

Interstate-Callahan
Upper and Lower Rock Dumps
RA Construction Project

East Fork Ninemile Creek, Idaho

May 3, 2016

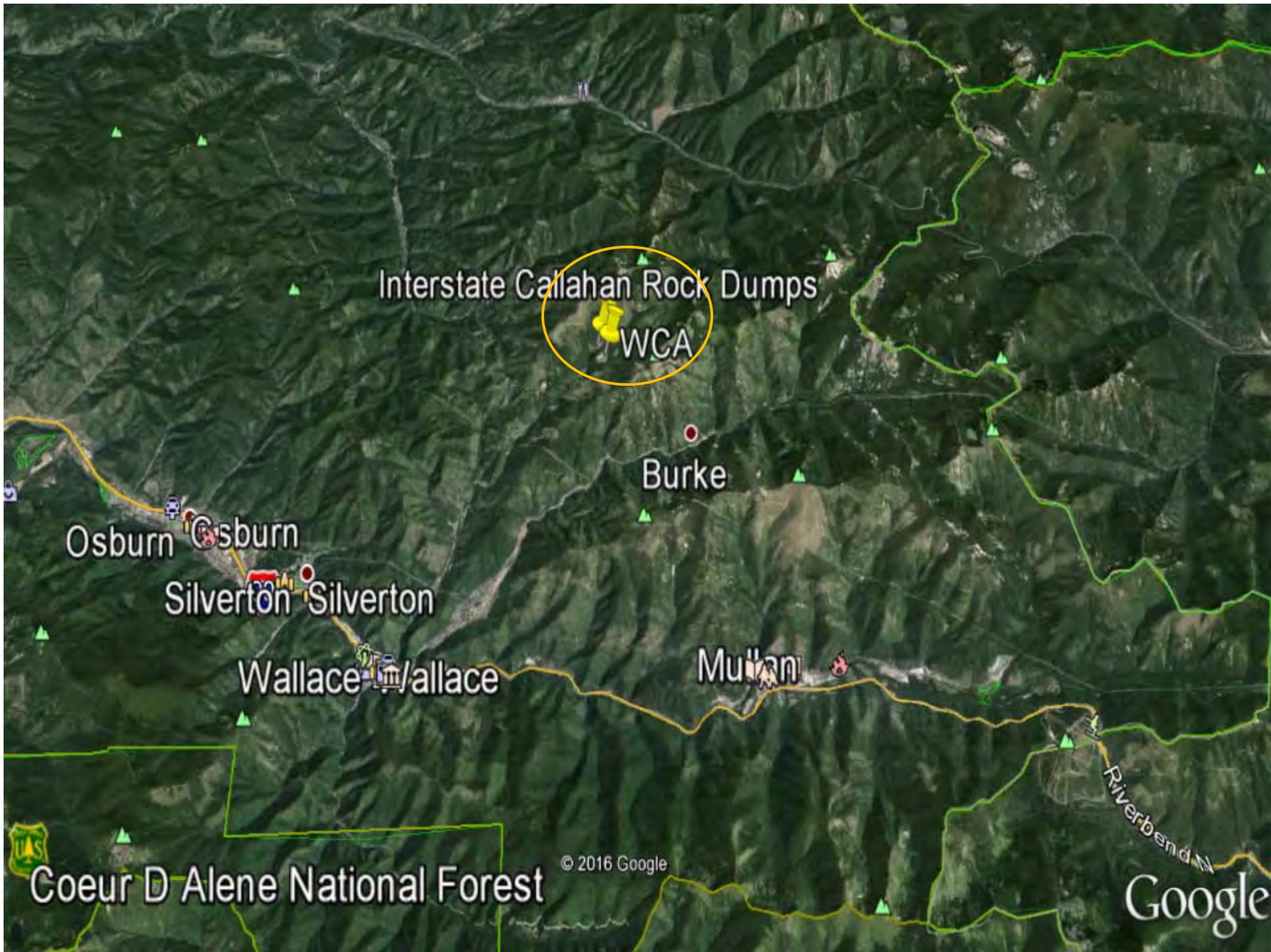
Tony Wesche, P.E.

Pioneer Technical Services, Inc. and North Wind Group

Presentation Topics

- ▶ Site History and Background
- ▶ Design Objectives and Constraints
- ▶ Mine Waste Excavation
- ▶ EFNM Creek and Tributary Reconstruction
- ▶ Revegetation





Interstate Callahan Rock Dumps

WCA

Burke

Osburn Osburn

Silverton Silverton

Wallace Wallace

Mullan

Riverbend

Coeur D'Alene National Forest

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Interstate Callahan Rock Dumps

WCA



History of the Interstate-Callahan

- ▶ 1887 - J.F. Callahan filed claim
- ▶ 1887-1888 - Built cabin and began small scale mining
- ▶ 1906 - First ore shipment from Callahan Mine
- ▶ 1912 - Consolidated Interstate Mining Company formed
- ▶ 1912 and 1913 - Constructed mill and cable tramway
- ▶ 1915 - Cable tramway connecting Interstate-Callahan to the railroad
- ▶ 1918-1920 - Part time mining operations
- ▶ 1920 - Callahan Zinc-Lead Company Formed
- ▶ 1921-1923 - Part Time Mining Operations
- ▶ 1924-1935 - Period of no mining
- ▶ 1936 - Interstate-Callahan Mine Reopened
- ▶ 1937-1949 - Active Mining
- ▶ 1951-1965 - Sorted backfill for Lead and Zinc.

Jim Callahan at his Cabin in
Nine Mile Canyon - 1912



JIM CALLAHAN
HIS CABIN
- NINE MILE
- 1912

Bunker Hill Superfund Background

SUMMARY OF ASARCO SETTLEMENT

- ▶ ~\$435 million for cleanup of the CDA Basin
 - ▶ Interstate-Callahan RA Construction = ~\$4.2 M

- ▶ Coeur d'Alene Trust was formed to oversee and manage the money for cleanup under direction from EPA

Design Objectives

- ▶ Restore native ground surface within excavated areas to match surrounding native conditions.
- ▶ Restore stream channels, floodplains and riparian areas within the site to conditions similar to upstream reference areas.
- ▶ Minimize operations and maintenance and institutional controls requirements.
- ▶ Maintain recreational use and access consistent with current conditions and reasonably anticipated land use as determined by EPA, other Federal land management agencies, and the current landowner.

