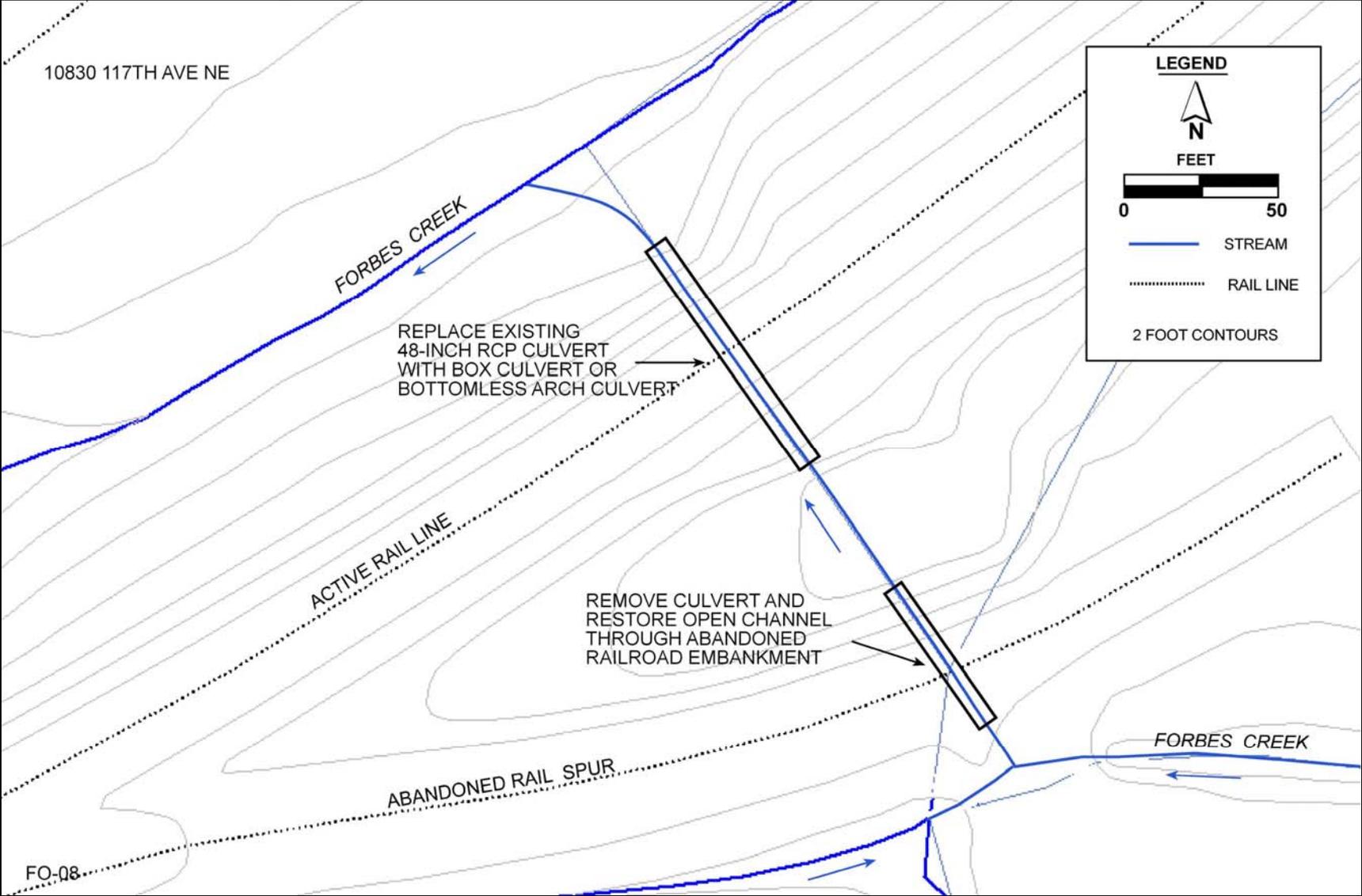
PROJECT SUMMARY SHEET

Forbes Creek –Fish Passage @ BNSF Rail Line

Problem Description:	Two culverts, in series, convey Forbes Creek under an abandoned railroad spur embankment and then under an active railroad track embankment. The grade of the existing culvert under the active rail embankment is greater than 1 percent, creating an impediment to fish passage.
Project Description:	Remove the culvert and restore open channel under the abandoned rail spur. Replace the culvert under the active rail line with a bottomless arch culvert or box culvert.
Design Assumptions:	No land acquisition costs are included to account for abandonment of the rail spur.
Project Benefits:	This project would improve fish passage to upstream habitat. This project should be undertaken only if project FO-09 is also completed, daylighting a long culverted section of the stream and allowing fish passage immediately upstream of this project.
Estimated Project Cost:	\$194,000
Associated Projects:	FO-09, daylighting the stream to allow fish passage immediately upstream of this project.

PROJECT SKETCH

Forbes Creek -Fish Passage @ BNSF Rail Line



PROJECT COST ESTIMATE

Forbes Creek –Fish Passage @ BNSF Rail Line

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT: Forbes Creek - fish passage @ BNSF rail line		BY: K. Ludwa			
Project ID: FO-08		CHECKED BY:			
City CIP ID: N/A		DATE: 4/21/2004			
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
26	COMMON EXCAVATION {QTY < 1000}	350	CY	\$29.50	\$10,325.97
7	REMOVE CULVERT	72	LF	\$13.11	\$944.09
28	CHANNEL EXCAVATION	40	CY	\$17.48	\$699.32
96	REINF. CONC. BOX CULVERT 72-INCH X 36-INCH	42	LF	\$743.03	\$31,207.37
169	REVEGETATION (RIPARIAN CORRIDOR)	0.065	AC	\$32,780.85	\$2,130.76
170	BIOENGINEERING BANK STABILIZATION	60	LF	\$109.27	\$6,556.17
179	TEMPORARY BYPASS	1	LS	\$18,000.00	\$18,000.00
Subtotal: Construction Elements					\$ 69,864
<i>Required Ancillary Items</i>					
178	DEWATERING	0%			\$ -
180	EROSION & SEDIMENTATION CONTROL	15%	(See Note 3)		\$ 10,480
182	TRAFFIC CONTROL	0%	(See Note 4)		\$ -
184	CONTINGENCY	30%			\$ 20,959
Subtotal: Construction + Ancillary					\$ 101,302
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 10,130
Subtotal: Construction + Ancillary + Mobilization					\$ 111,433
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%			\$ 9,806
	ENGINEERING/LEGAL/ADMIN	35%			\$ 39,001
	CONSTRUCTION MANAGEMENT	20%			\$ 22,287
	PERMITTING	10%			\$ 11,143
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 193,670
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,				\$ -
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT				\$ -
	CONDEMNATION				\$ -
	CONTINGENCY				\$ -
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 194,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.					
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.					

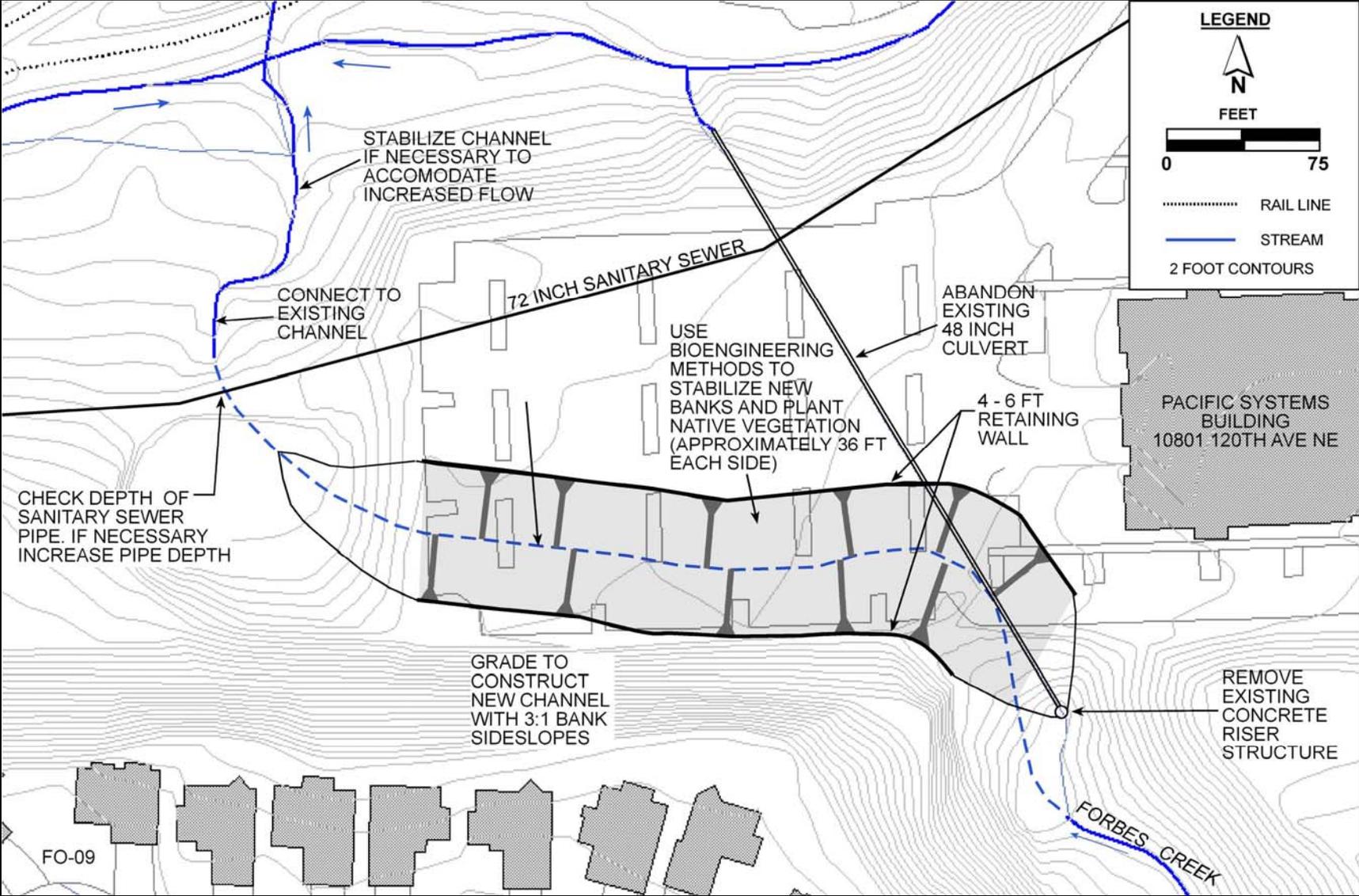
PROJECT SUMMARY SHEET

Forbes Creek – Daylighting at Office Complex Parking Lot

Problem Description:	Stream flows through a 350-foot-long culvert under a parking lot with a 3-foot drop to a rock outfall approximately 20 feet high. This forms a complete barrier to fish passage.
Project Description:	Construct an open channel (approximately 490 feet) and connect the to an existing tributary channel on the west side of the parking lot. Improve tributary channel connection (approximately 190 feet) as necessary to convey increased flows. Plant riparian vegetation along the banks of the new channel.
Design Assumptions:	<p>This would require an easement from the property owner, to relinquish area that is currently a parking lot (not included in this cost estimate). The parking lot appears to be underutilized. Abandon and plug existing culvert. The channel is approximately 14-16 feet below the parking lot. Assume an 8-foot wide channel with 3: 1 banks and a 4-6-foot retaining walls at the top, requiring a corridor approximately 72 feet wide.</p> <p>The new channel would be constructed through an existing stormwater pond on the west side of the parking lot. The pond would be abandoned to create an open channel through the pond. Replacement detention volume for the parking lot would be constructed by creating a new pond or detention pipe.</p> <p>Additional feasibility analysis is needed for this project, to consider unstable slopes and the necessity for steep grades. Additionally, a 72-inch King County sewer main crosses the site approximately perpendicular to the proposed open channel; the depth of the sewer line is unknown. These factors are not included in the cost estimate.</p>
Project Benefits:	This project will provide access to suitable spawning habitat upstream of the culvert.
Estimated Project Cost:	\$2,727,000
Associated Projects:	FO-08, culvert replacement under BNSF railroad tracks, downstream of this project.

