

Appendix 5

Mine Site Stormwater Permit Application Support Drawings

Errata Sheet

Poly Met Mining, Inc. NorthMet Project

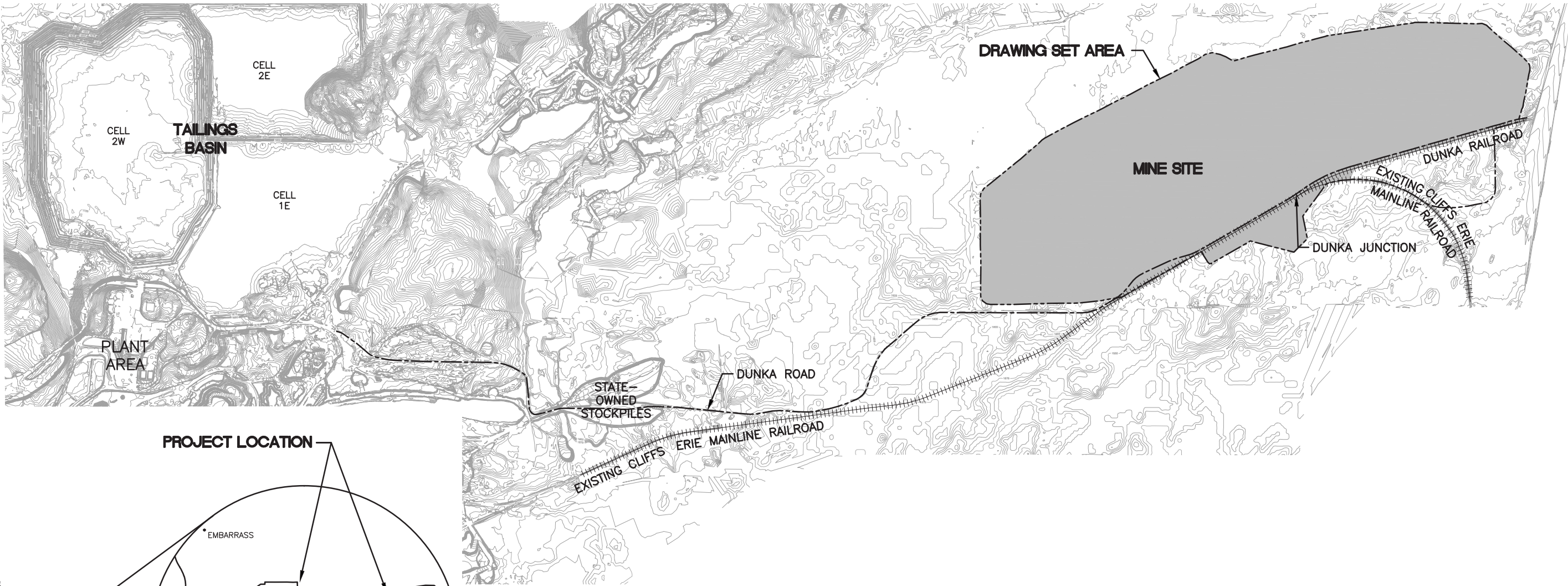
Permit Application Support Drawings: Mine Site Stormwater

August 2017 (version 3)

Engineering design is currently in progress. The table below lists changes that have been identified to-date and have not yet been incorporated in the attached permit application support drawings within this set. Final design will incorporate these changes along with additional site-specific information (e.g., supplementary geotechnical data); therefore, additional adjustments may be made during final design that will be incorporated into the final design drawing set.

Drawing Sheet(s)	Change
Global change to all sheets, as needed	The terminology "mine drainage" as noted in these drawings will be changed to "mine water".
SW-003, SW-004, SW-005, SW-006, SW-031	Temporary sedimentation basins or stormwater infiltration basins may be added to meet construction stormwater requirements. These construction stormwater features require additional site-specific data and will be evaluated in final design.
SW-002, SW-003, SW-004, SW-005, SW-006, SW-008, SW-009, SW-010, SW-013, SW-014, SW-015, SW-016, SW-017, SW-018, SW-019, SW-021, SW-031	The "Mine Site Boundary" will be replaced by the "Mining Area Boundary" as shown on figures included in the Permit to Mine Application.

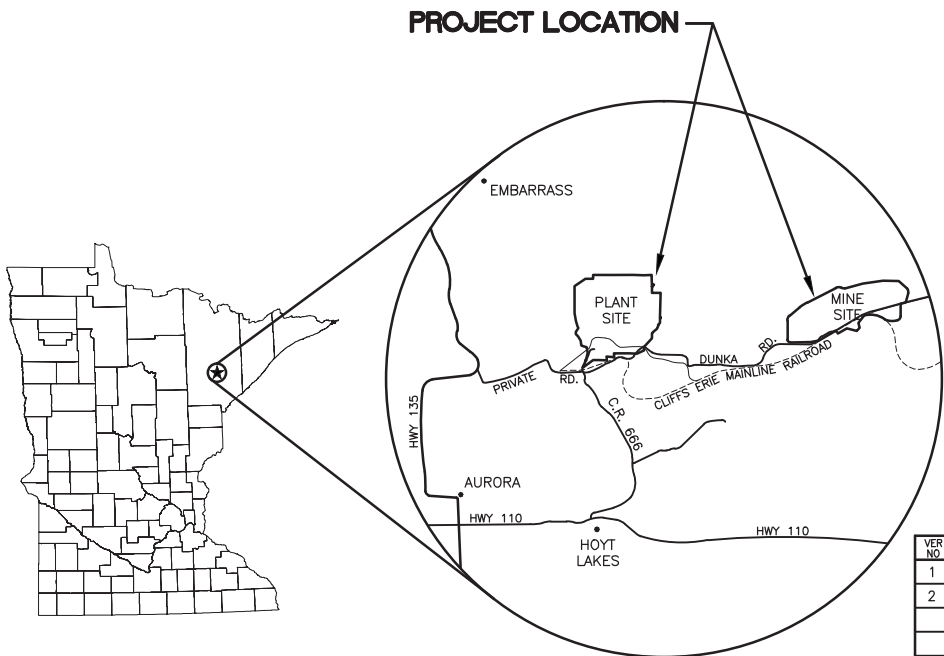
POLY MET MINING, INC. NORTHMET PROJECT
PERMIT APPLICATION SUPPORT DRAWINGS
MINE SITE STORMWATER
HOYT LAKES, MINNESOTA



SITE MAP



0 2000 4000
SCALE IN FEET



LOCATION MAP

NOT TO SCALE



VICINITY MAP

NOT TO SCALE

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
			ISSUED	VERSION	DATE
1	5/26/15	ISSUED FOR INCLUSION IN PERMIT APPLICATION	ISSUED		
2	6/7/2017	PERMIT APPLICATION UPDATES	FOR PERMITTING	2	6/7/2017
			FOR CONSTRUCTION		
			NOT APPROVED FOR CONSTRUCTION.		

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME: PAUL T. SWENSON
SIGNATURE:
DATE: 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS
CHECKED: ATS
BARR PROJECT NO.: 23/69-0C29
SCALE: AS SHOWN

PLANT DRAWING NUMBER:

MINE SITE STORMWATER
LOCATION MAP AND SITE MAP

POLYMET MINING

POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA

BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO. SW-001
REV B

CADD USER: Kate K. Brown FILE: K:\DESIGN\23690C29\10\PERMIT_NMM-05-SW-002.DWG PLOT SCALE: 1:2 PLOT DATE: 6/1/2017 9:21 AM

INCHES

1

2

GENERAL LEGEND

EXISTING		PROPOSED	
	EXISTING CONTOUR - MAJOR		PROPOSED CONTOUR - MAJOR
	EXISTING POWER POLE		PROPOSED CONTOUR - MINOR
	EXISTING RAILROAD		PROPOSED ACCESS ROADS
	WATER EDGE/CREEK CENTER LINE		PROPOSED STORMWATER DRAIN
	EXISTING ROAD		SURFACE DRAINAGE
	RIGHT OF WAY		
	PROPERTY LINE		
	MINE SITE BOUNDARY		
	EXISTING STRUCTURES		
	WETLAND BOUNDARY		
	EXISTING OVERHEAD ELECTRIC		
	EXISTING UNDERGROUND ELECTRIC		
	EXISTING CULVERT		
	PROPOSED MINE WATER CULVERT		

NOTES

- COORDINATE SYSTEM IS MINNESOTA STATE PLANE NORTH ZONE, NAD83.
- ELEVATIONS ARE BASED ON MEAN SEA LEVEL (MSL), NAVD88.
- EXISTING TOPOGRAPHIC INFORMATION SHOWN ON THE DRAWINGS WAS PREPARED BY AEROMETRIC, INC. FROM LIDAR DATA COLLECTED ON MARCH 17, 2010.
- CULVERT DIMENSIONS ARE PRELIMINARY. FINAL DIMENSIONS SHALL BE DETERMINED DURING FINAL DESIGN.
- THE BEDROCK PROFILES SHOWN ON THESE DRAWINGS REPRESENT THE BEST AVAILABLE INFORMATION FOR PLANNING PURPOSES. THE BEDROCK SURFACE FROM WHICH THE PROFILES ARE EXTRACTED IS A THREE-DIMENSIONAL, MODELED SURFACE THAT RESULTED FROM DEDUCTING THE DEPTH TO BEDROCK IDENTIFIED ON LOGS OF BORINGS CONDUCTED AT THE MINE SITE FROM THE LIDAR TOPOGRAPHIC GROUND SURFACE MODEL. THE RESULTING DATA WAS THEN MODELED IN GIS SOFTWARE TO DEVELOP A THREE-DIMENSIONAL BEDROCK SURFACE. THE PROFILES SHOW SIGNIFICANT DETAIL IN LOCAL ELEVATIONS, WHICH MAY OR MAY NOT ACTUALLY EXIST. THE BEDROCK SURFACE PROFILES SHOULD BE TAKEN AS REPRESENTATIVE, BUT NOT NECESSARILY PRECISE.

ABBREVIATIONS

CATEGORY 1 STOCKPILE	-	CATEGORY 1 WASTE ROCK STOCKPILE	-
CATEGORY 2/3 STOCKPILE	-	CATEGORY 2/3 WASTE ROCK STOCKPILE	-
CL	-	CENTERLINE	-
CPS	-	CENTRAL PUMPING STATION	-
D50	-	THE MEDIAN PARTICLE DIAMETER OF A PARTICLESIZE DISTRIBUTION; THE SIZE AT WHICH 50% OF THE PARTICLES IN THE MATERIAL PARTICLE SIZE DISTRIBUTION CURVE ARE SMALLER	-
EL	-	ELEVATION	-
INV	-	INVERT	-
I, I, III, IV, V	-	ROMAN NUMERALS FOR RIPRAP CLASSIFICATION	-
KV	-	KILOVOLT	-
LF	-	LINEAR FEET	-
MP	-	MINNESOTA POWER	-
MPP	-	MINE TO PLANT PIPELINES	-
NWL	-	NORMAL WATER LEVEL	-
RCP	-	REINFORCED CONCRETE PIPE	-
O.C.	-	ON CENTER	-
OSLA	-	OVERBURDEN STORAGE AND LAYDOWN AREA	-
PVI	-	POINT OF VERTICAL	-
SWPPP	-	STORMWATER POLLUTION PREVENTION PLAN	-
WWTS	-	WASTE WATER TREATMENT SYSTEM	-
(E)	-	EAST	-
(W)	-	WEST	-

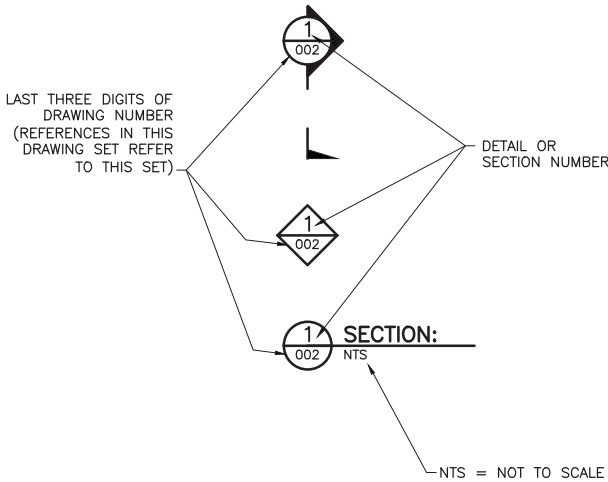
SHEET INDEX



SHEET NO. TITLE

GENERAL DRAWINGS

- SW-001 STORMWATER LOCATION MAP AND SITE MAP
- SW-002 STORMWATER LEGEND AND SHEET INDEX
- SW-003 STORMWATER SITE DRAINAGE PLAN MINE YEAR 1
- SW-004 STORMWATER SITE DRAINAGE PLAN MINE YEAR 11
- SW-005 STORMWATER SITE DRAINAGE PLAN MINE YEAR 20
- SW-006 STORMWATER SHEET LOCATION MAP
- SW-007 STORMWATER TYPICAL DIKES AND DITCHES CROSS SECTIONS
- SW-008 STORMWATER SEDIMENTATION POND A GRADING PLAN AND DETAILS
- SW-009 STORMWATER SEDIMENTATION POND B GRADING PLAN AND DETAILS
- SW-010 STORMWATER SEDIMENTATION POND C-EAST GRADING PLAN AND DETAILS
- SW-011 STORMWATER SEDIMENTATION POND C-WEST GRADING PLAN AND DETAILS
- SW-012 STORMWATER SEDIMENTATION POND D GRADING PLAN AND DETAILS
- SW-013 STORMWATER NORTH DIKE AND DITCH PLAN AND PROFILE STATION 10+00N - 38+50N
- SW-014 STORMWATER NORTH DIKE AND DITCH PLAN AND PROFILE STATION 38+50N - 66+50N
- SW-015 STORMWATER NORTH DIKE AND DITCH PLAN AND PROFILE STATION 66+50N - 94+00N
- SW-016 STORMWATER NORTH DIKE AND DITCH PLAN AND PROFILE STATION 94+00N - 122+00N
- SW-017 STORMWATER NORTH DIKE AND DITCH PLAN AND PROFILE STATION 122+00N - 144+00N
- SW-018 STORMWATER NORTH DIKE AND DITCH PLAN AND PROFILE STATION 146+00N - 162+00N
- SW-019 STORMWATER NORTH DIKE AND DITCH PLAN AND PROFILE STATION 162+00N - 183+00N
- SW-020 STORMWATER SOUTH DIKE AND DITCH PLAN AND PROFILE STATION 10+00S - 22+95S
- SW-021 STORMWATER DITCH B PLAN AND PROFILE STATION 0+00B - 17+50B
- SW-022 STORMWATER DITCH B PLAN AND PROFILE STATION 17+50B - 35+00B
- SW-023 STORMWATER DITCH C(E) PLAN AND PROFILE STATION 0+00C(E) - 19+64C(E)
- SW-024 STORMWATER DITCH C(W) PLAN AND PROFILE STATION 0+00C(W) - 18+00C(W)
- SW-025 STORMWATER DITCH C(W) PLAN AND PROFILE STATION 18+00C(W) - 34+50C(W)
- SW-026 STORMWATER DITCH C(W) PLAN AND PROFILE STATION 35+00C(W) - 55+00C(W)
- SW-027 STORMWATER DITCH C(W) PLAN AND PROFILE STATION 55+00C(W) - 75+00C(W)
- SW-028 STORMWATER DITCH C(W) PLAN AND PROFILE STATION 75+00C(W) - 94+60C(W)
- SW-029 STORMWATER DITCH C(W) PLAN AND PROFILE STATION 95+00C(W) - 124+35C(W)
- SW-030 STORMWATER DITCH D PLAN AND PROFILE STATION 0+00D - 27+00D
- SW-031 STORMWATER DIKES, DITCHES, AND PONDS CLOSURE PLAN

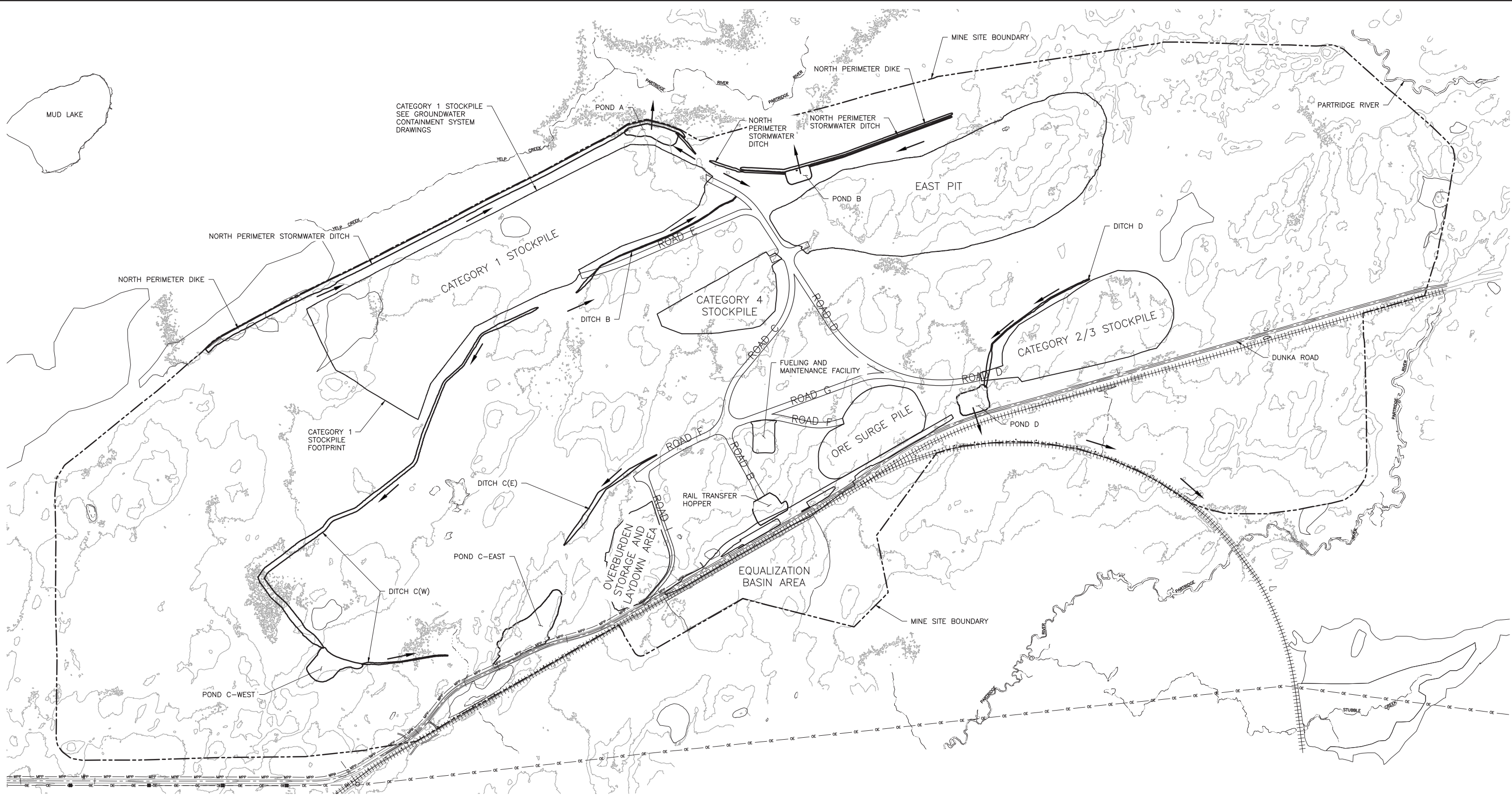
DRAWING NUMBERING



VER NO		DATE	DESCRIPTION	ISSUE STATUS			I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA. PRINTED NAME <u>PAUL T. SWENSON</u> SIGNATURE <u></u> DATE <u>5/26/17</u> LICENSE# <u>20533</u>	DRAWN:		POLYMET MINING		POLY MET MINING, INC. NORTHMET PROJECT HOYT LAKES, MINNESOTA	
1		5/26/15	ISSUED FOR INCLUSION IN PERMIT APPLICATION	ISSUED	VERSION	DATE		KKB/ATS		 BARR ENGINEERING CO. 4300 MARKETPOINTE DRIVE SUITE 200 MINNEAPOLIS, MN. Ph: 1-800-632-2277		REV B	
2		6/7/2017	PERMIT APPLICATION UPDATES	FOR PERMITTING	2	6/7/2017		ATS					
				FOR CONSTRUCTION				BARR PROJECT NO.: 23/69-0C29					
								SCALE: AS SHOWN					
				NOT APPROVED FOR CONSTRUCTION.					DWG. NO. SW-002				

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INCHES
1
2





1 PLAN: STORMWATER SITE DRAINAGE MINE YEAR 1

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
			ISSUED	VERSION	DATE
1	5/26/15	ISSUED FOR INCLUSION IN PERMIT APPLICATION	ISSUED		
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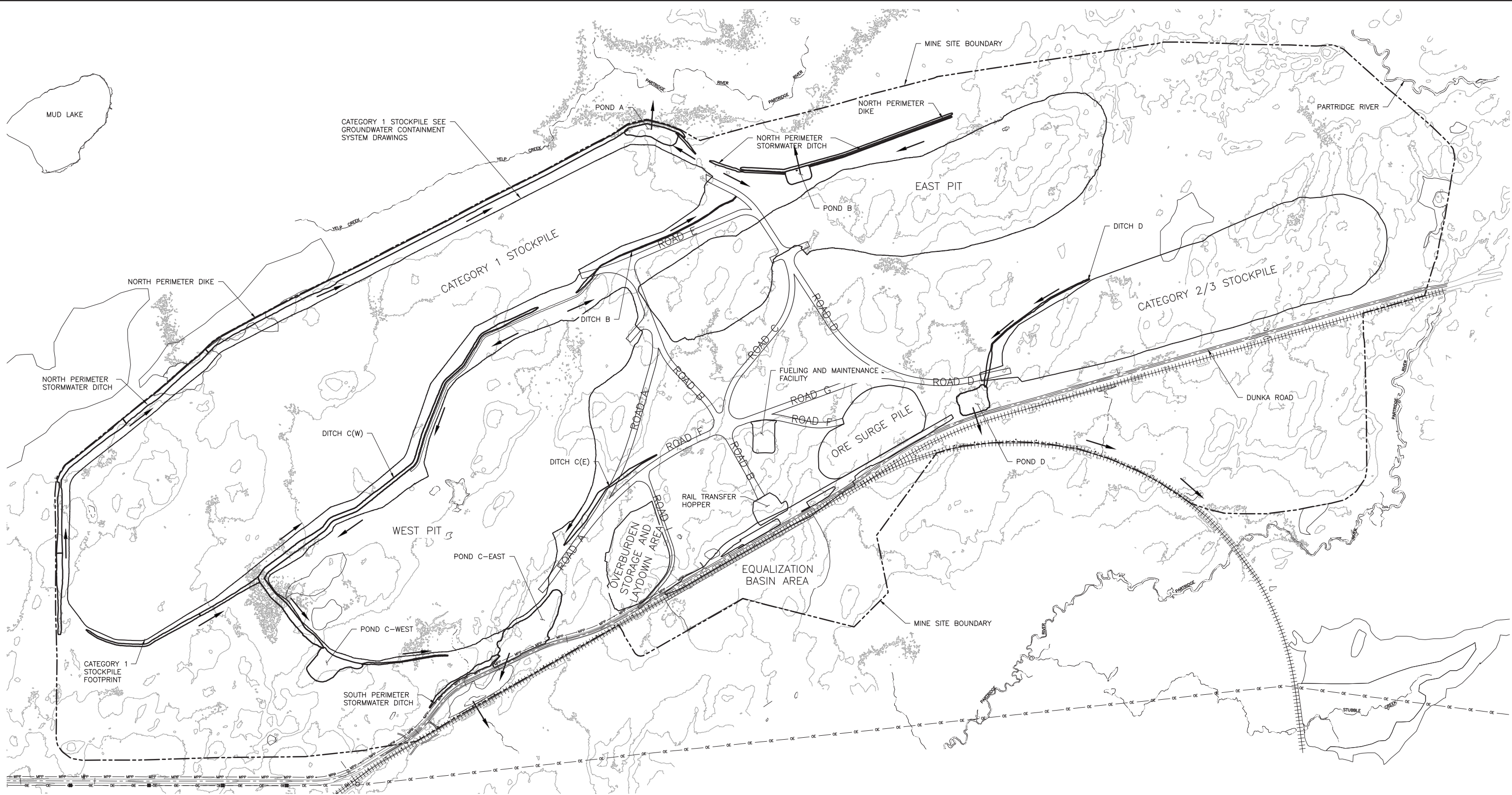
PRINTED NAME: PAUL T. SWENSON
SIGNATURE: *Paul T. Swenson*
DATE: 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS
CHECKED: ATS
BARR PROJECT NO.: 23/69-0C29
SCALE: AS SHOWN

