



June 29, 2026

Mr. Stephen D. Miles, P.E.
Alabama Surface Mining Commission
P.O. Box 2390
Jasper, AL 35502-2390

RE: Highland Energy, Inc.
No. 5 Mine, P-3957, R-8

Dear Mr. Miles:

I hereby certify the enclosed detailed design plans for Final Pit Impoundment No. 13 for the above referenced mine are in accordance with the Regulations of the Alabama Surface Mining Commission as adopted by Act 81-435 of December 18, 1981 and as amended to date and that the information used in the enclosed design plans is true and correct to the best of my knowledge and belief.

If you have any questions or need additional information, please do not hesitate to contact our office.

Sincerely,

Simmons-Johnsey Engineering, LLC

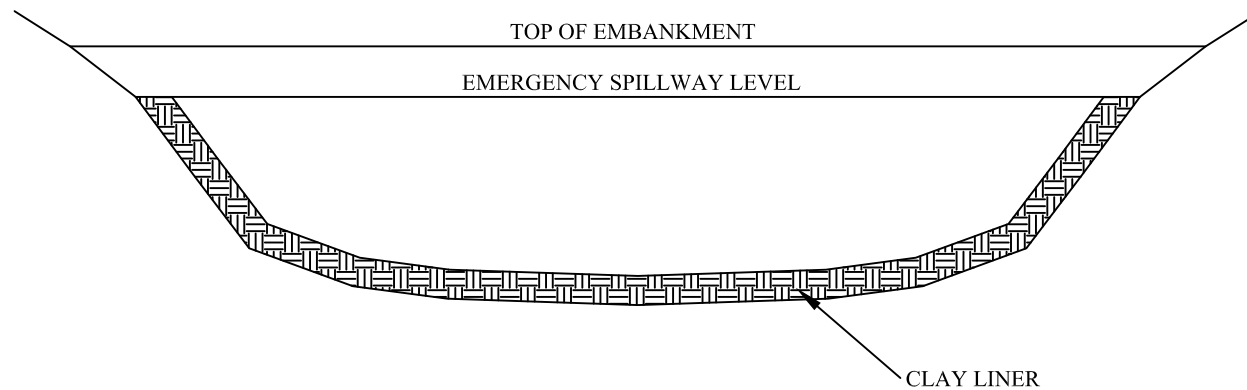
Jared P. Johnsey, P.E.
Alabama Reg No. 33239

Introduction:

Final Pit Impoundment No. 13 is being proposed as an incised impoundment remaining after grading and reclamation was performed along a section of highwall. Due to mining into the northern end of the Basin 013 pool area, the impoundment area created during reclamation extends into the Basin 013 pool area. Therefore, Basin 013 is proposed to be changed to Final Pit Impoundment No. 13. The final reclamation has resulted in a much larger drainage area for Final Pit Impoundment No. 13 (66 Acres) compared to the original drainage area for Basin 013 (18.4 Acres). Final Pit Impoundment No. 13 will utilize the current spillway and embankment of Basin 013. A new design was performed for Final Pit Impoundment No. 13 to address the updated drainage area, hydrology conditions, and stage storage. These design plans show that the existing spillway and embankment are adequate, with no modification required. It is anticipated that Final Pit Impoundment No. 13 will retain adequate water to qualify as a Permanent Water Impoundment prior to a phase 2 bond release. If it is determined that the impoundment does not contain adequate water prior to a phase 2 bond release, areas of the pool area located in the spoil material will be lined with a clay liner up to the emergency spillway elevation to ensure that the impoundment retains water. See attached [Typical Clay Liner](#).

Once revision R-9 has been approved, Final Pit Impoundment No. 13 will be certified to the Regulatory Authority within 30 days unless an extension is granted by the Director.

TYPICAL IMPOUNDMENT CLAY LINER CROSS SECTION



THE POOL AREA OF THE BASIN SHALL BE LINED WITH A MINIMUM ONE (1') FOOT OF CLAY MATERIAL UP TO THE EMERGENCY SPILLWAY ELEVATION. THE CLAY LINER MATERIAL SHALL BE PLACED IN LIFTS NO GREATER THAN SIX (6") INCHES AND COMPACTED TO NINETY-FIVE (95) PERCENT OF THE STANDARD PROCTOR DENSITY.

SEDIMENT BASIN CONSTRUCTION SPECIFICATIONS

Sediment basins (temporary or permanent) will be designed and constructed using the following as minimum specifications:

EMBANKMENT REQUIREMENTS

1. The minimum width of the top of the embankment shall be no less than twelve (12) feet.
2. The embankment will have a minimum front and back slope no steeper than the slopes shown on the detailed design sheet.
3. The foundation area of the embankment will be cleared and grubbed of all organic matter with no surface slope steeper than 1 horizontal to 1 vertical. The entire wet area, as measured from the upstream toe of the embankment to the normal pool level, will be cleared of trees and large brush.
4. A core will be constructed in a cutoff trench along the centerline of the embankment. The cutoff trench will be of suitable depth and width to attain relatively impervious material.
5. The embankment construction material will be free of sod, roots, stumps, rocks, etc., which exceed six (6") inches in diameter. The embankment material will be placed in layers of twelve (12") inches or less and compacted to ninety-five (95%) percent of the standard proctor density, as set forth in ASTM.
6. The embankment, foundation and abutments will be designed and constructed to be stable under normal construction and operating conditions, with a minimum static safety factor of 1.3 at normal pool level with steady seepage saturation conditions.
7. The actual constructed height of the embankment will be a minimum of five (5%) percent higher than the design height to allow for settling over the life of the embankment.
8. The design embankment height for temporary impoundments will be a minimum of one (1') foot above the maximum water level anticipated from the 10 Year-24 Hour or the 25 Year-6 Hour precipitation event (whichever is greater). The design embankment height for permanent impoundments will be a minimum of one (1') foot above the maximum water level anticipated from the 10 Year-24 Hour or the 25 Year-6 Hour precipitation event (whichever is greater).
9. For embankments constructed as point source discharges, the embankment will be constructed and keyed into undisturbed, virgin, ground if at all possible. In the event that this cannot be achieved, additional design and construction specifications will be submitted in the detailed design plans.
10. The embankment and all areas disturbed in the construction of the embankment will be

