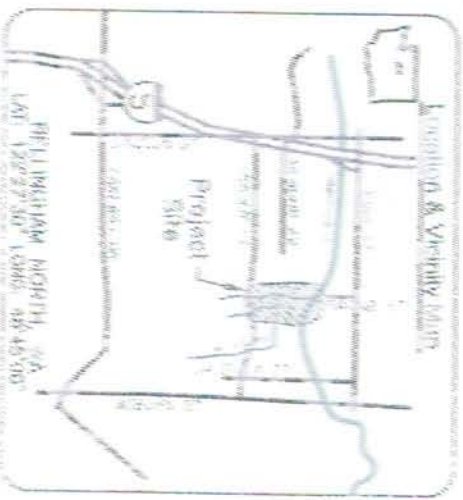




PROJECT PURPOSES/USES

- 1. ENHANCE ANADROMY PERIODS AND SUPPORT OTHER HABITATS TO THE EXTENT OF THE WATERSHED SALMOND SPAWNING AREAS IN WHATCOOM CREEK
- 2. IMPROVE HABITAT CONDITIONS PRIMARILY FOR CUTTHROAT TROUT, WITH ADDITIONAL BENEFITS FOR COHO SALMON AND OTHER NATIVE FISH SPECIES SALMON PARK
- 3. CREATE HIGH-FLOW FISH REFUGE AND SPAWNING HABITAT ALONG WHATCOOM CREEK
- 4. STREAMSIDE BROWNS TO BE REMOVED AND THE STREAM BANKS REBUILT TO RESTORE CHANNEL, MEANWHILE NATIVE, INCREASE FLOODPLAIN AREA, IMPROVE FLOOD STORAGE CAPACITY, AND FACILITATE NATURAL GENERATION OF SALMONID HABITAT
- 5. CEMETERY CREEK
- 6. CREATE A NEW STREAM CHANNEL, AND THREE COLD WATER FISH REARING POOLS IN LOWER CEMETERY CREEK
- 7. IMPROVE TERRESTRIAL HABITAT (INLAND POOLS OF ELEVATED STREAM TRANSFORMERS IN WHATCOOM CREEK (SUBMITTING))
- 8. PLACE LARGE WOODY DEBRIS IN PORTIONS OF CEMETERY CREEK AND WHATCOOM CREEK TO IMPROVE HABITAT DIVERSITY AND COVER
- 9. CREATE MORE NATURALLY FLOODING STREAM CHANNELS



PREFERRED DESIGN ALTERNATIVE

WHATCOOM CREEK LONG TERM ENHANCEMENT PLANS FOR-- SALMONID HABITAT

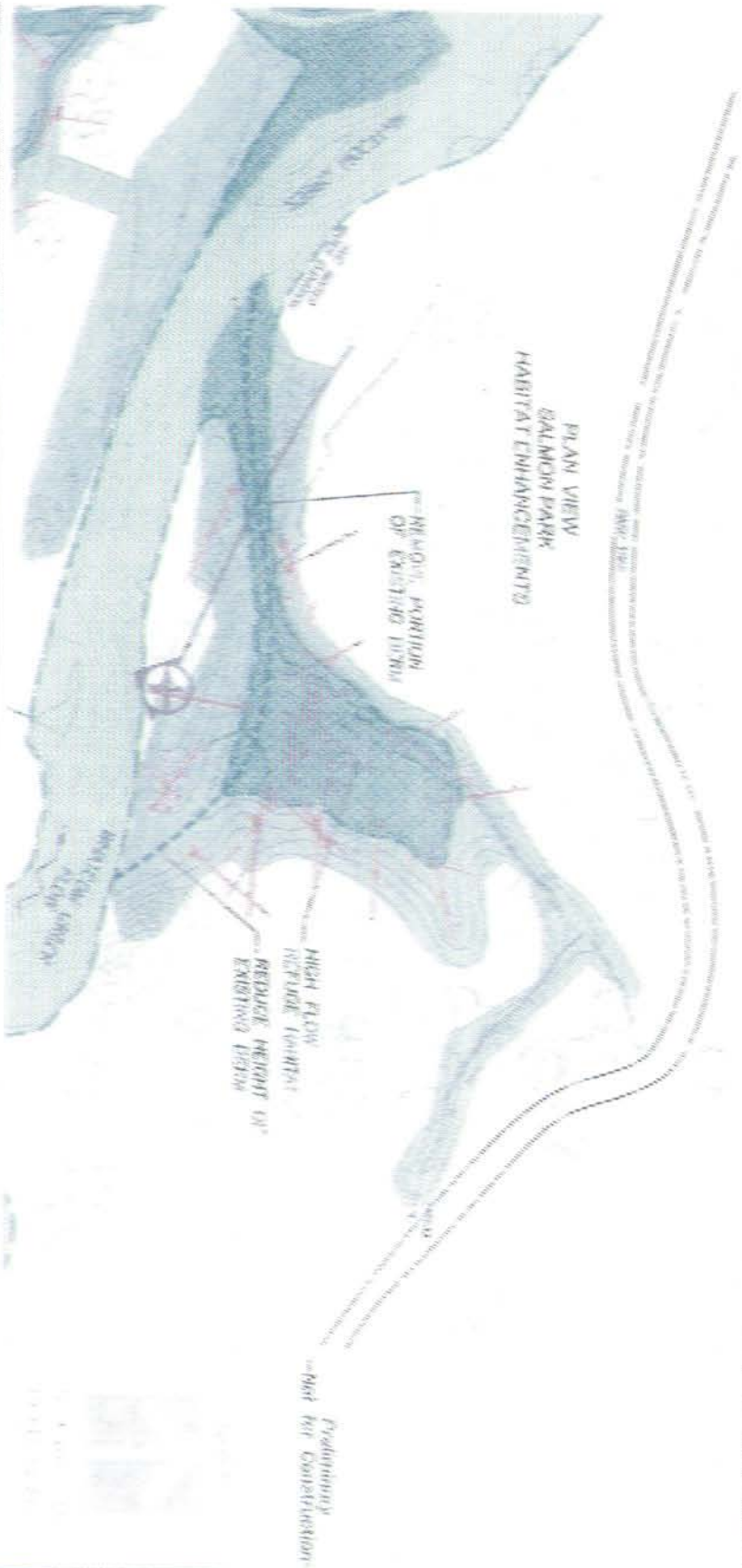
Aerial View Enhancement Areas

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16

1 of 6



PLAN VIEW
SALMON PARK
HABITAT ENHANCEMENT



SECTION VIEW OF SALMON PARK DRAIN REMOVAL



PLAN LEGEND

	EXISTING TREES
	AFT. WINTER WATER FLOW
	FUTURE CHANNEL CENTERLINE
	EXISTING STONE OR DRIFT
	EXISTING 1 FT. CONTOUR
	LIMIT OF DISTURBANCE
	LARGE WOOD PLACEMENT
	FORESTED AND SHRUB/GRASSLAND PLANTING AREA

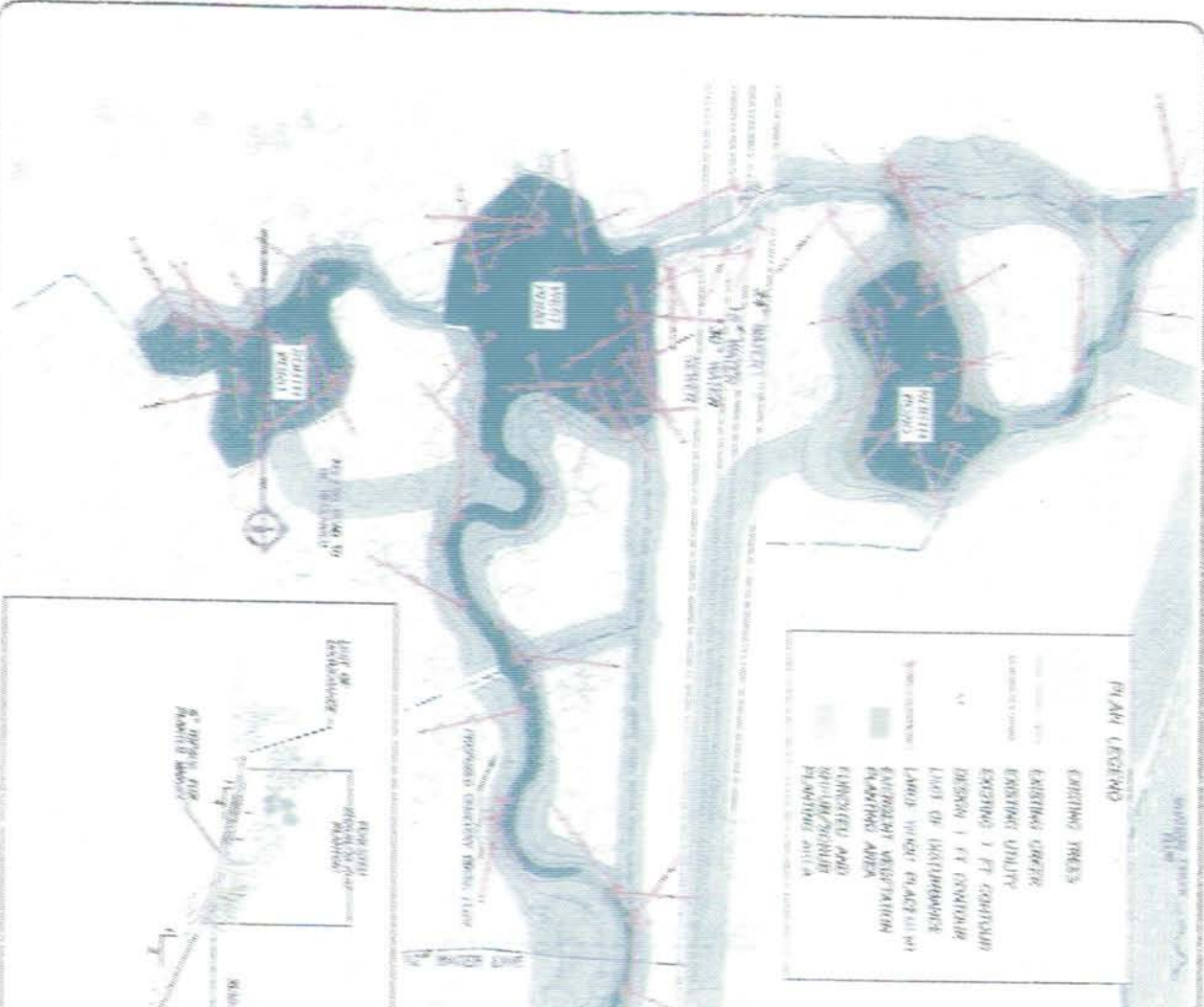
PREFERRED DESIGN ALTERNATIVE

WHATCOM CREEK LONG TERM
ENHANCEMENT PLANS FOR
SALMONID HABITAT

SALMON PARK
PLAN VIEW
HABITAT ENHANCEMENT

2 of 6





PLAN LEGEND

(Symbol)	EXISTING TREES
(Symbol)	EXISTING CORNER
(Symbol)	EXISTING SHOULDER
(Symbol)	EXISTING 1 FT CONTOUR
(Symbol)	EXISTING 1 FT CONTOUR
(Symbol)	LAND USE DISTURBANCE
(Symbol)	EXISTING VEGETATION
(Symbol)	PLANTED AND REGENERATING PLANTING AREA