Design Constraints

- ▶ Short construction season (approximately 120 working days) due to weather conditions
- ▶ Limited area for construction activities and stockpiling of materials
- ▶ Working on steep slopes
- ▶ Coordination with design and construction of the EFNM WCA

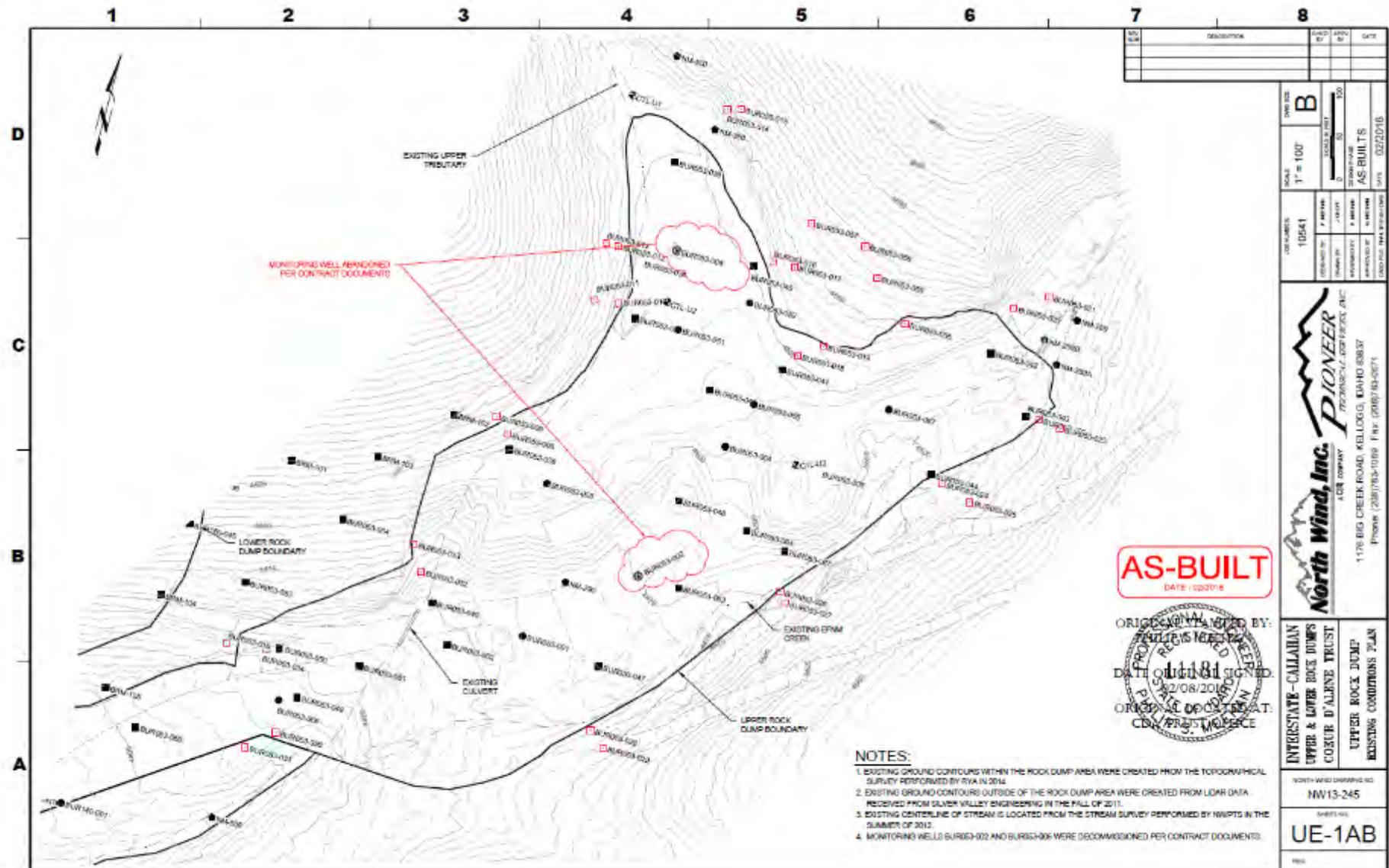
Mine Waste Excavation



Excavation Design Basis

- ▶ Soil boring and test pit data used from 2011 and 2012 Trust site characterization investigations
- ▶ Achieve soil and sediment concentrations less than or equal to 530 mg/kg lead
- ▶ Characterization showed minimal leaching into native soils

