

An aerial photograph of a rocky streambed in a forested area. The streambed is composed of various sized rocks and gravel, with some larger logs scattered throughout. The surrounding forest is dense with evergreen trees. The text is overlaid on the image in white, bold font.

Interstate-Callahan Upper and Lower Rock Dumps RA Construction Project

East Fork Ninemile Creek, Idaho

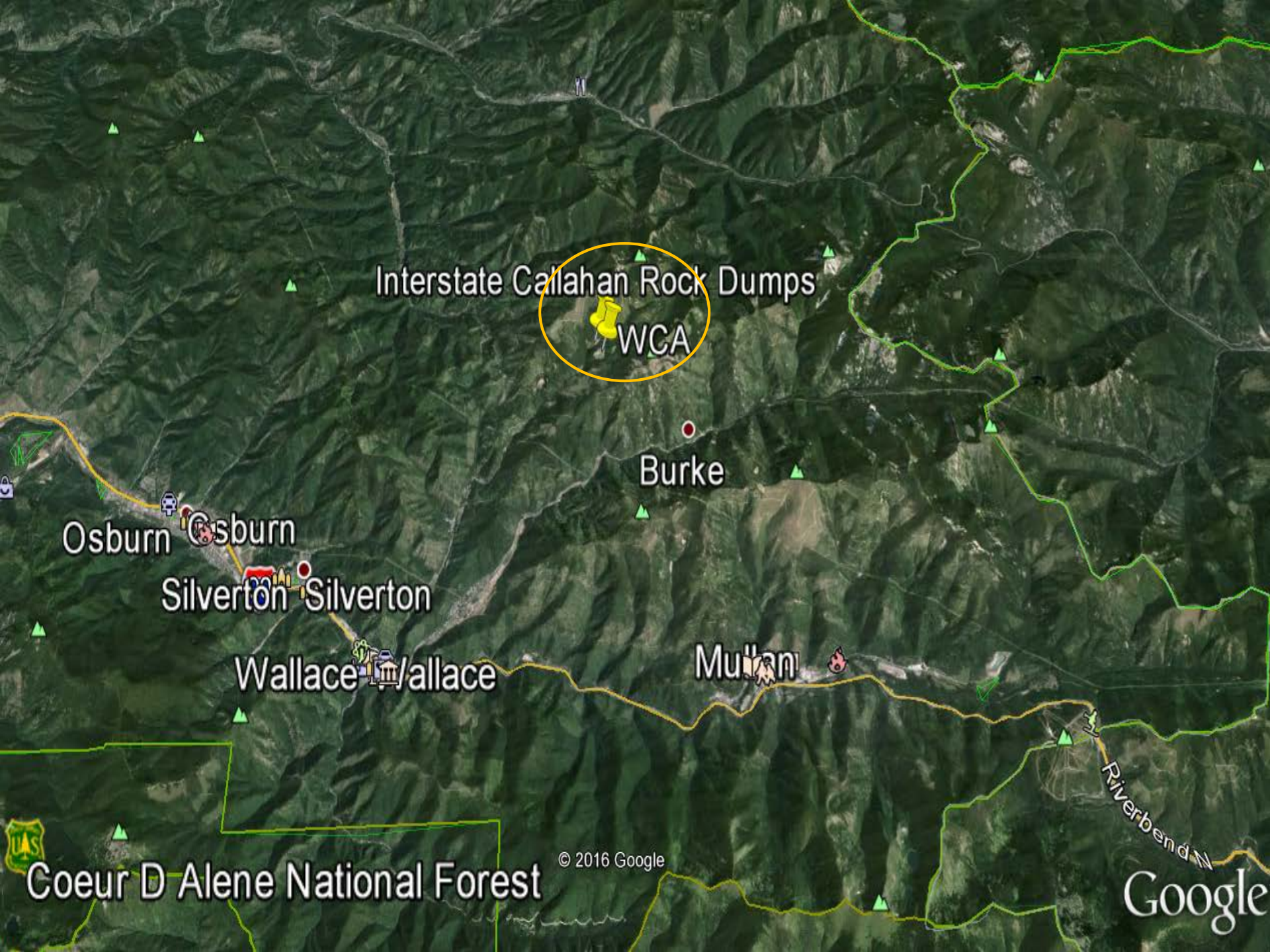
June 8, 2016

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

Silverton

Wallace


Mullan

Riverbend

Coeur D'Alene National Forest

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Google

A satellite map showing a large area of cleared land, likely a construction site or quarry, surrounded by dense green forest. The cleared area is light brown and tan, with various structures and roads visible. Two yellow pushpin markers are placed on the map. One marker is located in the upper left quadrant, and the other is in the center-right. White lines outline the cleared area and some surrounding features.