**PLAN VIEW
GEMETERY CREEK
HABITAT ENHANCEMENTS**

SALMONID HABITAT FEATURES

- 1) CREATION OF A SOFT NATURAL FORESHORE
- 2) SLOW VEGETATION AND TREE GROWTH
- 3) FISH PASSAGE BARRIERS IN LOWER GEMETERY CREEK
- 4) PROVIDE ADDITIONAL THERMAL REFUGIA
- 5) HABITAT DURING PERIODS OF ELEVATED WATER TEMPERATURES IN WATERSHED CREEK (SUMMERING)
- 6) NEAR STREAM VEGETATION PROVIDES SHADE AND FOOD CHAIN SUPPORT
- 7) LARGE WOOD PLACEMENTS FOR COVER, REFUGIA, AND HABITAT ENERGY
- 8) ENLARGED CAPACITY FOR NATIVE SALMONIDS



PREFERRED DESIGN ALTERNATIVE

**WHATCOM CREEK LONG TERM
ENHANCEMENT PLANS FOR
SALMONID HABITAT**

**Consolidated
Plan View**

10/15/2020

10/15/2020



Washington
Department of Ecology

Preliminary
Not for Construction



PLAN VIEW
CEMETERY CREEK
HABITAT ENHANCEMENTS

CEMETERY CREEK HABITAT FEATURES

- 1. CREATION OF A MORE NATURALLY FUNCTIONING STREAM CORRIDOR
- 2. LARGE WOOD PLACEMENT FOR COVER AND HABITAT DIVERSITY
- 3. BANK VEGETATION PROVIDES FOOD CHAIN SUPPORT, BANK STABILITY AND SHADE
- 4. EXISTING OVERHANGING TREES PROVIDE SHADE AND KEEP WATER TEMPERATURES LOW
- 5. IMPROVED NATURAL STREAM FUNCTION AND RIPARIAN INTERACTION
- 6. ENLARGED CAPACITY FOR OUTTHROW TROUT



PREFERRED DESIGN ALTERNATIVE

RYATCOM CREEK LONG TERM
ENHANCEMENT PLANS FOR
SALMONID HABITAT

CEMETERY CREEK
PLAN VIEW
HABITAT PLAN EAST

DATE	6/24
BY	WJL
SCALE	AS SHOWN
NO.	65 10-10-10

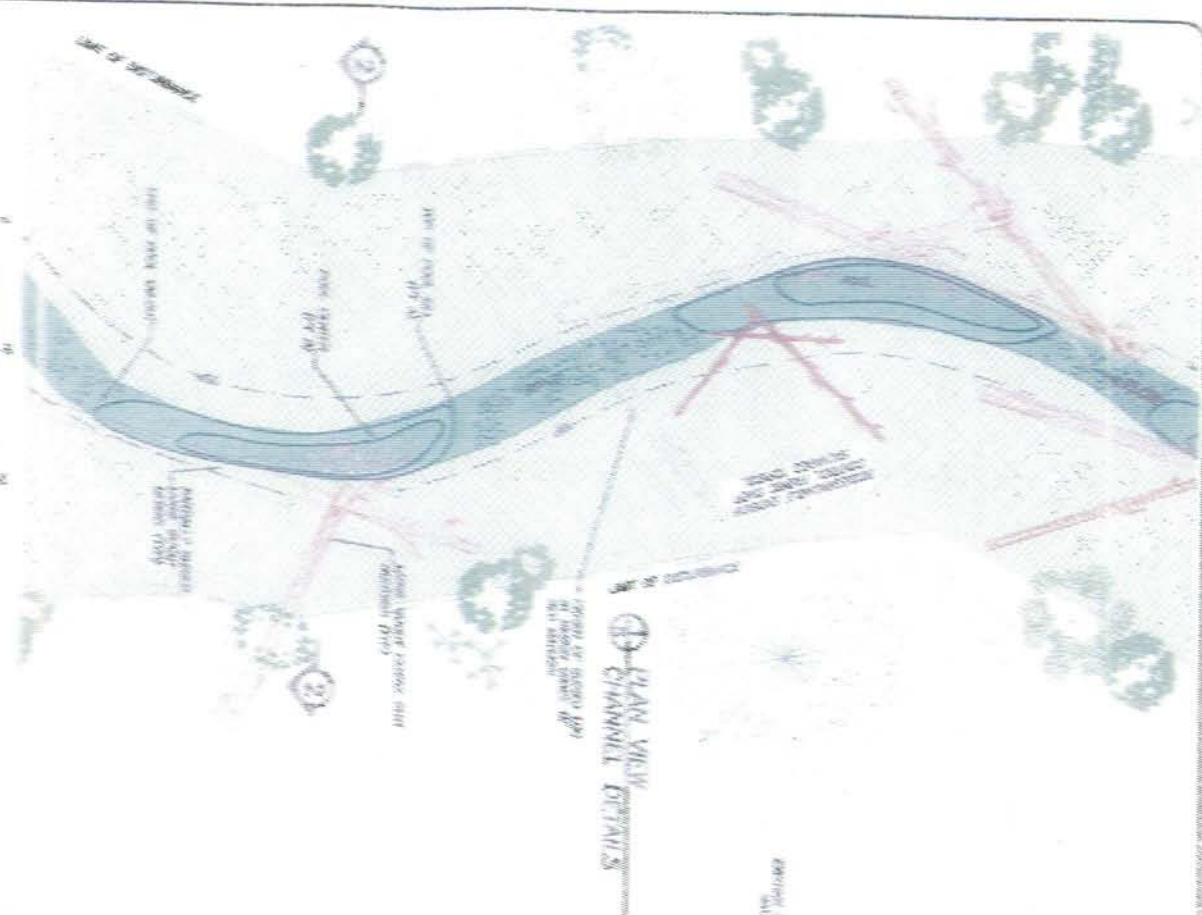
4 OF 6



RYATCOM, INC. 10000 15TH AVENUE S.W. SUITE 1000, BELLEVUE, WA 98005-4100 TEL: (206) 835-1000 FAX: (206) 835-1001
 RYATCOM CONSULTING, INC. 10000 15TH AVENUE S.W. SUITE 1000, BELLEVUE, WA 98005-4100 TEL: (206) 835-1000 FAX: (206) 835-1001
 RYATCOM CONSULTING, INC. 10000 15TH AVENUE S.W. SUITE 1000, BELLEVUE, WA 98005-4100 TEL: (206) 835-1000 FAX: (206) 835-1001



DATE: 11/11/2010



TYPICAL SECTION VIEW



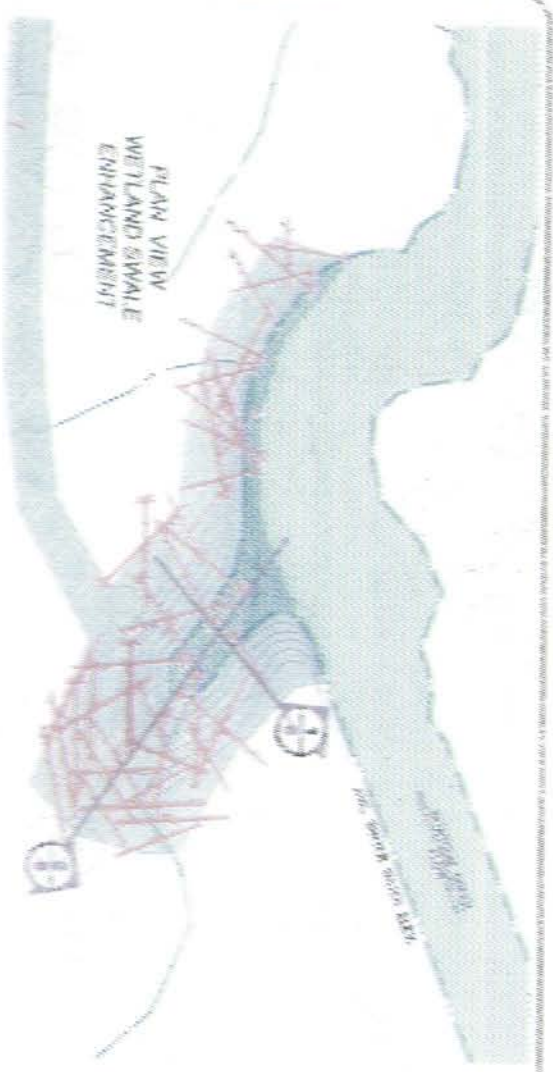
PREFERRED DESIGN ALTERNATIVE

WHATCOM CREEK LONG TERM ENHANCEMENT PLANS FOR SALICOID HABITAT

CEMETERY CREEK TYPICAL CHANNEL DETAILS



NO.	DATE	BY	CHKD.
1	11/11/2010	JL	JL
2			
3			
4			
5			
6			
7			
8			
9			
10			

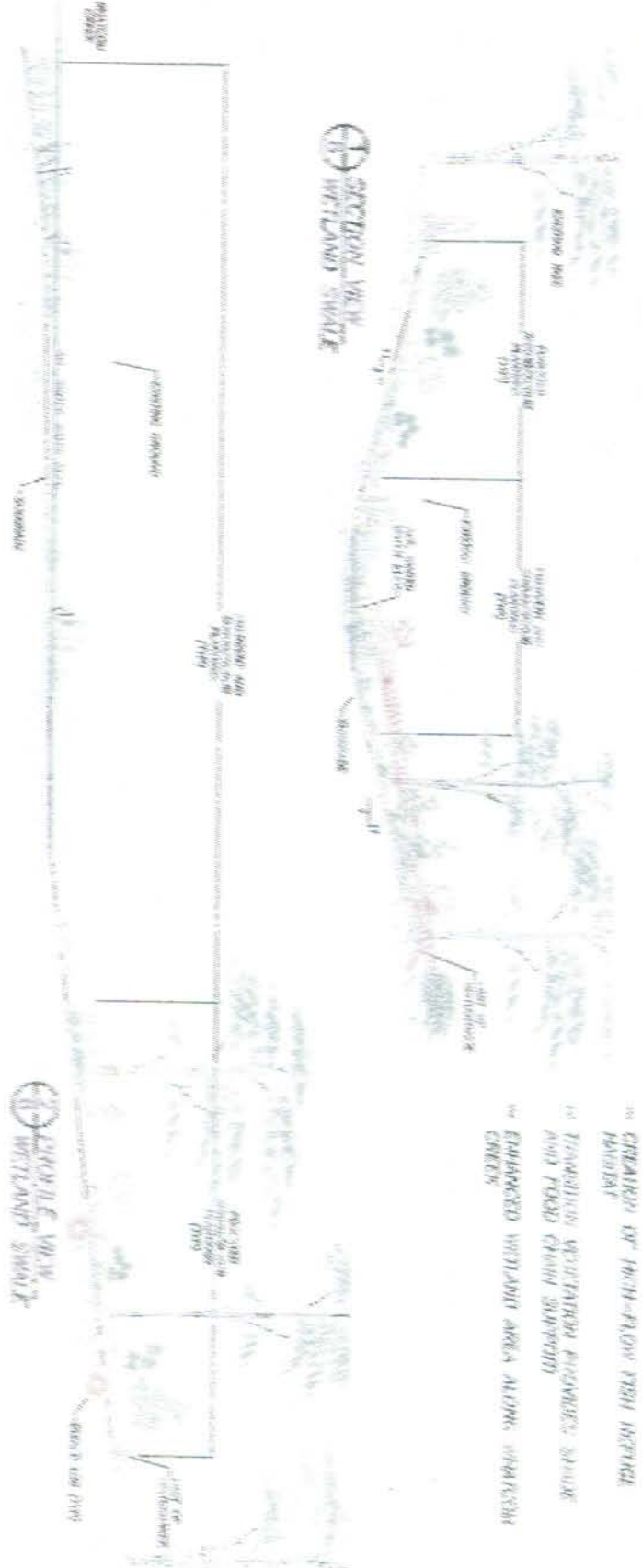


PLAN VIEW
WETLAND SWALE
ENHANCEMENT

PLAN VIEW	
	EXISTING TREES
	VARYING CREEK
	EXPOSURE UTILITY
	EXPOSURE 1 FT CONCRETE
	EXPOSURE 1 FT CONCRETE
	1 FOOT EAR DISCHARGE
	NATIVE WEED PLACEMENT
	PLANTED AND SHRUB PLANTING AREA