PLANT DRAWING NUMBER:	
MINE SITE STORMWATER SITE DRAINAGE PLAN MINE YEAR 1	
	POLY MET MINING, INC. NORTHMET PROJECT HOYT LAKES, MINNESOTA
	BARR ENGINEERING CO. 4300 MARKETPOINTE DRIVE SUITE 200 MINNEAPOLIS, MN. Ph: 1-800-632-2277
DWG. NO. SW-003	REV B

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INCHES
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2



1 PLAN: STORMWATER SITE DRAINAGE MINE YEAR 11



0 700 1400
SCALE IN FEET

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
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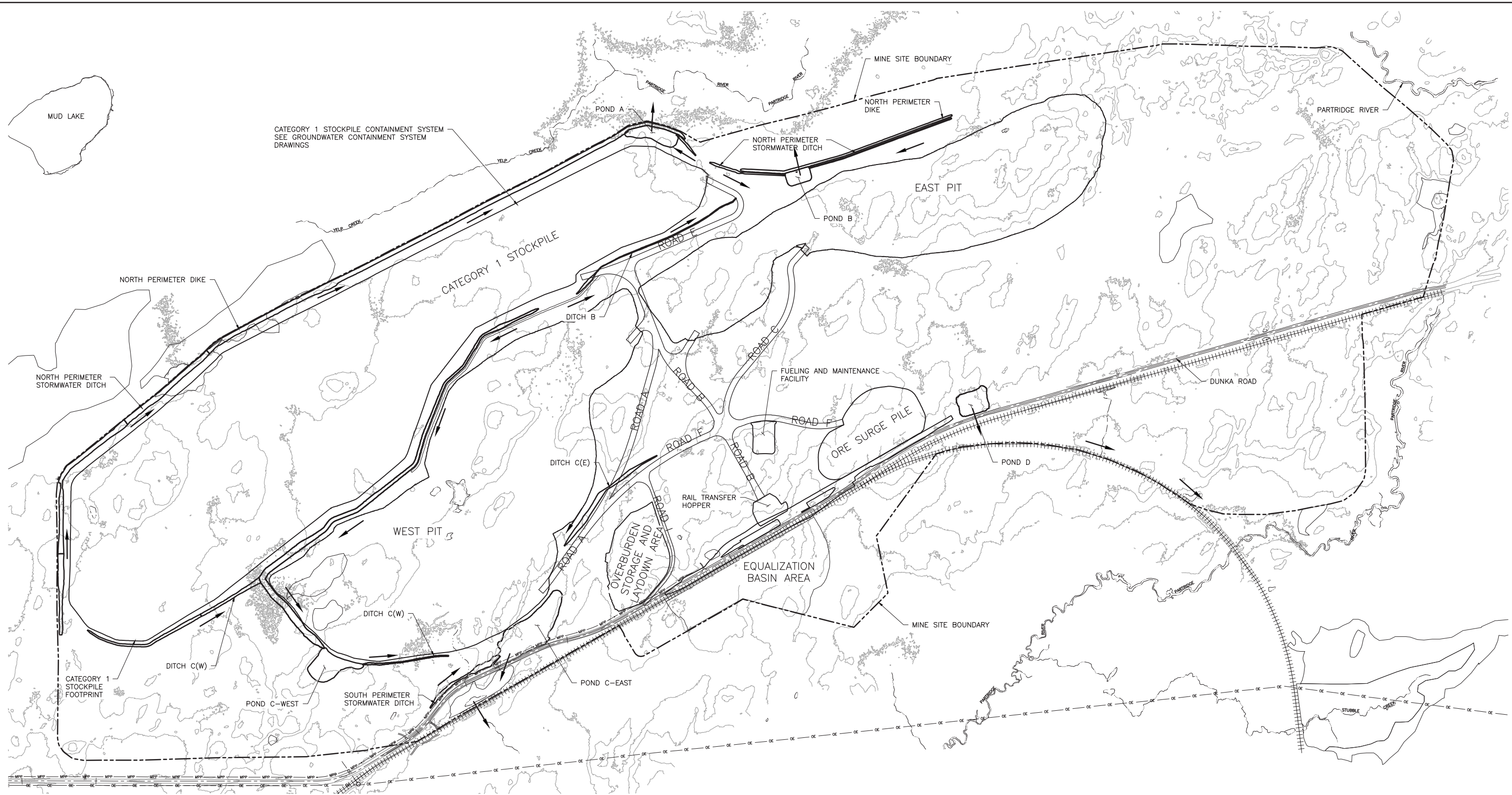
PRINTED NAME: PAUL T. SWENSON
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DATE: 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS
CHECKED: ATS
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SCALE: AS SHOWN

PLANT DRAWING NUMBER:	
MINE SITE STORMWATER SITE DRAINAGE PLAN MINE YEAR 11	
	POLY MET MINING, INC. NORTHMET PROJECT HOYT LAKES, MINNESOTA
	BARR ENGINEERING CO. 4300 MARKETPOINTE DRIVE SUITE 200 MINNEAPOLIS, MN. Ph: 1-800-632-2277
DWG. NO. SW-004	REV B

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INCHES
1
2



1 PLAN: STORMWATER SITE DRAINAGE MINE YEAR 20



0 700 1400
SCALE IN FEET

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
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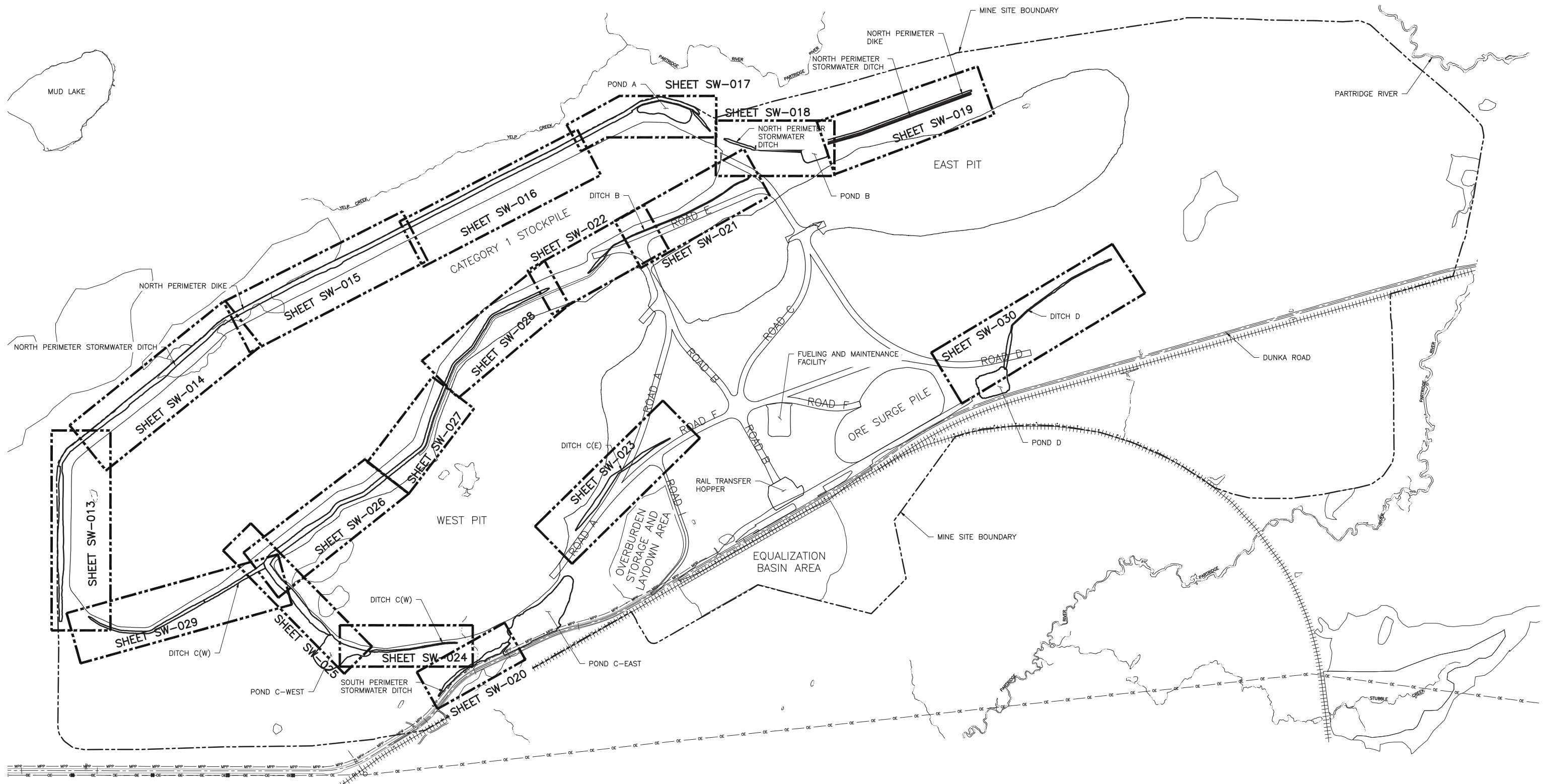
PRINTED NAME: PAUL T. SWENSON
SIGNATURE: *Paul T. Swenson*
DATE: 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS
CHECKED: ATS
BARR PROJECT NO.: 23/69-0C29
SCALE: AS SHOWN

PLANT DRAWING NUMBER:	
MINE SITE STORMWATER SITE DRAINAGE PLAN MINE YEAR 20	
	POLY MET MINING, INC. NORTHMET PROJECT HOYT LAKES, MINNESOTA
	BARR ENGINEERING CO. 4300 MARKETPOINTE DRIVE SUITE 200 MINNEAPOLIS, MN. Ph: 1-800-632-2277
DWG. NO. SW-005	REV B

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INCHES
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2



1 PLAN: STORMWATER SHEET LOCATION MAP

0 700 1400
SCALE IN FEET





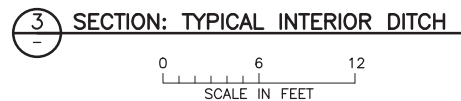
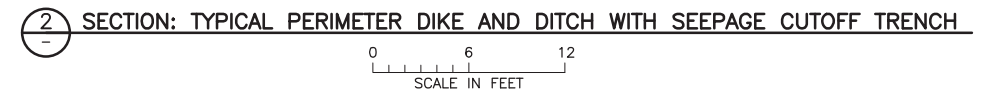
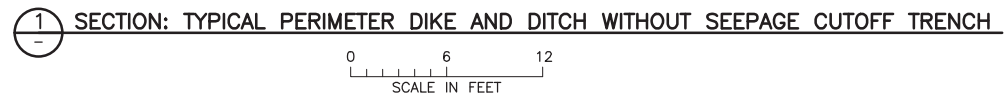
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DATE 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS
CHECKED: ATS
BARR PROJECT NO.: 23/69-0C29
SCALE: AS SHOWN

PLANT DRAWING NUMBER:	
MINE SITE STORMWATER SHEET LOCATION MAP	
 POLYMET MINING	POLY MET MINING, INC. NORTHMET PROJECT HOYT LAKES, MINNESOTA
 BARR	BARR ENGINEERING CO. 4300 MARKETPOINTE DRIVE SUITE 200 MINNEAPOLIS, MN. Ph: 1-800-632-2277
DWG. NO. SW-006	REV B

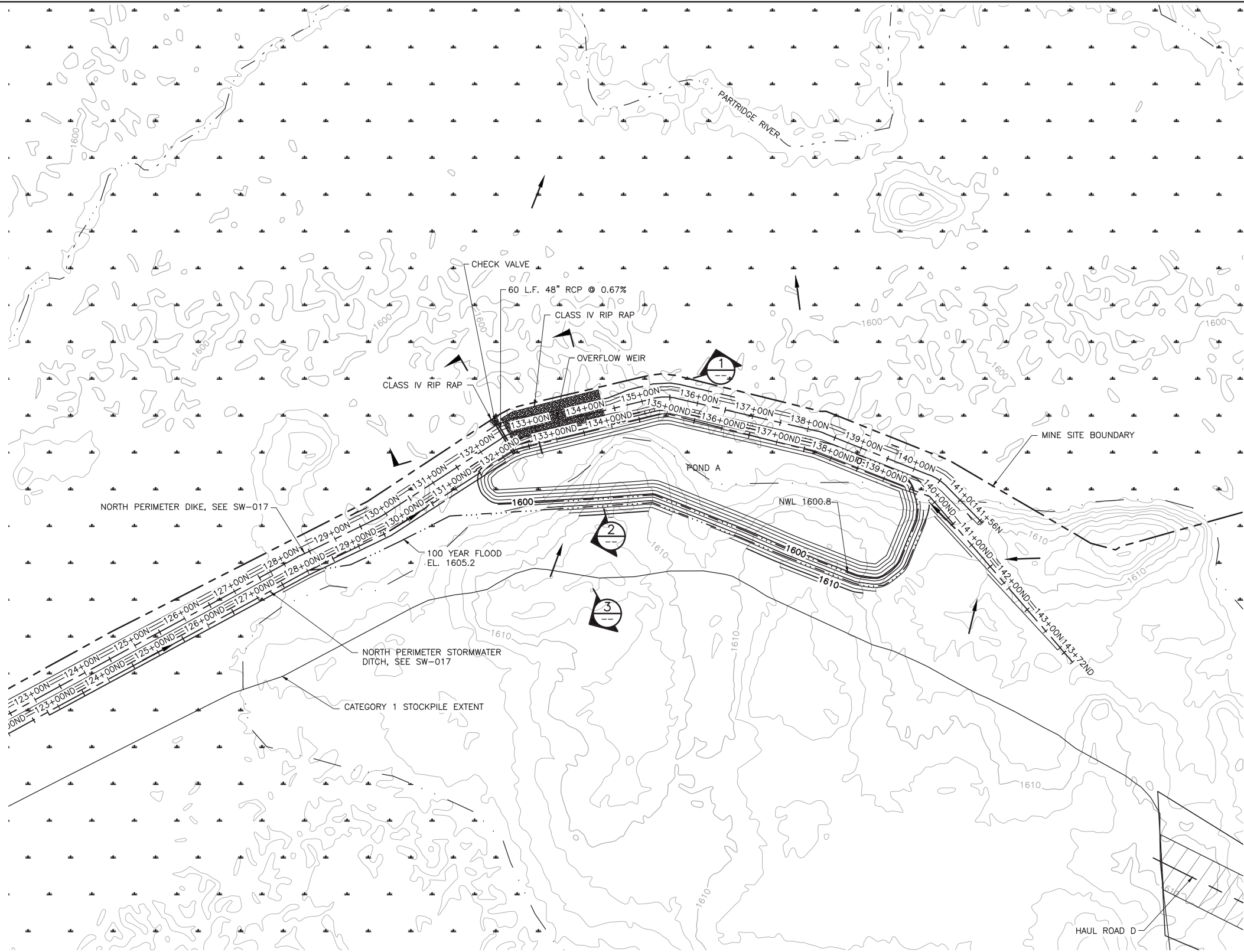


1. DITCHES NOT REQUIRING RIPRAP WILL BE CONSTRUCTED WITH NATIVE SOILS AND EITHER 4" TOPSOIL OR 4" OF 1" MINUS ROCK MULCH TO DESIGN PROFILE GRADE.
2. RESTORE ALL DISTURBED AREAS NOT STABILIZED WITH RIPRAP IN ACCORDANCE WITH THE SWPPP.
3. DESIGN DEPTH ESTABLISHED IN FINAL DESIGN OR IN FIELD. TOP OF DIKE TO FLOWLINE OF DITCH SHALL PROVIDE 1 FOOT OF FREEBOARD FROM DESIGN DEPTH.
4. INSPECTION TRENCH TO BE CONSTRUCTED ALONG ENTIRE LENGTH OF PERIMETER DIKES WHERE NON-ORGANIC MATERIALS ARE PRESENT.
5. PERIMETER DITCH AND DIKE ALONG THE NORTH SIDE OF THE CATEGORY 1 STOCKPILE (STATION 10+00 TO 143+53) SHALL HAVE 2.5H:1V SIDE SLOPES. ALL OTHER DITCHES AND DIKES SHALL HAVE SIDE SLOPES OF 3H:1V.

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1	5/26/15	ISSUED FOR INCLUSION IN PERMIT APPLICATION	ISSUED	VERSION	DATE		<p>DRAWN: KKB/ATS</p> <p>CHECKED: ATS</p> <p>BARR PROJECT NO.: 23/69-0C29</p> <p>SCALE: AS SHOWN</p>	<p> POLY MET MINING, INC. NORTHMET PROJECT HOYT LAKES, MINNESOTA</p> <p> BARR ENGINEERING CO. 4300 MARKETPOINTE DRIVE SUITE 200 MINNEAPOLIS, MN. Ph: 1-800-632-2277</p>	REV B
2	6/7/2017	PERMIT APPLICATION UPDATES	FOR PERMITTING	2	6/7/2017				
			FOR CONSTRUCTION						
			NOT APPROVED FOR CONSTRUCTION.						

CADD USER: Kate K. Brown FILE: K:\DESIGN\23690C29\10\PERMIT_NMM-08-SW-008.DWG PLOT SCALE: 1:2 PLOT DATE: 6/6/2017 11:50 AM

2
1
INCHES



NOTES

1. ALL DISTURBED AREAS WILL BE RESTORED IN ACCORDANCE WITH THE SWPPP.

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
1	5/26/15	ISSUED FOR INCLUSION IN PERMIT APPLICATION	ISSUED	VERSION	DATE
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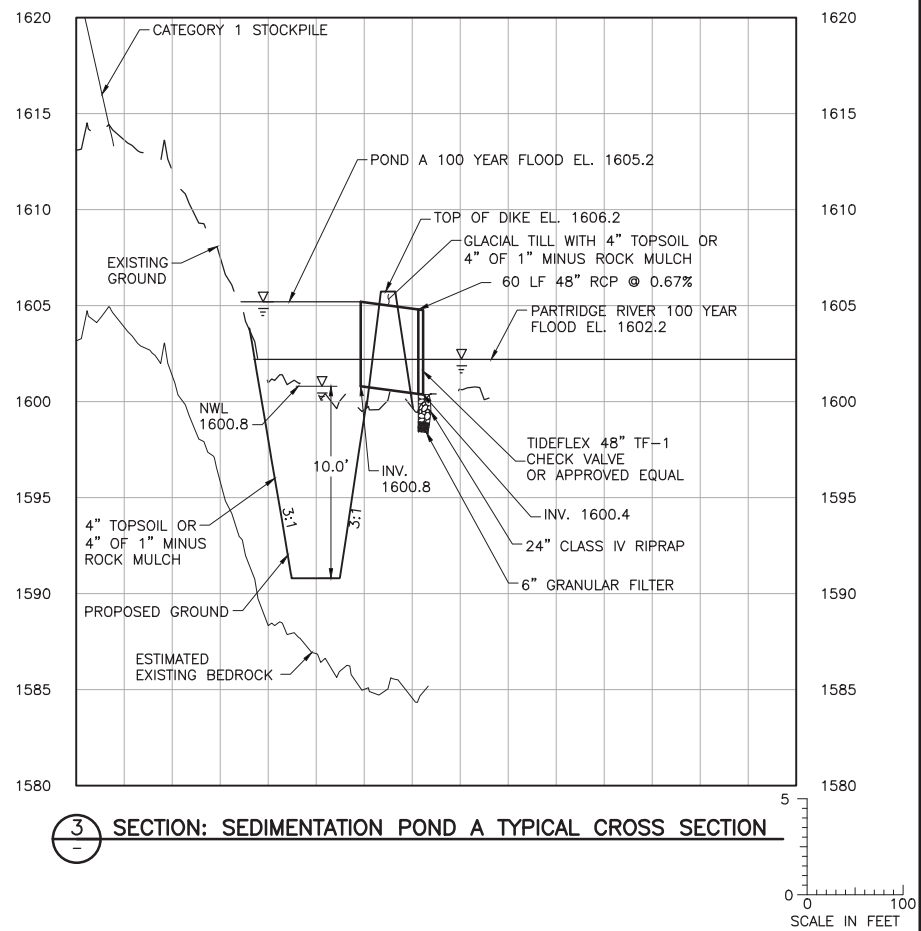
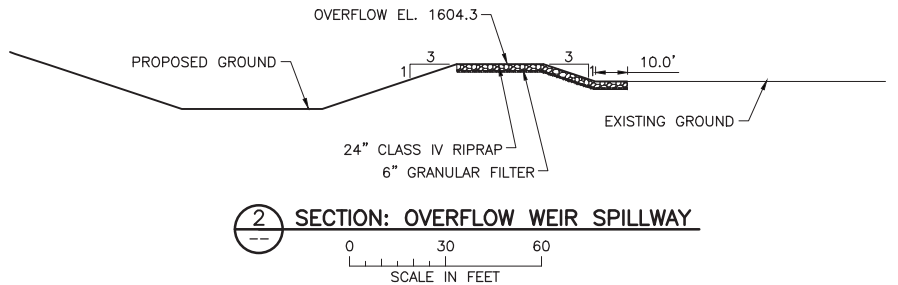
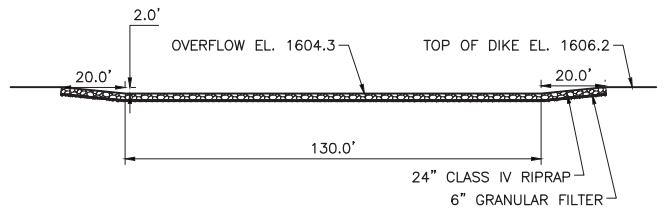
PLANT DRAWING NUMBER:

