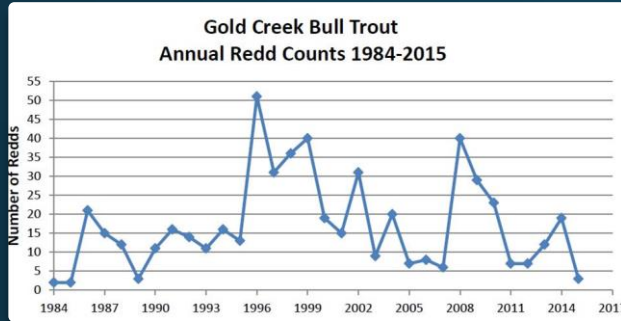




#15-1153

# Gold Creek Instream Design Project

# Need...



## Severely Depressed Population

High Redd Count = 51 (1996)

Low Redd Count = 3 (2015)

## Seasonal Dewatering

Normal water years  $\geq 1$  mile

Late July to late September

- Increased mortality
- Migration (adult/juvenile)

## Habitat Degradation

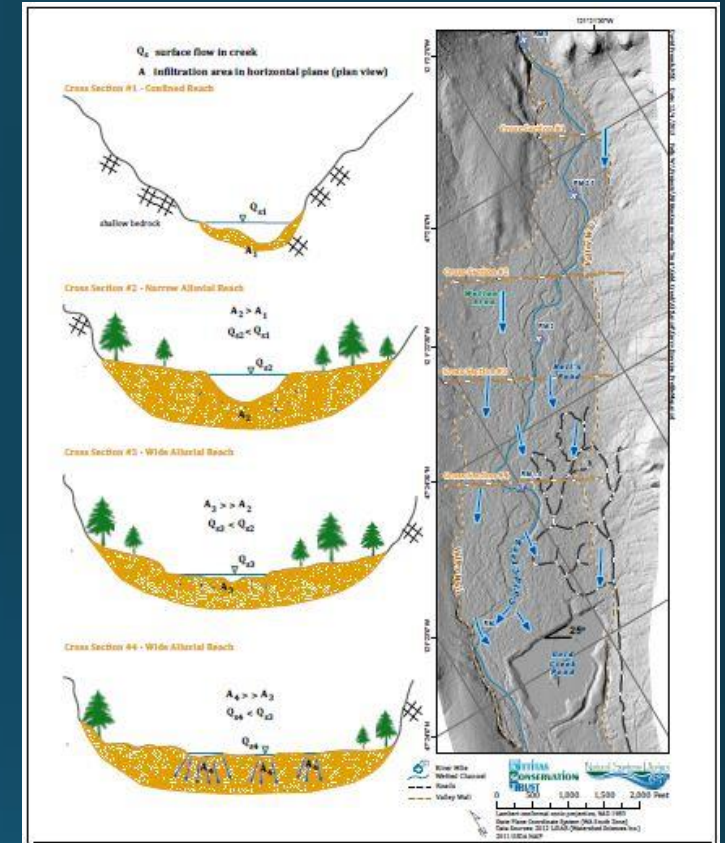
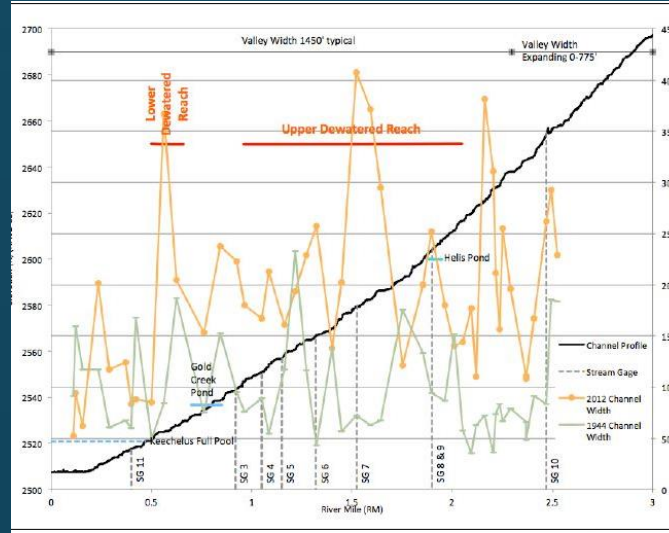
Anthropogenic Causes

- Riparian logging
- Gravel mining
- Development in CMZ and floodplain

# Work Completed to Date...

## Gold Creek Habitat Assessment & Conceptual Design Project #12-1306

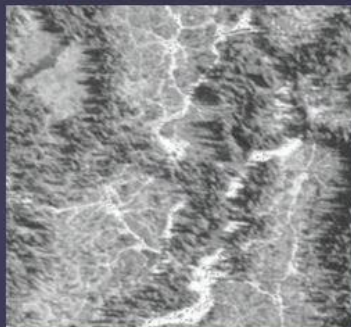
- Data Inventory & Gap Analysis
- Hydrologic & Hydraulic Assessment
- Geomorphic Assessment
- Habitat Assessment
- Conceptual Design



