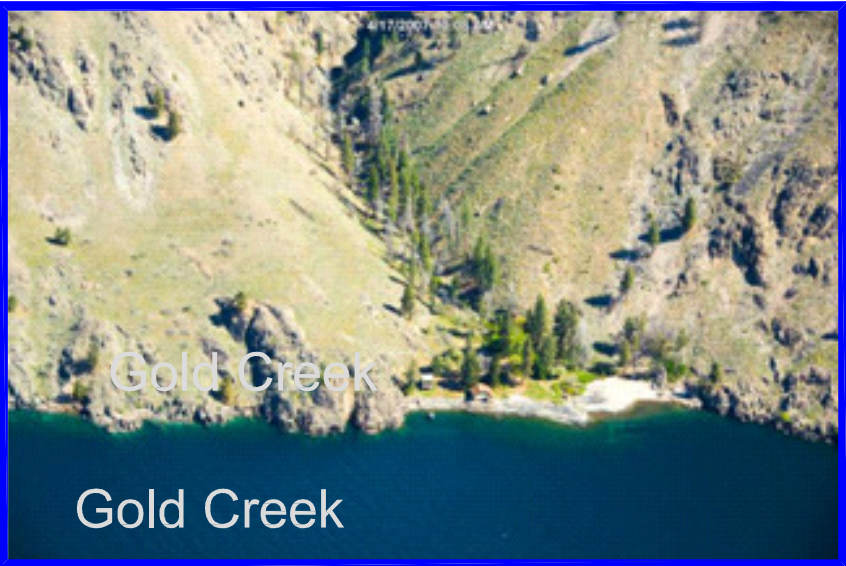
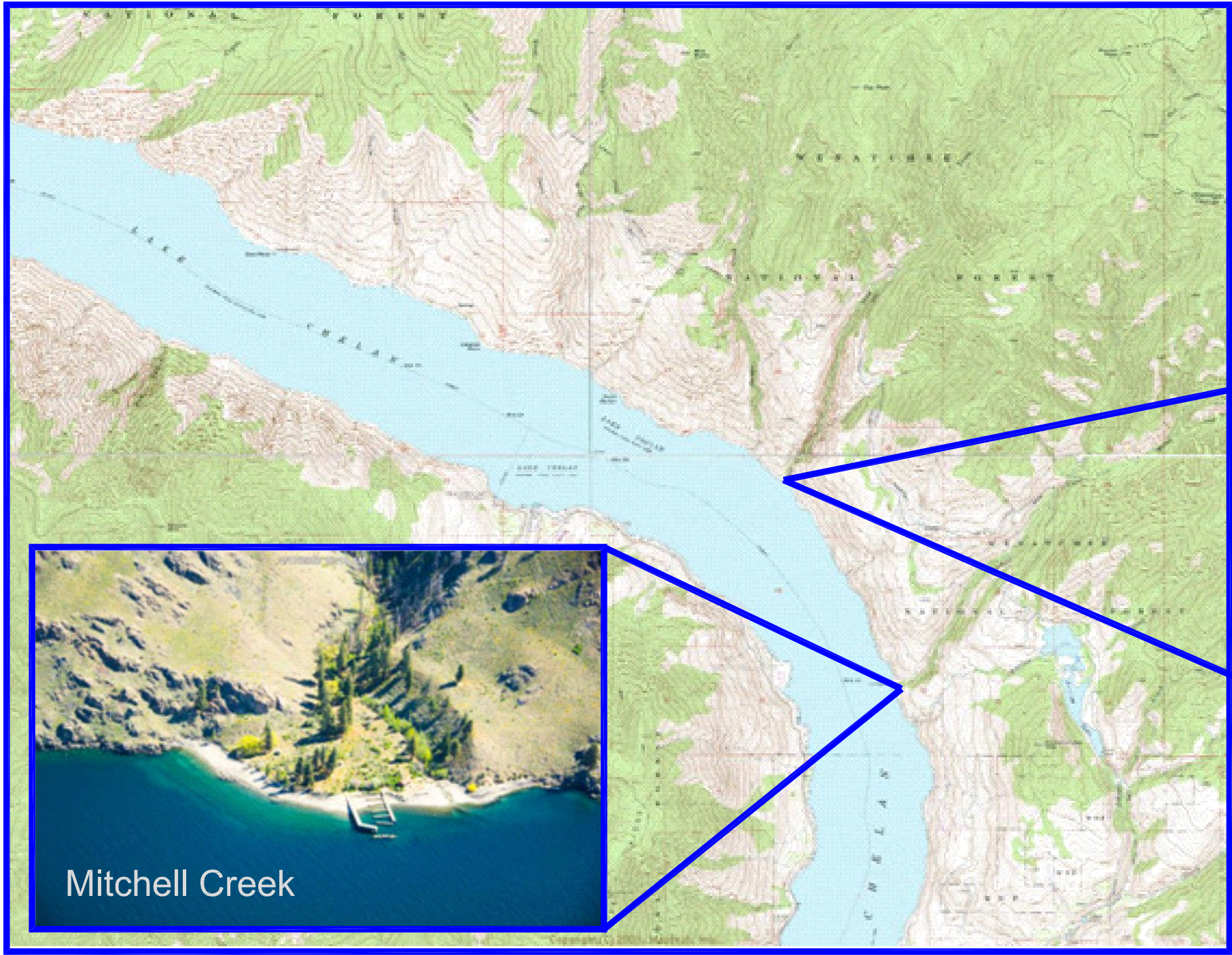