Upper Rock Dump



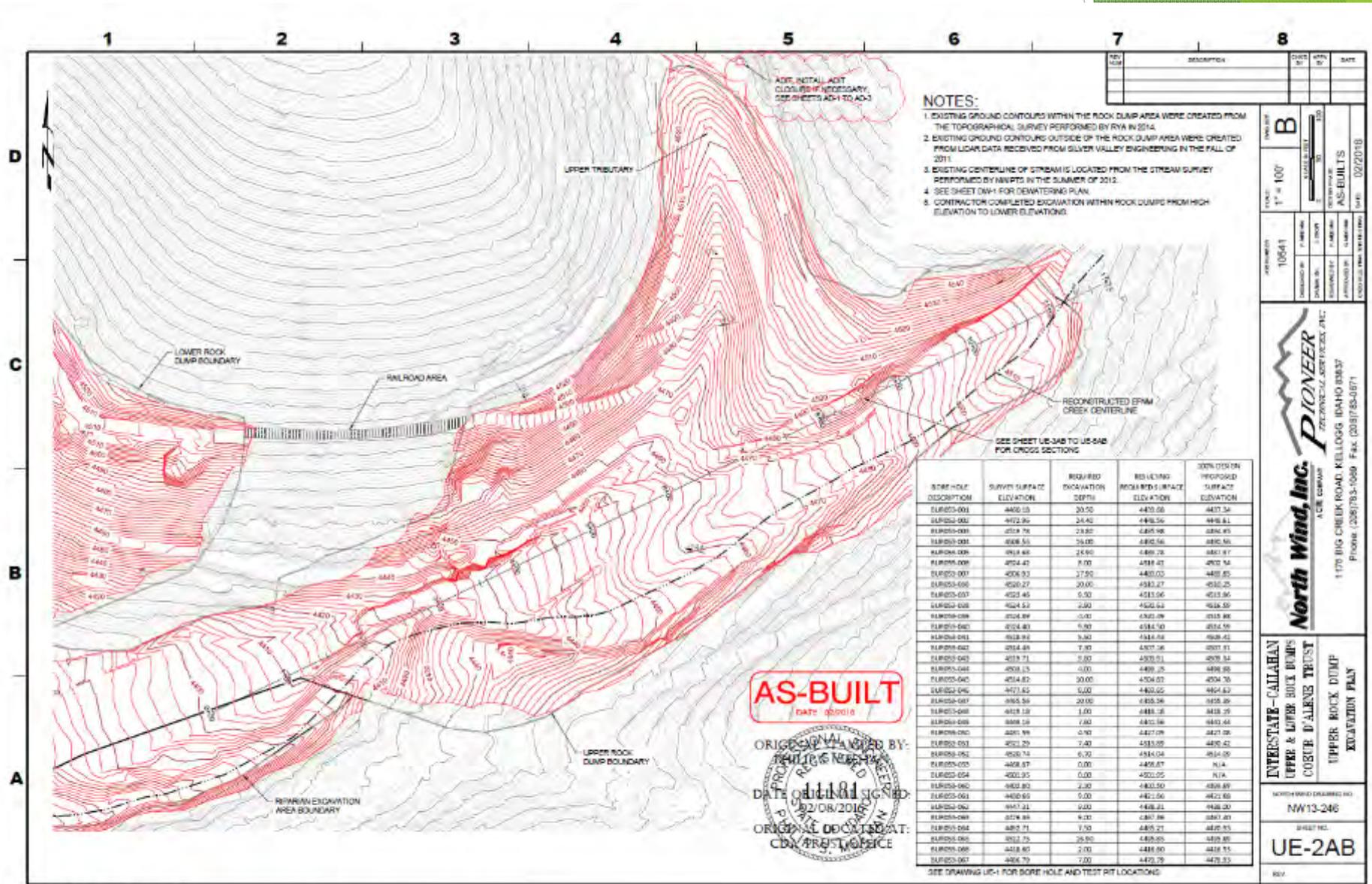
AS-BUILT
DATE: 1/22/2016

ORIGINAL DRAWING BY:
TAYLOR MESSER
DATE ORIGINAL SIGNED:
02/08/2015
ORIGINAL CONTRACT AT:
CDM, FRS, WILCOX

- NOTES:**
- EXISTING GROUND CONTOURS WITHIN THE ROCK DUMP AREA WERE CREATED FROM THE TOPOGRAPHICAL SURVEY PERFORMED BY RVA IN 2014.
 - EXISTING GROUND CONTOURS OUTSIDE OF THE ROCK DUMP AREA WERE CREATED FROM LIDAR DATA RECEIVED FROM SILVER VALLEY ENGINEERING IN THE FALL OF 2011.
 - EXISTING CENTERLINE OF STREAM IS LOCATED FROM THE STREAM SURVEY PERFORMED BY HWPTS IN THE SUMMER OF 2012.
 - MONITORING WELLS BUR10-002 AND BUR10-006 WERE DECOMMISSIONED PER CONTRACT DOCUMENTS.

NO. OF SHEETS	10/24	DATE	02/22/16
SCALE	1" = 100'	AS-BUILTS	
<p>North Wind, Inc. A CDR COMPANY 1170 BIG CREEK ROAD, KELOLOGA, IDAHO 83837 Phone: (208)763-1099 Fax: (208)763-0071</p>			
<p>INTERSTATE-CALLAHAN UPPER & LOWER ROCK DUMPS COLORADO ALPINE TRUST UPPER ROCK DUMP EXISTING CONDITIONS PLAN</p>			
<p>NORTH WIND DRAWING NO. NW13-245</p>			
<p>SHEET NO. UE-1AB</p>			

Upper Rock Dump Excavation



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 - EXISTING GROUND CONTOURS OUTSIDE OF THE ROCK DUMP AREA WERE CREATED FROM LIDAR DATA RECEIVED FROM SILVER VALLEY ENGINEERING IN THE FALL OF 2011.
 - EXISTING CENTERLINE OF STREAM IS LOCATED FROM THE STREAM SURVEY PERFORMED BY NWPTS IN THE SUMMER OF 2012.
 - SEE SHEET DW-1 FOR DEMATERING PLAN.
 - CONTRACTOR COMPLETED EXCAVATION WITHIN ROCK DUMPS FROM HIGH ELEVATION TO LOWER ELEVATIONS.

BORE HOLE DESCRIPTION	SURVEY SURFACE ELEVATION	REQUIRED DEPTH	BORE HOLE FINISH ELEVATION	100% DESIGN PROPOSED SURFACE ELEVATION
EUR025-001	4400.05	20.75	4420.80	4427.34
EUR025-002	4402.96	24.42	4427.38	4436.38
EUR025-003	4374.76	23.82	4400.58	4386.95
EUR025-004	4368.55	26.02	4400.58	4386.95
EUR025-005	4364.66	25.82	4400.58	4386.95
EUR025-006	4354.47	7.00	4361.47	4362.54
EUR025-007	4306.92	27.92	4400.02	4400.82
EUR025-008	4290.27	20.00	4310.27	4310.25
EUR025-009	4252.45	0.50	4251.95	4252.95
EUR025-010	4244.52	2.82	4241.70	4242.50
EUR025-011	4224.89	0.42	4224.47	4225.88
EUR025-012	4224.83	0.92	4223.91	4224.88
EUR025-013	4128.94	3.52	4132.46	4138.42
EUR025-014	4164.84	7.82	4172.66	4177.81
EUR025-015	4171.71	0.82	4172.53	4176.54
EUR025-016	4164.15	0.00	4164.15	4166.82
EUR025-017	4154.82	20.00	4174.82	4174.76
EUR025-018	4171.52	0.00	4171.52	4174.82
EUR025-019	4165.26	20.00	4185.26	4178.89
EUR025-020	4129.18	1.00	4130.18	4131.25
EUR025-021	4118.18	1.82	4119.00	4121.00
EUR025-022	4118.18	0.92	4119.10	4121.00
EUR025-023	4118.18	0.92	4119.10	4121.00
EUR025-024	4118.18	0.92	4119.10	4121.00
EUR025-025	4118.18	0.92	4119.10	4121.00
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EUR025-034	4118.18	0.92	4119.10	4121.00
EUR025-035	4118.18	0.92	4119.10	4121.00
EUR025-036	4118.18	0.92	4119.10	4121.00
EUR025-037	4118.18	0.92	4119.10	4121.00