**HABITAT ENHANCEMENT
AREA FEATURES**

- 1. CREATE OF HIGH-FLOW FISH REFUGIA HABITAT
- 2. TRANSITION VEGETATION FROM OPEN SWALE AND FRESH GRASS SHRUBS
- 3. ENHANCED WETLAND AREA ALONG WESTERN CREEK



PREFERRED DESIGN ALTERNATIVE

WHATCOOL CREEK LONG TERM
ENHANCEMENT PLANS FOR
SALMONID HABITAT

City of Coquille
1000 1st St
Coquille, OR 97404

10/15/2010

10/15/2010



11.0 Figures and Photographs

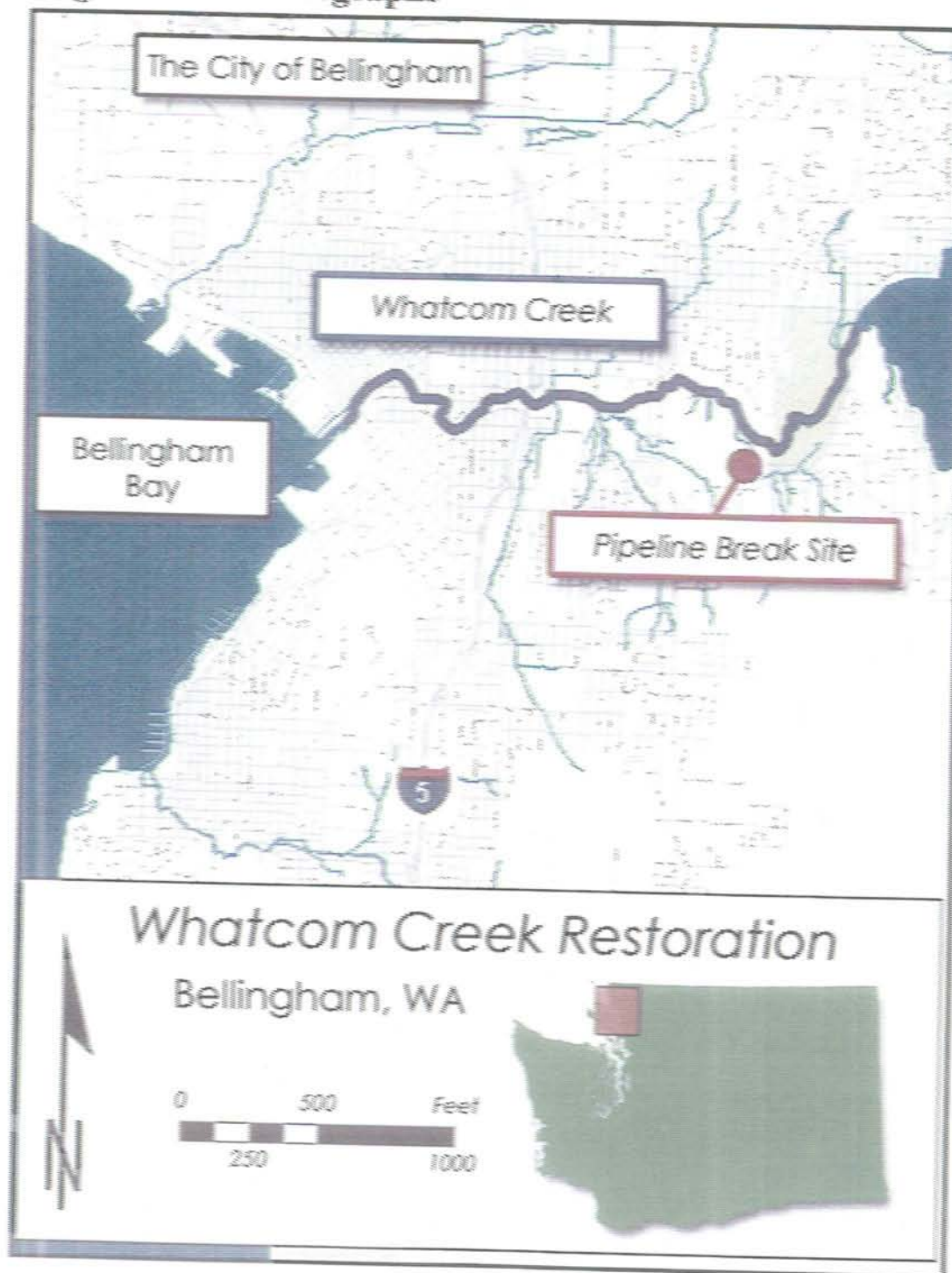


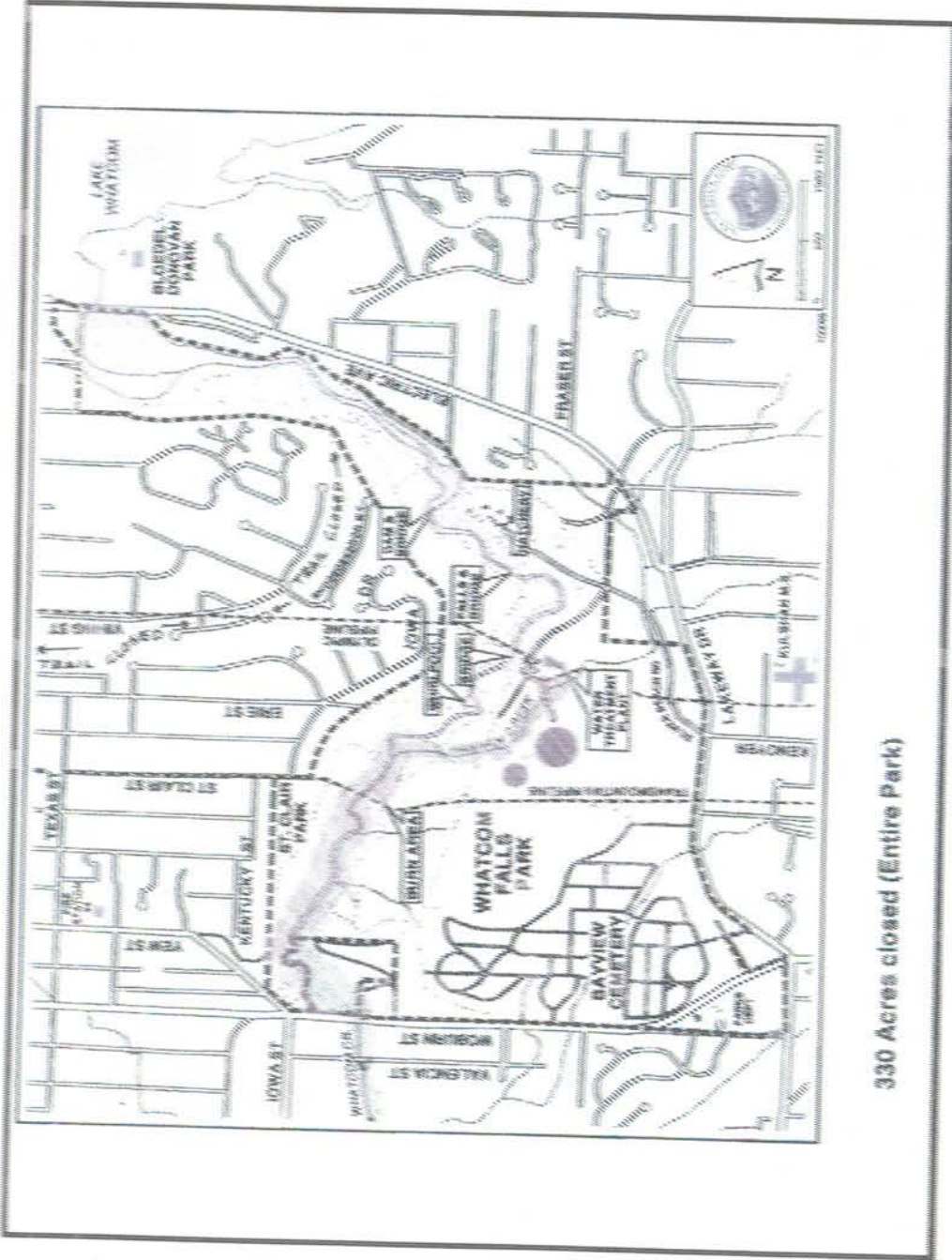
Figure 1: Incident Location



Figure 2: Break Site



Figure 3: Excavation of Pipe



330 Acres closed (Entire Park)

Figure 4: Map of Whatcom Falls Park Area. Closures from June 10-17, 1999

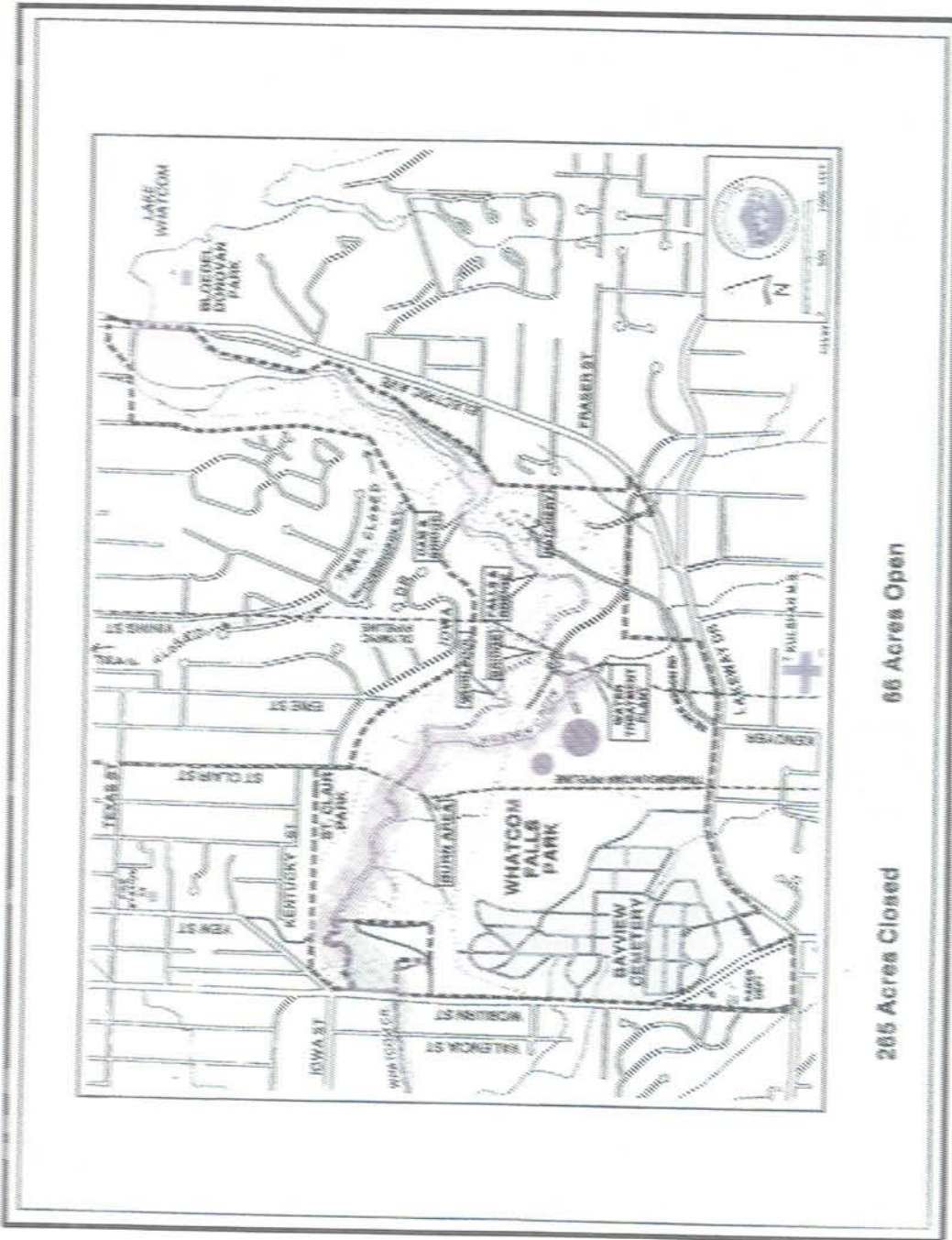


Figure 5: Map of Whatcom Falls Park, Closures from June 17-July 10, 1999

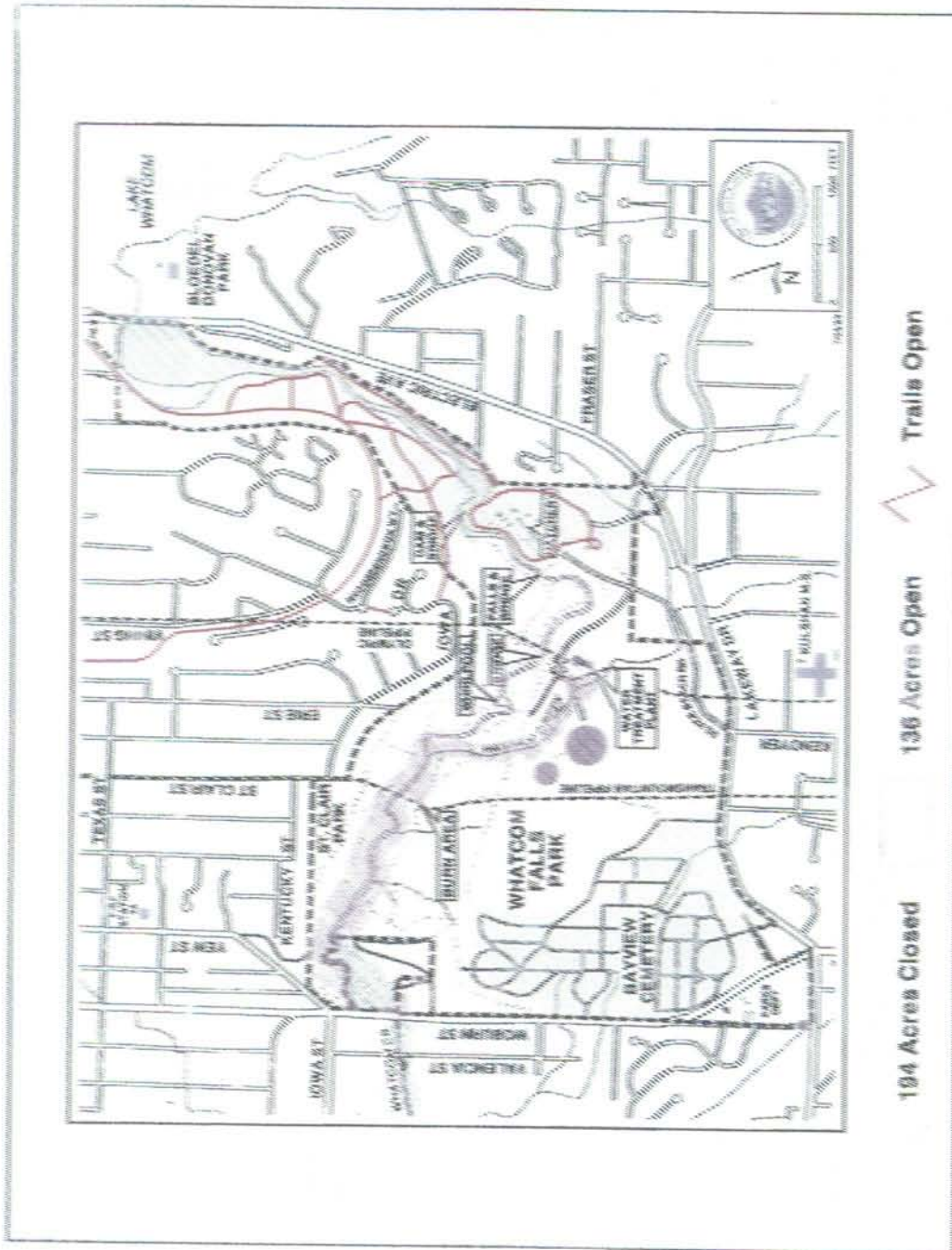