MINE SITE STORMWATER SEDIMENTATION POND A GRADING PLAN AND DETAILS

POLYMET MINING
POLYMET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA

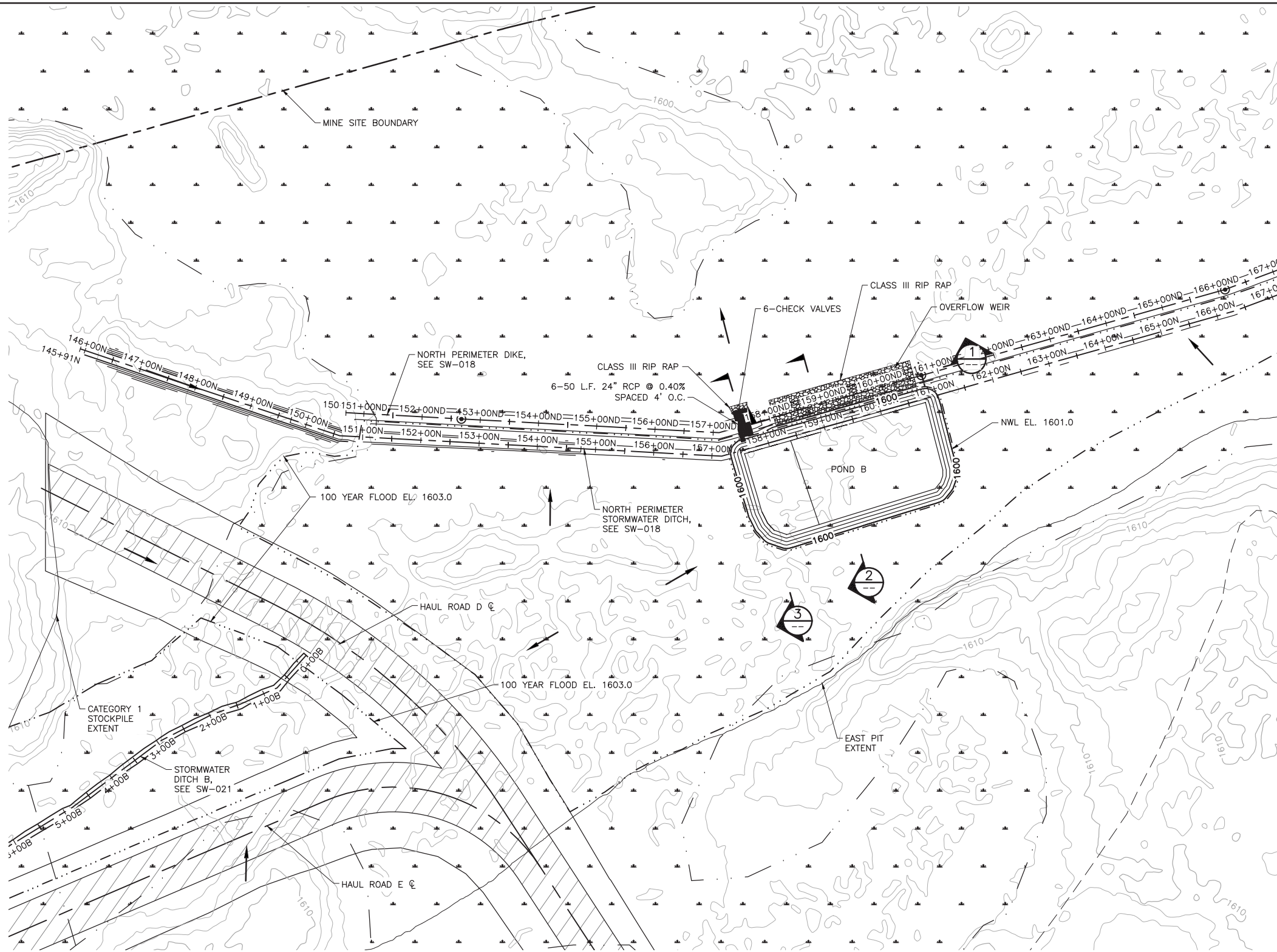
BARR ENGINEERING COMPANY
4700 WEST 77TH STREET
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO. SW-008
REV B

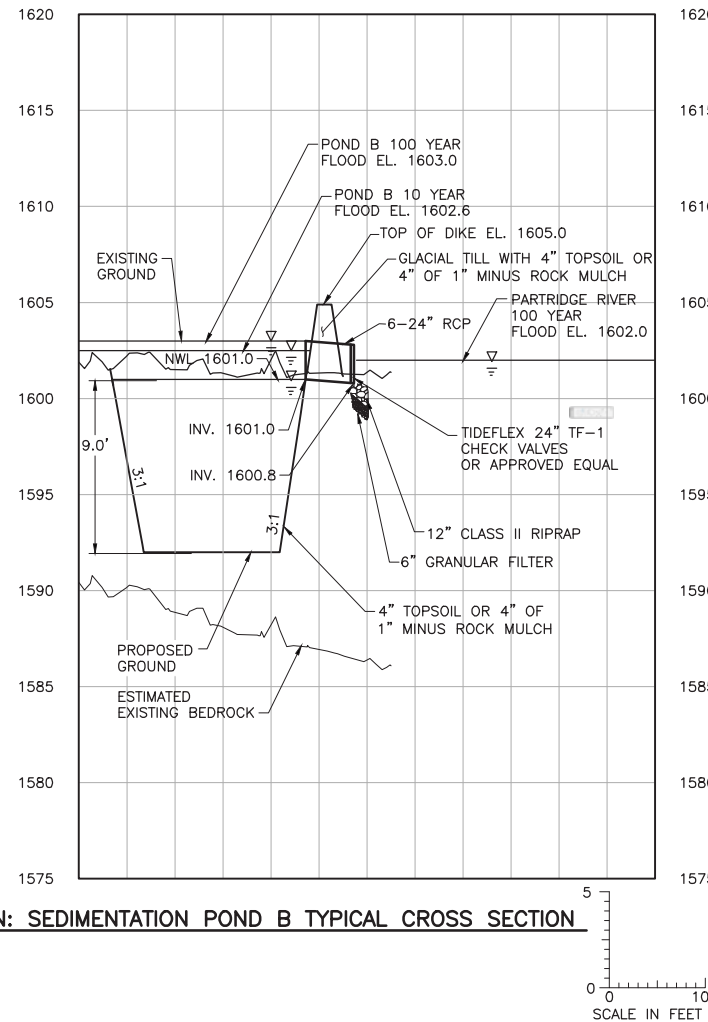
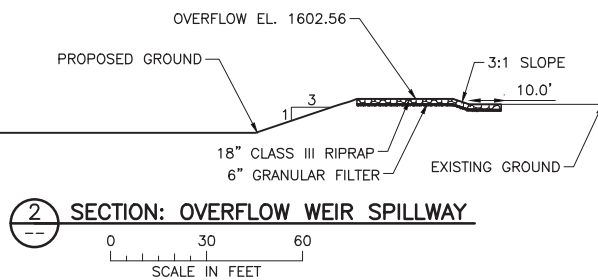
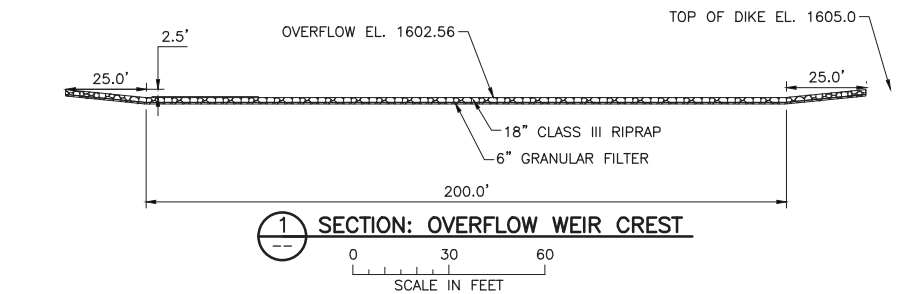


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2
1
INCHES



1 PLAN: STORMWATER SEDIMENTATION POND B



3 SECTION: SEDIMENTATION POND B TYPICAL CROSS SECTION

NOTES

1. ALL DISTURBED AREAS WILL BE RESTORED IN ACCORDANCE WITH THE SWPPP.

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SCALE: AS SHOWN

PLANT DRAWING NUMBER:

MINE SITE STORMWATER SEDIMENTATION POND B GRADING PLAN AND DETAILS

POLYMET MINING

POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA

BARR

BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO.

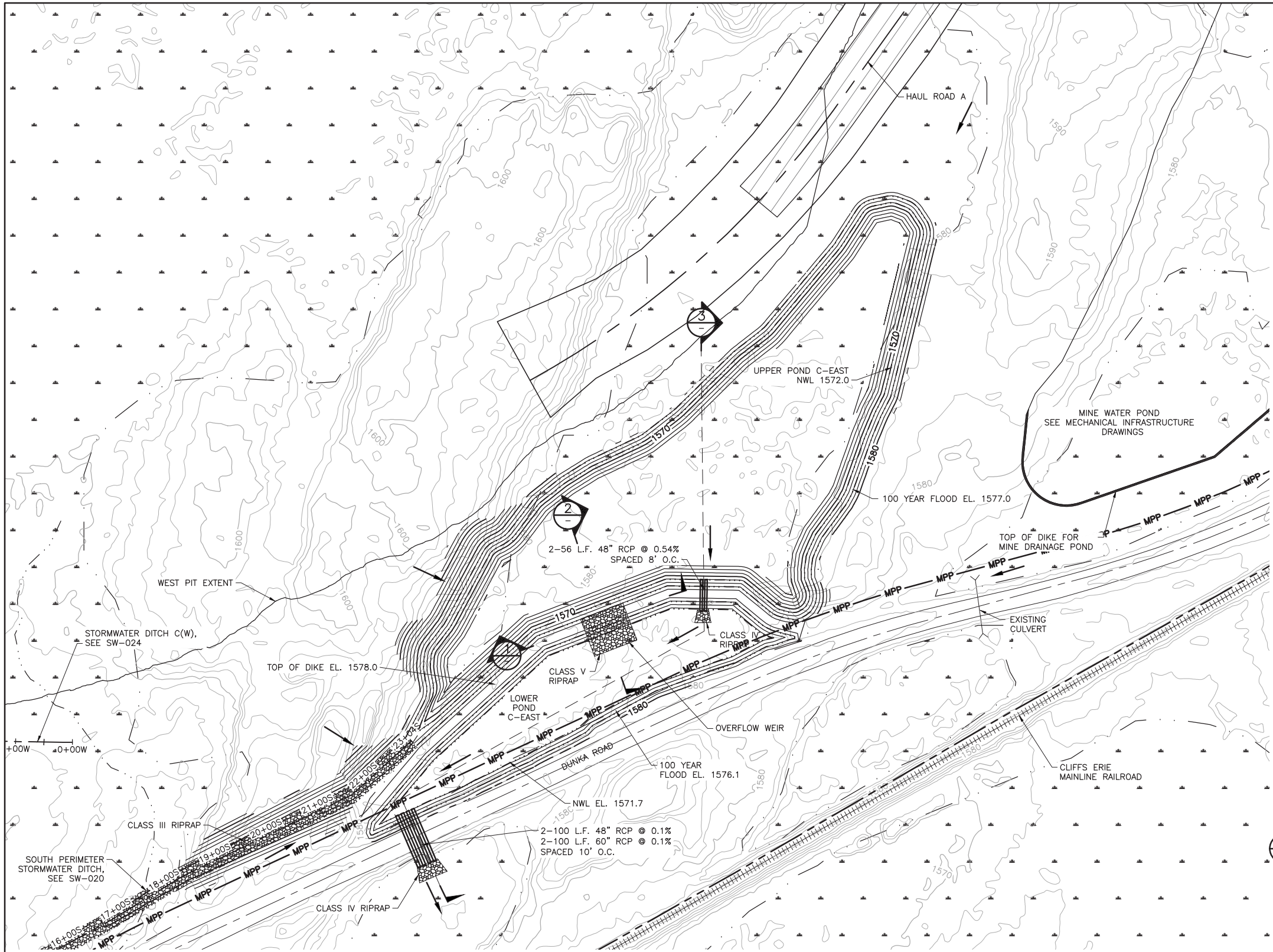
SW-009

REV

B

CADD USER: Kate K. Brown FILE: K:\DESIGN\23690C29\10\PERMIT_NMW-09-SW-010.DWG PLOT SCALE: 1:2 PLOT DATE: 6/1/2017 9:01 AM

2
1
INCHES



1 PLAN: STORMWATER SEDIMENTATION POND C-EAST

0 100 200
SCALE IN FEET



NOTES

1. ALL DISTURBED AREAS WILL BE RESTORED IN ACCORDANCE WITH THE SWPPP.

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
1	5/26/15	ISSUED FOR INCLUSION IN PERMIT APPLICATION	ISSUED	VERSION	DATE
2	6/7/2017	PERMIT APPLICATION UPDATES	FOR PERMITTING	2	6/7/2017
			FOR CONSTRUCTION		
			NOT APPROVED FOR CONSTRUCTION.		

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SPECIFICATION, OR REPORT WAS
PREPARED BY ME OR UNDER MY DIRECT
SUPERVISION AND THAT I AM A DULY
LICENSED PROFESSIONAL ENGINEER
UNDER THE LAWS OF THE STATE OF
MINNESOTA.

PRINTED NAME PAUL T. SWENSON
SIGNATURE *Paul T. Swenson*
DATE 5/26/17 LICENSE# 20533

DRAWN:
KKB/ATS

CHECKED:
ATS

BARR PROJECT NO.:
23/69-0C29

SCALE:
AS SHOWN

PLANT DRAWING NUMBER:

MINE SITE STORMWATER
SEDIMENTATION POND C-EAST
GRADING PLAN AND DETAILS



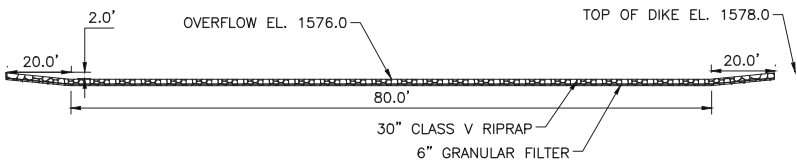
POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA



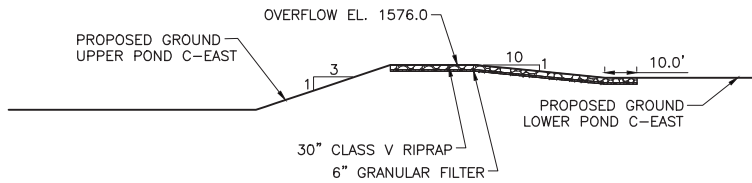
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO.
SW-010

REV
B

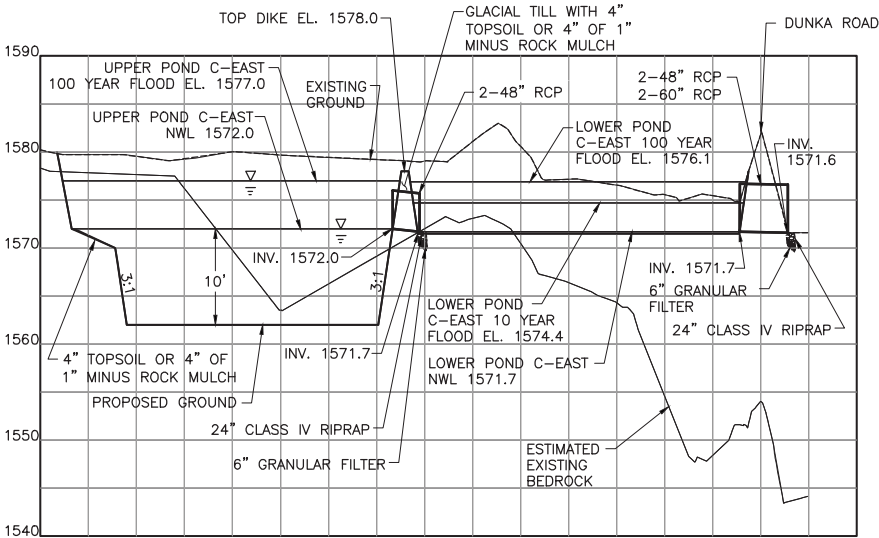


1 SECTION: OVERFLOW WEIR CREST
N.T.S.



2 SECTION: UPPER POND OVERFLOW WEIR SPILLWAY

0 30 60
SCALE IN FEET

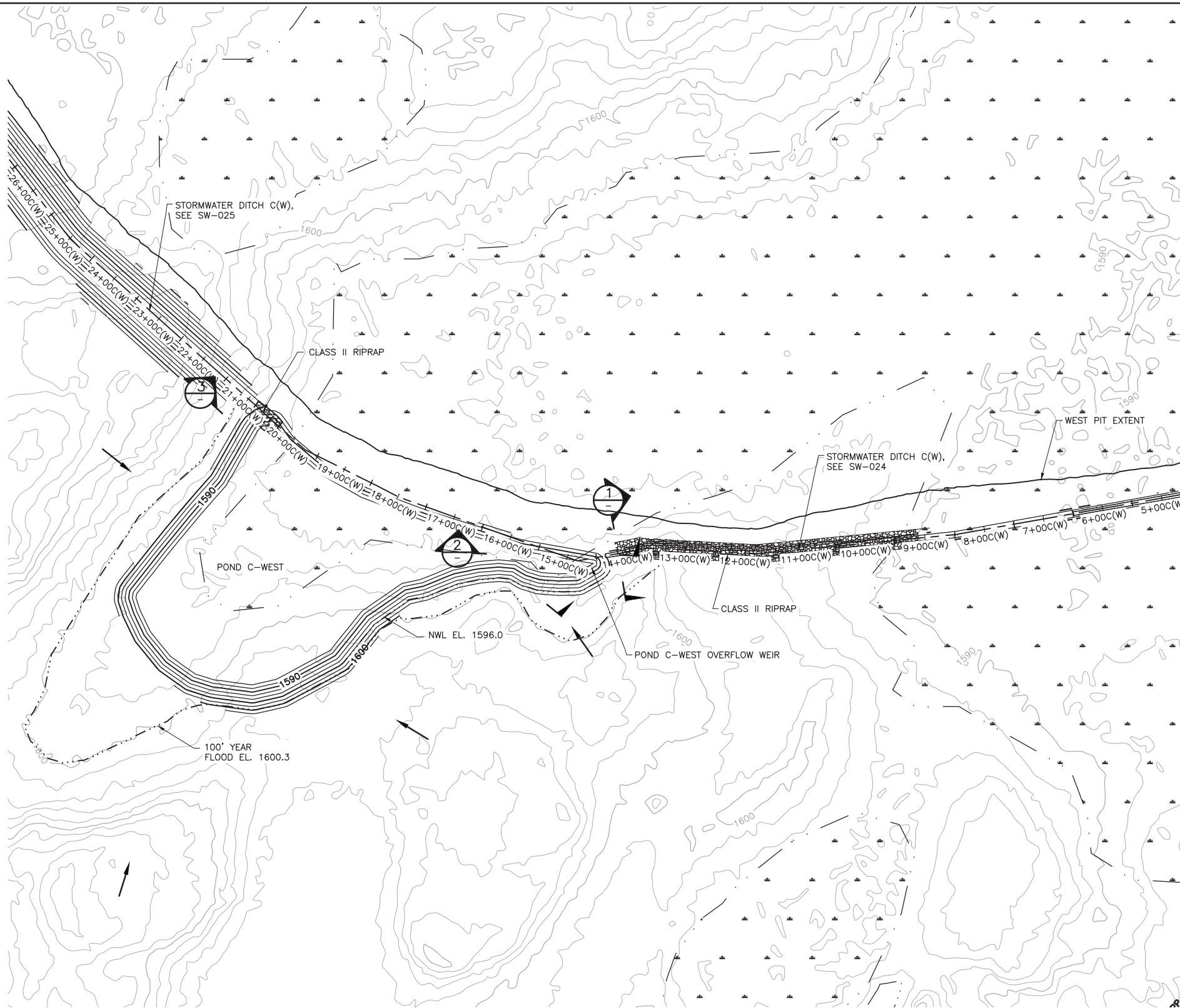


3 SECTION: UPPER POND SEDIMENTATION POND C-EAST TYPICAL CROSS SECTION

10
0 100
SCALE IN FEET

CADD USER: Kate K. Brown FILE: K:\DESIGN\23690C29\10\PERMIT_NMW-09-SW-011.DWG PLOT SCALE: 1:2 PLOT DATE: 6/1/2017 8:21 AM

INCHES
1
2



1 PLAN: STORMWATER SEDIMENTATION POND C-WEST

0 100 200
SCALE IN FEET



NOTES

1. ALL DISTURBED AREAS WILL BE RESTORED IN ACCORDANCE WITH THE SWPPP.

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
1	5/26/15	ISSUED FOR INCLUSION IN PERMIT APPLICATION	ISSUED	VERSION	DATE
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PRINTED NAME: PAUL T. SWENSON
SIGNATURE: *Paul T. Swenson*
DATE: 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS
CHECKED: ATS
BARR PROJECT NO.: 23/69-0C29
SCALE: AS SHOWN

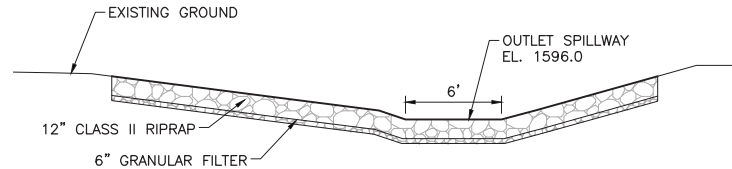
PLANT DRAWING NUMBER:

MINE SITE STORMWATER SEDIMENTATION POND C-WEST GRADING PLAN AND DETAILS

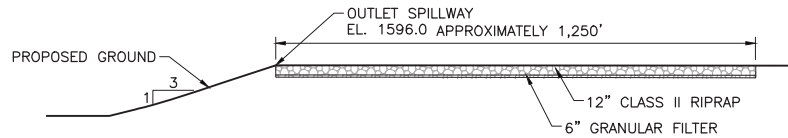
POLYMET MINING POLY MET MINING, INC. NORTHMET PROJECT HOYT LAKES, MINNESOTA

BARR BARR ENGINEERING CO. 4300 MARKETPOINTE DRIVE SUITE 200 MINNEAPOLIS, MN. Ph: 1-800-632-2277

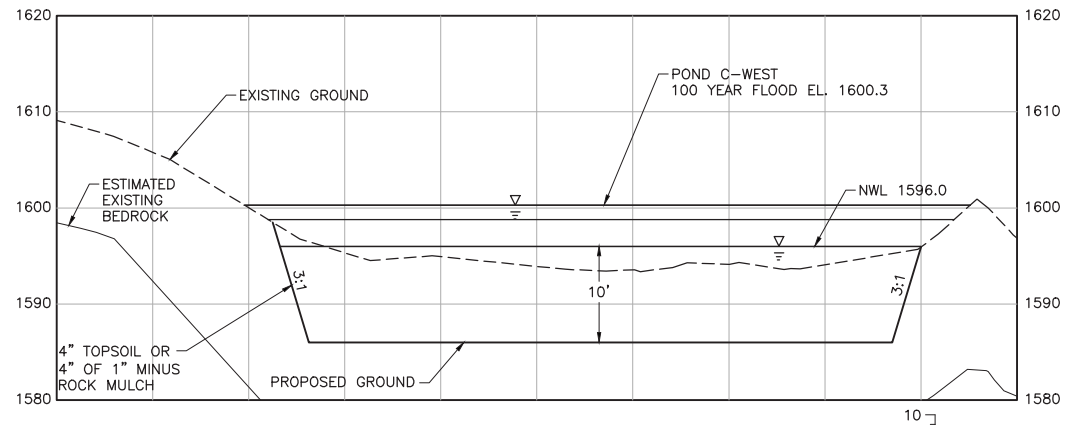
DWG. NO. SW-011 REV B



1 SECTION: OVERFLOW WEIR CREST
N.T.S.



2 SECTION: OVERFLOW WEIR SPILLWAY
N.T.S.

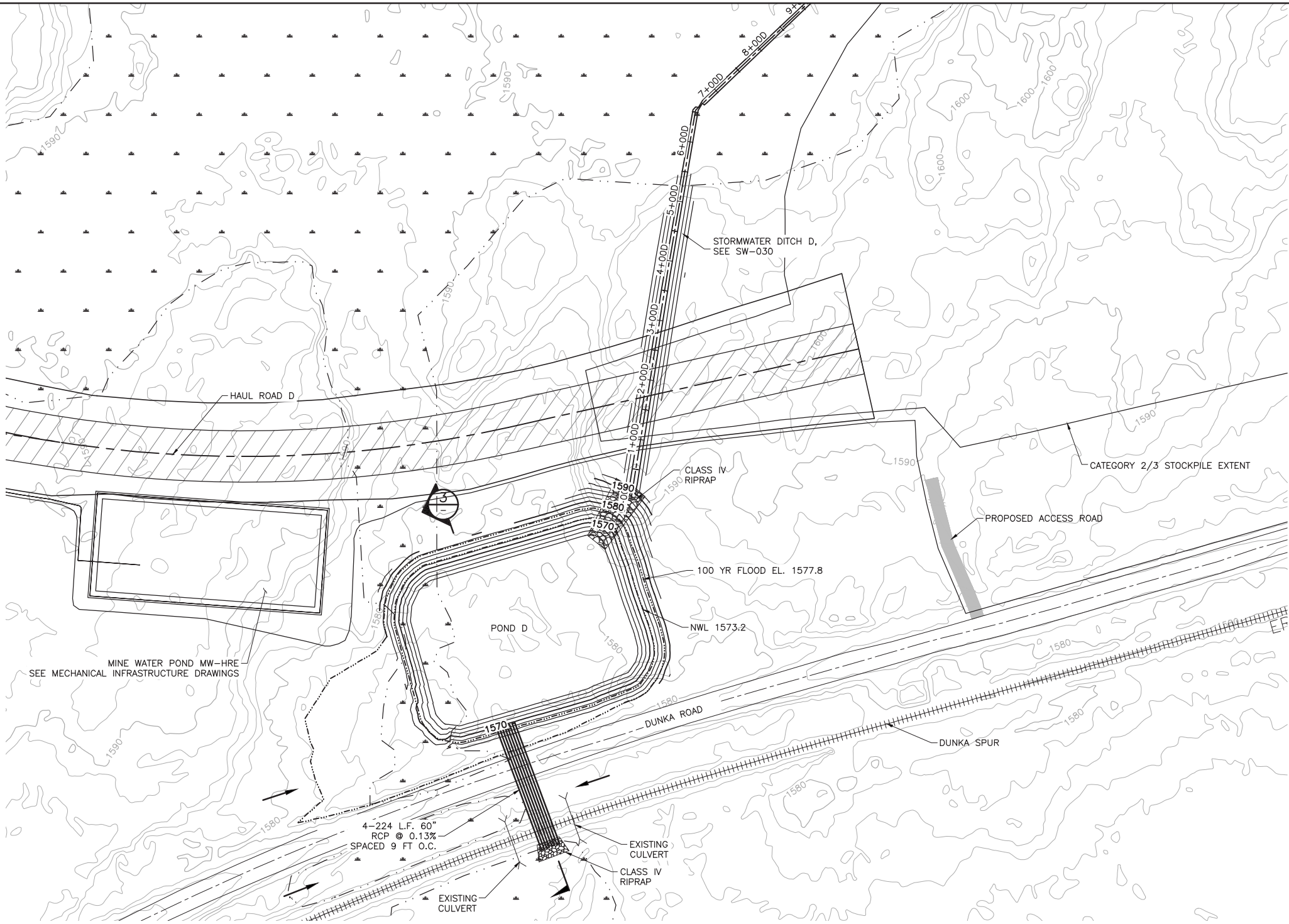


3 SECTION: SEDIMENTATION POND C-WEST TYPICAL CROSS SECTION

10
0 100
SCALE IN FEET

CADD USER: Kate K. Brown FILE: K:\DESIGN\23690C29\10\PERMIT_NMM-09-SW-012.DWG PLOT SCALE: 1:2 PLOT DATE: 6/6/2017 11:52 AM