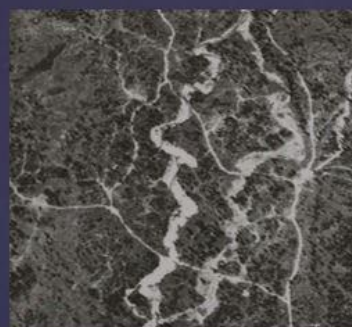
1944



1957



1970



1985

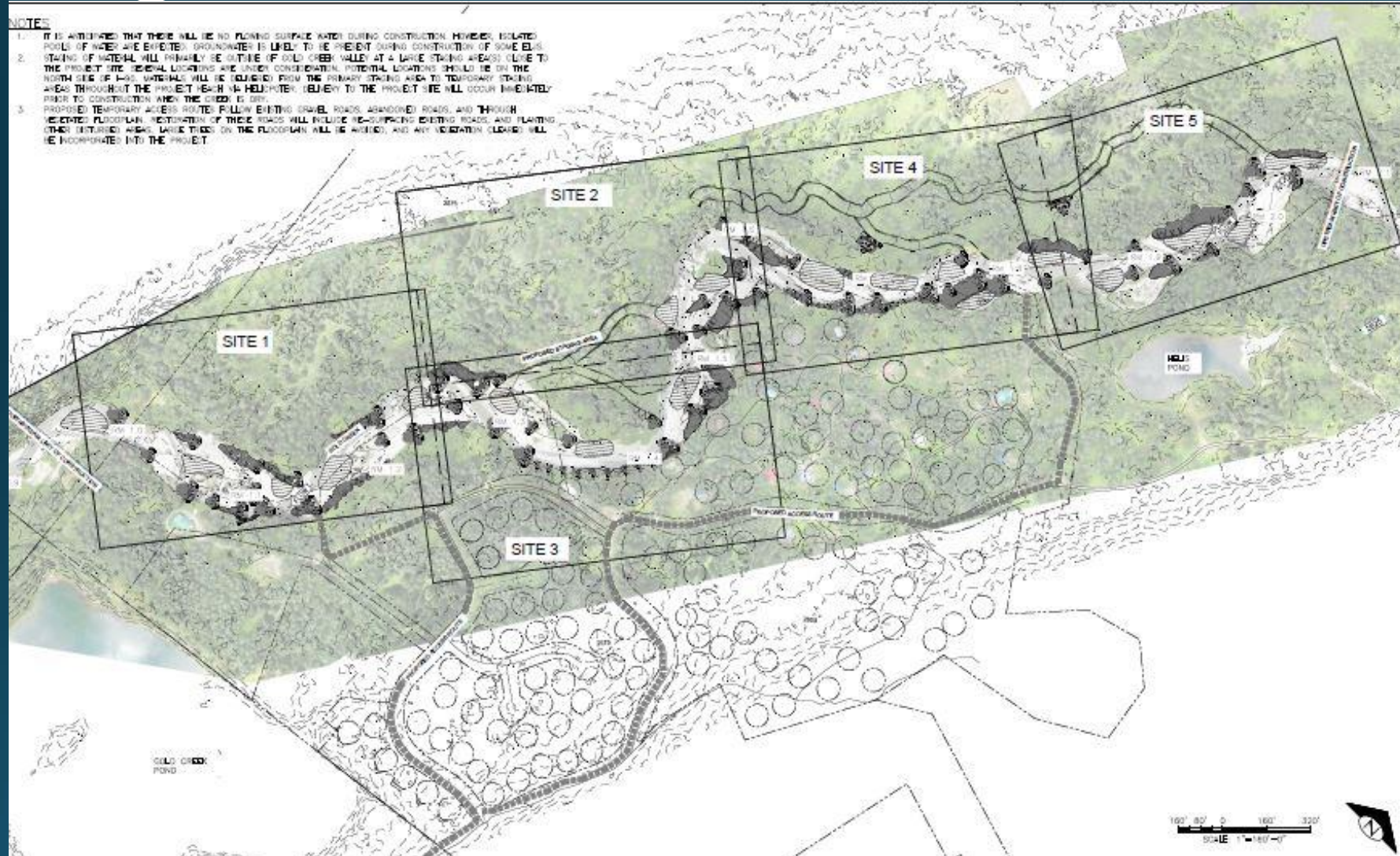


# Design Area

## 60% Instream Habitat Design

### NOTES

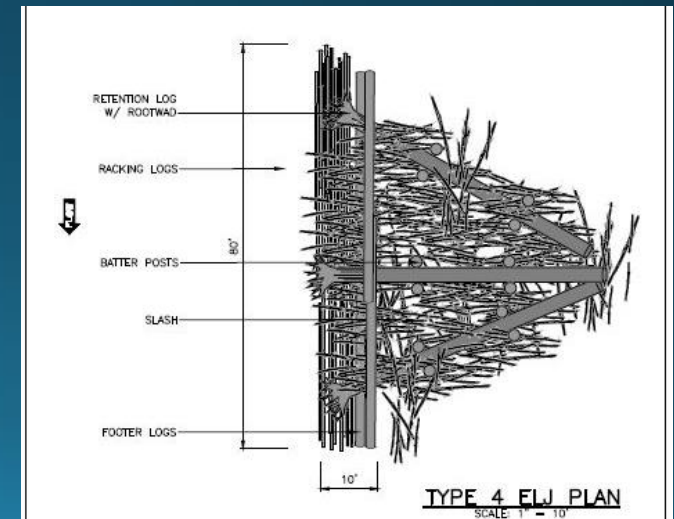
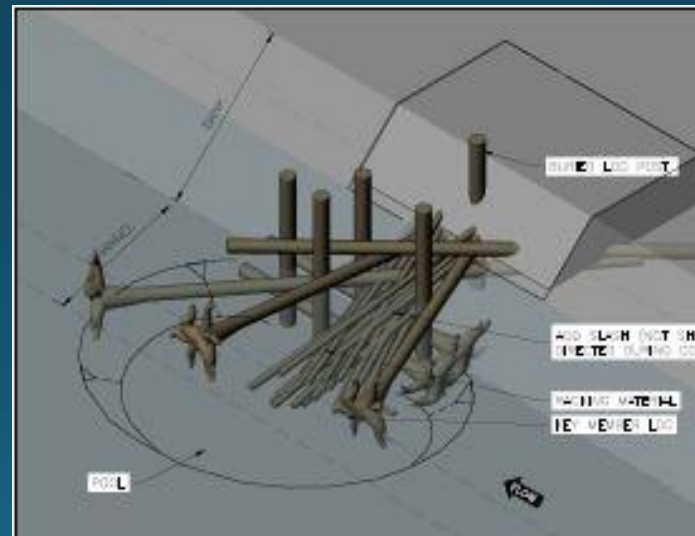
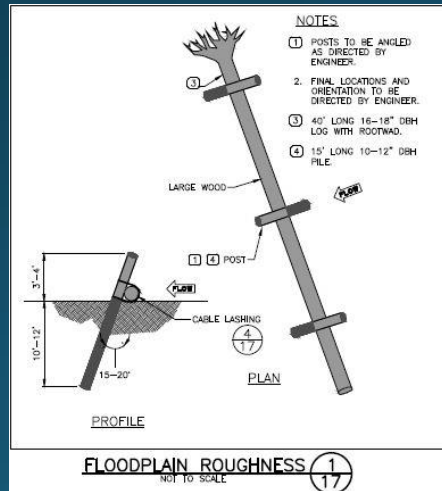
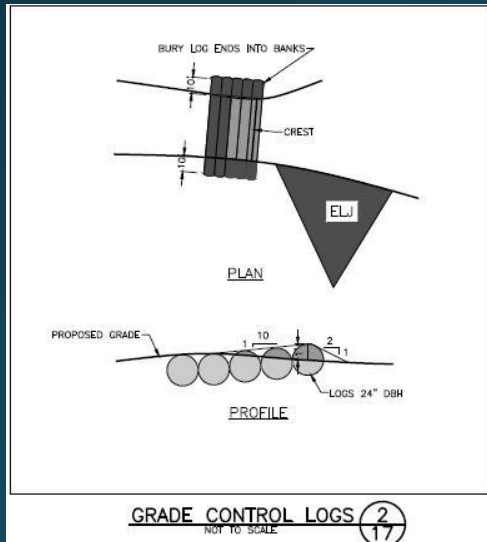
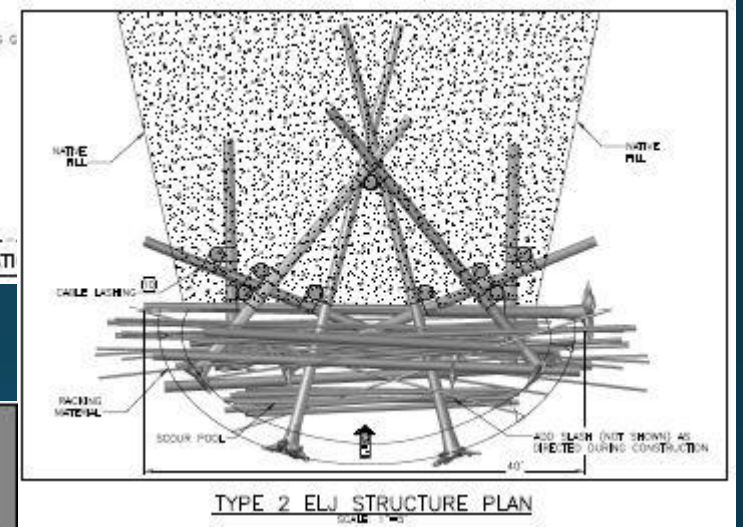
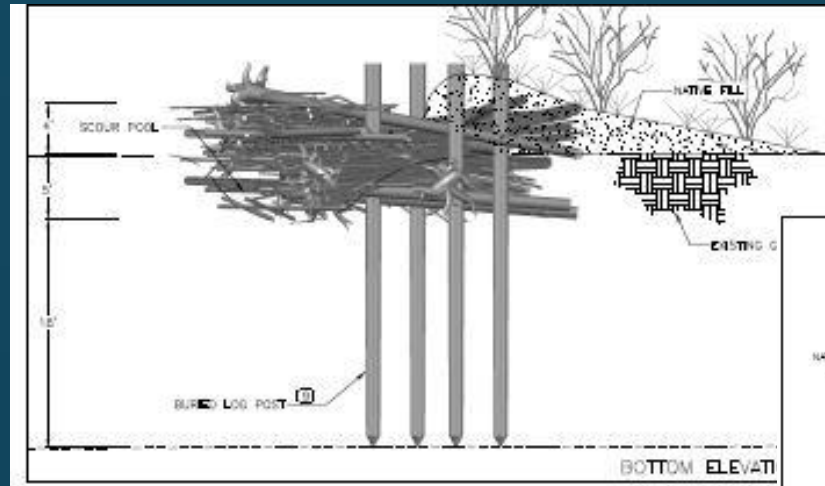
1. IT IS ANTICIPATED THAT THERE WILL BE NO FLOWING SURFACE WATER DURING CONSTRUCTION. HOWEVER, ISOLATED POOLS OF WATER ARE EXPECTED. GROUNDWATER IS LIKELY TO BE PRESENT DURING CONSTRUCTION OF SOME ELS.