Figure 6: Map of Whatcom Falls Park. Closures from July 10-15, 1999

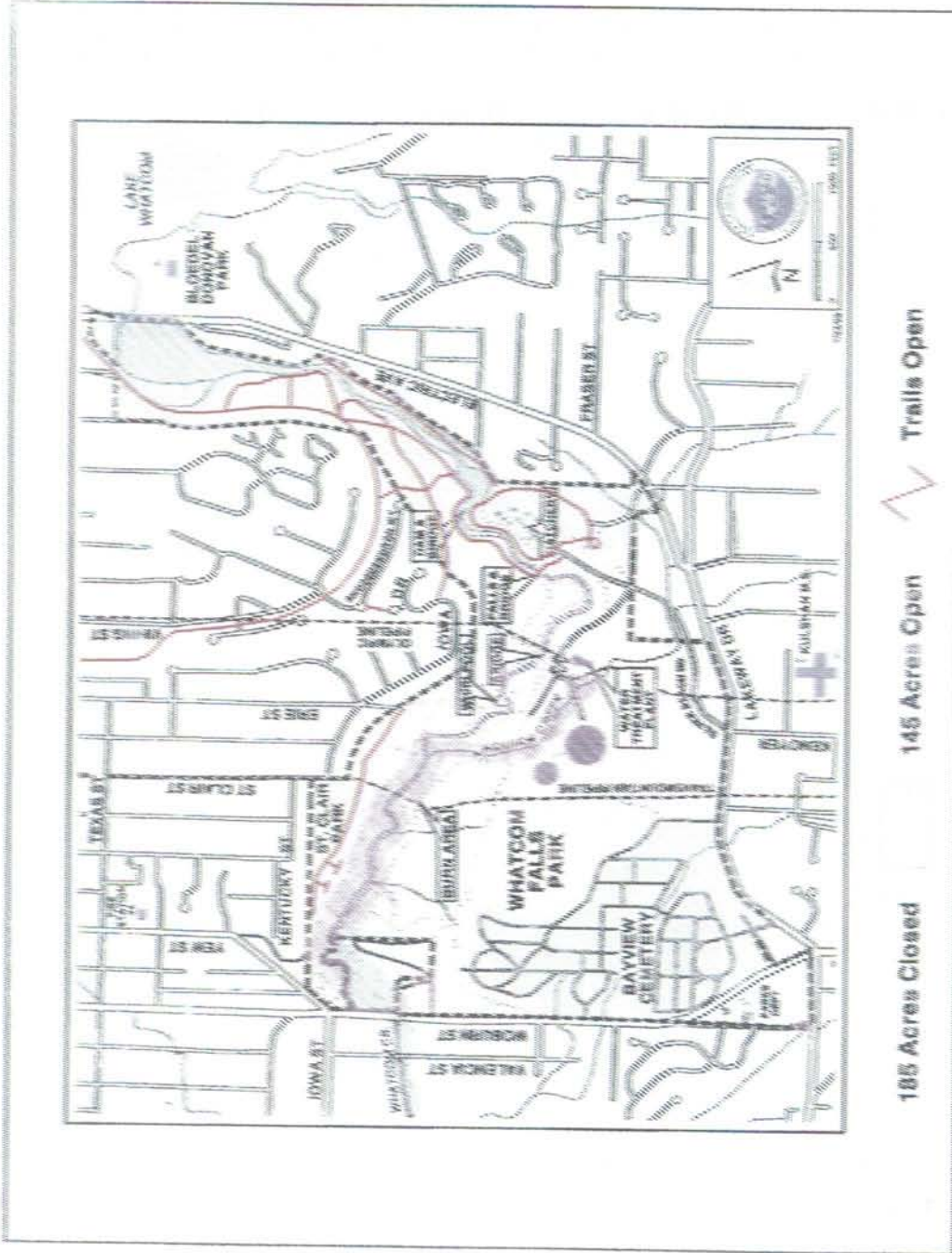


Figure 7: Map of Whatcom Falls Park. Closures from July 16-23, 1999

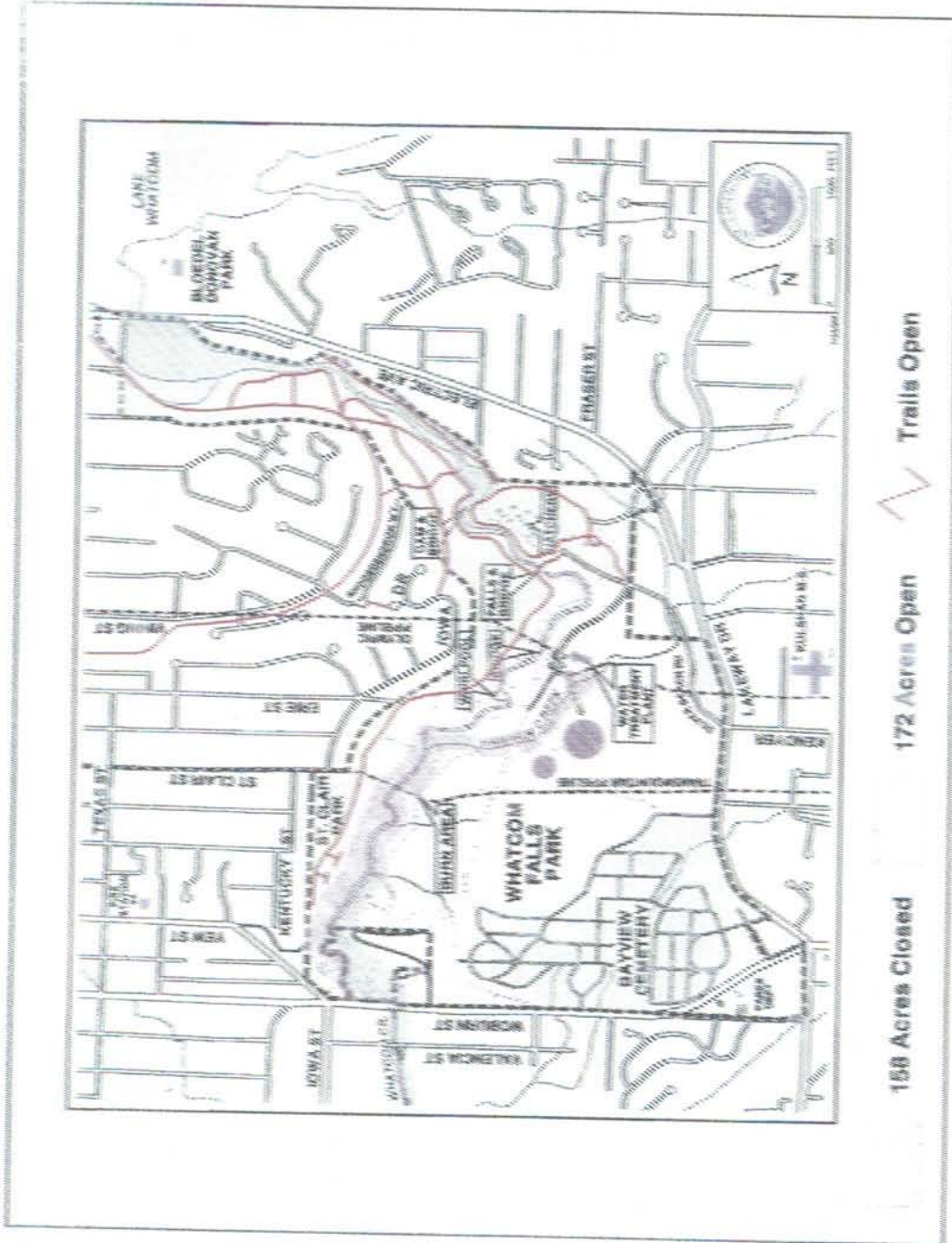


Figure 8: Map of Whatcom Falls Park, Closures from July 23-September 22, 1999

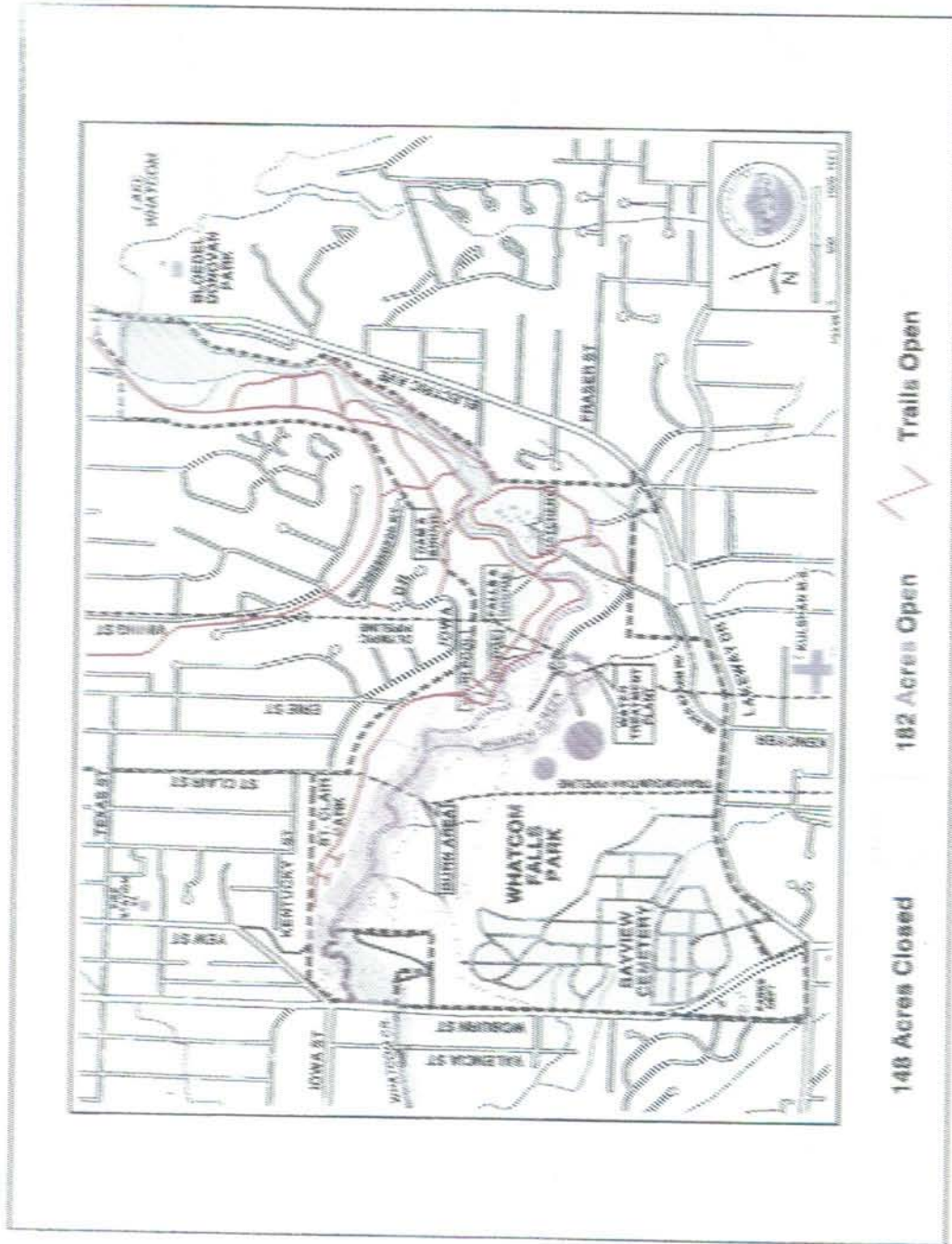


Figure 9: Map of Whatcom Falls Park. Closures from September 22-November 21, 1999

