

Module 13: Impoundments/Treatment Facilities

[§§77.457/77.461/77.526/77.531/Chapter 105]

13.1 Treatment

Provide a plan for the treatment of surface and groundwater drainage from the areas disturbed by the mining activities. Include a construction and treatment narrative, flow diagram, design criteria, and design calculations (which include the proposed capacity) of the treatment facilities. Identify treatment chemicals to be used. Do not include any facilities included in Module 12.

Water treatment will consist primarily of clarification of the suspended solids associated with mining operations. Water will be clarified primarily by settling within the pit sump. Pit water may be pumped into a functioning sediment pond when necessary. Should it prove necessary, flocculants may be added at the sediment ponds via gel logs placed in the inflow. This should only be done if the water contains colloidal fine particles that cannot be settled with simple retention.

13.2 Quarry/Pit Sump

Provide a description of the sump including size, location, depth, method of pumping, etc. (Key location to Exhibits 6.2 and 9).

A pit sump will be constructed at the lowest point of all pits to collect runoff from the pit workings. Electric or diesel pumps will be used to pump water from the pit sump to Sediment Pond SP-1 or SP-2 for additional settling time and discharge. The pit sump has been designed to capture runoff from the entire pit footprint. A 10-year rainfall was used to size the pit sump. Water will be pumped out of the sump into SP-1 or SP-2 at an approximate rate of 1.5 cfs. Pumped water circulating through Sediment Pond SP-1 or SP-2 will provide approximately 12 hours of additional retention time prior to discharging.

13.3 Dams and Impoundments (General) Do not include any facilities included in Module 12

- a) **Proposed use.** Sediment Pond SP-1 will be used to control runoff from the proposed processing pad and part of the mining area (Phase 1 and part of Phase 3). Sediment Pond SP-2 will be used to control runoff from the remaining portion of the mining area (Phase 2 and part of Phase 3). Two process ponds will be constructed to settle fines generated by washing aggregate products.
- b) **Map and location (key to maps).** See Exhibit 9 for locations.
- c) **Provide a design report and construction plans and specifications to include detailed cross-sections and plan view scale drawings of the proposed structure which show: principal spillway, dewatering devices, embankment details (including maximum height, top width, and cutoff trench), crest of emergency spillway and existing ground.**

See Exhibit 13 Sheets 1, 2, and 3. Hydrocad software was used to perform the design calculations.

Sediment pond SP-1 will control 55.5 acres. It was designed with a minimum of 7,000 cubic feet per acre capacity with a minimum of 2,000 cubic feet per acre designated to sediment storage and 5,000 cubic feet per acre for the dewatering zone. The 50-year, 24-hour storm (5.05") was used to design the emergency spillway, while the 10-year, 24-hour storm (3.57") was used to size the principal spillway. The resulting emergency spillway has a crest length of 44 feet. The principal spillway has a diameter of 18 inches. The dewatering pipe was designed so that the pond would dewater in 4 to 7 days. A dewatering pipe of 6 inches was chosen due to the size of the pond and longevity of the site.

Sediment pond SP-2 will control 81.7 acres. It was designed with a minimum of 7,000 cubic feet per acre capacity with a minimum of 2,000 cubic feet per acre designated to sediment storage and 5,000 cubic feet per acre for the dewatering zone. The 50-year, 24-hour storm (5.05") was used to design the emergency spillway, while the 10-year, 24-hour storm (3.57") was used to size the principal spillway. The resulting emergency spillway has a crest length of 76 feet. The principal spillway has two barrels, each with a diameter of 18 inches. The dewatering pipe was designed so that the pond would dewater in 4 to 7 days. A dewatering pipe of 6 inches was chosen due to the size of the pond and longevity of the site.

Two process ponds will be constructed to settle fines created by a closed loop sand washing system. The water will be pumped from the lower pond to the washing area on the process pad. The washing will be done with equipment designed for this purpose such as sand screw or other type. The fines pulled from the product will flow through a pipe into the first process pond. The fines will settle out via gravity and primarily gather in the first pond. The water will then circulate into the second (lower) pond, where it will be pumped out and provided back to the wash plant. The system is closed loop. Cleaning will take place regularly, and will be performed by excavators dipping out the fines and loading haul trucks. The material will be taken back to open pits where the aggregate was mined from and placed in the backfill. The ponds have been designed to have large top widths for equipment access and will be constructed well in excess of minimum embankment criteria. The process water ponds cannot follow a typical sediment or treatment pond design and will likely involve some field changes to perfect the settling efficiency. Minimum 3h:1v out slopes have been utilized to allow vegetation and stability. Flow curtains or baffles may be installed. Water for the system may be sourced from onsite ponds and pumping from Rhoades Creek.

- d) **Complete a Certification Form for each structure as appropriate:**
Sediment Pond Certification form 5600-PM-BMP0408
Treatment Pond Certification form 5600-PM-BMP0455
- e) **If the impoundment is located outside of the area covered by the geology and hydrology description contained in Modules 7 and 8, include a preliminary geology and hydrology report.** N/A - All sediment ponds are within the area covered by the reports in Modules 7 and 8.
- f) **Describe the potential effect on the structure from subsidence from underground mining when applicable.** N/A - There are no anticipated problems from underground mining subsidence.
- g) **If the detailed design plans are not included with the initial submittal of this application, identify when the detailed design plans will be submitted. (Note: The detailed design plans must be approved by the Department before construction of the structure begins.)** N/A - Detailed design plans are included in this submission.

13.4 Class C Dams

A separate permit is required for impoundments that meet one or more of the following:

- 1) **a contributory drainage area exceeding 100 acres;**
- 2) **a depth of water measured by the upstream toe of the dam at maximum storage elevation exceeding 15 ft;**
- 3) **an impounding capacity at maximum storage elevation exceeding 50 acre-feet.**

13.5 Operation and Maintenance Requirements

Describe the operation and maintenance requirements for the structure, including dewatering of the impoundments following storm events.

All sediment ponds will be inspected on a weekly basis and after every runoff event to ensure proper function of the inlets, outlets, dewatering device, and sediment elevation. A stake showing the cleanout elevation will be placed near the center of each pond. Once the sediment reaches this level, that pond will be cleaned out. All dewatering devices are valved and require the valve to be opened after storm events to dewater the ponds. After the ponds have been dewatered down to the sediment elevation, the valves must be closed.

13.6 Removal

Describe the timetable and plans for removal of the impoundment and reclamation of the area.

Sediment ponds SP-1 and SP-2 are proposed to remain post-mining. The process ponds will be removed and reclaimed once mining is complete and they are no longer needed for washing aggregate products. Each process pond will be completely dewatered, regraded to AOC, and seeded with the permanent seed mixture.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF MINING PROGRAMS

E-TEMPLATE SEDIMENT POND CERTIFICATION

Permittee: Rockwood Stone, LLC Site Name: Rockwood Quarry SMP No.: _____
 Engineer/Land Surveyor: Earthtech, Inc. Structure ID #: SP-1 NPDES Outfall ID #: 001
 Location (point of discharge): Latitude (DMS): 39° 54' 22" Longitude (DMS): 79° 09' 24"
 Drainage Area: 55.5 acres Design Storm: 50 year / 24 hour Rainfall Amount: 5.05 inches
 Average Watershed Slope: 6% Land Use: Quarry Soil Type: C Curve Number: 85
 Peak Discharge: 131.1 cubic feet/second NPDES Average Flow: 0.56 mgd NPDES Design Flow: 112.2 mgd

	Permit Application	As Constructed	
Embankment	Top Width (Minimum)	<u>10'</u>	
	Outside Slope (Maximum) (H:V)	<u>3h:1v</u>	
	Inside Slope (Maximum) (H:V)	<u>3h:1v</u>	
	Top Elevation	<u>1974.0</u>	
	Bottom Elevation	<u>1959.0</u>	
	Upstream Toe Elevation	<u>1962.0</u>	
	Downstream Toe Elevation	<u>1928.0</u>	
	Type of Cover	<u>Vegetation</u>	
	Incised Slope (if any)		
	Inside Slope (Maximum) (H:V)	<u>0.25h:1v(virgin rock only)</u>	
Top Elevation			
Bottom Elevation			
Principal Spillway	Type	<u>Barrel</u>	
	Conduit Diameter (if barrel/riser give both)	<u>18"</u>	
	Inlet Elevation	<u>1970.0</u>	
	Outlet Protection	<u>R-4 Rip-Rap</u>	
	Spillway Capacity (cubic feet/second)	<u>7.6 cfs</u>	
Dewatering Device	Type/Size	<u>6" Perf PVC w/capped top</u>	
	Inlet Elevation	<u>1963.5</u>	
	Discharge Regulation (self-draining or valved)	<u>Valved</u>	
	Discharge Capacity (cubic feet/second)	<u>1.72 cfs</u>	
	Time to Dewater Full Pond	<u>6.46 days</u>	
Emergency Spillway	Type	<u>Trapezoidal Weir</u>	
	Width	<u>44'</u>	
	Depth (with 2 feet of freeboard)	<u>3.1'</u>	
	Length	<u>53.6' / (28.6' Control)</u>	
	Sideslopes (H:V)	<u>2h:1v</u>	
	Crest Elevation	<u>1970.9</u>	
	Slope	<u>27.6%</u>	
	Type of Lining/Protection	<u>R-4 Rip-Rap</u>	
	Spillway Capacity (provide design calculations)	<u>173.6 cfs</u>	
Storage Capacity	Length @ Bottom	<u>495'</u>	
	Width @ Bottom	<u>35'</u>	
	Length @ Dewatering Device	<u>522'</u>	
	Width @ Dewatering Device	<u>62'</u>	
	Volume @ Dewatering Device	<u>111,292</u>	
	Length @ Principal Spillway	<u>561'</u>	
	Width @ Principal Spillway	<u>101'</u>	
	Volume @ Principal Spillway	<u>399,000 cf</u>	
	Length @ Crest of Emergency Spillway	<u>566.4'</u>	
	Width @ Crest of Emergency Spillway	<u>106.4'</u>	
	Volume @ Crest of Emergency Spillway	<u>451,695 cf</u>	

Will the sediment pond be constructed in previously disturbed, fractured, or unconsolidated material? ☐ Yes ☒ No
 If yes, specify the type of liner that will be used: _____

SEDIMENT POND CONSTRUCTION CERTIFICATION

Permittee: Rockwood Stone, LLC Site Name: Rockwood Quarry SMP No.: _____
 Engineer/Land Surveyor: Earthtech, Inc. Structure ID #: SP-1 NPDES Outfall ID #: 001

- | | | | |
|--|------------------------------|-----------------------------|-----------------------------|
| 1. Has the facility been constructed at the location shown in the approved permit? | ☐ Yes | ☐ No | |
| 2. Is the emergency spillway constructed at the location shown in the approved plan? | ☐ Yes | ☐ No | |
| 3. Is the principal spillway constructed at the location shown in the approved plan? | ☐ Yes | ☐ No | ☐ NA |
| 4. Is the dewatering device constructed at the location shown in the approved plan? | ☐ Yes | ☐ No | |
| 5. Are the collection channel inlets constructed at the location shown in the approved plan? | ☐ Yes | ☐ No | |
| 6. Do the collection channel inlets have adequate inlet protection? | ☐ Yes | ☐ No | |
| 7. Has the liner been installed in accordance with the approved plan? | ☐ Yes | ☐ No | ☐ NA |
| 8. Has the non-discharge alternative been constructed in accordance with the approved plan? | ☐ Yes | ☐ No | ☐ NA |
| 9. Was coal encountered during construction of the pond? | ☐ Yes | ☐ No | |
| 10. If yes, was a liner used? | ☐ Yes | ☐ No | |
| 11. Identify any conditions or deficiencies in the facility that need to be corrected. | | | ☐ NA |

Stage of Construction

(specify stage e.g. layout, impoundment/embankment construction, spillway/piping installation, non-discharge alternative construction)

Date of Inspection

Inspected By

Supervising Professional Engineer/Registered Professional Land Surveyor _____

Address and phone _____

I certify in accordance with 25 Pa Code Section 77.531, 87.112, 89.101, or 90.112 that the above-mentioned structure is complete and has been constructed.