seeded with a mixture of perennial and annual grasses, fertilized and mulched to prevent erosion and ensure re-stabilization. Hay dams, silt fences, rock check dams, etc. will be installed, where deemed necessary, as additional erosion prevention methods.

DISCHARGE STRUCTURE REQUIREMENTS

11. The primary spillway will be designed to adequately carry the anticipated peak runoff from the 10 Year-24 Hour precipitation event. The combination primary and secondary (emergency) spillway system will be designed to safely carry the anticipated peak runoff from a 25 Year-6 Hour precipitation event. When sediment basins are proposed in the drainage course of a public water supply, the spillway system will be designed and constructed to adequately carry the runoff from the 50 Year-24 Hour precipitation event.
12. Channel linings, for secondary (emergency) spillways will be a trapezoidal open channel constructed in natural ground and planted with a mixture of both annual and perennial grasses being predominantly fescue and Bermuda. In the event that the spillway cannot be constructed in natural ground, the spillway will be lined with riprap, concrete, asphalt or durable rock (See Detailed Design Plans for Spillway Lining).
13. When consisting of pipe, the primary spillway will be installed according to Class "C" pipe installation for embankment bedding.
14. Sediment basins with a single spillway system, such as a skimmer board, will be a trapezoidal open channel constructed in consolidated, nonerodable material and lined with rip-rap, concrete, asphalt or durable rock (See Detailed Design Plans for Spillway Lining).
15. The primary spillway will be designed and constructed with device to eliminate floating solids from leaving the impoundment. This device will consist of a turned down elbow when using pipe or a skimmer system when using an open channel spillway.
16. When necessary, to prevent erosion of the embankment or discharge area, a splash pad of rip-rap, durable rock, sacrete, etc. will be installed at the discharge end of the primary spillway.
17. The combined spillway systems, for sediment basins constructed in series, will be designed to adequately accommodate the entire drainage area.

INSPECTION, MAINTENANCE AND CERTIFICATION REQUIREMENTS

18. Inspections will be conducted regularly during construction of the sediment basin by a qualified registered professional engineer or other qualified person under the direction of a professional engineer. Upon completion of construction, the sediment basin will be certified, by a qualified registered professional engineer, to the Regulatory Authority as having been constructed in accordance with the approved detailed design plans.
19. Sediment basins will be inspected semi-monthly for erosion, instability, etc., with maintenance performed as necessary, until the removal of the structure or until a Phase III Bond Release is granted.
20. Sediment basins will be examined quarterly for structural weakness, instability, erosion, slope failure, or other hazardous conditions with maintenance performed as necessary.
21. Formal inspections will be made annually, by a qualified registered professional engineer or other qualified person under the direction of a professional engineer, including any reports or modifications, in accordance with 880-X-10C-.20[1(j)] of the Alabama Surface Mining Regulations.
22. Retained sediment will be removed from each sediment basin when the accumulated sediment reaches the maximum allowable sediment volume as set forth in the detailed design plans.
23. The basin will be certified as constructed to the Regulatory Authority within 90 days after the start of construction of the respective basin unless an extension is granted by the Director.