AS-BUILT
DATE: 02/08/2016

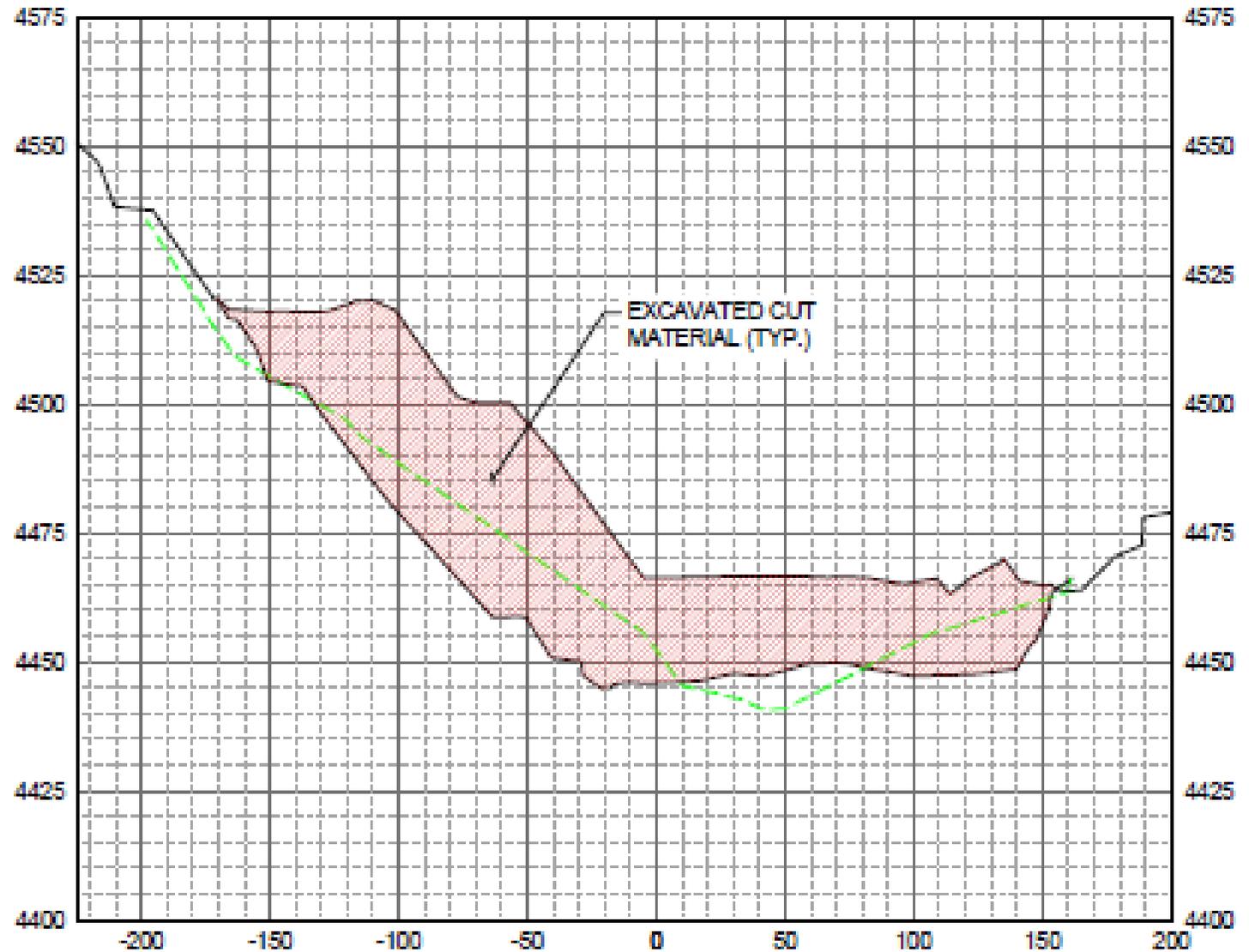
ORIGINAL DRAWN BY: PHILIP NEFF
DATE OF ORIGINAL: 02/08/2016
ORIGINAL LOCATION: CDV TRUST OFFICE

PROJECT NO.	DESCRIPTION	SHEET NO.	TOTAL SHEETS	DATE
10641		B	100	02/2018
SCALE: 1" = 100'		DRAWN BY: AS-BUILT		
CHECKED BY:		APPROVED BY:		
DATE:		DATE:		
North Wind, Inc. A CEC COMPANY 1170 BIG CREEK ROAD, KELLOGG, WASHO COUNTY, OR Phone: (503) 933-0069 Fax: (503) 765-0071				
INTERSTATE-CALLAHAN UPPER & LOWER ROCK DUMPS COSTE D'ALENS TRUST UPPER ROCK DUMP EXCAVATION PLAN				
NORTH WIND DRAWING NO. NW13-246				
SHEET NO. UE-2AB				

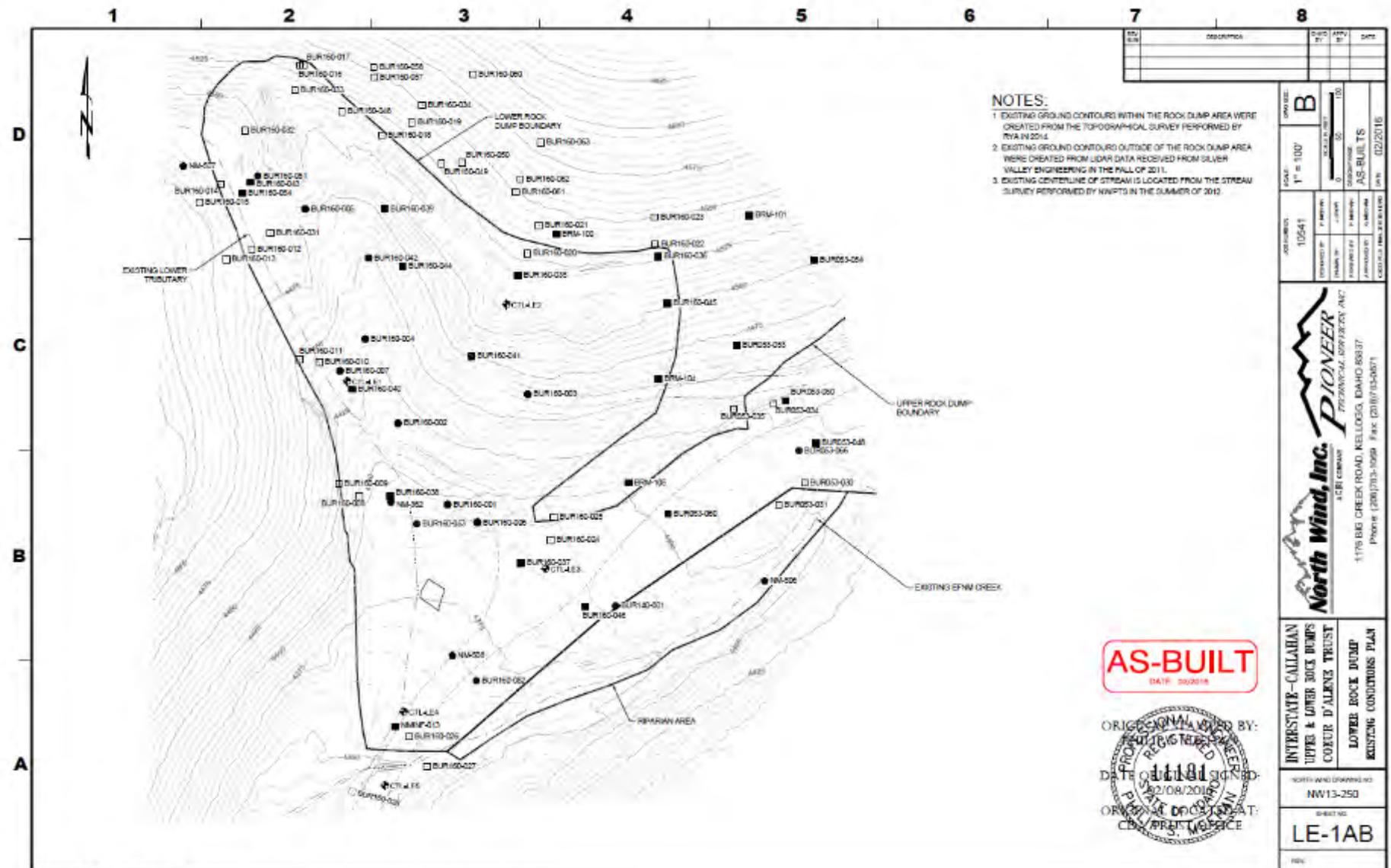
2/2/2018 9:52 PM By: Alvin Riva
 C:\Users\Public\Engineering\Drawings\10641-004 Tract Interstate-Callahan\3D Design\31 Dwg\UE-17 AS-BUILT\2018 AS-Built\Drawings\FINAL 2018 UE-2AB.dwg

