

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.

Construction and Treatment Narrative:

The initial site development of the Northern Tract Quarry consists of 3 phases. For Phase 1, collection ditches CD-1 and CD-2 will be constructed to allow for initial development and overburden soil removal of the Northern Tract Quarry. Collection Ditch CD-1 collects stormwater runoff from roughly an 11 acre area and Collection Ditch CD-2 collects stormwater runoff from roughly a 33 acre area, of which approximately 3 acres consists of the adjacent access road and approximately 41 acres consists of area available for overburden soil removal. These ditches convey the runoff to the existing Pitts Quarry. The accumulated water in the Pitts Quarry will then be incrementally pumped to the Lower Mill Pond system. Refer to Module 12 for design criteria and calculations related to these ditches.

NT Pond No. 1 and the associated collection ditches CD-3 and CD-4 will be constructed to begin Phase 2 of development. NT Pond No. 1 will collect stormwater runoff from roughly 18 acres of area downstream of Collection Ditch CD-1, of which approximately 3 acres consists of the adjacent access road and approximately 15 acres consists of area available for overburden soil removal. Collected stormwater runoff detained by NT Pond No. 1 will be incrementally pumped to the Pitts Quarry (if needed) and ultimately to the Lower Mill Pond (LMP) system over a period of 2 to 7 days after the occurrence of the storm. Once NT Pond No. 1 and the associated collection ditches are established, overburden removal and development of the Northern Tract Quarry in the Phase 2 area may advance.

NT Pond No. 2 and associated collection ditches CD-5 and CD-6 will be constructed to begin Phase 3 development. The area of overburden removal in Phases 1 and 2 will be maintained to drain towards Pitts Quarry, or into the Northern Tract Quarry. NT Pond No. 2 will collect stormwater runoff from roughly 28 acres of area downstream of collection CD-2 and CD-4, of which approximately 4 acres consists of the adjacent access road and approximately 24 acres consists of area available for overburden removal. Collected stormwater runoff detained by NT Pond No. 2 will be pumped to the Pitts Quarry (if needed) and ultimately to the LMP system over a period of 2 to 7 days after the occurrence of the storm. Once NT Pond No. 2 and the associated collection ditches are established, overburden removal and development of the Northern Tract Quarry in the Phase 3 area may advance.

Design Criteria:

Both NT Pond No. 1 and No. 2 are designed to detain, without discharging, the stormwater runoff from a storm less than or equal to a Soil Conservation Service (SCS) Type II, 24-hour duration, 100-year recurrence interval storm event. Typically, when mining is proposed within a sensitive watershed such as a High Quality (HQ) watershed as designated in 25 Pa. Code Chapter 93, the sedimentation impoundment is required to have the capacity to contain the runoff from a 10-year, 24-hour precipitation event, per the PADEP Engineering Manual for Mining Operations. This requires an impoundment constructed with a minimum total capacity of approximately 8,600 cubic feet per drainage acre. The ponds proposed for the Northern Tract Quarry permit area can store the runoff from the 100-year storm, without the use of any spillway or conveyance structure, and provide 1.5 feet of freeboard. Therefore, the proposed ponds are conservatively sized to provide storm storage capacity that greatly exceeds the minimum requirement.

SCS curve number methodology was used to calculate the stormwater runoff volume for each pond, considering a curve number of 86 (assuming disturbed conditions and hydrologic soil group B) for the runoff area and a rainfall depth of 8.03 inches. Both of the ponds are designed to have 2,000 cubic-feet per drainage acre for sediment storage, consistent with PADEP requirements. Since the ponds are design to detain the 100-year storm event runoff, NT Pond Nos. 1 and 2 have approximately 27,000 cubic-feet per acre and 30,000 cubic-feet per acre of settling volume, respectively. This settling volume is significantly larger than the typical settling volume required by the PADEP of 5,000 cubic feet per acre, minus applicable reductions.