LAKE CHELAN TRIBUTARY FISH PASSAGE - FINAL DESIGN

DRAWING INDEX:

- 1. Site Maps
- 2. Drainage Areas
- 3. Mitchell Creek Site Plan
- 4. Mitchel Creek Profile
- 5. Gold Creek Site Plan
- 6. Gold Creek Profile



Consultant Team:
Fairbanks Environmental Services
Waterfall Engineering
GeoEngineers

LAKE CHELAN TRIBUTARY FISH PASSAGE

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

DESIGNED BY: Waterfall Engineering
DRAWN BY:
CHECKED BY:
APPROVED BY:
FILE:
DATE: 8/12/09

Mitchell and Gold Creeks

Site Map



2 and 100 Yr Flow, Fish Passage Design Flows and Channel Width Based on Drainage Area:

Site	Q2 ^a	Q100 ^a	Qfp ^b	Channel Width ^c
		(cfs)		(ft)
Mitchel Creek	155	1163	98	12
Gold Creek	222	1650	105	15

References: a) Sumioka, USGS, 1988
b) Rowland, WSU, 2001
c) Castro, Jackson, 2001

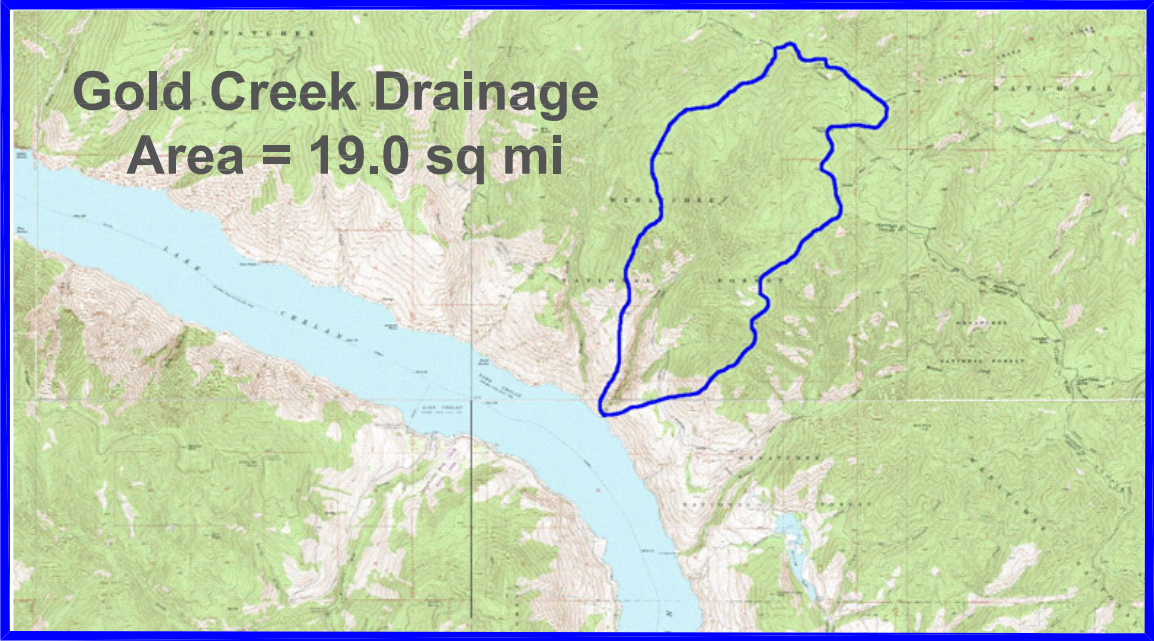
Note: This information is provided as background only.