Signature of Registered Professional Engineer/Registered Professional Land Surveyor _____ Date _____

Registration Number and Expiration Date _____

SEAL

Signature of Permittee or Responsible Official _____

Date _____

Title _____

SP-1 Report

Top of dam elevation: 1974.0000

Bottom of pond elevation: 1959.0000

Top of dam width: 10.0000

Cut Slope: 50.00% 2.000:1 26.57°

Fill Slope: 33.33% 3.000:1 18.43°

Interior Slope: 33.33% 3.000:1 18.43°

Existing Surface: Z:\Mining\Rockwood Stone, LLC\Dwgs&Data\TIN Files\2020 PASDA.tin

Pond Earthwork Volumes

Total cut : 718,029.42 C.F., 26,593.68 C.Y.

Total fill: 649,301.79 C.F., 24,048.21 C.Y.

Pond Storage Volumes

Water Elev	Storage(AcreFt)	(C.Y.)	(C.F.)	(Gallons)	Area(Acre)
1959.00	0.00000	0.0	0.0	0.0	0.399
1959.50	0.20815	335.8	9066.8	67824.4	0.435
1960.00	0.43474	701.4	18937.3	141661.0	0.472
1960.50	0.67999	1097.1	29620.6	221577.3	0.509
1961.00	0.94411	1523.2	41125.6	307640.7	0.547
1961.50	1.22730	1980.0	53461.3	399918.4	0.586
1962.00	1.52977	2468.0	66636.8	498477.9	0.624
1962.50	1.85172	2987.4	80661.1	603386.6	0.664
1963.00	2.19337	3538.6	95543.1	714711.8	0.703
1963.50	2.55491	4121.9	111291.9	832520.9	0.743
1964.00	2.93656	4737.6	127916.4	956881.3	0.784
1964.50	3.33852	5386.1	145425.8	1087860.4	0.824
1965.00	3.76099	6067.7	163828.9	1225525.5	0.866
1965.50	4.20420	6782.8	183134.9	1369943.9	0.907
1966.00	4.66833	7531.6	203352.6	1521183.2	0.949
1966.50	5.15361	8314.5	224491.2	1679310.6	0.992
1967.00	5.66023	9131.8	246559.6	1844393.6	1.035
1967.50	6.18840	9984.0	269566.8	2016499.4	1.078
1968.00	6.73833	10871.2	293521.8	2195695.5	1.122
1968.50	7.31023	11793.8	318433.7	2382049.3	1.166
1969.00	7.90430	12752.3	344311.4	2575628.1	1.210
1969.50	8.52075	13746.8	371164.0	2776499.2	1.255
1970.00	9.15979	14777.8	399000.4	2984730.2	1.301
1970.50	9.82162	15845.5	427829.7	3200388.3	1.347
1971.00	10.50645	16950.4	457660.9	3423540.9	1.393
1971.50	11.21448	18092.7	488502.9	3654255.5	1.439
1972.00	11.94593	19272.8	520364.9	3892599.3	1.486
1972.50	12.70100	20491.0	553255.7	4138639.7	1.534
1973.00	13.47990	21747.6	587184.4	4392444.2	1.582
1973.50	14.28283	23043.0	622160.0	4654080.1	1.630
1974.00	15.11000	24377.5	658191.6	4923614.7	1.679

Time of Concentration (SCS)

Mon Jan 20 10:45:13 2025

Project: ROCKWOOD
Location: SP-1
Developed

By: CGY
Checked:

Date: 01/20/25
Date: 01/20/25

Curve Number : 85
Length of Flow : 4604.00 ft
Average Land Slope : 6.00 %

Time of Concentration : 0.622 hrs, 37.3 mins

SP-1 Emergency Spillway Design

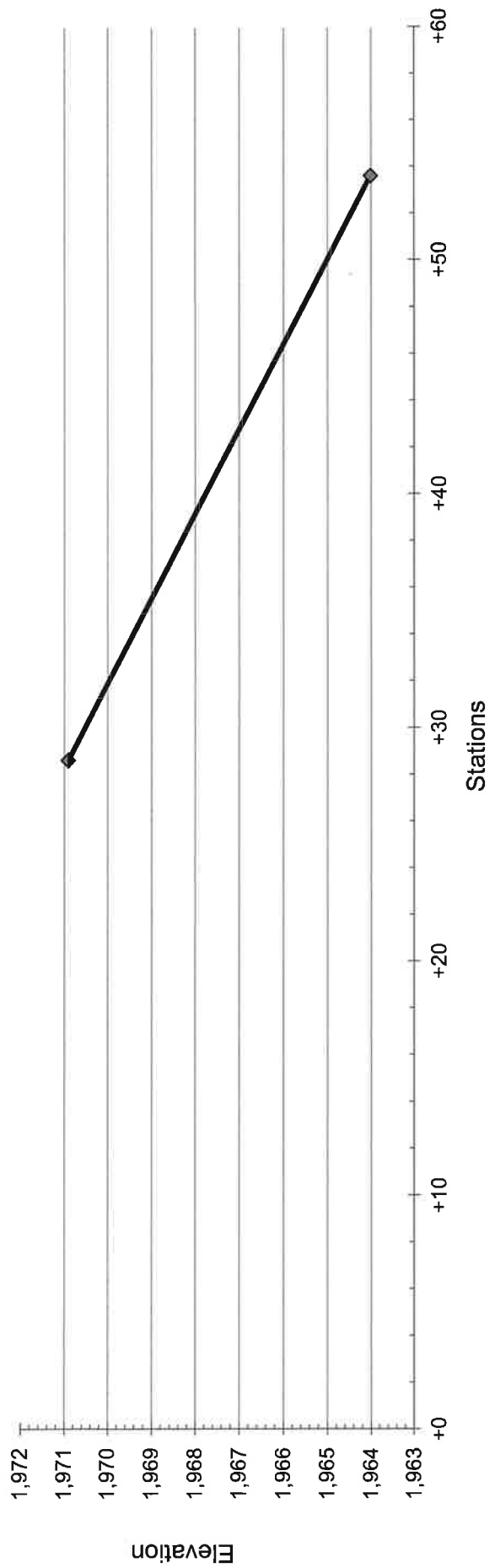
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Shape:	Trapezoidal	
Side Slope Ratio (V:H):	0.50	
Crest Length:	44.00	ft
Invert Elevation:	1970.90	ft
Coefficient:	2.63	
Number of Openings:	1	
Calculation Result		
Headwater Elevation:	1972.000	ft
Discharge:	173.556	cfs
Velocity:	3.412	ft/s

12.1 Diversion/Collection Ditch Data Sheet

[illegible]

Ditch Profile



Trapezoidal/Triangle Section Ditch

Channel Name:	SP-1 EMS			Peak Disch & Base Flow:	173.6
Section Number:	1			Peak Discharge (Cum):	173.6
End Station:	0	+	54	Drainage Acreage:	55.5
End Elevation:	1,964.0			Watershed Slope:	6.0%

Given:				
Flow Depth, d (ft)	=	0.6		
Bottom Width (ft)	=	44		
Side Slopes (H:1)	=	2		
What size Rip Rap	=	R-4		
d ₅₀ size (inches)	=	6		
Mannings Coefficient	=	0.058		
Channel Slope, s (ft/ft)	=	27.60%		

Flow Rate, Q_{design} (cfs)				
$Q = (1.486/n) \times a \times r^{2/3} \times s^{1/2}$				
Q =	251.71	cfs		
Q =	365.92	cfs	WITH FREEBOARD	

Velocity, V (fps)				
Use V to size rip rap if s < 10%, grouted, or d_{actual} ≤ 0				
$V = Q/A$				
V =	9.28	fps		
V _{MAX} =	9.00	fps		

Account for 40% Void Space in Rip Rap				
if s ≥ 10%				
Rip Rap Thickness, t (inches)	=	18		
$A_{void} = 0.4 \times b \times t$				
A _{void} =	26.40	sq.ft.		
$A_{in-channel flow} = A - A_{void}$				
A _{in-channel flow} =	0.72	sq.ft.		
$d_{in-channel flow} = \frac{-b + \sqrt{b^2 + 4 \times z \times A_{in-channel flow}}}{2 \times z}$				
d _{in-channel flow} =	0.02	ft		

Shear Stress Calculation				
Use Sh to size rip rap if s > 10%				
$Sh = 62.4 \times d_{in-channel flow} \times s$				
Allowable Shear Stress =	2.00	psf		
Calculated Shear Stress =	0.28	psf		

Cross Sectional Area, Wetted Perimeter & Hydraulic Radius				
$A = bd + zd^2$				
A =	27.12	sq.ft.		
A =	34.13	sq.ft.	WITH FREEBOARD	
$P = b + 2d \sqrt{z^2 + 1}$				
P =	46.68	feet		
P =	47.35	feet	WITH FREEBOARD	
$r = A/P$				
r =	0.58	feet		
r =	0.72	feet	WITH FREEBOARD	
Top Width (feet)				
$T = b + 2 \times z \times d$				
T =	46.40	feet		
T =	47.00	feet	WITH FREEBOARD	
Ditch Sizing Check				
Q CHECK =		PASS		
VELOCITY CHECK =		GREATER THAN 10% SLOPE		
SHEAR STRESS CHECK =		PASS		
OVERALL CHECK =		PASS		

Design Parameters

Section

Shape:	Circular
Material:	HDPE
Diameter:	18.00 in
Manning's n:	0.0120
Number of Barrels:	1

Inlet

Inlet Type:	Thin Edge Projecting
Ke:	0.90

Inverts

Inlet Invert Elevation:	1970.000	ft
Outlet Invert Elevation:	1969.200	ft
Length:	40.000	ft
Slope:	2.00	%

Culvert Calculation

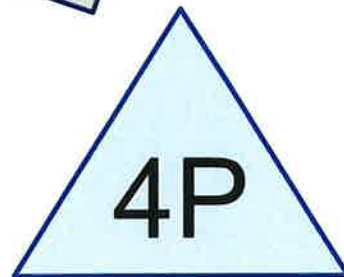
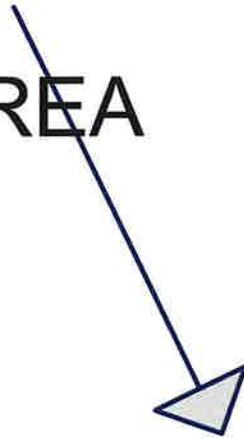
Discharge:	7.55	cfs
Headwater Elevation:	1972.000	ft
Tailwater Elevation:	0.000	ft
Downstream Velocity:	8.96	ft/s
Downstream Flow Depth:	0.723	ft
Critical Flow Depth:	1.064	ft
Normal Flow Depth:	0.723	ft
Flow Control Type:	Outlet Control, Gradually Varied Flow	

SP-1 DEWATERING

Elevation	Storage (cf)	Discharge (cfs)	Time (hr)	# of Openings	Orifice Size (in)
1963.5	111292	0.00	0	4	1.25
1964.0	127916	0.12	39.79		
1964.5	145426	0.16	29.63	4	1.25
1965.0	163829	0.32	16.12		
1965.5	183135	0.40	13.53	4	1.25
1966.0	203353	0.58	9.74		
1966.5	224491	0.68	8.63	4	1.25
1967.0	246560	0.88	6.94		
1967.5	269567	1.01	6.33	4	1.25
1968.0	293522	1.23	5.40		
1968.5	318434	1.38	5.03		
1969.0	344311	1.50	4.79		
1969.5	371164	1.61	4.62		
1970.0	399000	1.72	4.50		
Total			155.06	hours	
			6.46	days	



SP-1 AREA



SP-1



Routing Diagram for SP-1

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SP-1

Prepared by Earthtech, Inc.