Although not activated for the 100-yr storm event, both ponds are provided with an emergency spillway. The spillways are configured with a riprap lining to preclude uncontrolled erosion in the event of being activated. However, these spillways are not anticipated to be activated except during rare or extreme storm events that exceed a 24-hour duration, 100-year storm event. The ponds are configured to provide sufficient volume to store the volume of the 24-hour, 100-year storm event without the need for any type of dewatering (e.g. via spillway or pumping) during the storm. Thus, the ponds can passively control the 100-year design storm without discharge and be dewatered at a later time after cessation of the storm. Electric turbine pumps are proposed in each pond to facilitate dewatering of the ponds in 2 to 7

days, and to maintain the ponds' normal pool elevations.

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).

The location and size of the quarry sump will vary as mining progresses to the final configuration depicted on Exhibit 9 – Operations Map. Electric turbine pumps with diesel backup capabilities will be maintained in the quarry to transfer water collected in NT Ponds 1 and 2 into the LMP system. Alternately, water collected in NT Ponds 1 and 2 may be pumped directly to the LMP System.

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

- a) Proposed use. **Collection and Sediment Removal**
- b) Map and location (key to maps). **Refer to Exhibit 13 drawings for plans, cross-sections, and details of NT Pond Nos. 1 and 2.**
- 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.

Refer to Exhibit 13 drawings for plans, cross-sections, and details of NT Pond Nos. 1 and 2. Additionally, design calculations for each pond, demonstrating how the proposed configurations meet PADEP criteria, are attached to this module.

As discussed in Module 13.1, accumulated water in NT Pond Nos. 1 and 2 will be pumped to the Pitts Quarry (if needed) and ultimately to the LMP system for ultimate discharge into Miney Branch through NPDES Outfall 001 (NPDES Permit PA0009059). The existing LMP system has adequate capacity to accommodate this additional water as discussed in the following section.

Per the NT Pond Calculations provided with this permit application, the anticipated pumping rate at NT Pond No. 1 will range from 400 gallons per minute (gpm) to 1,000 gpm, considering a dewatering time of 7 days to 2 days, respectively, per PADEP requirements. Similarly, NT Pond No. 2 will have a pumping rate ranging from approximately 650 gpm to 1,800 gpm (7 day to 2 day dewatering time). Thus, the total pumping rate tributary to the LMP from the NT Ponds will range from 1,050 gpm to 2,800 gpm, depending on the chosen pump capacities.

The NT Ponds are designed to detain the runoff from a 100-year, 24-hour storm event without discharging. Therefore, the NT Ponds have excess available storage volume that, during normal operations, will allow for temporarily detaining accumulated water in the NT Ponds to accommodate mining operations. Thus, after a storm event, the accumulated water in the NT Ponds could be allowed to remain in the pond for two to five days. Then, the NT ponds could be dewatered in the following two to five days (within seven days total), depending on the chosen pump capacities. This will allow for a staged dewatering process at the LMP system where the runoff that is passively conveyed to the LMP system (the runoff from its tributary watershed) will be discharged from the pond in the short term through the perforated riser spillways, and the accumulated runoff from the NT Ponds and other sources can be pumped to the LMP system at a later time for subsequent release. Once the Northern Tract Quarry is developed such that it will detain water in the bottom of the pit, the ability to complete a staged dewatering process will be improved since the water can be detained in the quarry pit for an even longer duration. Therefore, the discharge rate at NPDES Outfall 001 will be unchanged considering the addition of the pumped water from the proposed NT Ponds.

An evaluation of the LMP system was provided to the PADEP on October 26, 2017 in report titled NPDES Permit No. PA0009059 Application Final Addendum Report. This submission was made in response to comments provided by the PADEP regarding the associated NPDES permit renewal. Per the NPDES report, the total spillway capacity of the LMP system is 775.7 cubic feet per second (cfs), while providing 2 feet of freeboard. The anticipated pumping rate from the proposed NT Ponds is anticipated to be no greater than 2,800 gpm (1,000 gpm

from NT Pond No. 1 and 1,800 gpm from NT Pond No. 2) or 6.2 cfs. As previously mentioned, the NT Ponds are configured so that the water conveyed from these ponds as part of dewatering will be discharged to the LMP system after the storm event has ceased in most cases. However, even if dewatering of the NT Ponds occurred during a storm event at the LMP system, the additional 6.2 cfs of flow is negligible considering the overall discharge capacity of the LMP system.

