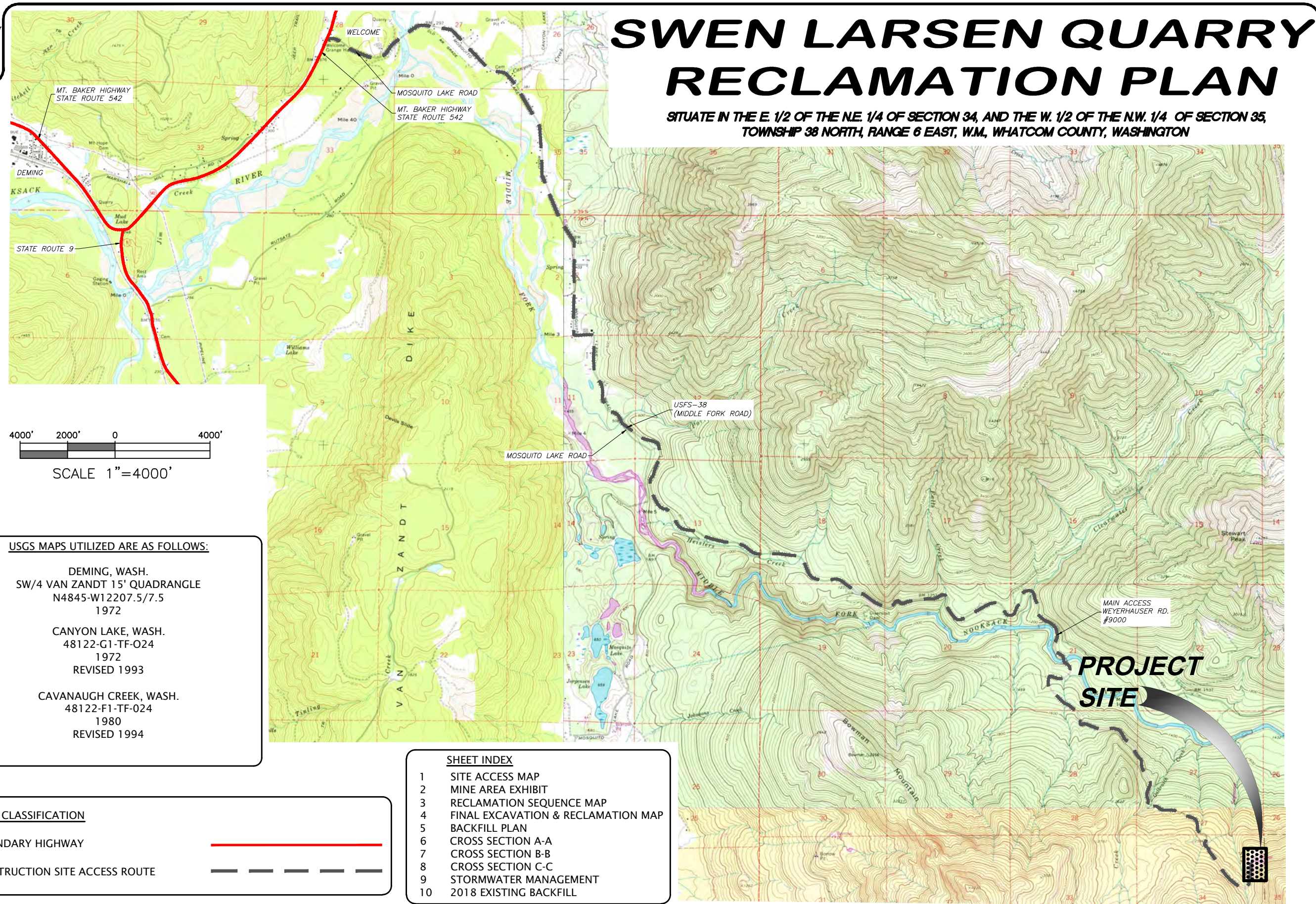




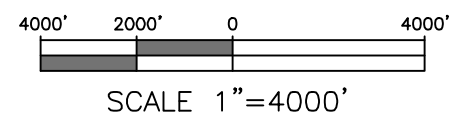
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SWEN LARSEN QUARRY RECLAMATION PLAN

SITUATE IN THE E 1/2 OF THE NE 1/4 OF SECTION 34, AND THE W 1/2 OF THE N.W. 1/4 OF SECTION 35, TOWNSHIP 38 NORTH, RANGE 6 EAST, W.M, WHATCOM COUNTY, WASHINGTON



USGS MAPS UTILIZED ARE AS FOLLOWS:

- DEMING, WASH.
SW/4 VAN ZANDT 15' QUADRANGLE
N4845-W12207.5/7.5
1972
- CANYON LAKE, WASH.
48122-G1-TF-024
1972
REVISED 1993
- CAVAUGHAN CREEK, WASH.
48122-F1-TF-024
1980
REVISED 1994

ROAD CLASSIFICATION

- SECONDARY HIGHWAY
- CONSTRUCTION SITE ACCESS ROUTE

SHEET INDEX

1	SITE ACCESS MAP
2	MINE AREA EXHIBIT
3	RECLAMATION SEQUENCE MAP
4	FINAL EXCAVATION & RECLAMATION MAP
5	BACKFILL PLAN
6	CROSS SECTION A-A
7	CROSS SECTION B-B
8	CROSS SECTION C-C
9	STORMWATER MANAGEMENT
10	2018 EXISTING BACKFILL

