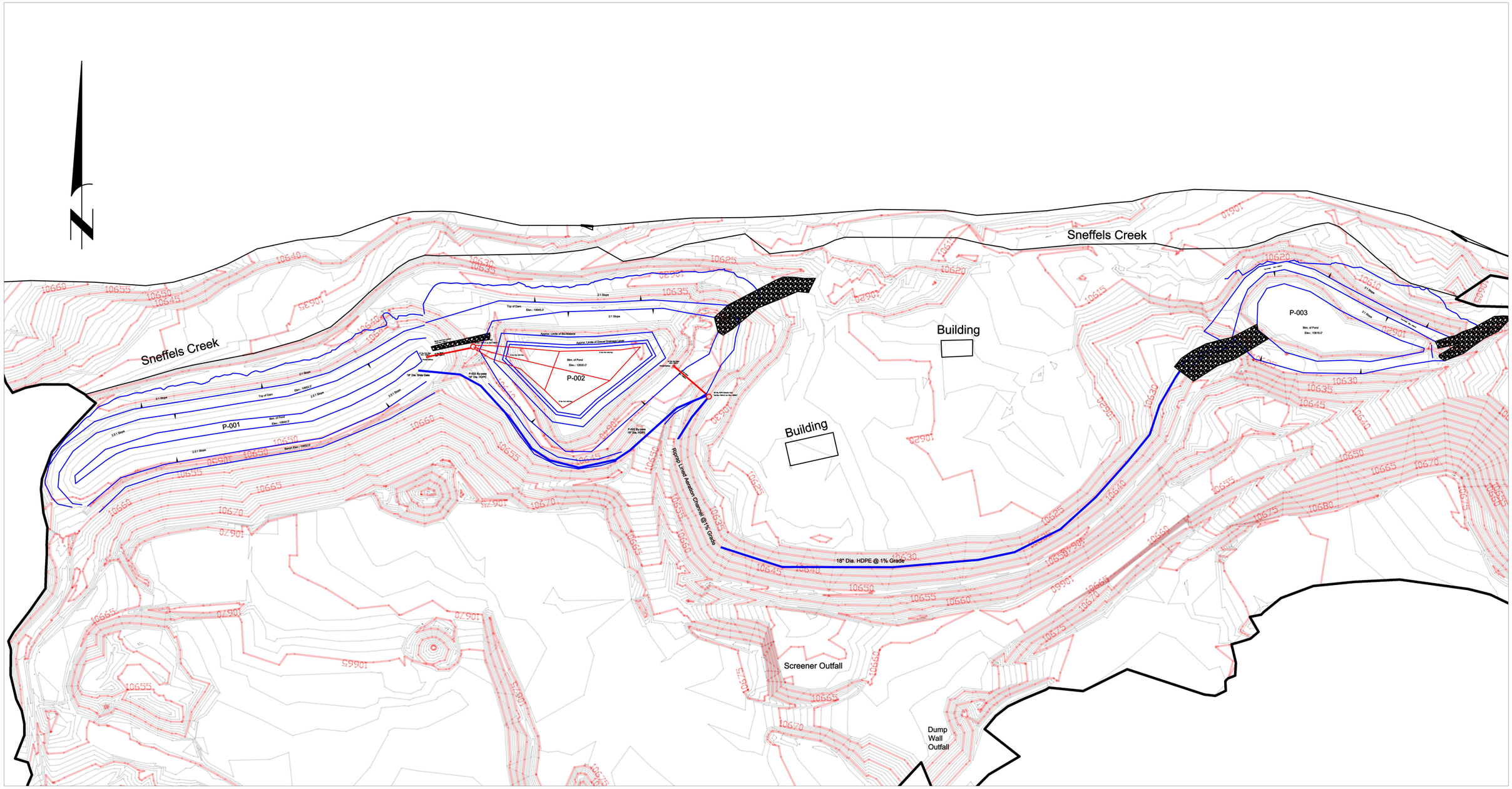

	BY	DATE
DRAWN	DJD	01/10/21
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CLIENT

Ouray SIlver Mines, Inc.
Ouray, Colorado

PROJECT NAME

Revenue Mine
Pond Engineering & Reconstruction

MERIDIAM PARTNERS, LLC

P.O. BOX 102380, DENVER COLORADO 80210 TEL: 303–815–9248

General Arrangement Plan
As-Built

PROJECT NUMBER	SCALE	DRAWING NUMBER	REVISION
20-011	1" = 100'	4 of 4	0

Ouray Silver Mines
Pond Expansions and Spillway Modifications

Ponds to accomodate minimum 1300 gpm from mine portal, along with usual storm events