- d) 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.

Not Applicable

- e) Describe the potential effect on the structure from subsidence from underground mining when applicable.

Not Applicable

- f) 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.) **Not Applicable. All detailed design plans are included with this submittal.**

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.

(**Note:** A permit processing fee of \$1500 should be included for structures that meet the above criteria. Permits for impoundments that meet the above mentioned criteria and are to be left in place after mining will be submitted to the Division of Dams Safety, Bureau of Waterways Engineering for their review and approval.)

The proposed NT Pond Nos. 1 and 2 have contributory areas of less than 100 acres, do not include dams that exceed 15 feet in height, and do not impound more than 50 acre-feet at the maximum storage elevation. Therefore, a separate dam permit is not applicable.

13.5 Operation and Maintenance Requirements

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

The dewatering of NT Pond Nos. 1 and No. 2 is to be maintained by pumping. The ponds will be inspected after every storm event or on a minimum weekly basis. The inspection will entail a visual inspection of the impounded water level and clarity; measurement of the sediment storage level to ascertain its level relative to the maximum permitted sediment cleanout level; observation of the conditions of the emergency spillway, embankment crest, and pond interior and exterior slopes; and observation of other pertinent features of the pond and adjoining areas (such as contributing ditches). The ponds will be dewatered by pumping within 2 to 7 days following a storm event. Physical markers within the pond will provide reference points for identifying when the pond is approaching sediment capacity and requires cleaning. An access road is provided in each pond to facilitate sediment cleanout operations. Sediment will be removed from the ponds as necessary to maintain accumulated sediment levels at or below the prescribed sediment cleanout elevation. The removed sediment will be disposed in approved areas at the Charmian Site.

13.6 Removal

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

Once the Northern Tract Quarry is developed and the contributory areas to the ponds are encompassed within the quarry, and the depth of the quarry can detain the runoff volume from storm events without impacting mining operations, NT Pond No. 1 and NT Pond No. 2 may be removed. The operator will submit a revised E & S plan for approval to the Department prior to removing NT Pond No. 1 and/or NT Pond No. 2. The E & S plan will show that no storm water from the mining area will be directed to Tom's Creek or unnamed tributary to Tom's Creek, located next to Iron Springs Road.

**Commonwealth of Pennsylvania
Department of Environmental Protection
Bureau of Mining Programs**

Permittee Specialty Granules, LLC
 Permit No. Pending
 Pond NT Pond No. 1
 Township Hamiltonban Township
 County Adams County, Pennsylvania
 Engineer/Land Surveyor D'Appolonia Engineering Division of GTI
 Date _____

POND CERTIFICATION

Instructions: Complete first page and submit with permit application. Use both pages to certify completed impoundment.

Sedimentation ponds and other impoundments must be constructed in accordance with the approved permit before any disturbance of the area to be drained into the pond. Impoundment requiring a Chapter 105 permit or is equal to or greater than 20 acre-feet storage capacity must be inspected during construction under the supervision of, and certified to the Department upon completion of construction by a registered professional engineer. If impoundment does not require a Chapter 105 permit or is less than 20 acre-feet storage capacity, it must be inspected during construction, and certified by a registered professional engineer or a registered professional land surveyor.

Any enlargement, reduction in size, reconstruction, or other modification, that may affect the stability or operation must be approved by the Department. Pond must be certified and approved prior to the start of any other mining activities.

Unless otherwise specified in your permit, use this form for the sedimentation pond and other impoundment certification. Submit 1 original and 2 copies to the appropriate District Mining Office. All information must be provided, otherwise it will be returned for completion.

