

only detected for a few minutes (F. Goetz, *in litt.* March 2006). After June 29, bull trout were less prevalent. The only other detection of a bull trout occurred as the average water temperature fluctuated between 17 °C and 18 °C (on approximately July 9) within the Snohomish River Delta.

Summer water temperatures adjacent to the project area are likely above the levels preferred by bull trout. When water temperature reaches approximately 18 °C on a sustained basis, bull trout no longer use an area (F. Goetz, *in litt.* March 2006). Water temperatures for Hat Slough (River Kilometer 3) at the mouth of the Stillaguamish River reached approximately 18 °C on approximately June 4, 2003, but temperature levels at and above this were not sustained until after approximately July 2, 2003. At South Pass (north end of Port Susan) water temperatures were predicted to reach approximately 18 °C around June 4, 2003. An average water temperature in the lower Stillaguamish River, reached approximately 18 °C prior to June 18, 2003, but was not sustained until after approximately July 1 (F. Goetz, *in litt.* 2004).

We do not have specific temperature data for the waters adjacent to the project area. We relied on water temperature data for Hat Slough, and predicted water temperatures for South Pass and West Pass. The use of these data may have resulted in an overestimation of water temperature in Port Susan Bay and therefore, an underestimation of exposure. Therefore to avoid this underestimation, we also included water temperature data for the Snohomish River Delta. We assumed that water temperatures in the Snohomish River Delta would likely be representative of the Stillaguamish River Delta since they are both large river deltas. The comparison of the Snohomish River Delta water temperatures with Hat Slough and West and South Pass was close enough to predict the movement of bull trout through Port Susan Bay with suitable reliability.

However, as noted above, bull trout did migrate through Port Susan up until the point where water temperatures exceed 18 °C on a sustained basis. Therefore, we assume that bull trout would avoid the Stillaguamish River Delta in Port Susan Bay after the water temperatures are sustained at or above 18 °C, approximately after the first week in July. After that point in time, bull trout will likely be moving quickly through the area during their up-stream migration to the Stillaguamish River or will avoid the area.

For the northern portion of the project area, adjacent to the waters in West Pass, we have no temperature information. We do know that bull trout use the general area around the Skagit Bay mouth of West Pass and also use the marine shoreline around Brown Point, English Boom and Arrowhead Beach.

Adult and sub-adult bull trout may be present in the waters adjacent to both the north and south ends of the project area when project construction is scheduled to begin. However, all early construction work will occur behind the existing exterior levees. The exterior levees will not likely be removed until August, and the levee removal work will occur only at low tide, so no in-water work will occur. After the first week of July, we assume that water temperatures are likely to be sustained above 18°C, and any bull trout in the Port Susan Bay area are likely to avoid the tidal flat areas with high water temperatures. Additionally, with the deconstruction of the

exterior levees occurring only during low tide events, the only potential impact to bull trout would be sediment exposure from the tidal wash over the bare ground from levee removal during tidal cycles. Given the nature of the tidal flats habitat in both the north and south project areas, any sediment produced from tidal cycle wash over exposed new ground will be very minor, and will dissipate in the bay waters resulting in very limited potential for impacts to bull trout.

3) Does the project activity involve removing structural barriers to fish passage or creating fish passage structures (restoration activities 11 & 13)?

YES If yes, apply conservation measure BT2. Document compliance with BT2 in the Notes section below. Go to question 4.

NO Go to question 4.

Notes: _____

4) Does the proposed activity have the potential to impact individual bull trout from dewatering, electrofishing, capturing, handling or stranding?

YES If yes, describe expected impacts: _____

_____ If
yes, the final effect determination is “may affect, likely to adversely affect.” **If bull trout are impacted by dewatering, electrofishing, capturing, handling or stranding in a way different than described in the above expected impacts, write a memo to the project file documenting the actual impacts and record the information in the annual report for this programmatic consultation.** Go to Question 5.

NO Go to question 5.

5) Does the proposed activity have the potential to alter or affect the following Matrix Indicators: sub-population size, growth and survival, life history diversity and isolation, persistence and genetic integrity, temperature, sediment, chemical contamination/nutrients, physical barriers, substrate embeddedness, large woody debris, pool frequency, pool quality, off-channel habitat, refugia, wetted width/depth ratio, streambank condition, floodplain connectivity, peak/base flows, drainage network, road density and location, disturbance history, function of riparian reserves, disturbance regime, or integration of species and habitat conditions?

YES Use Enclosure A to answer this question. If the project results in a “degrade” to the sediment indicator, and there is exposure of bull trout to project activities, you must adequately describe in the Notes Section below:

a) the substrate composition present in the project area,

- b) the best management practices undertaken to reduce disturbance to the substrate and any potential sediment inputs to the aquatic system,
- c) the suspected magnitude, duration, and distance of any turbidity above background, and
- d) any monitoring being undertaken to evaluate impacts. Go to question 6.