2. STAGING OF MATERIAL WILL PRIMARILY BE OUTSIDE OF GOLD CREEK VALLEY AT A LARGE STAGING AREA(S) CLOSE TO THE PROJECT SITE. SEVERAL LOCATIONS ARE UNDER CONSIDERATION. POTENTIAL LOCATIONS SHOULD BE ON THE NORTH SIDE OF E-480. MATERIALS WILL BE DELIVERED FROM THE PRIMARY STAGING AREA TO TEMPORARY STAGING AREAS THROUGHOUT THE PROJECT AREA VIA HELICOPTER. DELIVERY TO THE PROJECT SITE WILL OCCUR IMMEDIATELY PRIOR TO CONSTRUCTION WHEN THE CREEK IS DRY.
3. PROPOSED TEMPORARY ACCESS ROUTE: FOLLOW EXISTING GRAVEL ROADS, ABANDONED ROADS, AND THROUGH DESIGNATED FLOODPLAIN. RESTORATION OF THESE ROADS WILL INCLUDE RE-SUPPORTING EXISTING ROADS, AND PLANTING OTHER DISTURBED AREAS. LAKE TIES ON THE FLOODPLAIN WILL BE AVOIDED, AND ANY VEGETATION CLEARING WILL BE INCORPORATED INTO THE PROJECT.