PROJECT SKETCH

Forbes Creek – Daylighting at Office Complex Parking Lot



PROJECT COST ESTIMATE

Forbes Creek – Daylighting at Office Complex Parking Lot

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT:	Forbes Creek - daylighting at office complex parking lot			BY:	K. Ludwa
Project ID:	FO-09			CHECKED BY:	
City CIP ID:	N/A			DATE:	4/21/2004
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
17	SAW ASPHALT CONCRETE FULL DEPTH	400	LF	\$4.92	\$1,966.85
5	REMOVE PAVEMENT	2,850	SY	\$21.85	\$62,283.62
145	CURB, EXTRUDED ASPHALT CONCRETE (ASPHALT BERM)	400	LF	\$7.10	\$2,841.01
10	REMOVE PIPE	150	LF	\$16.39	\$2,458.56
28	CHANNEL EXCAVATION	8,000	CY	\$17.48	\$139,864.97
167.1	RETAINING WALL	3,400	SF	\$30.00	\$102,000.00
29	REGRADE EXISTING DITCH	190	LF	\$5.46	\$1,038.06
119	PIPE, DETENTION, CONC, 60-INCH	400	LF	\$819.52	\$327,808.51
111	FLOW CONTROL STRUCTURE, 72-INCH	1	EA	\$11,145.49	\$11,145.49
133	TOPSOIL	475	CY	\$30.60	\$14,532.84
130	EROSION CONTROL, MATTING, JUTE	37,600	SF	\$0.98	\$36,976.80
34	STREAM GRAVEL (1.7 TON PER CY)	40	TN	\$39.34	\$1,573.48
41	ROUND RIVER ROCK	20	TN	\$43.71	\$874.16
129	EROSION CONTROL, HYDRO-SEEDING {QTY >= 5000}	32,000	SF	\$0.16	\$5,244.94
170	BIOENGINEERING BANK STABILIZATION	900	LF	\$109.27	\$98,342.55
173	LOG FISH WEIR (Includes installation)	4	EA	\$2,185.39	\$8,741.56
169	REVEGETATION (RIPARIAN CORRIDOR)	0.75	AC	\$32,780.85	\$24,585.64
179	TEMPORARY BYPASS	1.00	LS	\$60,000.00	\$60,000.00
Subtotal: Construction Elements					\$ 902,279
<i>Required Ancillary Items</i>					
178	DEWATERING	20%			\$ 180,456
180	EROSION & SEDIMENTATION CONTROL	20%	(See Note 3)		\$ 180,456
182	TRAFFIC CONTROL	3%	(See Note 4)		\$ 27,068
184	CONTINGENCY	30%			\$ 270,684
Subtotal: Construction + Ancillary					\$ 1,560,943
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 156,094
Subtotal: Construction + Ancillary + Mobilization					\$ 1,717,037
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%			\$ 151,099
	ENGINEERING/LEGAL/ADMIN	25%			\$ 429,259
	CONSTRUCTION MANAGEMENT	20%			\$ 343,407
	PERMITTING	5%			\$ 85,852
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 2,726,655
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,				\$ -
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT				\$ -
	CONDEMNATION				\$ -
	CONTINGENCY				\$ -
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 2,727,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.					
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.					

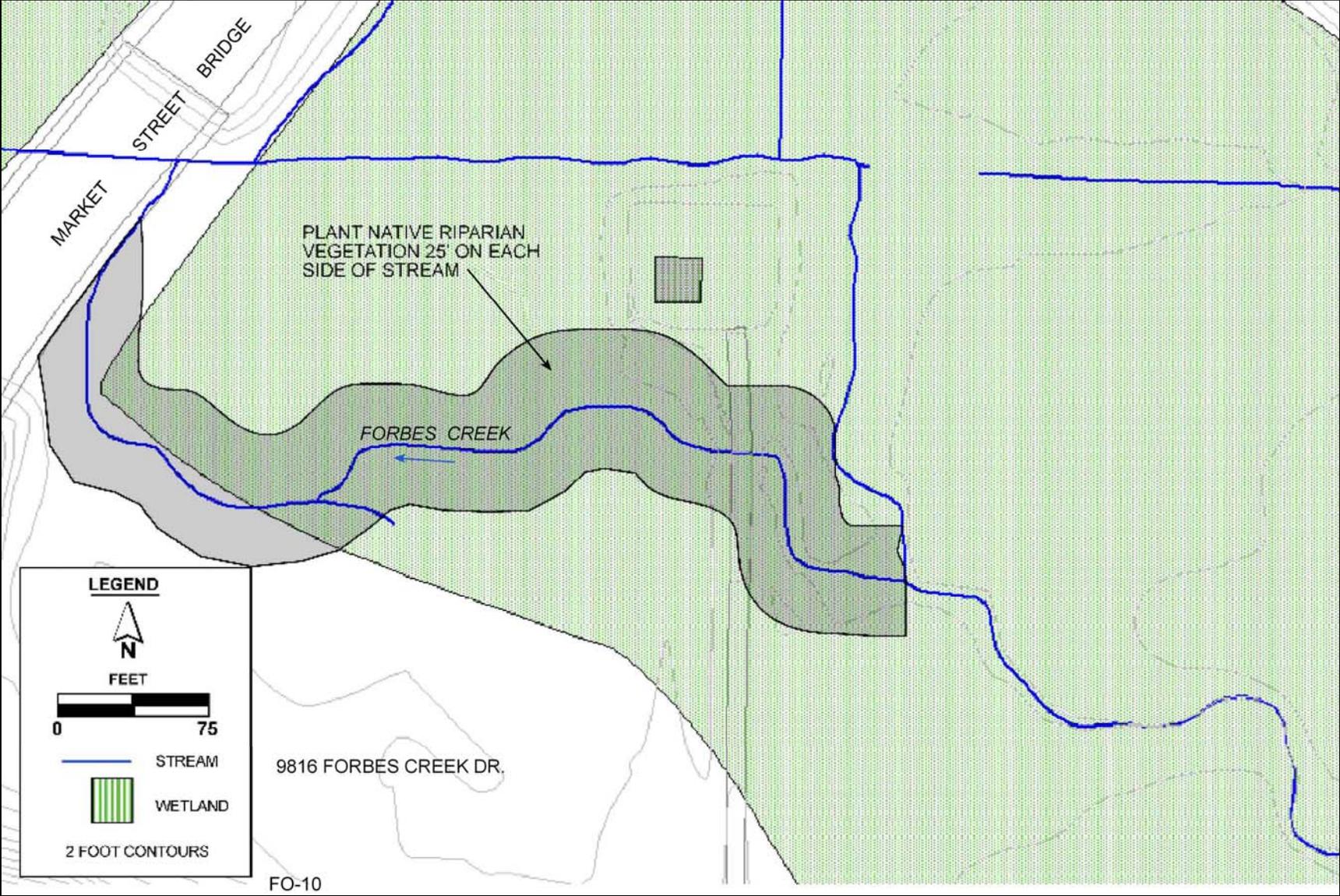
PROJECT SUMMARY SHEET

Forbes Creek –Riparian Planting Upstream of Market Street Bridge

Problem Description:	Riparian vegetation is lacking in the reach upstream of the Market Street Bridge.
Project Description:	Plant trees and understory shrubs in approximately 550 feet of riparian zone upstream of the Market Street Bridge.
Design Assumptions:	25-foot planting zone on each side of stream. No instream work is included. Simple planting project will have minimal engineering, legal, admin, and permitting costs. Assume that clearing is necessary to remove existing undesirable vegetation (reed canarygrass, etc.).
Project Benefits:	Planting will provide shading for the stream, which will reduce water temperature impacts.
Estimated Project Cost:	\$58,000
Associated Projects:	N/A

PROJECT SKETCH

Forbes Creek –Riparian Planting Upstream of Market Street Bridge



PROJECT COST ESTIMATE

Forbes Creek –Riparian Planting Upstream of Market Street Bridge

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT: Forbes Cr. - riparian planting upstream of Market Street Bridge		BY: K. Ludwa			
Project ID: FO-10		CHECKED BY:			
City CIP ID: N/A		DATE: 4/21/2004			
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
2	CLEARING AND GRUBBING	0.65	AC	\$5,500.00	\$3,575.00
169	REVEGETATION (RIPARIAN CORRIDOR)	0.65	AC	\$32,780.85	\$21,307.55
Subtotal: Construction Elements					\$ 24,883
<i>Required Ancillary Items</i>					
178	DEWATERING	0%			\$ -
180	EROSION & SEDIMENTATION CONTROL	10%	(See Note 3)		\$ 2,488
182	TRAFFIC CONTROL	0%	(See Note 4)		\$ -
184	CONTINGENCY	20%			\$ 4,977
Subtotal: Construction + Ancillary					\$ 32,347
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 3,235
Subtotal: Construction + Ancillary + Mobilization					\$ 35,582
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%			\$ 3,131
	ENGINEERING/LEGAL/ADMIN	35%			\$ 12,454
	CONSTRUCTION MANAGEMENT	20%			\$ 7,116
	PERMITTING	0%			\$ -
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 58,283
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,				\$ -
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT				\$ -
	CONDEMNATION				\$ -
	CONTINGENCY				\$ -
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 58,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.					
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.					

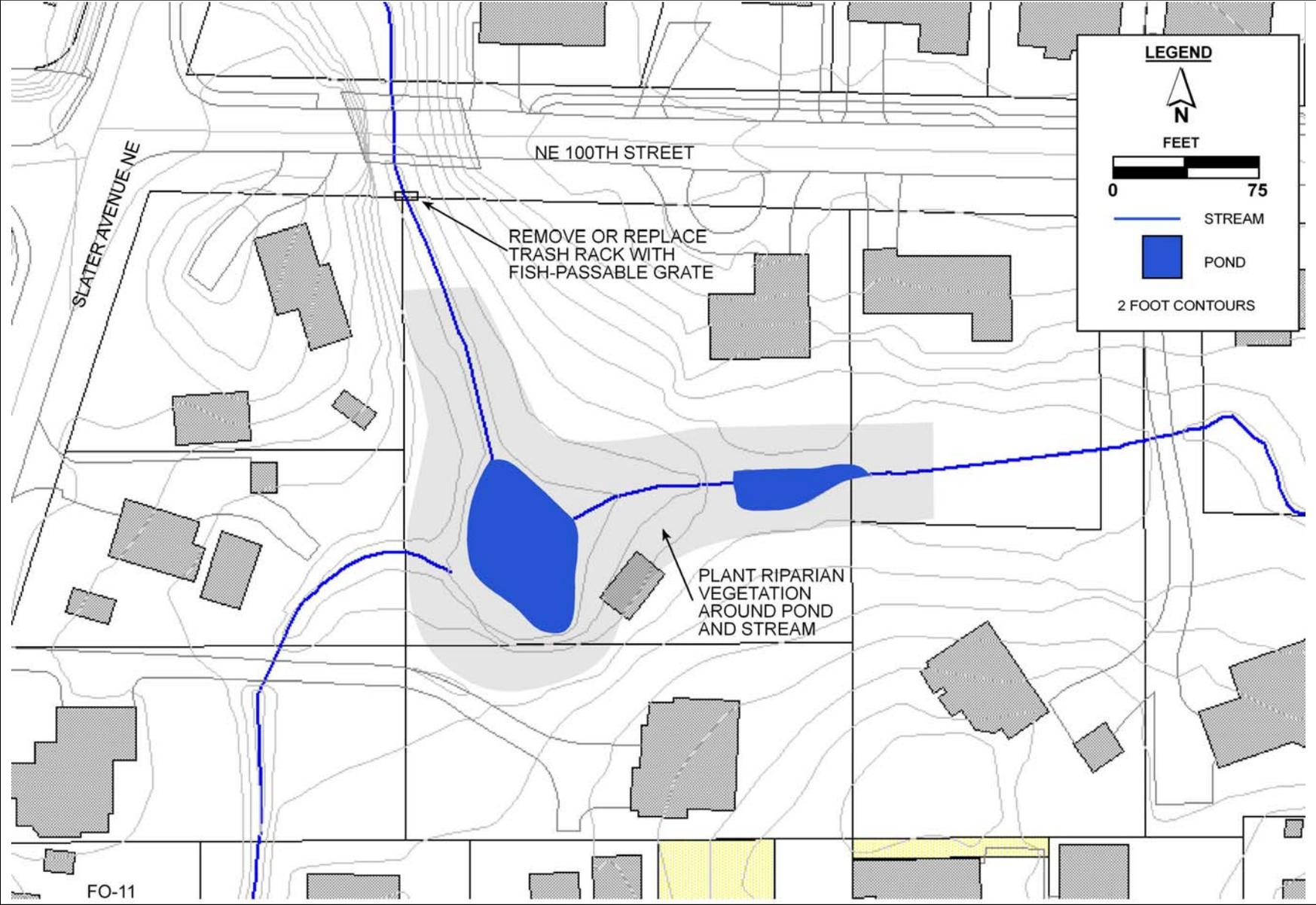
PROJECT SUMMARY SHEET

Forbes Creek – Fish Passage and Riparian Planting at In-Line Ponds

Problem Description:	Area surrounding two in-line ponds is poorly vegetated, resulting in heating of standing water. Trash rack grate at pond outlet prevents fish passage.
Project Description:	Remove or replace trash rack. Plant riparian vegetation in and around ponds.
Design Assumptions:	25-foot planting zone on each side of pond and stream. No easement costs included in project cost estimate. No instream work is included. No permitting costs.
Project Benefits:	Reduced temperatures and improved fish passage.
Estimated Project Cost:	\$76,000
Associated Projects:	This project gains priority if fish passage is improved under Interstate 405.

PROJECT SKETCH

Forbes Creek – Fish Passage Through In-Line Pond



PROJECT COST ESTIMATE

Forbes Creek – Fish Passage Through In-Line Pond

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT: Forbes Cr. - fish passage through in-line pond		BY: K. Ludwa			
Project ID: FO-11		CHECKED BY:			
City CIP ID: N/A		DATE: 4/21/2004			
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
2	CLEARING AND GRUBBING	0.65	AC	\$5,500.00	\$3,575.00
169	REVEGETATION (RIPARIAN CORRIDOR)	0.65	AC	\$32,780.85	\$21,307.55
Subtotal: Construction Elements					\$ 24,883
<i>Required Ancillary Items</i>					
178	DEWATERING	0%			\$ -
180	EROSION & SEDIMENTATION CONTROL	10%	(See Note 3)		\$ 2,488
182	TRAFFIC CONTROL	0%	(See Note 4)		\$ -
184	CONTINGENCY	20%			\$ 4,977
Subtotal: Construction + Ancillary					\$ 32,347
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 3,235
Subtotal: Construction + Ancillary + Mobilization					\$ 35,582
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%			\$ 3,131
	ENGINEERING/LEGAL/ADMIN	85%			\$ 30,245
	CONSTRUCTION MANAGEMENT	20%			\$ 7,116
	PERMITTING	0%			\$ -
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 76,074
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,				\$ -
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT				\$ -
	CONDEMNATION				\$ -
	CONTINGENCY				\$ -
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 76,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.					
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.					