Field Modifications

5+00



Lower Rock Dump



- NOTES:**
- EXISTING GROUND CONTOURS WITHIN THE ROCK DUMP AREA WERE CREATED FROM THE TOPOGRAPHICAL SURVEY PERFORMED BY RYA IN 2014.
 - EXISTING GROUND CONTOURS OUTSIDE OF THE ROCK DUMP AREA WERE CREATED FROM LIDAR DATA RECEIVED FROM SILVER VALLEY ENGINEERING IN THE FALL OF 2011.
 - EXISTING CENTERLINE OF STREAM IS LOCATED FROM THE STREAM SURVEY PERFORMED BY NWPTD IN THE SUMMER OF 2010.

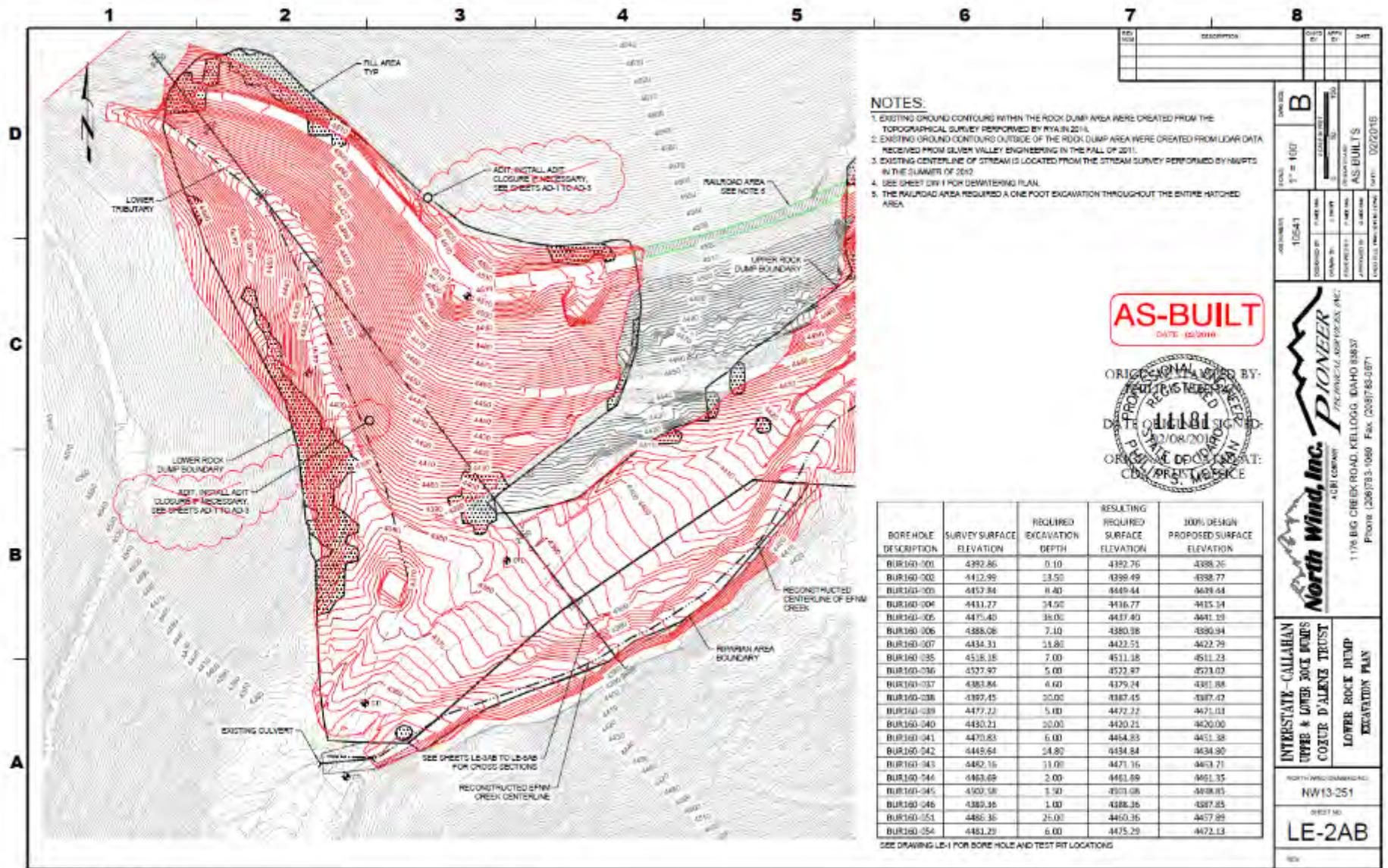
AS-BUILT
DATE: 02/08/2016

ORIGINAL VIEWED BY:
DATE: 02/08/2016
ORIGINAL DATE: 02/08/2016
DRAWN BY: [Signature]
CHECKED BY: [Signature]