2-Hr Event Inflow

Daniel J. Duche'

Meridam Partners, LLC
P.O. Box 102380
Denver, CO 80210

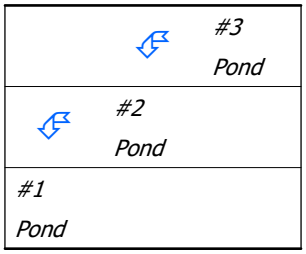
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	1 yr - 2 hr
Rainfall Depth:	1.500 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	End	0.000	0.000	P-003
Pond	#2	==>	#1	0.000	0.000	P-002
Pond	#3	==>	#2	0.000	0.000	P-001



Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#3	In	6.000	6.000	9.48	0.37
	Out			0.70	0.37
#2	In	3.500	9.500	6.02	0.58
	Out			0.43	0.58
#1	In	4.100	13.600	6.68	0.83
	Out			1.75	0.82

Structure Detail:

Structure #3 (Pond)

P-001

Pond Inputs:

Initial Pool Elev:	10,648.00 ft
Initial Pool:	0.75 ac-ft

Perforated Riser

Riser Diameter (in)	Riser Height (ft)	Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Number of Holes per Elev
24.00	2.00	18.00	30.00	2.00	0.0120	10,649.50	4

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
10,651.00	10.00	2.00:1	2.00:1	8.00

Pond Results:

Peak Elevation:	10,648.99 ft
Dewater Time:	1.21 days

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
10,644.50	0.150	0.000	0.000		
10,645.00	0.167	0.079	0.000		
10,645.50	0.185	0.167	0.000		
10,646.00	0.204	0.264	0.000		
10,646.50	0.223	0.371	0.000		
10,647.00	0.244	0.488	0.000		
10,647.50	0.266	0.615	0.000		
10,648.00	0.288	0.754	0.000		Low hole SPW #1
10,648.50	0.311	0.903	0.297	24.90	
10,648.99	0.335	1.060	0.705	4.05	Peak Stage
10,649.00	0.336	1.065	0.717		

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
10,649.50	0.361	1.239	1.232		Spillway #1
10,650.00	0.387	1.426	6.886		
10,650.50	0.414	1.626	15.127		
10,651.00	0.442	1.840	16.673		Spillway #2
10,651.50	0.470	2.068	19.337		
10,652.00	0.500	2.310	42.048		

Detailed Discharge Table

Elevation (ft)	Perf. Riser (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
10,644.50	0.000	0.000	0.000
10,645.00	0.000	0.000	0.000
10,645.50	0.000	0.000	0.000
10,646.00	0.000	0.000	0.000
10,646.50	0.000	0.000	0.000
10,647.00	0.000	0.000	0.000
10,647.50	0.000	0.000	0.000
10,648.00	2.00>0.000	0.000	0.000
10,648.50	2.00>0.297	0.000	0.297
10,649.00	2.00>0.717	0.000	0.717
10,649.50	1.232	0.000	1.232
10,650.00	6.886	0.000	6.886
10,650.50	15.127	0.000	15.127
10,651.00	16.673	0.000	16.673
10,651.50	0.000	0.000	19.337
10,652.00	0.000	0.000	42.048

Structure #2 (Pond)

P-002

Pond Inputs:

Initial Pool Elev:	10,641.00 ft
Initial Pool:	3.31 ac-ft

Perforated Riser

Riser Diameter (in)	Riser Height (ft)	Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Number of Holes per Elev
24.00	4.00	18.00	55.00	1.00	0.0120	10,643.00	4

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
10,644.00	10.00	2.00:1	2.00:1	8.00

Pond Results:

Peak Elevation:	10,641.65 ft
Dewater Time:	0.62 days

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
10,630.00	0.200	0.000	0.000		
10,630.50	0.208	0.102	0.000		
10,631.00	0.217	0.208	0.000		
10,631.50	0.225	0.319	0.000		
10,632.00	0.234	0.434	0.000		
10,632.50	0.243	0.553	0.000		
10,633.00	0.252	0.677	0.000		
10,633.50	0.261	0.805	0.000		
10,634.00	0.271	0.938	0.000		
10,634.50	0.280	1.076	0.000		
10,635.00	0.290	1.218	0.000		
10,635.50	0.300	1.366	0.000		
10,636.00	0.309	1.518	0.000		
10,636.50	0.319	1.675	0.000		
10,637.00	0.328	1.837	0.000		
10,637.50	0.338	2.003	0.000		
10,638.00	0.348	2.175	0.000		
10,638.50	0.358	2.351	0.000		
10,639.00	0.368	2.532	0.000		
10,639.50	0.378	2.719	0.000		
10,640.00	0.388	2.910	0.000		
10,640.50	0.399	3.107	0.000		
10,641.00	0.410	3.309	0.000		Low hole SPW #1
10,641.50	0.420	3.517	0.297	8.45*	
10,641.65	0.424	3.583	0.427	6.35	Peak Stage
10,642.00	0.431	3.730	0.717		
10,642.50	0.442	3.948	1.232		
10,643.00	0.454	4.172	1.826		Spillway #1

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
10,643.50	0.465	4.402	6.886		
10,644.00	0.477	4.637	15.127		Spillway #2
10,644.50	0.488	4.879	20.202		
10,645.00	0.500	5.126	43.269		

Detailed Discharge Table

Elevation (ft)	Perf. Riser (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
10,630.00	0.000	0.000	0.000
10,630.50	0.000	0.000	0.000
10,631.00	0.000	0.000	0.000
10,631.50	0.000	0.000	0.000
10,632.00	0.000	0.000	0.000
10,632.50	0.000	0.000	0.000
10,633.00	0.000	0.000	0.000
10,633.50	0.000	0.000	0.000
10,634.00	0.000	0.000	0.000
10,634.50	0.000	0.000	0.000
10,635.00	0.000	0.000	0.000
10,635.50	0.000	0.000	0.000
10,636.00	0.000	0.000	0.000
10,636.50	0.000	0.000	0.000
10,637.00	0.000	0.000	0.000
10,637.50	0.000	0.000	0.000
10,638.00	0.000	0.000	0.000
10,638.50	0.000	0.000	0.000
10,639.00	0.000	0.000	0.000
10,639.50	0.000	0.000	0.000
10,640.00	0.000	0.000	0.000
10,640.50	0.000	0.000	0.000
10,641.00	2.00>0.000	0.000	0.000
10,641.50	2.00>0.000	0.000	0.297
10,642.00	2.00>0.000	0.000	0.717
10,642.50	2.00>0.000	0.000	1.232
10,643.00	0.000	0.000	1.826
10,643.50	0.000	0.000	6.886
10,644.00	0.000	0.000	15.127
10,644.50	0.000	0.000	20.202
10,645.00	0.000	0.000	43.269

Structure #1 (Pond)

P-003

Pond Inputs:

Initial Pool Elev:	10,617.50 ft
Initial Pool:	0.32 ac-ft

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
10,619.50	6.00	2.00:1	2.00:1	6.00

Side-contracting Weir

Weir Width (ft)	Spillway Elev (ft)
1.00	10,617.50

Pond Results:

Peak Elevation:	10,618.16 ft
Dewater Time:	0.10 days

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
10,616.00	0.200	0.000	0.000		
10,616.50	0.207	0.102	0.000		
10,617.00	0.214	0.207	0.000		
10,617.50	0.221	0.316	0.000		Spillway #2
10,618.00	0.229	0.428	1.119	1.22*	
10,618.16	0.231	0.465	1.748	1.10	Peak Stage
10,618.50	0.236	0.544	3.100		
10,619.00	0.244	0.664	5.626		
10,619.50	0.251	0.788	8.588		Spillway #1
10,620.00	0.259	0.916	15.138		
10,620.50	0.267	1.047	35.662		
10,621.00	0.275	1.183	62.202		
10,621.50	0.283	1.322	96.431		
10,622.00	0.292	1.466	139.208		
10,622.50	0.300	1.614	190.995		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