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

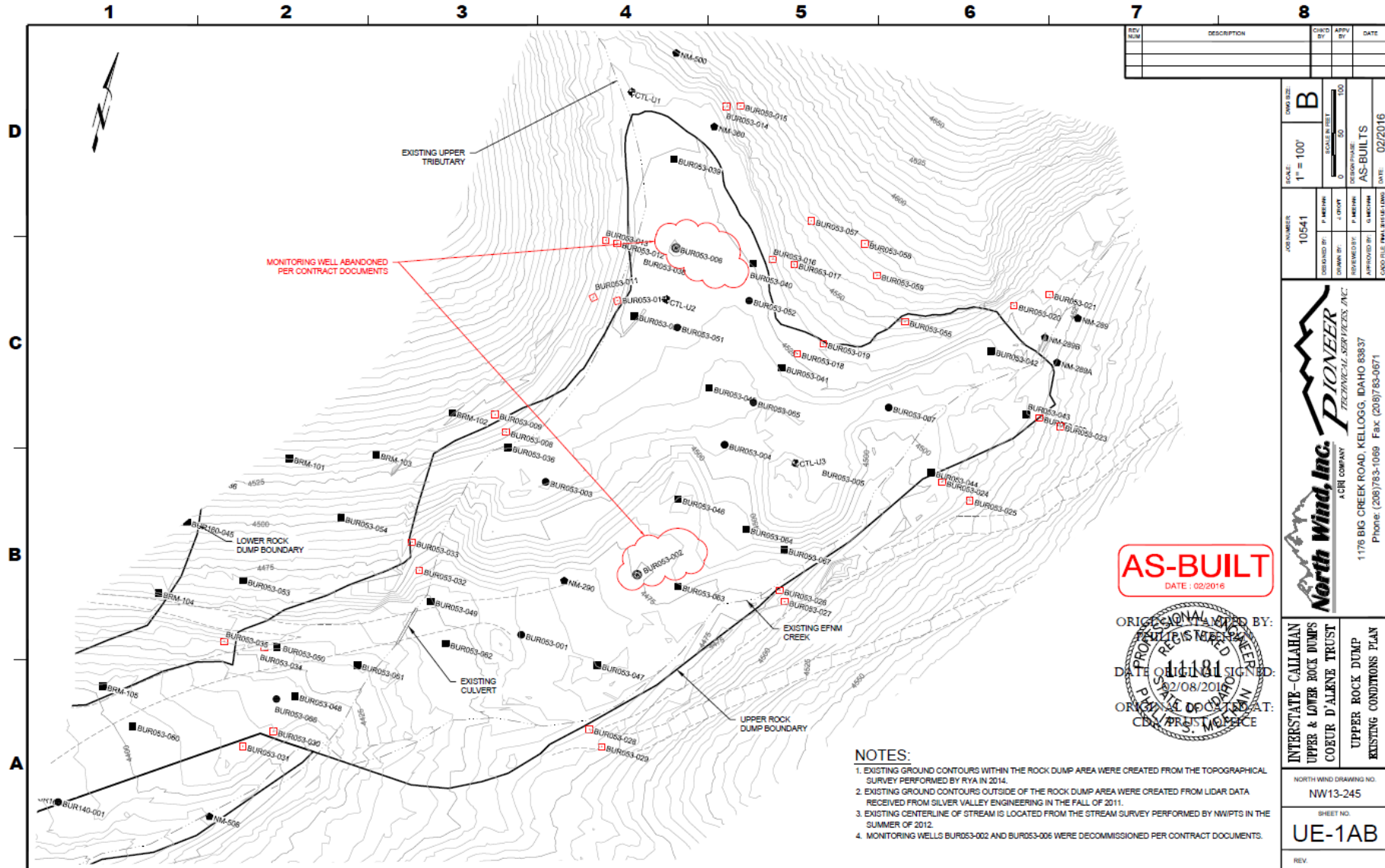
Mine Waste Excavation



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



REV. NUM	DESCRIPTION	CHG. BY	APPV. BY	DATE

JOB NUMBER	10541
SCALE	1" = 100'
DATE	02/2016
AS-BUILTS	AS-BUILTS

North Wind, Inc.
 A CIVIL COMPANY
PIONEER
 1776 BIG CREEK ROAD, KELLOGG, IDAHO 83837
 Phone: (208)783-1089 Fax: (208)783-0871