Mitchell Creek View Upstream From Mouth



Mitchell Creek View Downstream Towards Lake Chelan



Gold Creek View Upstream From Mouth



Gold Creek View Downstream Towards Lake Chelan

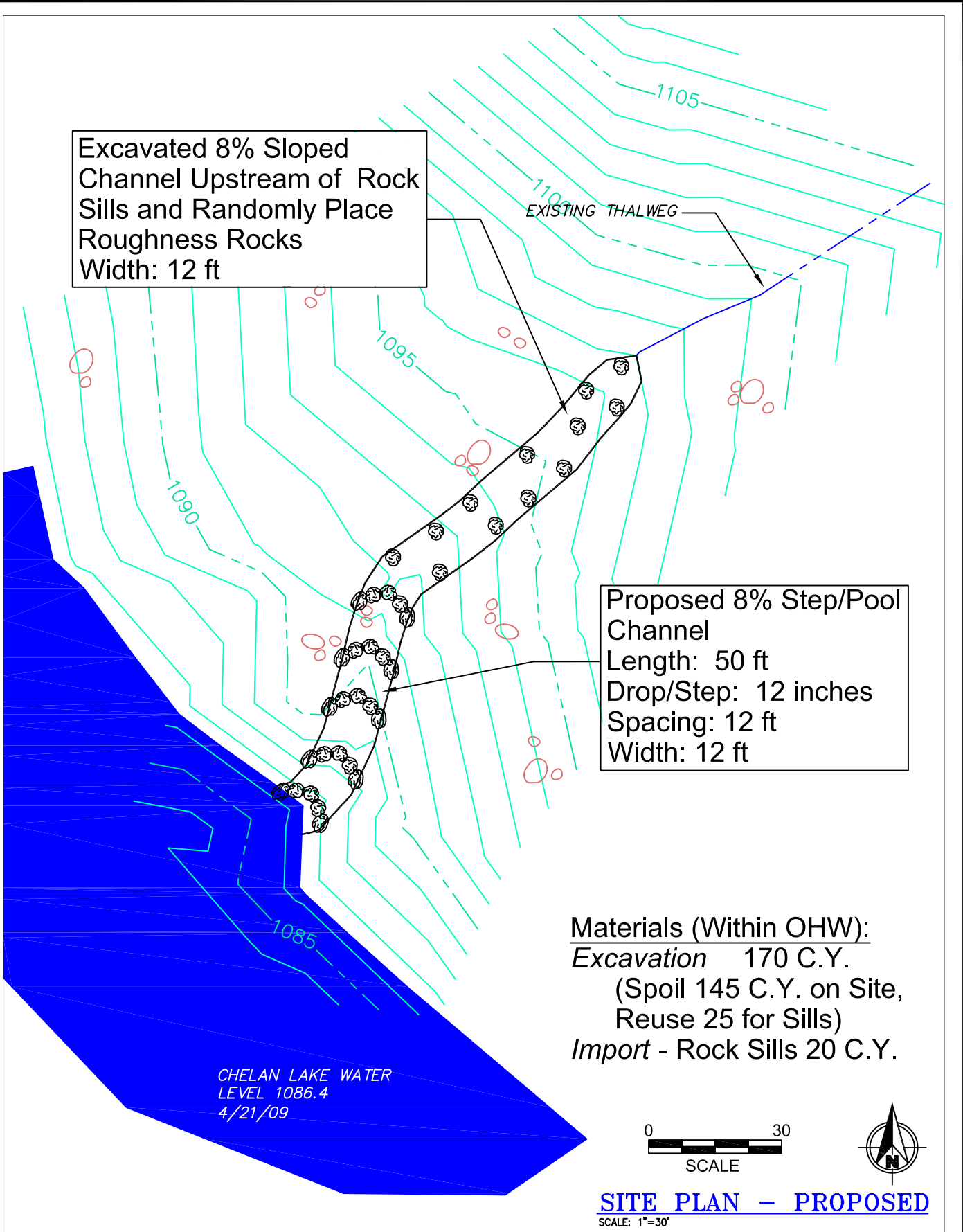
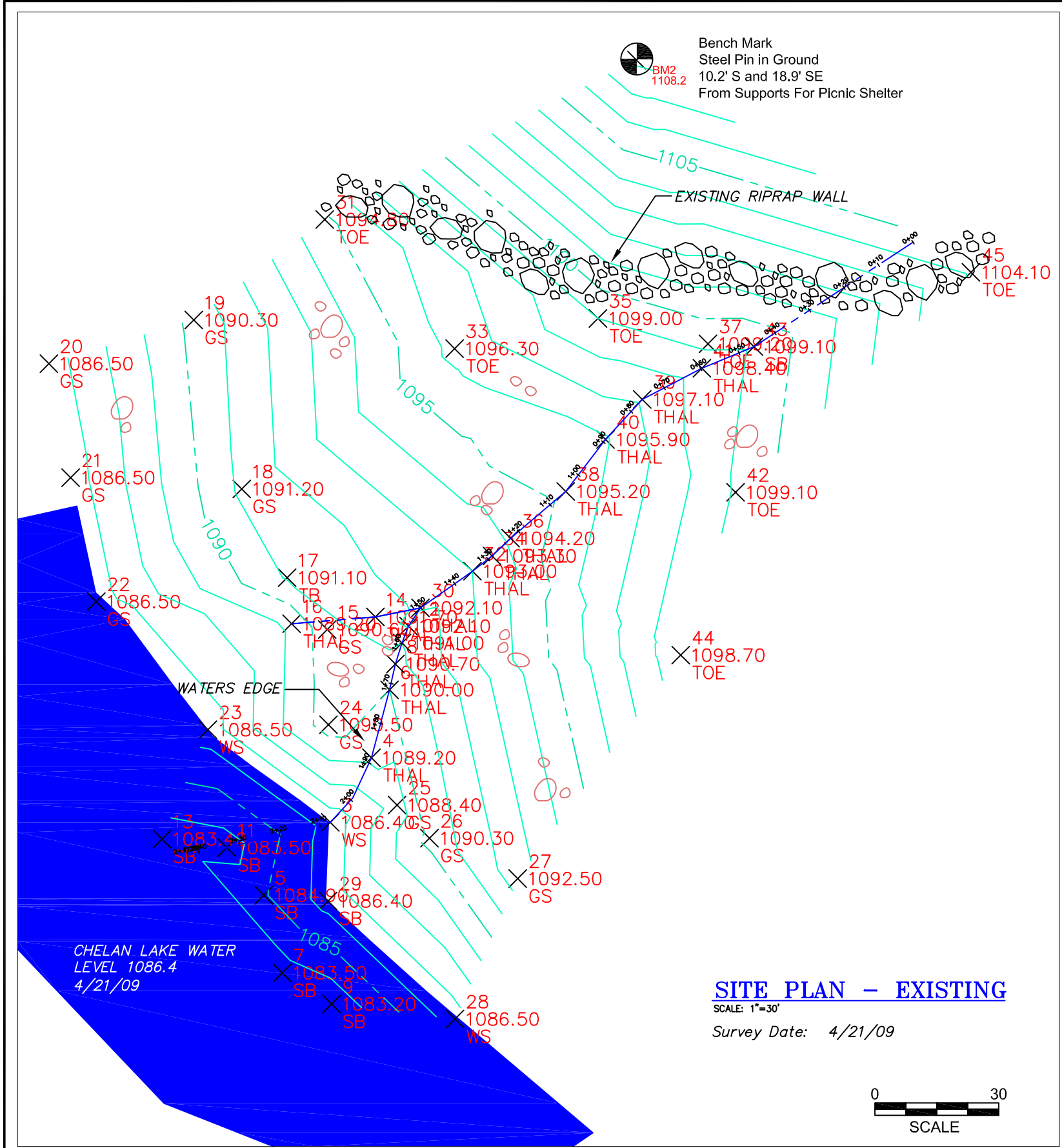
LAKE CHELAN TRIBUTARY FISH
PASSAGE