NO ___ Go to question 6.

Notes: See 2.f. for discussion of the limited potential impacts to bull trout. a) Substrate composition present in the project area is tidal mud flats in all areas adjacent to the exterior dikes on the north and south side of the project area. b) Best management practices include the following:

Schedule and sequence controls:

- Borrow areas will be closed basins, preventing runoff from most disturbed areas well into the rainy season (no discharge until wetland ponds are full).
- Work will be staged to minimize the area disturbed at any given time.
- Stabilization of disturbed areas will occur soon after work in a given area is completed.
- Work will be completed prior to rainy season.
- The new drainage system will be in place before the existing system is filled, and will route and contain any runoff.
- The filling of existing ditches will be staged so that any expelled water will flow to the new wetland areas for on-site containment.
- If there is any need for dewatering, the discharge will be directed to a closed on-site basin that will be converted to a freshwater wetland at project completion.

Physical Barriers:

- Silt fence will be installed to separate disturbed areas from downhill undisturbed areas.
- Silt fence and bio-bag filtration (or similar) will be installed just upstream from existing tide-gate outlets, until such outlets are removed (during outer levee removal).
- Silt fence will be installed on the down-sloping side of topsoil stockpiles (unless slope leads to borrow area) and on up-slope side if the stockpile is within 50' of existing ditch.
- Road entrances from SR 532 and Eide Road will be rocked to reduce mud tracking onto paved roads.

Disturbed Soil Stabilization:

- Borrow area operations will be managed to minimize the disturbed area and the number and size of topsoil stockpiles in use at any given time.

- Disturbed areas will be seeded with 20 pounds per acre red fescue and 20 pounds per acre winter wheat. The seeds will be harrowed in for effective germination, and to produce a good growth of ground cover before the fall rains.
- c) The project will result in minor levels of turbidity from project deconstruction of the north and south exterior levees. All work at these sites will be completed during low tide cycles. Turbidity inputs will only occur during high tide events and when the dike removal is low enough to experience tidal heights sufficient to wash over the bare ground resulting from exterior levee removal. We expect that the magnitude of turbidity increases will be very minor, the duration of potential impacts will occur only during the high tide cycle and the distance of turbidity spread will be very minor and controlled by tidal waters and will dissipate fairly quickly into the existing habitat of tidal mud flats surrounding the project area. These minor impacts will occur in August or early September, when most bull trout have left the marine environment and are moving back up river. d). Given the expectation that any potential impacts to bull trout will be very minor, given the shallow water habitat type, the expected temperature above levels preferred by bull trout, and the likelihood that most bull trout have left the project area by July/August, there is no monitoring associated with project construction.

6) Conservation Measures to be applied: F1 BT1 BT2 BT3
 None

F1. When the restoration activity requires a Hydraulic Project Approval permit (HPA), an HPA will be secured and conditions will be followed. Any ambiguities related to permit conditions will be cleared up prior to construction.

BT3. In-water work will only occur during the timing windows identified in Appendix F.2, when the in-water restoration activity occurs in the following water bodies: the Duwamish Waterway, Lake Union and the Ship Canal, Lake Washington, Sammamish Basin, Columbia River Mainstem or in marine nearshore and estuarine areas. This conservation measure supersedes conservation measure F1 when conducting in-water restoration activities in the above mentioned areas.

Effect Determination: NLTAA Coastal Puget Sound bull trout DPS

Provide rationale for effect determination. See 2f, and above discussion.

DESIGNATED CRITICAL HABITAT FOR BULL TROUT

NOTE: Only address critical habitat for listed species with designated critical habitat. If your project is not in designated critical habitat for bull trout or not in an area of influence for designated critical habitat, you do not need to address the PCE's. When working in marine waters address PCE's 1, 6, 7, and 8. For freshwater, all PCE's are applicable.

7) Will project work occur in an area of influence or in designated critical habitat for bull trout?

YES If yes, go to question 8.

NO If no, explain your answer and go to question 9. _____

8) Does the proposed activity have the potential to beneficially or negatively alter or impact any of the bull trout critical habitat primary constituent elements (PCEs)?

See **PBA Chapter 4, Designated Critical Habitat for Bull Trout and Salmon ESUs** for full description of PCE's and analysis of impacts from implementation of restoration activities. To understand how the PCEs crosswalk with the Matrix Indicators, refer to Appendix Q. *Crosswalk between Matrix of Pathways and Indicators and Bull Trout Critical Habitat Primary Constituent Elements.*

YES If yes, indicate on the list below which PCEs may be altered. **Describe the cause, size, and expected length of duration of the alteration in the Notes section following each PCE. Remember alterations can be beneficial or negative.**

NO Go to Question 9.

 PCE 1. Water temperatures that support bull trout use.