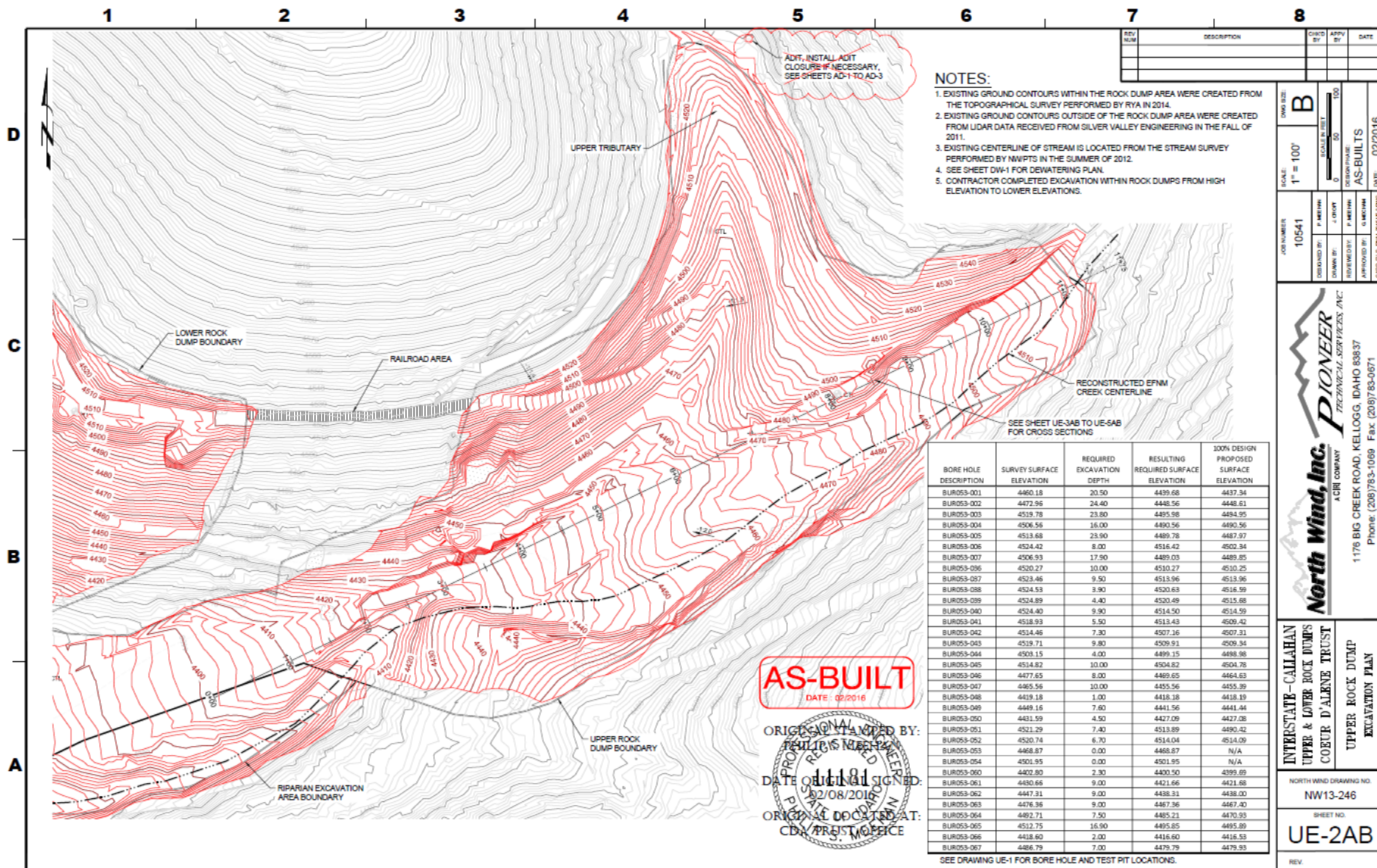
AS-BUILT
 DATE: 02/2016

ORIGINAL DESIGNED BY:
 PROJECT REGISTERED
 DATE: 02/08/2016
 ORIGINAL CONTRACT AT:
 CDA TRUST INTERSTATE

- 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 NWPTS IN THE SUMMER OF 2012.
 - MONITORING WELLS BUR053-002 AND BUR053-006 WERE DECOMMISSIONED PER CONTRACT DOCUMENTS.

INTERSTATE-CALLAHAN UPPER ROCK DUMPS COEUR D'ALENE TRUST	UPPER ROCK DUMP EXISTING CONDITIONS PLAN
NORTH WIND DRAWING NO.	NW13-245
SHEET NO.	UE-1AB
REV.	

Upper Rock Dump Excavation



ADT. INSTALL ADIT CLOSURE IF NECESSARY. SEE SHEETS AD-1 TO AD-3

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 NWPTS IN THE SUMMER OF 2012.
- SEE SHEET DW-1 FOR DEWATERING PLAN.
- CONTRACTOR COMPLETED EXCAVATION WITHIN ROCK DUMPS FROM HIGH ELEVATION TO LOWER ELEVATIONS.

BORE HOLE DESCRIPTION	SURVEY SURFACE ELEVATION	EXCAVATION DEPTH	RESULTING REQUIRED SURFACE ELEVATION	100% DESIGN PROPOSED SURFACE ELEVATION
BUR05-001	4460.18	20.50	4439.68	4437.34
BUR05-002	4472.96	24.40	4448.56	4448.61
BUR05-003	4519.78	23.80	4495.98	4494.95
BUR05-004	4506.56	16.00	4490.56	4490.56
BUR05-005	4513.68	23.90	4489.78	4487.97
BUR05-006	4524.42	8.00	4516.42	4502.34
BUR05-007	4506.93	17.50	4489.03	4489.85
BUR05-008	4520.27	10.00	4510.27	4510.25
BUR05-009	4513.46	9.50	4513.96	4513.96
BUR05-010	4524.53	9.90	4520.63	4518.99
BUR05-011	4524.89	4.40	4520.49	4515.68
BUR05-012	4524.40	9.90	4514.50	4514.59
BUR05-013	4518.93	5.50	4513.43	4509.42
BUR05-014	4514.46	7.30	4507.16	4507.31
BUR05-015	4519.71	9.80	4509.91	4509.34
BUR05-016	4503.15	4.00	4499.15	4498.98
BUR05-017	4514.82	10.00	4504.82	4504.78
BUR05-018	4477.65	9.00	4489.65	4484.63
BUR05-019	4465.56	10.00	4455.56	4455.39
BUR05-020	4419.18	1.00	4418.18	4418.19
BUR05-021	4449.16	7.60	4441.56	4441.44
BUR05-022	4431.59	4.50	4427.09	4427.08
BUR05-023	4521.29	7.40	4513.89	4490.42
BUR05-024	4520.74	6.70	4514.04	4514.09
BUR05-025	4468.87	0.00	4468.87	N/A
BUR05-026	4501.95	0.00	4501.95	N/A
BUR05-027	4492.80	2.30	4490.50	4399.89
BUR05-028	4450.66	9.00	4441.66	4421.68
BUR05-029	4447.31	9.00	4438.31	4438.00
BUR05-030	4476.36	9.00	4467.36	4467.40
BUR05-031	4482.71	7.50	4475.21	4470.93
BUR05-032	4512.75	16.90	4495.85	4495.89
BUR05-033	4418.60	2.00	4416.60	4416.53
BUR05-034	4486.79	7.00	4479.79	4479.93

AS-BUILT
DATE: 02/2016

ORIGINAL STAMPED BY:
PHILIP M. REED
DATE ORIGINAL SIGNED:
02/08/2016
ORIGINAL LOCATED AT:
CDA TRUST OFFICE

SEE DRAWING UE-1 FOR BORE HOLE AND TEST PIT LOCATIONS.

REV. NO.	DESCRIPTION	CHG. BY	APP. BY	DATE

SCALE: 1" = 100'	SCALE: 1" = 100'
APPROVALS:	DATE: 02/2016
DESIGNED BY: AS-BUILTS	
CHECKED BY: AS-BUILTS	
APPROVED BY: AS-BUILTS	