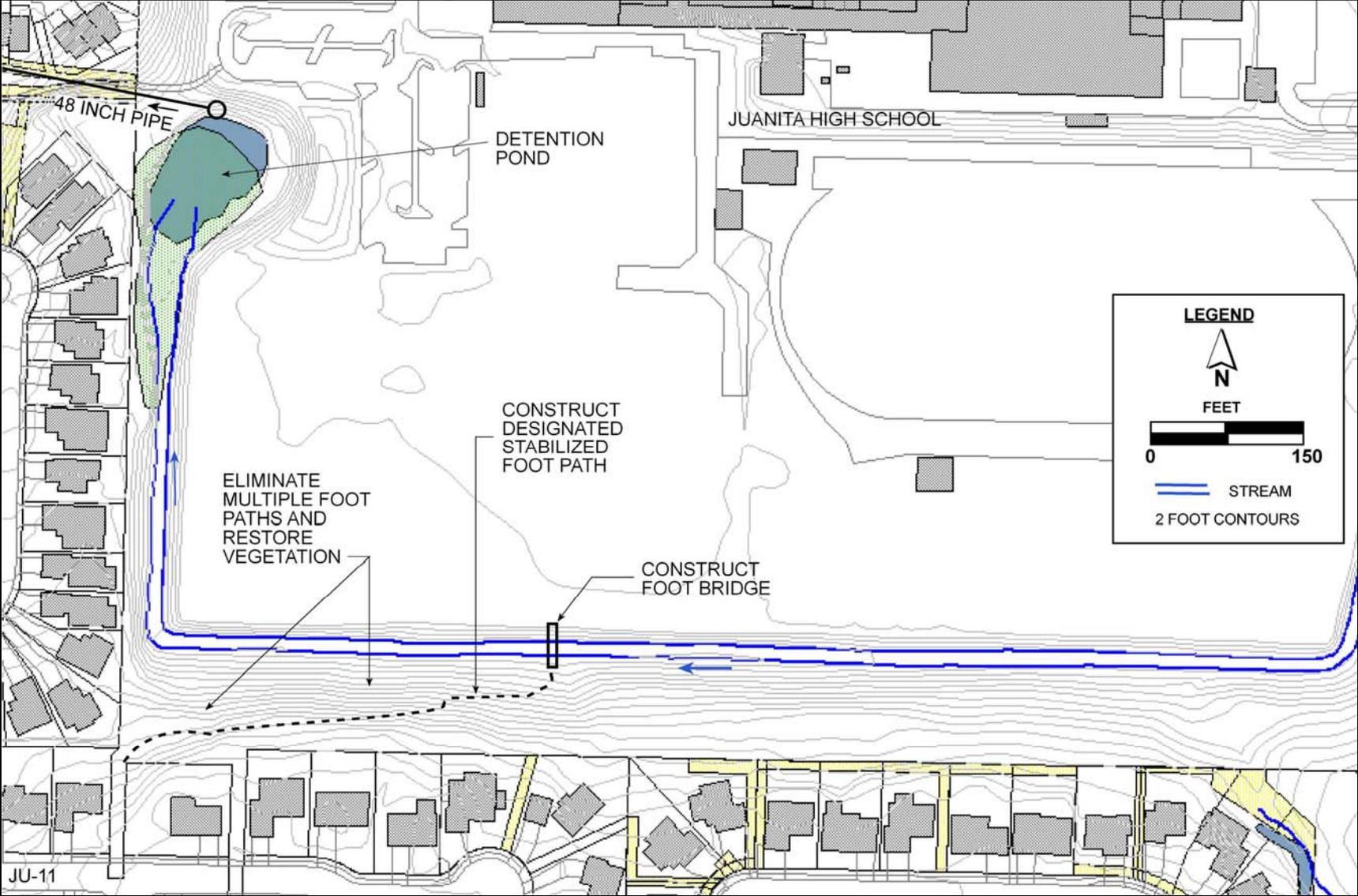
PROJECT SUMMARY SHEET

Juanita Creek – Footpath, Bridge, and Riparian Planting @ Juanita High School

Problem Description:	Straightened and degraded channel and existing pedestrian crossing is water quality and safety hazard. Makeshift footpaths and stream crossings causing bank erosion.
Project Description:	Improve channel crossing. Create a designated, stabilized footpath and construct footbridge. Eliminate other footpaths and restore riparian zone with understory tree and shrub planting.
Design Assumptions:	Construct 500 linear-foot trail, 8 feet wide. Restore riparian vegetation on 2 acres. 30-foot bridge.
Project Benefits:	Reduced sediment supply to stream. Improved safety and aesthetic quality for pedestrian crossing.
Estimated Project Cost:	\$269,000
Associated Projects:	N/A

PROJECT SKETCH

Juanita Creek – Footpath, Bridge, and Riparian Planting @ Juanita High School



PROJECT COST ESTIMATE

Juanita Creek – Footpath, Bridge, and Riparian Planting @ Juanita High School

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT: Juanita Cr. - riparian improvements @ Juanita High School		BY: K. Ludwa			
Project ID: JU-11		CHECKED BY:			
City CIP ID: SD-0337		DATE: 5/5/2004			
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
2	CLEARING AND GRUBBING	0.15	AC	\$5,500.00	\$825.00
156.1	FOOTPATH, GRAVEL COMPACTED	4,000	SF	\$3.50	\$14,000.00
156.3	FOOTBRIDGE, WOOD, LIGHT DUTY	30	LF	\$250.00	\$7,500.00
169	REVEGETATION (RIPARIAN CORRIDOR)	2.00	AC	\$32,780.85	\$65,561.70
Subtotal: Construction Elements					\$ 87,887
<i>Required Ancillary Items</i>					
178	DEWATERING	10%			\$ 8,789
180	EROSION & SEDIMENTATION CONTROL	20%	(See Note 3)		\$ 17,577
182	TRAFFIC CONTROL	0%	(See Note 4)		\$ -
184	CONTINGENCY	30%			\$ 26,366
Subtotal: Construction + Ancillary					\$ 140,619
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 14,062
Subtotal: Construction + Ancillary + Mobilization					\$ 154,681
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%			\$ 13,612
	ENGINEERING/LEGAL/ADMIN	35%			\$ 54,138
	CONSTRUCTION MANAGEMENT	20%			\$ 30,936
	PERMITTING	10%			\$ 15,468
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 268,835
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,				\$ -
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT				\$ -
	CONDEMNATION				\$ -
	CONTINGENCY				\$ -
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 269,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
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4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.					

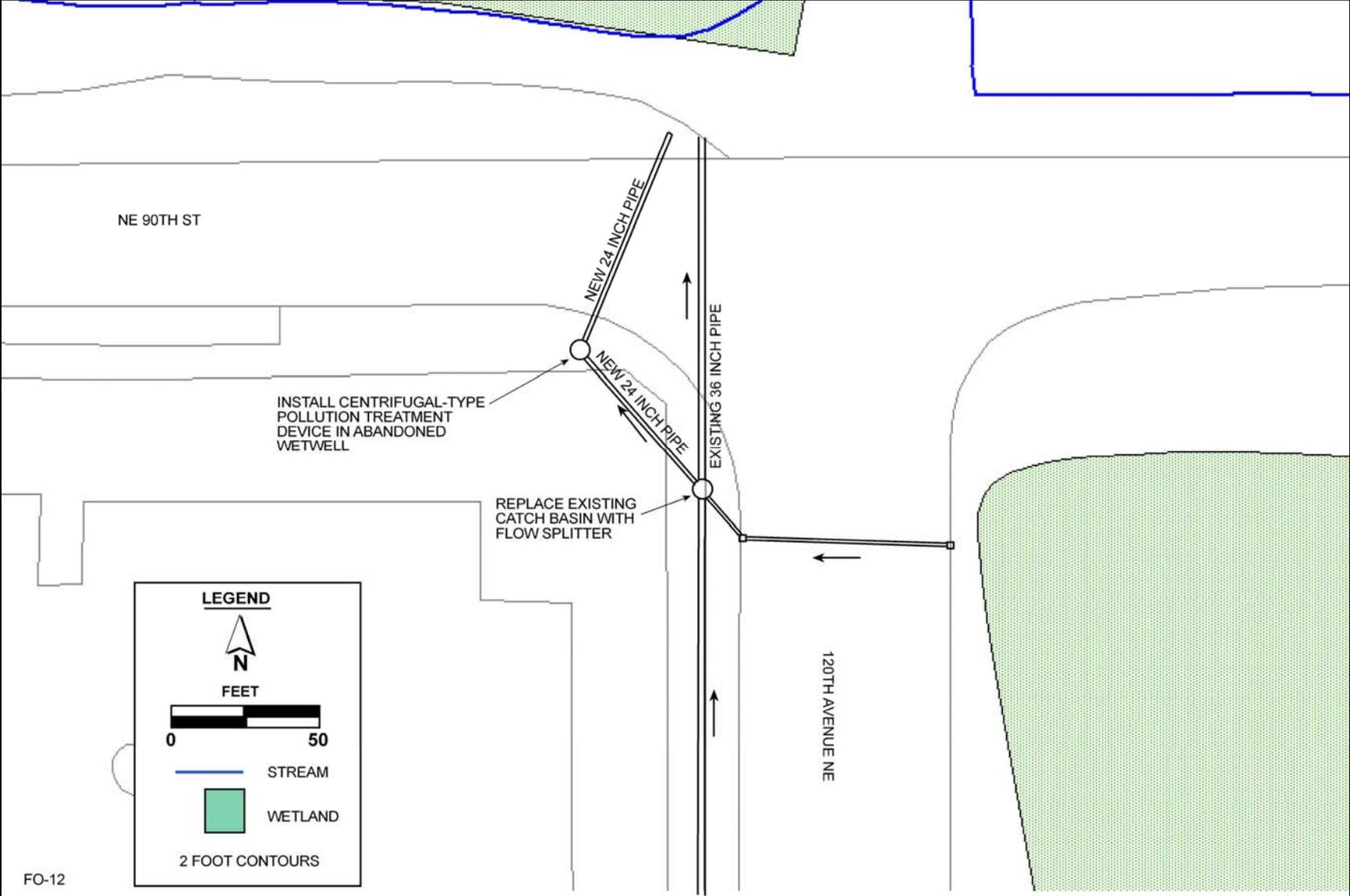
PROJECT SUMMARY SHEET

Forbes Creek – NE 90th Street/120th Ave NE Sediment Control

Problem Description:	Sediment from upslope areas south of NE 90th Street deposits in the wetland area between NE 90th Street and Forbes Lake. Trash and oil sheens have also been observed. Water sample taken at storm drain outfall from 120th Avenue NE on January 7, 2004 had total suspended solids (TSS) of 94 mg/L.
Project Description:	Install treatment device. Possible solution is to install a centrifugal-type pollution treatment device in an abandoned wetwell located in the SW corner of the NE 90th Street/120th Avenue NE intersection.
Project Alternatives	Sedimentation basin at existing pipe outfall on north side of NE 90th Street. This alternative would have wetland impacts.
Design Assumptions:	No excavation costs are included because it is assumed that the pollution treatment device could be installed in the abandoned wetwell.
Project Benefits:	Reduced sedimentation and pollution in Forbes Lake wetlands.
Estimated Project Cost:	\$169,000
Associated Projects:	N/A

PROJECT SKETCH

Forbes Creek – NE 90th Street/120th Ave NE Sediment Control



PROJECT COST ESTIMATE

Forbes Creek – NE 90th Street/120th Ave NE Sediment Control

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT: Forbes Cr. - NE 90th Street/120th Ave NE sediment control		BY: K. Ludwa			
Project ID: FO-12		CHECKED BY:			
City CIP ID: SD-0033		DATE: 4/21/2004			
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
5	REMOVE PAVEMENT	70	SY	\$21.85	\$1,529.77
58	REINF. CONC. PIPE 24-INCH	140	LF	\$76.49	\$10,708.41
124	FLOW SPLITTER	1	LS	\$5,800.00	\$5,800.00
175.1	CENTRIFUGAL SEPARATOR WQ TREATMENT DEVICE	1	EA	\$35,000.00	\$35,000.00
43.1	PAVMT PATCH, ASPH CONC	450	SF	\$10.00	\$4,500.00
Subtotal: Construction Elements					\$ 57,538
<i>Required Ancillary Items</i>					
178	DEWATERING	10%		\$	5,754
180	EROSION & SEDIMENTATION CONTROL	10%	(See Note 3)	\$	5,754
182	TRAFFIC CONTROL	8%	(See Note 4)	\$	4,603
184	CONTINGENCY	30%		\$	17,261
Subtotal: Construction + Ancillary					\$ 90,910
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%		\$	9,091
Subtotal: Construction + Ancillary + Mobilization					\$ 100,001
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%		\$	8,800
	ENGINEERING/LEGAL/ADMIN	40%		\$	40,001
	CONSTRUCTION MANAGEMENT	10%		\$	10,000
	PERMITTING	10%		\$	10,000
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 168,802
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,			\$	-
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT			\$	-
	CONDEMNATION			\$	-
	CONTINGENCY			\$	-
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 169,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.					
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.					