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Type II 24-hr 50-YR Rainfall=5.05"

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Summary for Subcatchment 2S: SP-1 AREA

Runoff = 141.58 cfs @ 12.32 hrs, Volume= 14.593 af, Depth> 3.16"

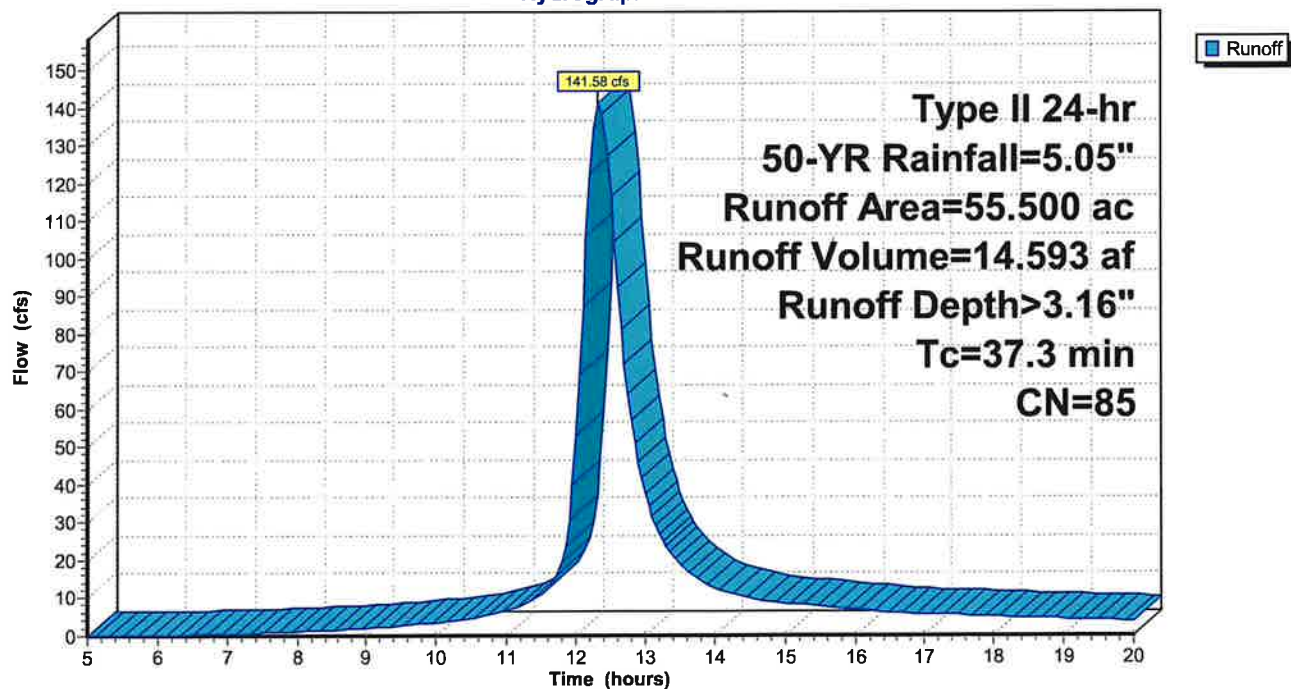
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-YR Rainfall=5.05"

Area (ac)	CN	Description
* 55.500	85	
55.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.3					Direct Entry,

Subcatchment 2S: SP-1 AREA

Hydrograph



SP-1

Type II 24-hr 50-YR Rainfall=5.05"

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Summary for Pond 4P: SP-1

Inflow Area = 55.500 ac, 0.00% Impervious, Inflow Depth > 3.16" for 50-YR event
 Inflow = 141.58 cfs @ 12.32 hrs, Volume= 14.593 af
 Outflow = 131.09 cfs @ 12.43 hrs, Volume= 14.453 af, Atten= 7%, Lag= 6.6 min
 Secondary = 131.09 cfs @ 12.43 hrs, Volume= 14.453 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Starting Elev= 1,970.90' Surf.Area= 0 sf Storage= 451,695 cf
 Peak Elev= 1,971.99' @ 12.43 hrs Surf.Area= 0 sf Storage= 519,424 cf (67,729 cf above start)
 Flood Elev= 1,972.00' Surf.Area= 0 sf Storage= 520,365 cf (68,670 cf above start)

Plug-Flow detention time= 268.2 min calculated for 4.083 af (28% of inflow)
 Center-of-Mass det. time= 10.2 min (802.2 - 792.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,959.00'	658,192 cf	Custom Stage Data Listed below

Elevation (feet)	Cum.Store (cubic-feet)
1,959.00	0
1,959.50	9,067
1,960.00	18,937
1,960.50	29,621
1,961.00	41,126
1,961.50	53,461
1,962.00	66,637
1,962.50	80,661
1,963.00	95,543
1,963.50	111,292
1,964.00	127,916
1,964.50	145,426
1,965.00	163,829
1,965.50	183,135
1,966.00	203,353
1,966.50	224,491
1,967.00	246,560
1,967.50	269,567
1,968.00	293,522
1,968.50	318,434
1,969.00	344,311
1,969.50	371,164
1,970.00	399,000
1,970.50	427,830
1,971.00	457,661
1,971.50	488,503
1,972.00	520,365
1,972.50	553,256
1,973.00	587,184
1,973.50	622,160
1,974.00	658,192

SP-1

Prepared by Earthtech, Inc.

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Type II 24-hr 50-YR Rainfall=5.05"

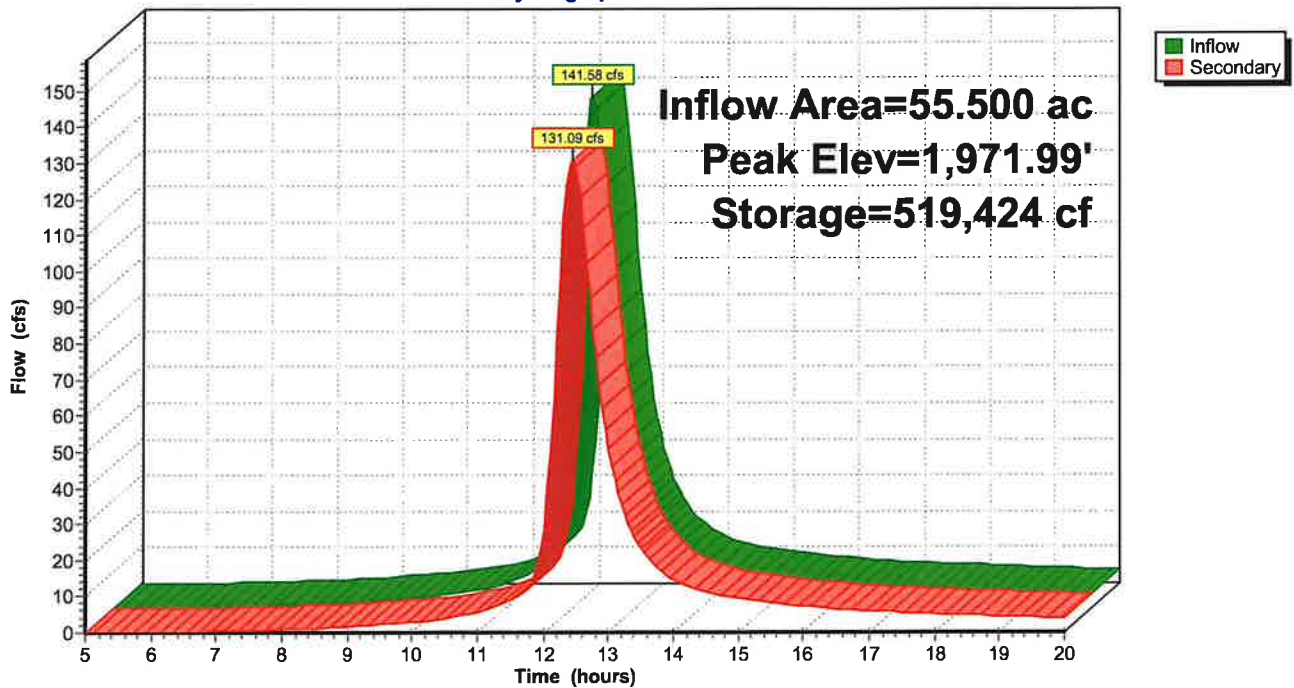
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Device	Routing	Invert	Outlet Devices
#1	Secondary	1,970.90'	44.0' long x 28.6' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

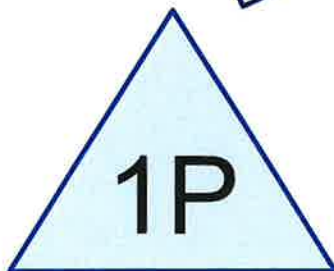
Secondary OutFlow Max=130.56 cfs @ 12.43 hrs HW=1,971.98' (Free Discharge)

└─1=Broad-Crested Rectangular Weir (Weir Controls 130.56 cfs @ 2.74 fps)

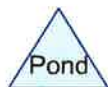
Pond 4P: SP-1**Hydrograph**



SP-1 AREA



SP-1



Routing Diagram for SP-1

Prepared by Earthtech, Inc., Printed 1/20/2025

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SP-1

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Type II 24-hr 10-YR Rainfall=3.57"

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Page 2

Summary for Subcatchment 2S: SP-1 AREA

Runoff = 86.19 cfs @ 12.33 hrs, Volume= 8.810 af, Depth> 1.90"