SWEN LARSEN QUARRY - MINE RECLAMATION PLAN- WHATCOM COUNTY, WA
DNR SURFACE MINE OPERATING PERMIT # 70-012069

TWIN SISTERS OLIVINE
15540 N. LOMBARD STREET
PORTLAND, OR 97206
503.226.4836

SITE ACCESS MAP
JOB NO. 2015229
DATE: 03/19/2024

SHEET 01 OF 10

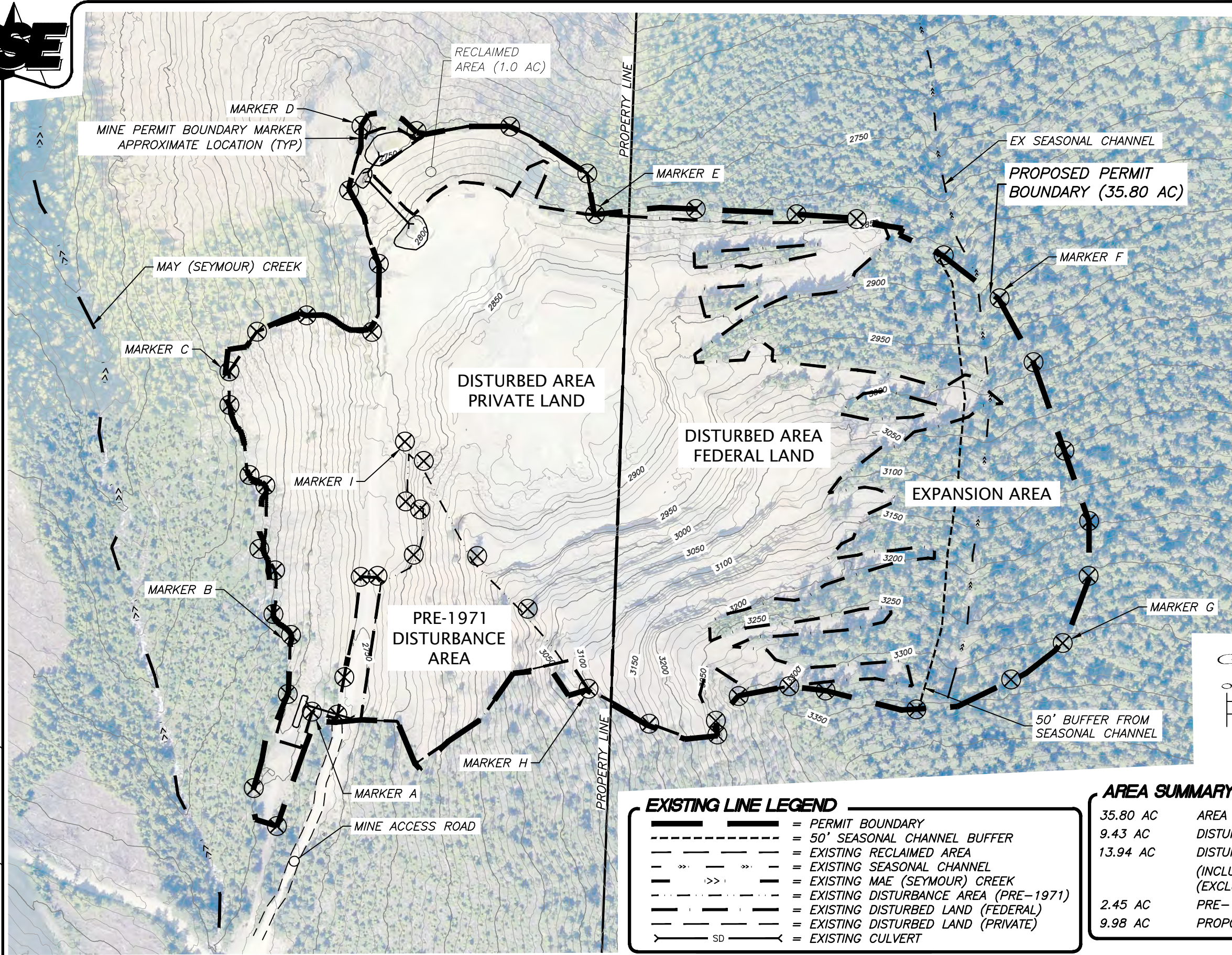
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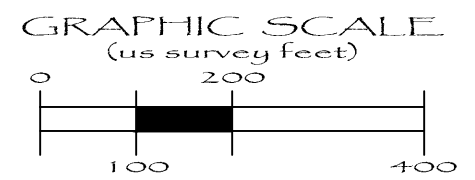
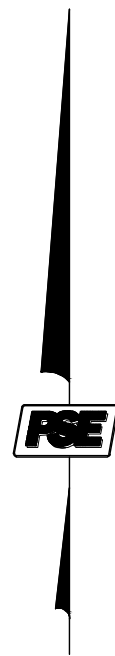


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EXISTING LINE LEGEND

	= PERMIT BOUNDARY
	= 50' SEASONAL CHANNEL BUFFER
	= EXISTING RECLAIMED AREA
	= EXISTING SEASONAL CHANNEL
	= EXISTING MAE (SEYMOUR) CREEK
	= EXISTING DISTURBANCE AREA (PRE-1971)
	= EXISTING DISTURBED LAND (FEDERAL)
	= EXISTING DISTURBED LAND (PRIVATE)
	= EXISTING CULVERT