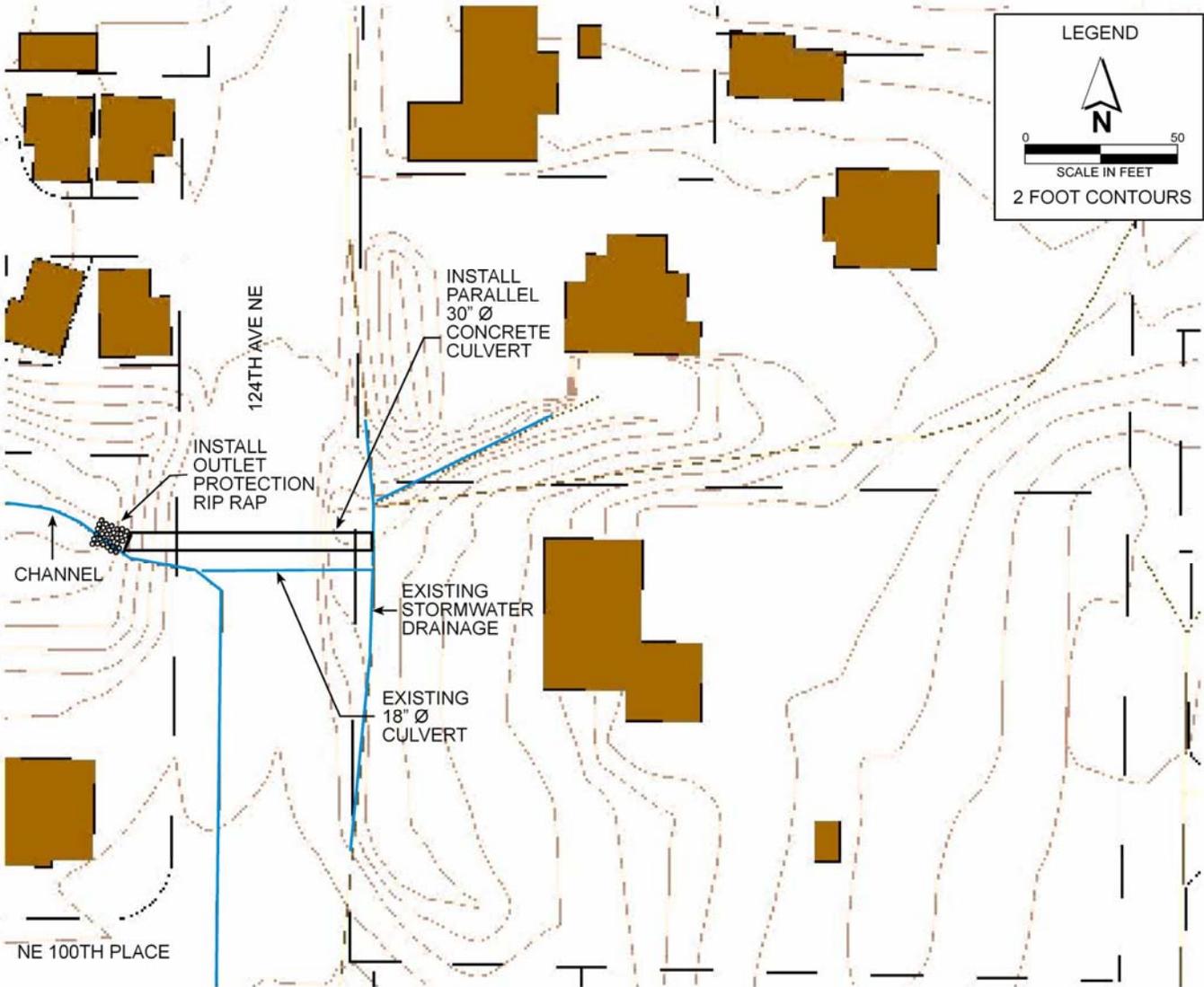
PROJECT SUMMARY SHEET

Forbes Creek –124th Ave NE/NE 100th Place Drainage Improvements

Problem Description:	An 18-inch diameter culvert on 124th Avenue NE, north of NE 100th Place does not have enough capacity to carry flow under the roadway during large storm events. Water backs up on the upstream end of the culvert, causing flooding and residential property damage.
Project Description:	Increase culvert capacity under 124th Ave. NE roadway by installing a parallel culvert.
Project Alternatives:	Alternatives considered included (1) replacing the existing 18-inch diameter culvert on 124th Avenue NE with a larger culvert, and (2) installing a high flow bypass from the discharge pipe at the Rosewood Commons detention pond.
Design Assumptions:	An Army Corps of Engineers Nationwide Permit is required for project. Low flow to the stream upstream of the culvert must be maintained.
Project Benefits:	This project will alleviate flooding and reduce property damage upstream of 124th Avenue NE.
Estimated Project Cost:	\$160,000
Associated Projects:	N/A

PROJECT SKETCH

Forbes Creek – 124th Ave NE/NE 100th Place Drainage Improvements



PROJECT COST ESTIMATE

Forbes Creek – 124th Ave NE/NE 100th Place Drainage Improvements

CONSTRUCTION COST OPINION					
PROJECT: <u>NE 124th Street/NE 100th Place Drainage</u>		BY: <u>E. Nelson</u>			
Project ID: <u>FO-13</u>		CHECKED BY:			
City CIP ID: <u>N/A</u>		DATE: <u>4/4/2005</u>			
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
1	CLEARING AND GRUBBING	500.0	SF	\$2.19	\$1,092.70
26	COMMON EXCAVATION (QTY <1000)	10.0	CY	\$29.50	\$295.00
31	CRUSHED SURFACE TOP COURSE	35.0	TN	\$32.78	\$1,147.30
47	ASPHALT CONCRETE PAVEMENT PATCHING	30.0	TN	\$109.27	\$3,278.10
132	FENCE, TEMPORARY SILT CONTAINMENT	100.0	LF	\$8.52	\$852.00
59	REINF. CONC. PIPE 30-INCH	100	LF	\$109.27	\$10,926.95
136	SEEDED LAWN INSTALLATION (QTY < 10,000)	150	SF	\$0.66	\$98.34
36	RIPRAP, LIGHT LOOSE (1.6 TON PER CY)	50	TN	\$52.45	\$2,622.47
179	TEMPORARY BYPASS	1	LS	\$15,000.00	\$15,000.00
33	GRAVEL BORROW	100	TN	\$25.13	\$2,513.00
176	STREAM RESTORATION	37	LF	\$191.22	\$7,075.14
Subtotal: Construction Elements					\$ 44,901
<i>Required Ancillary Items</i>					
178	DEWATERING	11%		\$	4,939
180	EROSION & SEDIMENTATION CONTROL	20%	(See Note 3)	\$	8,980
182	TRAFFIC CONTROL	20%	(See Note 4)	\$	8,980
184	CONTINGENCY	30%		\$	13,470
Subtotal: Construction + Ancillary					\$ 81,271
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%		\$	8,127
Subtotal: Construction + Ancillary + Mobilization					\$ 89,398
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%		\$	7,867
	ENGINEERING/LEGAL/ADMIN	40%		\$	35,759
	CONSTRUCTION MANAGEMENT	15%		\$	13,410
	PERMITTING	15%		\$	13,410
Construction + Ancillary +					\$ 159,843
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,			\$	-
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT			\$	-
	CONDEMNATION			\$	-
	CONTINGENCY			\$	-
2004 Dollars	Total Estimated Project Cost (Rounded)				\$ 160,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.					
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.					

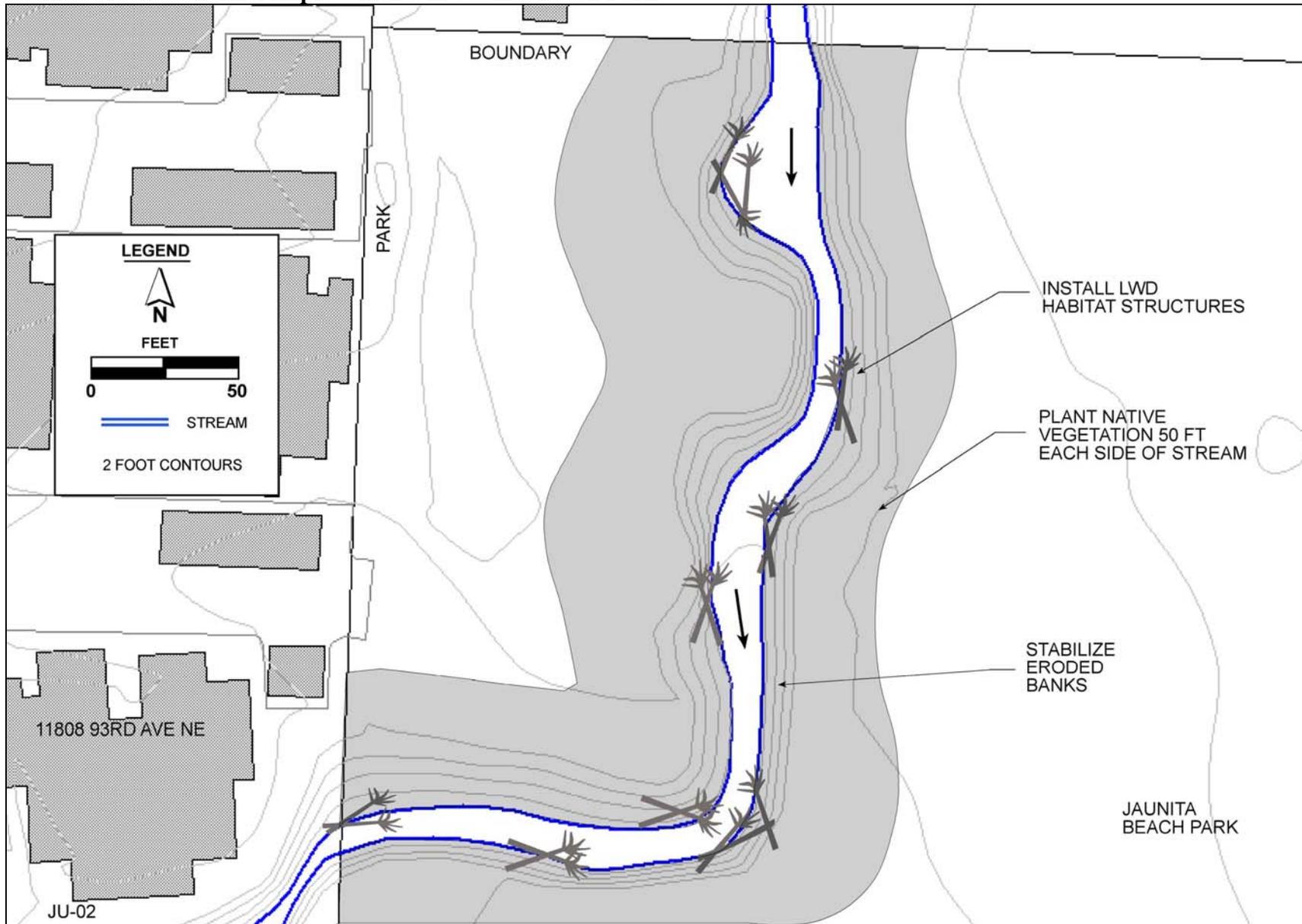
PROJECT SUMMARY SHEET

Juanita Creek – Channel Improvements in Juanita Beach Park

Problem Description:	Sediment deposition, poorly vegetated banks, and poor riparian cover.
Project Description:	Use bioengineering methods to stabilize and vegetate banks. Plant trees and understory shrubs in riparian zone within Juanita Beach Park upstream of NE Juanita Drive. Install instream log habitat structures.
Design Assumptions:	Planting will occur in a 50-foot riparian buffer on each side of stream (approximately 415 feet of channel). Stream is wide enough to use flow barriers around instream work locations (included in erosion and sedimentation control).
Project Benefits:	This project will improve habitat structure in this reach. Properly designed and constructed log structures will create scour pools in the channel. Bank stabilization will reduce bank erosion, which will reduce sediment supply. Planting will provide shading for the stream, which will reduce water temperatures.
Estimated Project Cost:	\$262,000
Associated Projects:	N/A