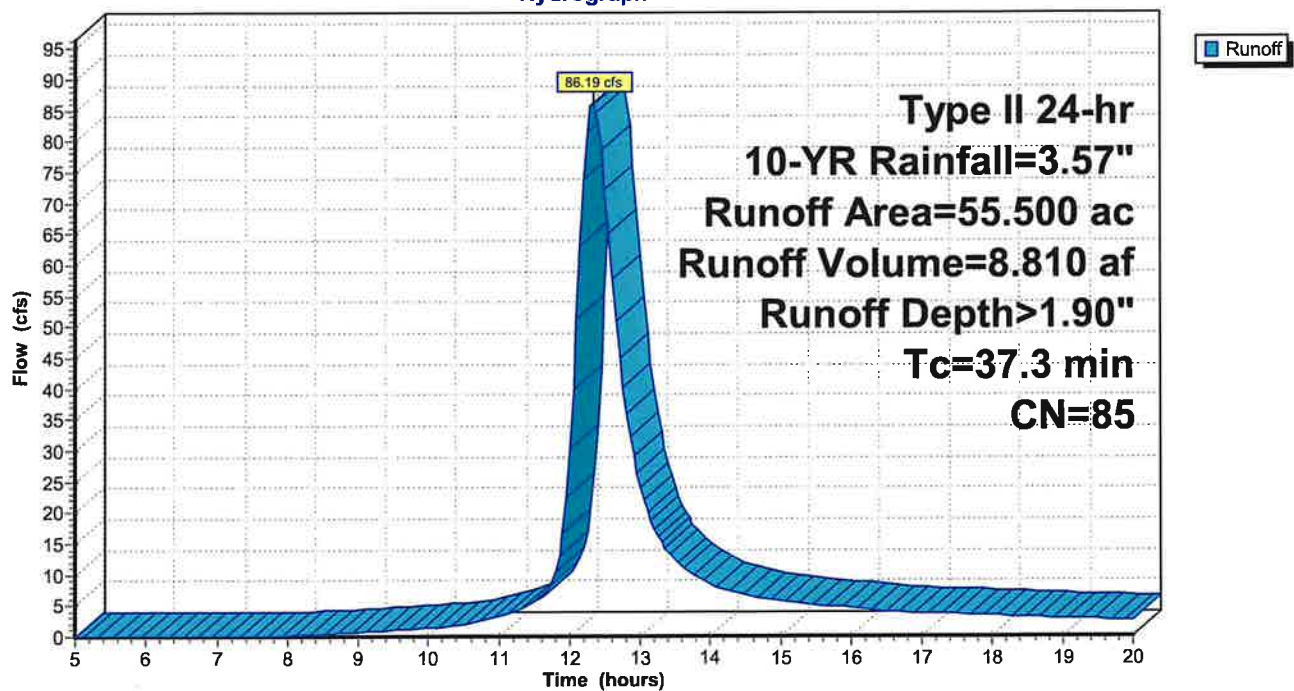
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=3.57"

Area (ac)	CN	Description
* 55.500	85	
55.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.3					Direct Entry,

Subcatchment 2S: SP-1 AREA

Hydrograph



SP-1

Type II 24-hr 10-YR Rainfall=3.57"

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Summary for Pond 1P: SP-1

Inflow Area = 55.500 ac, 0.00% Impervious, Inflow Depth > 1.90" for 10-YR event
 Inflow = 86.19 cfs @ 12.33 hrs, Volume= 8.810 af
 Outflow = 2.82 cfs @ 19.23 hrs, Volume= 1.007 af, Atten= 97%, Lag= 413.9 min
 Primary = 2.82 cfs @ 19.23 hrs, Volume= 1.007 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Starting Elev= 1,963.50' Surf.Area= 0 sf Storage= 111,292 cf

Peak Elev= 1,970.90' @ 19.23 hrs Surf.Area= 0 sf Storage= 451,627 cf (340,335 cf above start)

Flood Elev= 1,972.00' Surf.Area= 0 sf Storage= 520,365 cf (409,073 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 259.7 min (1,062.8 - 803.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,959.00'	658,192 cf	Custom Stage Data Listed below

Elevation (feet)	Cum.Store (cubic-feet)
1,959.00	0
1,959.50	9,067
1,960.00	18,937
1,960.50	29,621
1,961.00	41,126
1,961.50	53,461
1,962.00	66,637
1,962.50	80,661
1,963.00	95,543
1,963.50	111,292
1,964.00	127,916
1,964.50	145,426
1,965.00	163,829
1,965.50	183,135
1,966.00	203,353
1,966.50	224,491
1,967.00	246,560
1,967.50	269,567
1,968.00	293,522
1,968.50	318,434
1,969.00	344,311
1,969.50	371,164
1,970.00	399,000
1,970.50	427,830
1,971.00	457,661
1,971.50	488,503
1,972.00	520,365
1,972.50	553,256
1,973.00	587,184
1,973.50	622,160
1,974.00	658,192

SP-1

Prepared by Earthtech, Inc.

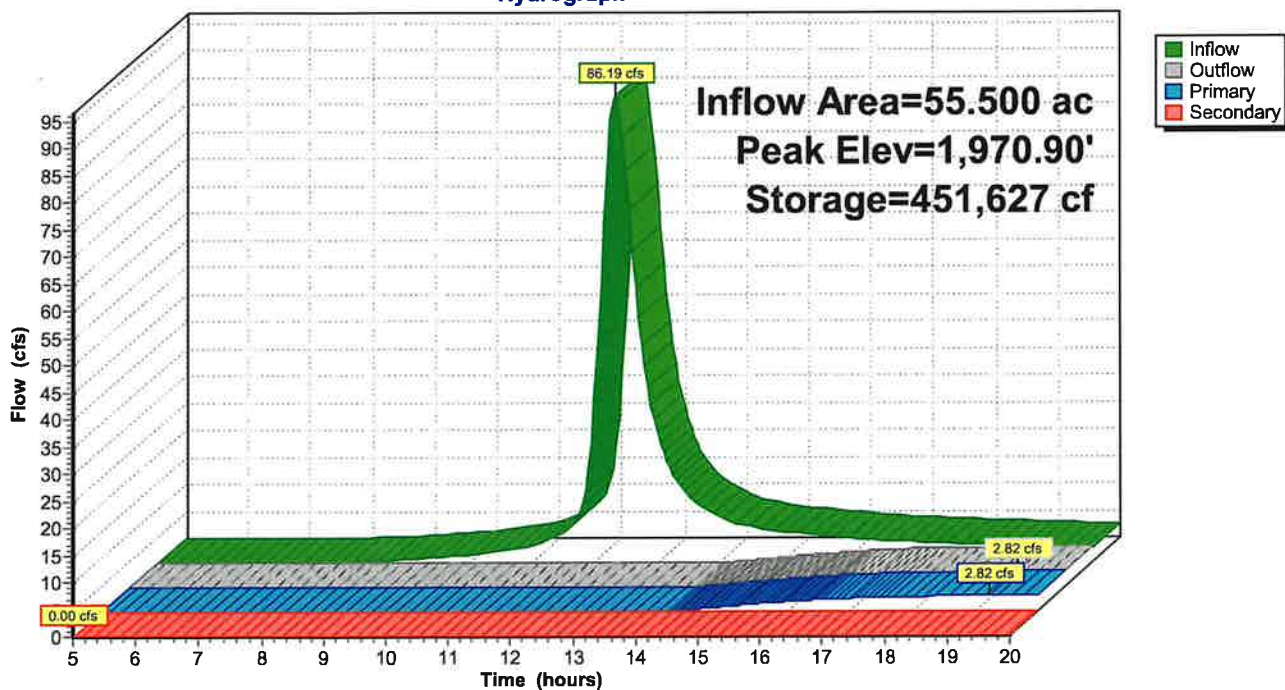
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Type II 24-hr 10-YR Rainfall=3.57"

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Device	Routing	Invert	Outlet Devices
#1	Primary	1,970.00'	18.0" Round Culvert L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,970.00' / 1,969.20' S= 0.0200 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf
#2	Secondary	1,970.90'	44.0' long x 28.6' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=2.82 cfs @ 19.23 hrs HW=1,970.90' (Free Discharge)↑**1=Culvert** (Inlet Controls 2.82 cfs @ 2.55 fps)**Secondary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=1,963.50' (Free Discharge)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Pond 1P: SP-1****Hydrograph**



E-TEMPLATE SEDIMENT POND CERTIFICATION

Permittee: Rockwood Stone, LLC Site Name: Rockwood Quarry SMP No.: _____

Engineer/Land Surveyor: Earthtech, Inc. Structure ID #: SP-2 NPDES Outfall ID #: 002

Location (point of discharge): Latitude (DMS): 39° 54' 14" Longitude (DMS): 79° 09' 17"

Drainage Area: 81.7 acres Design Storm: 50 year / 24 hour Rainfall Amount: 5.05 inches

Average Watershed Slope: 6% Land Use: Quarry Soil Type: C Curve Number: 85

Peak Discharge: 231.2 cubic feet/second NPDES Average Flow: 0.80 mgd NPDES Design Flow: 190.6 mgd

	Permit Application	As Constructed	
Embankment	Top Width (Minimum)	<u>10'</u>	
	Outside Slope (Maximum) (H:V)	<u>3h:1v</u>	
	Inside Slope (Maximum) (H:V)	<u>3h:1v</u>	
	Top Elevation	<u>2010.0</u>	
	Bottom Elevation	<u>1995.0</u>	
	Upstream Toe Elevation	<u>1995.0</u>	
	Downstream Toe Elevation	<u>1984.0</u>	
	Type of Cover	<u>Vegetation</u>	
	Incised Slope (if any)		
	Inside Slope (Maximum) (H:V)	<u>0.25h:1v(virgin rock only)</u>	
Top Elevation			
Bottom Elevation			
Principal Spillway	Type	<u>Barrel</u>	
	Conduit Diameter (if barrel/riser give both)	<u>(2x) 18"</u>	
	Inlet Elevation	<u>2006.0</u>	
	Outlet Protection	<u>R-4 Rip-Rap</u>	
	Spillway Capacity (cubic feet/second)	<u>15.1 cfs</u>	
Dewatering Device	Type/Size	<u>6" Perf PVC w/capped top</u>	
	Inlet Elevation	<u>1999.5</u>	
	Discharge Regulation (self-draining or valved)	<u>Valved</u>	
	Discharge Capacity (cubic feet/second)	<u>2.47 cfs</u>	
	Time to Dewater Full Pond	<u>6.60 days</u>	
Emergency Spillway	Type	<u>Trapezoidal Weir</u>	
	Width	<u>76'</u>	
	Depth (with 2 feet of freeboard)	<u>3.1'</u>	
	Length	<u>50' (28.6' Control)</u>	
	Sideslopes (H:V)	<u>2h:1v</u>	
	Crest Elevation	<u>2006.9</u>	
	Slope	<u>4%</u>	
	Type of Lining/Protection	<u>R-4 Rip-Rap</u>	
	Spillway Capacity (provide design calculations)	<u>294.9 cfs</u>	
Storage Capacity	Length @ Bottom	<u>481' (average)</u>	
	Width @ Bottom	<u>69' (average)</u>	
	Length @ Dewatering Device	<u>508' (average)</u>	
	Width @ Dewatering Device	<u>96' (average)</u>	
	Volume @ Dewatering Device	<u>186,815 cf</u>	
	Length @ Principal Spillway	<u>547' (average)</u>	
	Width @ Principal Spillway	<u>135' (average)</u>	
	Volume @ Principal Spillway	<u>595,541 cf</u>	
	Length @ Crest of Emergency Spillway	<u>552.4' (average)</u>	
	Width @ Crest of Emergency Spillway	<u>140.4' (average)</u>	
	Volume @ Crest of Emergency Spillway	<u>666,203 cf</u>	