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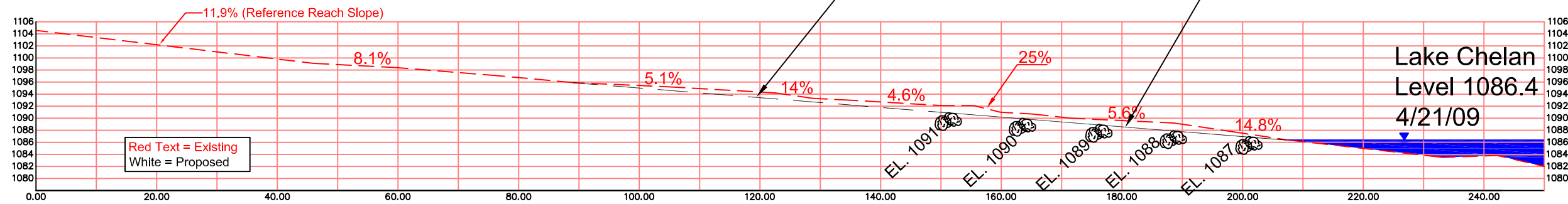
Mitchell and Gold Creeks

Drainage Areas and Photos



Excavate Channel Upstream of Rock Sills 60 ft (Elev. 1091 to Existing Grade (8% Slope). Place Select Boulders (12 to 24") From Excavation and Place Randomly at 6 to 8 ft O.C. Throughout Channel Bed and Banks For Roughness.