Notes: The Leque Island Estuary Restoration Project will not remove or restore shoreline vegetation, and so will not impact any shading on marine waters. Since the project is happening only adjacent to marine waters with high temperature 18°C likely to occur after July 1, no beneficial or negative impacts are expected, and existing water temperatures are expected to remain within the range of current temperatures adjacent to the project area.

PCE 6. Migratory corridors with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and foraging habitats, including intermittent or seasonal barriers induced by high water temperatures or low flows.

Notes: The migratory corridor may be beneficially impacted by the removal of the exterior levees from the north and south project sites. Setback levees will open up more tidally influenced habitat for migration use. However, the existing high water temperatures adjacent to the project area may continue to pose a seasonal barrier to migration along the project shoreline.

PCE 7. An abundant food base including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.

Notes: Removal of the exterior levees from the north and south project sites will provide more estuarine habitat for production of the marine food base. Habitats adjacent to the existing project area are tidal mud flats and currently do not support spawning areas for forage fish, nor are they expected to once the project is complete. However, increased tidal mudflat area may provide an increased food base for forage fish that bull trout may eat.

PCE 8. Permanent water of sufficient quantity and quality such that normal reproduction, growth, and survival are not inhibited.

Notes: This project will not negatively or beneficially impact permanent water of sufficient quantity or quality.

NOTE: if a PCE is altered, the effect determination for bull trout critical habitat is a "may affect" determination. If the alteration is negative, the effect determination is a "may affect, likely to adversely affect" determination. If the alteration is positive, the effect determination is a "may affect, not likely to adversely affect" determination. Go to question 9.

9) Effect Determination: NLTAA designated critical habitat for the Coastal Puget Sound bull trout DPS

Provide rationale for effect determination. PCE 1 and PCE 8 will not be impacted by project actions. PCE 6 migratory corridor habitat may improve from levee removal, and PCE 7 Abundant food base may improve by allowing a larger area for primary productivity to occur, supporting the forage fish base of the area, and potentially increasing availability for bull trout forage.

Go to question 10.

10) Does the project address any of the identified recovery actions in the *Draft Recovery Plan for the Coastal-Puget Sound Distinct Population Segment of Bull Trout*?

YES If so, identify the action and location here. : 1.6.3 Restore or recreate intertidal foraging habitats in key areas.

NO

Go to Question 11.

11) **If the above effect determination for bull trout is a "likely to adversely affect" determination for bull trout and bull trout critical habitat, a pre-project incidental take estimate will need to be thoroughly described here. Link incidental take estimates to a restoration activity occurring at the project site, do not double count incidental take.** For example, the project involves riparian planting and instream structure work. All work will occur at the same time. Both the riparian planting and instream structure work will contribute sediment to the stream channel. In this case, you would only count the immediate instream project area and downstream sediment dispersal area once and associate it with the most egregious activity, RA 1 Install instream structures.

Bull Trout Incidental Take

There is no incidental take associated with these restoration activities.

Impacts to Bull Trout Critical Habitat

✓ There are positive impacts to bull trout critical habitat associated with this project. Impacts to bull trout critical habitat associated with restoration activities 4, 8, and 10 are the following:

Impacts to bull trout critical habitat is occurring in the following:

bull trout management unit: Puget Sound

bull trout core area: _____

bull trout local population: _____

bull trout FMO habitat: Marine Areas of Puget Sound

bull trout FMO habitat outside of core area: _____

Intertidal acreage directly beneficially impacted: 105 acres of intertidal habitat restored

Description of impacts to critical habitat (positive or negative):

PCE 1 and PCE 8 will not be impacted by project actions. PCE 6 migratory corridor habitat may improve from levee removal, and PCE 7 Abundant food base may improve by allowing a larger area for primary productivity to occur, supporting the forage fish base of the area, and potentially increasing availability for bull trout forage.

CONCURRENCE:

Virginia G. Thal 12/13/07
Project Biologist Date

Mrs. Mahaff 12/17/07
Manager, Division of Environmental Assessment and Restoration Date

Not Required
Manager, Division of Consultation & Technical Assistance Date

NA
NOAA Fisheries Date

ENCLOSURE A - Project Evaluation for Determination of Alteration or Effects on Fish Habitat Indicators

In the appropriate column(s), mark **S** for short-term impacts (within first year), **L** for long-term impacts (>1 year). If the project activities result in an impact which degrades an indicator, you must explain the impact in the Comments/Explanation column.