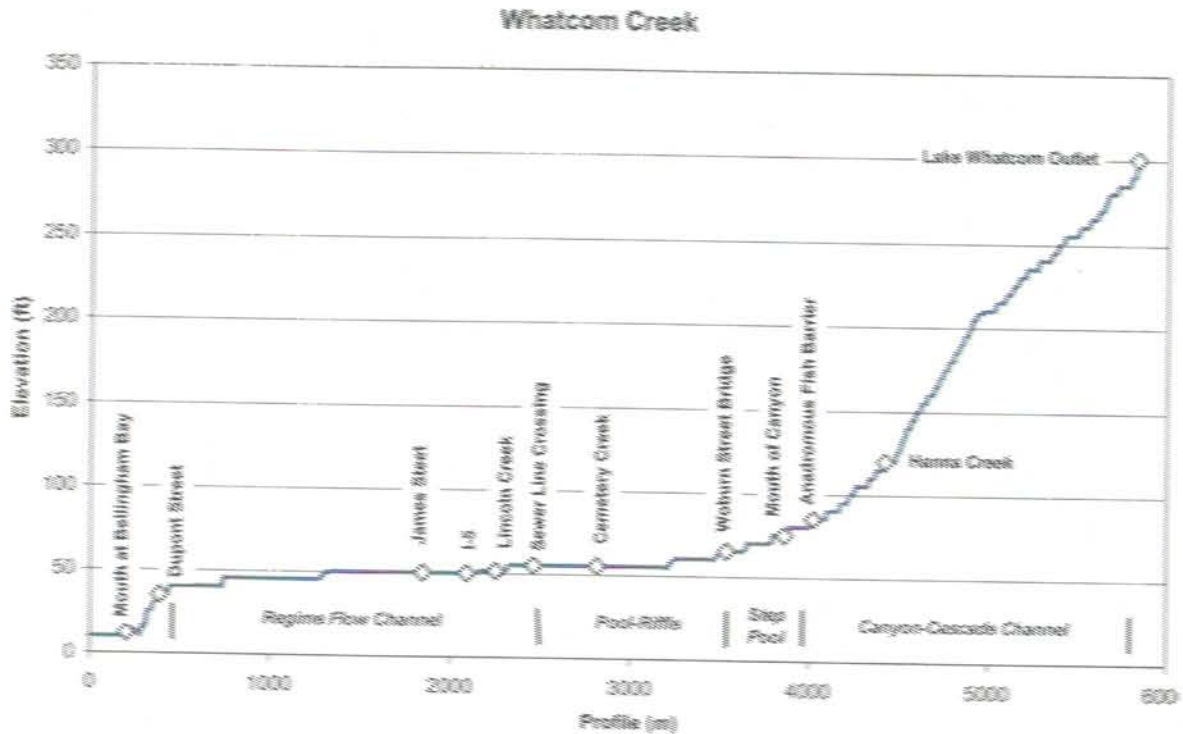


Figure 10: Whatcom Creek Vertical Profile

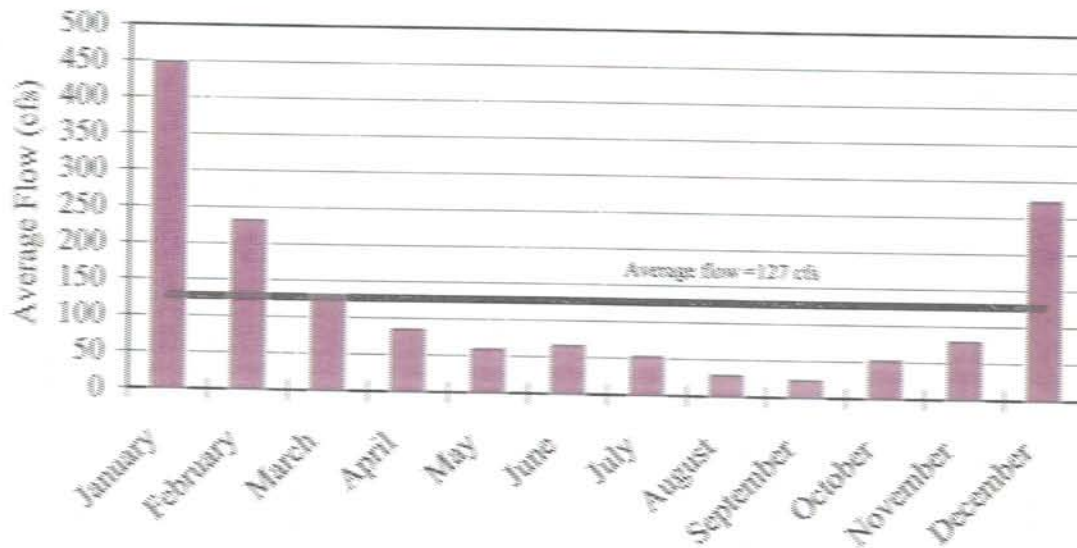


Figure 11: Average Monthly Flows for Whatcom Creek

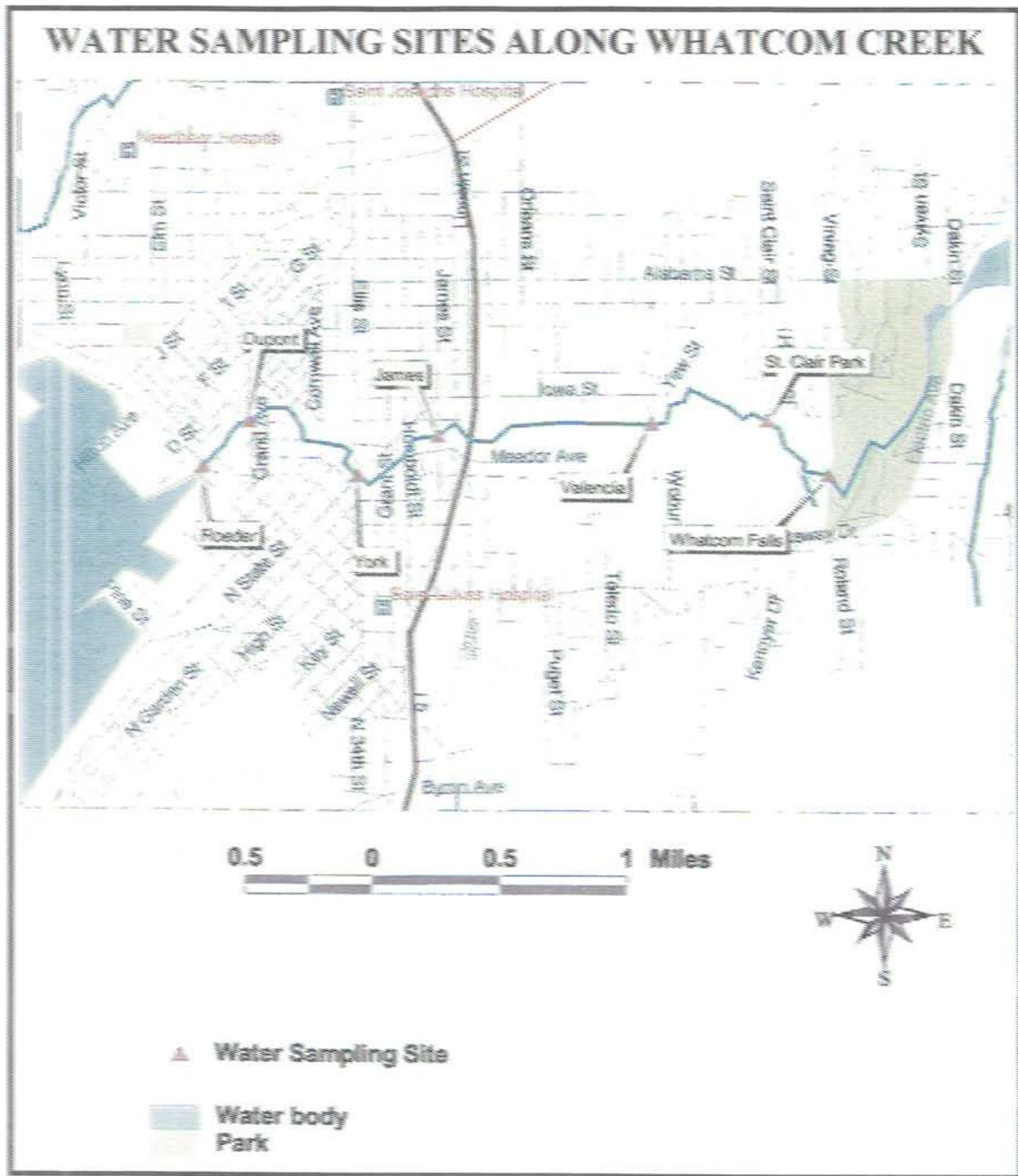


Figure 12: Map of Water Sampling Stations in Creek

WATER SAMPLING SITES IN BELLINGHAM BAY

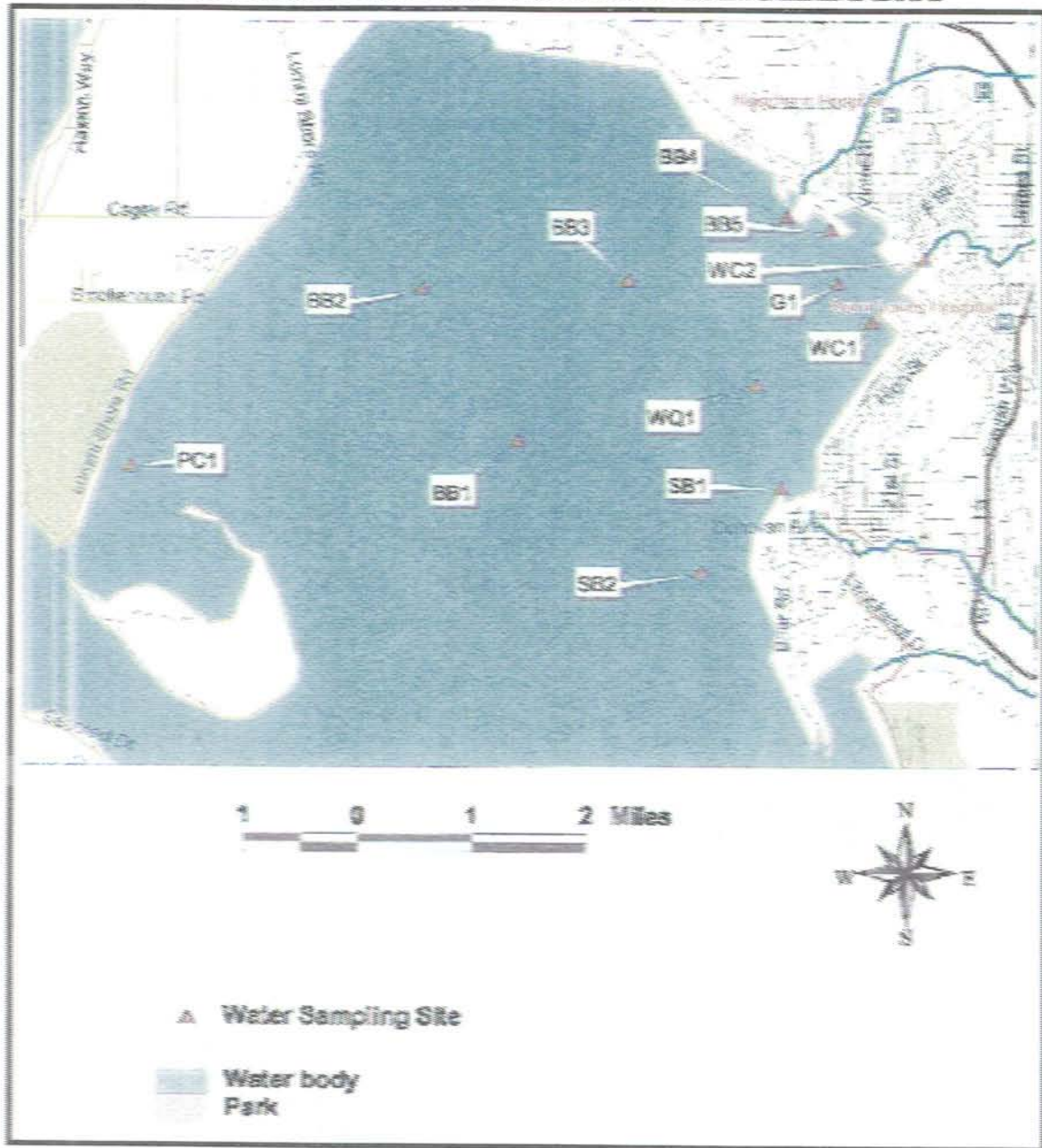


Figure 13: Map of Water Sampling Stations in Bellingham Bay



Figure 14: Spawning areas



Figure 15: Beach Seine Surveys, May 2000



Figure 16: Dead Lamprey in the Whatcom Waterway



Figure 17: Deer in Whatcom Creek

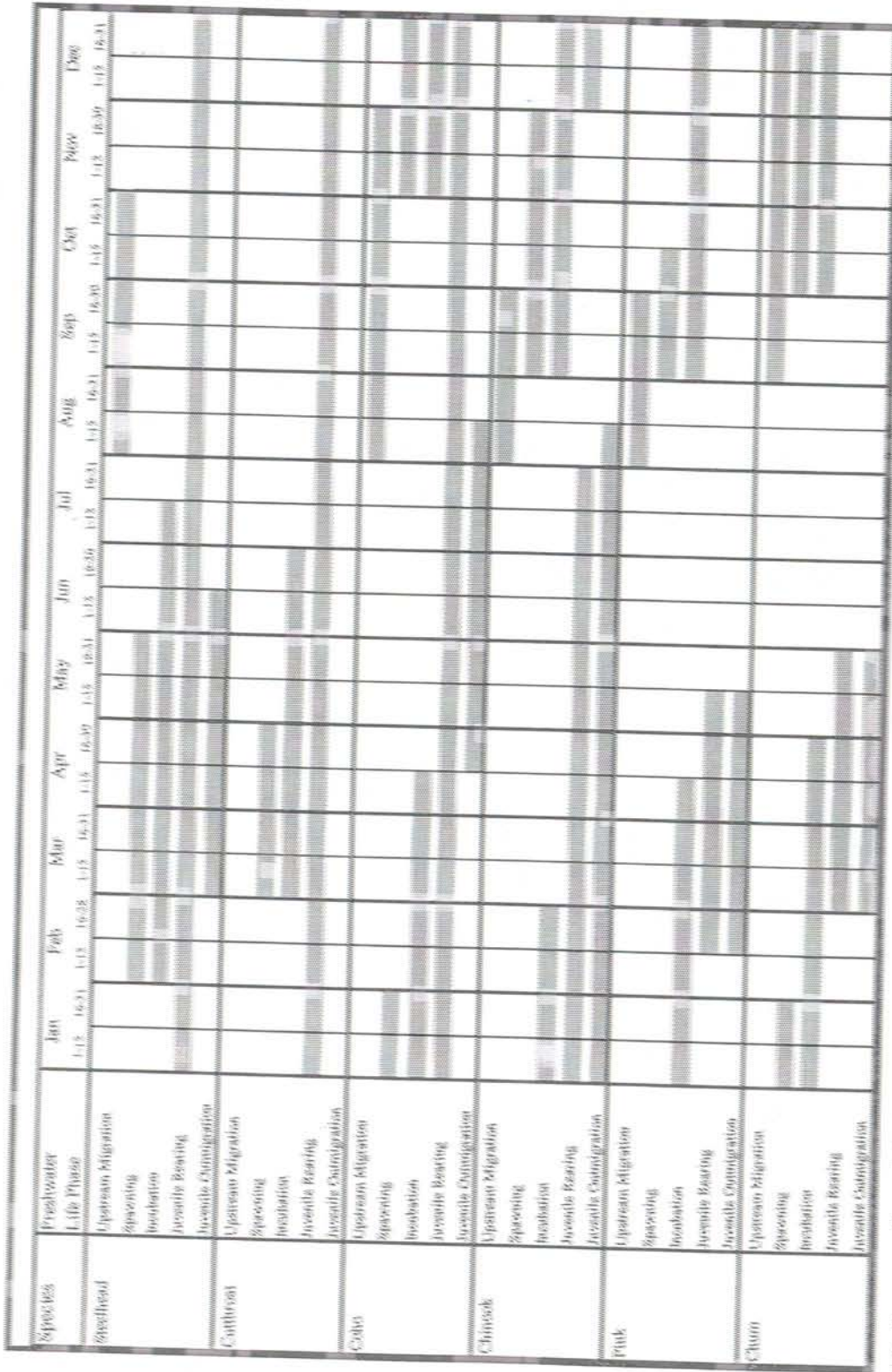


Figure 18: Seasonality of Salmonid Utilization



Figure 19: Hanna Creek Remediation (Before)