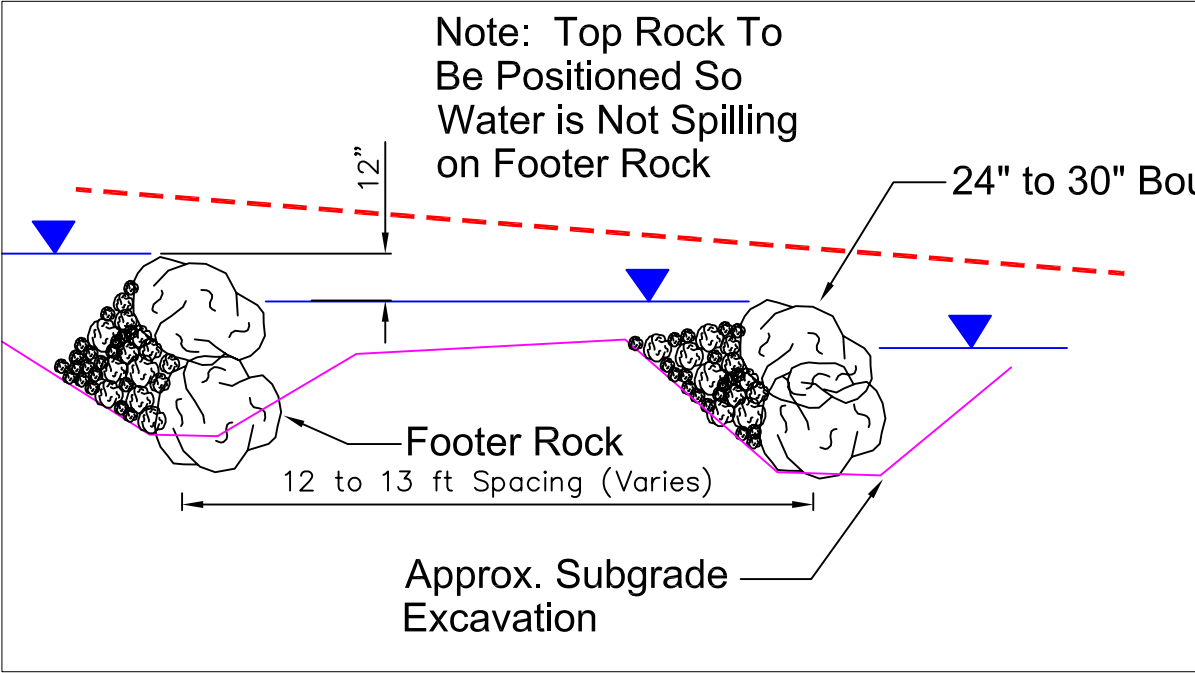
Proposed 8%
Step/Pool Profile
Length: 50 ft



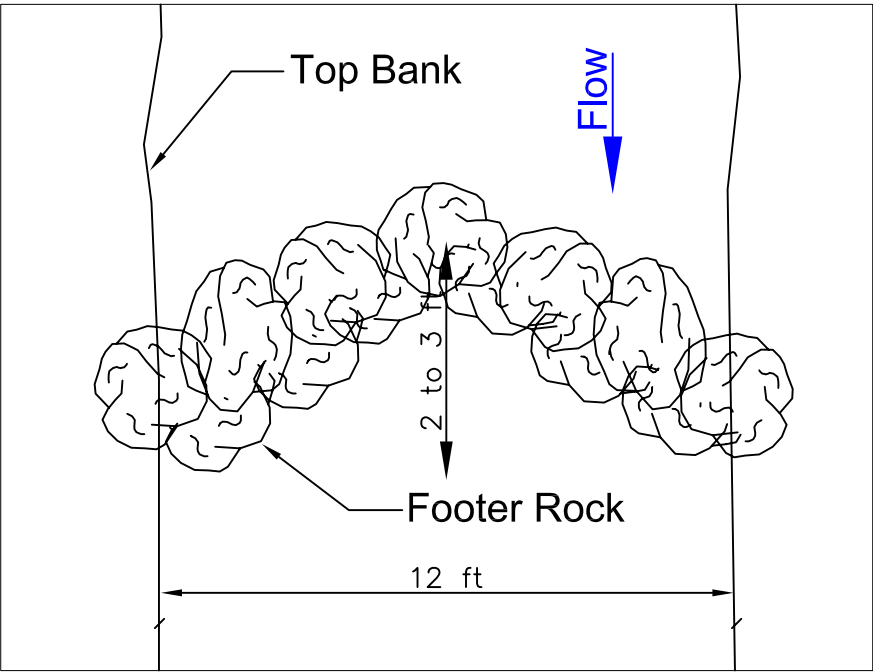
Mitchel Creek - Existing and Proposed Profile



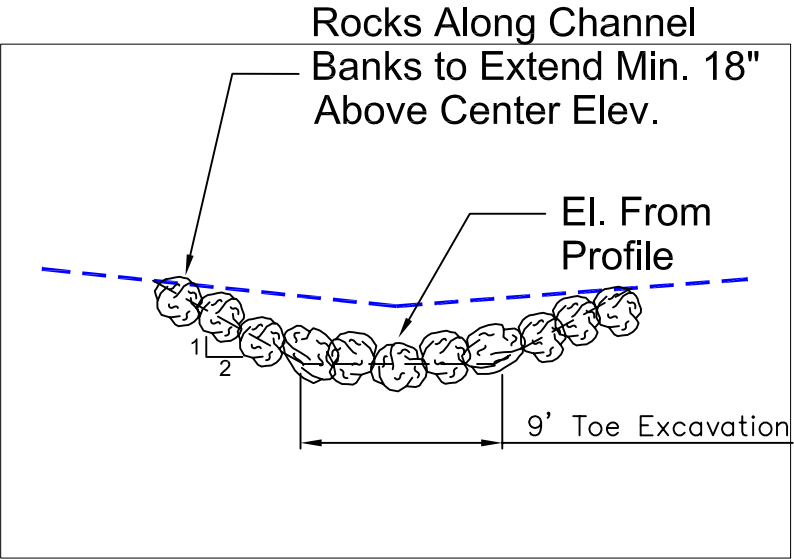
170 cu yds
excavation



Typical Rock Sill Profile Detail - Scale 1" = 4'



Typical Rock Sill Plan Detail - Scale 1" = 4'



Typical Rock Sill Section Detail
NTS

Note: Boulders to be placed in the upstream direction, buttressed against downstream boulders and partially resting on footer rocks. Backfill upstream side with select (finer material to seal upstream of boulders) with excavated material.