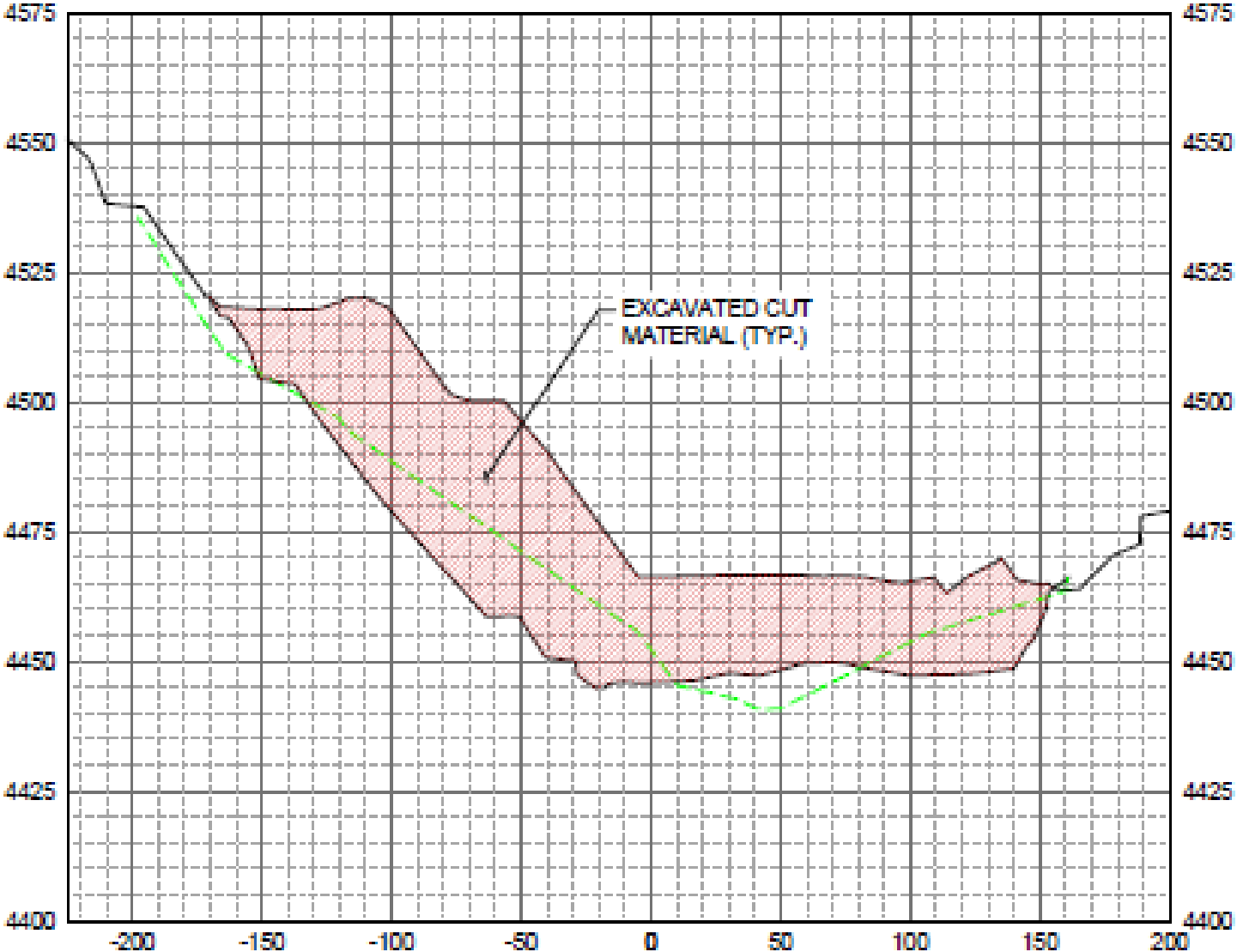
North Wind, Inc.
a CRI COMPANY
PIONEER
TECHNICAL SERVICES, INC.
1176 BIG CREEK ROAD, KELLOGG, IDAHO 83837
Phone: (208)783-1089 Fax: (208)785-0671

INTERSTATE-CALLAHAN
UPPER & LOWER ROCK DUMPS
COBET D'ALRENE TRUST
UPPER ROCK DUMP
EXCAVATION PLAN

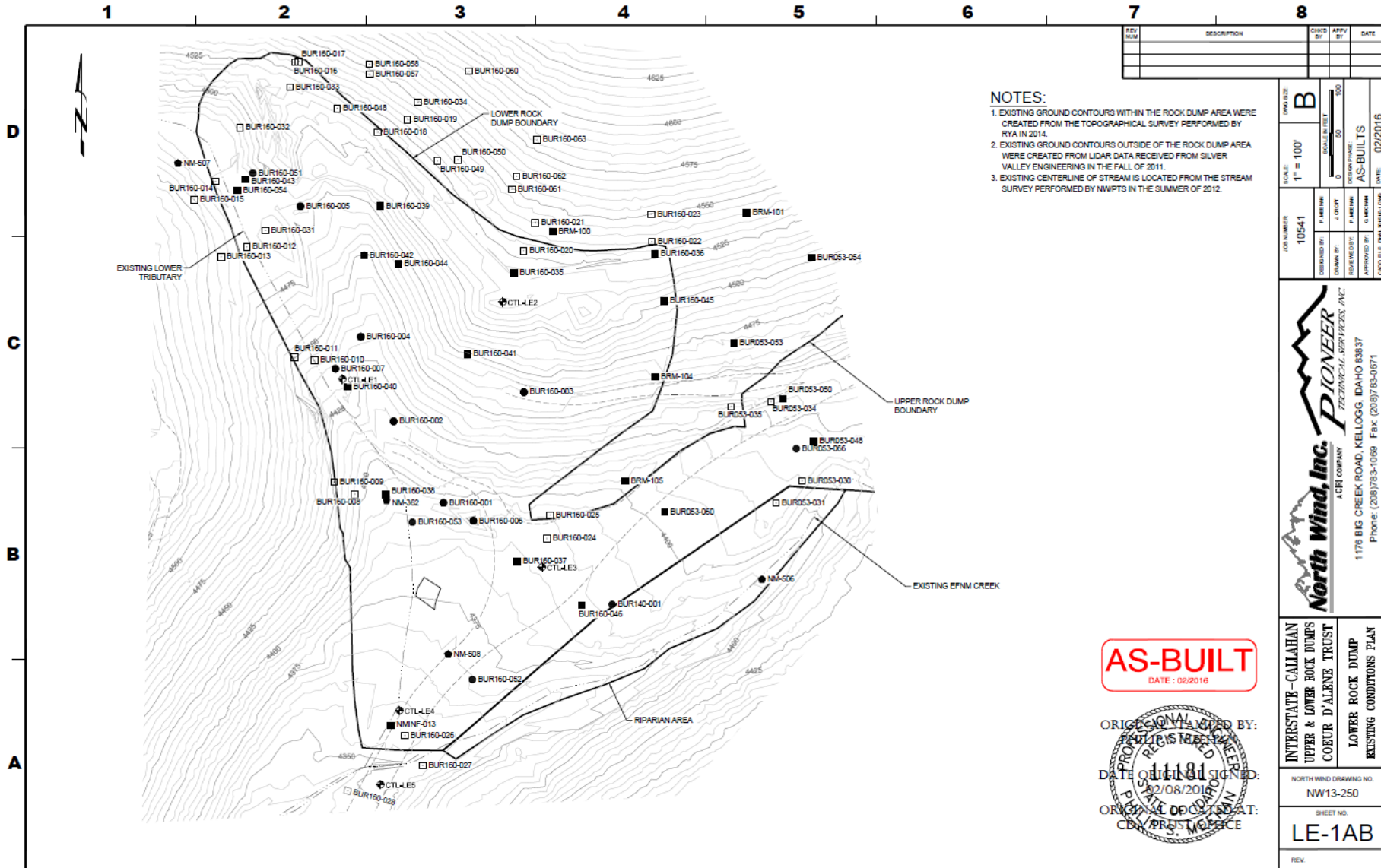
NORTH WIND DRAWING NO.
NW13-246
SHEET NO.
UE-2AB