AREA SUMMARY TABLE

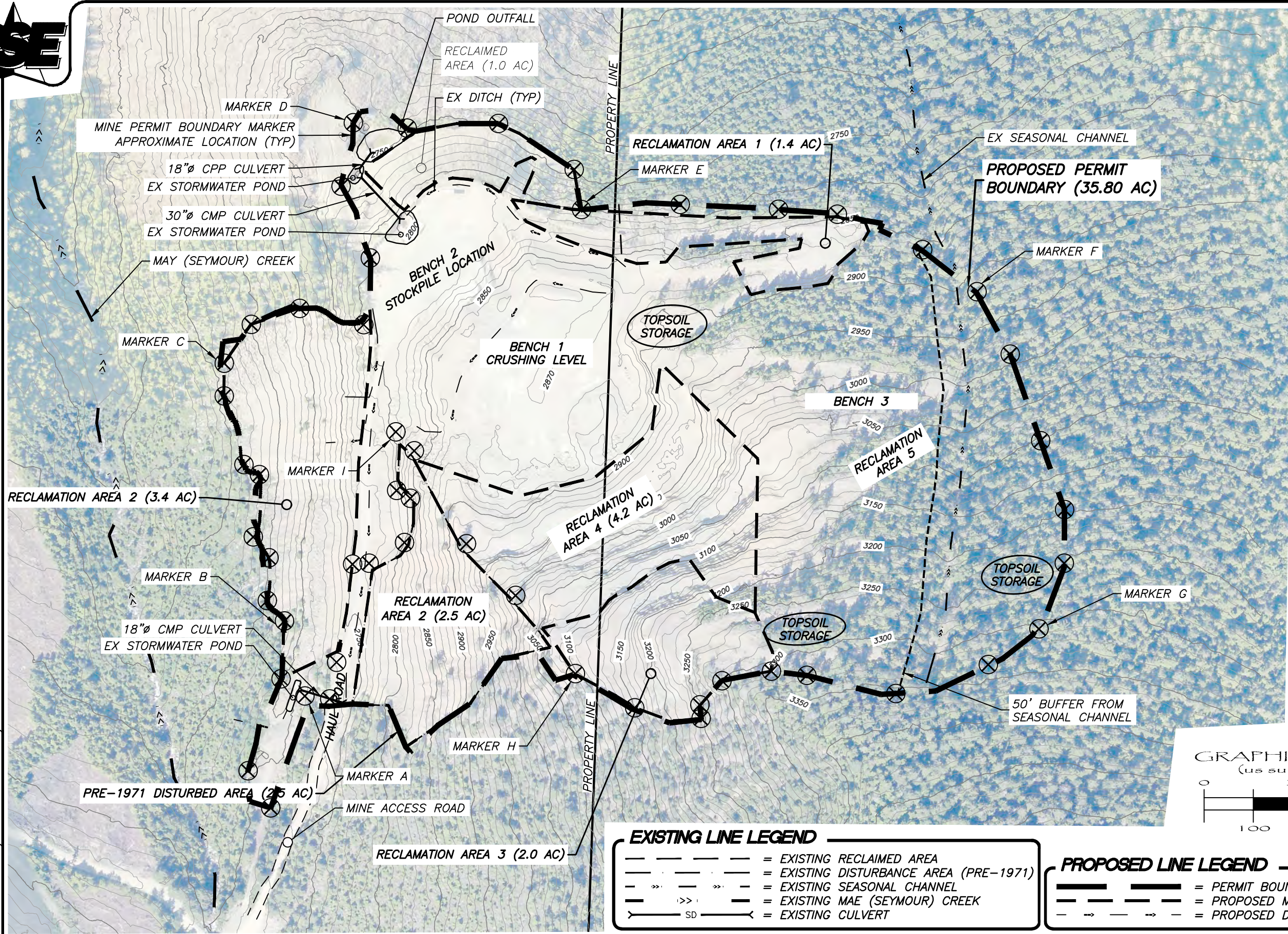
35.80 AC	AREA WITHIN PERMIT BOUNDARY
9.43 AC	DISTURBED AREA WITHIN FEDERAL LAND
13.94 AC	DISTURBED AREA WITHIN PRIVATE LAND (INCLUDES 1 ACRE OF RECLAIMED AREA (EXCLUDES AREA DISTURBED PRE-1971))
2.45 AC	PRE-1971 DISTURBED AREA
9.98 AC	PROPOSED EXPANSION AREA

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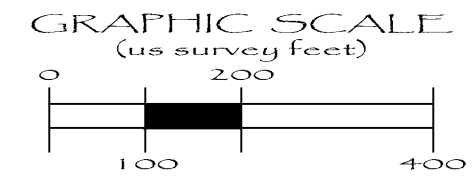
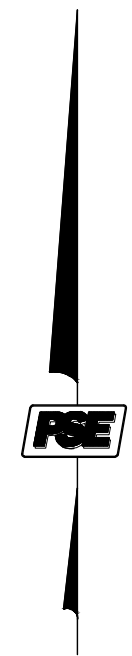


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EXISTING LINE LEGEND

	= EXISTING RECLAIMED AREA
	= EXISTING DISTURBANCE AREA (PRE-1971)
	= EXISTING SEASONAL CHANNEL
	= EXISTING MAE (SEYMOUR) CREEK
	= EXISTING CULVERT