U.S.G.S. Quadrangle: Iron Springs, Pennsylvania Location (point of discharge): Latitude 39° 46' 9.2"; Longitude 77° 26' 37.9" or
 Location from **Bottom Right** corner of U.S.G.S. Quadrangle: - _____ inches North; - _____ inches West
 HYDROLOGY: Drainage Area 18.37 acres Design Storm 100-yr Average Watershed Slope 0.25 ft/ft
 Land Use Unmanaged Forestland Soil Type HSG B Curve Number 86 (Disturbed) Peak Discharge 178 cfs (100-yr storm)

		<i>Permit Application</i>	<i>As Constructed</i>
Embankment	Top Width (Minimum)	<u>12 ft</u>	_____
	Outside Slope (Maximum) (_H: _V)	<u>2H:1V</u>	_____
	Inside Slope (Maximum)	<u>2H:1V</u>	_____
	Top Elevation	<u>1060.0</u>	_____
	Bottom Elevation	<u>1045.0</u>	_____
	Upstream Toe Elevation	<u>1058.5</u>	_____
	Downstream Toe Elevation	<u>1048.5</u>	_____
	Type of Cover	<u>Vegetated/Coarse Aggregate</u>	_____
	Incised Slope (if any)	<u>Yes</u>	_____
	Inside Slope (Maximum) (_H: _V)	<u>2H:1V</u>	_____
	Top Elevation	<u>1060</u>	_____
	Bottom Elevation	<u>1045.0</u>	_____
Principal Spillway	Type	<u>See Dewatering Device</u>	_____
	Conduit Diameter (if barrel/riser give both)	<u>N/A</u>	_____
	Inlet Elevation	<u>N/A</u>	_____
	Outlet Protection	<u>N/A</u>	_____
	Spillway Capacity	<u>N/A</u>	_____
Dewatering Device	Type/Size	<u>Pumping System</u>	_____
	Inlet Elevation	<u>1047.0</u>	_____
	Discharge Regulation (ie., self draining or valved)	<u>-</u>	_____
	Discharge Capacity (cubic feet/second)	<u>0.89 to 2.23 cfs (400 to 1000 gpm)</u>	_____
	Time to Dewater Full Pond	<u>2 to 7 days</u>	_____
Emergency Spillway	Type	<u>Open Channel Spillway</u>	_____
	Width	<u>8 ft</u>	_____
	Depth (with 2 feet of freeboard)	<u>1.5 ft</u>	_____
	Length	<u>24 ft</u>	_____
	Sideslopes	<u>10H:1V</u>	_____
	Crest Elevation	<u>1058.5</u>	_____
	Slope	<u>0.0 ft/ft</u>	_____
	Type of Lining/Protection	<u>R-3 Riprap/AASHTO No. 57</u>	_____
	Spillway Capacity (provide design calculations)	<u>21 cfs at EI 1059.5</u>	_____
Storage Capacity	Length @ Bottom	<u>802 ft</u>	_____
	Width @ Bottom	<u>12 ft to 33 ft</u>	_____
	Length @ Crest of Emergency Spillway	<u>862 ft</u>	_____
	Width @ Crest of Emergency Spillway	<u>65.5 ft to 87 ft</u>	_____
	Volume @ Crest of Emergency Spillway	<u>537,159 cf (12.33 ac-ft)</u>	_____

Permittee _____
 Permit No. _____
 Pond _____
 Township _____
 County _____

TO BE COMPLETED AFTER CONSTRUCTION

- 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
- 4. Are the collection channel inlets constructed with adequate inlet protection and at the location shown in the approved plan? Yes No
- 5. Identify any conditions or deficiencies in the facility that need to be corrected.

Construction Inspection

Stage of Construction (specify stage e.g. layout, impoundment/embankment construction, spillway/piping installation)	Date of Inspection	Inspected By
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Supervising Professional Engineer/Registered Professional Land Surveyor _____

Address _____

Telephone Number _____

I certify in accordance with 25 Pa Code Section 77.531 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 _____

Commonwealth of Pennsylvania
 Department of Environmental Protection
 Bureau of Mining Programs

POND CERTIFICATION

Permittee Specialty Granules, LLC
 Permit No. Pending
 Pond NT Pond No. 2
 Township Hamiltonban Township
 County Adams County, Pennsylvania
 Engineer/Land Surveyor D'Appolonia Engineering Division of GTI
 Date _____

Instructions: Complete first page and submit with permit application. Use both pages to certify completed impoundment.

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Any enlargement, reduction in size, reconstruction, or other modification, that may affect the stability or operation must be approved by the Department. Pond must be certified and approved prior to the start of any other mining activities.