Figure 20: Hanna Creek Remediation (After)



Figure 21: Aerial photograph of burn zone



Figure 22: Close-up of burn zone



Figure 23: Hydroseeding



Figure 24: Sampling with pipette



Figure 25: Fires in Creek



Figure 26: Creation of Pool Habitats

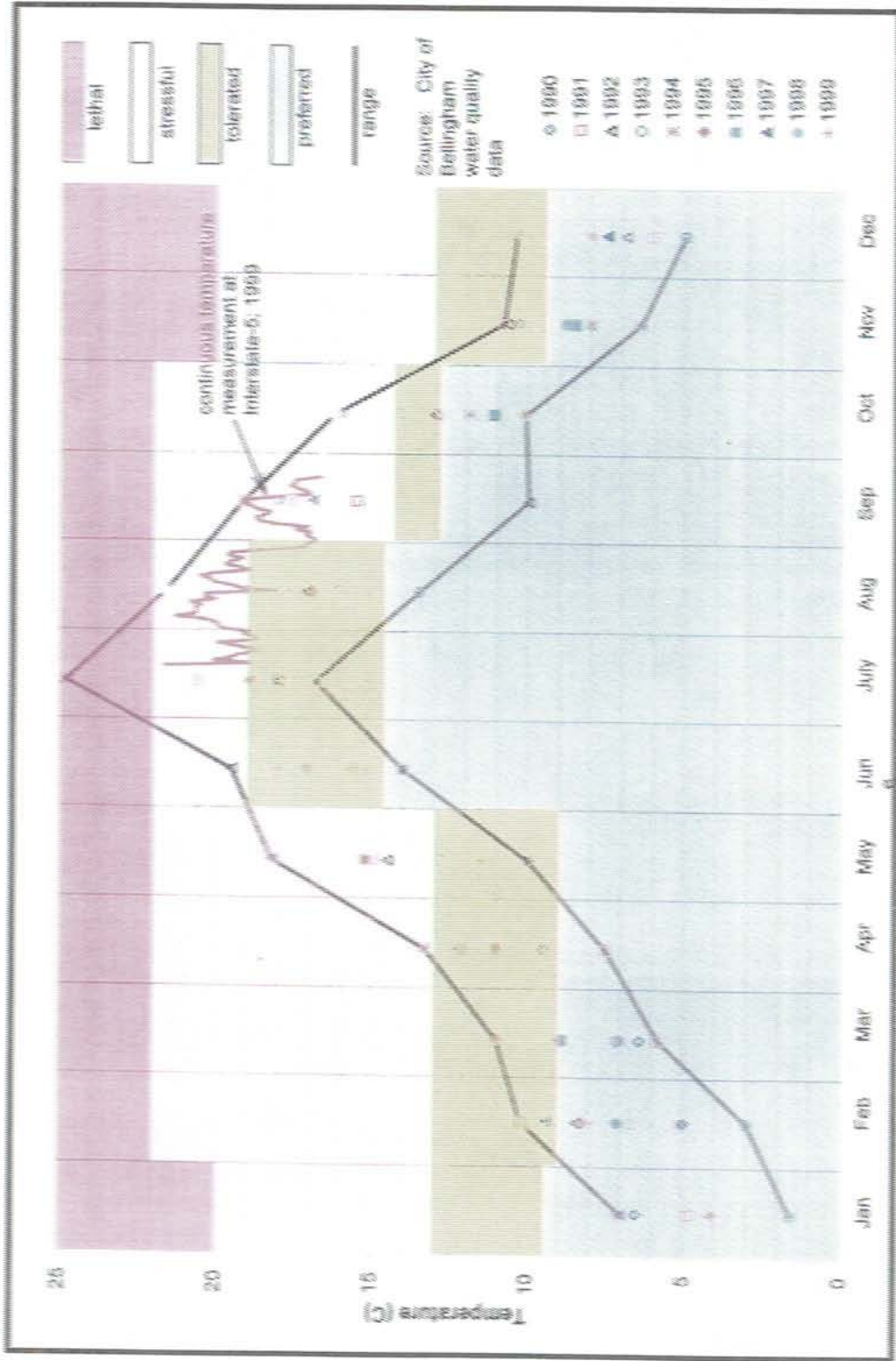


Figure 27: Chart of Fish thermal stress



Figure 28: Heavy Equipment Working in Stream



Figure 29: Completed placement of woody debris in stream



Figure 30: Closure sign in park



Figure 31: Newly Planted Tree



Figure 32: Map of Long-Term Restoration Sites



Figure 33: Picture of Whatcom Reach project site (August 2001)



Figure 34: Picture of Haskell project site (May 2000)