BASIN REMOVAL REQUIREMENTS

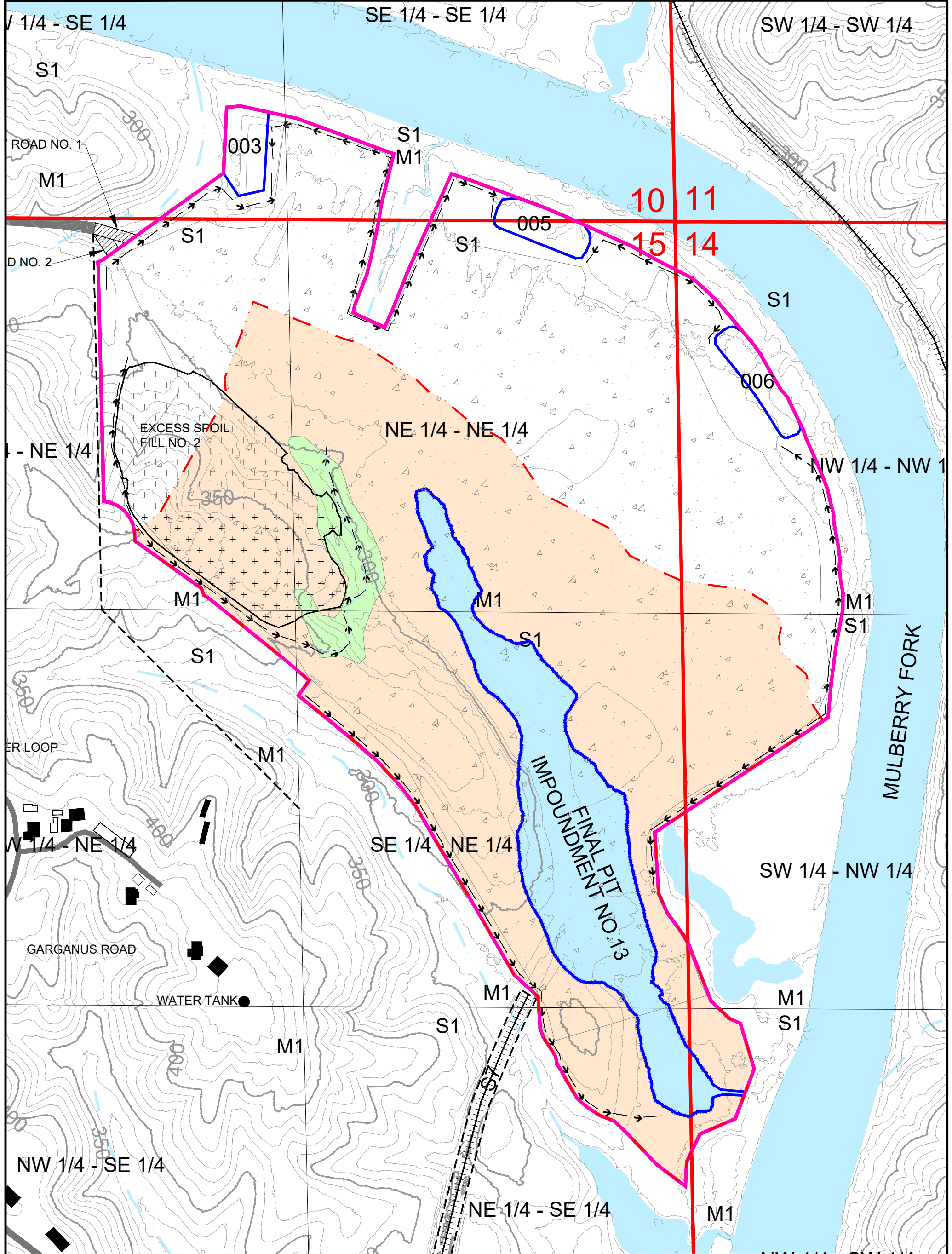
24. Upon completion of mining, reclamation, re-stabilization and effluent standards being met, each sediment basin not proposed as a permanent water impoundment will be dewatered in a controlled manner by either pumping or siphoning. Upon successful dewatering, a determination will be made as to the retained sediment level in the basin. After determining the retained sediment level, a channel will be cut into the embankment down to the retained sediment level on the side of the embankment deemed most suitable to reach natural ground without encountering prohibited rock. The embankment material removed from this newly constructed channel will be spread and compacted over the previous impoundment (pool area) to prevent erosion and ensure re-stabilization. The newly constructed channel will be designed to safely carry the anticipated peak runoff from a 10 Year-6 Hour precipitation event. The channel will be lined with riprap, concrete, asphalt or durable rock. Upon removal of the embankment section, all disturbed areas will be graded in such a manner to ensure slope stability, successful re-stabilization and to minimize erosion. All disturbed areas will be seeded with a mixture of annual and perennial grasses, fertilized and mulched.

No slope, existing or created in the removal of the sediment basin, will be left on a grade that will slip or slough.

PERMANENT WATER IMPOUNDMENT REQUIREMENTS

25. Prior to a request for a Phase II Bond Release, all sediment basins being left as permanent water impoundments will have supplemental data submitted to the Regulatory Authority concerning water quality, water quantity, size, depth, configuration, postmining land use, etc.
26. Final graded slopes of the entire permanent water impoundment area will not exceed a slope of 2 Horizontal to 1 Vertical to provide for safety and access for future water users.

DETAILED DESIGN PLANS
FINAL PIT IMPOUNDMENT NO. 13



407 9th Ave., Jasper, AL 35501
(205) 275-0689 (205)522-2057

MAP LEGEND

- PERMIT BOUNDARY
- RE-VEGETATED 2-12 MONTHS, CN 74
- MOSTLY FOREST CN 70
- SEDIMENT BASIN CN 100
- DRAINAGE DIVIDE
- DIVERSION

SECTIONS 10, 11, 14, & 15 TOWNSHIP 15 SOUTH, RANGE 6 WEST
WALKER COUNTY, ALABAMA
CORDOVA AND GOODSPRINGS USGS QUADRANGLES
CONTOUR INTERVAL: 10 FT.

HIGHLAND ENERGY, INC.			
NO. 5 MINE ASMC P-3957, R-8			
FINAL PIT IMPOUNDMENT NO. 13 WATERSHED MAP			
DATE: 3/17/26	APPROVED BY: JPJ	SCALE: 1"=300'	SHEET: 1 OF 1