PROPOSED LINE LEGEND

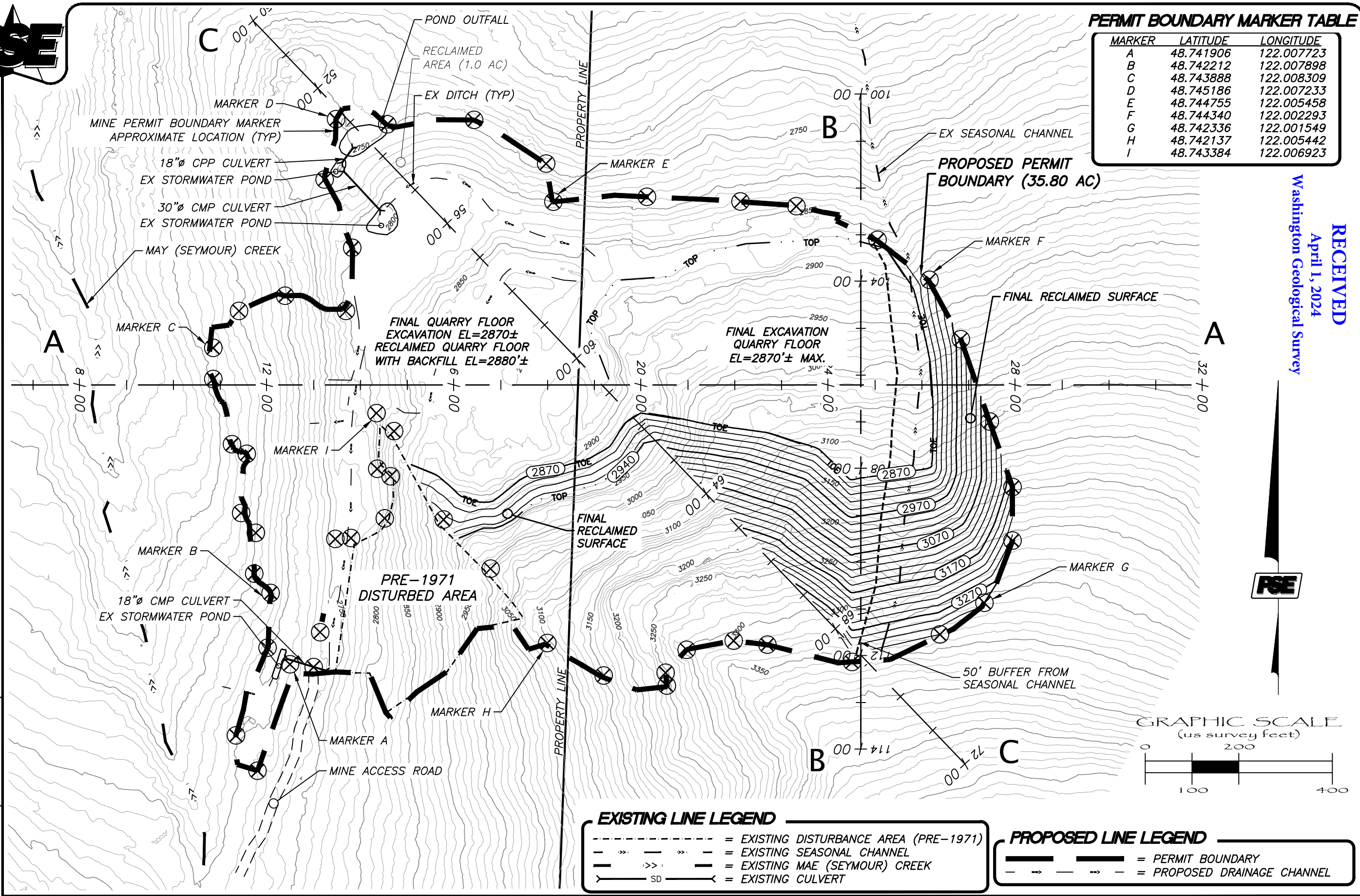
	= PERMIT BOUNDARY
	= PROPOSED MINE RECLAIM AREAS
	= PROPOSED DRAINAGE CHANNEL

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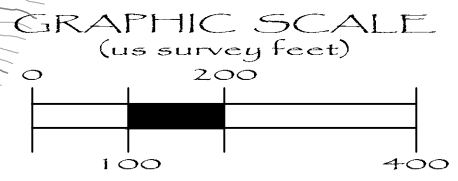
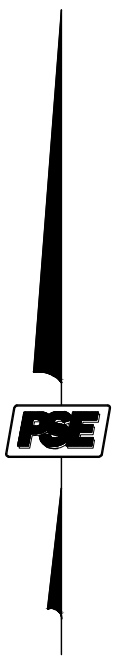
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PERMIT BOUNDARY MARKER TABLE		
MARKER	LATITUDE	LONGITUDE
A	48.741906	122.007723
B	48.742212	122.007898
C	48.743888	122.008309
D	48.745186	122.007233
E	48.744755	122.005458
F	48.744340	122.002293
G	48.742336	122.001549
H	48.742137	122.005442
I	48.743384	122.006923

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EXISTING LINE LEGEND	
	= EXISTING DISTURBANCE AREA (PRE-1971)
	= EXISTING SEASONAL CHANNEL
	= EXISTING MAE (SEYMOUR) CREEK
	= EXISTING CULVERT

PROPOSED LINE LEGEND	
	= PERMIT BOUNDARY
	= PROPOSED DRAINAGE CHANNEL

SWEN LARSEN QUARRY - MINE RECLAMATION PLAN- WHATCOM COUNTY, WA
DNR SURFACE MINE OPERATING PERMIT # 70-012069

TWIN SISTERS OLIVINE
15540 N. LOMBARD STREET
PORTLAND, OR 97206
503.226.4836

FINAL EXCAVATION AND RECLAMATION MAP
JOB NO. 2015229 DATE: 03/19/2024

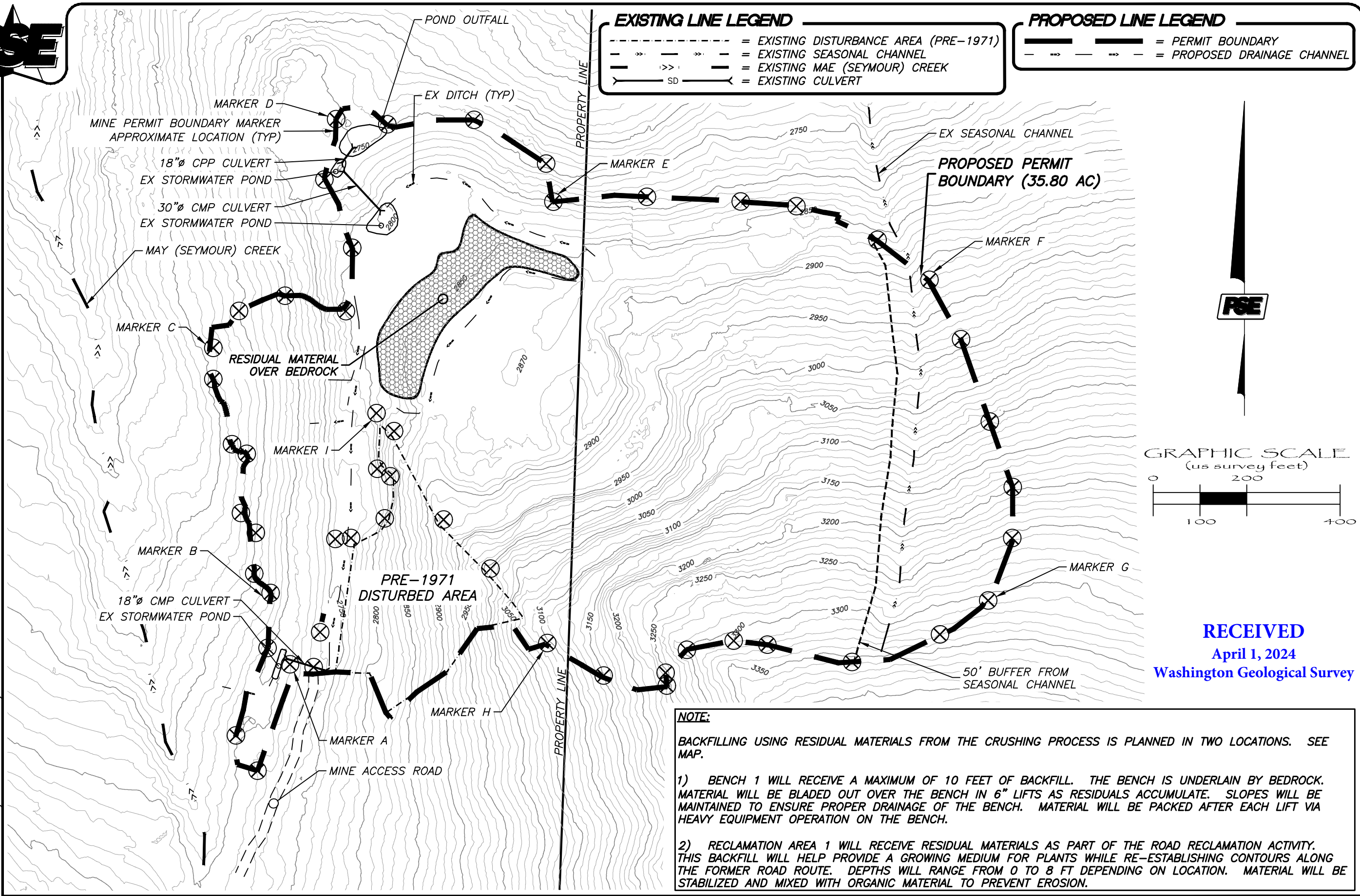
SHEET **04** OF **10**

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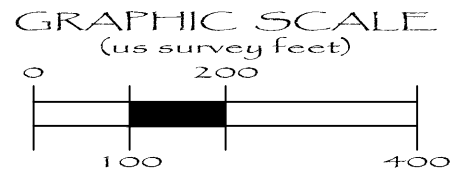