NO. 10541	DATE: 02/2016
SCALE: 1" = 100'	AS-BUILTS
<p>North Wind, Inc. PIONEER 1175 BIG CREEK ROAD, KELLOGG, IDAHO 83837 Phone: (208)733-3099 Fax: (208)733-0671</p>	
INTERSTATE-CALLAHAN UPPER & LOWER ROCK DUMPS	LOWER ROCK DUMP EXISTING CONDITIONS PLAN
NO. NW13-250	LE-1AB

2/3/2016, 3:18 PM By: Ahmad Riba
Q:\Info Files\Engineering\Drawings\10541 CDA Trail Interstate-Callahan\3.0 Design\3.1.7 AS-BUILTS\2015 AS-BUILT Drawings\FINAL 2015 LE-1.dwg

Lower Rock Dump Excavation



- NOTES:**
- EXISTING GROUND CONTOURS WITHIN THE ROCK DUMP AREA WERE CREATED FROM THE TOPOGRAPHICAL SURVEY PERFORMED BY NYA IN 2011.
 - EXISTING GROUND CONTOURS OUTSIDE OF THE ROCK DUMP AREA WERE CREATED FROM LIDAR DATA RECEIVED FROM SILVER VALLEY ENGINEERING IN THE FALL OF 2011.
 - EXISTING CENTERLINE OF STREAM IS LOCATED FROM THE STREAM SURVEY PERFORMED BY NYETS IN THE SUMMER OF 2010.
 - SEE SHEET 0511 FOR DRAINAGE PLAN.
 - THE RAILROAD AREA REQUIRED A ONE FOOT EXCAVATION THROUGHOUT THE ENTIRE HATCHED AREA.

AS-BUILT
DATE: 02/20/16



BORE HOLE DESCRIPTION	SURVEY SURFACE ELEVATION	REQUIRED EXCAVATION DEPTH	RESULTING SURFACE ELEVATION	100% DESIGN PROPOSED SURFACE ELEVATION
BUR160-001	4392.86	0.10	4392.76	4388.26
BUR160-002	4412.99	13.50	4399.49	4388.77
BUR160-003	4452.84	6.40	4446.44	4435.64
BUR160-004	4411.27	24.50	4386.77	4415.14
BUR160-005	4415.40	36.00	4379.40	4411.10
BUR160-006	4388.08	7.10	4380.98	4380.94
BUR160-007	4434.31	11.80	4422.51	4422.79
BUR160-035	4518.18	7.00	4511.18	4511.23
BUR160-036	4527.97	5.00	4522.97	4523.02
BUR160-037	4383.84	6.60	4377.24	4381.88
BUR160-038	4397.45	20.00	4377.45	4387.42
BUR160-039	4477.22	5.00	4472.22	4471.03
BUR160-040	4430.21	20.00	4410.21	4420.00
BUR160-041	4470.83	6.00	4464.83	4451.38
BUR160-042	4445.64	24.80	4420.84	4434.80
BUR160-043	4482.16	11.00	4471.16	4463.71
BUR160-044	4463.69	2.00	4461.69	4461.35
BUR160-045	4300.58	1.50	4299.08	4298.85
BUR160-046	4389.36	1.00	4388.36	4387.85
BUR160-051	4486.36	25.00	4461.36	4457.89
BUR160-054	4481.29	6.00	4475.29	4472.13

SEE DRAWING LE-1 FOR BORE HOLE AND TEST PIT LOCATIONS

DATE PLOTTED	02/20/16
DATE CHECKED	
DATE DESIGNED	
DATE APPROVED	
SCALE	1" = 100'
PROJECT NO.	10541
DESIGNED BY	J. HART
CHECKED BY	J. HART
APPROVED BY	AS-BUILTS
DRAWN BY	AS-BUILTS
DATE	02/20/16

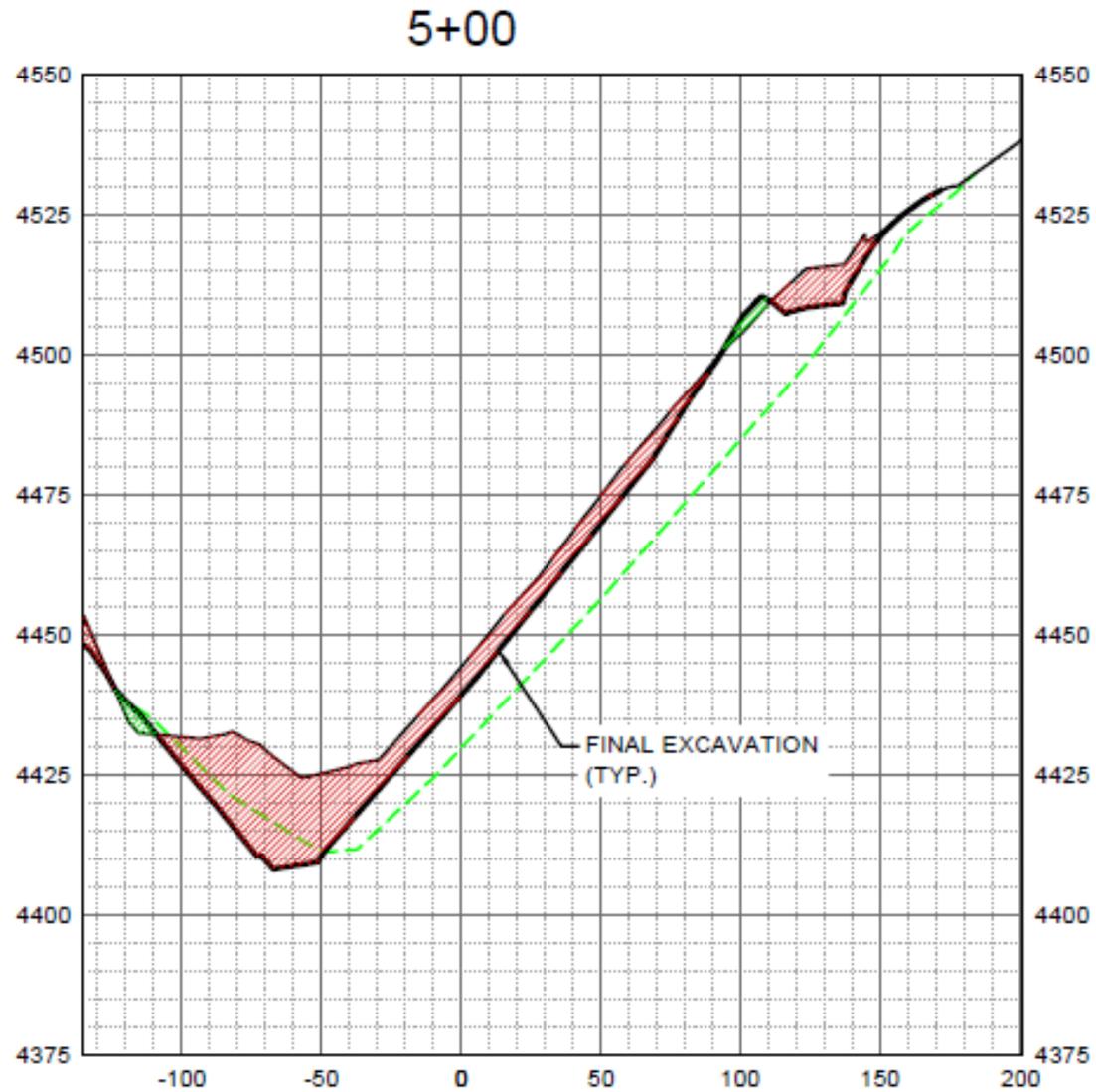
North Wind, Inc.
A CH2M COMPANY
1176 BIG CREEK ROAD, KELLIOGG, UTAH 84807
Phone: (208)793-1980 Fax: (208)785-0871