FINAL PIT IMPOUNDMENT NO. 13

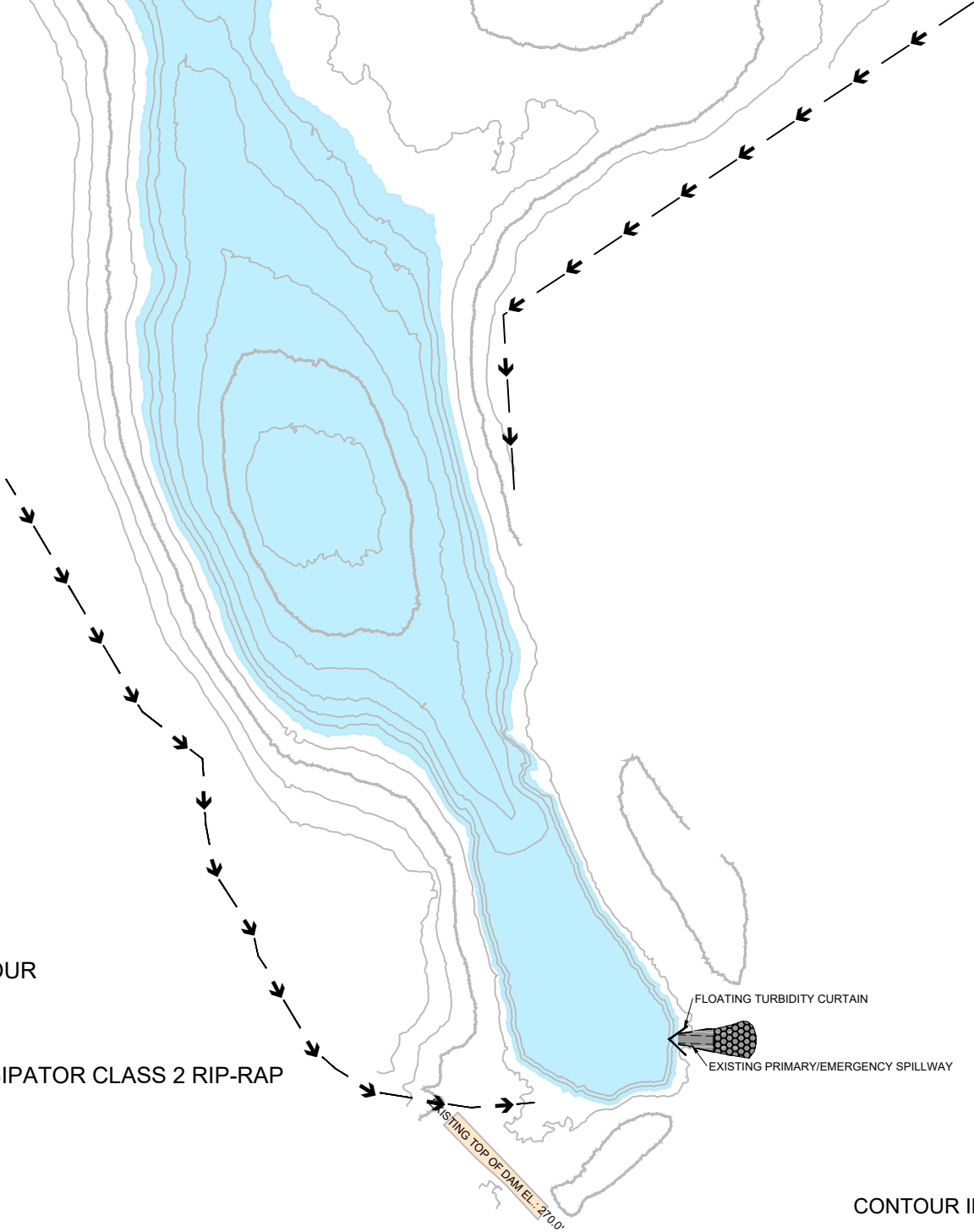
UPSTREAM TOE ELEV.: 268.0'
INCISED TOE.: 243.0'
SEDIMENT REMOVAL ELEV.: 265.0'
EMERGENCY SPILLWAY ELEV.: 267.0'
** MAXIMUM WATER ELEV.: 267.83'
TOP OF DAM ELEV.: 268.83' DESIGN
TOP OF DAM ELEV.: 270.0' EXISTING
EMERGENCY SPILLWAY: 10' WIDE TRAPEZOIDAL
CONCRETE LINED OPEN CHANNEL

- EMBANKMENT
- NORMAL POOL AREA
- EXISTING CONTOUR
- 520

 EXISTING INDEX CONTOUR
- DIVERSION
- EXISTING ENERGY DISSIPATOR CLASS 2 RIP-RAP
MIN, 35' x 50' x 16"



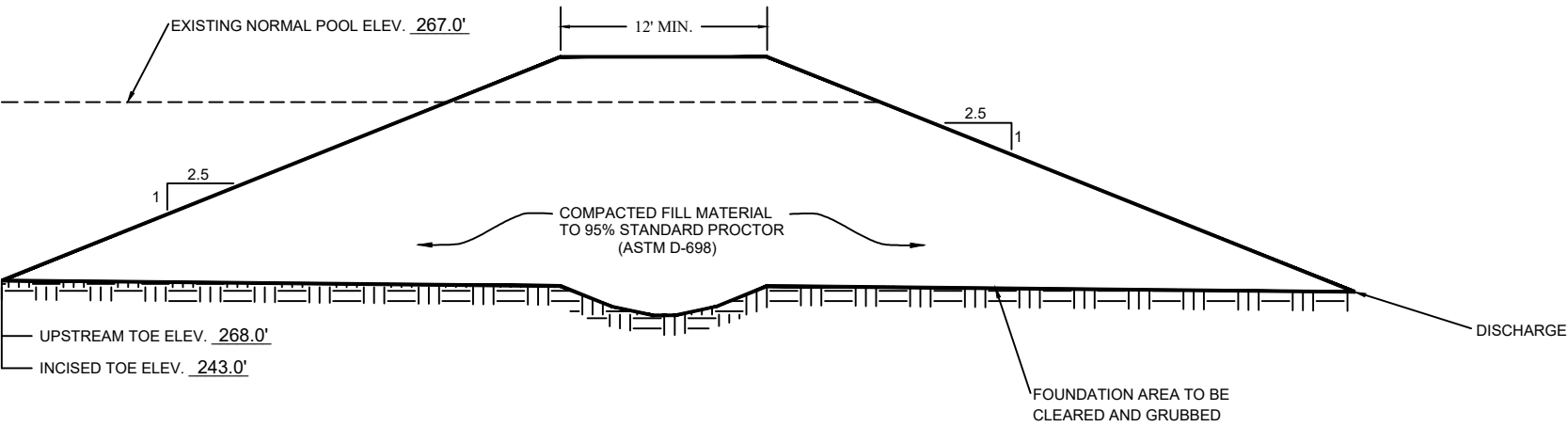
407 9th Ave., Jasper AL, 35501
(205) 275-0689 (205) 522-2057