EXISTING LINE LEGEND

- - - - - = EXISTING DISTURBANCE AREA (PRE-1971)
- - - - - = EXISTING SEASONAL CHANNEL
- - - - - = EXISTING MAE (SEYMOUR) CREEK
- - - - - = EXISTING CULVERT

PROPOSED LINE LEGEND

- - - - - = PERMIT BOUNDARY
- - - - - = PROPOSED DRAINAGE CHANNEL



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NOTE:

BACKFILLING USING RESIDUAL MATERIALS FROM THE CRUSHING PROCESS IS PLANNED IN TWO LOCATIONS. SEE MAP.

- 1) BENCH 1 WILL RECEIVE A MAXIMUM OF 10 FEET OF BACKFILL. THE BENCH IS UNDERLAIN BY BEDROCK. MATERIAL WILL BE BLADED OUT OVER THE BENCH IN 6" LIFTS AS RESIDUALS ACCUMULATE. SLOPES WILL BE MAINTAINED TO ENSURE PROPER DRAINAGE OF THE BENCH. MATERIAL WILL BE PACKED AFTER EACH LIFT VIA HEAVY EQUIPMENT OPERATION ON THE BENCH.
- 2) RECLAMATION AREA 1 WILL RECEIVE RESIDUAL MATERIALS AS PART OF THE ROAD RECLAMATION ACTIVITY. THIS BACKFILL WILL HELP PROVIDE A GROWING MEDIUM FOR PLANTS WHILE RE-ESTABLISHING CONTOURS ALONG THE FORMER ROAD ROUTE. DEPTHS WILL RANGE FROM 0 TO 8 FT DEPENDING ON LOCATION. MATERIAL WILL BE STABILIZED AND MIXED WITH ORGANIC MATERIAL TO PREVENT EROSION.

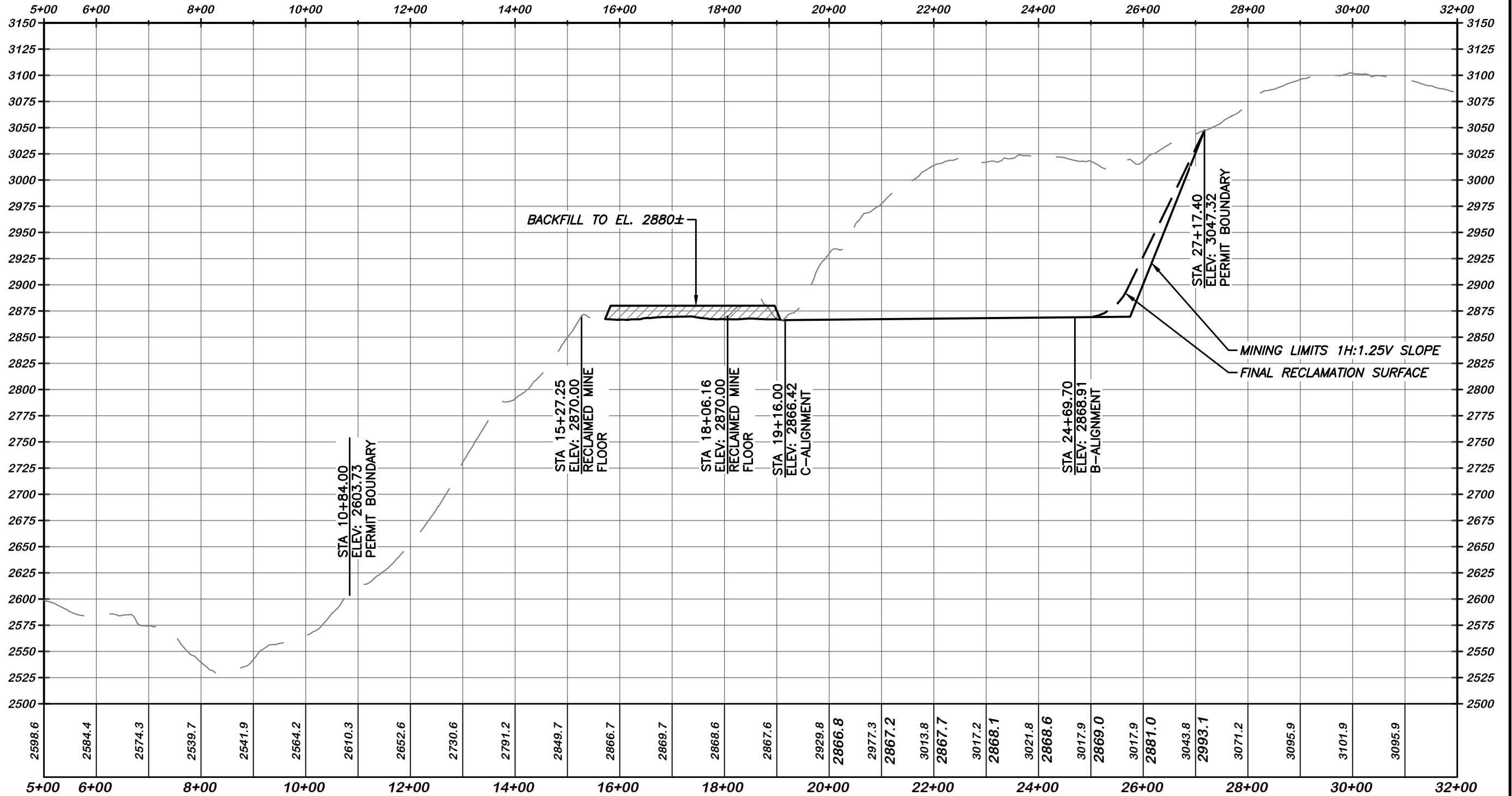
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SECTION A-A

H. SCALE: 1"=200' V. SCALE: 1"=100'

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DNR SURFACE MINE OPERATING PERMIT # 70-012069