Will the sediment pond be constructed in previously disturbed, fractured, or unconsolidated material? ☐ Yes ☒ No

If yes, specify the type of liner that will be used: _____

SEDIMENT POND CONSTRUCTION CERTIFICATION

Permittee: Rockwood Stone, LLC Site Name: Rockwood Quarry SMP No.: _____
 Engineer/Land Surveyor: Earthtech, Inc. Structure ID #: SP-2 NPDES Outfall ID #: 002

- | | | | |
|--|------------------------------|-----------------------------|-----------------------------|
| 1. Has the facility been constructed at the location shown in the approved permit? | ☐ Yes | ☐ No | |
| 2. Is the emergency spillway constructed at the location shown in the approved plan? | ☐ Yes | ☐ No | |
| 3. Is the principal spillway constructed at the location shown in the approved plan? | ☐ Yes | ☐ No | ☐ NA |
| 4. Is the dewatering device constructed at the location shown in the approved plan? | ☐ Yes | ☐ No | |
| 5. Are the collection channel inlets constructed at the location shown in the approved plan? | ☐ Yes | ☐ No | |
| 6. Do the collection channel inlets have adequate inlet protection? | ☐ Yes | ☐ No | |
| 7. Has the liner been installed in accordance with the approved plan? | ☐ Yes | ☐ No | ☐ NA |
| 8. Has the non-discharge alternative been constructed in accordance with the approved plan? | ☐ Yes | ☐ No | ☐ NA |
| 9. Was coal encountered during construction of the pond? | ☐ Yes | ☐ No | |
| 10. If yes, was a liner used? | ☐ Yes | ☐ No | |
| 11. Identify any conditions or deficiencies in the facility that need to be corrected. | | | ☐ NA |

Stage of Construction

(specify stage e.g. layout, impoundment/embankment
 construction, spillway/piping installation, non-discharge
 alternative construction)

Date of Inspection**Inspected By**

Supervising Professional Engineer/Registered Professional Land Surveyor _____

Address and phone _____

I certify in accordance with 25 Pa Code Section 77.531, 87.112, 89.101, or 90.112 that the above-mentioned structure is complete and has been constructed.

Signature of Registered Professional Engineer/Registered Professional Land Surveyor _____

Date _____

Registration Number and Expiration Date _____

SEAL

Signature of Permittee or Responsible Official _____

Date _____

Title _____

SP-2 Report

Top of dam elevation: 2010.0000

Bottom of pond elevation: 1995.0000

Top of dam width: 10.0000

Cut Slope: 50.00% 2.000:1 26.57°

Fill Slope: 33.33% 3.000:1 18.43°

Interior Slope: 33.33% 3.000:1 18.43°

Existing Surface: Z:\Mining\Rockwood Stone, LLC\Dwgs&Data\TIN Files\2020 PASDA.tin

Pond Earthwork Volumes

Total cut : 1,126,671.08 C.F., 41,728.56 C.Y.

Total fill: 368,290.54 C.F., 13,640.39 C.Y.

Pond Storage Volumes

Water Elev	Storage(AcreFt)	(C.Y.)	(C.F.)	(Gallons)	Area(Acre)
1995.00	0.00000	0.0	0.0	0.0	0.768
1995.50	0.39369	635.1	17149.0	128283.4	0.807
1996.00	0.80755	1302.9	35177.0	263142.1	0.848
1996.50	1.24182	2003.5	54093.8	404650.0	0.889
1997.00	1.69673	2737.4	73909.4	552881.0	0.931
1997.50	2.17249	3505.0	94633.7	707909.1	0.973
1998.00	2.66934	4306.5	116276.4	869808.1	1.015
1998.50	3.18750	5142.5	138847.6	1038652.0	1.058
1999.00	3.72720	6013.2	162357.0	1214514.6	1.101
1999.50	4.28867	6919.1	186814.6	1397470.0	1.145
2000.00	4.87213	7860.4	212230.2	1587591.9	1.189
2000.50	5.47782	8837.5	238613.7	1784954.4	1.234
2001.00	6.10595	9850.9	265975.0	1989631.4	1.279
2001.50	6.75675	10900.9	294324.0	2201696.7	1.324
2002.00	7.43045	11987.8	323670.6	2421224.3	1.370
2002.50	8.12729	13112.0	354024.6	2648288.0	1.417
2003.00	8.84747	14273.9	385396.0	2882961.9	1.464
2003.50	9.59124	15473.9	417794.5	3125319.8	1.511
2004.00	10.35882	16712.2	451230.1	3375435.6	1.559
2004.50	11.15043	17989.4	485712.7	3633383.3	1.607
2005.00	11.96630	19305.6	521252.2	3899236.8	1.656
2005.50	12.80666	20661.4	557858.3	4173069.9	1.705
2006.00	13.67174	22057.1	595541.1	4454956.6	1.755
2006.50	14.56176	23493.0	634310.4	4744970.9	1.805
2007.00	15.47695	24969.5	674176.0	5043186.6	1.856
2007.50	16.41754	26487.0	715147.9	5349677.6	1.907
2008.00	17.38374	28045.8	757235.9	5664517.9	1.958
2008.50	18.37580	29646.3	800450.0	5987781.4	2.010
2009.00	19.39394	31288.9	844799.9	6319541.9	2.062
2009.50	20.43838	32973.9	890295.6	6659873.5	2.115
2010.00	21.50934	34701.7	936947.0	7008850.0	2.169

Time of Concentration (SCS)

Mon Nov 11 16:45:51 2024

Project: ROCKWOOD QUARRY
Location: SP-2
Developed

By: CGY
Checked:

Date: 11/11/24
Date: 11/11/24

Curve Number : 85
Length of Flow : 3295.00 ft
Average Land Slope : 6.00 %

Time of Concentration : 0.476 hrs, 28.6 mins

SP-2 Emergency Spillway Design

Wed Jan 22 08:22:48 2025

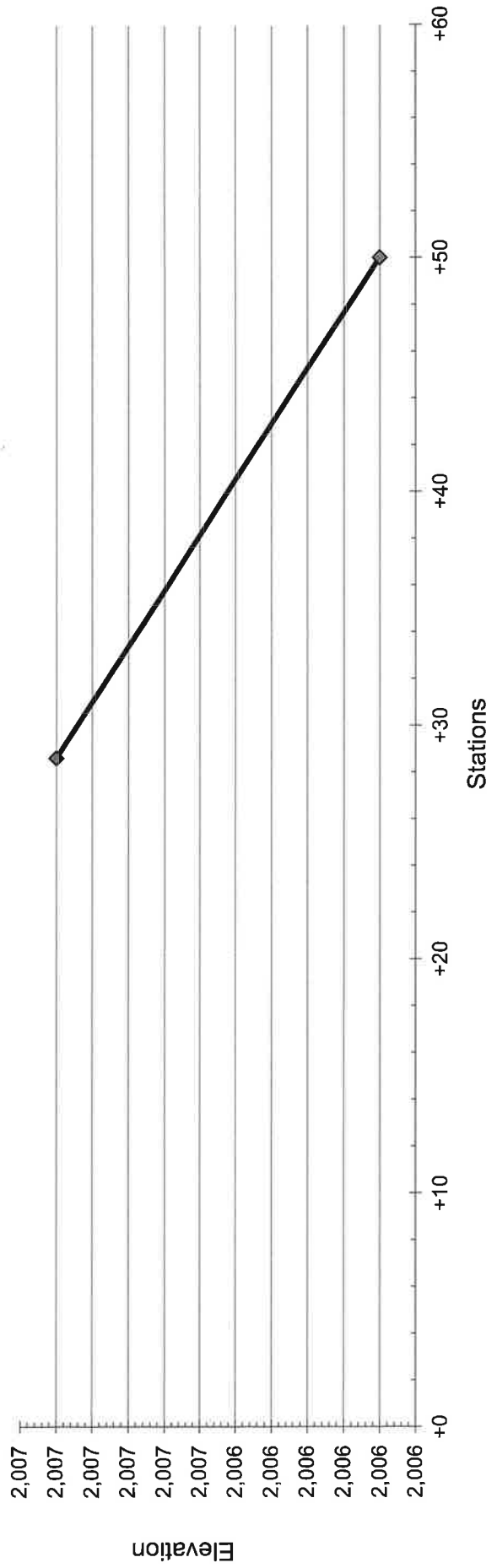
Shape: Trapezoidal
Side Slope Ratio (V:H): 0.50
Crest Length: 76.00 ft
Invert Elevation: 2006.90 ft
Coefficient: 2.63
Number of Openings: 1

Calculation Result
Headwater Elevation: 2008.000 ft
Discharge: 294.920 cfs
Velocity: 3.430 ft/s

12.1 Diversion/Collection Ditch Data Sheet

[illegible]

Ditch Profile



Trapezoidal/Triangle Section Ditch

Channel Name:	SP-2 EMS			Peak Disch & Base Flow:	294.9
Section Number:	1			Peak Discharge (Cum):	294.9
End Station:	0	+	50	Drainage Acreage:	81.7
End Elevation:	2,006.0			Watershed Slope:	6.0%

Given:				
Flow Depth, d (ft)	=	0.8		
Bottom Width (ft)	=	76		
Side Slopes (H:1)	=	2		
What size Rip Rap	=	R-4		
d ₅₀ size (inches)	=	6		
Mannings Coefficient	=	0.052		
Channel Slope, s (ft/ft)	=	4.21%		

Flow Rate, Q_{design} (cfs)				
$Q = (1.486/n) \times a \times r^{2/3} \times s^{1/2}$				
Q =	306.07	cfs		
Q =	444.77	cfs	WITH FREEBOARD	

Velocity, V (fps)				
Use V to size rip rap if s < 10%, grouted, or d _{actual} ≤ 0				
$V = Q/A$				
V =	4.93	fps		
V _{MAX} =	9.00	fps		

Account for 40% Void Space in Rip Rap				
if s ≥ 10%				
Rip Rap Thickness, t (inches)	=	18		
$A_{void} = 0.4 \times b \times t$				
A _{void} =	N/A	sq.ft.		
$A_{in-channel flow} = A - A_{void}$				
A _{in-channel flow} = #VALUE! sq.ft.				
$d_{in-channel flow} = \frac{-b + \sqrt{b^2 + 4 \times z \times A_{in-channel flow}}}{2 \times z}$				
d _{in-channel flow} = #VALUE! ft				

Shear Stress Calculation				
Use Sh to size rip rap if s > 10%				
$Sh = 62.4 \times d_{in-channel flow} \times s$				
Allowable Shear Stress =	2.00	psf		
Calculated Shear Stress =	2.10	psf		

Cross Sectional Area, Wetted Perimeter & Hydraulic Radius				
$A = bd + zd^2$				
A =	62.08	sq.ft.		
A =	78.00	sq.ft.	WITH FREEBOARD	
$P = b + 2d \text{ SQRT}(z^2 + 1)$				
P =	79.58	feet		
P =	80.47	feet	WITH FREEBOARD	
$r = A/P$				
r =	0.78	feet		
r =	0.97	feet	WITH FREEBOARD	
Top Width (feet)				
$T = b + 2 \times z \times d$				
T =	79.20	feet		
T =	80.00	feet	WITH FREEBOARD	
Ditch Sizing Check				
Q CHECK =		PASS		
VELOCITY CHECK =		PASS		
SHEAR STRESS CHECK =		USE VELOCITY		
OVERALL CHECK =		PASS		