LAKE CHELAN TRIBUTARY FISH PASSAGE

REVISIONS				
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FILE: NOTED
DATE: 8/12/09

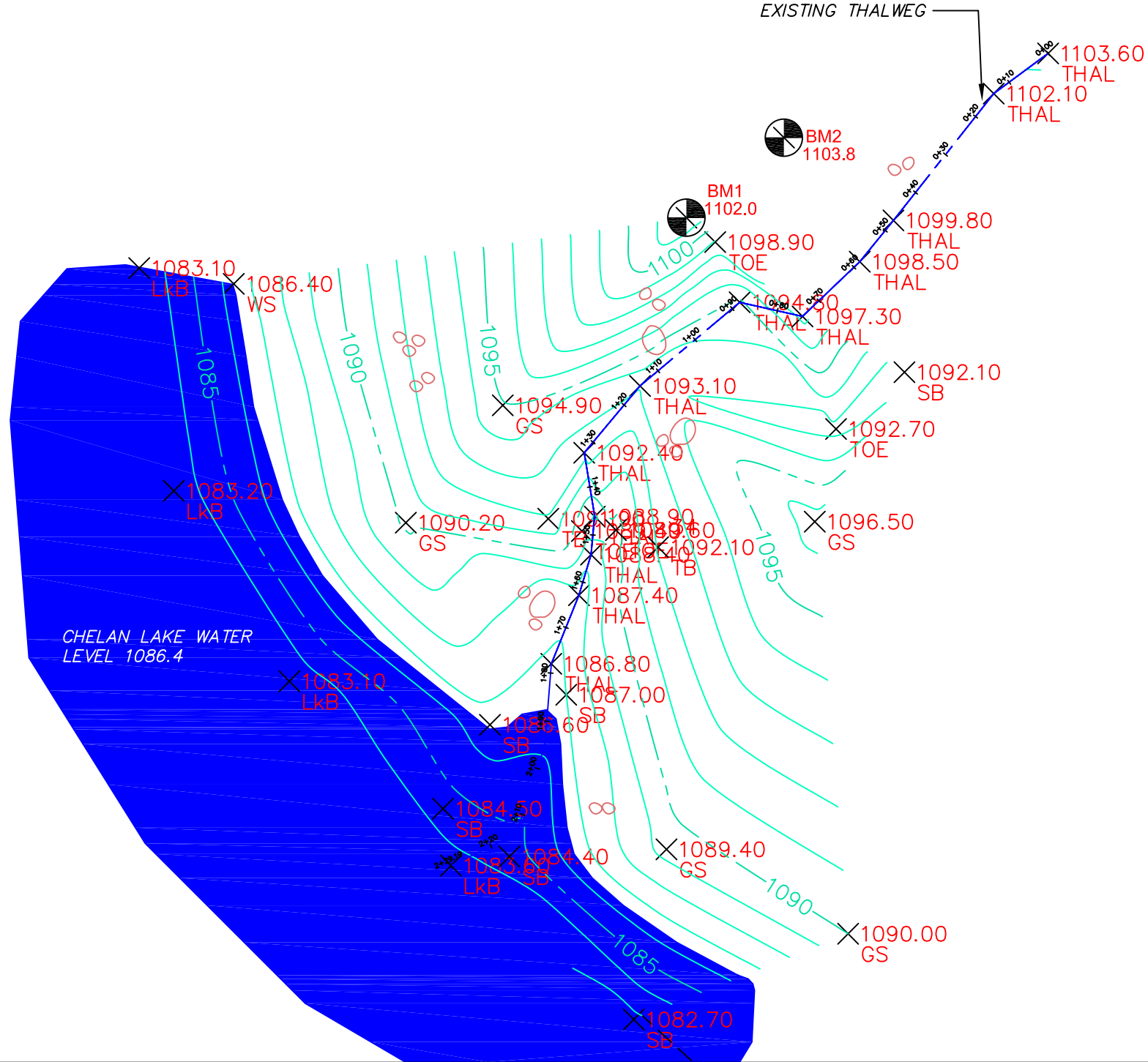
Mitchell Creek

PROFILE

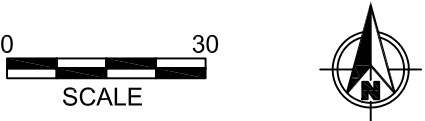
SITE PLAN - EXISTING

SCALE: 1"=30'