TWIN SISTERS OLIVINE
15540 N. LOMBARD STREET
PORTLAND, OR 97206
503.226.4836

JOB NO. 2015229

CROSS SECTION A-A

DATE: 03/19/2024

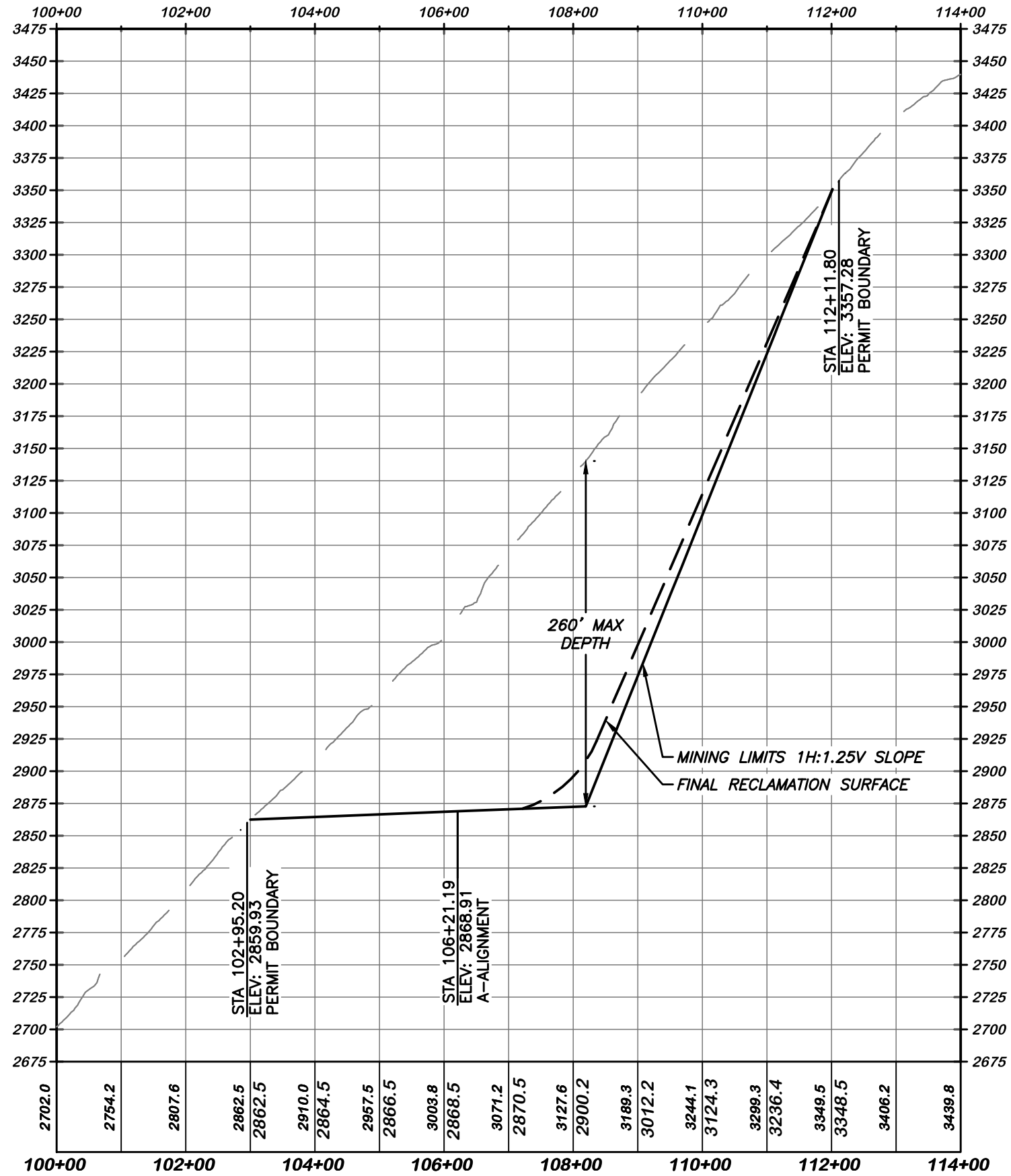
SHEET **06** OF **10**

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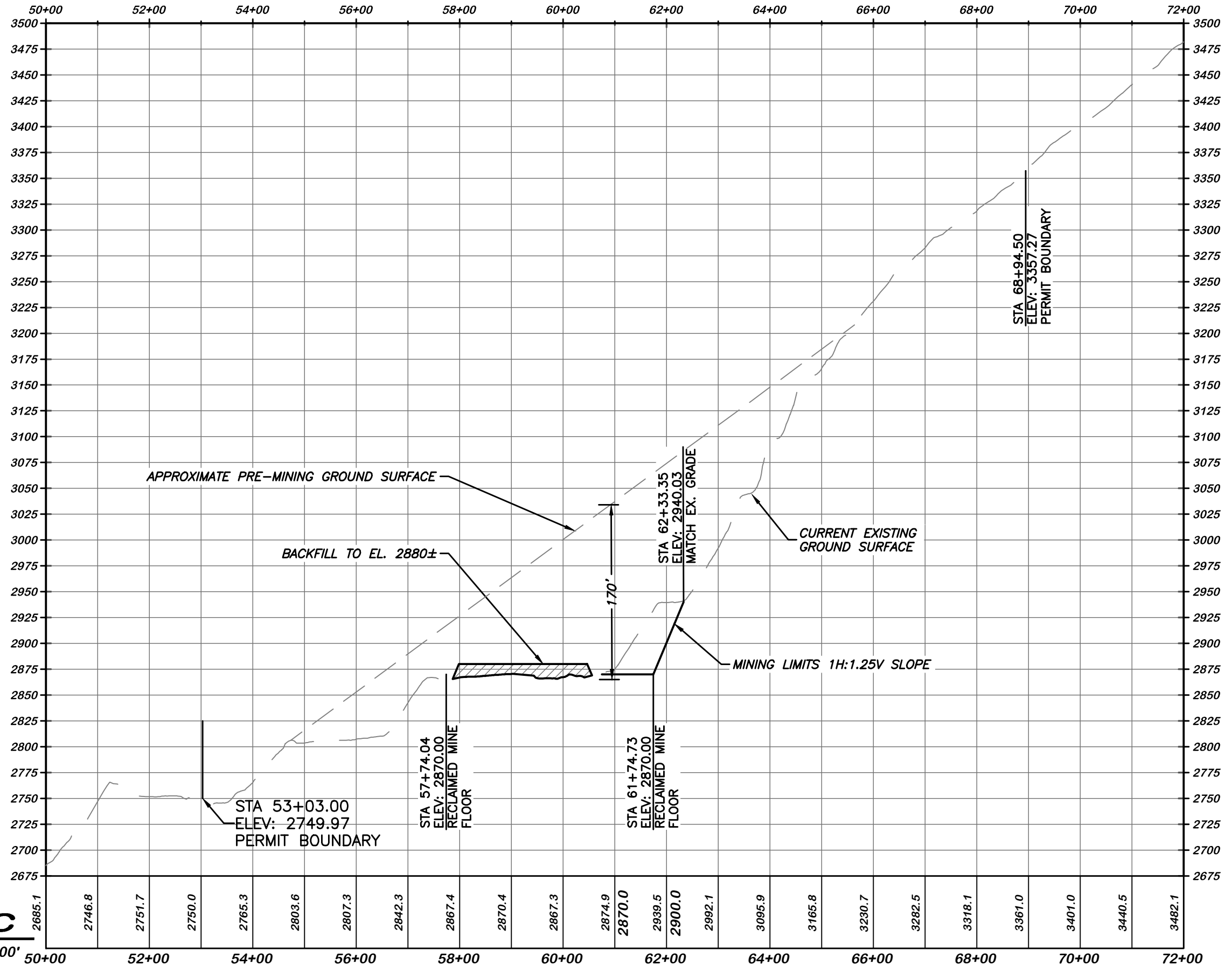
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SECTION B-B
H. SCALE: 1"=200' V. SCALE: 1"=100'