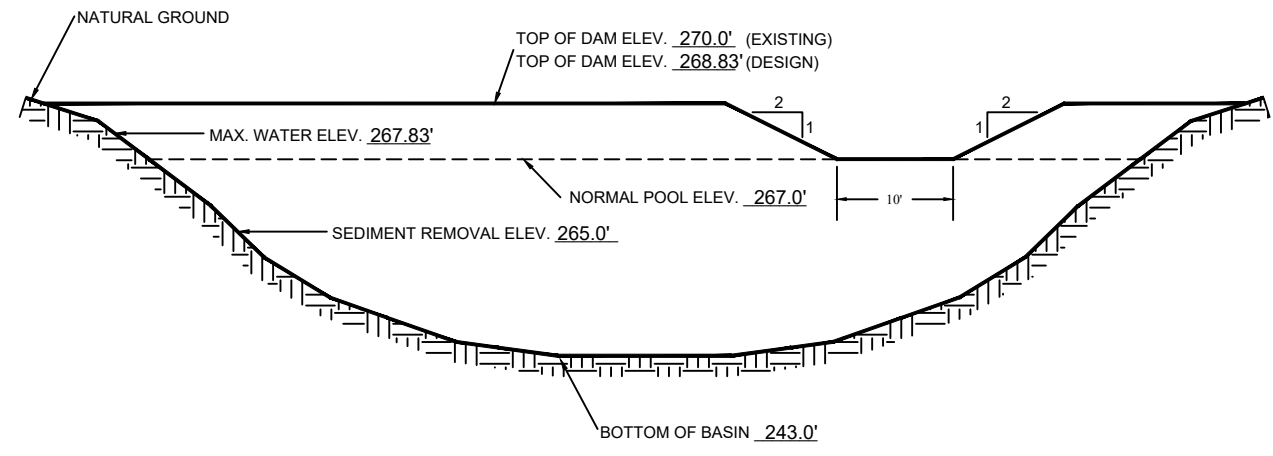
CONTOUR INTERVAL 2'

HIGHLAND ENERGY, INC.			
NO. 5 MINE P-3957, R-8			
FINAL PIT IMPOUNDMENT NO. 13 PLANVIEW MAP			
DATE: 3/17/26	APPROVED BY: J.P.J.	SCALE: 1"=200'	SHEET: 1 OF 1