PROJECT SKETCH

Juanita Creek – Channel Improvements in Juanita Beach Park



PROJECT COST ESTIMATE

Juanita Creek – Channel Improvements in Juanita Beach Park

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT: Juanita Cr. - channel improvements in Juanita Beach Park		BY: K. Ludwa			
Project ID: JU-02		CHECKED BY:			
City CIP ID: N/A		DATE: 4/30/2004			
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
1	CLEARING AND GRUBBING	21,000	SF	\$1.00	\$21,000.00
170	BIOENGINEERING BANK STABILIZATION	350	LF	\$109.27	\$38,244.33
172	LARGE WOODY DEBRIS	18	EA	\$874.16	\$15,734.81
169	REVEGETATION (RIPARIAN CORRIDOR)	0.50	AC	\$32,780.85	\$16,390.43
Subtotal: Construction Elements					\$ 91,370
<i>Required Ancillary Items</i>					
178	DEWATERING	0%			\$ -
180	EROSION & SEDIMENTATION CONTROL	20%	(See Note 3)		\$ 18,274
182	TRAFFIC CONTROL	0%	(See Note 4)		\$ -
184	CONTINGENCY	30%			\$ 27,411
Subtotal: Construction + Ancillary					\$ 137,054
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 13,705
Subtotal: Construction + Ancillary + Mobilization					\$ 150,760
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%			\$ 13,267
	ENGINEERING/LEGAL/ADMIN	35%			\$ 52,766
	CONSTRUCTION MANAGEMENT	20%			\$ 30,152
	PERMITTING	10%			\$ 15,076
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 262,020
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,				\$ -
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT				\$ -
	CONDEMNATION				\$ -
	CONTINGENCY				\$ -
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 262,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
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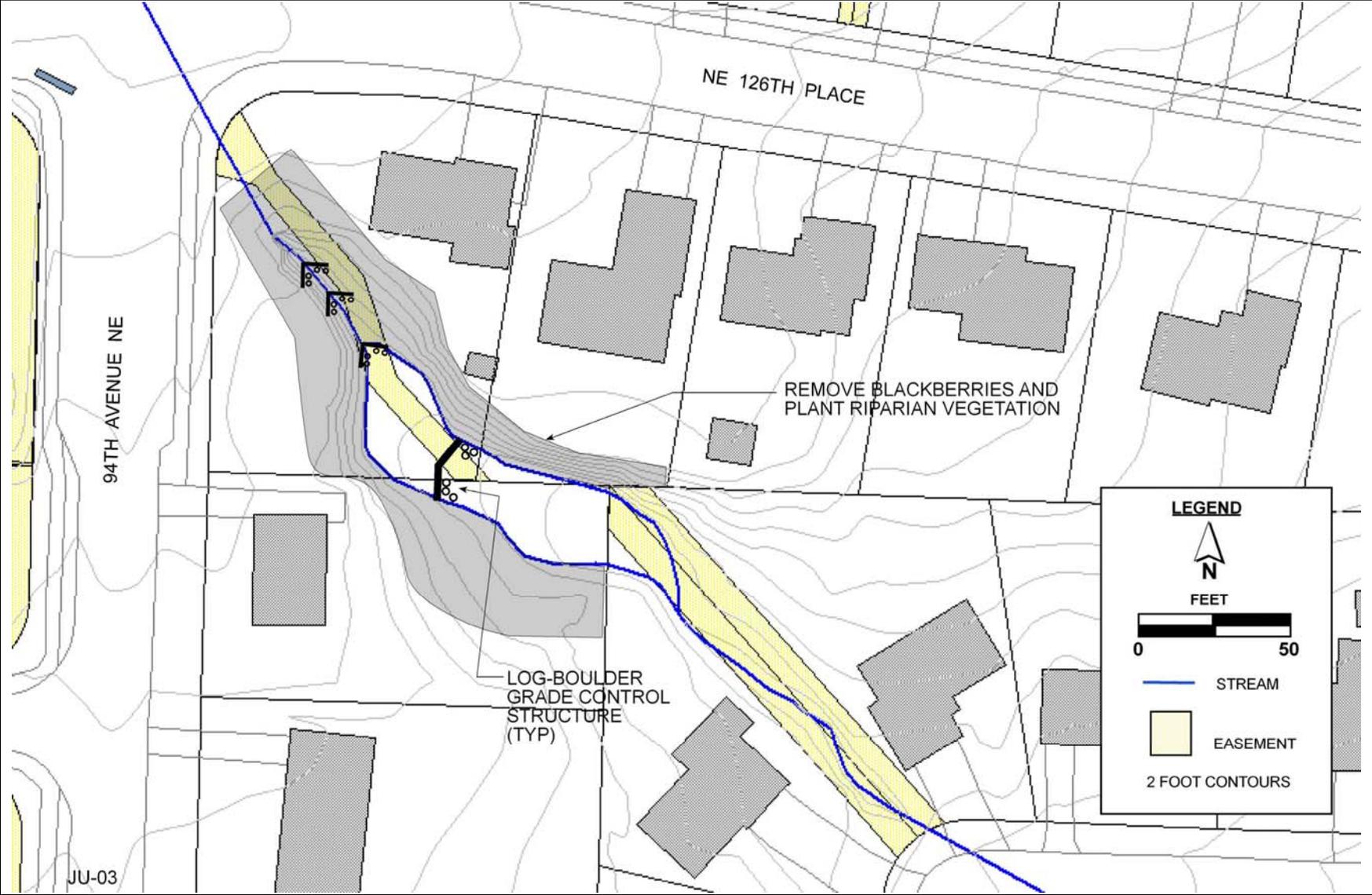
PROJECT SUMMARY SHEET

Juanita Creek Trib 0125 – NE 126th Pl @ 94th Ave NE Restoration

Problem Description:	Poor riparian vegetation (blackberries), downcutting channel, illegal rockery on right bank.
Project Description:	Remove blackberries and plant trees and shrubs in riparian zone. Install log-boulder grade controls in channel within City-owned easement.
Design Assumptions:	If allowed by homeowners, some planting will occur on two adjacent privately-owned parcels; however, no easement purchase or property acquisition is included. Planting along 200 feet of channel, approximately 25 feet each side.
Project Benefits:	This project will reduce channel downcutting in this reach, reducing sediment supply to reaches downstream. Planting will provide shading for the stream, which will reduce water temperature impacts.
Estimated Project Cost:	\$164,000
Associated Projects:	JU-04 – sedimentation basin.

PROJECT SKETCH

Juanita Creek Trib 0125 – NE 126th Pl @ 94th Ave NE Restoration



PROJECT COST ESTIMATE

Juanita Creek Trib 0125 – NE 126th Pl @ 94th Ave NE Restoration

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT: Juanita Cr. Trib 0125 - NE 126th Pl @ 94th Ave NE restoration		BY: K. Ludwa			
Project ID: JU-03		CHECKED BY:			
City CIP ID: N/A		DATE: 4/30/2004			
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
1	CLEARING AND GRUBBING	8,800	SF	\$2.19	\$19,231.43
173	LOG-BOULDER GRADE CONTROL STRUCTURE (Includes installation)	4	EA	\$2,185.39	\$8,741.56
170	BIOENGINEERING BANK STABILIZATION	100	LF	\$109.27	\$10,926.95
169	REVEGETATION (RIPARIAN CORRIDOR)	0.20	AC	\$32,780.85	\$6,556.17
179	TEMPORARY BYPASS	1.00	LS	\$6,000.00	\$6,000.00
Subtotal: Construction Elements					\$ 51,456
<i>Required Ancillary Items</i>					
178	DEWATERING	0%			\$ -
180	EROSION & SEDIMENTATION CONTROL	20%	(See Note 3)		\$ 10,291
182	TRAFFIC CONTROL	3%	(See Note 4)		\$ 1,544
184	CONTINGENCY	30%			\$ 15,437
Subtotal: Construction + Ancillary					\$ 78,728
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 7,873
Subtotal: Construction + Ancillary + Mobilization					\$ 86,601
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%			\$ 7,621
	ENGINEERING/LEGAL/ADMIN	50%			\$ 43,300
	CONSTRUCTION MANAGEMENT	20%			\$ 17,320
	PERMITTING	10%			\$ 8,660
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 163,502
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,				\$ -
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT				\$ -
	CONDEMNATION				\$ -
	CONTINGENCY				\$ -
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 164,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
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PROJECT SUMMARY SHEET

Juanita Creek Trib 0125 – NE 125th Place @ 95th Ave NE Sedimentation Basin and Riparian Planting

Problem Description: Sedimentation and poor riparian vegetation (blackberries). Opportunity for sediment control basin.

Project Description: Excavate in-line pond and construct outlet structure to provide sediment storage. Stabilize banks. Plant trees and understory shrubs. Design should include a low-flow channel and control structure.

Design Assumptions:

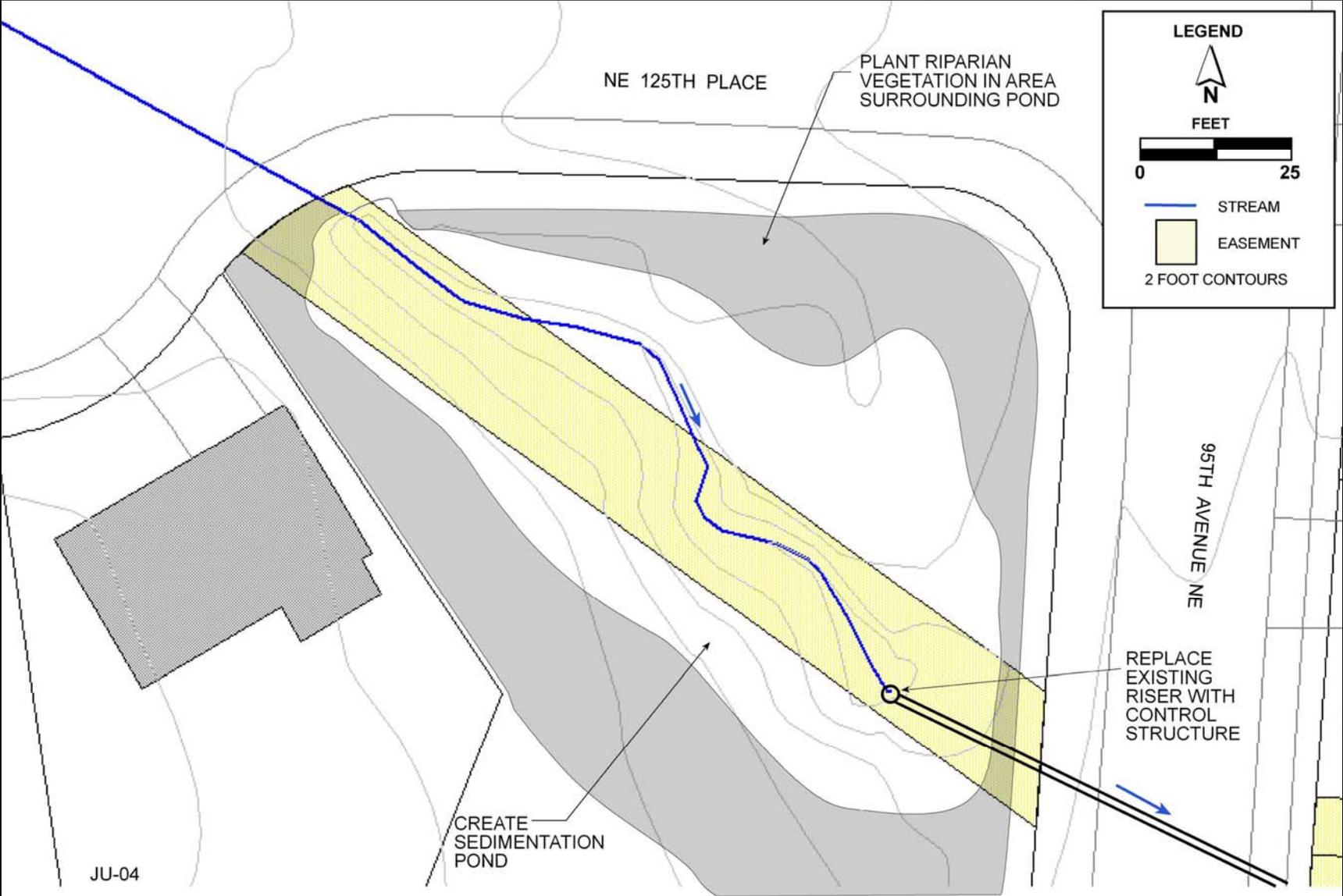
Project Benefits: Reduced sediment supply to reaches downstream. Planting will provide shading for the stream, which will reduce water temperature impacts.

Estimated Project Cost: \$169,000

Associated Projects: JU-03 – channel restoration.

PROJECT SKETCH

Juanita Creek Trib 0125 – NE 125th Place @ 95th Ave NE Sedimentation Basin and Riparian Planting



PROJECT COST ESTIMATE

Juanita Creek Trib 0125 – NE 125th Place @ 95th Ave NE Sedimentation Basin and Riparian Planting

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT: Juanita Cr. Trib 0125 - NE 125th Place @ 95th Ave NE Sedimentation		BY: K. Ludwa			
Project ID: Basin and Riparian Planting		CHECKED BY:			
Project ID: JU-04		DATE: 4/30/2004			
City CIP ID: N/A					
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
1	CLEARING AND GRUBBING	5,600	SF	\$2.19	\$12,238.18
13	REMOVE MANHOLE	1	EA	\$704.79	\$704.79
25	COMMON EXCAVATION {QTY >= 1000}	1,100	CY	\$16.39	\$18,029.47
110	FLOW CONTROL STRUCTURE, 54-INCH	1	EA	\$6,665.44	\$6,665.44
169	REVEGETATION (RIPARIAN CORRIDOR)	0.13	AC	\$32,780.85	\$4,261.51
179	TEMPORARY BYPASS	1.00	LS	\$8,000.00	\$8,000.00
Subtotal: Construction Elements					\$ 49,899
<i>Required Ancillary Items</i>					
178	DEWATERING	10%			\$ 4,990
180	EROSION & SEDIMENTATION CONTROL	20%	(See Note 3)		\$ 9,980
182	TRAFFIC CONTROL	3%	(See Note 4)		\$ 1,497
184	CONTINGENCY	30%			\$ 14,970
Subtotal: Construction + Ancillary					\$ 81,336
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 8,134
Subtotal: Construction + Ancillary + Mobilization					\$ 89,470
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%			\$ 7,873
	ENGINEERING/LEGAL/ADMIN	50%			\$ 44,735
	CONSTRUCTION MANAGEMENT	20%			\$ 17,894
	PERMITTING	10%			\$ 8,947
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 168,919
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,				\$ -
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT				\$ -
	CONDEMNATION				\$ -
	CONTINGENCY				\$ -
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 169,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.					
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.					