Unless otherwise specified in your permit, use this form for the sedimentation pond and other impoundment certification. Submit 1 original and 2 copies to the appropriate District Mining Office. All information must be provided, otherwise it will be returned for completion.

U.S.G.S. Quadrangle: Iron Springs, Pennsylvania Location (point of discharge): Latitude 39° 46' 4.8"; Longitude 77° 26' 9.2" or
 Location from **Bottom Right** corner of U.S.G.S. Quadrangle: - _____ inches North; - _____ inches West
 HYDROLOGY: Drainage Area 28.19 acres Design Storm 100-yr Average Watershed Slope 0.25 ft/ft
 Land Use Unmanaged Forestland Soil Type HSG B Curve Number 86 (Disturbed) Peak Discharge 272 cfs (100-yr storm)

		<i>Permit Application</i>	<i>As Constructed</i>
Embankment	Top Width (Minimum)	<u>12 ft</u>	_____
	Outside Slope (Maximum) (_H: _V)	<u>2H:1V</u>	_____
	Inside Slope (Maximum)	<u>2H:1V</u>	_____
	Top Elevation	<u>1010.0</u>	_____
	Bottom Elevation	<u>995.0</u>	_____
	Upstream Toe Elevation	<u>1004.5</u>	_____
	Downstream Toe Elevation	<u>998.5</u>	_____
	Type of Cover	<u>Vegetated/Coarse Aggregate</u>	_____
	Incised Slope (if any)	<u>Yes</u>	_____
	Inside Slope (Maximum) (_H: _V)	<u>2H:1V</u>	_____
	Top Elevation	<u>1075.0</u>	_____
Bottom Elevation	<u>995.0</u>	_____	
Principal Spillway	Type	<u>See Dewatering Device</u>	_____
	Conduit Diameter (if barrel/riser give both)	<u>N/A</u>	_____
	Inlet Elevation	<u>N/A</u>	_____
	Outlet Protection	<u>N/A</u>	_____
	Spillway Capacity	<u>N/A</u>	_____
Dewatering Device	Type/Size	<u>Pumping System</u>	_____
	Inlet Elevation	<u>997.0</u>	_____
	Discharge Regulation (ie., self draining or valved)	<u>-</u>	_____
	Discharge Capacity (cubic feet/second)	<u>1.45 to 4.01 cfs (650 to 1,800 gpm)</u>	_____
	Time to Dewater Full Pond	<u>2 to 7 days</u>	_____
Emergency Spillway	Type	<u>Open Channel Spillway</u>	_____
	Width	<u>8 ft</u>	_____
	Depth (with 2 feet of freeboard)	<u>1.5 ft</u>	_____
	Length	<u>18 ft</u>	_____
	Sideslopes	<u>10H:1V</u>	_____
	Crest Elevation	<u>1008.5</u>	_____
	Slope	<u>0.0 ft/ft</u>	_____
	Type of Lining/Protection	<u>R-3 Riprap/AASHTO No. 57</u>	_____
	Spillway Capacity (provide design calculations)	<u>21 cfs at EI 1008.5</u>	_____
Storage Capacity	Length @ Bottom	<u>1286 ft</u>	_____
	Width @ Bottom	<u>13 ft to 23 ft</u>	_____
	Length @ Crest of Emergency Spillway	<u>1346 ft</u>	_____
	Width @ Crest of Emergency Spillway	<u>62 ft to 97 ft</u>	_____
	Volume @ Crest of Emergency Spillway	<u>910,367 cf (20.90 ac-ft)</u>	_____

Permittee _____
 Permit No. _____
 Pond _____
 Township _____
 County _____

TO BE COMPLETED AFTER CONSTRUCTION

- 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
- 4. Are the collection channel inlets constructed with adequate inlet protection and at the location shown in the approved plan? Yes No
- 5. Identify any conditions or deficiencies in the facility that need to be corrected.

Construction Inspection

Stage of Construction (specify stage e.g. layout, impoundment/embankment construction, spillway/piping installation)	Date of Inspection	Inspected By
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Supervising Professional Engineer/Registered Professional Land Surveyor _____

Address _____

Telephone Number _____

I certify in accordance with 25 Pa Code Section 77.531 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