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 NWPTS IN THE SUMMER OF 2012.

REV. NUM	DESCRIPTION	CREATED BY	APPROVED BY	DATE

SCALE: B	DATE: 02/2016
SCALE: 1" = 100'	AS-BUILTS
PROJECT NUMBER: 10541	DATE: 02/2016
DESIGNED BY: J. MEYER	AS-BUILTS
DRAWN BY: J. MEYER	AS-BUILTS
CHECKED BY: J. MEYER	AS-BUILTS
APPROVED BY: J. MEYER	AS-BUILTS
CADD FILE: FINAL AS-BUILT.DWG	DATE: 02/2016

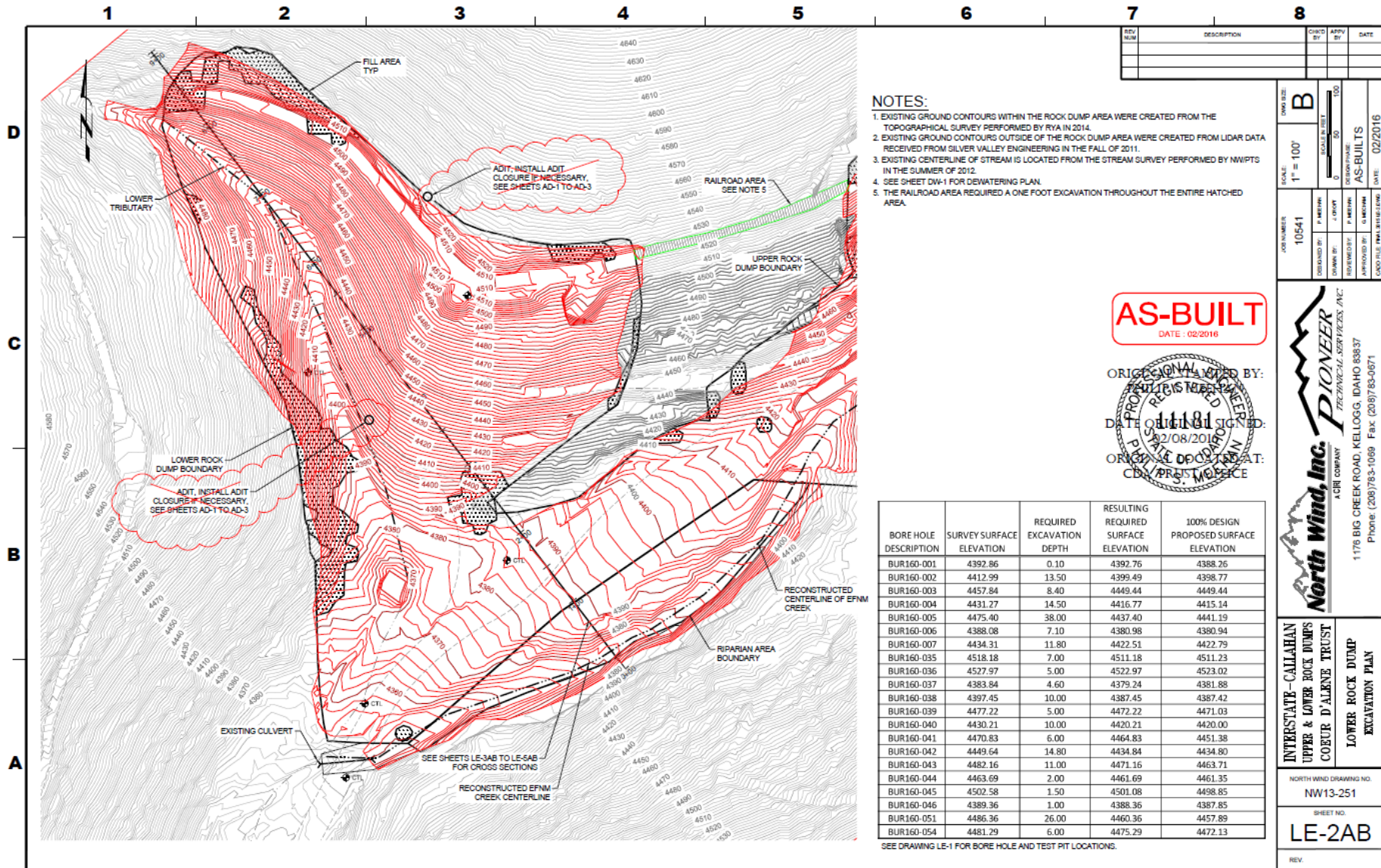
North Wind, Inc.
 a civil company
PIONEER
 TECHNICAL SERVICES, INC.
 1176 BIG CREEK ROAD, KELLOGG, IDAHO 83837
 Phone: (208)793-1089 Fax: (208)755-0671