PROJECT SUMMARY SHEET

Juanita Creek – Riparian Planting on City-Owned Parcel Downstream of NE 128th Street

Problem Description:	Opportunity to improve riparian understory vegetation.
Project Description:	Plant trees and understory shrubs on City-owned parcel downstream of NE 128th Street.
Design Assumptions:	Planting on approximately 20,000 square feet; approximately 50 percent of this area available for planting (due to existing trees and other vegetation).
Project Benefits:	Planting will provide shading for the stream, which will reduce water temperature.
Estimated Project Cost:	\$69,000
Associated Projects:	N/A

PROJECT SKETCH

Juanita Creek – Riparian Planting Downstream of NE 128th Street



PROJECT COST ESTIMATE

Juanita Creek – Riparian Planting Downstream of NE 128th Street

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT: Juanita Creek – riparian planting downstream of NE 128th Street			BY: K. Ludwa		
Project ID: JU-06			CHECKED BY:		
City CIP ID: N/A			DATE: 4/30/2004		
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
1	CLEARING AND GRUBBING	10,000	SF	\$1.00	\$10,000.00
169	REVEGETATION (RIPARIAN CORRIDOR)	0.23	AC	\$32,780.85	\$7,539.60
Subtotal: Construction Elements					\$ 17,540
<i>Required Ancillary Items</i>					
178	DEWATERING	0%			\$ -
180	EROSION & SEDIMENTATION CONTROL	20%	(See Note 3)		\$ 3,508
182	TRAFFIC CONTROL	3%	(See Note 4)		\$ 526
184	CONTINGENCY	30%			\$ 5,262
Subtotal: Construction + Ancillary					\$ 26,836
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 2,684
Subtotal: Construction + Ancillary + Mobilization					\$ 29,519
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%			\$ 2,598
	ENGINEERING/LEGAL/ADMIN	85%			\$ 25,091
	CONSTRUCTION MANAGEMENT	20%			\$ 5,904
	PERMITTING	20%			\$ 5,904
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 69,016
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,				\$ -
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT				\$ -
	CONDEMNATION				\$ -
	CONTINGENCY				\$ -
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 69,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.					
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.					

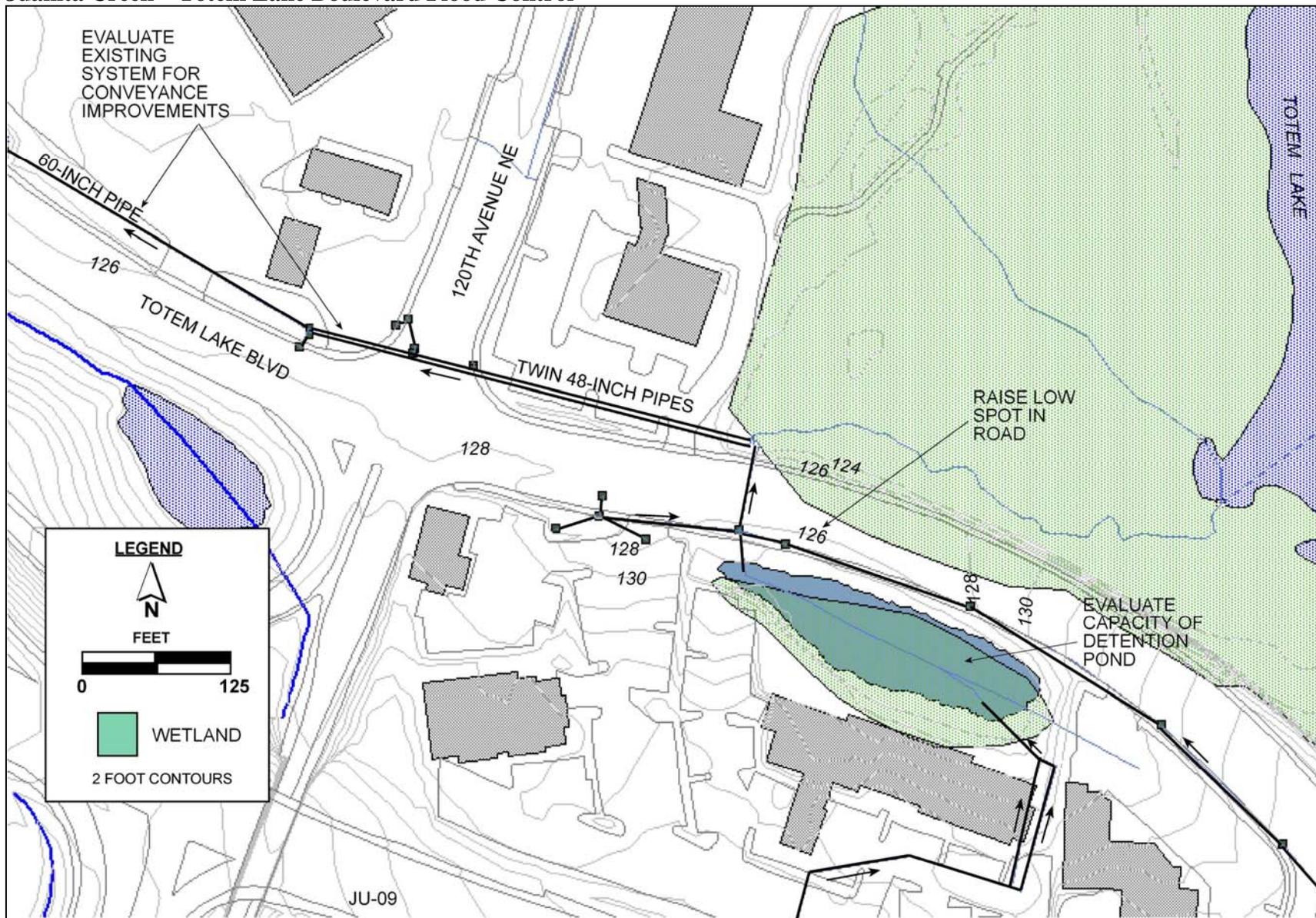
PROJECT SUMMARY SHEET

Juanita Creek – Totem Lake Boulevard Flood Control

Problem Description:	Totem Lake Boulevard floods during mid to large storms, several times per year
Project Description:	<p>If raising the low spot in the road can alleviate the flooding without additional conveyance improvements, this would be the ideal solution. Additional monitoring and modeling of flood levels would be necessary to identify the elevation to which the road should be raised.</p> <p>The capacity and elevation of the pond on the south side of Totem Lake Boulevard should be examined. If necessary, a bypass or additional detention should be provided. Conveyance improvements (including a pump station) may also need to be considered downstream of the Totem Lake wetlands, but this would reduce the effectiveness of natural detention in the wetlands. Conveyance improvements should be considered only as a last resort, as this will increase downstream flow rates.</p>
Design Assumptions:	Cost estimate accounts only for elevating the road.
Project Benefits:	This project will reduce the frequency and magnitude of flooding on Totem Lake Boulevard.
Estimated Project Cost:	\$1,017,000
Associated Projects:	N/A

PROJECT SKETCH

Juanita Creek – Totem Lake Boulevard Flood Control



PROJECT COST ESTIMATE

Juanita Creek – Totem Lake Boulevard Flood Control

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT: Juanita Cr. - Totem Lake Boulevard flooding		BY: K. Ludwa			
Project ID: JU-09		CHECKED BY:			
City CIP ID: N/A		DATE: 5/4/2004			
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
5	REMOVE PAVEMENT	3,800	SY	\$21.85	\$83,044.82
39	CONTROLLED DENSITY FILL	1,260	CY	\$103.81	\$130,795.60
30	CRUSHED SURFACE BASE COURSE	1,600	TN	\$25.13	\$40,211.18
44	PAVEMENT, ASPHALT CONCRETE CL A (QTY < 500)	800	TN	\$115.83	\$92,660.54
Subtotal: Construction Elements					\$ 346,712
<i>Required Ancillary Items</i>					
178	DEWATERING	10%			\$ 34,671
180	EROSION & SEDIMENTATION CONTROL	20%	(See Note 3)		\$ 69,342
182	TRAFFIC CONTROL	8%	(See Note 4)		\$ 27,737
184	CONTINGENCY	30%			\$ 104,014
Subtotal: Construction + Ancillary					\$ 582,476
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 58,248
Subtotal: Construction + Ancillary + Mobilization					\$ 640,724
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%			\$ 56,384
	ENGINEERING/LEGAL/ADMIN	25%			\$ 160,181
	CONSTRUCTION MANAGEMENT	20%			\$ 128,145
	PERMITTING	5%			\$ 32,036
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 1,017,470
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,				\$ -
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT				\$ -
	CONDEMNATION				\$ -
	CONTINGENCY				\$ -
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 1,017,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.					
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.					

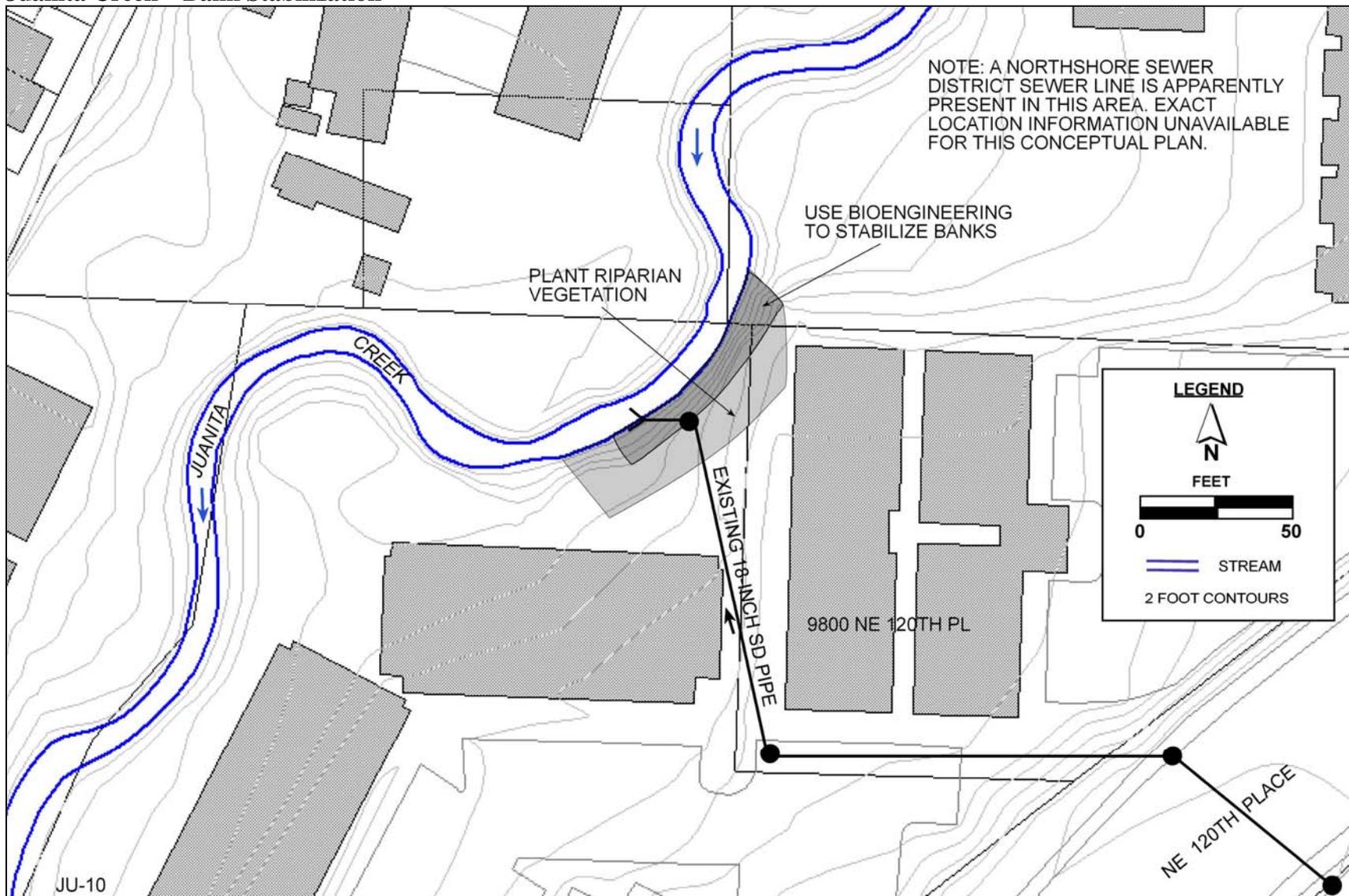
PROJECT SUMMARY SHEET

Juanita Creek – Bank Stabilization

Problem Description:	Eroding/slumping streambank, exposed storm drain outfall pipe, poor riparian vegetation. Located approximately 390 feet downstream of NE 122nd Street.
Project Description:	Use bioengineering methods to stabilize and vegetate banks. Plant riparian vegetation.
Design Assumptions:	<p>Bioengineering bank stabilization unit cost increased by factor of 2, to account for relatively high (8 feet) vertical unstable banks, and proximity to buildings, which restrict ability to slope banks.</p> <p>A 27-inch Northshore Sewer District line is present in the vicinity of this project. No costs were included for relocation or stabilization of the sewer line.</p>
Project Benefits:	This project will reduce sediment supply to Juanita Creek and protect adjacent property.
Estimated Project Cost:	\$97,000
Associated Projects:	N/A

PROJECT SKETCH

Juanita Creek – Bank Stabilization



PROJECT COST ESTIMATE

Juanita Creek – Bank Stabilization

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT: Juanita Cr. - bank stabilization		BY: K. Ludwa			
Project ID: JU-10		CHECKED BY:			
City CIP ID: N/A		DATE: 5/4/2004			
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
1	CLEARING AND GRUBBING	1,400	SF	\$2.19	\$3,059.55
170	BIOENGINEERING BANK STABILIZATION	80	LF	\$218.54	\$17,483.12
169	REVEGETATION (RIPARIAN CORRIDOR)	0.05	AC	\$32,780.85	\$1,639.04
Subtotal: Construction Elements					\$ 22,182
<i>Required Ancillary Items</i>					
178	DEWATERING	10%		\$	2,218
180	EROSION & SEDIMENTATION CONTROL	30%	(See Note 3)	\$	6,655
182	TRAFFIC CONTROL	0%	(See Note 4)	\$	-
184	CONTINGENCY	30%		\$	6,655
Subtotal: Construction + Ancillary					\$ 37,709
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%		\$	3,771
Subtotal: Construction + Ancillary + Mobilization					\$ 41,480
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%		\$	3,650
	ENGINEERING/LEGAL/ADMIN	85%		\$	35,258
	CONSTRUCTION MANAGEMENT	20%		\$	8,296
	PERMITTING	20%		\$	8,296
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 96,980
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,			\$	-
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT			\$	-
	CONDEMNATION			\$	-
	CONTINGENCY			\$	-
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 97,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.					
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.					