PIONEER
THE PIONEER ENGINEERS, INC.

INTERSTATE-CALLAHAN
UTAH & LOWER ROCK DAMS
COLORADO TRUST
LOWER ROCK DUMP
EXCAVATION PLAN

NORTH WIND/ENGINEER/SCALE
NW13-251
SHEET NO.
LE-2AB

Field Modifications



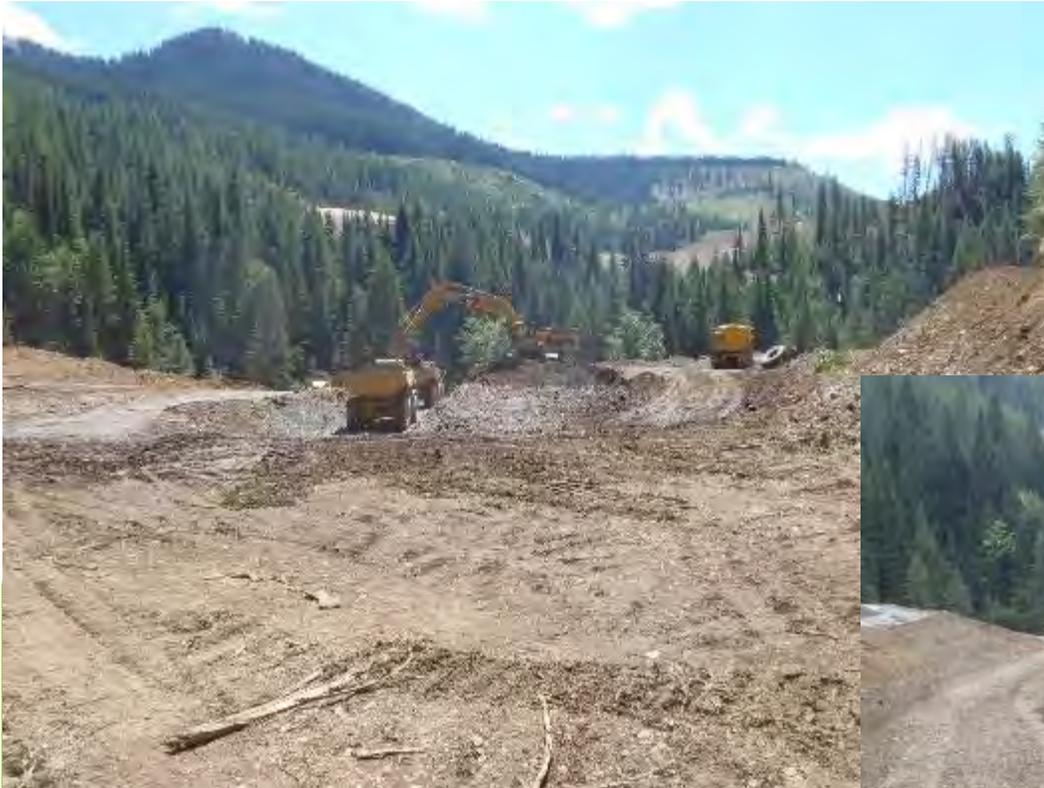
Excavation Design Summary

- ▶ Total excavation of 215,928 bank cubic yards of mine waste rock
- ▶ Approximately 27,345 bcy of general fill required for slope establishment, positive drainage and haul road reconstruction
- ▶ Total disturbed footprint was approximately 18 acres