Design Parameters

Section

Shape:	Circular
Material:	HDPE
Diameter:	18.00 in
Manning's n:	0.0120
Number of Barrels:	2

Inlet

Inlet Type:	Thin Edge Projecting
Ke:	0.90

Inverts

Inlet Invert Elevation:	2006.000	ft
Outlet Invert Elevation:	2005.200	ft
Length:	40.000	ft
Slope:	2.00	%

Culvert Calculation

Discharge:	15.10	cfs
Headwater Elevation:	2008.000	ft
Tailwater Elevation:	0.000	ft
Downstream Velocity:	8.96	ft/s
Downstream Flow Depth:	0.723	ft
Critical Flow Depth:	1.408	ft
Normal Flow Depth:	1.154	ft
Flow Control Type:	Outlet Control, Gradually Varied Flow	

SP-2 DEWATERING

Elevation	Storage (cf)	Discharge (cfs)	Time (hr)	# of Openings	Orifice Size (in)
1999.5	186815	0.00	0	4	1.5
2000.0	212230	0.17	42.24		
2000.5	238614	0.24	31.01	4	1.5
2001.0	265975	0.46	16.65		
2001.5	294324	0.57	13.80	4	1.5
2002.0	323671	0.83	9.82		
2002.5	354025	0.98	8.60	4	1.5
2003.0	385396	1.27	6.85		
2003.5	417795	1.45	6.20	4	1.5
2004.0	451230	1.77	5.24		
2004.5	485713	1.98	4.83		
2005.0	521252	2.16	4.57		
2005.5	557858	2.32	4.38		
2006.0	595541	2.47	4.23		
		Total	158.41	hours	
			6.60	days	



SP-2 AREA



SP-2 EMS



SP-2

Prepared by Earthtech, Inc.

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Type II 24-hr 50-YR Rainfall=5.05"

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Summary for Subcatchment 2S: SP-2 AREA

Runoff = 247.77 cfs @ 12.22 hrs, Volume= 21.543 af, Depth> 3.16"

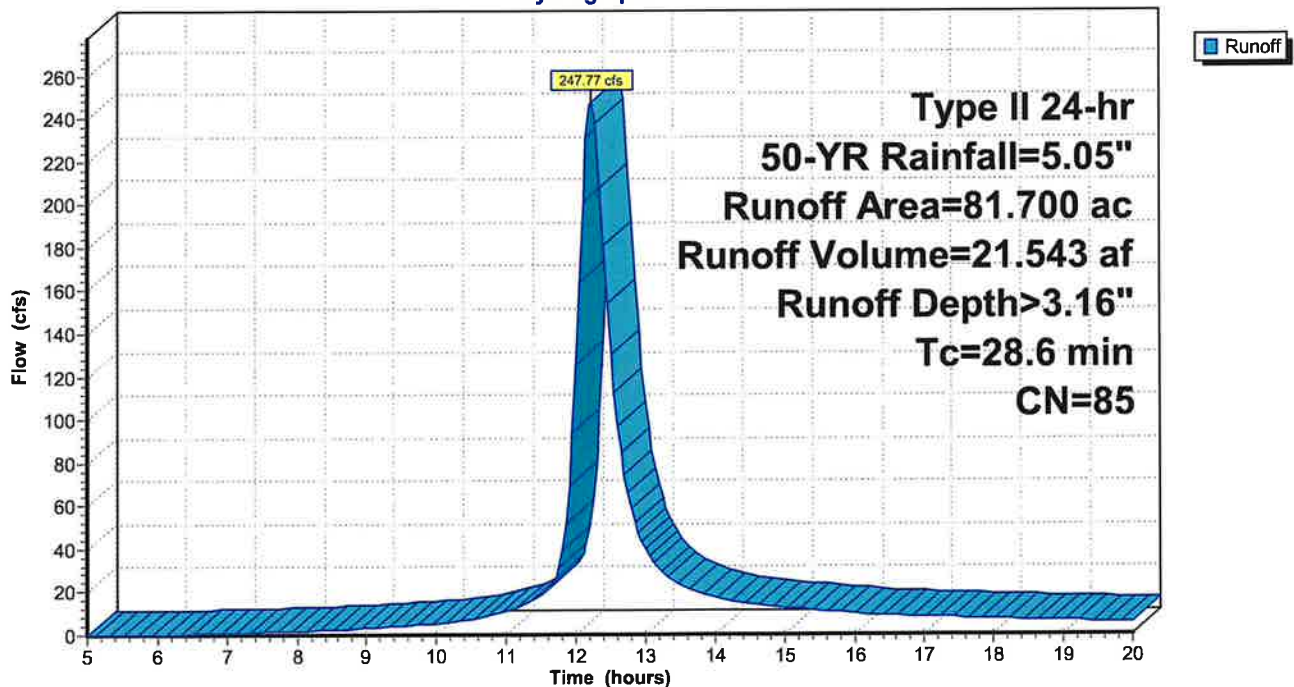
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-YR Rainfall=5.05"

Area (ac)	CN	Description
* 81.700	85	
81.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.6					Direct Entry,

Subcatchment 2S: SP-2 AREA

Hydrograph



SP-2

Type II 24-hr 50-YR Rainfall=5.05"

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Page 3

Summary for Pond 4P: SP-2 EMS

Inflow Area = 81.700 ac, 0.00% Impervious, Inflow Depth > 3.16" for 50-YR event
 Inflow = 247.77 cfs @ 12.22 hrs, Volume= 21.543 af
 Outflow = 231.20 cfs @ 12.30 hrs, Volume= 21.382 af, Atten= 7%, Lag= 4.8 min
 Secondary = 231.20 cfs @ 12.30 hrs, Volume= 21.382 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Starting Elev= 2,006.90' Surf.Area= 0 sf Storage= 666,203 cf

Peak Elev= 2,008.00' @ 12.30 hrs Surf.Area= 0 sf Storage= 757,279 cf (91,076 cf above start)

Flood Elev= 2,008.00' Surf.Area= 0 sf Storage= 757,236 cf (91,033 cf above start)

Plug-Flow detention time= 265.7 min calculated for 6.068 af (28% of inflow)

Center-of-Mass det. time= 8.2 min (793.3 - 785.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,995.00'	936,947 cf	Custom Stage Data Listed below

Elevation (feet)	Cum.Store (cubic-feet)
1,995.00	0
1,995.50	17,149
1,996.00	35,177
1,996.50	54,094
1,997.00	73,909
1,997.50	94,634
1,998.00	116,276
1,998.50	138,848
1,999.00	162,357
1,999.50	186,815
2,000.00	212,230
2,000.50	238,614
2,001.00	265,975
2,001.50	294,324
2,002.00	323,671
2,002.50	354,025
2,003.00	385,396
2,003.50	417,795
2,004.00	451,230
2,004.50	485,713
2,005.00	521,252
2,005.50	557,858
2,006.00	595,541
2,006.50	634,310
2,007.00	674,176
2,007.50	715,148
2,008.00	757,236
2,008.50	800,450
2,009.00	844,800
2,009.50	890,296
2,010.00	936,947

SP-2

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Type II 24-hr 50-YR Rainfall=5.05"

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Page 4

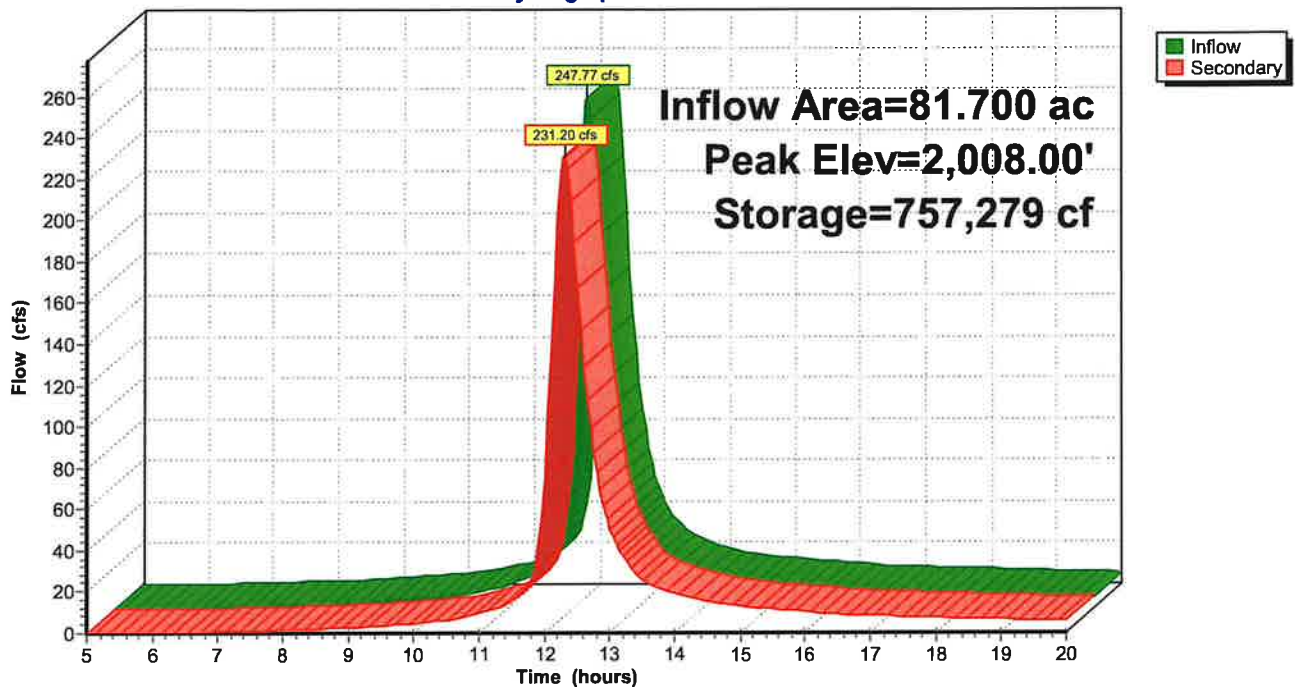
Device	Routing	Invert	Outlet Devices
#1	Secondary	2,006.90'	76.0' long x 28.6' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Secondary OutFlow Max=231.00 cfs @ 12.30 hrs HW=2,008.00' (Free Discharge)

1=Broad-Crested Rectangular Weir (Weir Controls 231.00 cfs @ 2.76 fps)

Pond 4P: SP-2 EMS

Hydrograph





SP-2 AREA



SP-2



Routing Diagram for SP-2

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SP-2

Prepared by Earthtech, Inc.