AS-BUILT
 DATE: 02/2016

PROFESSIONALLY ENGINEERED BY:
 INTERSTATE-CALLAHAN
 UPPER & LOWER ROCK DUMPS
 COEUR D'ALENE TRUST
 DATE ORIGINAL SIGNED: 02/08/2016
 ORIGINAL PROJECT NO.: NW13-250
 CD/PROS/10541

INTERSTATE-CALLAHAN UPPER & LOWER ROCK DUMPS COEUR D'ALENE TRUST	LOWER ROCK DUMP EXISTING CONDITIONS PLAN
NORTH WIND DRAWING NO. NW13-250	SHEET NO. LE-1AB
REV.	

Lower Rock Dump Excavation



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 NWPTS IN THE SUMMER OF 2012.
- SEE SHEET DW-1 FOR DEWATERING PLAN.
- THE RAILROAD AREA REQUIRED A ONE FOOT EXCAVATION THROUGHOUT THE ENTIRE HATCHED AREA.

AS-BUILT
DATE : 02/2016

ORIGINAL DESIGNED BY:

 DATE OF DESIGN: 02/08/2016
 ORIGINAL DOCUMENT AT:
 CDA TRUST INTERSTATE

BORE HOLE DESCRIPTION	SURVEY SURFACE ELEVATION	REQUIRED EXCAVATION DEPTH	RESULTING REQUIRED 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	4398.77
BUR160-003	4457.84	8.40	4449.44	4449.44
BUR160-004	4431.27	14.50	4416.77	4415.14
BUR160-005	4475.40	38.00	4437.40	4441.19
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	4.60	4379.24	4381.88
BUR160-038	4397.45	10.00	4387.45	4387.42
BUR160-039	4477.22	5.00	4472.22	4471.03
BUR160-040	4430.21	10.00	4420.21	4420.00
BUR160-041	4470.83	6.00	4464.83	4451.38
BUR160-042	4449.64	14.80	4434.84	4434.80
BUR160-043	4482.16	11.00	4471.16	4463.71
BUR160-044	4463.69	2.00	4461.69	4461.35
BUR160-045	4502.58	1.50	4501.08	4498.85
BUR160-046	4389.36	1.00	4388.36	4387.85
BUR160-051	4486.36	26.00	4460.36	4457.89
BUR160-054	4481.29	6.00	4475.29	4472.13

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

REV	NO	DESCRIPTION	CHG'D BY	APP'D BY	DATE

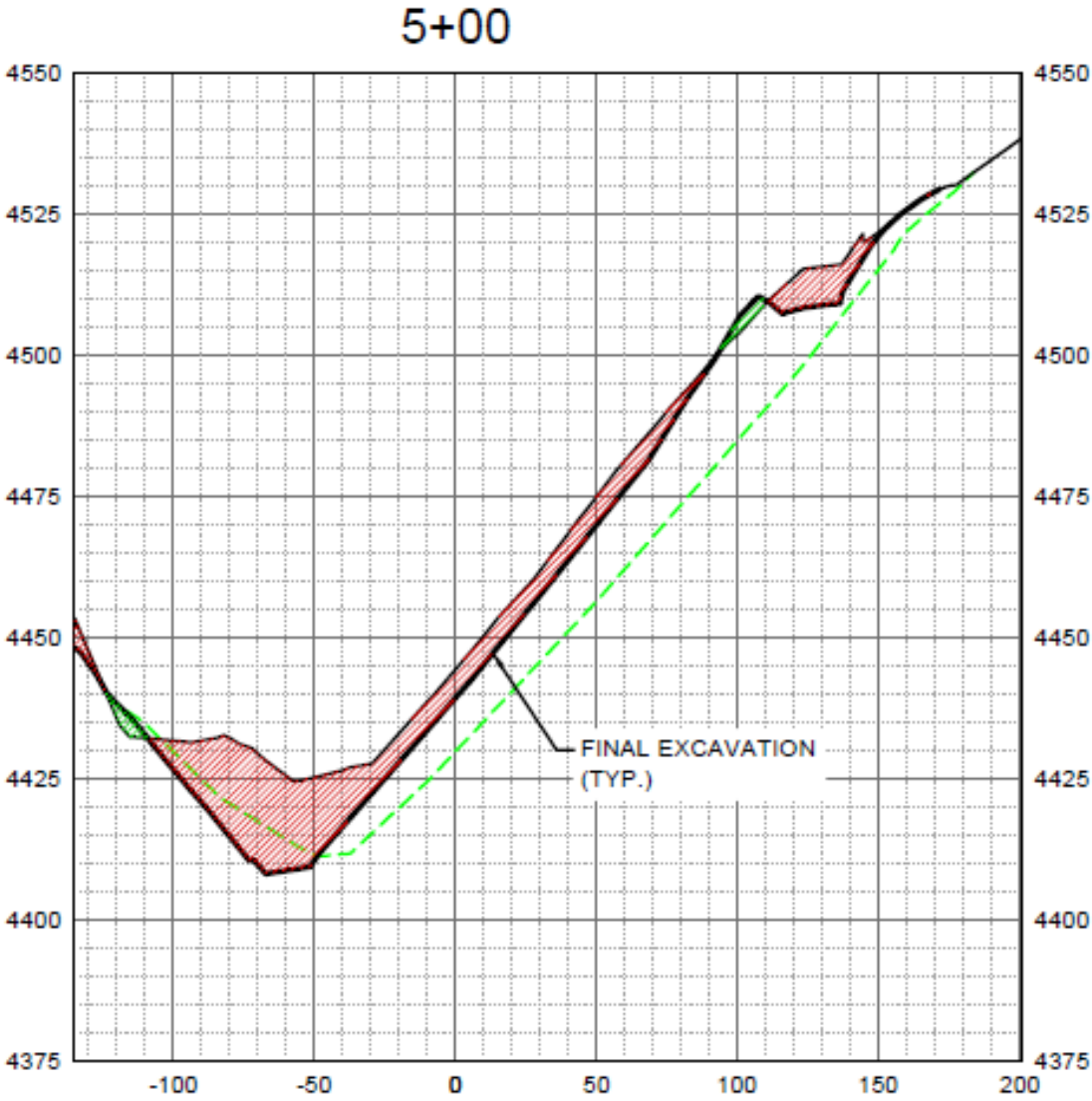
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JOB NUMBER: 10541	AS-BUILTS
DESIGNED BY: P. MERRIN	DATE: 02/2016
DRAWN BY: J. DAVIS	DATE: 02/2016
CHECKED BY: P. MERRIN	DATE: 02/2016
APPROVED BY: G. MERRIN	DATE: 02/2016
CADD FILE: FINAL.DWG	DATE: 02/2016