INCHES
1
2



1 PLAN: STORMWATER SEDIMENTATION POND D

0 100 200
SCALE IN FEET



NOTES

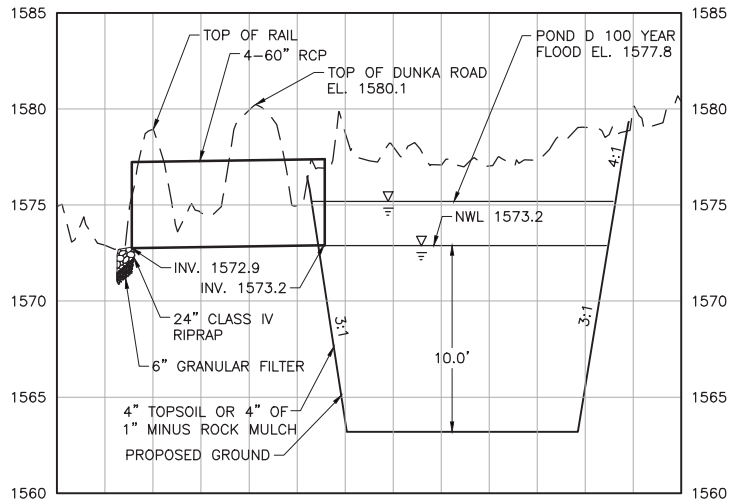
1. ALL DISTURBED AREAS WILL BE RESTORED IN ACCORDANCE WITH THE SWPPP.

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
			ISSUED	VERSION	DATE
1	5/26/15	ISSUED FOR INCLUSION IN PERMIT APPLICATION			
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PRINTED NAME: PAUL T. SWENSON
SIGNATURE:
DATE 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS
CHECKED: ATS
BARR PROJECT NO.: 23/69-0C29
SCALE: AS SHOWN



3 SECTION: SEDIMENTATION POND D TYPICAL CROSS SECTION

5
0 100
SCALE IN FEET

PLANT DRAWING NUMBER:

MINE SITE STORMWATER
SEDIMENTATION POND D
GRADING PLAN AND DETAILS



POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA



BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO. SW-012

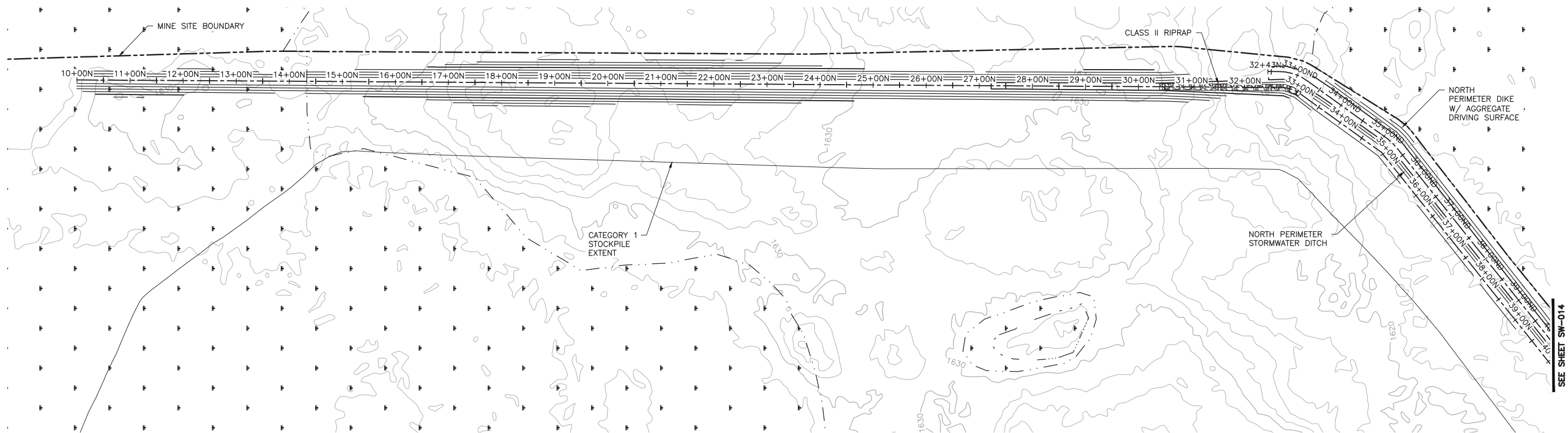
REV
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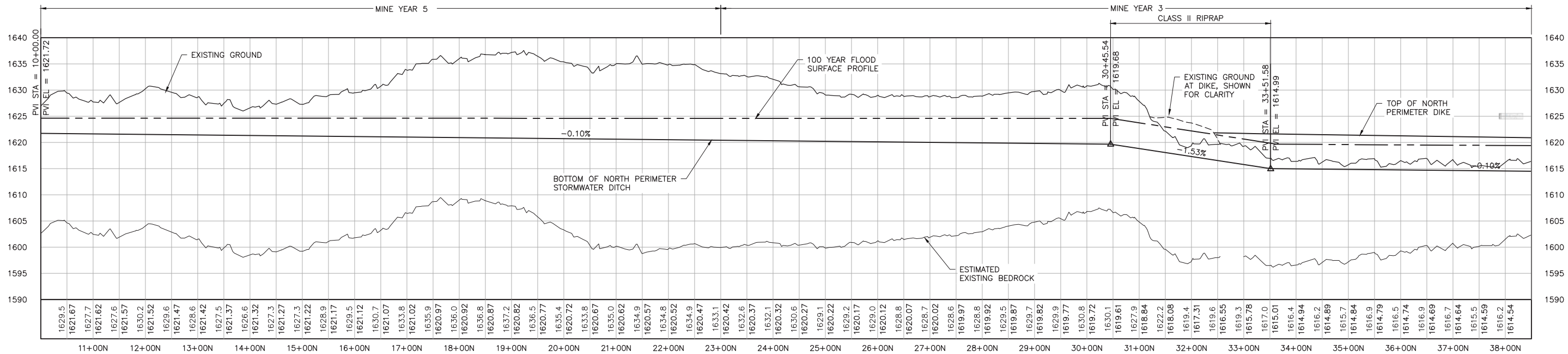
2

1

INCHES



1 PLAN: NORTH PERIMETER STORMWATER DITCH & DIKE STA. 10+00N-38+50N



2 PROFILE: NORTH PERIMETER STORMWATER DITCH & DIKE STA. 10+00N-38+50N

NOTES:

- ALL STATIONS SHOWN ON PROFILE ARE BASED ON DITCH CENTERLINE STATIONS.
- EXISTING GROUND PROFILE REPRESENTS GRADE AT DITCH CENTERLINE.

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
1	5/26/15	ISSUED FOR INCLUSION IN PERMIT APPLICATION	ISSUED	VERSION	DATE
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PRINTED NAME: PAUL T. SWENSON
SIGNATURE: *Paul T. Swenson*
DATE 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS

CHECKED: ATS

BARR PROJECT NO.: 23/69-0C29

SCALE: AS SHOWN

PLANT DRAWING NUMBER:

MINE SITE STORMWATER
NORTH DIKE AND DITCH PLAN AND PROFILE
STATION 10+00N - 38+50N

POLYMET
MINING

POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA

BARR
ENGINEERING CO.

4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO.

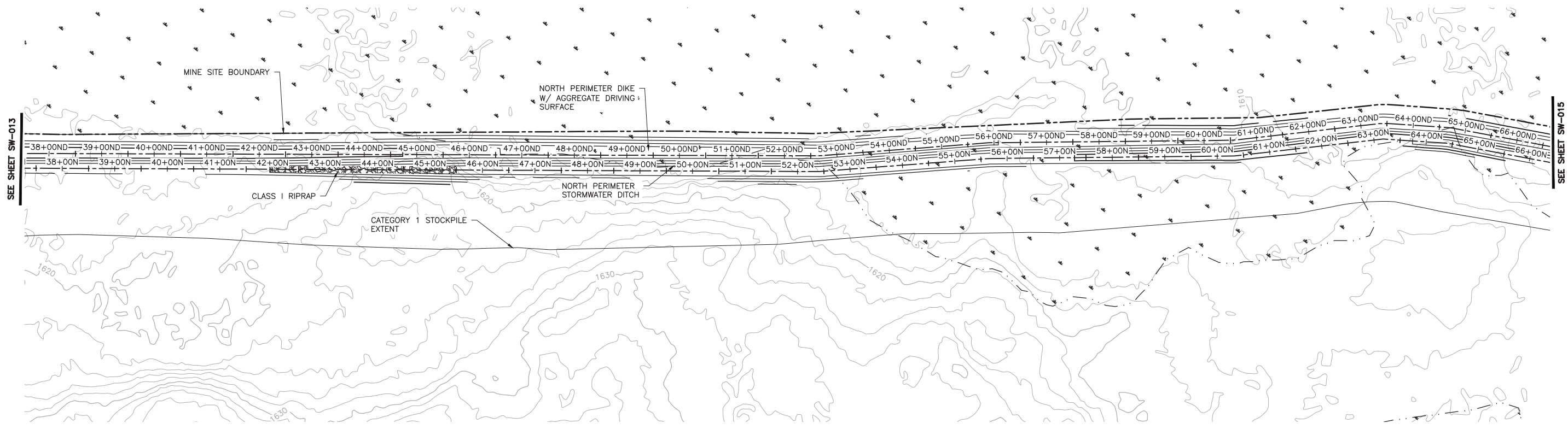
SW-013

REV

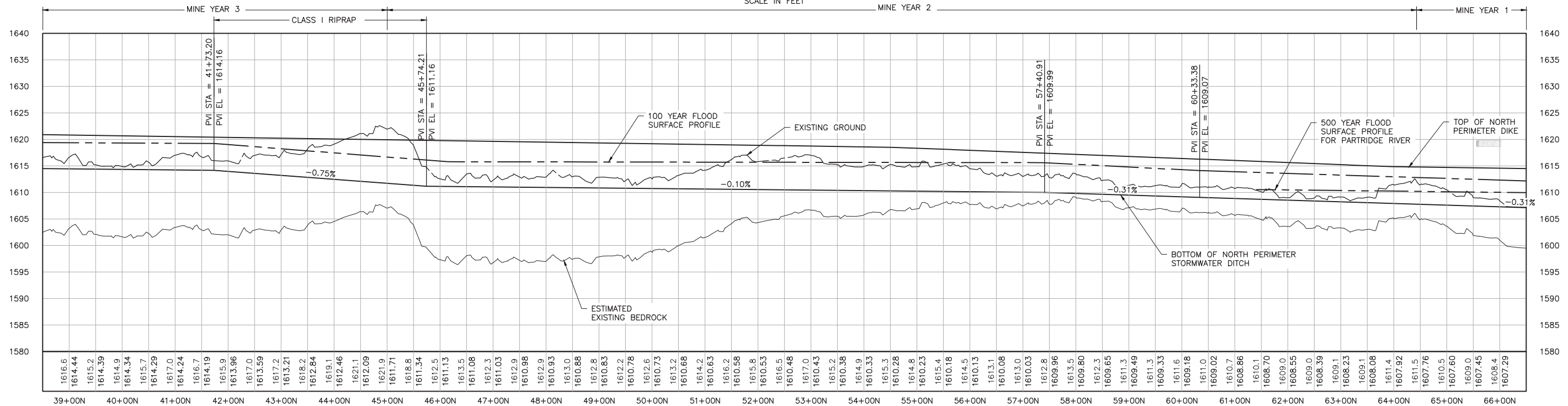
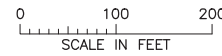
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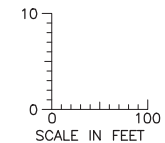
2
1
INCHES



1 PLAN: NORTH PERIMETER STORMWATER DITCH & DIKE STA. 38+50N-66+50N



2 PROFILE: NORTH PERIMETER STORMWATER DITCH & DIKE STA. 38+50N-66+50N



NOTES:

- ALL STATIONS SHOWN ON PROFILE ARE BASED ON DITCH CENTERLINE STATIONS.
- EXISTING GROUND PROFILE REPRESENTS GRADE AT DITCH CENTERLINE.

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
1	5/26/15	ISSUED FOR INCLUSION IN PERMIT APPLICATION	ISSUED	VERSION	DATE
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PRINTED NAME: PAUL T. SWENSON
SIGNATURE: *Paul T. Swenson*
DATE: 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS
CHECKED: ATS
BARR PROJECT NO.: 23/69-0C29
SCALE: AS SHOWN

PLANT DRAWING NUMBER:

MINE SITE STORMWATER
NORTH DIKE AND DITCH PLAN AND PROFILE
STATION 38+50N - 66+50N



POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA



BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO.

SW-014

REV

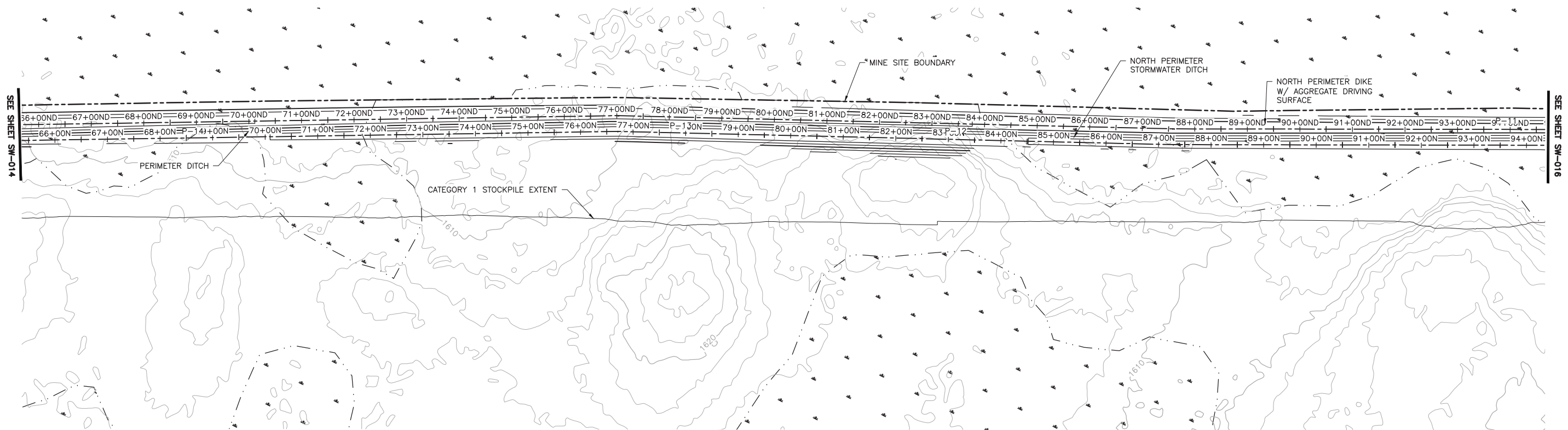
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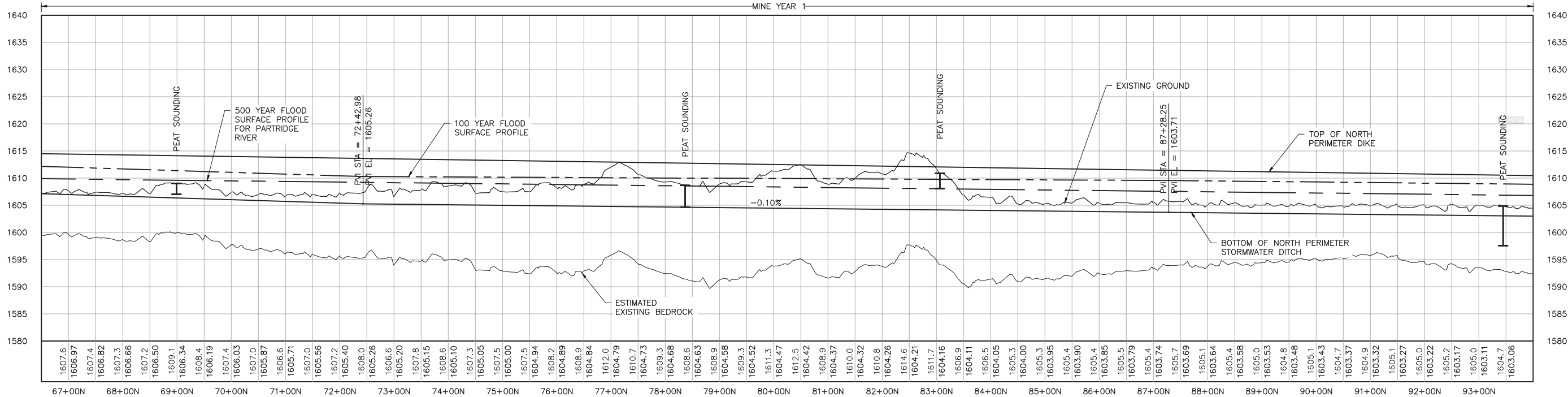
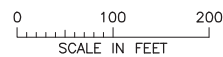
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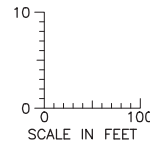
INCHES



1 PLAN: NORTH PERIMETER STORMWATER DITCH & DIKE STA. 66+50N-94+00N



2 PROFILE: NORTH PERIMETER STORMWATER DITCH & DIKE STA. 66+50N-94+00N



NOTES:

- ALL STATIONS SHOWN ON PROFILE ARE BASED ON DITCH CENTERLINE STATIONS.
- EXISTING GROUND PROFILE REPRESENTS GRADE AT DITCH CENTERLINE.

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
1	5/26/15	ISSUED FOR INCLUSION IN PERMIT APPLICATION	ISSUED	VERSION	DATE
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PRINTED NAME: PAUL T. SWENSON
SIGNATURE: *Paul T. Swenson*
DATE: 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS
CHECKED: ATS
BARR PROJECT NO.: 23/69-0C29
SCALE: AS SHOWN

PLANT DRAWING NUMBER:

MINE SITE STORMWATER
NORTH DIKE AND DITCH PLAN AND PROFILE
STATION 66+50N - 94+00N



POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA



BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO.