Indicator	Restore	Maintain	Degrade	Unk. Or N/A	Comments/Explanation
Temperature				NA	
Sediment		L	S		Potential short-term sediment increase in immediate project area may occur during high tide events
Chemical Contaminants/ Nutrients				NA	
Physical Passage Barriers	L				Dike removal and setback restores access to a natural shoreline
Substrate Embeddedness				NA	
Large Woody Debris				NA	
Pool Frequency and Quality				NA	
Large Pools				NA	
Off-channel Habitat	L				Dike removal and setback allows for tidal channel development
Refugia				NA	
Wetted Width/Maximum Depth Ratio				NA	
Streambank Condition				NA	
Floodplain Connectivity				NA	
Change in Peak/Base Flows				NA	

Drainage Network Increase					NA	
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Road Density & Location	L				Removal of 175 feet of Eide Road
Disturbance History				NA	
Function of Riparian Reserves				NA	
Disturbance Regime (BT)				NA	
Subpopulation Size (BT)				NA	
Growth and Survival (BT)				NA	
Life History Diversity and Isolation (BT)				NA	
Persistence and Genetic Integrity (BT)				NA	
Integration of Species and Habitat Conditions (BT)				NA	

(BT) = indicator only to be evaluated for bull trout

Restore = project is likely to have a beneficial impact on habitat indicator

Maintain = project may affect indicator, but impact in neutral

Degrade = project is likely to have a negative impact on the habitat indicator.

Unk. = Unknown; project may affect indicator, but impact is uncertain

N/A = project does not have the potential to impact the habitat indicator

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LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES AND CRITICAL HABITAT; CANDIDATE SPECIES; AND SPECIES OF CONCERN IN SNOHOMISH COUNTY

**AS PREPARED BY
THE U.S. FISH AND WILDLIFE SERVICE
WESTERN WASHINGTON FISH AND WILDLIFE OFFICE**

(Revised November 1, 2007)

LISTED

Bull trout (*Salvelinus confluentus*)

~~Canada lynx (*Lynx canadensis*)~~

~~Gray wolf (*Canis lupus*)~~

~~Grizzly bear (*Ursus arctos* = *U. a. horribilis*)~~

Marbled murrelet (*Brachyramphus marmoratus*)

~~Northern spotted owl (*Strix occidentalis caurina*)~~

project occurs in
Lowland Estuarine
Habitat in Port Susan
Bay/Mouth of the Stillaguamish
River. No Habitat for these

Major concerns that should be addressed in your Biological Assessment of project impacts to listed species include: Species
is
present

1. Level of use of the project area by listed species.
2. Effect of the project on listed species' primary food stocks, prey species, and foraging areas in all areas influenced by the project.
3. Impacts from project activities and implementation (e.g., increased noise levels, increased human activity and/or access, loss or degradation of habitat) that may result in disturbance to listed species and/or their avoidance of the project area.

DESIGNATED

Critical habitat for bull trout

Critical habitat for the marbled murrelet

Critical habitat for the northern spotted owl

PROPOSED

None

CANDIDATE

Oregon spotted frog (*Rana pretiosa*)
Yellow-billed cuckoo (*Coccyzus americanus*)

SPECIES OF CONCERN

Bald eagle (*Haliaeetus leucocephalus*)
Beller's ground beetle (*Agonum belleri*)
California wolverine (*Gulo gulo luteus*)
Cascades frog (*Rana cascadae*)
Long-eared myotis (*Myotis evotis*)
Long-legged myotis (*Myotis volans*)
Northern goshawk (*Accipiter gentilis*)
Olive-sided flycatcher (*Contopus cooperi*)
Pacific lamprey (*Lampetra tridentata*)
Pacific Townsend's big-eared bat (*Corynorhinus townsendii townsendii*)
Peregrine falcon (*Falco peregrinus*)
River lamprey (*Lampetra ayresi*)
Tailed frog (*Ascaphus truei*)
Western toad (*Bufo boreas*)
Botrychium pedunculatum (stalked moonwort)

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The existing drainage infrastructure will be reconfigured to support freshwater wetland management, while ensuring continued stormwater drainage away from Eide Road and the private residence near the end of Eide Road.

Reconfiguring the drainage works will involve new ditch excavation, filling existing ditches, installation of two new tidegates, and the installation of three concrete water-control structures, one for each wetland. The revised drainage works will be managed to support freshwater wetlands and agriculture where deemed appropriate.