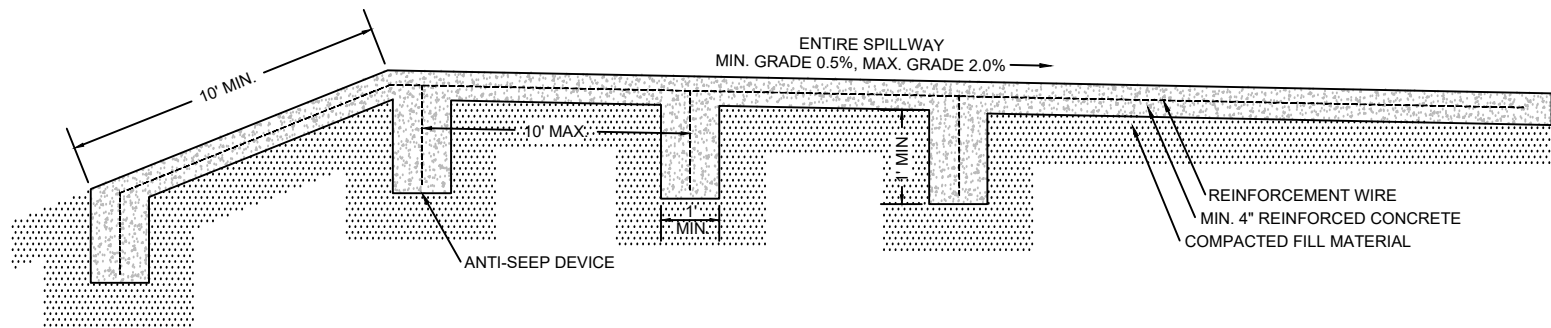
EMBANKMENT CROSS-SECTION



IMPOUNDMENT PROFILE



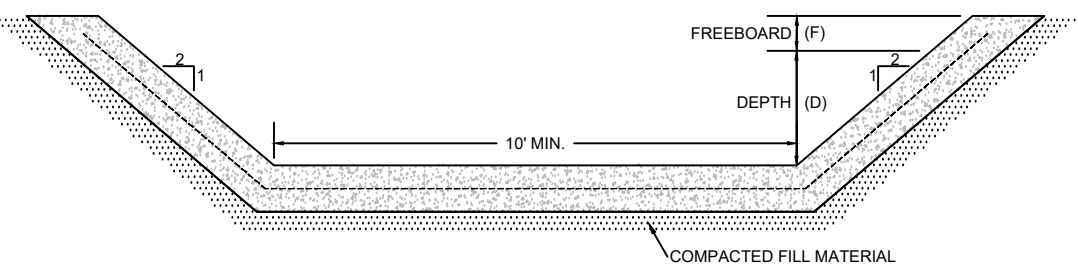
SPILLWAY PROFILE



KEY BASIN PARAMETERS

TOTAL DRAINAGE AREA	66.0	ACRES
DISTURBED AREA	52.5	ACRES
SEDIMENT STORAGE	61.9	AC-FT
DETENTION STORAGE	18.74	AC-FT
PERMANENT POOL CAPACITY	80.64	AC-FT
*TOTAL BASIN STORAGE CAPACITY	89.43	AC-FT
** PEAK INFLOW	173.02	C.F.S.
** PEAK OUTFLOW	17.28	C.F.S.
* 10 YEAR - 24 HOUR EVENT		
** 25 YEAR - 6 HOUR EVENT		

SPILLWAY CROSS SECTION



	BEGINNING OF CONTROL SECTION	END OF CONTROL SECTION
MAXIMUM FLOW DEPTH (D)	0.83'	0.53'
FREEBOARD (F)	1.0'	1.0'
MIN. CONCRETE HEIGHT ON SIDE SLOPES (F + D)	1.83'	1.53'

SJE

SIMMONS-JOHNSEY
ENGINEERING, LLC

407 9th Ave., Jasper AL, 35501
(205) 275-0689 (205) 522-2057

HIGHLAND ENERGY, INC.

NO. 5 MINE
P-3957, R-8

FINAL PIT IMPOUNDMENT NO. 13
DETAIL PLAN SHEET

DATE: 3/17/26	APPROVED BY: J.P.J.	SCALE: NA	SHEET: 1 OF 1
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Final Pit Impoundment No. 13

Elevation-Area-Capacity Table

Elevation (ft)	Area (ac)	Capacity (ac-ft)
243.00	0.450	0.000
243.50	0.474	0.231
244.00	0.499	0.474
244.50	0.524	0.730
245.00	0.550	0.998
245.50	0.615	1.289
246.00	0.683	1.614
246.50	0.755	1.973
247.00	0.830	2.369
247.50	0.916	2.805
248.00	1.006	3.286
248.50	1.101	3.812
249.00	1.200	4.387
249.50	1.304	5.013
250.00	1.411	5.692
250.50	1.524	6.425
251.00	1.640	7.216
251.50	1.736	8.060
252.00	1.835	8.952
252.50	1.936	9.895
253.00	2.040	10.889
253.50	2.158	11.938
254.00	2.278	13.047
254.50	2.403	14.217
255.00	2.530	15.450
255.50	2.722	16.763
256.00	2.921	18.173
256.50	3.127	19.685
257.00	3.340	21.301
257.50	3.488	23.008
258.00	3.639	24.789
258.50	3.793	26.647
259.00	3.950	28.583
259.50	4.194	30.618
260.00	4.445	32.778
260.50	4.704	35.065
261.00	4.970	37.483
261.50	5.171	40.018

Elevation (ft)	Area (ac)	Capacity (ac-ft)
262.00	5.377	42.655
262.50	5.586	45.396
263.00	5.800	48.243
263.50	6.288	51.264
264.00	6.796	54.534
264.50	7.323	58.063
265.00	7.870	61.860
265.50	8.603	65.977
266.00	9.370	70.469
266.50	10.168	75.352
267.00	11.000	80.643
267.50	11.449	86.255
268.00	11.907	92.093
268.50	12.374	98.163
269.00	12.850	104.469
269.50	13.301	111.006
270.00	13.760	117.771

Final Pit Impoundment No. 13 Spillway Control Section

Material: Concrete, Rubble

Trapezoidal Channel

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Manning's n	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
10.00	2.0:1	2.0:1	0.5	0.0220	1.00		

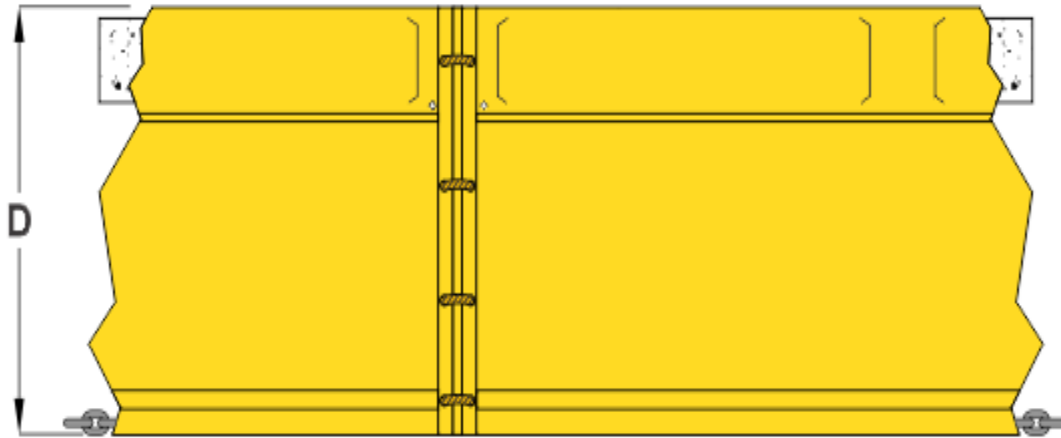
	w/o Freeboard	w/ Freeboard
Design Discharge:	17.28 cfs	
Depth:	0.53 ft	1.53 ft
Top Width:	12.14 ft	16.14 ft
Velocity:	2.92 fps	
X-Section Area:	5.91 sq ft	
Hydraulic Radius:	0.477 ft	
Froude Number:	0.74	