SW-015

REV

B



- | VER NO | DATE | DESCRIPTION | ISSUE STATUS | | |
|--------|----------|--|--------------------------------|---------|----------|
| 1 | 5/26/15 | ISSUED FOR INCLUSION IN PERMIT APPLICATION | ISSUED | VERSION | DATE |
| 2 | 6/7/2017 | PERMIT APPLICATION UPDATES | FOR PERMITTING | 2 | 6/7/2017 |
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| | | | FOR CONSTRUCTION | | |
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| | | | NOT APPROVED FOR CONSTRUCTION. | | |
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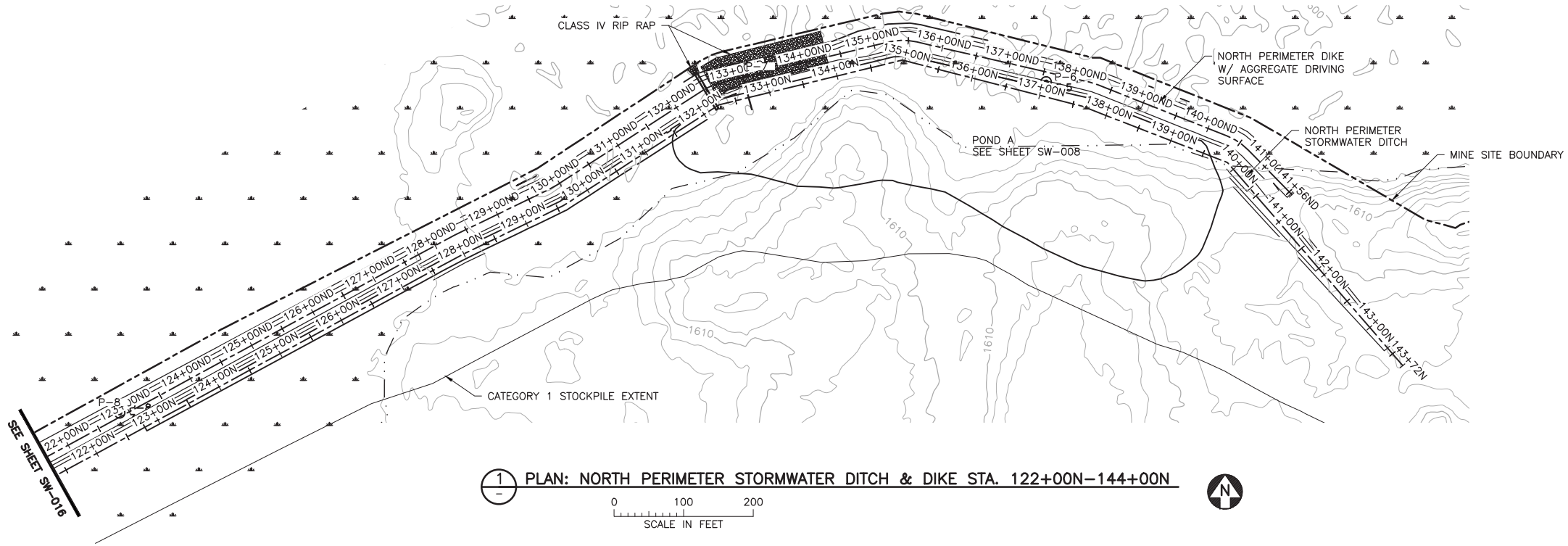
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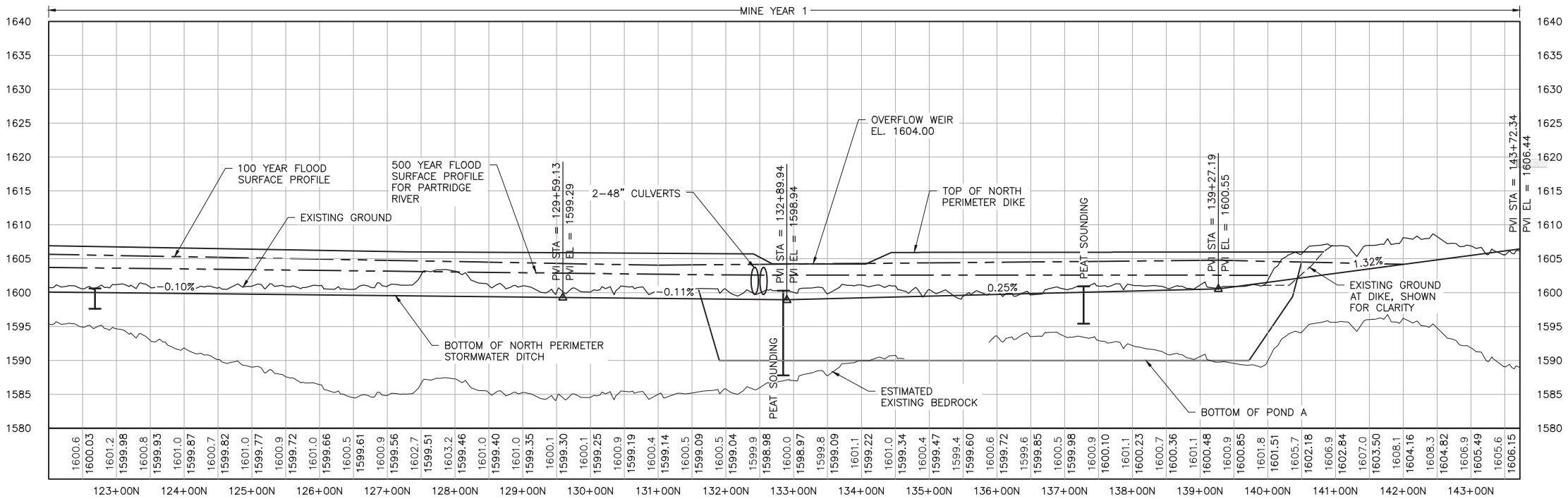
2

1

INCHES



1 PLAN: NORTH PERIMETER STORMWATER DITCH & DIKE STA. 122+00N-144+00N



2 PROFILE: NORTH PERIMETER STORMWATER DITCH & DIKE STA. 122+00N-144+00N

NOTES:

- ALL STATIONS SHOWN ON PROFILE ARE BASED ON DITCH CENTERLINE STATIONS.
- EXISTING GROUND PROFILE REPRESENTS GRADE AT DITCH CENTERLINE.
- BOTTOM OF DITCH PROFILE LINE SHOWN TO PRESENT HYDRAULIC GRADE REQUIREMENTS, RESULTING "FILL" AREAS SHALL BE LEFT AS IS. DO NOT PLACE FILL TO RAISE GROUND TO DITCH PROFILE LINE.

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
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PRINTED NAME: PAUL T. SWENSON
SIGNATURE: *Paul T. Swenson*
DATE: 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS
CHECKED: ATS
BARR PROJECT NO.: 23/69-0C29
SCALE: AS SHOWN

PLANT DRAWING NUMBER:

MINE SITE STORMWATER
NORTH DIKE AND DITCH PLAN AND PROFILE
STATION 122+00N - 144+00N

POLYMET
MINING

POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA

BARR

BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO.

SW-017

REV

B

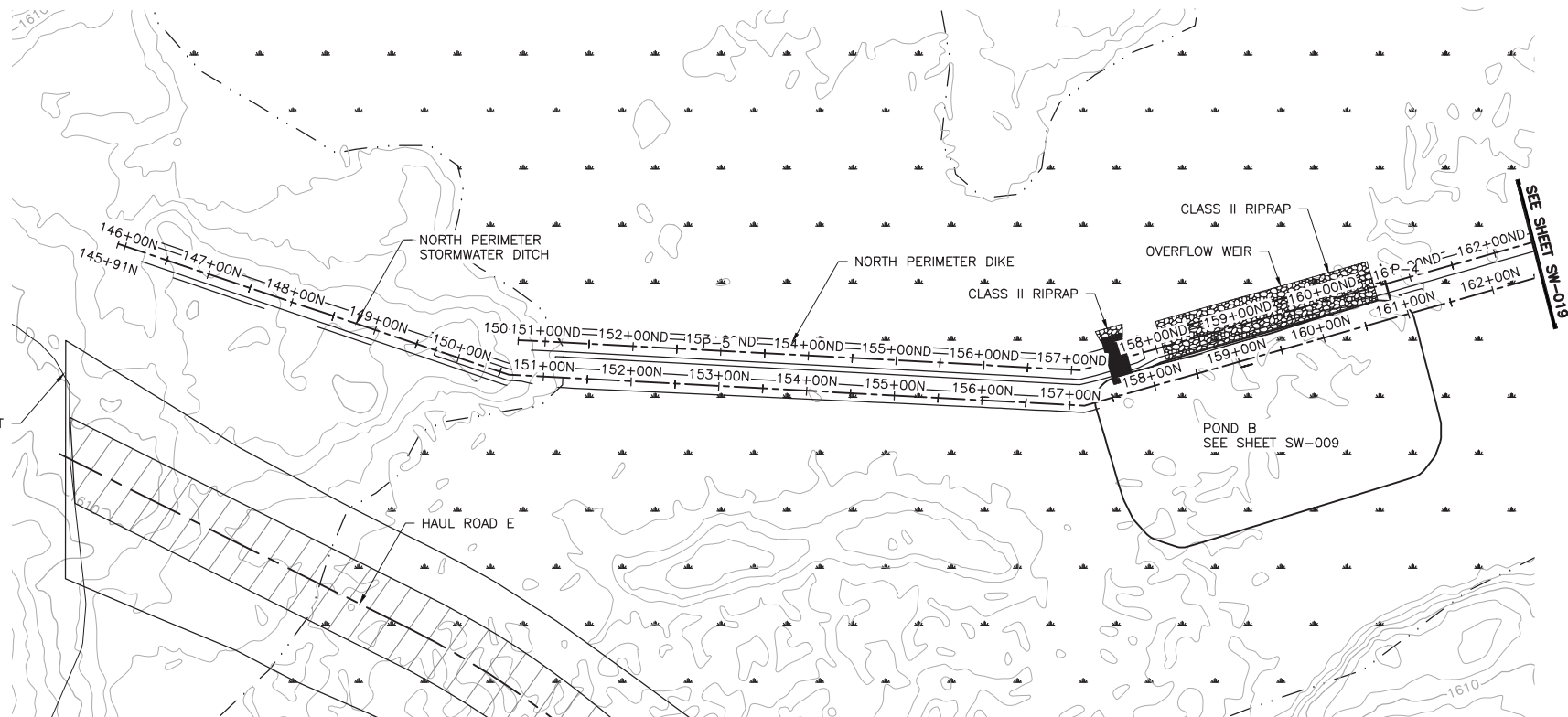
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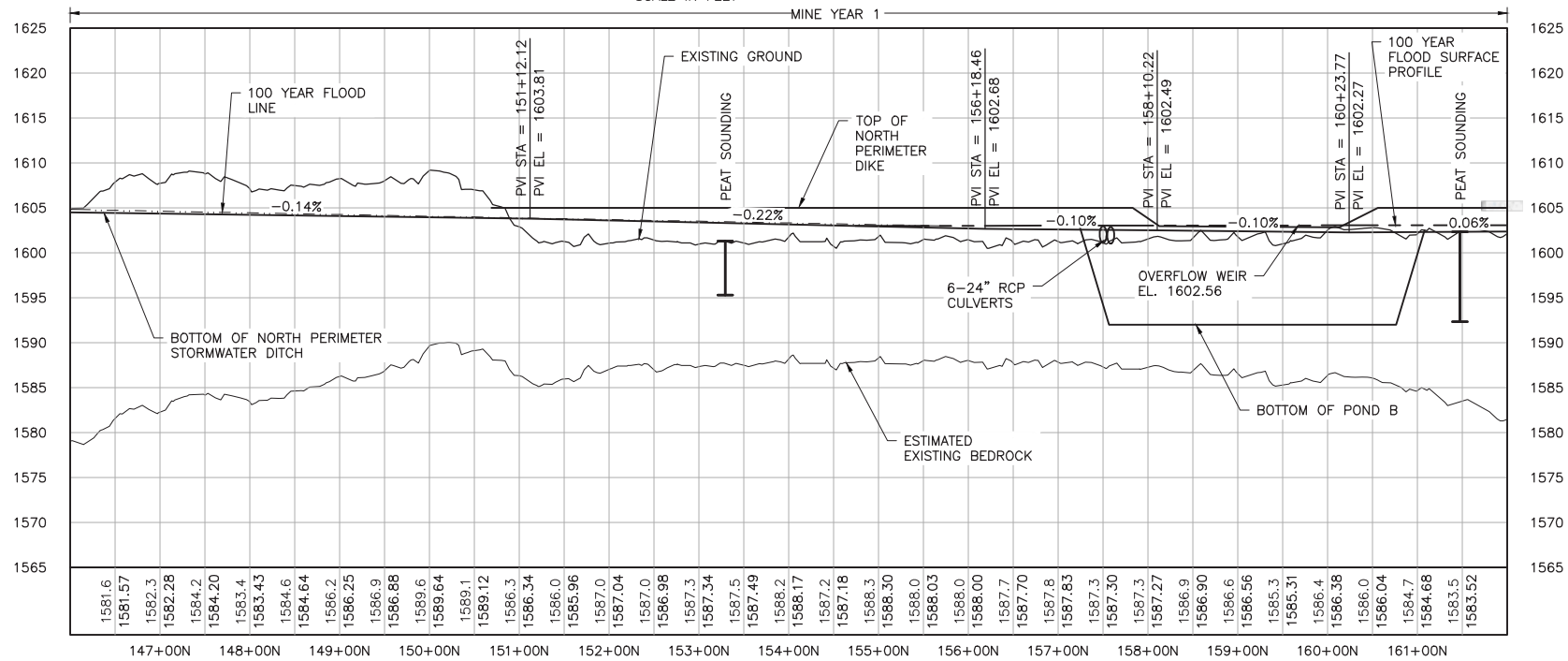
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INCHES

CATEGORY 1 STOCKPILE EXTENT



1 PLAN: NORTH PERIMETER STORMWATER DITCH & DIKE STA. 146+00N-162+00N



2 PROFILE: NORTH PERIMETER STORMWATER DITCH & DIKE STA. 146+00N-162+00N

NOTES:

1. ALL STATIONS SHOWN ON PROFILE ARE BASED ON DITCH CENTERLINE STATIONS.
2. EXISTING GROUND PROFILE REPRESENTS GRADE AT DITCH CENTERLINE.
3. BOTTOM OF DITCH PROFILE LINE SHOWN TO PRESENT HYDRAULIC GRADE REQUIREMENTS, RESULTING "FILL" AREAS SHALL BE LEFT AS IS. DO NOT PLACE FILL TO RAISE GROUND TO DITCH PROFILE LINE.

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
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PRINTED NAME: PAUL T. SWENSON
SIGNATURE: *Paul T. Swenson*
DATE: 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS

CHECKED: ATS

BARR PROJECT NO.: 23/69-0C29

SCALE: AS SHOWN

PLANT DRAWING NUMBER:

MINE SITE STORMWATER
NORTH DIKE AND DITCH PLAN AND PROFILE
STATION 146+00N - 162+00N



POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA



BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO.

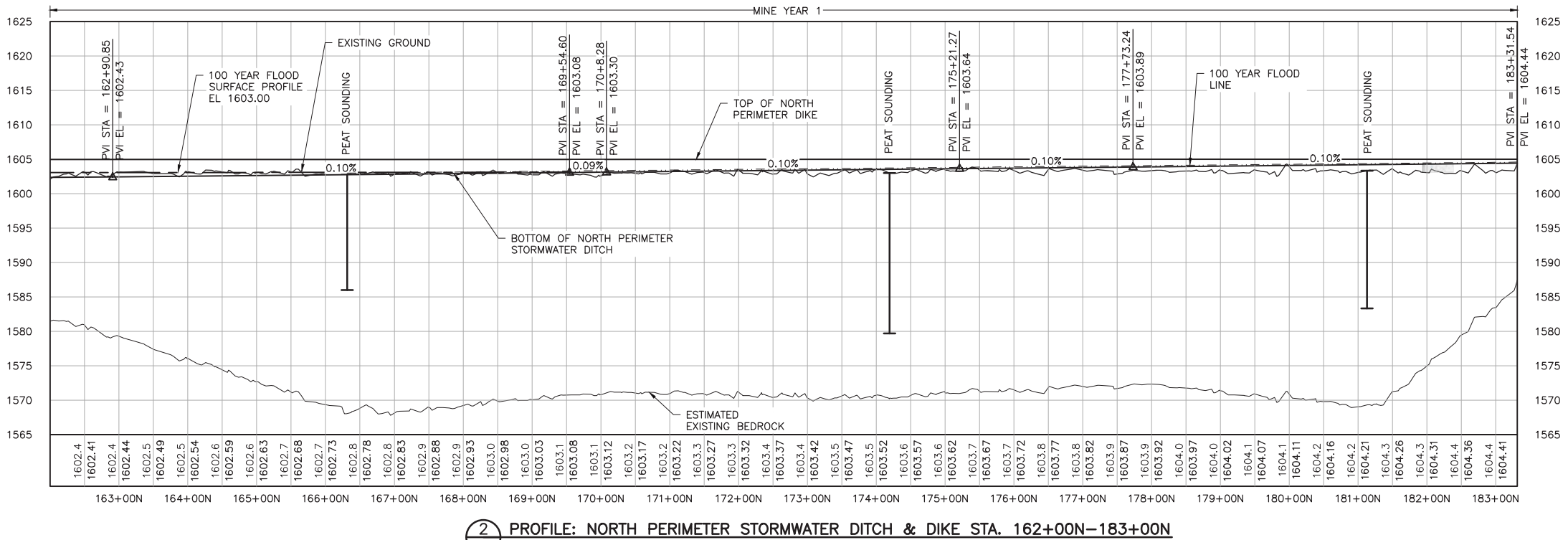
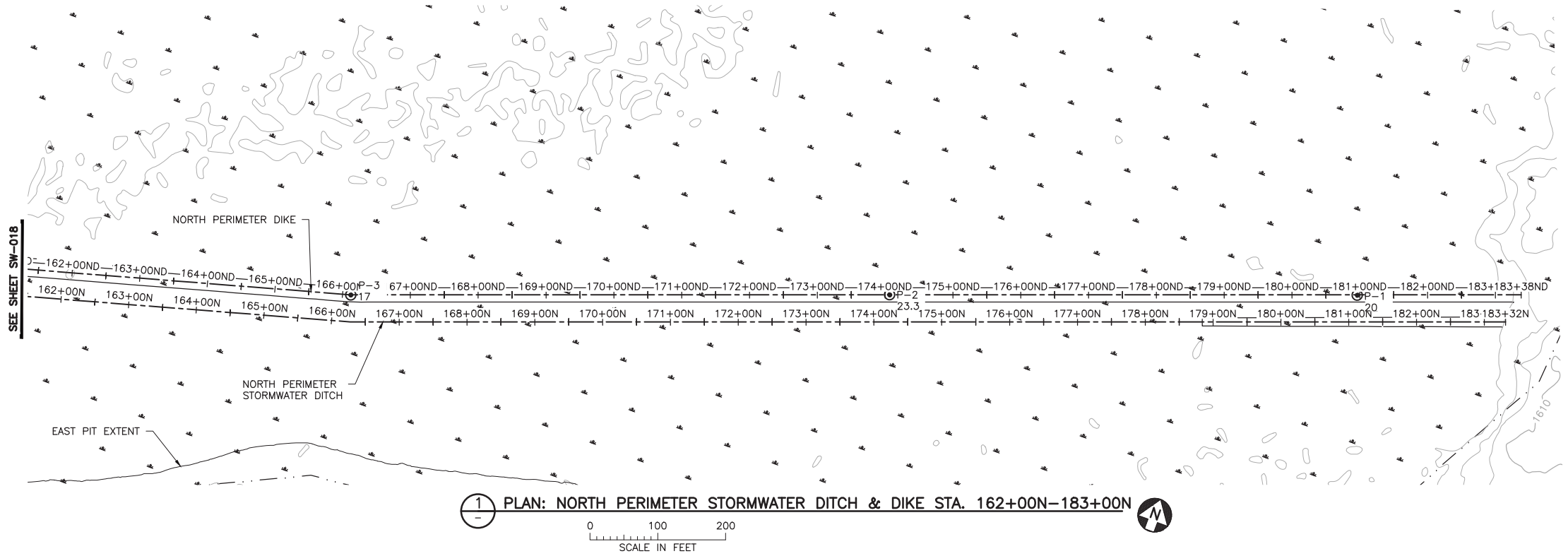
SW-018

REV

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CADD USER: Kate K. Brown FILE: K:\DESIGN\24690C29\10\PERMIT_NMM--08--SW--019.DWG PLOT SCALE: 1:2 PLOT DATE: 6/1/2017 7:57 AM

2
1
INCHES



NOTES:

1. ALL STATIONS SHOWN ON PROFILE ARE BASED ON DITCH CENTERLINE STATIONS.
2. EXISTING GROUND PROFILE REPRESENTS GRADE AT DITCH CENTERLINE.
3. BOTTOM OF DITCH PROFILE LINE SHOWN TO PRESENT HYDRAULIC GRADE REQUIREMENTS, RESULTING "FILL" AREAS SHALL BE LEFT AS IS. DO NOT PLACE FILL TO RAISE GROUND TO DITCH PROFILE LINE.

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
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PRINTED NAME: PAUL T. SWENSON
SIGNATURE: *Paul T. Swenson*
DATE: 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS
CHECKED: ATS
BARR PROJECT NO.: 23/69-0C29
SCALE: AS SHOWN

PLANT DRAWING NUMBER:

MINE SITE STORMWATER
NORTH DIKE AND DITCH PLAN AND PROFILE
STATION 162+00N - 183+00N



POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA



BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

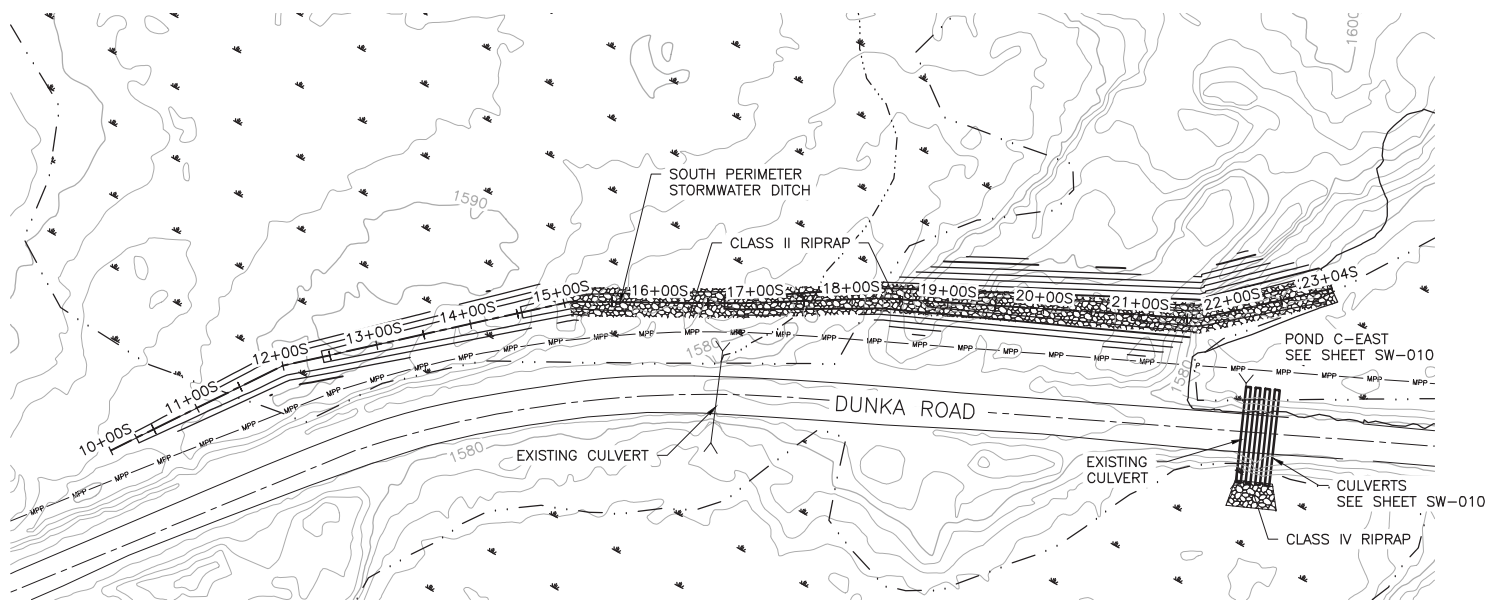
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SW-019

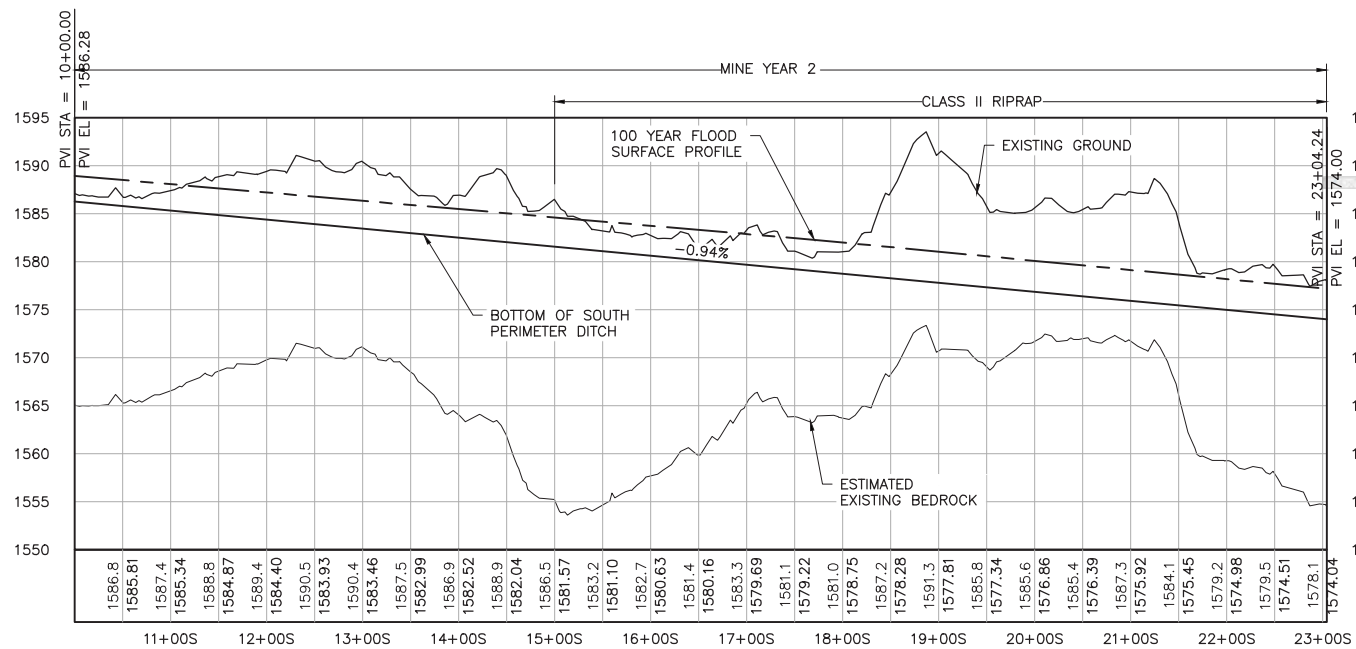
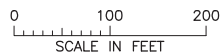
REV

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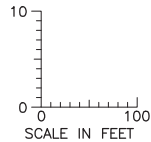
CADD USER: Kate K. Brown FILE: K:\DESIGN\23690C29\10\PERMIT_NMM-09-SW-020.DWG PLOT SCALE: 1:2 PLOT DATE: 6/1/2017 7:58 AM



1 PLAN: SOUTH PERIMETER DITCH STA. 10+00S-22+95S



2 PROFILE: SOUTH PERIMETER DITCH STA. 10+00S-22+95S




NOTES:

1. ALL STATIONS SHOWN ON PROFILE ARE BASED ON DITCH CENTERLINE STATIONS.
2. EXISTING GROUND PROFILE REPRESENTS GRADE AT DITCH CENTERLINE.