# Designs Completed to Date

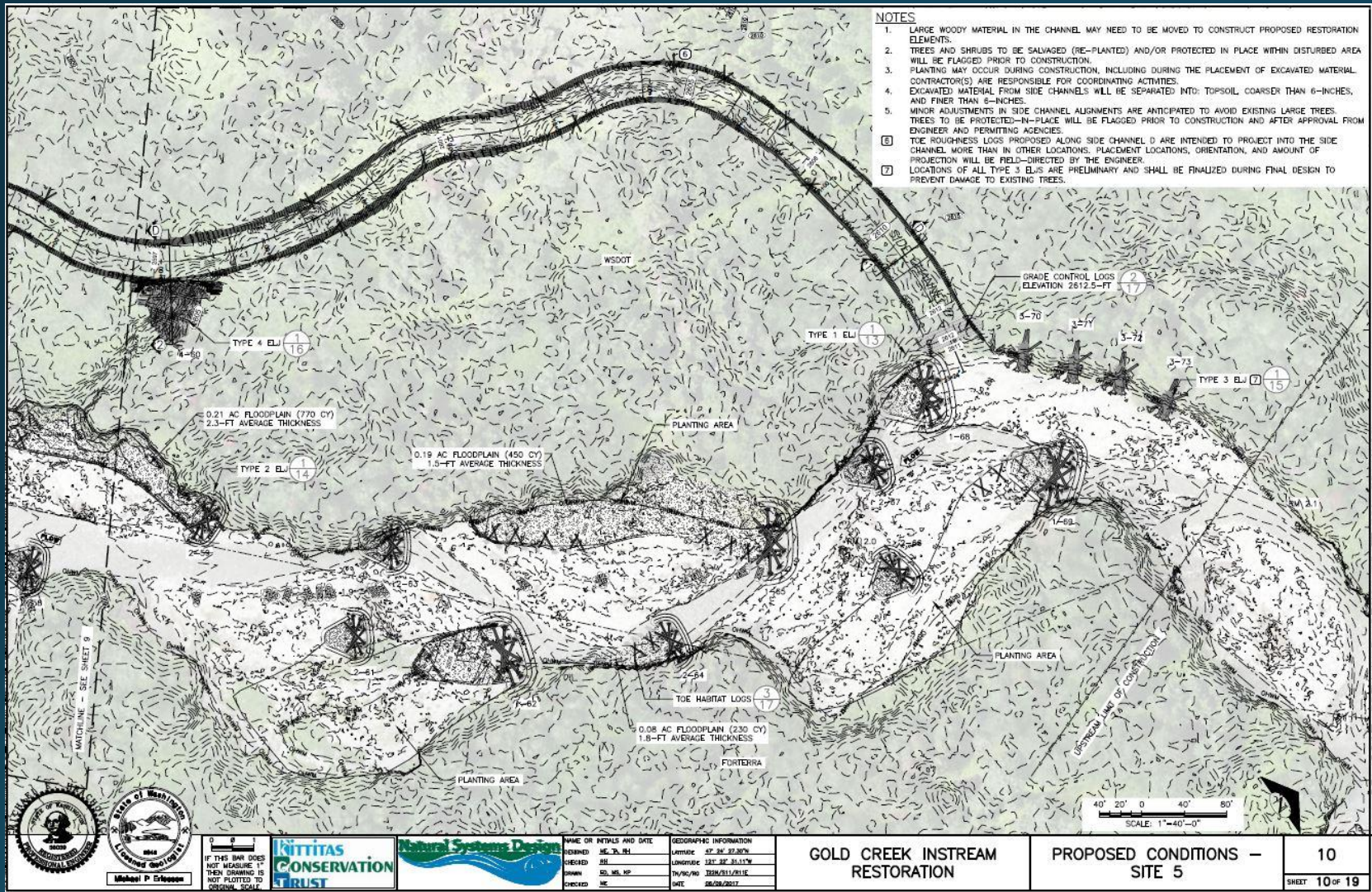
## Gold Creek Instream Habitat Design #15-1153

- 30% & 60% Design
- Design Report
- Flow Modeling
- Risk Assessment
- Public Engagement
- Cost Estimate



# 60% Designs

## Site 5 – Upstream Extent



- Side Channel – D
  - Activates when flow in creek = > 1" Depth
  - Inlet elevation set with grade control logs
- Floodplain restoration elements
- Engineered Log Jams
- Upstream of eastern floodplain development



IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT PLOTTED TO SCALE.



|                           |                               |
|---------------------------|-------------------------------|
| NAME OR INITIALS AND DATE | GEOGRAPHIC INFORMATION        |
| DRAWN BY: MS, MP          | Upriver - 42° 34' 22.20" N    |
| CHECKED BY: SH            | Downriver - 121° 34' 31.15" W |
| DRAWN BY: MS, MP          | TW/RS/NO 12/8/2017/2/13/18    |
| CHECKED BY: ME            | DATE: 06/08/2017              |

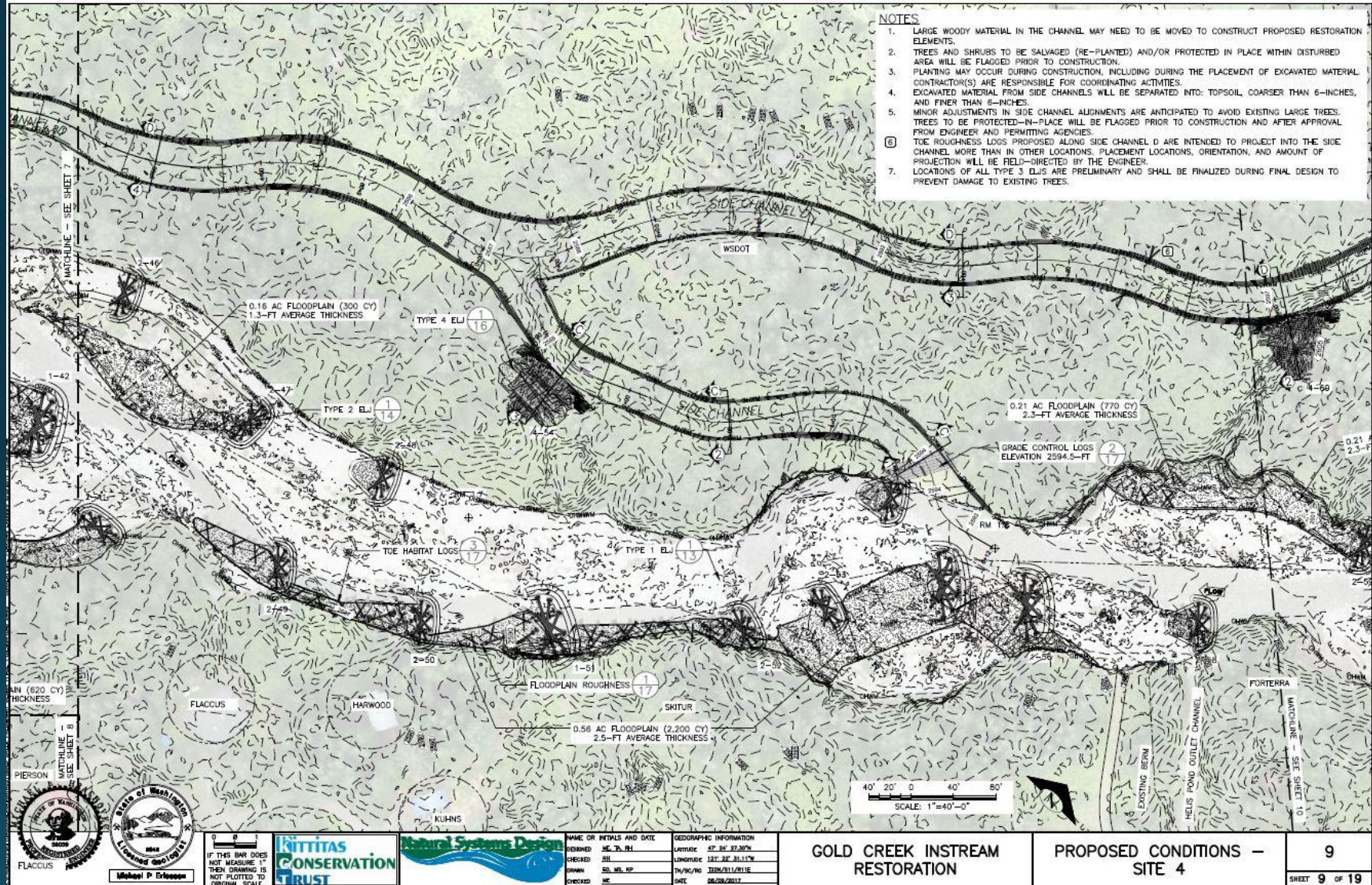
**GOLD CREEK INSTREAM RESTORATION**

**PROPOSED CONDITIONS – SITE 5**

10

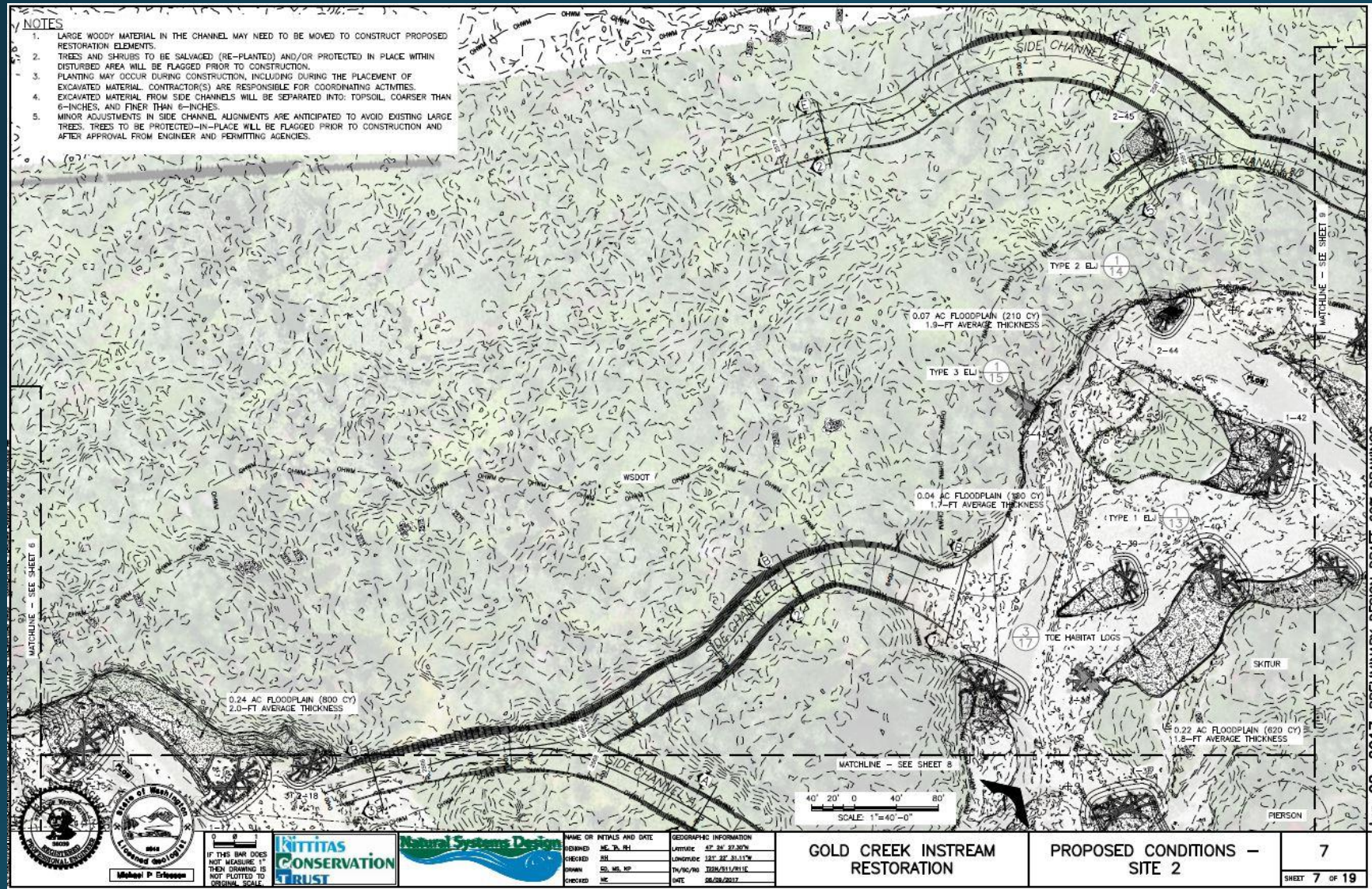
SHEET 10 OF 19

# 60% Designs Site 4



- Side Channel C Inlet
  - Connects to Side Channel D
  - Continued side channel excavation
- Floodplain restoration
- Engineered log jams
- Adjacent to Development

# 60% Designs Site 2



- Side Channel D Excavation Extent
- Side Channel B Inlet
  - Additional flood relief channel
- Floodplain Restoration
- Engineered Log Jams