Upper Rock Dump Excavation Pre/Post Photographs



Upper Rock Dump Excavation Pre/Post Photographs



Lower Rock Dump Excavation Pre/Post Photographs



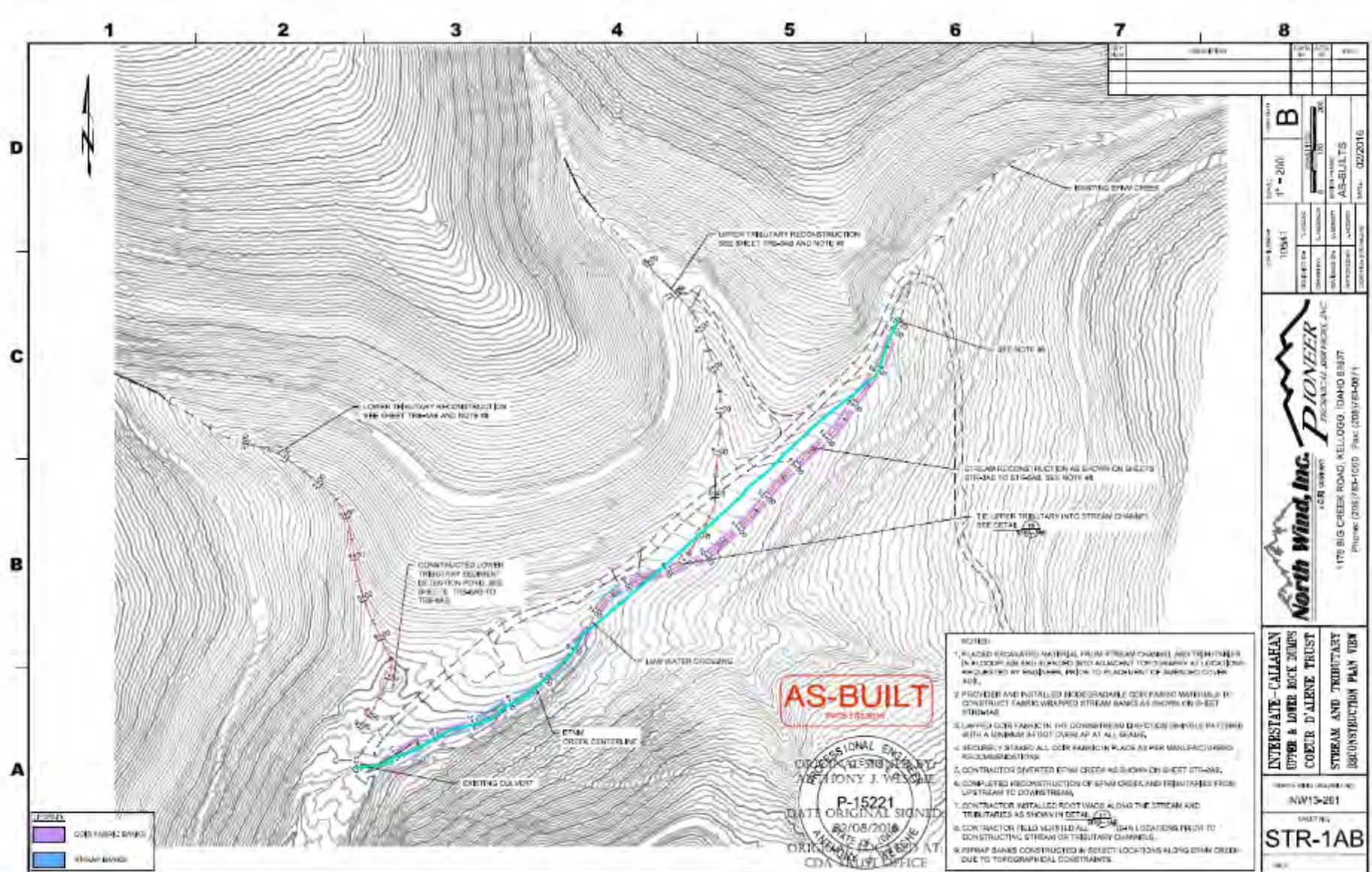


EFNM Creek and Tributary Reconstruction

Stream/Tributary Design Basis

- ▶ Design based upon upstream reference reach
- ▶ Diversion of EFNM Creek required during construction for waste excavation and stream reconstruction.
- ▶ Grade Controls, Step pools, and run sections
- ▶ Four designed structures incorporated (Rock Cross Vane, Double Log V-Structure, Armored Angled Log Step-Down, and Angled Rock Step Down)

EFNM Creek Channel Alignment



North Wind, Inc. PROJECT MANAGER 175 BIG CREEK ROAD, KELLOGG (DAMO) 83327 Phone: (208) 781-1000 Fax: (208) 781-0071	
INTERSTATE-CALLAHAN UPPER & LOWER ROCK JOUPS COOPER D'ALENE TRUST	STREAM AND TRIBUTARY RECONSTRUCTION PLAN VIEW
SHEET NO. NW15-261	SHEET NO. STR-1AB
SCALE: 1" = 200'	DATE: 02/08/2016
DRAWN BY: AS-BUILTS	CHECKED BY: AS-BUILTS
PROJECT NO. 0222116	DATE: 02/22/16

Grade Control Structure



Log Grade Control Structure



Incorporating Bedrock during Construction



Upper EFNM Creek



Lower EFNM Creek



Lower Tributary Reconstruction



Upper Tributary Reconstruction



Stream/Tributary Reconstruction Summary

- ▶ Reconstruction of approximately 1,692 linear feet of EFNM Creek
- ▶ Reconstruction of approximately 1,490 linear feet of Tributaries
- ▶ Installation of 37 Rock Cross Vane Structures in both EFNM Creek and tributaries
- ▶ Installation of 3 Double V-Log Structures
- ▶ 16 Armored Angled Log Step-Down Structures
- ▶ 17 Angled Rock Step-Down Structures
- ▶ 1,800 Riparian tubelings (alders and willow)

A photograph of a forested hillside. The central part of the hill is cleared of trees, showing a mix of brown and tan soil and sparse, dry-looking vegetation. This cleared area is flanked by dense, dark green coniferous forests. A narrow, light-colored path or stream bed runs down the center of the cleared area. The word "Revegetation" is overlaid in white text on the central cleared area.

Revegetation

Revegetation

- ▶ Cover Soil (12-inches of imported cover soils from EFNM WCA)
- ▶ Amendment (3% Organic matter and lime incorporation was performed as part of EFNM WCA Construction Activities)
- ▶ Upland and Riparian Seed Mixes (consistent with EFNM basin native plant species)
- ▶ Tubelings (western red cedar, western larch, white pine, and lodgepole pine at 150 -200 tubelings per acre)

Locals enjoying dinner



Revegetation Summary

- ▶ 19.1 acres of revegetation
 - ▶ 16.5 acres of upland seed mix
 - ▶ 1.6 acre of riparian seed mix
- ▶ 25,993 cubic yards of amended cover soil
- ▶ 2,262 dry tons of organic amendment
- ▶ 19.1 acres of hydro-mulch
- ▶ 3,620 conifer tubelings
- ▶ 1,800 riparian tubelings
- ▶ 11,001 square yards of erosion control mat

Lessons Learned

- ▶ Flexible Designs
- ▶ Flexible Contracting Mechanisms
 - ▶ Unit Rate Bids
 - ▶ Time and Materials
- ▶ Development of a good working relationship between owner, engineer and contractor results in a successful project
- ▶ Ensure third-party surveyors understand final use for their data
- ▶ Double V-log Grade Control Structures has gradient limitations
- ▶ Use of cleared and grubbed materials, wood debris, and Hydro Straw BFM are viable erosion control methods on steep slopes
- ▶ Organic amended cover soils are needed for successful revegetation
- ▶ Elk love Cedar tubelings

THANKS



A photograph of a forested hillside. The upper portion of the image shows a dense forest of tall, thin trees. Below the forest, a steep slope of brown, exposed soil or mud descends towards a stream. The stream flows through the center of the slope, surrounded by rocks. On the left side of the slope, there are several patches of snow. The word "QUESTIONS" is overlaid in large, white, sans-serif capital letters in the center of the image.

QUESTIONS