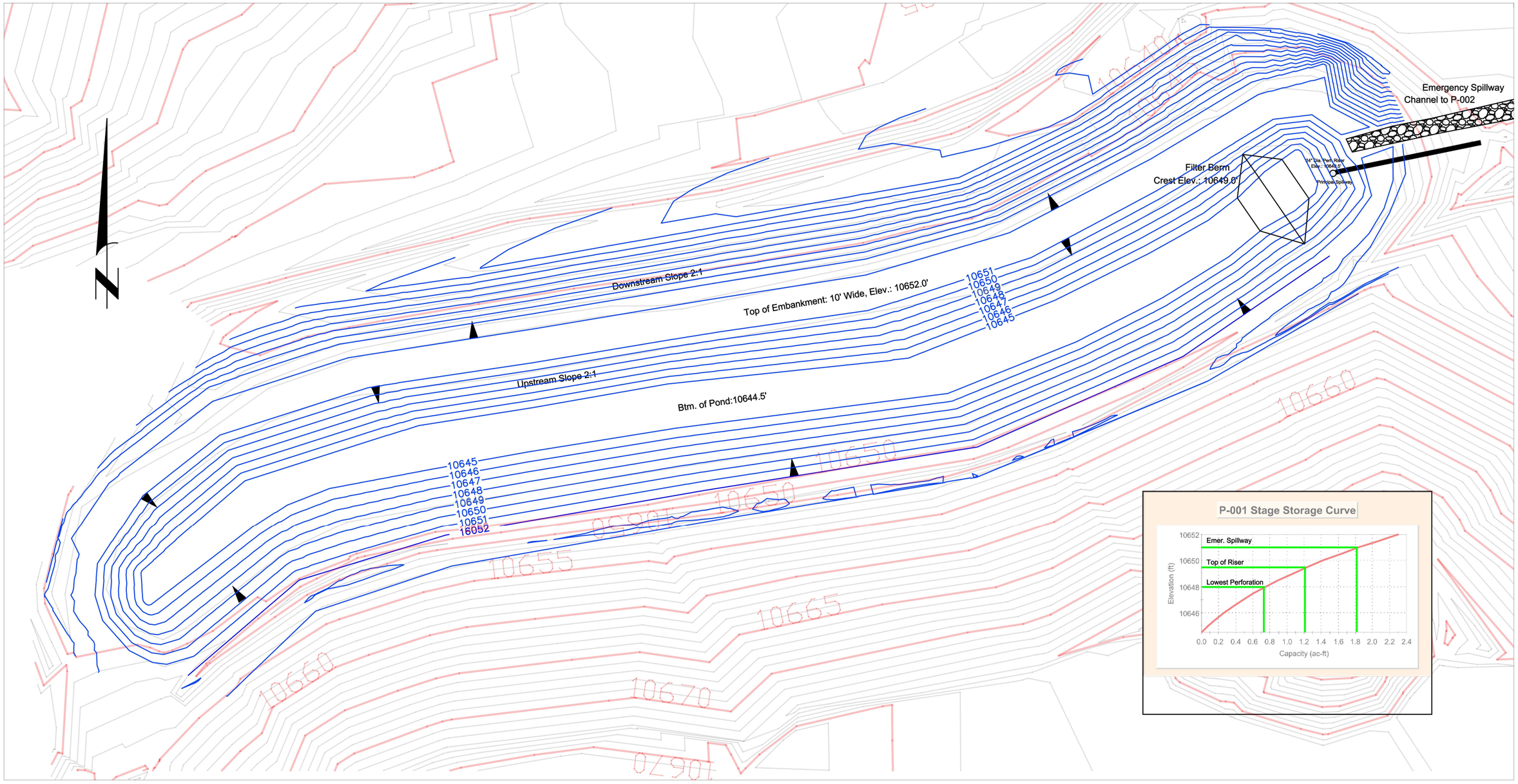
Elevation (ft)	Emergency Spillway (cfs)	Side-contracted Weir (cfs)	Combined Total Discharge (cfs)
10,616.00	0.000	0.000	0.000
10,616.50	0.000	0.000	0.000
10,617.00	0.000	0.000	0.000
10,617.50	0.000	0.000	0.000
10,618.00	0.000	1.119	1.119
10,618.50	0.000	3.100	3.100
10,619.00	0.000	5.626	5.626
10,619.50	0.000	8.588	8.588
10,620.00	3.217	11.922	15.138
10,620.50	20.076	15.586	35.662
10,621.00	42.653	19.550	62.202
10,621.50	72.641	23.790	96.431
10,622.00	110.921	28.287	139.208
10,622.50	157.969	33.025	190.995

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#3	1	6.000	0.008	0.000	0.000	91.000	M	9.48	0.366
	Σ	**6.000**						**9.48**	**0.366**
#2	1	3.500	0.003	0.000	0.000	91.000	M	5.53	0.213
	Σ	**9.500**						**6.02**	**0.579**
#1	1	4.100	0.005	0.000	0.000	91.000	M	6.48	0.250
	Σ	**13.600**						**6.68**	**0.825**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	9. Small streams flowing bankfull	15.00	100.00	666.66	34.850	0.005
#1	**1**	**Time of Concentration:**					**0.005**
#2	1	9. Small streams flowing bankfull	10.00	40.00	400.00	28.460	0.003
#2	**1**	**Time of Concentration:**					**0.003**
#3	1	9. Small streams flowing bankfull	5.00	30.00	600.00	20.120	0.008
#3	**1**	**Time of Concentration:**					**0.008**