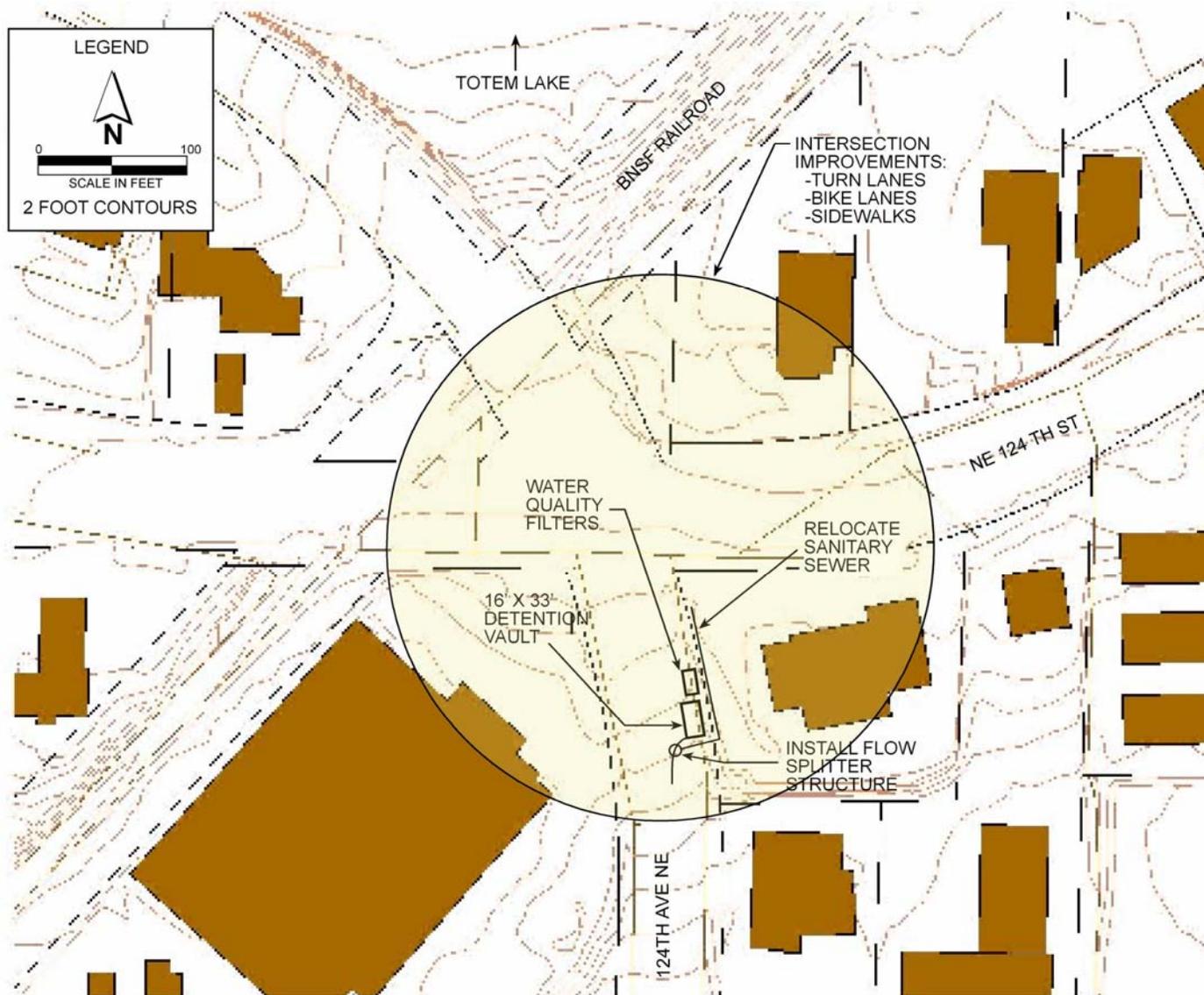
PROJECT SUMMARY SHEET

Juanita Creek – NE 124th Street/124th Ave NE WQ Treatment

Problem Description:	Intersection improvement project is adding turn lanes, bike lanes and sidewalks to improve bike and pedestrian safety and traffic level of service.
Project Description:	Provide water quality treatment for road intersection redevelopment.
Project Alternatives:	Alternatives considered included a detention pond, detention pipe and detention vault with stormfilters.
Design Assumptions:	Detention and water quality treatment provided for new impervious surfaces according to King County standards. Retrofit detention is not required.
Project Benefits:	Congestion relief, improved level of service, improved bike and pedestrian safety, and improved water quality.
Estimated Project Cost:	\$362,000
Associated Projects:	N/A

PROJECT SKETCH

Juanita Creek – NE 124th Street/124th Ave NE WQ Treatment



PROJECT COST ESTIMATE

Juanita Creek – NE 124th Street/124th Ave NE WQ Treatment

CONSTRUCTION COST OPINION					
PROJECT:	NE 124th Street/124th Avenue NE	BY:	K. Ludwa/E. Nelson		
Project ID:	JU-12	CHECKED BY:			
City CIP ID:	N/A	DATE:	4/5/2005		
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
2	CLEARING AND GRUBBING	0.5	AC	\$5,500.00	\$2,750.00
56	REINF. CONC. PIPE 18-INCH	200	LF	\$54.63	\$10,926.95
124	FLOW SPLITTER	1	LS	\$4,000 - \$7,500	\$7,500.00
123	OUTLET STRUCTURE	1	LS	\$2,185.39	\$2,185.39
175	STORMFILTER SYSTEM	1	LS	\$100,000.00	\$100,000.00
Subtotal: Construction Elements					\$ 123,362
<i>Required Ancillary Items</i>					
178	DEWATERING	10%			\$ 12,336
180	EROSION & SEDIMENTATION CONTRC	10%	(See Note 3)		\$ 12,336
182	TRAFFIC CONTROL	8%	(See Note 4)		\$ 9,869
184	CONTINGENCY	30%			\$ 37,009
Subtotal: Construction + Ancillary					\$ 194,912
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREME	10%			\$ 19,491
Subtotal: Construction + Ancillary + Mobilization					\$ 214,404
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%			\$ 18,868
	ENGINEERING/LEGAL/ADMIN	40%			\$ 85,761
	CONSTRUCTION MANAGEMENT	10%			\$ 21,440
	PERMITTING	10%			\$ 21,440
Construction + Ancillary +					\$ 361,914
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,				\$ -
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT				\$ -
	CONDEMNATION				\$ -
	CONTINGENCY				\$ -
2004 Dollars Total Estimated Project Cost (Rounded)					\$ 362,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.					
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.					

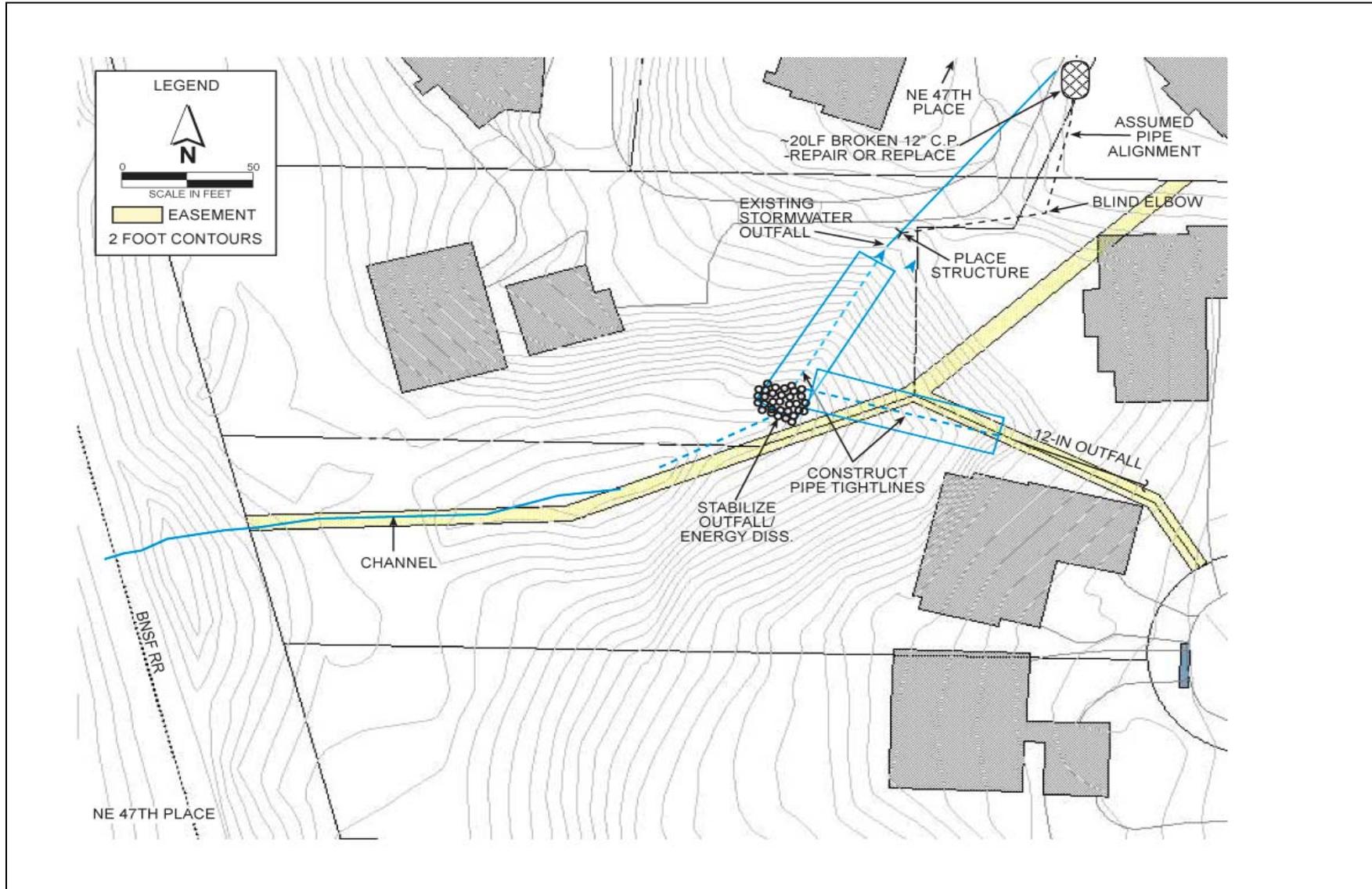
PROJECT SUMMARY SHEET

Urban Drainage – NE 47th Place Surface Water Outfall

Problem Description:	Unstable ravine slopes and erosion caused by stormwater pipe perched at top of slope.
Project Description:	Tightline two storm drains currently discharging at top of steep slope and repair or replace existing broken pipe. Stabilize new outfalls and construct energy dissipation pad. Use bioengineering methods and planting to stabilize slopes. Access is difficult due to steep slopes and private property on each side of ravine.
Design Assumptions:	<p>This estimate does not include geotechnical engineering such as retaining walls or other structural slope stabilization methods.</p> <p>Unit cost for bioengineering bank stabilization and revegetation increased by factor of 1.5 due to access issues. It is assumed that all work would be done by hand.</p>
Project Benefits:	Project will stabilize slopes and reduce sediment supply to stream.
Estimated Project Cost:	\$120,000
Associated Projects:	N/A

PROJECT SKETCH

Urban Drainage- NE 47th Place Surface Water Outfall



PROJECT COST ESTIMATE

Urban Drainage – NE 47th Place Surface Water Outfall

CONSTRUCTION COST OPINION					
PROJECT: Urban Drainage – NE 47th Place Surface Water Outfall		BY: E. Nelson			
Project ID: HSB-1		CHECKED BY:			
City CIP ID: N/A		DATE: 4/5/05			
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
1	CLEARING AND GRUBBING	1,200	SF	\$2.19	\$2,622.47
170	BIOENGINEERING BANK STABILIZATION	150	LF	\$163.90	\$24,585.64
169	REVEGETATION (RIPARIAN CORRIDOR)	0.03	AC	\$49,171.28	\$1,475.14
49	12-inch DIA. SMOOTH INTERIOR WALL CORRUGATED FUSED HDPE	100.0	LF	\$50.00	\$5,000.00
125	REPLACE EXISTING DRAINAGE STRUCTURE	1.0	EA	\$1,000.00	\$1,000.00
36	RIPRAP, LIGHT LOOSE (1.6 TON PER CY)	2.0	TN	\$48.00	\$96.00
Note: Unit Costs for bioengineering bank stabilization and revegetation increased by a factor of 1.5 due to access limitations.					
Subtotal: Construction Elements					\$ 34,779
<i>Required Ancillary Items</i>					
178	DEWATERING	0%		\$	-
180	EROSION & SEDIMENTATION CONTROL	30%	(See Note 3)	\$	10,434
182	TRAFFIC CONTROL	3%	(See Note 4)	\$	1,043
184	CONTINGENCY	40%		\$	13,912
Subtotal: Construction + Ancillary					\$ 60,168
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	15%		\$	9,025
Subtotal: Construction + Ancillary + Mobilization					\$ 69,193
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%		\$	6,089
	ENGINEERING/LEGAL/ADMIN	35%		\$	24,218
	CONSTRUCTION MANAGEMENT	20%		\$	13,839
	PERMITTING	10%		\$	6,919
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 120,258
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,			\$	-
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT			\$	-
	CONDEMNATION			\$	-
	CONTINGENCY			\$	-
2004 Dollars	Total Estimated Project Cost (Rounded)				\$ 120,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for <i>residence in</i>					
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.					
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.					