SPILLWAY CHANNEL REQUIREMENTS
FINAL PIT IMPOUNDMENT NO. 13

1. The entire control section and tail section of the spillway is lined with a minimum of four (4") inches of reinforced concrete with a minimum compressive strength of 3,000 psi.
2. All concrete is reinforced with 10 gauge, 6" x 6" welded wire.
3. A floating turbidity curtain is installed near the entrance to the spillway to provide sub-surface withdrawal. The floating turbidity curtain is anchored at the 10 Year-24 Hour precipitation event with t-posts or steel posts. See attached floating turbidity curtain specifications.

See enclosed SEDCAD 4 spillway control and tail section design and attached Spillway Cross-Section for minimum and maximum emergency spillway construction requirements.

SUBSURFACE WITHDRAWAL – FLOATING TURBIDITY CURTAIN



Specifications:

- Curtain to be anchored at the maximum anticipated peak stage (10 Year 24 Hour Precipitation Event).
- Fabric – Polyester reinforced vinyl high visibility yellow
- Connector – Sections are laced together through grommets and load lines are bolted
- Floatation – 6” expanded polystyrene over 9 lbs./ft buoyancy
- Ballast – ¼” galvanized chain (0.7 lbs./ft)

SEDCAD 4 HYDROLOGY AND SEDIMENTOLOGY REPORT
10 YR – 24 HR PRECIPITATION EVENT
FINAL PIT IMPOUNDMENT NO. 13

Highland Energy, Inc.
No. 5 Mine, P-3957, R-8
Final Pit Impoundment No. 13 Design

10 Year 24 Hour Storm Event

Jared P. Johnsey, P.E.

Simmons-Johnsey Engineering, LLC
407 9th Ave
Jasper, AL 35501

Phone: 205-522-2057
Email: jared@simmonsjohnsey.com

General Information

Storm Information:

Storm Type:	DRN-58
Design Storm:	10 yr - 24 hr
Rainfall Depth:	6.000 inches

Particle Size Distribution:

Size (mm)	Topsoil	Spoil
3.0000	100.000%	100.000%
2.0000	82.000%	89.000%
1.0000	61.000%	68.000%
0.5000	45.000%	51.000%
0.3000	34.000%	41.000%
0.2000	26.000%	34.000%
0.1000	18.000%	25.000%
0.0500	15.000%	22.000%
0.0300	14.000%	19.000%
0.0200	12.000%	17.000%
0.0100	10.000%	14.000%
0.0050	9.000%	12.000%
0.0030	7.000%	9.000%
0.0010	6.000%	6.000%

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	=>	End	0.000	0.000	Final Pit Impoundment No. 13

#1 Pond

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc. (ml/l)	24VW (ml/l)
#1 In	66.000	66.000	64.50	17.29	58.3	5,645	3.75	1.71
Out			14.70	14.18	1.9	121	0.00	0.00

Particle Size Distribution(s) at Each Structure

Structure #1:

Size (mm)	In	Out
3.0000	100.000%	100.000%
2.0000	100.000%	100.000%
1.0000	78.063%	100.000%
0.5000	58.546%	100.000%
0.3000	47.061%	100.000%
0.2000	39.021%	100.000%
0.1000	28.689%	100.000%
0.0500	25.244%	100.000%
0.0300	21.804%	100.000%
0.0200	19.508%	100.000%
0.0100	16.066%	100.000%
0.0050	13.772%	100.000%
0.0030	10.329%	100.000%
0.0010	6.889%	100.000%

Structure Detail:

Structure #1 (Pond)

Final Pit Impoundment No. 13

Pond Inputs:

Initial Pool Elev:	267.00 ft
Initial Pool:	18.74 ac-ft
*Sediment Storage:	61.90 ac-ft
Dead Space:	20.00 %

**Sediment capacity was entered by user*

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
267.00	20.00	2.00:1	2.00:1	10.00

Pond Results:

Peak Elevation:	267.77 ft
H'graph Detention Time:	7.69 hrs
Pond Model:	CSTRS
Dewater Time:	2.12 days
Trap Efficiency:	96.78 %

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)
265.00	7.877	0.000	0.000	Top of Sed. Storage
265.50	8.603	4.079	0.000	
266.00	9.370	8.571	0.000	
266.50	10.168	13.454	0.000	
267.00	11.000	18.745	0.000	Spillway #1
267.50	11.449	24.357	1.830	37.10*
267.77	11.700	27.533	14.697	13.90 Peak Stage
268.00	11.907	30.195	25.483	
268.50	12.374	36.265	53.905	
269.00	12.850	42.571	93.036	
269.50	13.301	49.108	141.972	
270.00	13.760	55.873	200.972	

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

Detailed Discharge Table

Elevation (ft)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
265.00	0.000	0.000
265.50	0.000	0.000
266.00	0.000	0.000
266.50	0.000	0.000
267.00	0.000	0.000
267.50	1.830	1.830
268.00	25.483	25.483
268.50	53.905	53.905
269.00	93.036	93.036
269.50	141.972	141.972
270.00	200.972	200.972