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CLIENT
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Ouray, Colorado

PROJECT NAME
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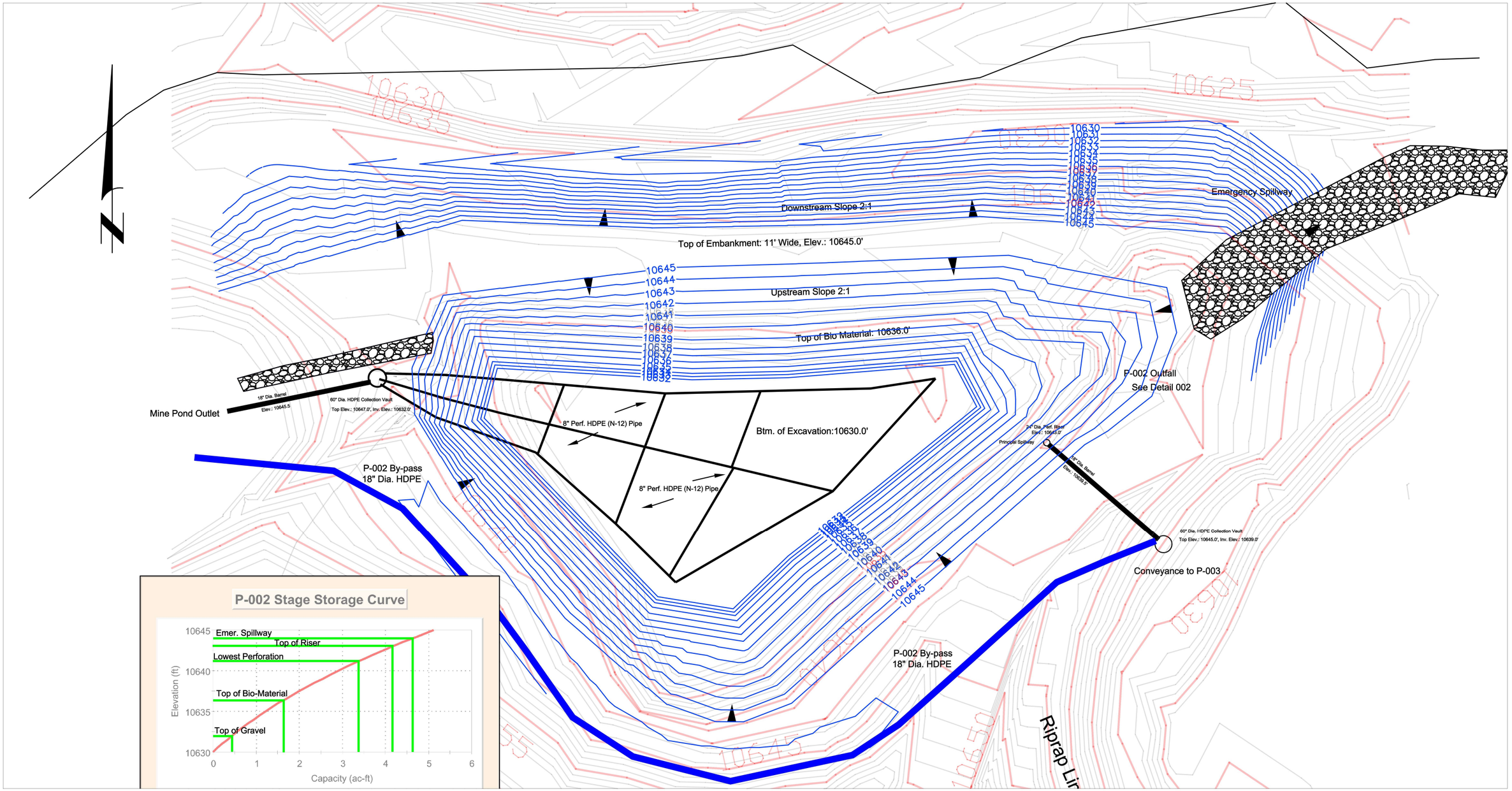
Pond Engineering & Reconstruction