Jun 08, 2017 PRELIMINARY DESIGN DRAFT 60% DRAWINGS

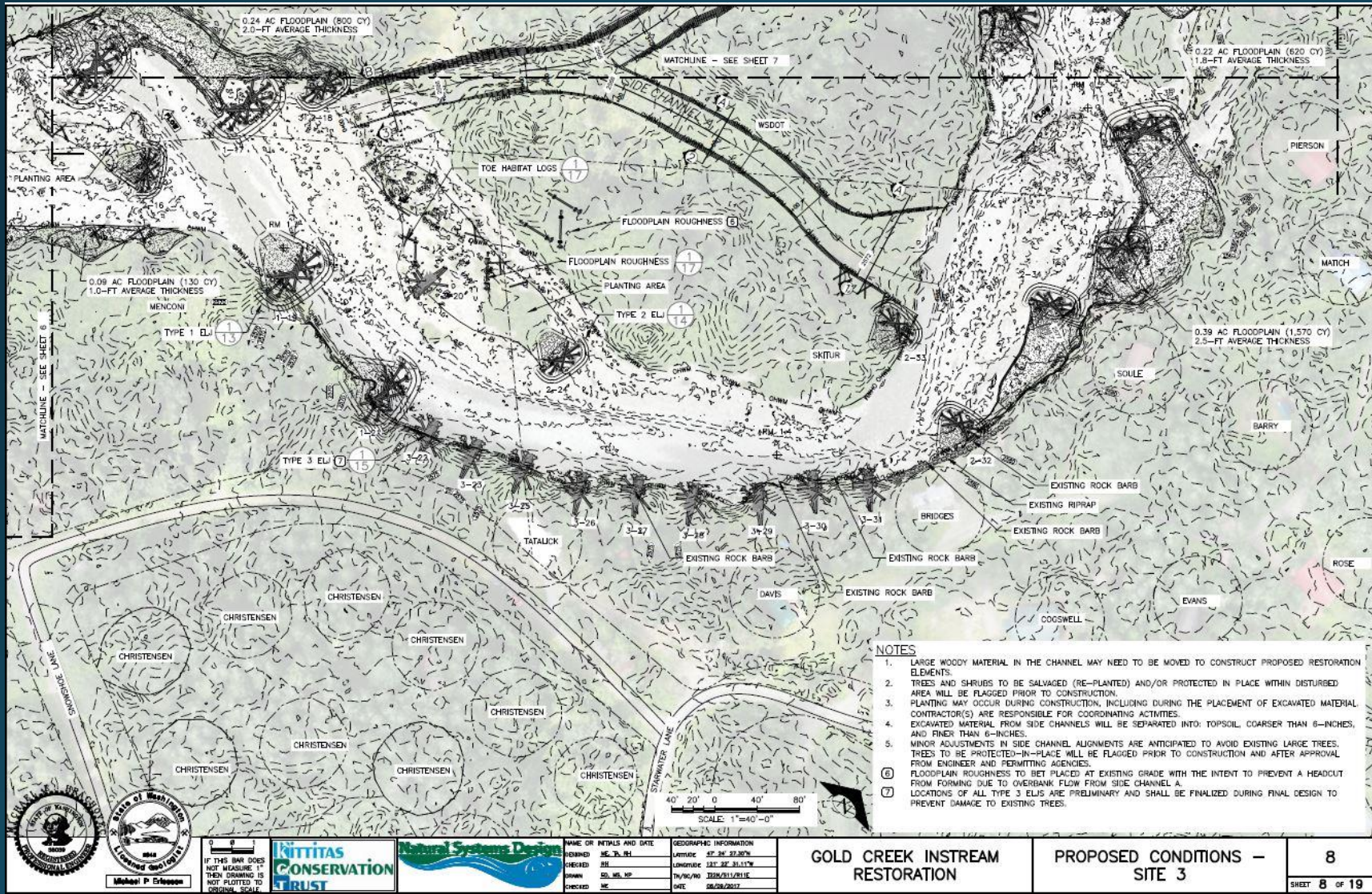


| NAME OR INITIALS AND DATE |            | GEOGRAPHIC INFORMATION |                 |
|---------------------------|------------|------------------------|-----------------|
| DESIGNED                  | ME, PL, JH | LAYOUT                 | 27.26.22.2024   |
| DRAWN                     | SH         | LOWERSIDE              | 1317 SP 31.117W |
| CHECKED                   | SO, MS, NP | TN/NO/NO               | 228/211/211E    |
|                           | MC         | DATE                   | 28/08/2017      |

|                                 |                              |               |
|---------------------------------|------------------------------|---------------|