Figure 35: New Fever Creek Bridge



Figure 36: New Valencia Street Bridge

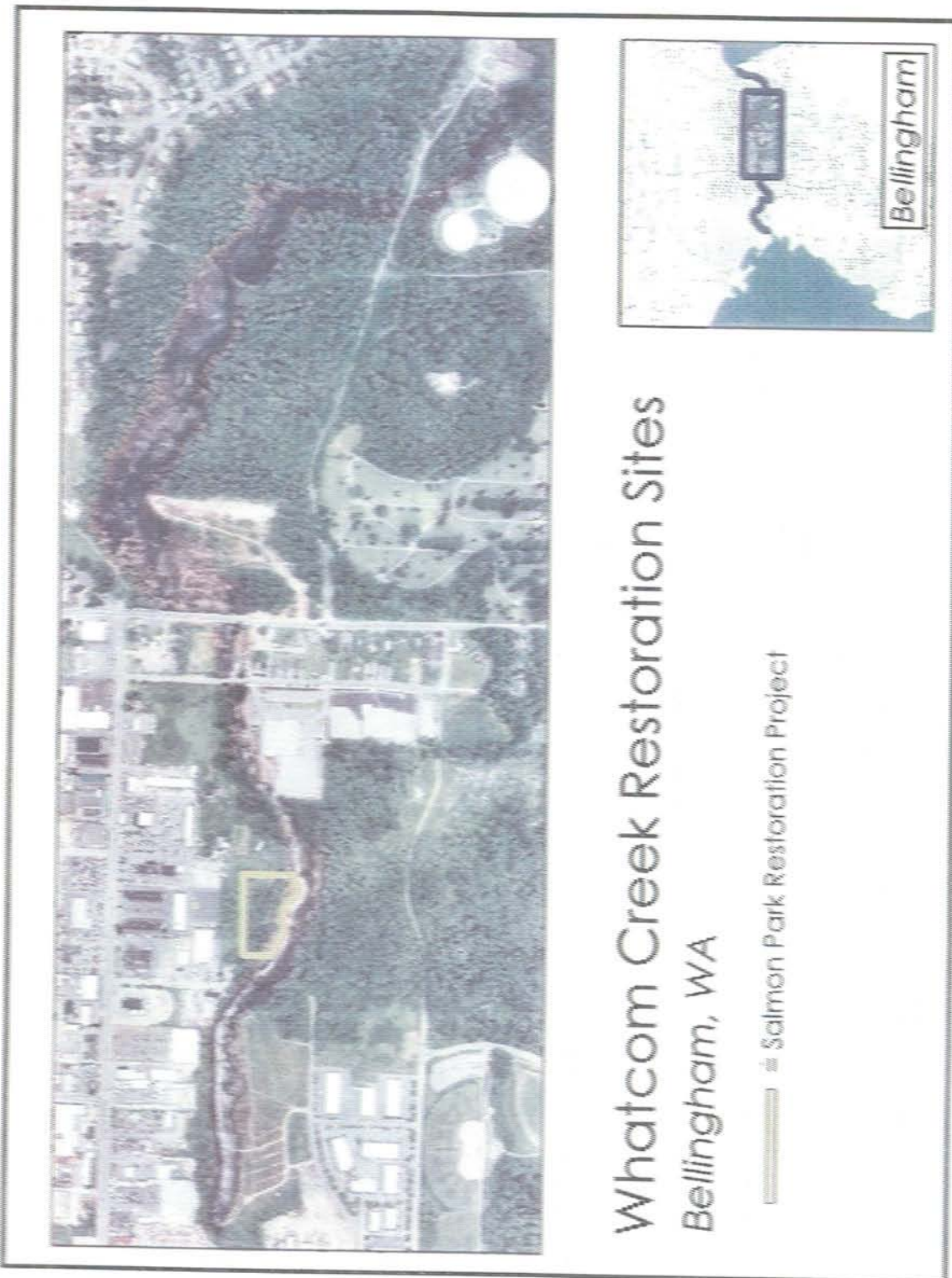


Figure 37: Salmon Park Location Map

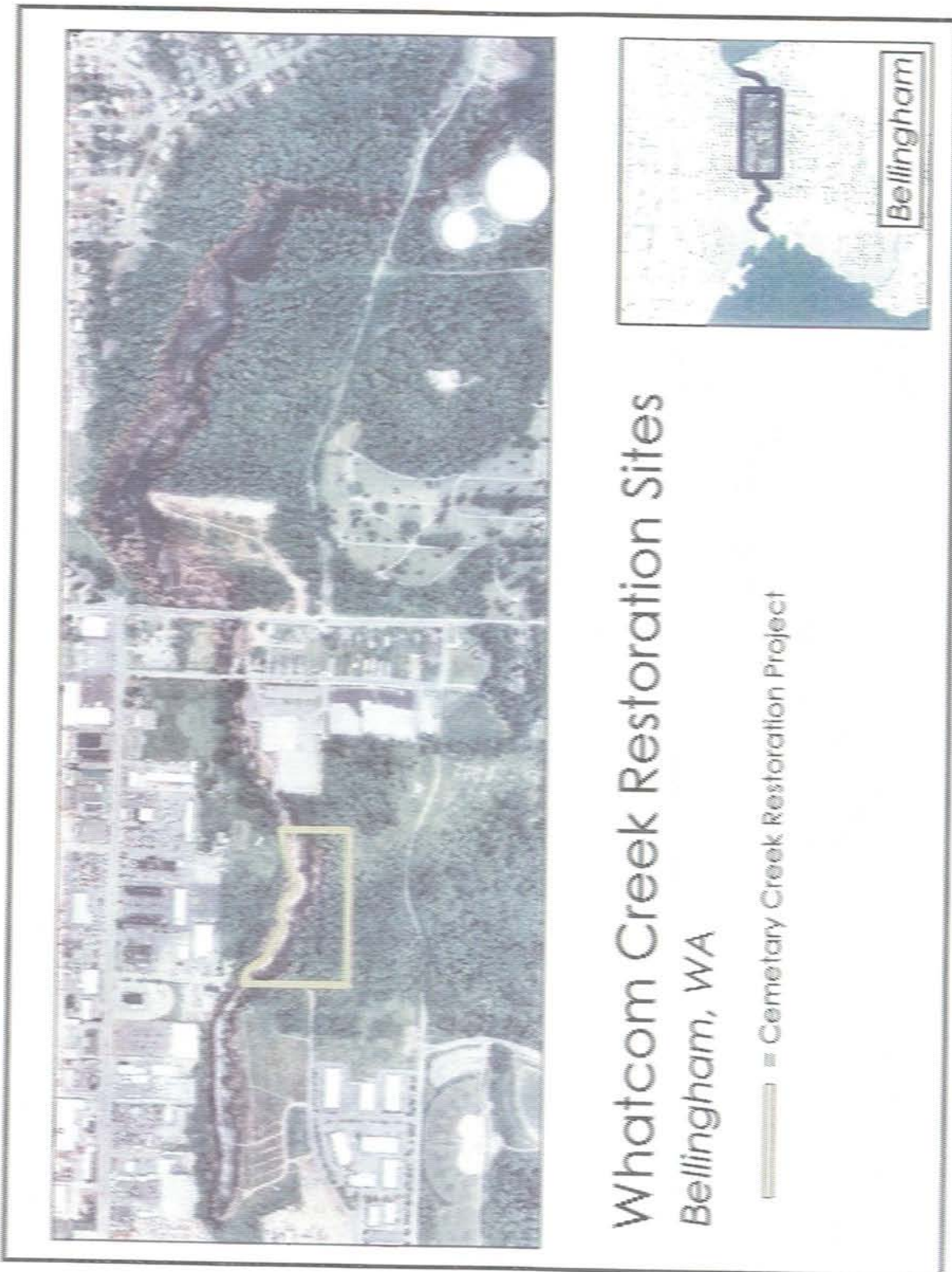


Figure 38: Cemetery Creek Project Location Map

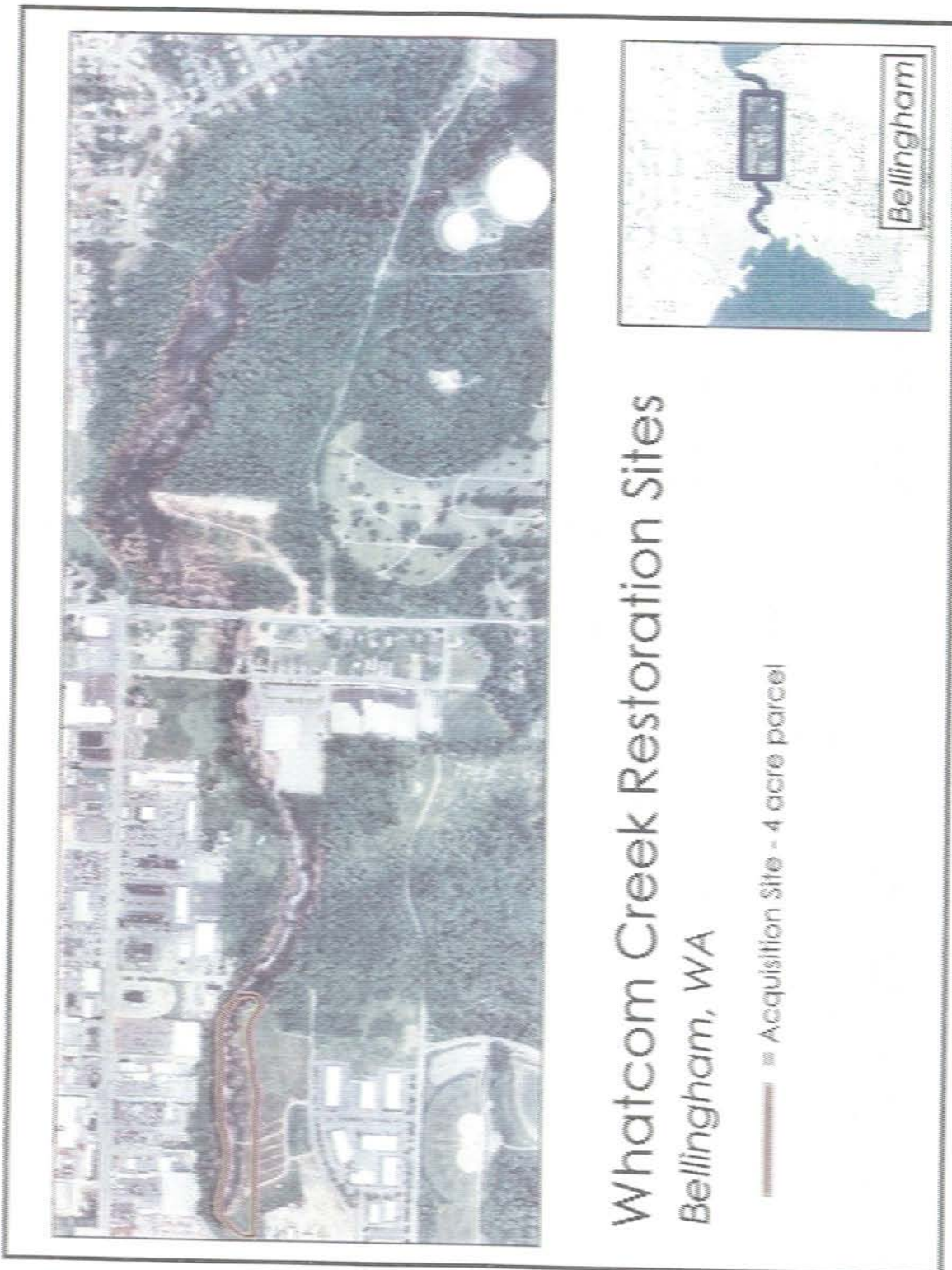


Figure 39: 4-Acre Acquisition Site

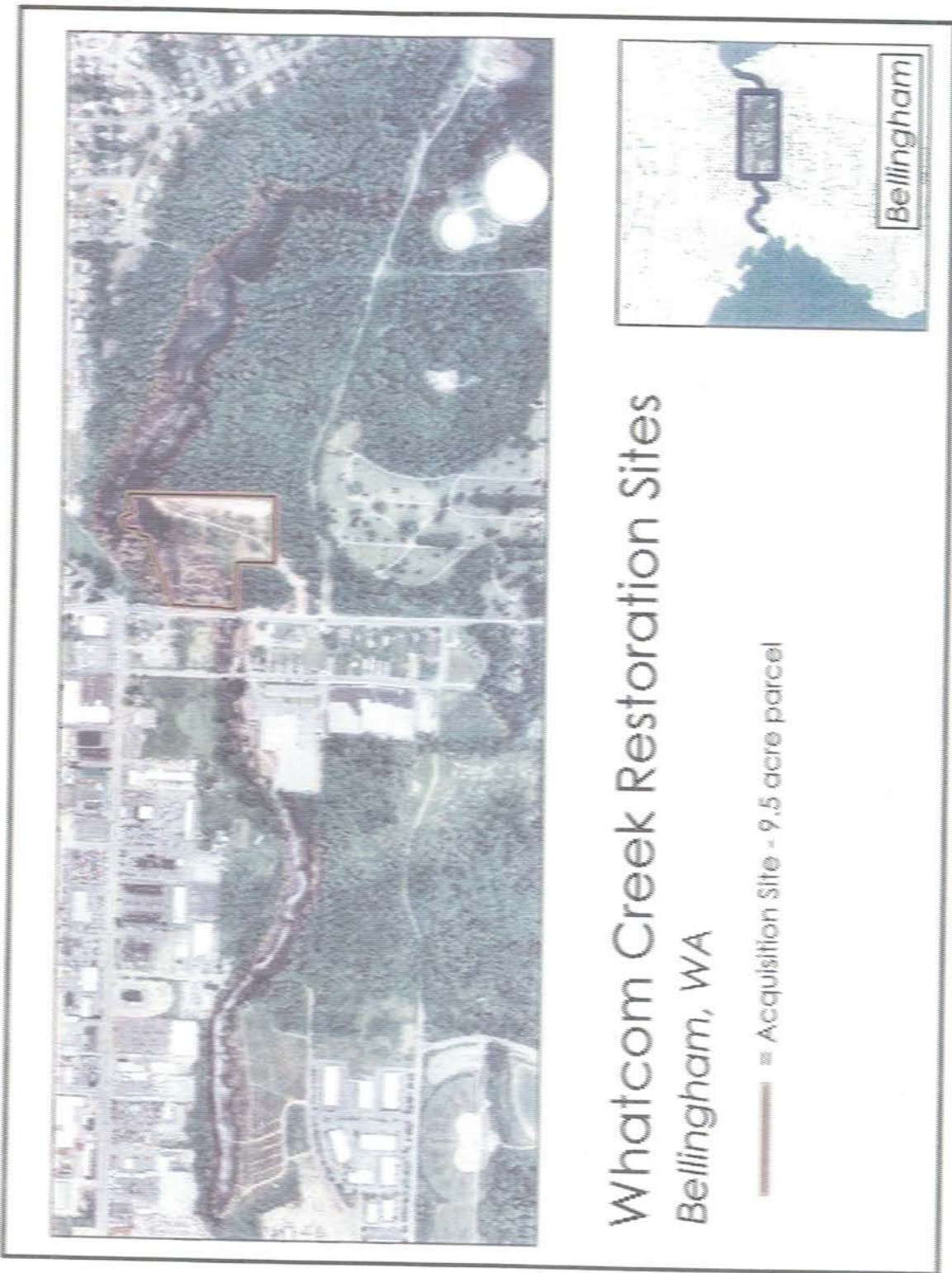


Figure 40: 9.5-Acre Acquisition Site