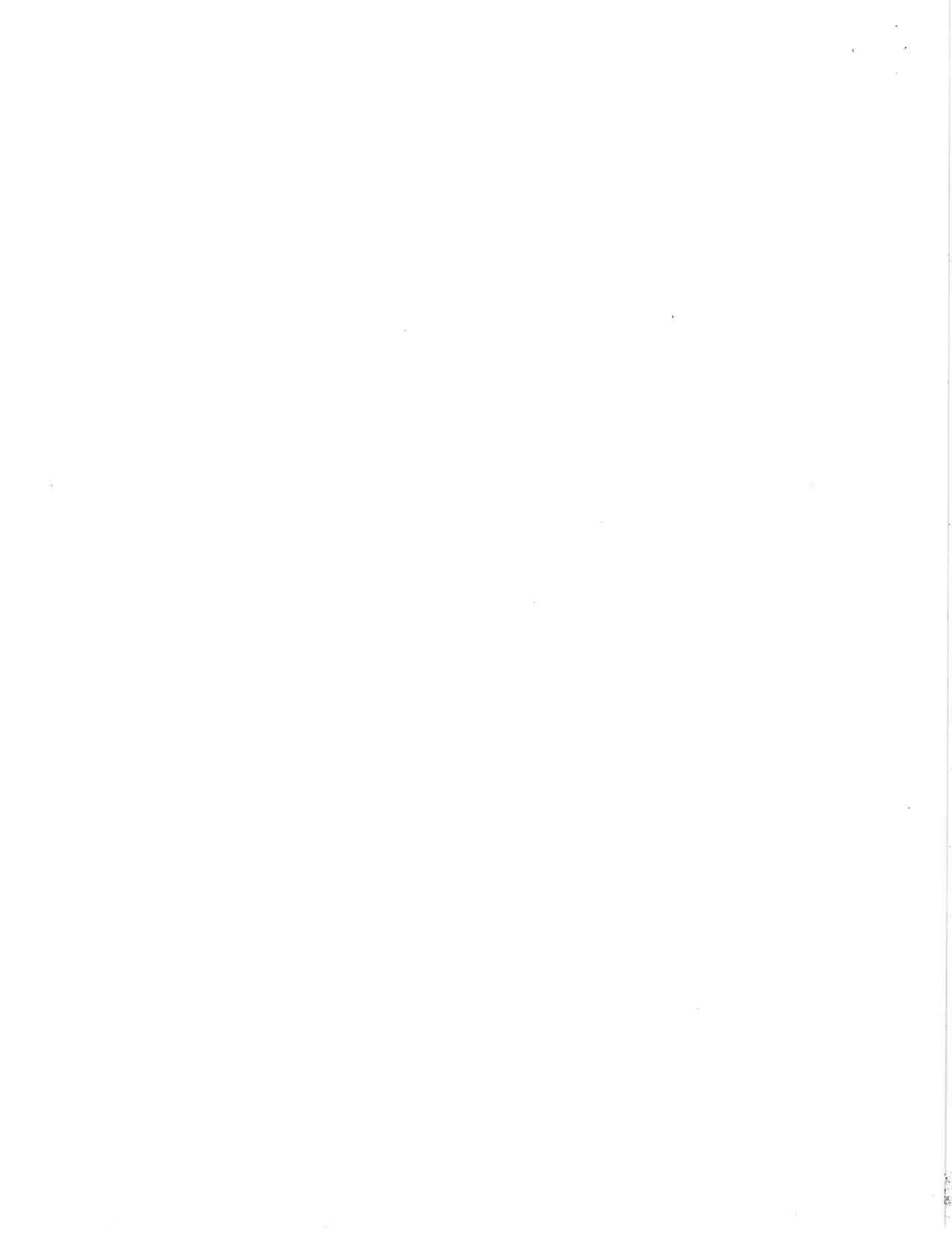
Public Amenities

Parking: two gravel parking areas will be provided, one accessed from SR-532, the other from Eide Road.

Trails: the levee-tops will be open for use as trails, and an at-grade trail will be constructed parallel to SR-532, on the south side.

The total length of provided trail is roughly 7600 feet (1.4 miles).

ADA: Parking and trail design will comply with ADA standards. Five ADA-accessible blinds near the proposed wetlands will be provided.





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Leque Island Restoration - Quantities Summary - Site Tour 9.28.07

All quantities conceptual and subject to change during final design

	Length	Area	Volume
	<i>feet</i>	<i>acres</i>	<i>cubic yards</i>
Estuary Restored - South	n/a	75.0	n/a
Levee Removed - South	5,100.0	4.1	22,370.0
South Setback Levee	2,600.0	5.6	65,000.0
Estuary Restored - North	n/a	30.0	n/a
Levee Removed - North	3,962.0	t.b.d	t.b.d.
North Setback Levee	1,800.0	2.7	21,000.0
Davis Slough Levee	2,515.0	5.5	40,000.0
Freshwater Wetlands	n/a	72.0	n/a