| GOLD CREEK INSTREAM RESTORATION | PROPOSED CONDITIONS – SITE 2 | 7             |
|                                 |                              | SHEET 7 OF 19 |



# 60% Designs Site 3



Jun 08, 2017 PRELIMINARY DESIGN DRAFT 60% DRAWINGS

- Side Channel A Inlet
  - Additional Flood Relief
- Flood Plain Restoration
- Engineered Log Jams
- Special consideration due to high velocity and bank erosion



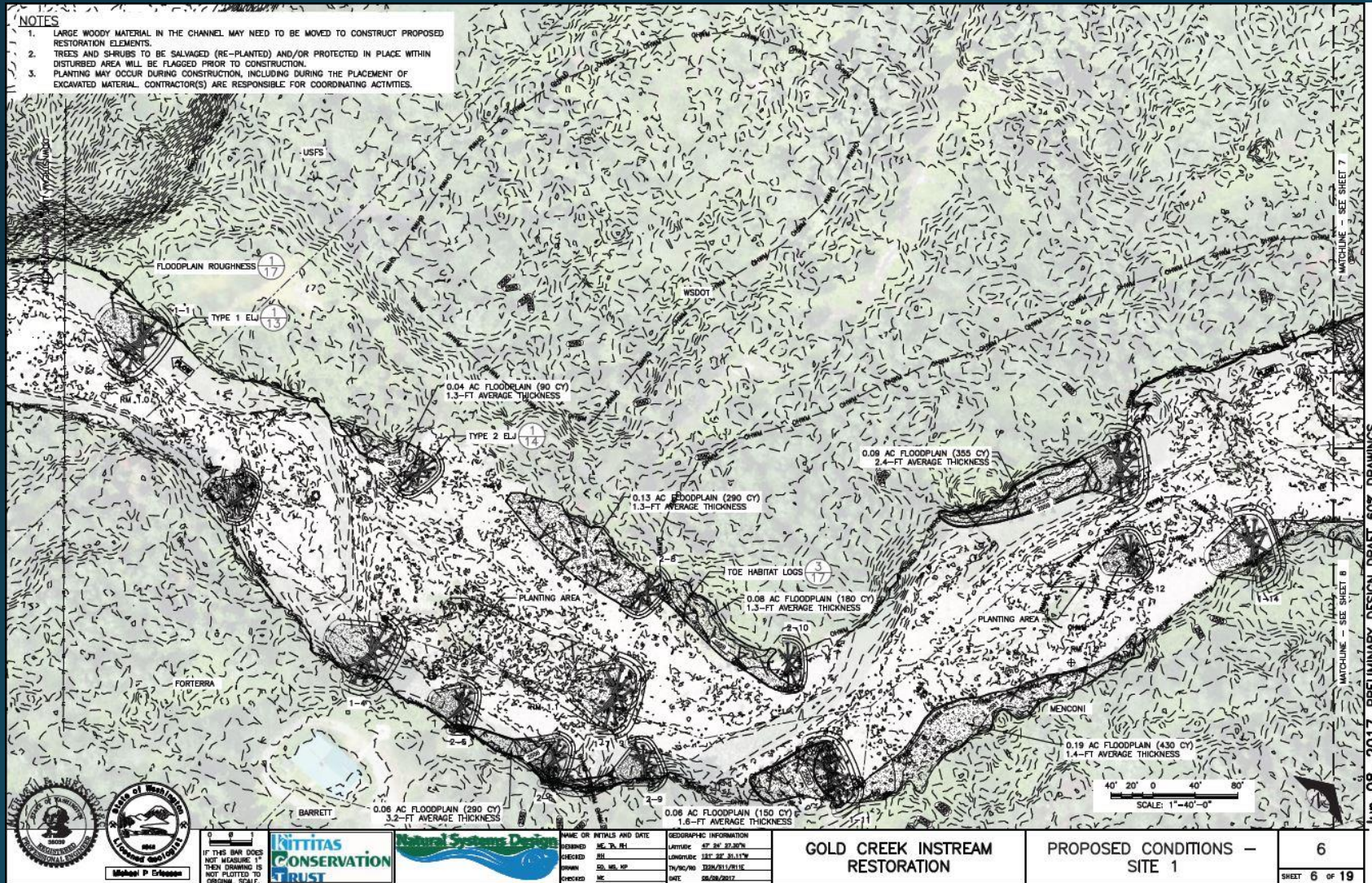
|                           |          |    |      |
|---------------------------|----------|----|------|
| NAME OR INITIALS AND DATE | DESIGNED | BY | DATE |
| GEOGRAPHIC INFORMATION    | CHECKED  | BY | DATE |
| PROJECT INFORMATION       | DRAWN    | BY | DATE |
|                           | CHECKED  | BY | DATE |