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Type II 24-hr 10-YR Rainfall=3.57"

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Page 2

Summary for Subcatchment 2S: SP-2 AREA

Runoff = 151.31 cfs @ 12.23 hrs, Volume= 13.009 af, Depth> 1.91"

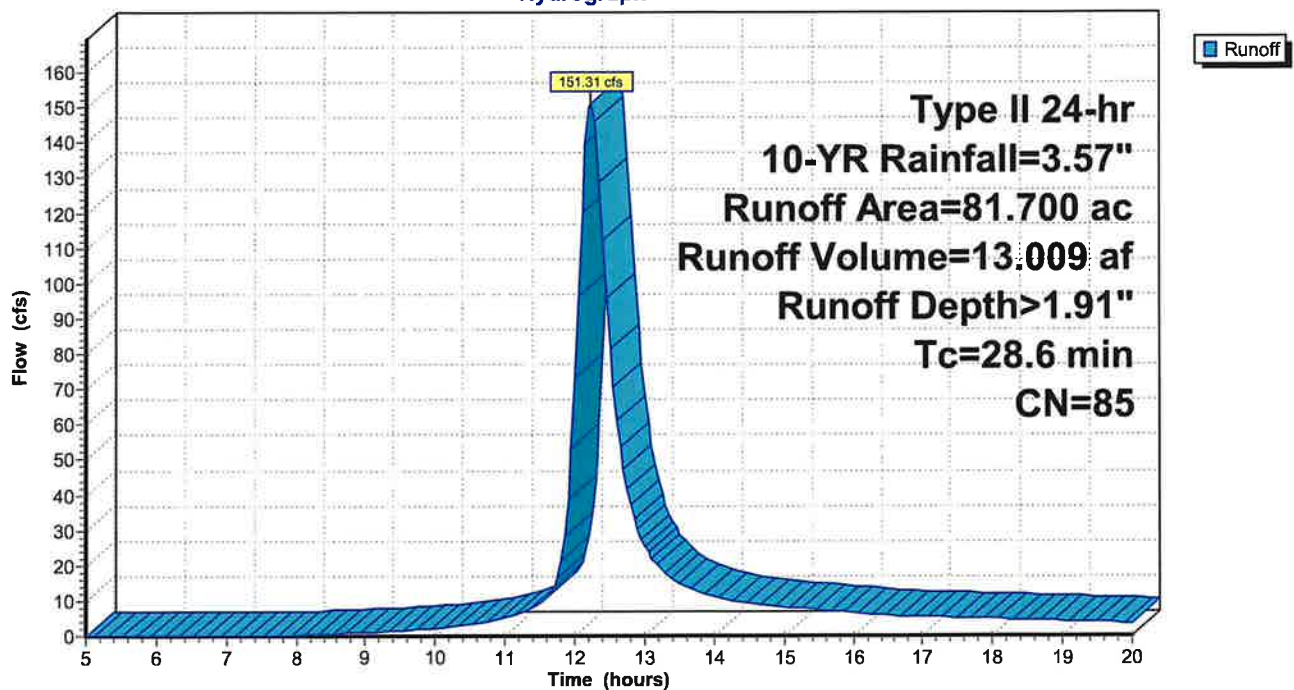
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=3.57"

Area (ac)	CN	Description
* 81.700	85	
81.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.6					Direct Entry,

Subcatchment 2S: SP-2 AREA

Hydrograph



SP-2

Type II 24-hr 10-YR Rainfall=3.57"

Prepared by Earthtech, Inc.

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Page 3

Summary for Pond 1P: SP-2

Inflow Area = 81.700 ac, 0.00% Impervious, Inflow Depth > 1.91" for 10-YR event
 Inflow = 151.31 cfs @ 12.23 hrs, Volume= 13.009 af
 Outflow = 5.17 cfs @ 17.41 hrs, Volume= 2.207 af, Atten= 97%, Lag= 310.9 min
 Primary = 5.17 cfs @ 17.41 hrs, Volume= 2.207 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Starting Elev= 1,999.50' Surf.Area= 0 sf Storage= 186,815 cf

Peak Elev= 2,006.86' @ 17.41 hrs Surf.Area= 0 sf Storage= 662,621 cf (475,806 cf above start)

Flood Elev= 2,008.00' Surf.Area= 0 sf Storage= 757,236 cf (570,421 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 240.3 min (1,036.7 - 796.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,995.00'	936,947 cf	Custom Stage Data Listed below

Elevation (feet)	Cum.Store (cubic-feet)
1,995.00	0
1,995.50	17,149
1,996.00	35,177
1,996.50	54,094
1,997.00	73,909
1,997.50	94,634
1,998.00	116,276
1,998.50	138,848
1,999.00	162,357
1,999.50	186,815
2,000.00	212,230
2,000.50	238,614
2,001.00	265,975
2,001.50	294,324
2,002.00	323,671
2,002.50	354,025
2,003.00	385,396
2,003.50	417,795
2,004.00	451,230
2,004.50	485,713
2,005.00	521,252
2,005.50	557,858
2,006.00	595,541
2,006.50	634,310
2,007.00	674,176
2,007.50	715,148
2,008.00	757,236
2,008.50	800,450
2,009.00	844,800
2,009.50	890,296
2,010.00	936,947

SP-2

Prepared by Earthtech, Inc.

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Type II 24-hr 10-YR Rainfall=3.57"

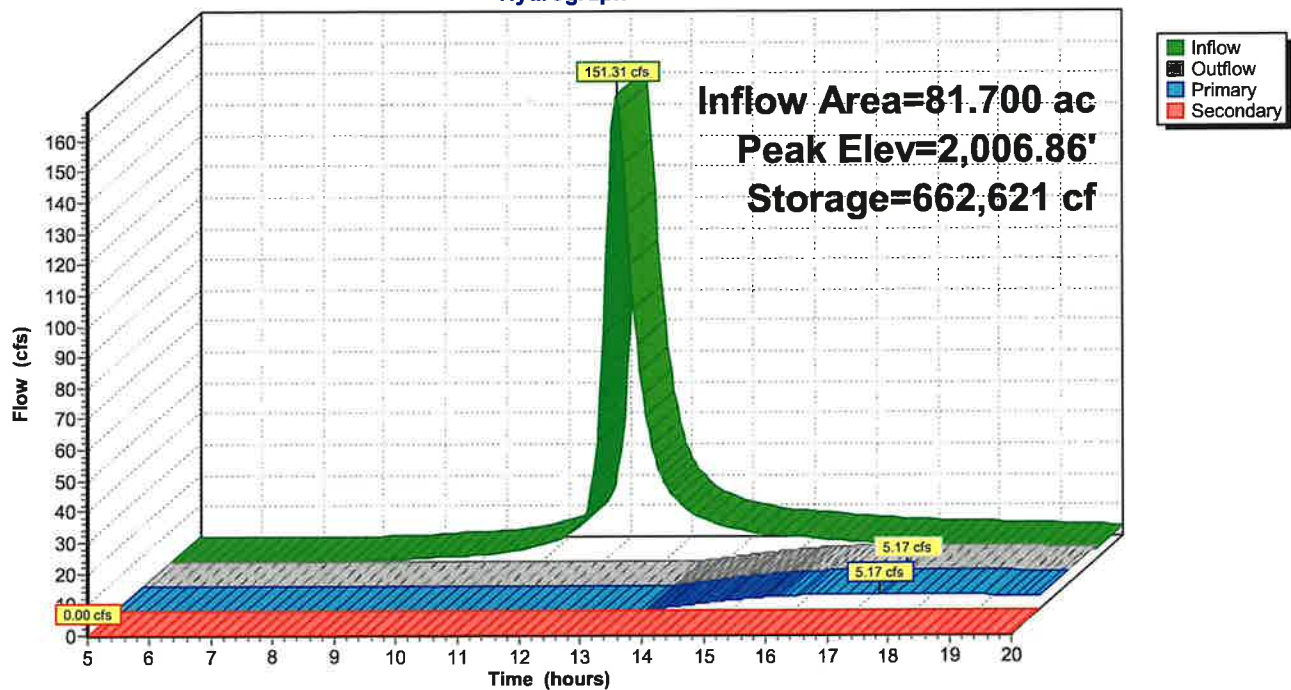
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Page 4

Device	Routing	Invert	Outlet Devices
#1	Primary	2,006.00'	18.0" Round Culvert X 2.00 L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,006.00' / 2,005.20' S= 0.0200 ' S= 0.0200 ' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf
#2	Secondary	2,006.90'	76.0' long x 28.6' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=5.17 cfs @ 17.41 hrs HW=2,006.86' (Free Discharge)←**1=Culvert** (Inlet Controls 5.17 cfs @ 2.49 fps)**Secondary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=1,999.50' (Free Discharge)←**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Pond 1P: SP-2**

Hydrograph



E-TEMPLATE SEDIMENT POND CERTIFICATION

Permittee: Rockwood Stone, LLC Site Name: Rockwood Quarry SMP No.: _____
 Engineer/Land Surveyor: Earthtech, Inc. Structure ID #: Process Pond 1 NPDES Outfall ID #: N/A
 Location (point of discharge): Latitude (DMS): 39° 54' 32"(non-discharge) Longitude (DMS): 79° 09' 17"
 Drainage Area: 0 acres Design Storm: N/A year / 24 hour Rainfall Amount: N/A inches
 Average Watershed Slope: N/A Land Use: Quarry Soil Type: C Curve Number: 85
 Peak Discharge: 0 cubic feet/second NPDES Average Flow: 0 mgd NPDES Design Flow: 0 mgd

	Permit Application	As Constructed	
Embankment	Top Width (Minimum)	<u>15'</u>	
	Outside Slope (Maximum) (H:V)	<u>3h:1v</u>	
	Inside Slope (Maximum) (H:V)	<u>2h:1v</u>	
	Top Elevation	<u>2021.0</u>	
	Bottom Elevation	<u>2011.0</u>	
	Upstream Toe Elevation	<u>2020.0</u>	
	Downstream Toe Elevation	<u>2008.0</u>	
	Type of Cover	<u>Vegetation or Rock-Lined</u>	
	Incised Slope (if any)		
	Inside Slope (Maximum) (H:V)	<u>0.25h:1v(virgin rock only)</u>	
	Top Elevation		
Bottom Elevation			
Principal Spillway	Type	<u>Barrel</u>	
	Conduit Diameter (if barrel/riser give both)	<u>12"</u>	
	Inlet Elevation	<u>2018.0</u>	
	Outlet Protection	<u>R-4 Rip-Rap</u>	
	Spillway Capacity (cubic feet/second)	<u>1.75 cfs</u>	
Dewatering Device	Type/Size	<u>N/A</u>	
	Inlet Elevation	<u>N/A</u>	
	Discharge Regulation (self-draining or valved)	<u>N/A</u>	
	Discharge Capacity (cubic feet/second)	<u>N/A</u>	
	Time to Dewater Full Pond	<u>N/A</u>	
Emergency Spillway	Type	<u>N/A</u>	
	Width	<u>N/A</u>	
	Depth (with 2 feet of freeboard)	<u>N/A</u>	
	Length	<u>N/A</u>	
	Sideslopes (H:V)	<u>N/A</u>	
	Crest Elevation	<u>N/A</u>	
	Slope	<u>N/A</u>	
	Type of Lining/Protection	<u>N/A</u>	
	Spillway Capacity (provide design calculations)	<u>N/A</u>	
Storage Capacity	Length @ Bottom	<u>300'</u>	
	Width @ Bottom	<u>10'</u>	
	Length @ Dewatering Device	<u>N/A</u>	
	Width @ Dewatering Device	<u>N/A</u>	
	Volume @ Dewatering Device	<u>N/A</u>	
	Length @ Principal Spillway	<u>328'</u>	
	Width @ Principal Spillway	<u>38'</u>	
	Volume @ Principal Spillway	<u>53,209 cf</u>	
	Length @ Crest of Emergency Spillway	<u>N/A</u>	
	Width @ Crest of Emergency Spillway	<u>N/A</u>	
	Volume @ Crest of Emergency Spillway	<u>N/A</u>	