Whidbey Island

Skagit Island

Skagit Snohomish

Skagit Bay

Snohomish Island

Milkovna

Skagit Snohomish



Maple Grove Beach

New Utsalady

English Broom

Loringston Bay

Juniper Beach

Stanwood

East Stanwood

268th St Nw

Church Creek

Marine Dr

Florence

Silvana Terraces

Norman

Silvana

N East Camano Dr

East Camano Dr

Driftwood Shores

Lona Beach

Port Susan

Warm Beach

92nd Ave Nw

Lakewood Rd

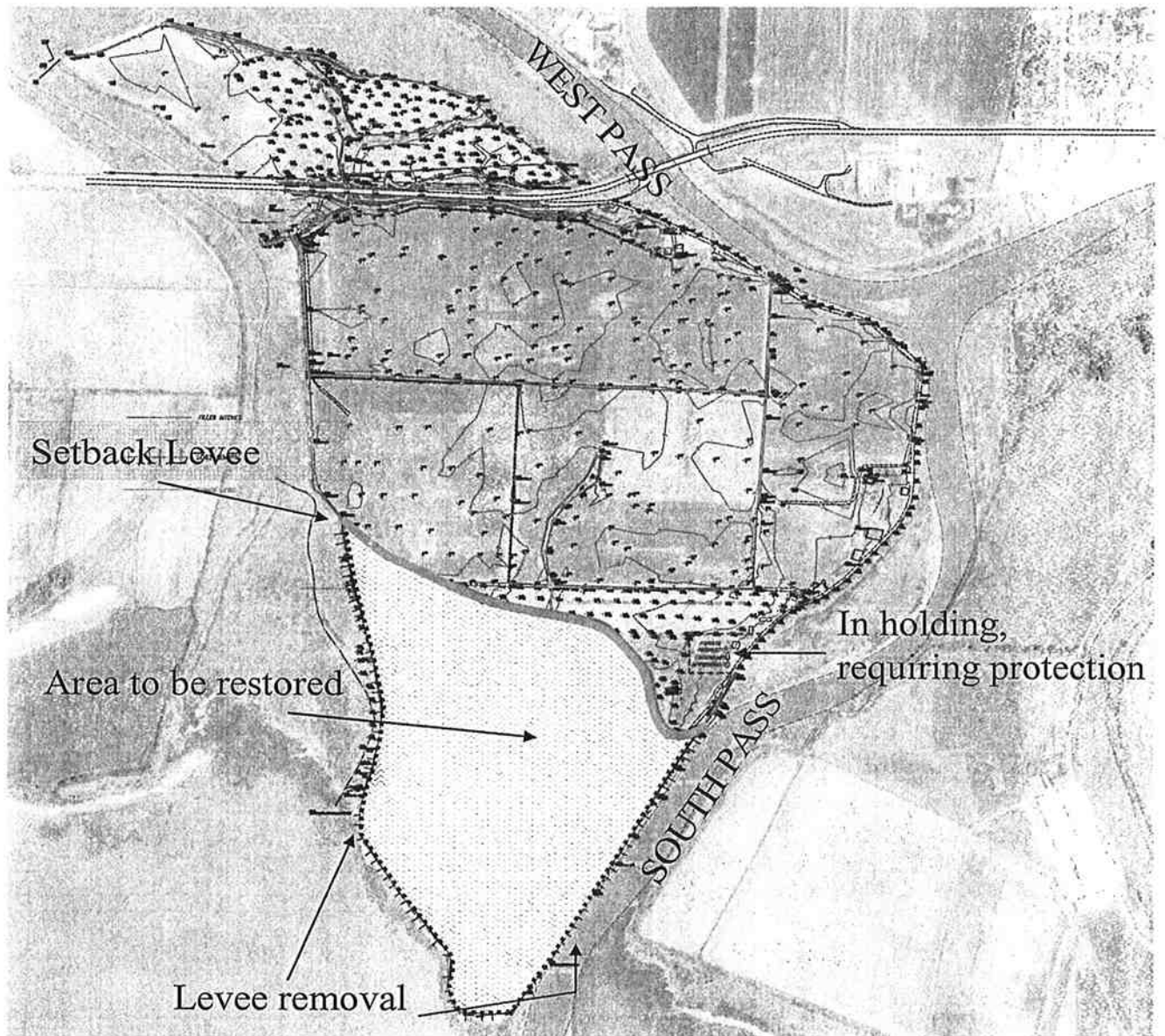
Eiger Bay Rd

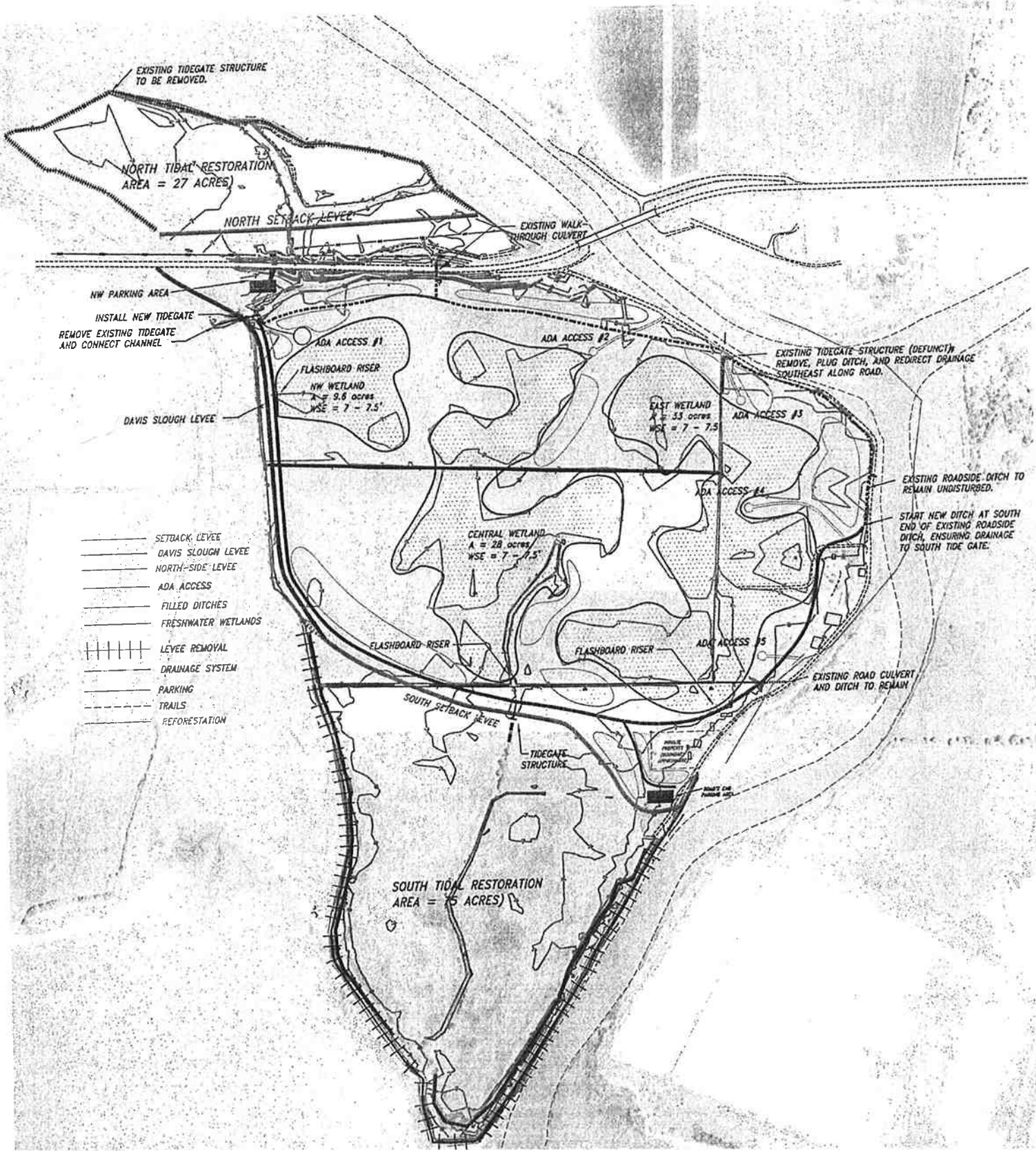
Indian Beach

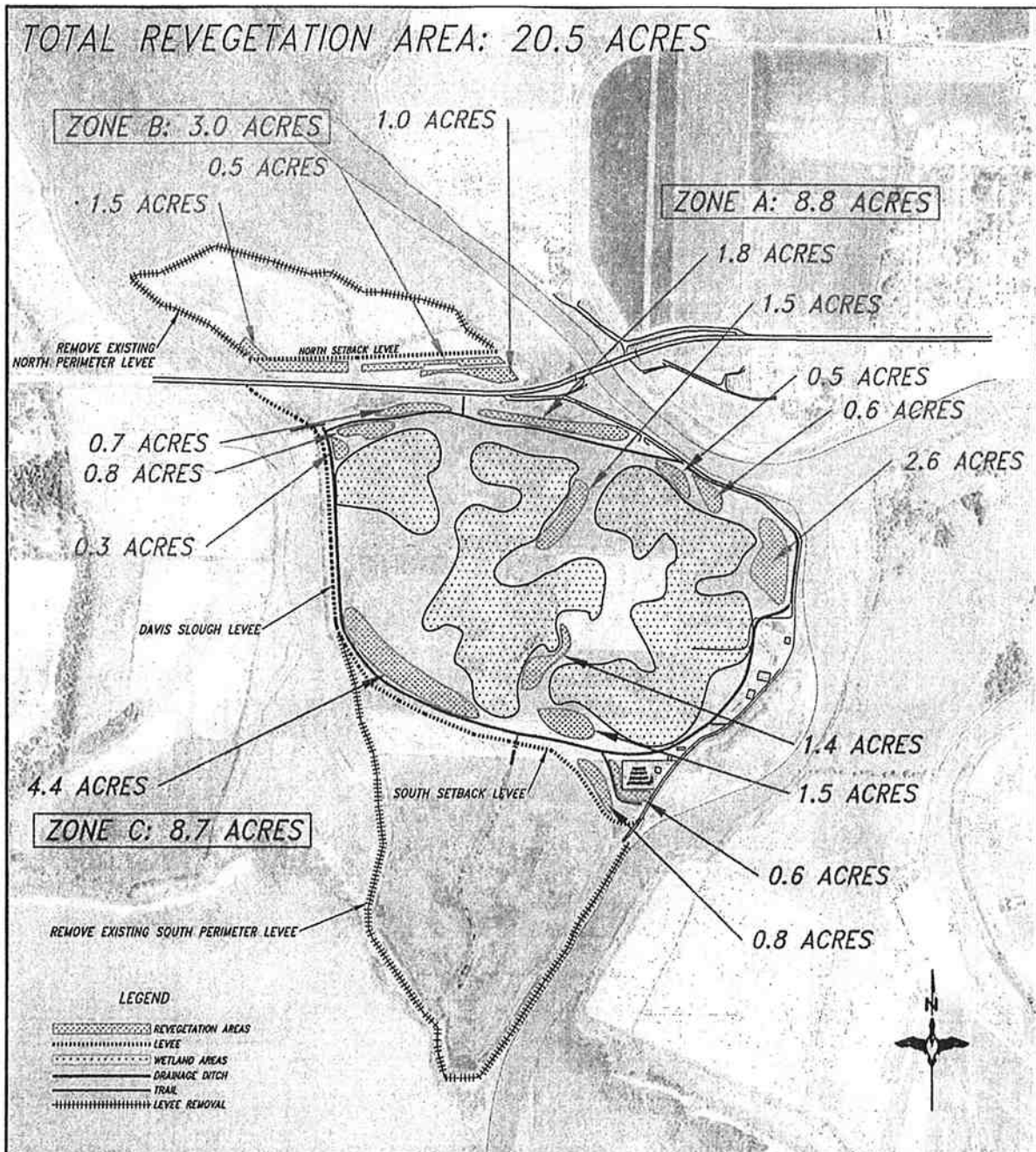
Vc Monticello Dr


LEQUE ISLAND ESTUARY RESTORATION

Conceptual design







 DUCKS UNLIMITED INC. PacNW Field Office (360) 885-2011	PROJECT NO. WA-62-2	GENERAL INFORMATION
	SNOHOMISH WILDLIFE AREA LEQUE ISLAND UNIT	DESIGNED BY: JDA DRAWN BY: TMW SURVEYED BY: JDA CHECKED BY: JDA
DATE: 27 NOV. 2007	SHEET NO. 1 of 1	REVEGETATION AREAS

**F.2. BULL TROUT WORK PERIODS FOR MARINE AND ESTUARINE WATERS,
LAKE UNION AND SHIP CANAL, LAKE WASHINGTON, SAMMAMISH BASIN AND