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SECTION C-C

H. SCALE: 1"=200' V. SCALE: 1"=100'

SWEN LARSEN QUARRY - MINE RECLAMATION PLAN- WHATCOM COUNTY, WA

DNR SURFACE MINE OPERATING PERMIT # 70-012069

TWIN SISTERS OLIVINE
15540 N. LOMBARD STREET
PORTLAND, OR 97206
503.226.4836

JOB NO. 2015229

CROSS SECTION C-C

DATE: 03/19/2024

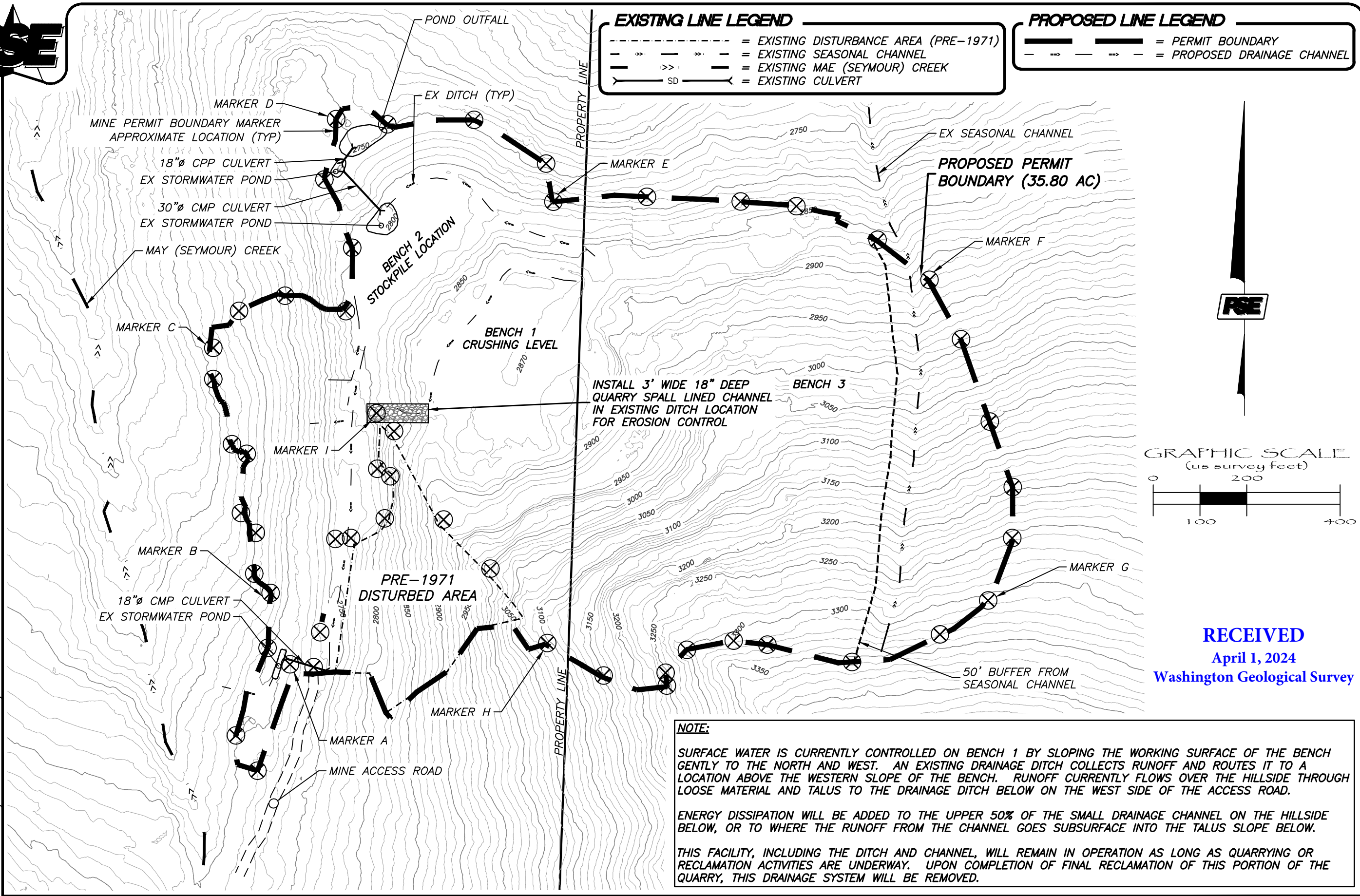
SHEET **08** OF **10**

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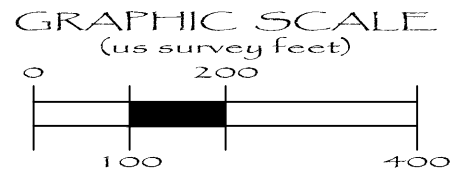