Will the sediment pond be constructed in previously disturbed, fractured, or unconsolidated material? ☐ Yes ☒ No
 If yes, specify the type of liner that will be used: _____

SEDIMENT POND CONSTRUCTION CERTIFICATION

Permittee: Rockwood Stone, LLC Site Name: Rockwood Quarry SMP No.: _____
 Engineer/Land Surveyor: Earthtech, Inc. Structure ID #: Process Pond 1 NPDES Outfall ID #: N/A

- | | | | |
|--|------------------------------|-----------------------------|-----------------------------|
| 1. Has the facility been constructed at the location shown in the approved permit? | ☐ Yes | ☐ No | |
| 2. Is the emergency spillway constructed at the location shown in the approved plan? | ☐ Yes | ☐ No | |
| 3. Is the principal spillway constructed at the location shown in the approved plan? | ☐ Yes | ☐ No | ☐ NA |
| 4. Is the dewatering device constructed at the location shown in the approved plan? | ☐ Yes | ☐ No | |
| 5. Are the collection channel inlets constructed at the location shown in the approved plan? | ☐ Yes | ☐ No | |
| 6. Do the collection channel inlets have adequate inlet protection? | ☐ Yes | ☐ No | |
| 7. Has the liner been installed in accordance with the approved plan? | ☐ Yes | ☐ No | ☐ NA |
| 8. Has the non-discharge alternative been constructed in accordance with the approved plan? | ☐ Yes | ☐ No | ☐ NA |
| 9. Was coal encountered during construction of the pond? | ☐ Yes | ☐ No | |
| 10. If yes, was a liner used? | ☐ Yes | ☐ No | |
| 11. Identify any conditions or deficiencies in the facility that need to be corrected. | | | ☐ NA |

Stage of Construction

(specify stage e.g. layout, impoundment/embankment
 construction, spillway/piping installation, non-discharge
 alternative construction)

Date of Inspection**Inspected By**

Supervising Professional Engineer/Registered Professional Land Surveyor

Address and phone

I certify in accordance with 25 Pa Code Section 77.531, 87.112, 89.101, or 90.112 that the above-mentioned structure is complete and has been constructed.

Signature of Registered Professional Engineer/Registered Professional Land Surveyor

Date

Registration Number and Expiration Date

SEALSignature of Permittee or Responsible Official

Date

Title

Process Pond 1 Stage-Storage Report

Thu Jan 23 08:54:37 2025

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PONDS\PROCESS PONDS.cap

Elev(Ft)	Storage(CF)	Storage(Gallons)	Area(SF)
2011.000	0.0	0.0	3000.000
2011.500	1655.7	12385.2	3624.000
2012.000	3625.3	27119.4	4256.000
2012.500	5913.0	44232.3	4896.000
2013.000	8522.7	63754.0	5544.000
2013.500	11458.3	85714.3	6200.000
2014.000	14724.0	110143.2	6864.000
2014.500	18323.7	137070.5	7536.000
2015.000	22261.3	166526.3	8216.000
2015.500	26541.0	198540.5	8904.000
2016.000	31166.7	233142.8	9600.000
2016.500	36142.3	270363.4	10304.000
2017.000	41472.0	310232.1	11016.000
2017.500	47159.7	352778.8	11736.000
2018.000	53209.3	398033.4	12464.000
2018.500	59625.0	446026.0	13200.000
2019.000	66410.7	496786.3	13944.000
2019.500	73570.3	550344.3	14696.000
2020.000	81108.0	606730.0	15456.000
2020.500	89027.7	665973.2	16224.000
2021.000	97333.3	728103.9	17000.000

Design Parameters

Section

Shape:	Circular
Material:	HDPE
Diameter:	12.00 in
Manning's n:	0.0120
Number of Barrels:	1

Inlet

Inlet Type:	Thin Edge Projecting
Ke:	0.90

Inverts

Inlet Invert Elevation:	2018.000	ft
Outlet Invert Elevation:	2017.200	ft
Length:	40.000	ft
Slope:	2.00	%

Culvert Calculation

Discharge:	1.75	cfs
Headwater Elevation:	2019.000	ft
Tailwater Elevation:	0.000	ft
Downstream Velocity:	6.19	ft/s
Downstream Flow Depth:	0.390	ft
Critical Flow Depth:	0.563	ft
Normal Flow Depth:	0.390	ft
Flow Control Type:	Outlet Control, Gradually Varied Flow	

E-TEMPLATE SEDIMENT POND CERTIFICATION

Permittee: Rockwood Stone, LLC Site Name: Rockwood Quarry SMP No.: _____
 Engineer/Land Surveyor: Earthtech, Inc. Structure ID #: Process Pond 2 NPDES Outfall ID #: N/A
 Location (point of discharge): Latitude (DMS): 39° 54' 32"(non-discharge) Longitude (DMS): 79° 09' 18"
 Drainage Area: 0 acres Design Storm: N/A year / 24 hour Rainfall Amount: N/A inches
 Average Watershed Slope: N/A Land Use: Quarry Soil Type: C Curve Number: 85
 Peak Discharge: 0 cubic feet/second NPDES Average Flow: 0 mgd NPDES Design Flow: 0 mgd

	Permit Application	As Constructed
Embankment	Top Width (Minimum)	<u>15'</u>
	Outside Slope (Maximum) (H:V)	<u>3h:1v</u>
	Inside Slope (Maximum) (H:V)	<u>2h:1v</u>
	Top Elevation	<u>2021.0</u>
	Bottom Elevation	<u>2011.0</u>
	Upstream Toe Elevation	<u>2020.0</u>
	Downstream Toe Elevation	<u>2008.0</u>
	Type of Cover	<u>Vegetation or Rock-Lined</u>
	Incised Slope (if any)	
	Inside Slope (Maximum) (H:V)	<u>0.25h:1v(virgin rock only)</u>
Principal Spillway	Type	<u>Pump</u>
	Conduit Diameter (if barrel/riser give both)	<u>6"</u>
	Inlet Elevation	<u>2018.0</u>
	Outlet Protection	<u>N/A</u>
	Spillway Capacity (cubic feet/second)	<u>1.45 cfs</u>
Dewatering Device	Type/Size	<u>N/A</u>
	Inlet Elevation	<u>N/A</u>
	Discharge Regulation (self-draining or valved)	<u>N/A</u>
	Discharge Capacity (cubic feet/second)	<u>N/A</u>
	Time to Dewater Full Pond	<u>N/A</u>
Emergency Spillway	Type	<u>N/A</u>
	Width	<u>N/A</u>
	Depth (with 2 feet of freeboard)	<u>N/A</u>
	Length	<u>N/A</u>
	Sideslopes (H:V)	<u>N/A</u>
	Crest Elevation	<u>N/A</u>
	Slope	<u>N/A</u>
	Type of Lining/Protection	<u>N/A</u>
	Spillway Capacity (provide design calculations)	<u>N/A</u>
Storage Capacity	Length @ Bottom	<u>300'</u>
	Width @ Bottom	<u>10'</u>
	Length @ Dewatering Device	<u>N/A</u>
	Width @ Dewatering Device	<u>N/A</u>
	Volume @ Dewatering Device	<u>N/A</u>
	Length @ Principal Spillway	<u>328'</u>
	Width @ Principal Spillway	<u>38'</u>
	Volume @ Principal Spillway	<u>53,209 cf</u>
	Length @ Crest of Emergency Spillway	<u>N/A</u>
	Width @ Crest of Emergency Spillway	<u>N/A</u>
	Volume @ Crest of Emergency Spillway	<u>N/A</u>

Will the sediment pond be constructed in previously disturbed, fractured, or unconsolidated material? ☐ Yes ☒ No
 If yes, specify the type of liner that will be used: _____

SEDIMENT POND CONSTRUCTION CERTIFICATION

Permittee: Rockwood Stone, LLC Site Name: Rockwood Quarry SMP No.: _____
 Engineer/Land Surveyor: Earthtech, Inc. Structure ID #: Process Pond 2 NPDES Outfall ID #: N/A

- | | | | |
|--|------------------------------|-----------------------------|-----------------------------|
| 1. Has the facility been constructed at the location shown in the approved permit? | ☐ Yes | ☐ No | |
| 2. Is the emergency spillway constructed at the location shown in the approved plan? | ☐ Yes | ☐ No | |
| 3. Is the principal spillway constructed at the location shown in the approved plan? | ☐ Yes | ☐ No | ☐ NA |
| 4. Is the dewatering device constructed at the location shown in the approved plan? | ☐ Yes | ☐ No | |
| 5. Are the collection channel inlets constructed at the location shown in the approved plan? | ☐ Yes | ☐ No | |
| 6. Do the collection channel inlets have adequate inlet protection? | ☐ Yes | ☐ No | |
| 7. Has the liner been installed in accordance with the approved plan? | ☐ Yes | ☐ No | ☐ NA |
| 8. Has the non-discharge alternative been constructed in accordance with the approved plan? | ☐ Yes | ☐ No | ☐ NA |
| 9. Was coal encountered during construction of the pond? | ☐ Yes | ☐ No | |
| 10. If yes, was a liner used? | ☐ Yes | ☐ No | |
| 11. Identify any conditions or deficiencies in the facility that need to be corrected. | | | ☐ NA |

Stage of Construction

(specify stage e.g. layout, impoundment/embankment
 construction, spillway/piping installation, non-discharge
 alternative construction)

Date of Inspection**Inspected By**

Supervising Professional Engineer/Registered Professional Land Surveyor

Address and phone

I certify in accordance with 25 Pa Code Section 77.531, 87.112, 89.101, or 90.112 that the above-mentioned structure is complete and has been constructed.

Signature of Registered Professional Engineer/Registered Professional Land Surveyor

Date

Registration Number and Expiration Date

SEALSignature of Permittee or Responsible Official

Date

Title

Process Pond 2 Stage-Storage Report

Thu Jan 23 08:54:37 2025

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PONDS\PROCESS PONDS.cap

Elev(Ft)	Storage(CF)	Storage(Gallons)	Area(SF)
2011.000	0.0	0.0	3000.000
2011.500	1655.7	12385.2	3624.000
2012.000	3625.3	27119.4	4256.000
2012.500	5913.0	44232.3	4896.000
2013.000	8522.7	63754.0	5544.000
2013.500	11458.3	85714.3	6200.000
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2014.500	18323.7	137070.5	7536.000
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2015.500	26541.0	198540.5	8904.000
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2017.500	47159.7	352778.8	11736.000
2018.000	53209.3	398033.4	12464.000
2018.500	59625.0	446026.0	13200.000
2019.000	66410.7	496786.3	13944.000
2019.500	73570.3	550344.3	14696.000
2020.000	81108.0	606730.0	15456.000
2020.500	89027.7	665973.2	16224.000
2021.000	97333.3	728103.9	17000.000