COLUMBIA RIVER MAINSTEM**

MARINE AND ESTUARINE¹ WATERS

SPECIFIC AREA	NO INWATER WORK	ALLOWABLE INWATER WORK
Marine Waters (including Puget Sound) ²	2/16 through 7/15	7/16 through 2/15
Duwamish Waterway	2/16 through 9/30	10/1 through 2/15

¹ estuaries may be provided separate windows in the future

² marine water timing may change in the future

LAKE UNION AND SHIP CANAL

SPECIFIC AREA	NO INWATER WORK	ALLOWABLE INWATER WORK
Ship Canal (from the Chittenden Locks to the east end of the Mountlake cut)	4/16 through 9/30	10/1 through 4/15
Lake Union	4/16 through 9/30	10/1 through 4/15

LAKE WASHINGTON

SPECIFIC AREA	NO INWATER WORK	ALLOWABLE INWATER WORK
South of I-90 within 1 mile Mercer Slough or Cedar River	1/1-7/15 <u>and</u> 8/1-11/15	7/16 through 7/31 <u>and</u> 11/16 through 12/31
South of I-90 further than 1 mile from Mercer Slough or Cedar River	1/1 through 7/15	7/16 through 12/31
Between I-90 and SR 520	5/1 through 7/15	7/16 through 4/30
North of SR 520, between SR 520 and a line drawn due west from Arrowhead Point	3/16 through 7/15	7/16 through 3/15
North of SR 520, north of a line drawn due west from Arrowhead Point	2/2 through 7/15 <u>and</u> 8/1 through 11/15	7/16 through 7/31 <u>and</u> 11/16 through 2/1

SAMMAMISH BASIN

SPECIFIC AREA	NO INWATER WORK	ALLOWABLE INWATER WORK
Mainstem Sammamish River	August 1 - November 15 <u>and</u> 2/2 through 7/15	7/16 through 7/31 <u>and</u> 11/16 through 2/1
Lake Sammamish - further than ½ mile from Issaquah Creek	January 1 through July 15	7/16 through 12/31
Lake Sammamish - within ½ mile of Issaquah Creek	August 1 - November 15 <u>and</u> January 1 - July 15	7/16 through 7/31 <u>and</u> 11/16 through 12/31
Issaquah Creek	August 1 through June 14	June 15 through July 31
Lower Cedar River	July 1 through August 31	Sept. 1 through June 30

COLUMBIA RIVER (general) 2/29 through 10/31

11/1 through 2/28

OTHERS

In general, use the WDFW work windows unless we have new information which conflicts with their dates.