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
1	5/26/15	ISSUED FOR INCLUSION IN PERMIT APPLICATIONS	ISSUED	VERSION	DATE
2	6/7/2017	PERMIT APPLICATION UPDATES	FOR PERMITTING	2	6/7/2017
			FOR CONSTRUCTION		
			NOT APPROVED FOR CONSTRUCTION.		

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME: PAUL T. SWENSON
SIGNATURE: 
DATE: 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS
CHECKED: ATS
BARR PROJECT NO.: 23/69-0C29
SCALE: AS SHOWN

PLANT DRAWING NUMBER:

MINE SITE STORMWATER
SOUTH DIKE AND DITCH PLAN AND PROFILE
STATION 10+00S - 22+95S



POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA



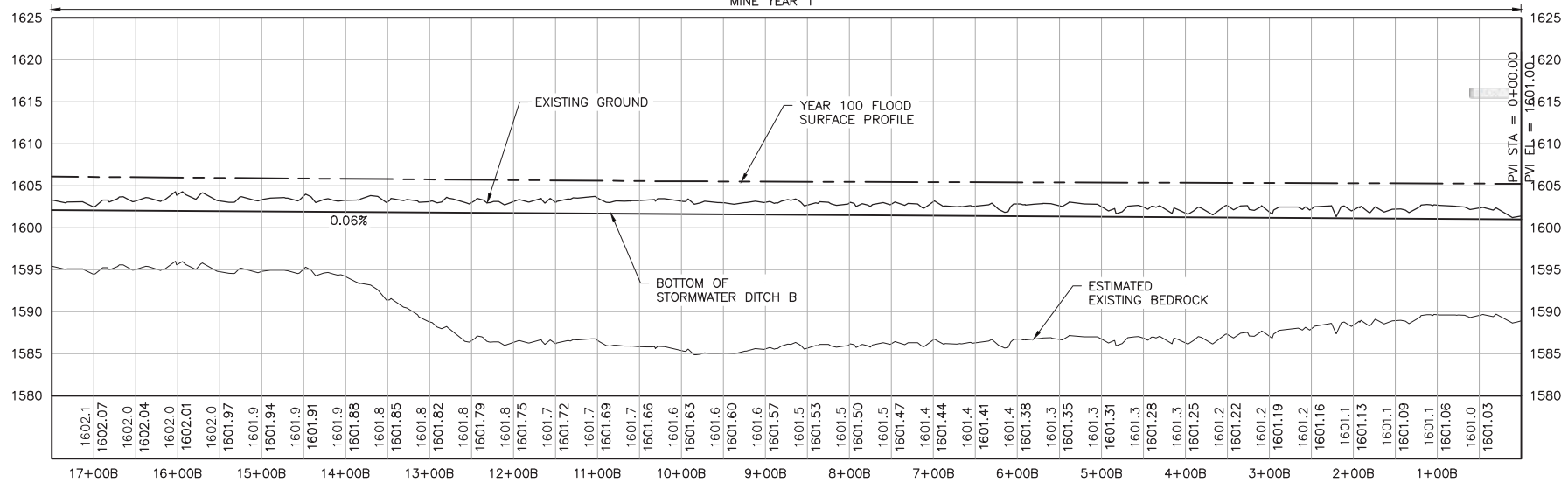
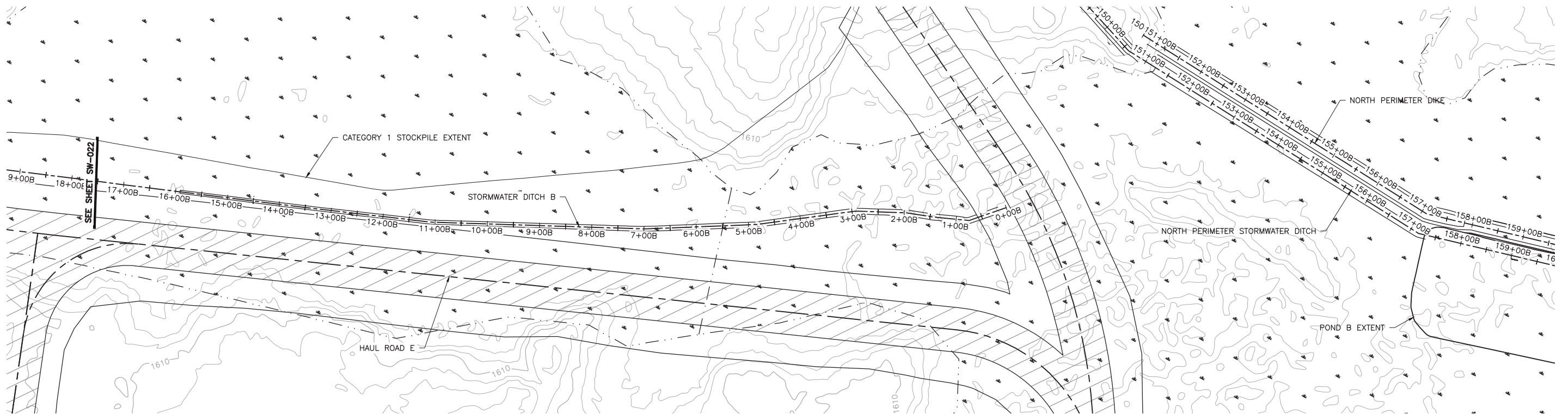
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO. SW-020

REV B

CADD USER: Kate K. Brown FILE: K:\DESIGN\23690C29-10\PERMIT_NMM--08--SW-021.DWG PLOT SCALE: 1:2 PLOT DATE: 6/1/2017 7:54 AM

2
1
INCHES



NOTES:

- ALL STATIONS SHOWN ON PROFILE ARE BASED ON DITCH CENTERLINE STATIONS.
- EXISTING GROUND PROFILE REPRESENTS GRADE AT DITCH CENTERLINE.

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
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SIGNATURE: *Paul T. Swenson*
DATE: 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS
CHECKED: ATS
BARR PROJECT NO.: 23/69-OC29
SCALE: AS SHOWN

PLANT DRAWING NUMBER:

MINE SITE STORMWATER
DITCH B PLAN AND PROFILE
STATION 0+00B - 17+50B



POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA



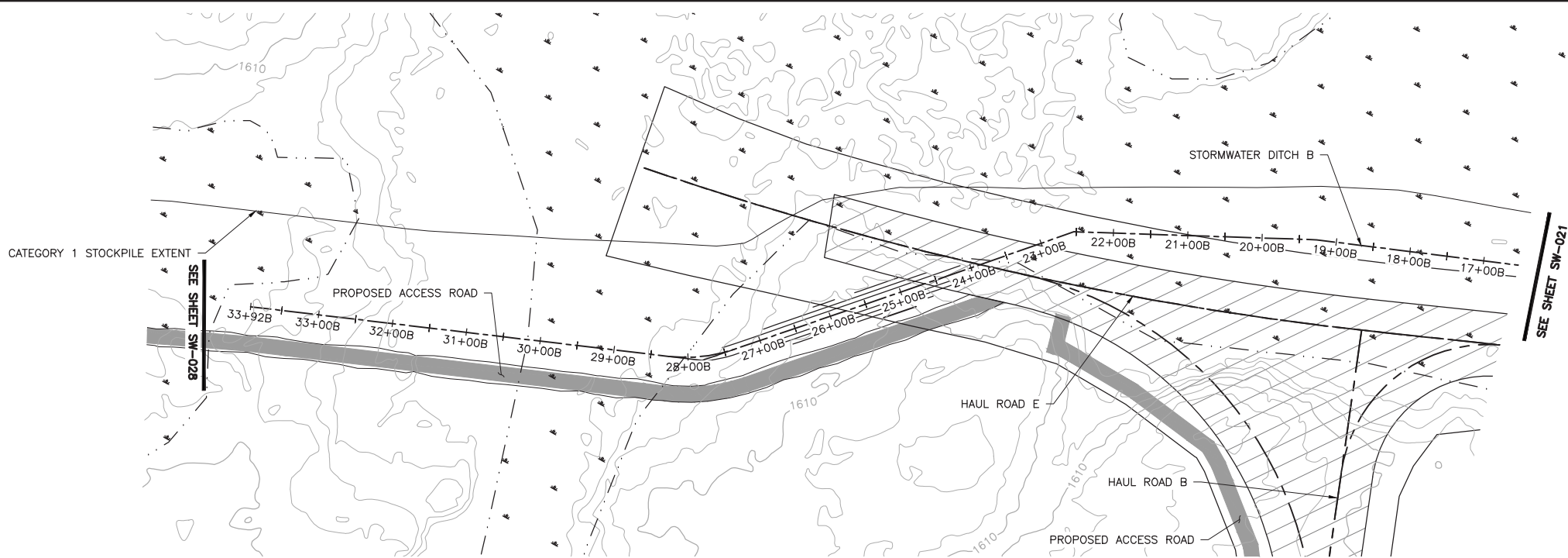
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO. SW-021

REV B

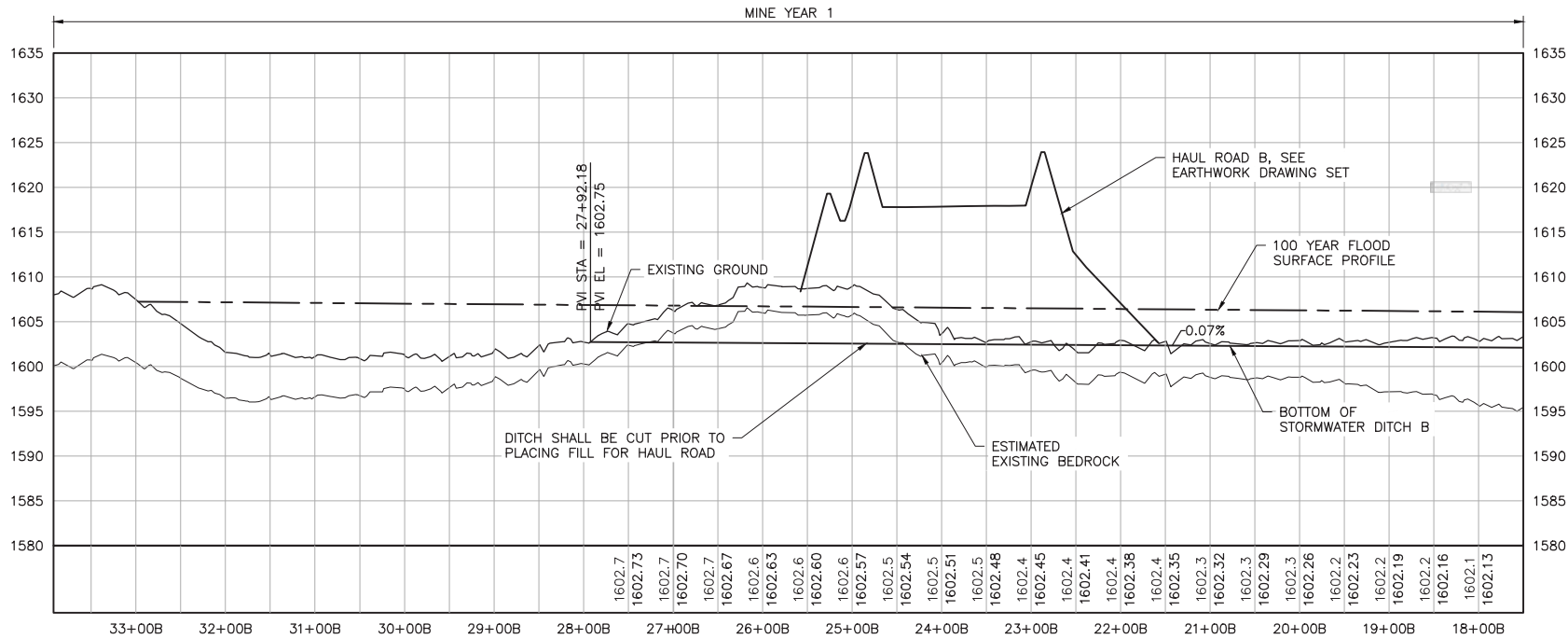
CADD USER: Kate K. Brown FILE: K:\DESIGN\23690C29\10\PERMIT_NMM--08--SW--022.DWG PLOT SCALE: 1:2 PLOT DATE: 6/1/2017 7:56 AM

INCHES
1
2



1 PLAN: STORMWATER DITCH B STA. 17+50B-33+92B

0 100 200
SCALE IN FEET



2 PROFILE: STORMWATER DITCH B STA. 17+50B-33+92B

10
0 100
SCALE IN FEET

NOTES:

1. ALL STATIONS SHOWN ON PROFILE ARE BASED ON DITCH CENTERLINE STATIONS.
2. EXISTING GROUND PROFILE REPRESENTS GRADE AT DITCH CENTERLINE.
3. BOTTOM OF DITCH PROFILE LINE SHOWN TO PRESENT HYDRAULIC GRADE REQUIREMENTS, RESULTING "FILL" AREAS SHALL BE LEFT AS IS. DO NOT PLACE FILL TO RAISE GROUND TO DITCH PROFILE LINE.

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
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DATE: 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS

CHECKED: ATS

BARR PROJECT NO.: 23/69-0C29

SCALE: AS SHOWN

PLANT DRAWING NUMBER:

MINE SITE STORMWATER
DITCH B PLAN AND PROFILE
STATION 17+50B - 33+92B



POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA



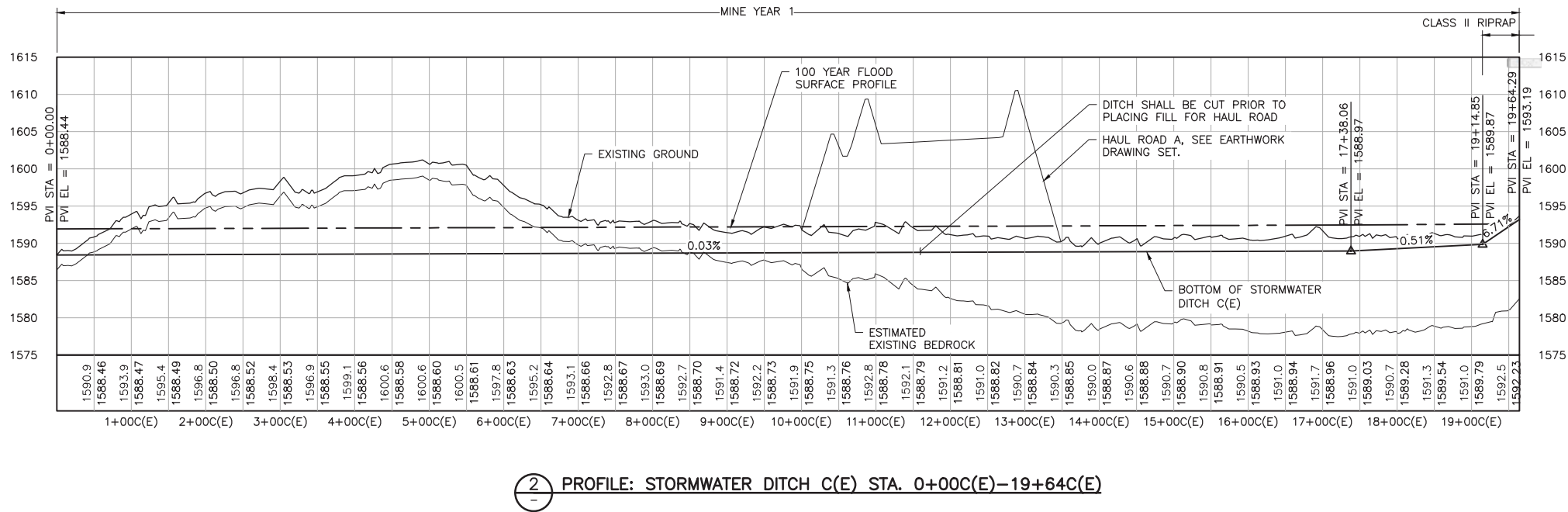
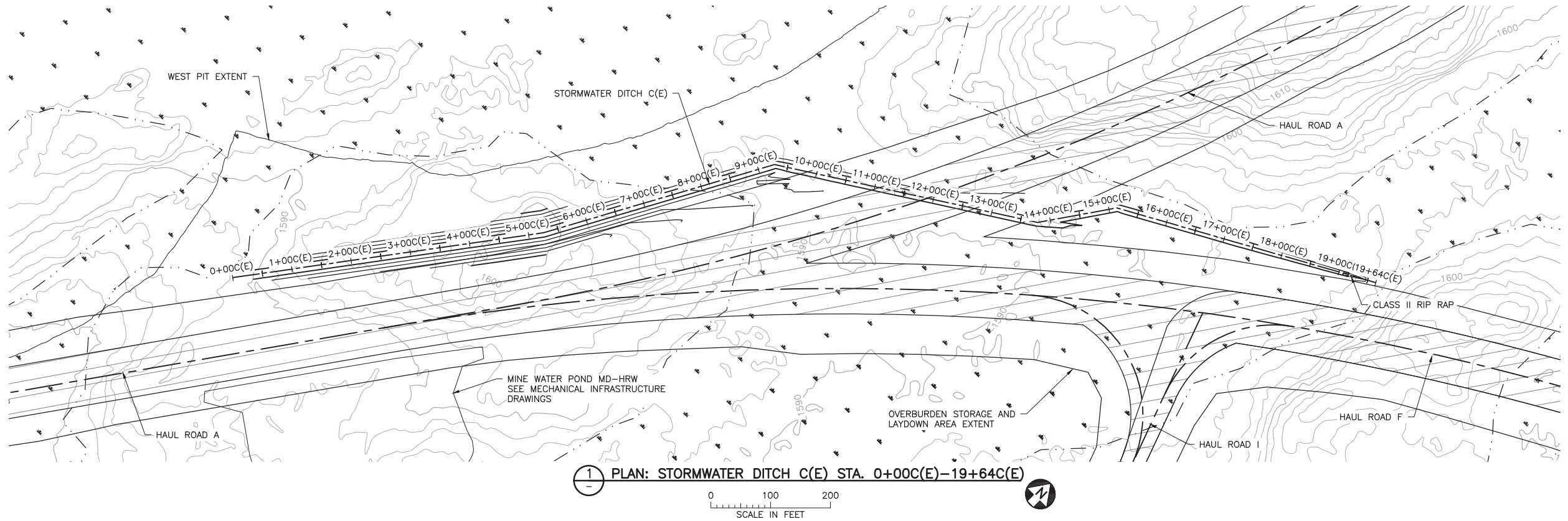
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO.

SW-022

REV

B

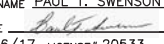


NOTES:

- ALL STATIONS SHOWN ON PROFILE ARE BASED ON DITCH CENTERLINE STATIONS.
- EXISTING GROUND PROFILE REPRESENTS GRADE AT DITCH CENTERLINE.

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
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PRINTED NAME PAUL T. SWENSON
SIGNATURE 
DATE 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS
CHECKED: ATS
BARR PROJECT NO.: 23/69-0C29
SCALE: AS SHOWN

PLANT DRAWING NUMBER:

MINE SITE STORMWATER
DITCH C(E) PLAN AND PROFILE
STATION 0+00C(E) - 19+64C(E)



POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA



BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO.