**GOLD CREEK INSTREAM RESTORATION**

**PROPOSED CONDITIONS - SITE 3**

**8**  
SHEET 8 OF 19

# 60% Designs Site 1 – Downstream Extent



- Water in western floodplain returns to creek
- Floodplain Restoration
- Engineered Log Jams



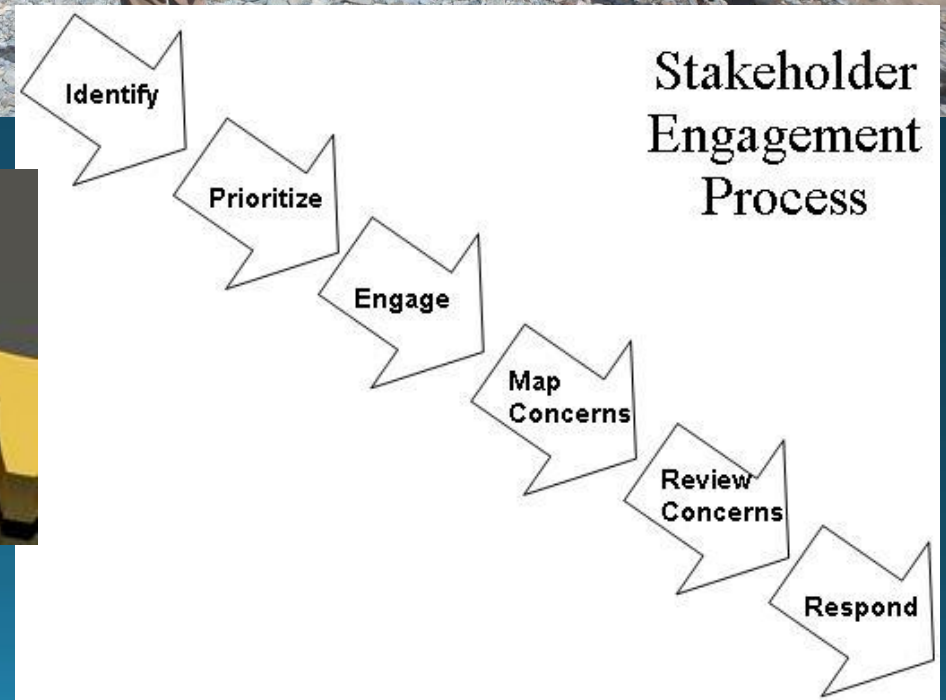
# Stakeholder Involvement

KCT has been actively engaged with...

- Local landowners
- Partner agencies
- Bull Trout Working Group
- Partner Non-profits

Communication includes...

- Meetings
- Periodic updates
- Individual landowner meetings
- Access to ftp site
- Numerous phone calls & email messages



# #17-1170 Project Goals

## Final (100%) Design - Instream Elements

- Floodplain Reconnection
- Instream Wood
- Stabilize Creek Channel
- Revegetation of Riparian Areas
- Increase ground and surface water connectivity

## Permitting

- Secure all required permits
- Shovel ready for implementation 2020
- Increase funding potential



# Restoration Strategy – Instream Elements

- Complete 100% Designs
  - Sediment Transport Model
  - Continued Modeling
- Complete Permitting
- Shovel Ready
- 2020 Begin Construction (funding and permitting dependent)
- Post Project – Continue surface and ground water monitoring
- Work with landowners throughout project monitoring



# Restoration Strategy – Gold Creek Pond



- 2017 Design Charrette
  - Refinement of Conceptual Design
  - Technical Working Group (primary audience)
  - Full Day
- Ensure designs complement instream restoration strategy
- Clear communication regarding responsibilities for Pond site and restoration strategies

# Restoration of Natural Processes