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)
#1	1	52.500	0.140	0.000	0.000	74.000	M	45.96	11.323
	2	2.500	0.250	0.078	0.267	70.000	M	1.87	0.469
	3	11.000	0.010	0.000	0.000	100.000	F	17.30	5.494
Σ		66.000						64.50	17.287

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.240	200.00	8.00	0.0500	1.0000	2	58.2	6,671	4.43	2.50
	2	0.320	400.00	5.00	0.0030	1.0000	1	0.1	325	0.23	0.13
	3	0.001	400.00	0.01	0.0001	1.0000	2	0.0	0	0.00	0.00
Σ								58.3	5,645	3.75	1.71

SEDCAD 4 HYDROLOGY AND SEDIMENTOLOGY REPORT
25 YR – 6 HR PRECIPITATION EVENT
FINAL PIT IMPOUNDMENT NO. 13

Highland Energy, Inc.
No. 5 Mine, P-3957, R-8
Final Pit Impoundment No. 13 Design

25 Year 6 Hour Storm Event

Jared P. Johnsey, P.E.

Simmons-Johnsey Engineering, LLC
407 9th Ave
Jasper, AL 35501

Phone: 205-522-2057
Email: jared@simmonsjohnsey.com

General Information

Storm Information:

Storm Type:	SCS-6
Design Storm:	25 yr - 6 hr
Rainfall Depth:	4.900 inches

Particle Size Distribution:

Size (mm)	Topsoil	Spoil
3.0000	100.000%	100.000%
2.0000	82.000%	89.000%
1.0000	61.000%	68.000%
0.5000	45.000%	51.000%
0.3000	34.000%	41.000%
0.2000	26.000%	34.000%
0.1000	18.000%	25.000%
0.0500	15.000%	22.000%
0.0300	14.000%	19.000%
0.0200	12.000%	17.000%
0.0100	10.000%	14.000%
0.0050	9.000%	12.000%
0.0030	7.000%	9.000%
0.0010	6.000%	6.000%

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	=>	End	0.000	0.000	Final Pit Impoundment No. 13

#1 Pond

Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc. (ml/l)	24VW (ml/l)
#1	In	66.000	66.000	173.02	12.93	84.2	10,494	6.82	3.27
	Out			17.28	10.89	2.7	209	0.00	0.00

Particle Size Distribution(s) at Each Structure***Structure #1:***

Size (mm)	In	Out
3.0000	100.000%	100.000%
2.0000	100.000%	100.000%
1.0000	86.658%	100.000%
0.5000	64.994%	100.000%
0.3000	52.250%	100.000%
0.2000	43.329%	100.000%
0.1000	31.860%	100.000%
0.0500	28.037%	100.000%
0.0300	24.214%	100.000%
0.0200	21.665%	100.000%
0.0100	17.842%	100.000%
0.0050	15.293%	100.000%
0.0030	11.470%	100.000%
0.0010	7.647%	100.000%

Structure Detail:

Structure #1 (Pond)

Final Pit Impoundment No. 13

Pond Inputs:

Initial Pool Elev:	267.00 ft
Initial Pool:	18.74 ac-ft
*Sediment Storage:	61.90 ac-ft
Dead Space:	20.00 %

**Sediment capacity was entered by user*

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
267.00	20.00	2.00:1	2.00:1	10.00

Pond Results:

Peak Elevation:	267.83 ft
H'graph Detention Time:	10.09 hrs
Pond Model:	CSTRS
Dewater Time:	1.88 days
Trap Efficiency:	96.82 %

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)
265.00	7.877	0.000	0.000	Top of Sed. Storage
265.50	8.603	4.079	0.000	
266.00	9.370	8.571	0.000	
266.50	10.168	13.454	0.000	
267.00	11.000	18.745	0.000	Spillway #1
267.50	11.449	24.357	1.830	37.10*
267.83	11.750	28.171	17.284	7.95 Peak Stage
268.00	11.907	30.195	25.483	
268.50	12.374	36.265	53.905	
269.00	12.850	42.571	93.036	
269.50	13.301	49.108	141.972	
270.00	13.760	55.873	200.972	

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

Detailed Discharge Table

Elevation (ft)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
265.00	0.000	0.000
265.50	0.000	0.000
266.00	0.000	0.000
266.50	0.000	0.000
267.00	0.000	0.000
267.50	1.830	1.830
268.00	25.483	25.483
268.50	53.905	53.905
269.00	93.036	93.036
269.50	141.972	141.972
270.00	200.972	200.972

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)
#1	1	52.500	0.140	0.000	0.000	74.000	M	123.88	8.123
	2	2.500	0.250	0.078	0.267	70.000	M	4.49	0.328
	3	11.000	0.010	0.000	0.000	100.000	F	58.47	4.482
Σ		66.000						173.02	12.933

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.240	200.00	8.00	0.0500	1.0000	2	84.2	11,762	7.64	4.93
	2	0.320	400.00	5.00	0.0030	1.0000	1	0.2	544	0.37	0.24
	3	0.001	400.00	0.01	0.0001	1.0000	2	0.0	0	0.00	0.00
Σ								84.2	10,494	6.82	3.27

STABILITY ANALYSIS
FINAL PIT IMPOUNDMENT NO. 13

Due to the basin being completely incised, no stability analysis was performed.