EXISTING LINE LEGEND

	= EXISTING DISTURBANCE AREA (PRE-1971)
	= EXISTING SEASONAL CHANNEL
	= EXISTING MAE (SEYMOUR) CREEK
	= EXISTING CULVERT

PROPOSED LINE LEGEND

	= PERMIT BOUNDARY
	= PROPOSED DRAINAGE CHANNEL



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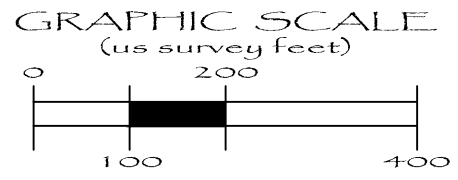
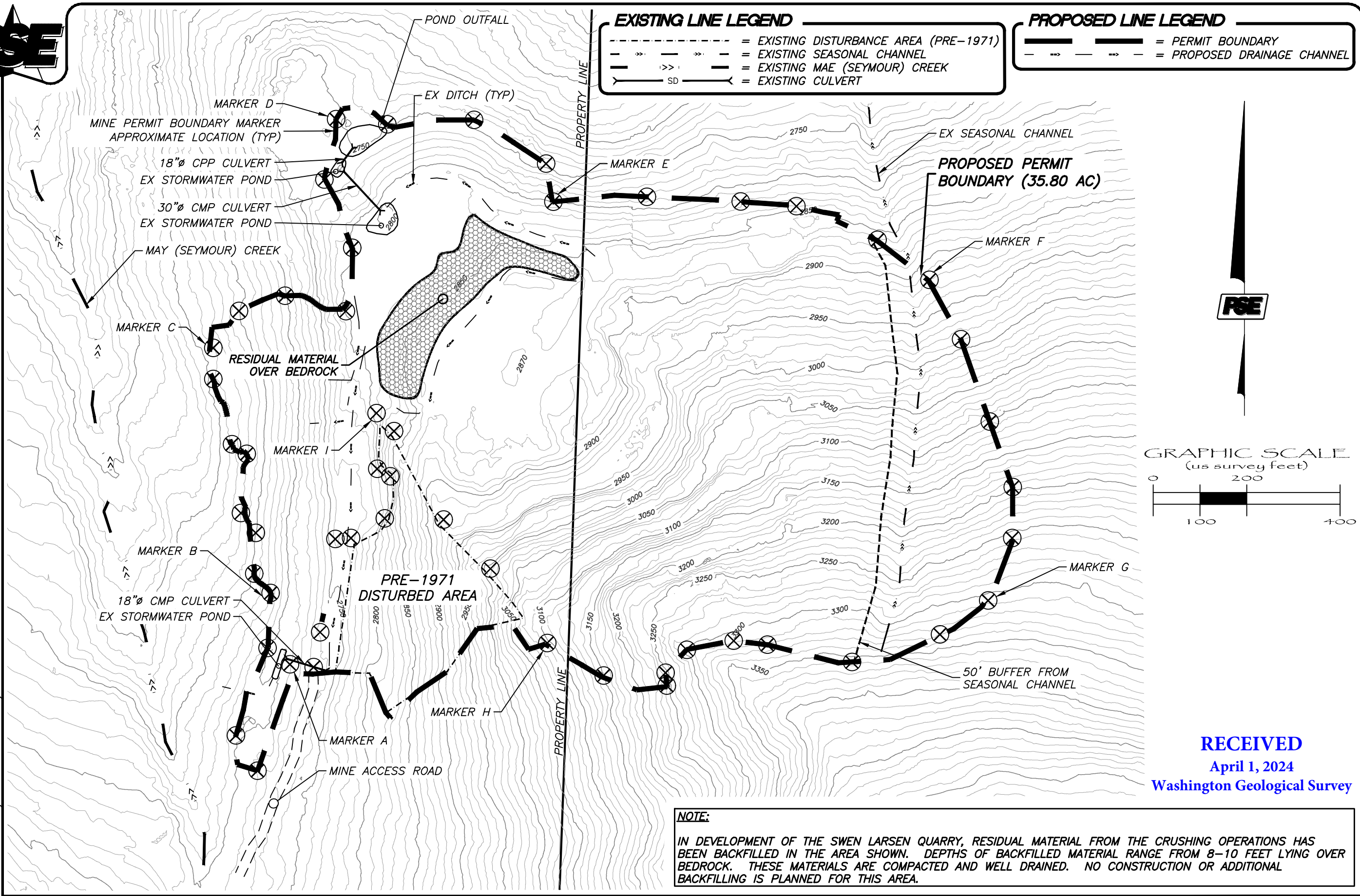
NOTE:
SURFACE WATER IS CURRENTLY CONTROLLED ON BENCH 1 BY SLOPING THE WORKING SURFACE OF THE BENCH GENTLY TO THE NORTH AND WEST. AN EXISTING DRAINAGE DITCH COLLECTS RUNOFF AND ROUTES IT TO A LOCATION ABOVE THE WESTERN SLOPE OF THE BENCH. RUNOFF CURRENTLY FLOWS OVER THE HILLSIDE THROUGH LOOSE MATERIAL AND TALUS TO THE DRAINAGE DITCH BELOW ON THE WEST SIDE OF THE ACCESS ROAD.
ENERGY DISSIPATION WILL BE ADDED TO THE UPPER 50% OF THE SMALL DRAINAGE CHANNEL ON THE HILLSIDE BELOW, OR TO WHERE THE RUNOFF FROM THE CHANNEL GOES SUBSURFACE INTO THE TALUS SLOPE BELOW.
THIS FACILITY, INCLUDING THE DITCH AND CHANNEL, WILL REMAIN IN OPERATION AS LONG AS QUARRYING OR RECLAMATION ACTIVITIES ARE UNDERWAY. UPON COMPLETION OF FINAL RECLAMATION OF THIS PORTION OF THE QUARRY, THIS DRAINAGE SYSTEM WILL BE REMOVED.

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NOTE:
IN DEVELOPMENT OF THE SWEN LARSEN QUARRY, RESIDUAL MATERIAL FROM THE CRUSHING OPERATIONS HAS BEEN BACKFILLED IN THE AREA SHOWN. DEPTHS OF BACKFILLED MATERIAL RANGE FROM 8-10 FEET LYING OVER BEDROCK. THESE MATERIALS ARE COMPACTED AND WELL DRAINED. NO CONSTRUCTION OR ADDITIONAL BACKFILLING IS PLANNED FOR THIS AREA.

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