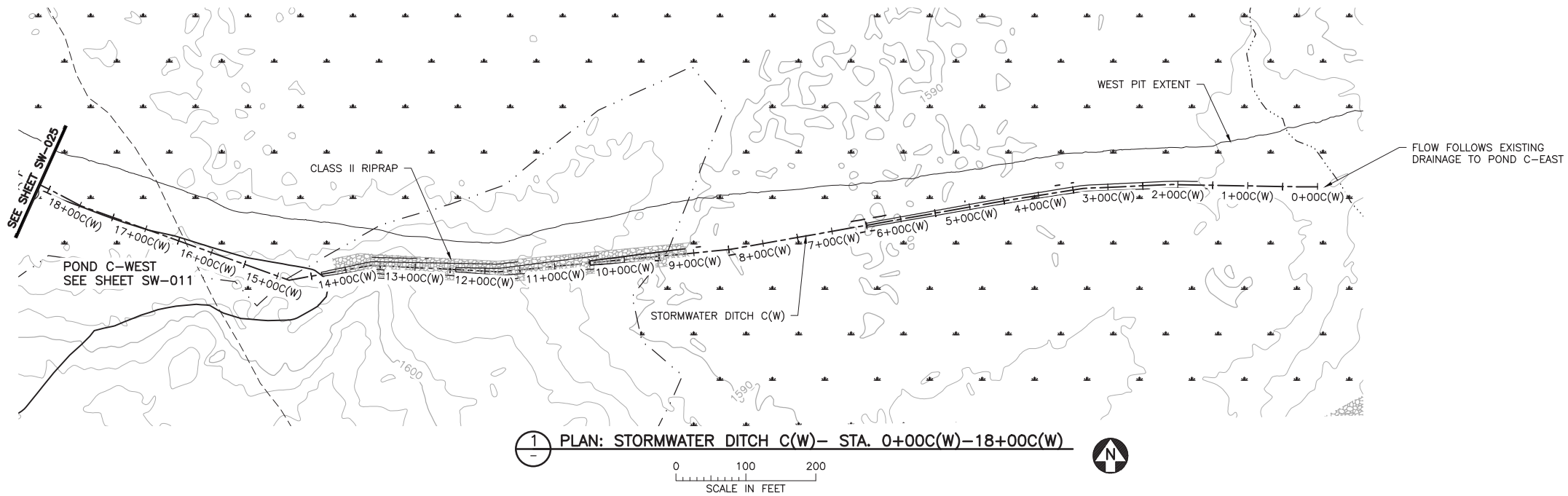
SW-023

REV

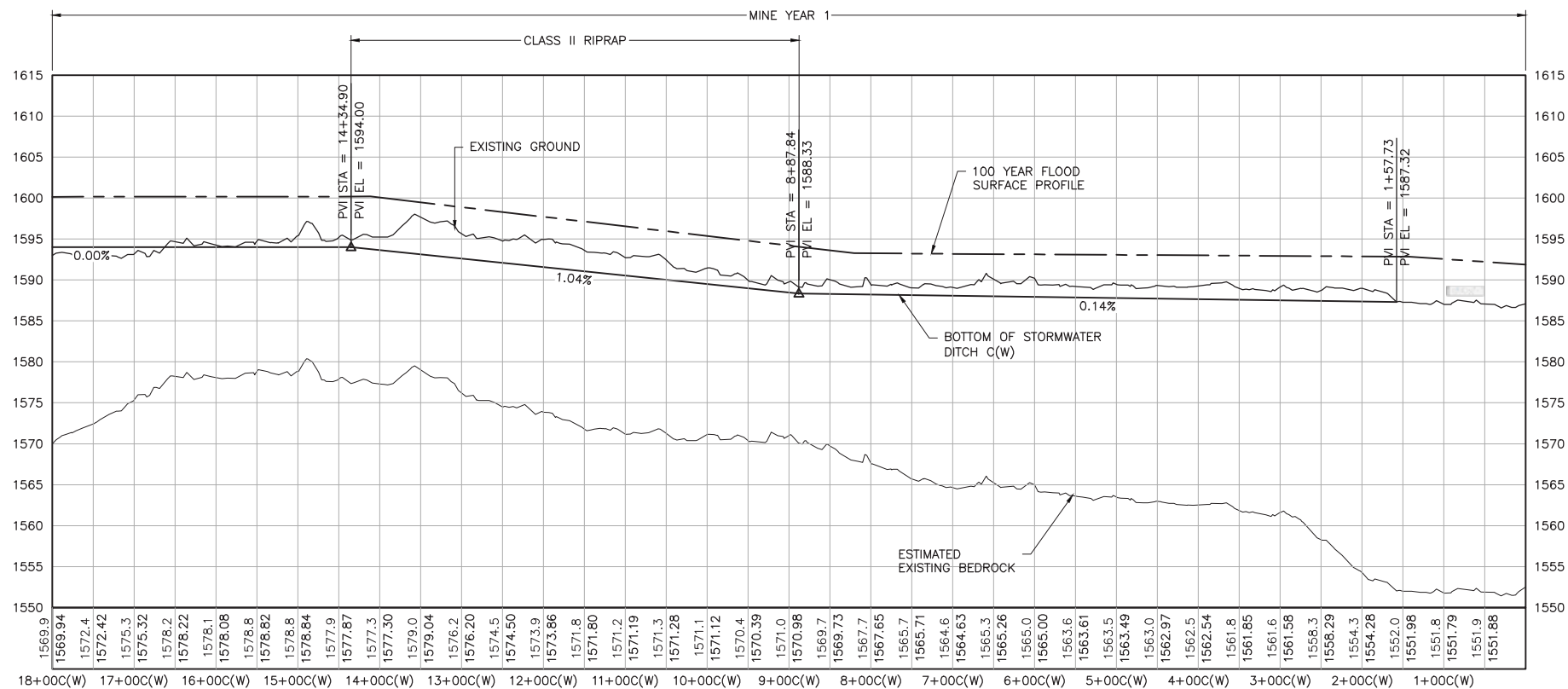
B

CADD USER: Kate K. Brown FILE: K:\DESIGN\23690C29\10\PERMIT_NMM--09--SW--024.DWG PLOT SCALE: 1:2 PLOT DATE: 6/1/2017 7:55 AM

INCHES
1
2



1 PLAN: STORMWATER DITCH C(W)– STA. 0+00C(W)–18+00C(W)



2 PROFILE: STORMWATER DITCH C(W)– STA. 0+00C(W)–18+00C(W)

NOTES:

1. ALL STATIONS SHOWN ON PROFILE ARE BASED ON DITCH CENTERLINE STATIONS.
2. EXISTING GROUND PROFILE REPRESENTS GRADE AT DITCH CENTERLINE.
3. BOTTOM OF DITCH PROFILE LINE SHOWN TO PRESENT HYDRAULIC GRADE REQUIREMENTS, RESULTING "FILL" AREAS SHALL BE LEFT AS IS. DO NOT PLACE FILL TO RAISE GROUND TO DITCH PROFILE LINE.

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
1	5/26/15	ISSUED FOR INCLUSION FOR PERMIT SUBMITTAL	ISSUED	VERSION	DATE
2	6/7/2017	PERMIT APPLICATION UPDATES	FOR PERMITTING	2	6/7/2017
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PRINTED NAME **PAUL T. SWENSON**
SIGNATURE *Paul T. Swenson*
DATE **5/26/17** LICENSE# **20533**

DRAWN: KKB/ATS
CHECKED: ATS
BARR PROJECT NO.: 23/69-0C29
SCALE: AS SHOWN

PLANT DRAWING NUMBER:

MINE SITE STORMWATER
DITCH C(W) PLAN AND PROFILE
STATION 0+00C(W) – 18+00C(W)



POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA



BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO.

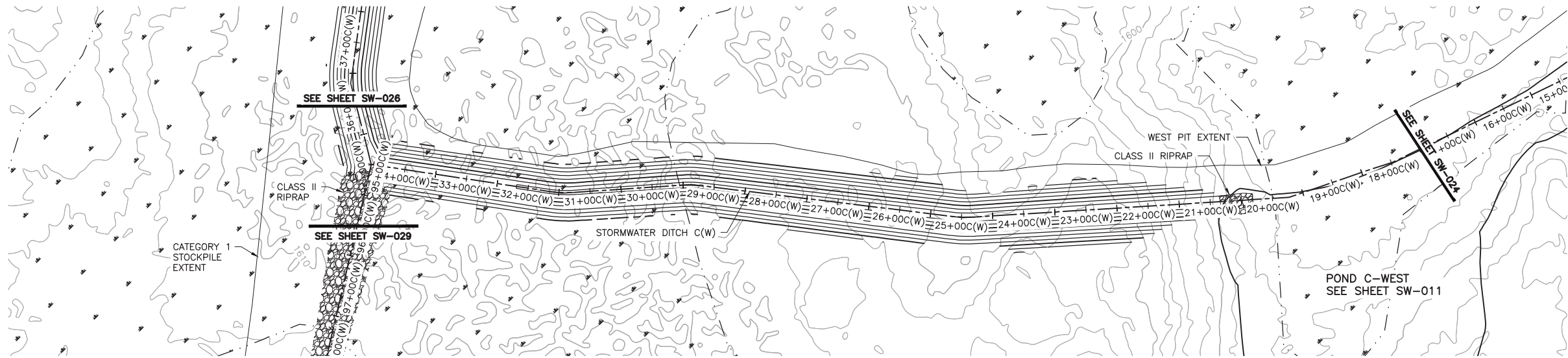
SW-024

REV

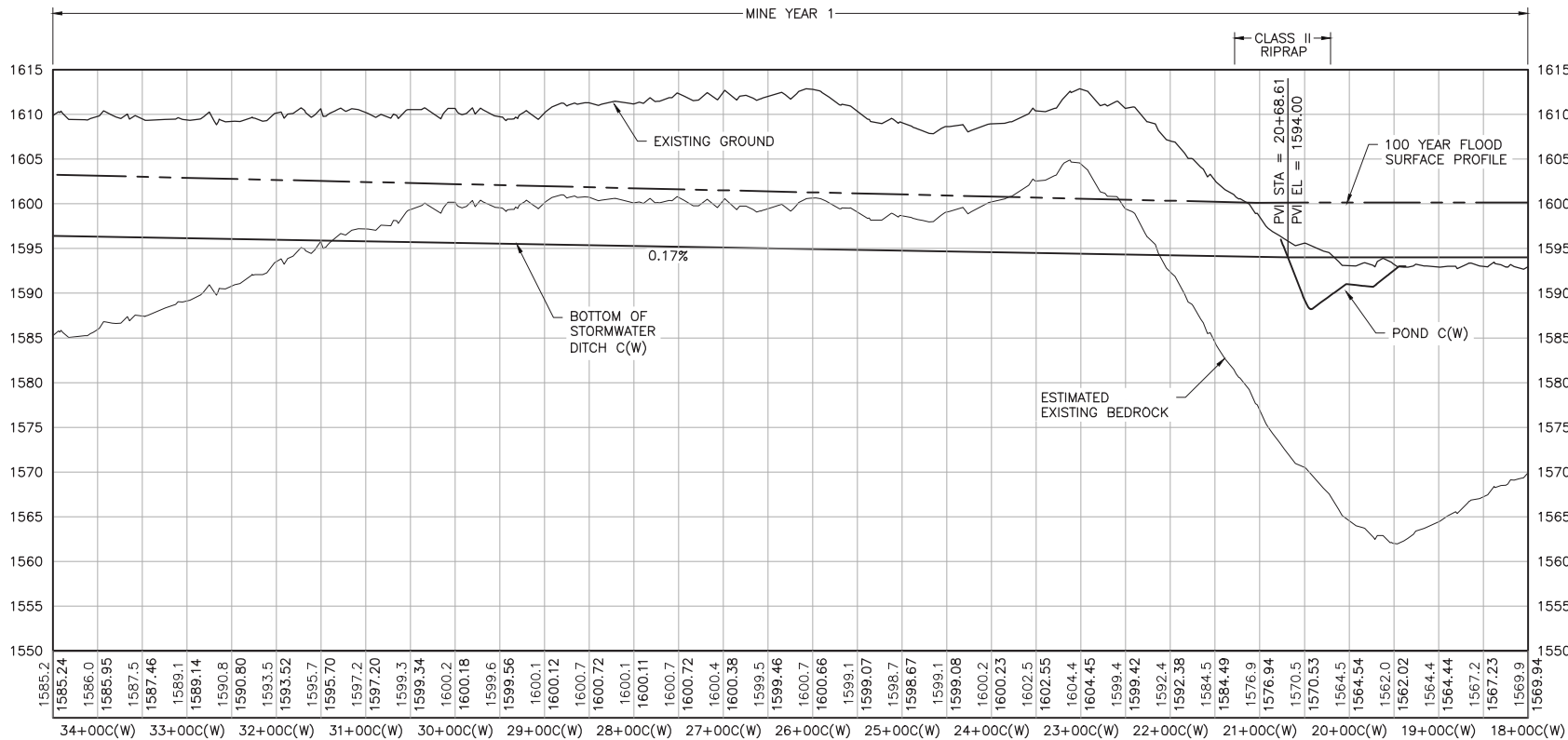
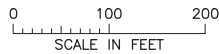
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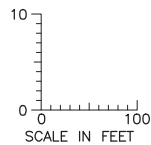
INCHES
1
2



1 PLAN: STORMWATER DITCH C(W) - STA. 18+00C(W)-34+50C(W)



2 PROFILE: STORMWATER DITCH C(W) - STA. 18+00C(W)-34+50C(W)



NOTES:

- ALL STATIONS SHOWN ON PROFILE ARE BASED ON DITCH CENTERLINE STATIONS.
- EXISTING GROUND PROFILE REPRESENTS GRADE AT DITCH CENTERLINE.
- BOTTOM OF DITCH PROFILE LINE SHOWN TO PRESENT HYDRAULIC GRADE REQUIREMENTS, RESULTING "FILL" AREAS SHALL BE LEFT AS IS. DO NOT PLACE FILL TO RAISE GROUND TO DITCH PROFILE LINE.

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PRINTED NAME: PAUL T. SWENSON
SIGNATURE: *Paul T. Swenson*
DATE: 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS
CHECKED: ATS
BARR PROJECT NO.: 23/69-0C29
SCALE: AS SHOWN

PLANT DRAWING NUMBER:

MINE SITE STORMWATER
DITCH C(W) PLAN AND PROFILE
STATION 18+00C(W) - 34+50C(W)

POLYMET
MINING

POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA

BARR

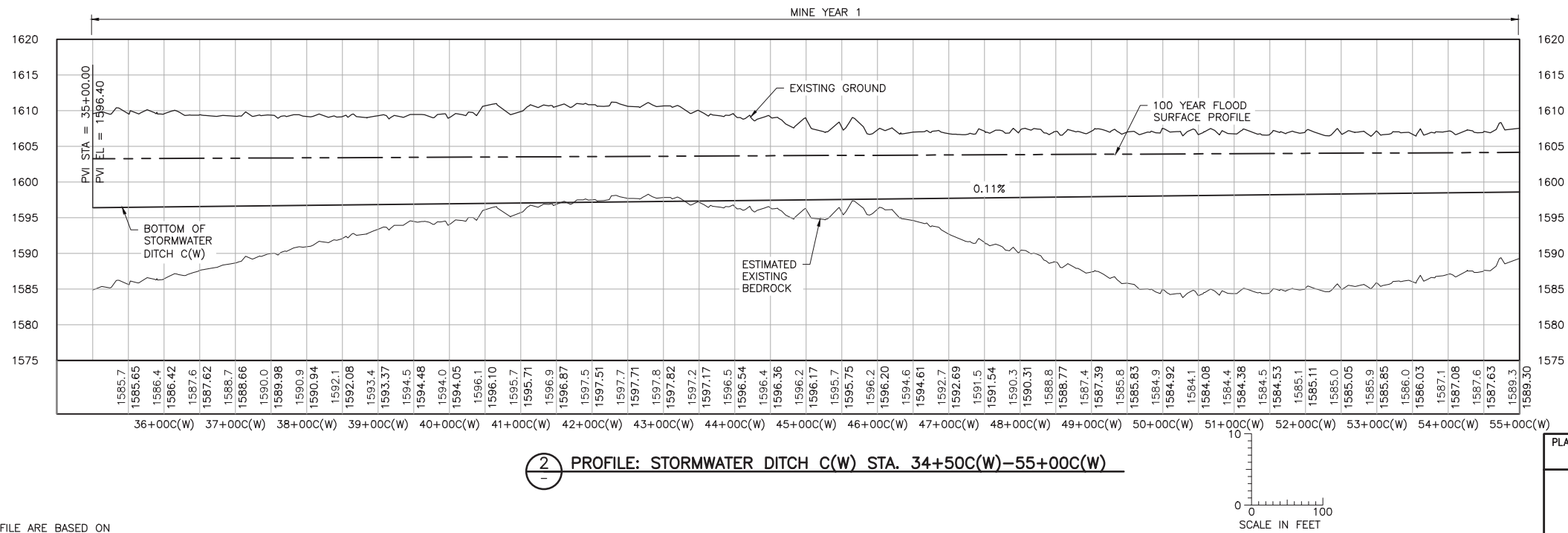
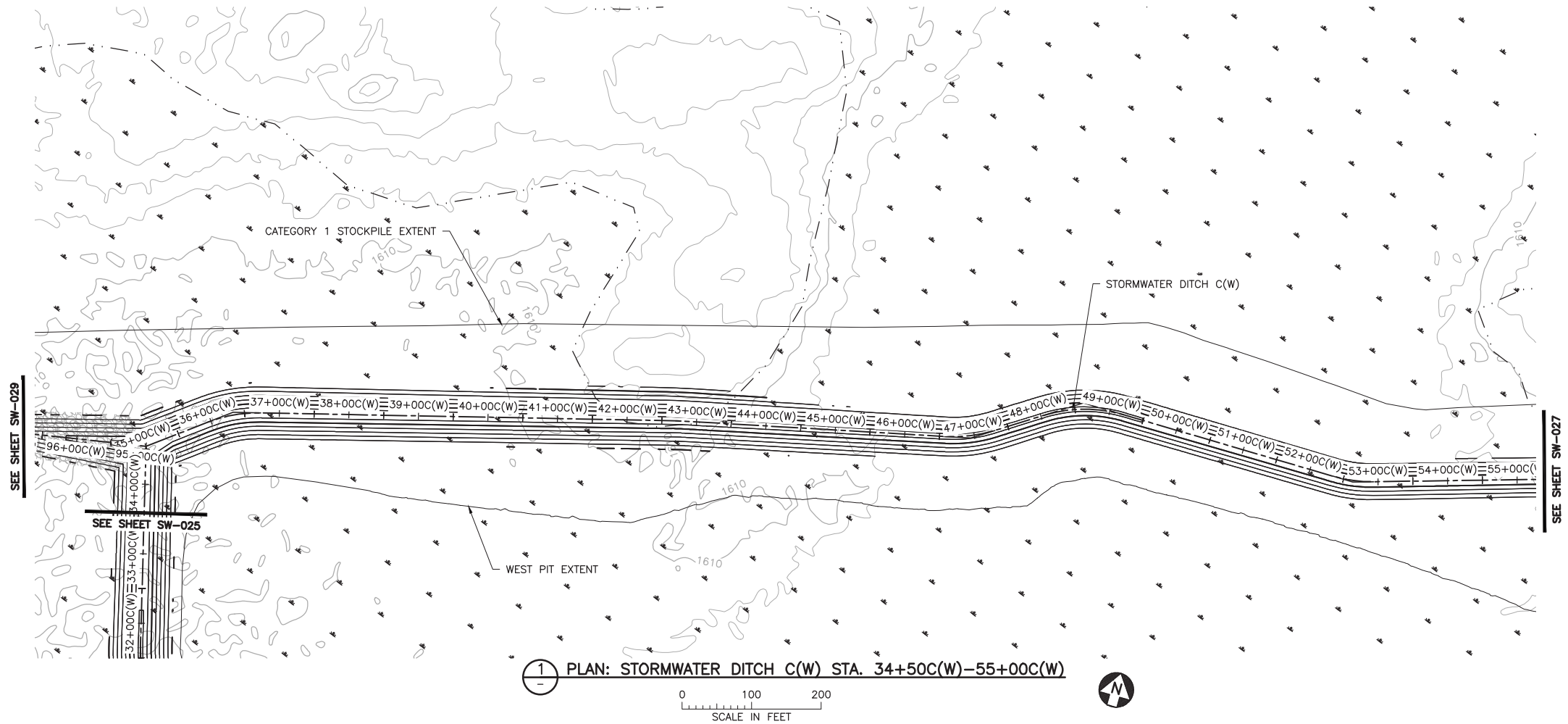
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO. SW-025

REV B

CADD USER: Kate K. Brown FILE: K:\DESIGN\23690C29\10\PERMIT_NM--SW--026.DWG PLOT SCALE: 1:2 PLOT DATE: 6/1/2017 7:22 AM

2
1
INCHES



NOTES:

1. ALL STATIONS SHOWN ON PROFILE ARE BASED ON DITCH CENTERLINE STATIONS.
2. EXISTING GROUND PROFILE REPRESENTS GRADE AT DITCH CENTERLINE.

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
			ISSUED	VERSION	DATE
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SIGNATURE:
DATE: 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS
CHECKED: ATS
BARR PROJECT NO.: 23/69-0C29
SCALE: AS SHOWN

PLANT DRAWING NUMBER:

**MINE SITE STORMWATER
DITCH C(W) PLAN AND PROFILE
STATION 34+50C(W) - 55+00C(W)**

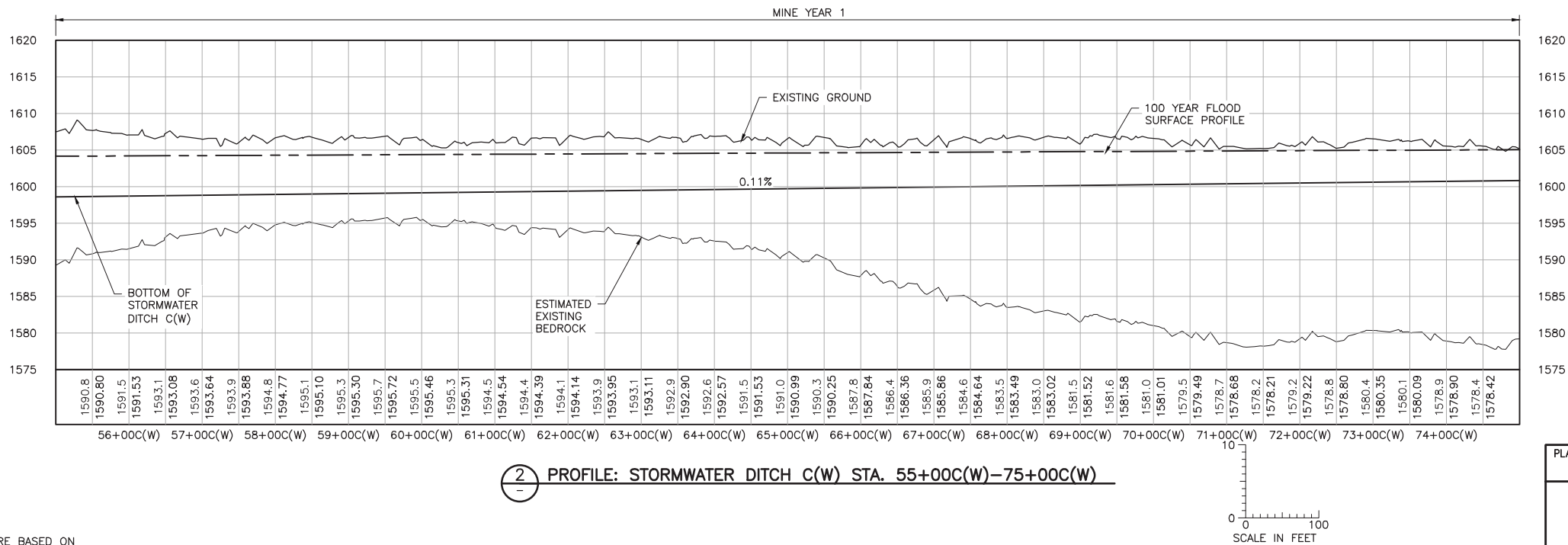
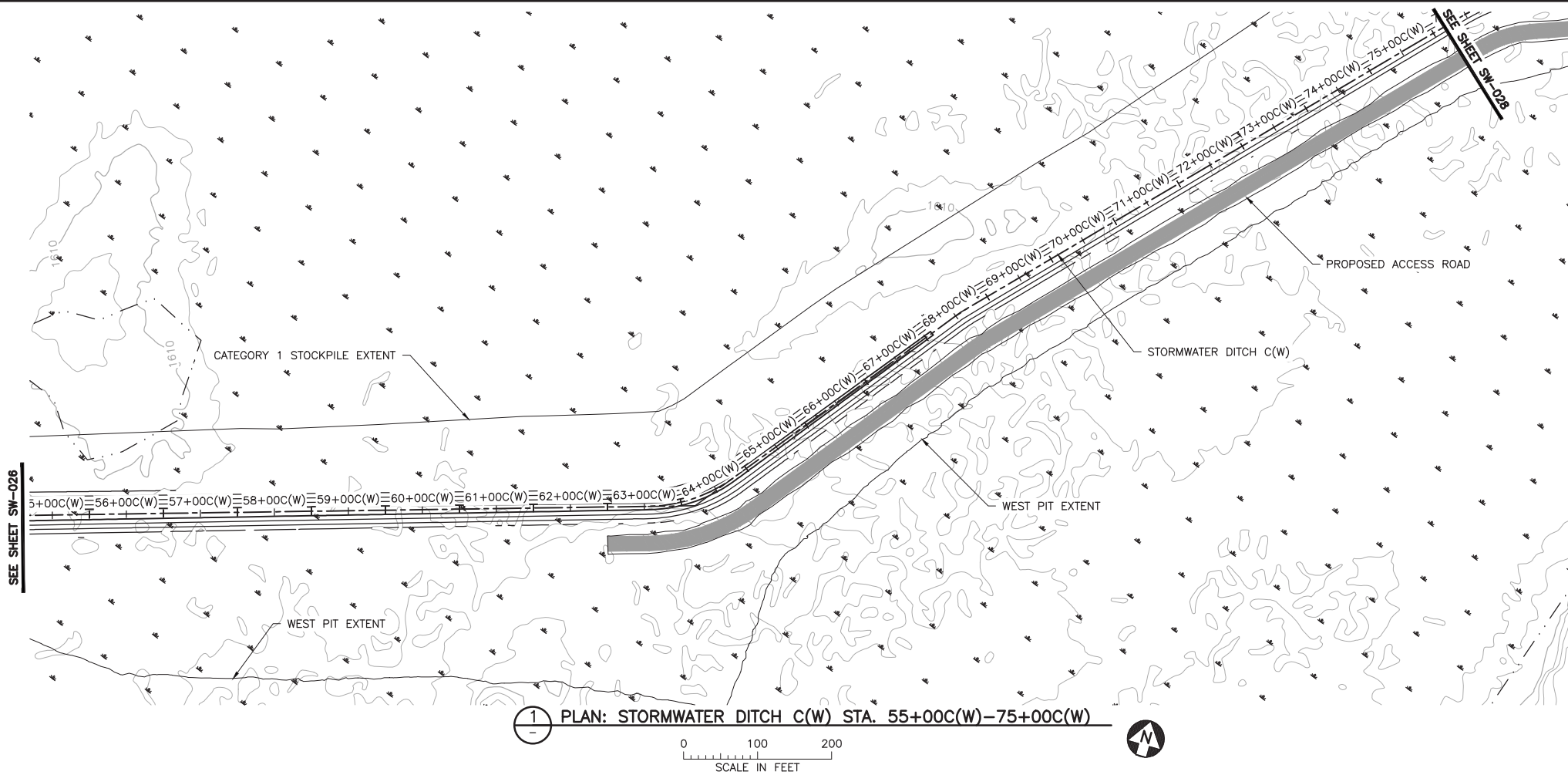
POLYMET MINING
POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA

BARR
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO. **SW-026**
REV **B**

CADD USER: Kate K. Brown FILE: K:\DESIGN\23690C29\10\PERMIT_NM--09--SW--027.DWG PLOT SCALE: 1:2 PLOT DATE: 6/1/2017 7:24 AM

INCHES
1
2



NOTES:

- ALL STATIONS SHOWN ON PROFILE ARE BASED ON DITCH CENTERLINE STATIONS.
- EXISTING GROUND PROFILE REPRESENTS GRADE AT DITCH CENTERLINE.