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INTERSTATE - CALLAHAN
 UPPER & LOWER ROCK DUMPS
 COEUR D'ALENE TRUST
 LOWER ROCK DUMP
 EXCAVATION PLAN

NORTH WIND DRAWING NO.
NW13-251
 SHEET NO.
LE-2AB

Field Modifications



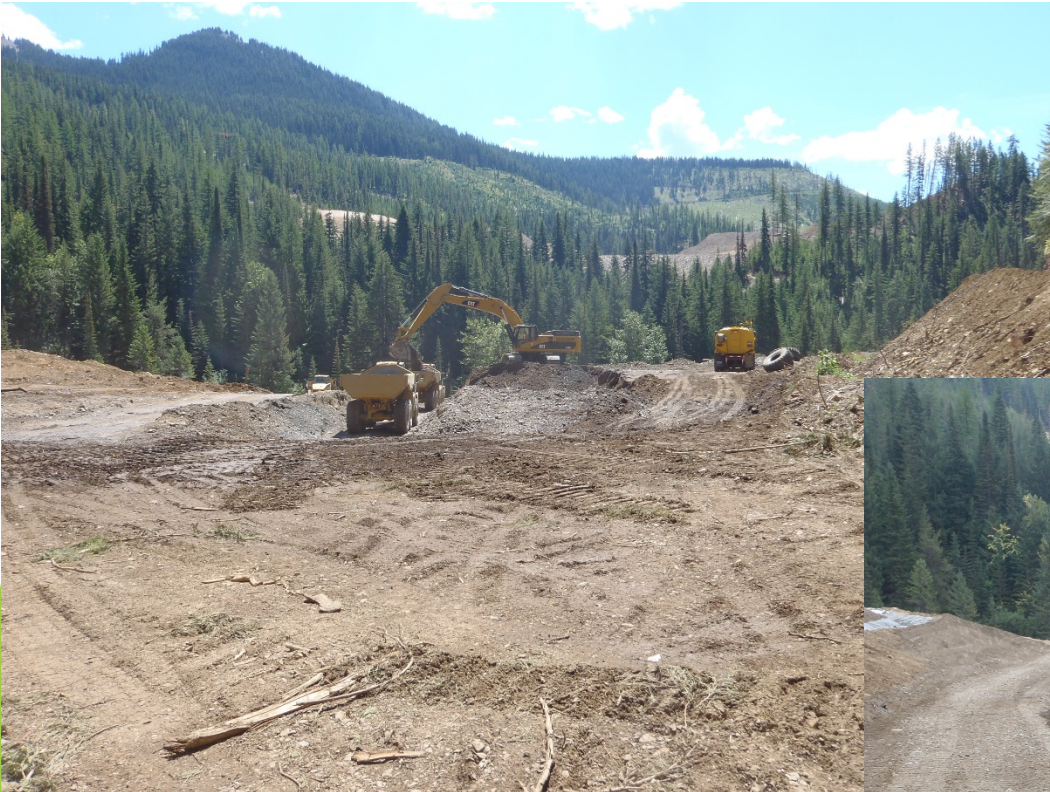
Excavation Design Summary

- ▶ 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



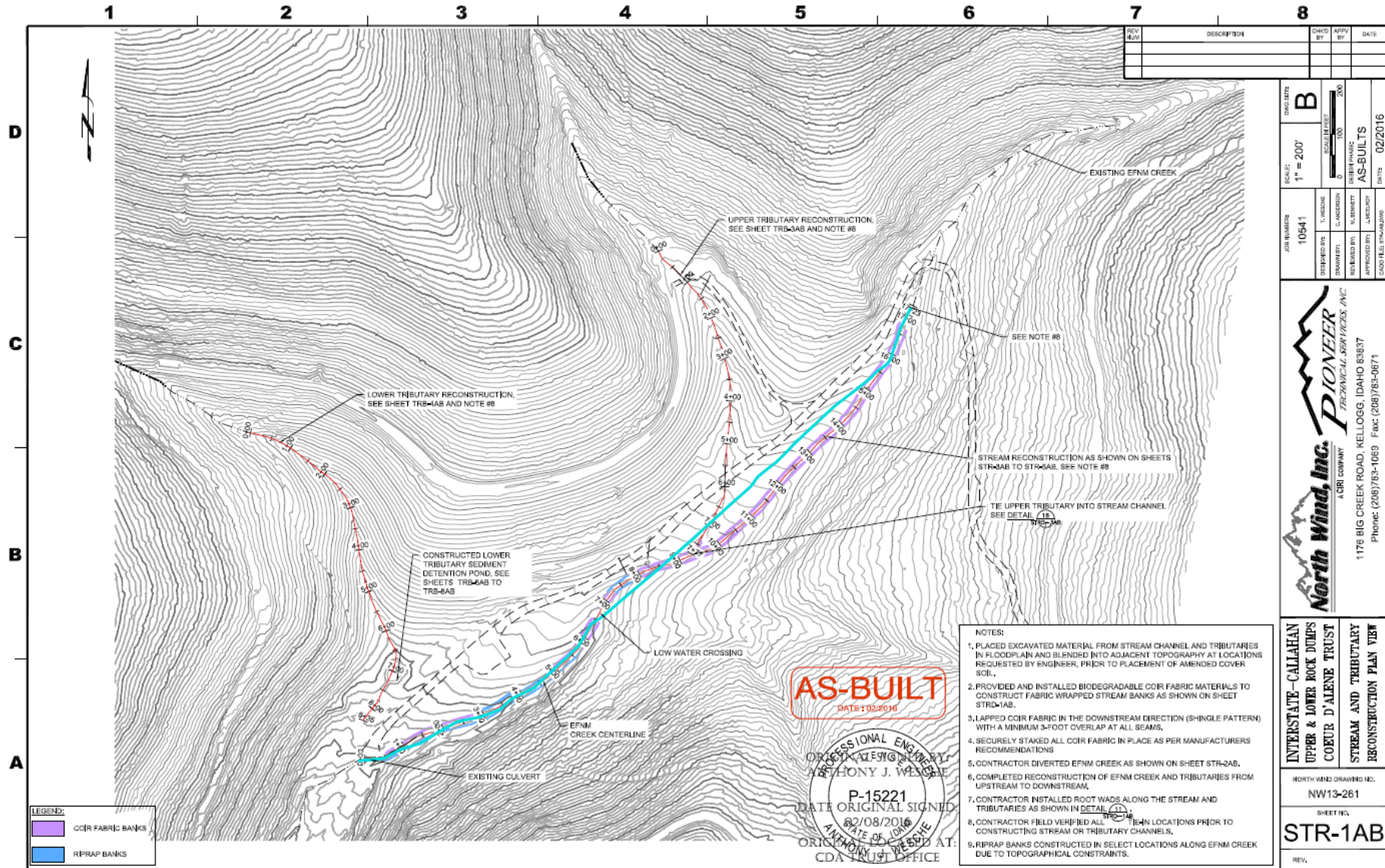


EFNM Creek and Tributary Reconstruction

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



AS-BUILT
DATE: 02/2016

PROFESSIONAL ENGINEER
ANTHONY J. WELSH
P-15221
DATE ORIGINAL SIGNED
02/08/2016
ANTHONY J. WELSH
CDA TRUST OFFICE

- NOTES:
1. PLACED EXCAVATED MATERIAL FROM STREAM CHANNEL AND TRIBUTARIES IN FLOODPLAIN AND BLENDED INTO ADJACENT TOPOGRAPHY AT LOCATIONS REQUESTED BY ENGINEER, PRIOR TO PLACEMENT OF AMENDED COVER SOIL.
 2. PROVIDED AND INSTALLED BIODEGRADABLE COIR FABRIC MATERIALS TO CONSTRUCT FABRIC WRAPPED STREAM BANKS AS SHOWN ON SHEET STR-1AB.
 3. LAPPED COIR FABRIC IN THE DOWNSTREAM DIRECTION (SHINGLE PATTERN) WITH A MINIMUM 3-FOOT OVERLAP AT ALL SEAMS.
 4. SECURELY STAKED ALL COIR FABRIC IN PLACE AS PER MANUFACTURERS RECOMMENDATIONS.
 5. CONTRACTOR DIVERTED EFNM CREEK AS SHOWN ON SHEET STR-2AB.
 6. COMPLETED RECONSTRUCTION OF EFNM CREEK AND TRIBUTARIES FROM UPSTREAM TO DOWNSTREAM.
 7. CONTRACTOR INSTALLED ROOT WADS ALONG THE STREAM AND TRIBUTARIES AS SHOWN IN DETAIL (D).
 8. CONTRACTOR FIELD VERIFIED ALL BEIN LOCATIONS PRIOR TO CONSTRUCTING STREAM OR TRIBUTARY CHANNELS.