MERIDIAM PARTNERS, LLC
P.O. BOX 102380, DENVER COLORADO 80210 TEL: 303-815-9248

P-001
As-built

PROJECT NUMBER	SCALE	DRAWING NUMBER	REVISION
20-011	1" = 30'	1 of 4	1



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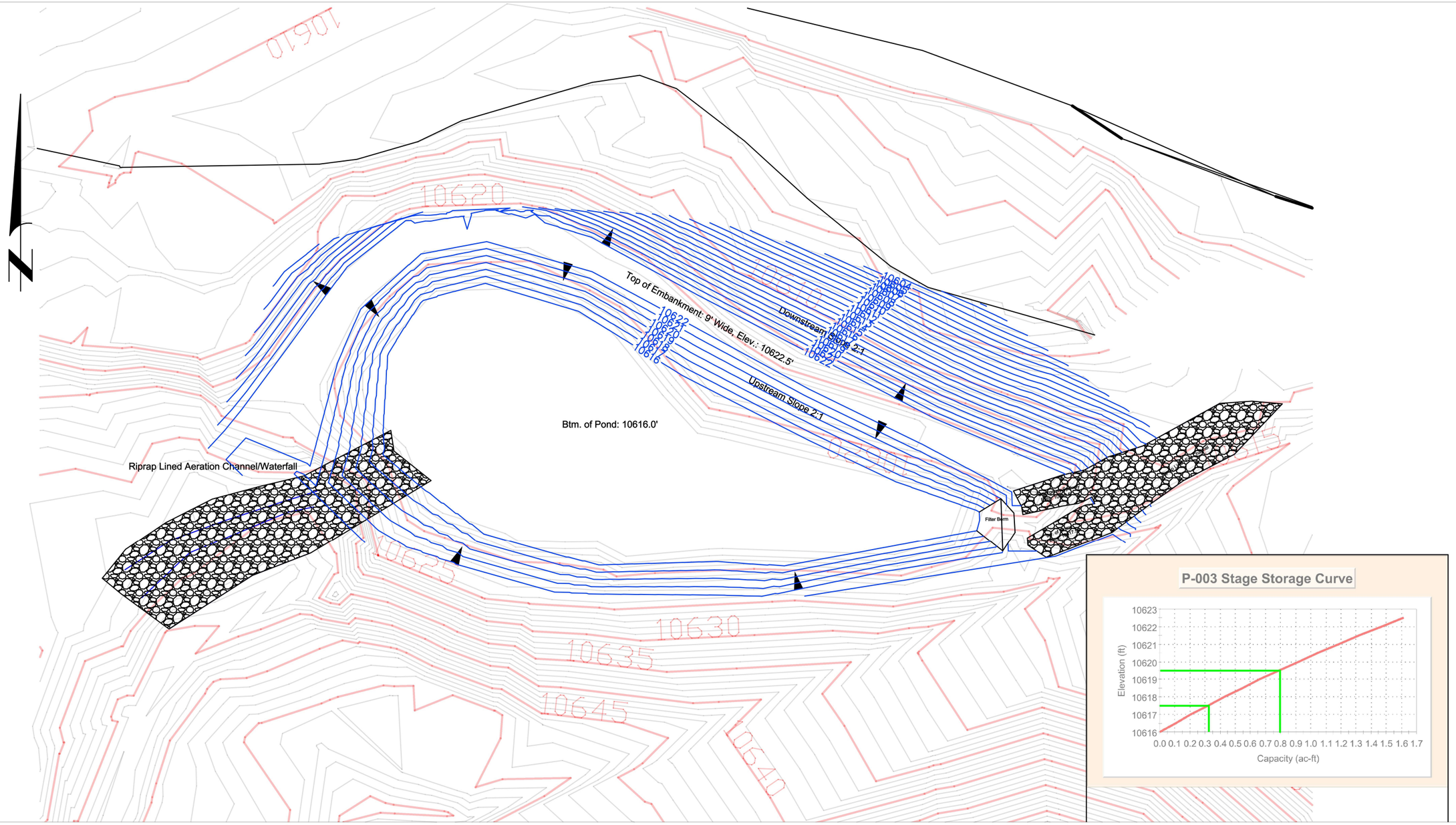
P-002
As-Built

PROJECT NUMBER	SCALE	DRAWING NUMBER	REVISION
20-011	1" = 30'	2 of 4	0



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DRAWN	DJD	02/25/21
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REV	0	00/00/00

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P-003
As-Built

PROJECT NUMBER	SCALE	DRAWING NUMBER	REVISION
20-011	1" = 30'	3 of 4	1