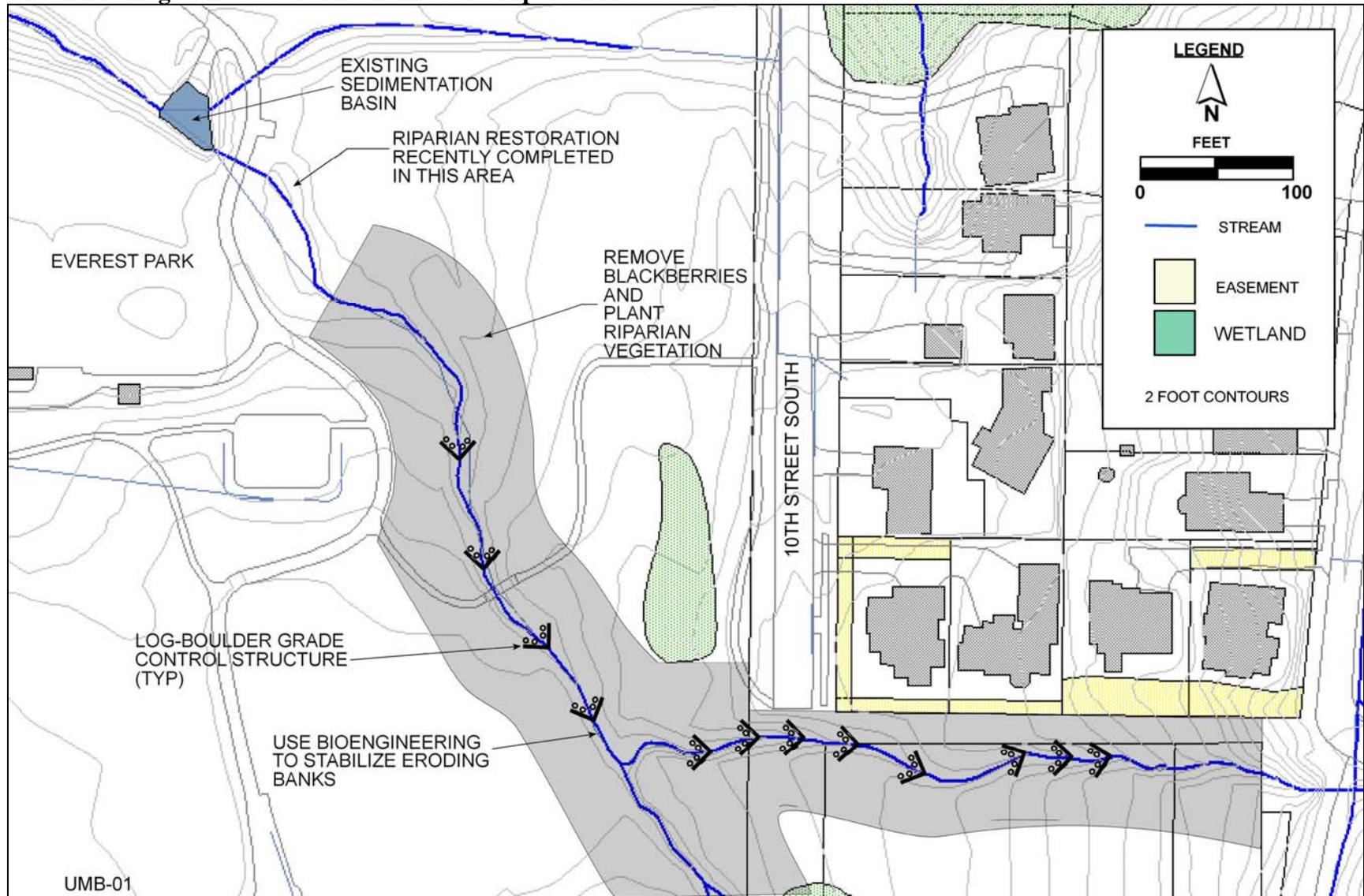
PROJECT SUMMARY SHEET

Urban Drainage – Everest Park Channel and Riparian Restoration

Problem Description:	Channel downcutting, unstable banks, poor quality riparian vegetation, and invasive vegetation.
Project Description:	Install log-boulder channel grade control structures. Use bioengineering methods to stabilize banks. Remove blackberries and plant trees and understory shrubs along 1000 feet of channel.
Design Assumptions:	Cost estimate includes approximately 12 grade control structures and a 50-foot riparian planting zone.
Project Benefits:	Reduced channel downcutting and stabilized banks, which will reduce sediment supply to reaches downstream. Improved riparian vegetation will reduce water temperature impacts.
Estimated Project Cost:	\$518,000
Associated Projects:	A riparian planting project has recently been completed immediately downstream of the project reach.

PROJECT SKETCH

Urban Drainage – Everest Park Channel and Riparian Restoration



PROJECT COST ESTIMATE

Urban Drainage – Everest Park Channel and Riparian Restoration

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT: Urban Drainages - Everest Park channel/riparian improvements		BY: K. Ludwa			
Project ID: UMB-01		CHECKED BY:			
City CIP ID: N/A		DATE: 5/4/2004			
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
2	CLEARING AND GRUBBING	2.3	AC	\$5,500.00	\$12,650.00
170	BIOENGINEERING BANK STABILIZATION	600	LF	\$109.27	\$65,561.70
173	LOG-BOULDER GRADE CONTROL STRUCTURE (Includes installation)	12	EA	\$2,185.39	\$26,224.68
169	REVEGETATION (RIPARIAN CORRIDOR)	2.3	AC	\$32,780.85	\$75,395.96
179	TEMPORARY BYPASS	1.0	LS	\$18,000.00	\$18,000.00
Subtotal: Construction Elements					\$ 197,832
<i>Required Ancillary Items</i>					
178	DEWATERING	0%			\$ -
180	EROSION & SEDIMENTATION CONTROL	20%	(See Note 3)		\$ 39,566
182	TRAFFIC CONTROL	0%	(See Note 4)		\$ -
184	CONTINGENCY	30%			\$ 59,350
Subtotal: Construction + Ancillary					\$ 296,749
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 29,675
Subtotal: Construction + Ancillary + Mobilization					\$ 326,423
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%			\$ 28,725
	ENGINEERING/LEGAL/ADMIN	25%			\$ 81,606
	CONSTRUCTION MANAGEMENT	20%			\$ 65,285
	PERMITTING	5%			\$ 16,321
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 518,360
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,				\$ -
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT				\$ -
	CONDEMNATION				\$ -
	CONTINGENCY				\$ -
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 518,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.					
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.					

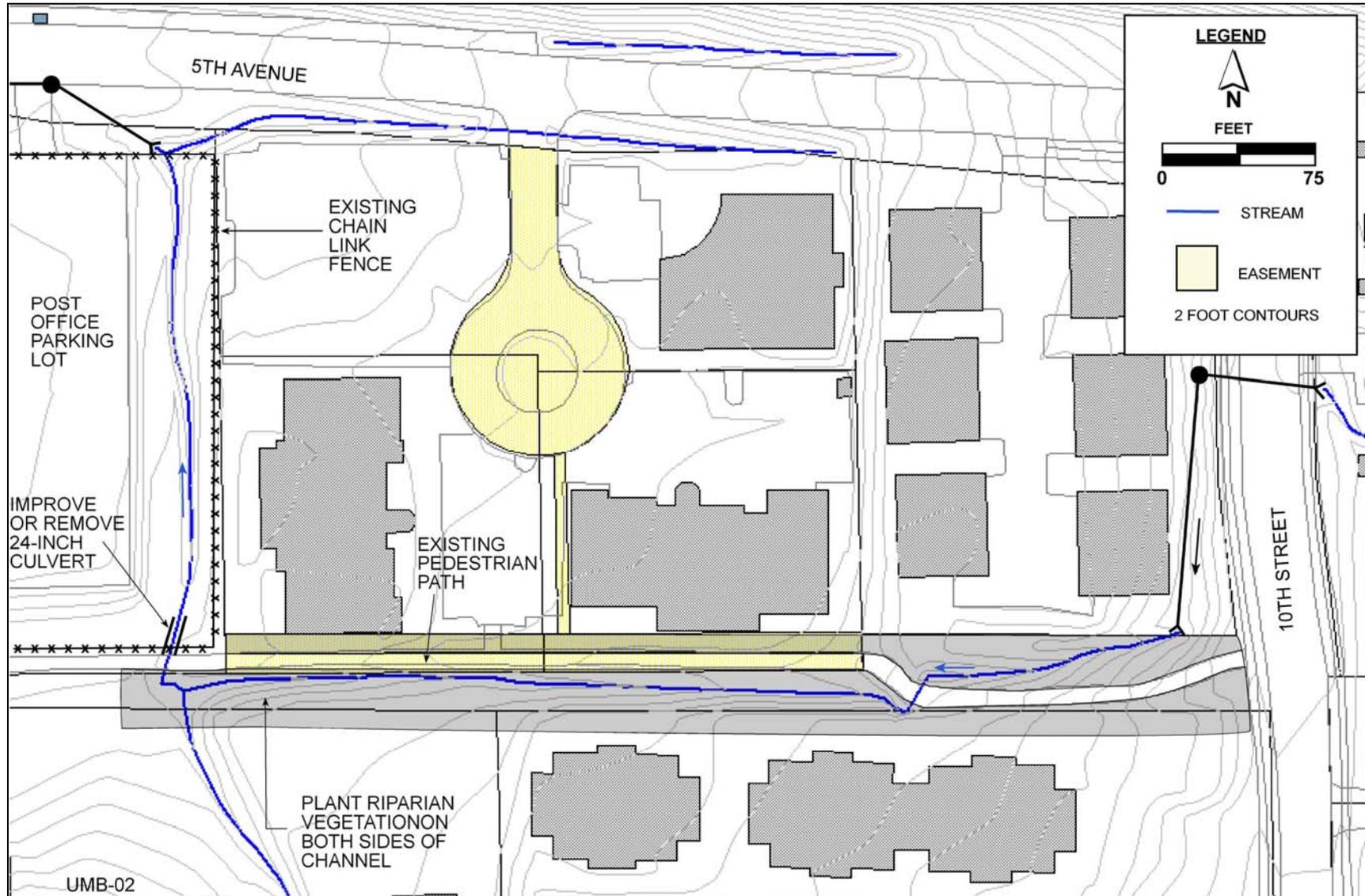
PROJECT SUMMARY SHEET

Post Office Creek – Flood Control

Problem Description:	Flooding of business park property along Post Office Creek, above post office property, caused by heavy weed/grass growth in channel, 90-degree channel turn, and undersized culvert. Poorly vegetated banks. Channel requires ongoing dredging.
Project Description:	Improve or remove culvert under Post Office property fence. Improve riparian vegetation along reach upstream of culvert. Remove blackberries and weeds, and replant with native vegetation less likely to obstruct channel.
Design Assumptions:	
Project Benefits:	Reduced frequency and magnitude of flooding. Reduce need for channel dredging.
Estimated Project Cost:	\$161,000
Associated Projects:	N/A

PROJECT SKETCH

Post Office Creek – Flood Control



PROJECT COST ESTIMATE

Post Office Creek – Flood Control

PLANNING LEVEL CONSTRUCTION COST OPINION					
PROJECT: Post Office Creek - flooding		BY: K. Ludwa			
Project ID: UMB-02		CHECKED BY:			
City CIP ID: N/A		DATE: 5/4/2004			
ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<i>Construction Elements</i>					
2	CLEARING AND GRUBBING	0.80	AC	\$5,500.00	\$4,400.00
7	REMOVE CULVERT	40	LF	\$13.11	\$524.49
28	CHANNEL EXCAVATION	40	CY	\$17.48	\$699.32
170	BIOENGINEERING BANK STABILIZATION	80	LF	\$109.27	\$8,741.56
169	REVEGETATION (RIPARIAN CORRIDOR)	0.80	AC	\$32,780.85	\$26,224.68
154	REMOVE & REINSTALL CHAIN LINK FENCE	60	LF	\$16.39	\$983.43
179	TEMPORARY BYPASS	1	LS	\$8,000.00	\$6,000.00
Subtotal: Construction Elements					\$ 47,573
<i>Required Ancillary Items</i>					
178	DEWATERING	10%			\$ 4,757
180	EROSION & SEDIMENTATION CONTROL	20%	(See Note 3)		\$ 9,515
182	TRAFFIC CONTROL	3%	(See Note 4)		\$ 1,427
184	CONTINGENCY	30%			\$ 14,272
Subtotal: Construction + Ancillary					\$ 77,545
<i>Mobilization</i>					
186	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 7,754
Subtotal: Construction + Ancillary + Mobilization					\$ 85,299
<i>Tax/Engineering/Management/Permitting</i>					
	STATE SALES TAX	8.8%			\$ 7,506
	ENGINEERING/LEGAL/ADMIN	50%			\$ 42,650
	CONSTRUCTION MANAGEMENT	20%			\$ 17,060
	PERMITTING	10%			\$ 8,530
Subtotal: Construction + Ancillary + Mobilization + Tax/Engineering/Management/Permitting					\$ 161,045
<i>Land and Right-of-Way</i>					
	LAND ACQUISITION,				\$ -
	ADMINISTRATIVE COSTS - CONSTRUCTION EASMENT				\$ -
	CONDEMNATION				\$ -
	CONTINGENCY				\$ -
2004 Dollars					Total Estimated Project Cost (Rounded) \$ 161,000
Notes:					
1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.					
2. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.					
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