 9. RIPRAP BANKS CONSTRUCTED IN SELECT LOCATIONS ALONG EFNM CREEK DUE TO TOPOGRAPHICAL CONSTRAINTS.

NO.	DESCRIPTION	CHECK BY	APPROVED BY	DATE

SCALE: 1" = 200'	ENCLOSURE: B
SCALE: 1" = 100'	SCALE: 1" = 200'
PROJECT NO: 10541	DATE: 02/2016
DESIGNED BY: S. ANDERSON	AS-BUILTS
DRAWN BY: K. BARNETT	
CHECKED BY: S. ANDERSON	
APPROVED BY: S. ANDERSON	
CADD FILE: P:\10541.DWG	

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TECHNICAL SERVICES, INC.
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INTERSTATE-CALLAHAN
UPPER & LOWER ROCK DUMPS
COEUR D'ALENE TRUST
STREAM AND TRIBUTARY
RECONSTRUCTION PLAN VIEW

NORTH WIND DRAWING NO. NW13-261
SHEET NO. STR-1AB
REV.

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)

2016 Photos



An aerial photograph of a forested hillside. A central, roughly V-shaped area has been cleared of trees, showing a mix of brownish soil and sparse, dry-looking vegetation. This cleared area is flanked by dense, dark green coniferous forests. The word "Revegetation" is overlaid in white text across the center of the cleared area. A small yellow marker is visible on the left side of the cleared area, and a narrow path or stream bed runs through the center of the 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 valley. In the foreground, a stream flows through a narrow channel, surrounded by brown, eroded soil. The banks are steep and show signs of recent erosion, with some snow patches on the left. The background is a dense forest of tall, thin trees. The word "QUESTIONS" is overlaid in white text in the center of the image.

QUESTIONS