Survey Date: 4/21/09

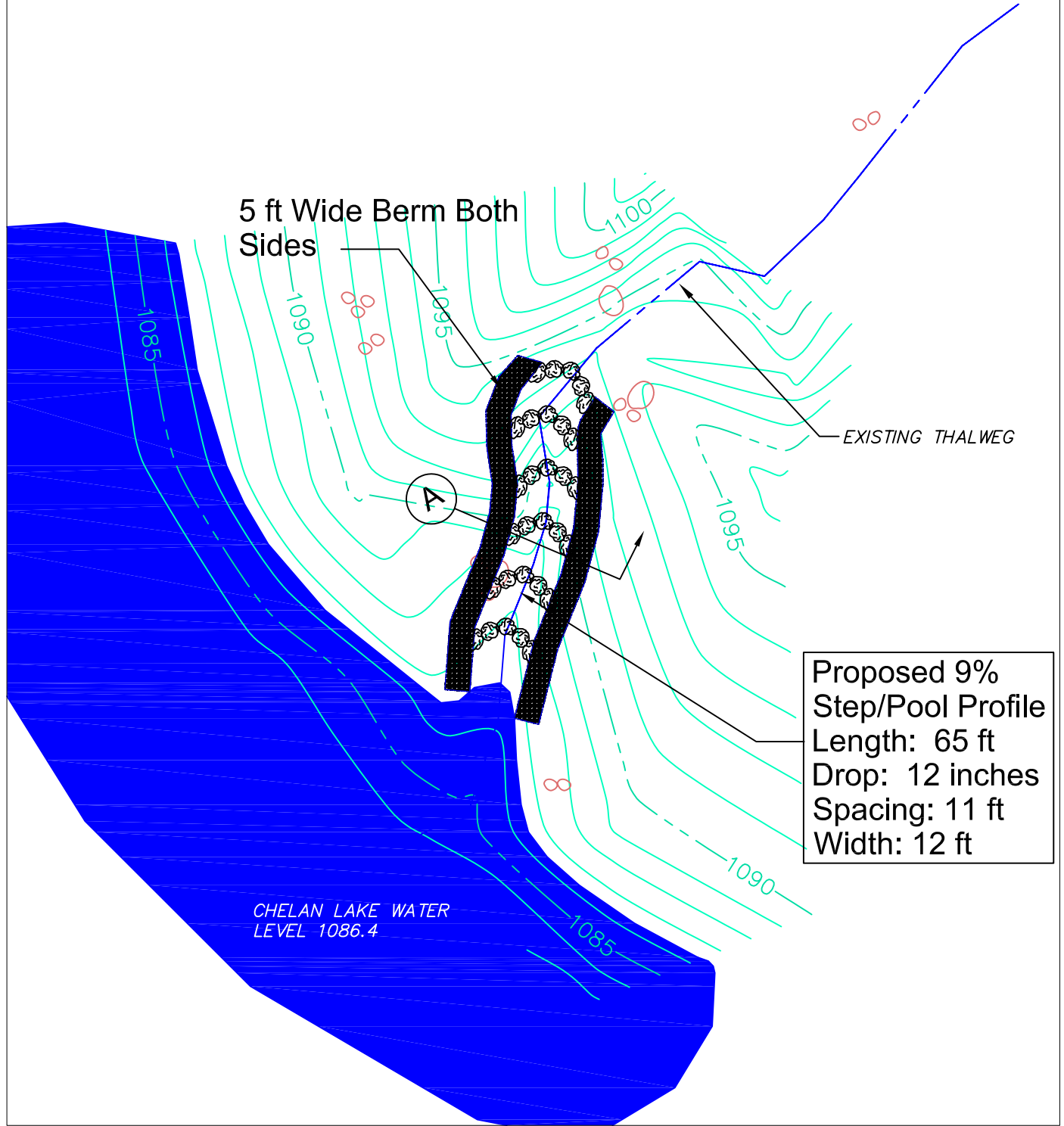


Materials (Within OHW):
Excavation 30 C.Y.
(Spoil 30 C.Y. on Site,
Reuse for Sills)
Import - Rock Sills 43 C.Y.



SITE PLAN - PROPOSED

SCALE: 1"=30'