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
1	5/26/15	ISSUED FOR INCLUSION IN PERMET APPLICATION	ISSUED	VERSION	DATE
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SIGNATURE: *Paul T. Swenson*
DATE: 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS
CHECKED: ATS
BARR PROJECT NO.: 23/69-0C29
SCALE: AS SHOWN

PLANT DRAWING NUMBER:

MINE SITE STORMWATER
DITCH C(W) PLAN AND PROFILE
STATION 55+00C(W) - 75+00C(W)



POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA



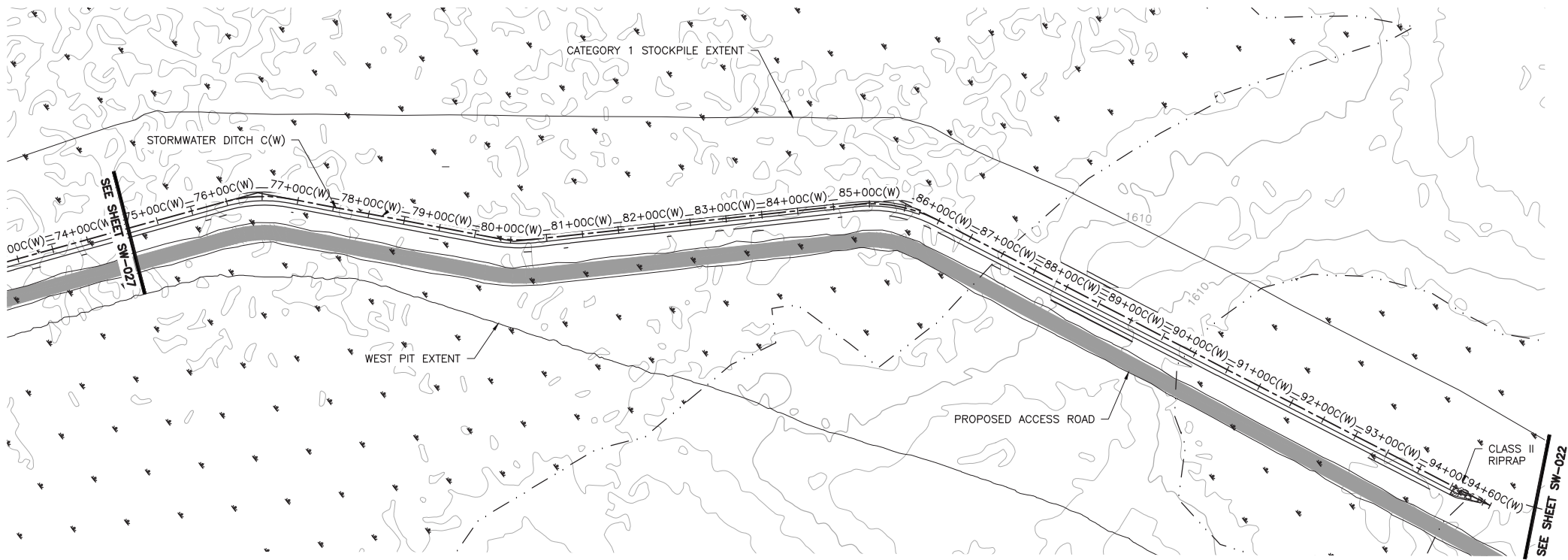
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO. SW-027

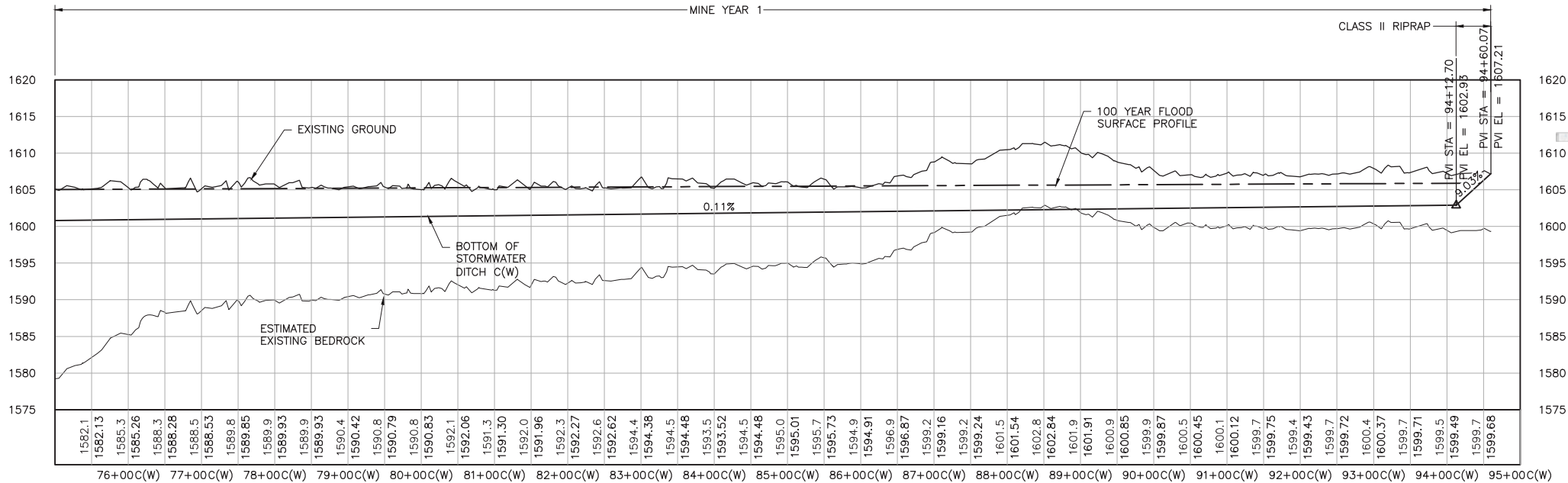
REV B

CADD USER: Kate K. Brown FILE: K:\DESIGN\23690C29-10\PERMIT_NMM-08-SW-028.DWG PLOT SCALE: 1:2 PLOT DATE: 6/1/2017 7:20 AM

2
1
INCHES



1 PLAN: STORMWATER DITCH C(W) STA. 75+00C(W)–94+60C(W)



2 PROFILE: STORMWATER DITCH C(W) STA. 75+00C(W)–94+60C(W)

NOTES:

1. ALL STATIONS SHOWN ON PROFILE ARE BASED ON DITCH CENTERLINE STATIONS.
2. EXISTING GROUND PROFILE REPRESENTS GRADE AT DITCH CENTERLINE.

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SIGNATURE: *Paul T. Swenson*
DATE: 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS

CHECKED: ATS

BARR PROJECT NO.: 23/69-0C29

SCALE: AS SHOWN

PLANT DRAWING NUMBER:

MINE SITE STORMWATER
DITCH C(W) PLAN AND PROFILE
STATION 75+00C(W) – 94+60C(W)



POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA



BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO.

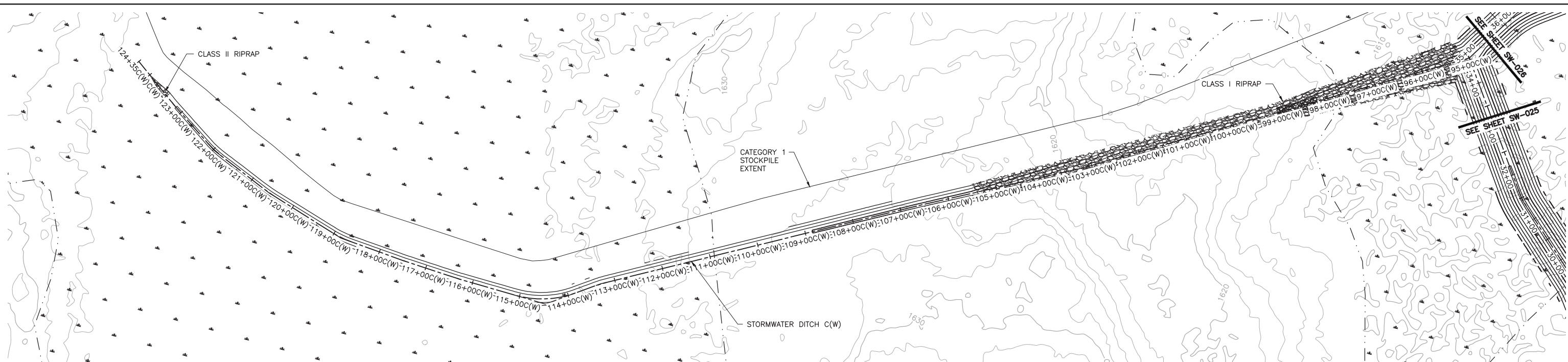
SW-028

REV

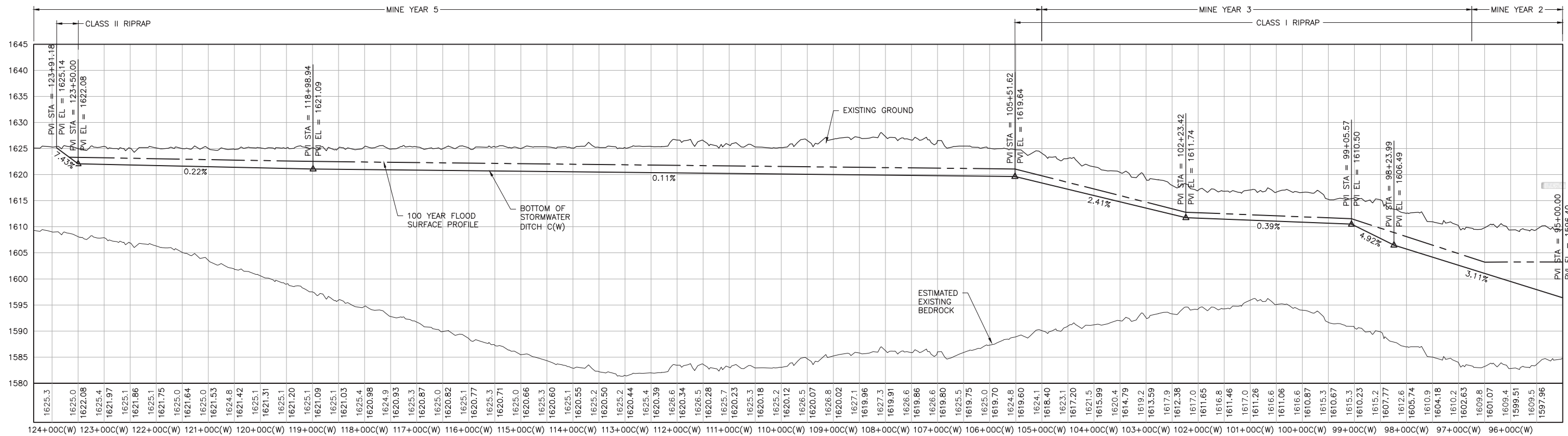
B

CADD USER: Kate K. Brown FILE: K:\DESIGN\23690C29\10\PERMIT_NMM-09-SW-029.DWG PLOT SCALE: 1:2 PLOT DATE: 6/1/2017 7:21 AM

2
1
INCHES



1 PLAN: STORMWATER DITCH C(W) STA. 95+00C(W)–124+35C(W)



2 PROFILE: STORMWATER DITCH STA. 95+00C(W)–124+35C(W)

NOTES:

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- EXISTING GROUND PROFILE REPRESENTS GRADE AT DITCH CENTERLINE.

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DATE: 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS
CHECKED: ATS
BARR PROJECT NO.: 23/69-0C29
SCALE: AS SHOWN

PLANT DRAWING NUMBER:

MINE SITE STORMWATER DITCH C(W) PLAN AND PROFILE
STATION 95+00C(W) – 124+35C(W)

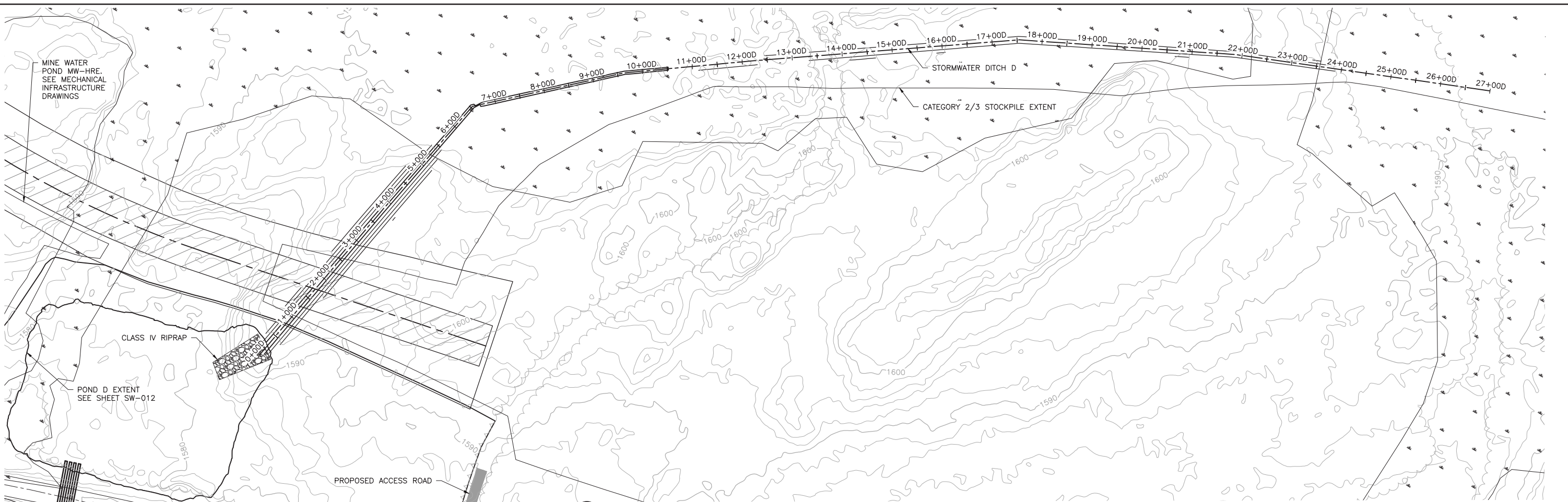
POLYMET MINING
POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA

BARR
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

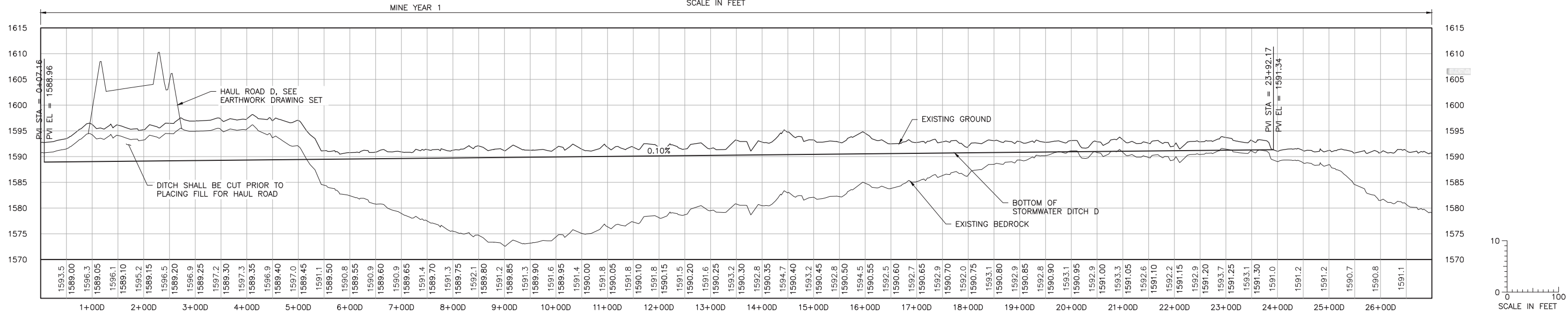
DWG. NO. SW-029
REV B

CADD USER: Kate K. Brown FILE: K:\DESIGN\23690C29-10\PERMIT_NM--08--SW-030.DWG PLOT SCALE: 1:2 PLOT DATE: 6/1/2017 7:25 AM

2
1
INCHES



1 PLAN: STORMWATER DITCH D STA. 0+000-27+000



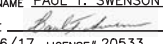
2 PROFILE: STORMWATER DITCH D STA. 0+000-27+000

NOTES:

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- EXISTING GROUND PROFILE REPRESENTS GRADE AT DITCH CENTERLINE.

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PRINTED NAME PAUL T. SWENSON
SIGNATURE 
DATE 5/26/17 LICENSE# 20533

DRAWN: KKB/ATS
CHECKED: ATS
BARR PROJECT NO.: 23/69-0C29
SCALE: AS SHOWN

PLANT DRAWING NUMBER:

MINE SITE STORMWATER
DITCH D PLAN AND PROFILE
STATION 0+000 - 27+000

**POLYMET**
MINING

**BARR**

POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA

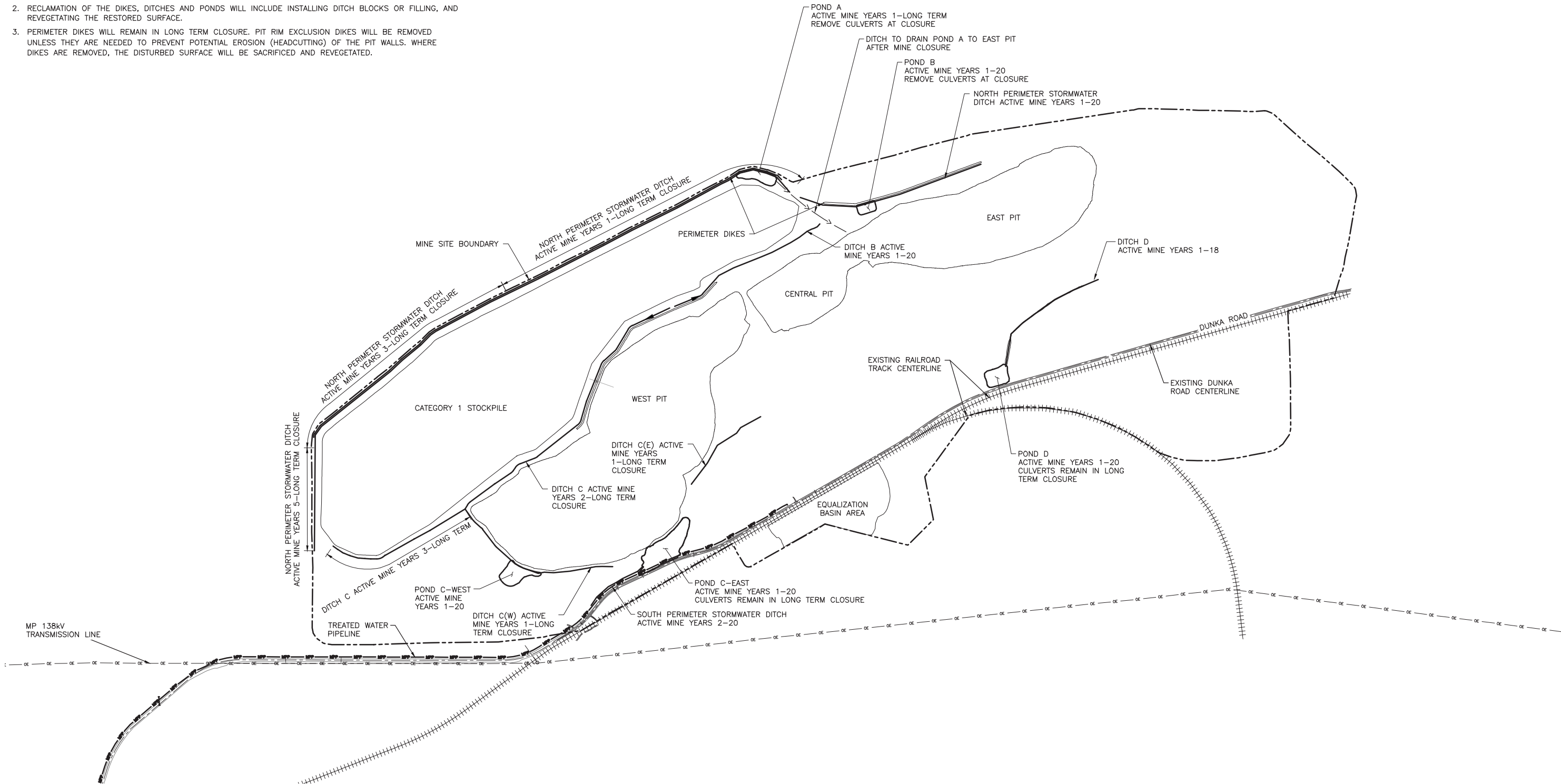
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO. SW-030

REV B

NOTES:

1. ALL FEATURES SHOWN WILL REMAIN IN LONG-TERM CLOSURE UNLESS OTHERWISE NOTED.
2. RECLAMATION OF THE DIKES, DITCHES AND PONDS WILL INCLUDE INSTALLING DITCH BLOCKS OR FILLING, AND REVEGETATING THE RESTORED SURFACE.
3. PERIMETER DIKES WILL REMAIN IN LONG TERM CLOSURE. PIT RIM EXCLUSION DIKES WILL BE REMOVED UNLESS THEY ARE NEEDED TO PREVENT POTENTIAL EROSION (HEADCUTTING) OF THE PIT WALLS. WHERE DIKES ARE REMOVED, THE DISTURBED SURFACE WILL BE SACRIFICED AND REVEGETATED.



1 PLAN: STORMWATER DIKES, DITCHES, AND PONDS RECLAMATION PLAN



VER NO	DATE	DESCRIPTION	ISSUE STATUS		
			ISSUED	VERSION	DATE
1	5/26/15	ISSUED FOR INCLUSION IN PERMIT APPLICATION	ISSUED		
2	6/7/2017	PERMIT APPLICATION UPDATES	FOR PERMITTING	2	6/7/2017
			FOR CONSTRUCTION		
			NOT APPROVED FOR CONSTRUCTION.		


I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME PAUL T. SWENSON
SIGNATURE [Signature]
DATE 5/26/17 LICENSE# 20533


DRAWN: KKB/ATS
CHECKED: ATS
BARR PROJECT NO.: 23/69-0C29
SCALE: AS SHOWN

PLANT DRAWING NUMBER:

MINE SITE STORMWATER
DIKES, DITCHES, AND PONDS
RECLAMATION PLAN

**POLYMET**
MINING

POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA

**BARR**
ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO. **SW-031**

REV **B**