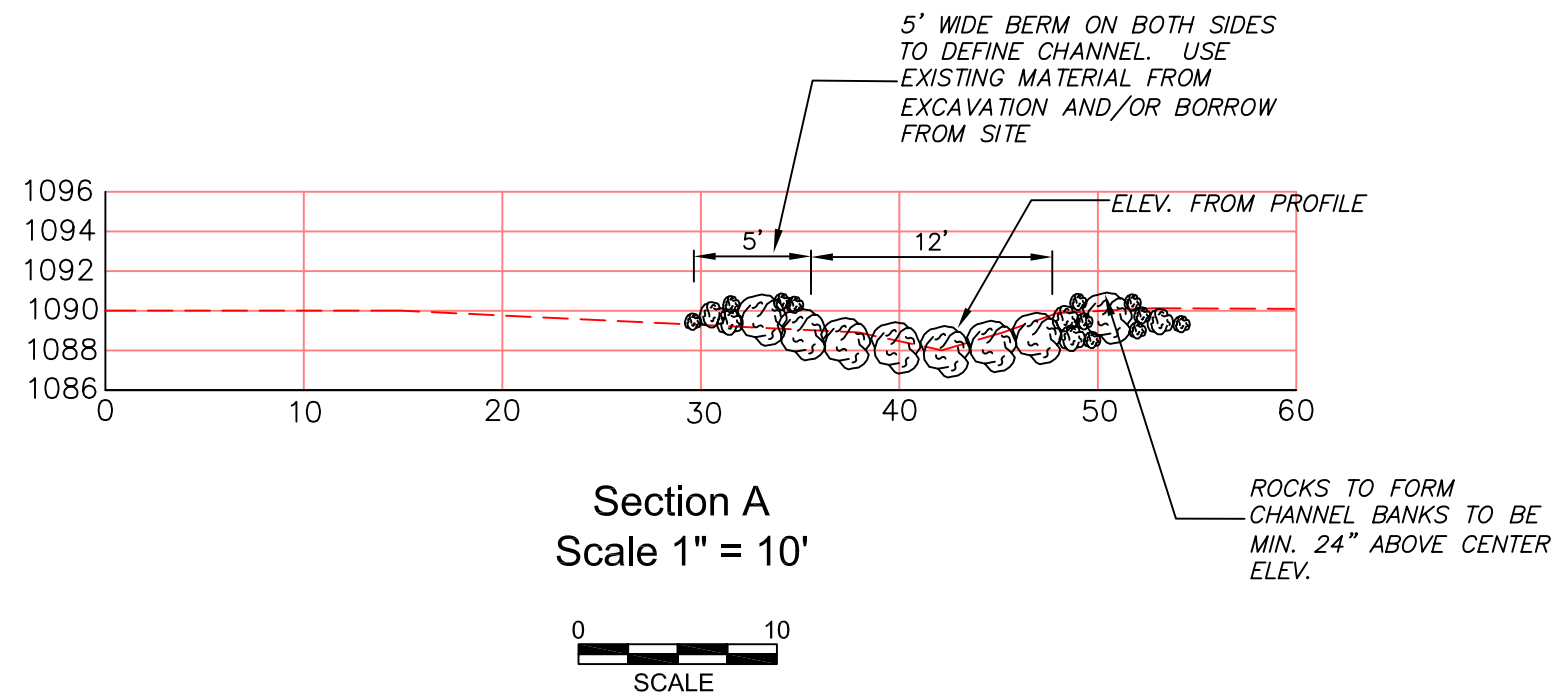
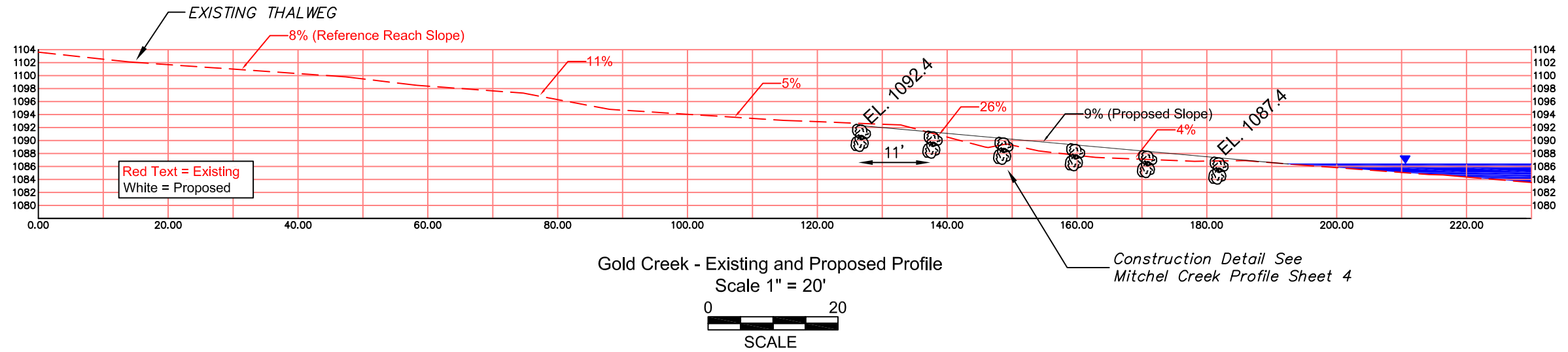
LAKE CHELAN TRIBUTARY FISH
PASSAGE

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

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CHECKED BY: -
APPROVED BY: -
FILE: NOTED
DATE: 8/12/9

Gold Creek

SITE PLAN



LAKE CHELAN TRIBUTARY FISH PASSAGE

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

DESIGNED BY: Waterfall Engineering
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CHECKED BY: -
APPROVED BY: -
FILE: NOTED
DATE: 8/12/9

Gold Creek

PROFILES

SHEET NO. 6 OF 6