

## **MODULE 24**

## Module 24: Special Protection Waters

### Notes:

1. Module 24 "Special Protection Waters" has been rescinded.
2. Form 5600-PM-BMP0007 "Anti-Degradation Supplement for Mining Permits" is to be used in all cases where a mining operation is proposed for Special Protection Waters.
3. The Social or Economic Justification (SEJ) section is now Form 5600-PM-BMP0028 "Social or Economic Justification (SEJ) and Water Use Demonstration (for projects in high quality [HQ] waters only)".

**SOCIAL OR ECONOMIC JUSTIFICATION (SEJ) AND WATER USE DEMONSTRATION**



## ANTI-DEGRADATION SUPPLEMENT FOR MINING PERMITS

**General Instructions:** This supplement is to be completed if the operation is proposed within areas of Special Protection Waters where a new, additional or increased discharge is proposed. In Special Protection waters, Section 1 is required. Every effort must be made to achieve total non-discharge or partial non-discharge. For more info on the Anti-degradation analysis, refer to Technical Guidance Document No. 391-0300-002.

**For all coal and large noncoal surface and underground permits:** Because of the interaction necessary between the department and the applicant, Section 1 must be completed prior to a formal submission of the mining permit application. It may take two or more exchanges of information between the parties to adequately complete this module. Pre-application discussions are required. Submission of a mining permit without adequate pre-application information will result in the permit application being returned to you as incomplete.

After submitting Section 1 including the Non-Discharge Alternatives Analysis, the applicant will receive communication from the department regarding the information presented in Section 1. If applicable, the applicant then completes Section 2 or the Social or Economic Justification (SEJ) (5600-PM-BMP0028). All plans described in this supplement must correlate directly with Erosion and Sedimentation Control, Operation and Reclamation plans in the permit application. All parts and supporting data, including those sections previously submitted to the department, must be included with the permit application upon formal submittal which must also include an application for an individual NPDES permit even if there is no point source discharge proposed.

**For small noncoal, bluestone, General Permits and exploration activities:** Complete Section 1 in conjunction with an appropriate NPDES individual permit application. Submit with the permit application package. The Department encourages pre-application discussions for any mining activity in a Special Protection watershed but it is not required for sites 5 acres or less. Section 2 will need to be completed only by Department request.

| Section 1  |   |
|--|---|
| <b>A. General Information</b>  |   |
| This supplement is submitted in support of the following facility:   |   |
| Applicant: <u>Specialty Granules LLC</u>   | Mining License No. <u>6982</u>                          |
| Permit or Authorization No.: <u>01170301</u>   | <i>Insert "pending" if no number has been assigned.</i> |
| Operation Name: <u>Northern Tract Quarry</u>   |   |
| <b>B. Receiving Streams</b>  |   |
| Watershed is: <input checked="" type="checkbox"/> HQ (high quality) or <input type="checkbox"/> EV (exceptional value)             |   |
| Provide the name(s) and existing water use(s) as identified in 25 Pa Code Section 93.9 for each of the proposed receiving streams: |   |
| Toms Creek:  |   |
| <u>HQ-CWF, MF</u>  |   |
| <u> </u>   |   |
| <u> </u>   |   |

**C. Non-Discharge Alternatives Evaluation** (*Attach extra sheets labeled "Non-Discharge Alternatives Evaluation"*)

Consider and evaluate non-discharge alternatives for the proposed storm water and/or encountered groundwater discharge(s) as required by 25 Pa Code Section 93.4c.(b)(1)(i)(A). Indicate which alternatives will be used at this site. Describe in an attachment(s) each specific alternative that will be used. If **no** specific options are feasible, provide feasibility analysis and cost data as justification. **See attached Section 1C. Non-Discharge Alternatives Evaluation.**

| To Be Used                          |  |
|-------------------------------------|--|
| <input type="checkbox"/>            | 1. Alternative project siting (in whole or in part)  |
| <input checked="" type="checkbox"/> | 2. Alternative discharge locations/discharging to another (non-special protection) watershed |
| <input type="checkbox"/>            | 3. Infiltration – galleries or land application  |
| <input checked="" type="checkbox"/> | 4. Limiting disturbed area (vertically or horizontally), extent and/or duration of mining    |
| <input checked="" type="checkbox"/> | 5. Recycling/reuse of water onsite   |
| <input type="checkbox"/>            | 6. Constructed treatment wetlands  |
| <input checked="" type="checkbox"/> | 7. Holding facilities and/or wastewater hauling  |
| <input type="checkbox"/>            | 8. Injection ( <input type="checkbox"/> pretreated) ( <input type="checkbox"/> no treatment) |
| <input checked="" type="checkbox"/> | 9. Vegetated riparian buffers  |
| <input checked="" type="checkbox"/> | 10. Specific pollution prevention processes  |
| <input type="checkbox"/>            | 11. Other(s) List:   |

**D. Use of Non-Discharge Alternatives**

In consideration of the options proposed for use in Section C. and in reference to supporting information that must be supplied for Section C., characterize the fate of stormwater runoff and/or encountered groundwater at this site. Choose #1 or #2.

1. Non-discharge alternatives will be used to address the entire discharge. No point source discharge is proposed. (Describe the implementation of the non-discharge alternative(s) you are proposing as part of the Erosion and Sedimentation plan and your NPDES permit application.)

OR

2. Non-discharge alternatives use will not account for the entire discharge. A point source discharge is anticipated. (Provide justification in Section 1.C. and chose a. or b. below.)

a.  A demonstration will be made that the resulting discharge will maintain and protect the existing quality of receiving surface waters. (Section 2)

b.  A demonstration will be made that the resulting discharge to the High Quality (HQ) water(s) will support the applicable existing and designated water uses (other than HQ uses) and an SEJ (Module 24) will be submitted.

**STOP:** Section 1 must be reviewed by the department before proceeding.

**Department use only**

**Section 2**

**A. Demonstration for Maintaining and Protecting Existing Water Quality – Test for non-degradation of water quality**

If no environmentally sound and cost-effective non-discharge alternative exists to address the entire discharge, provide a demonstration that a non-degrading discharge is feasible and will maintain and protect the existing water quality of the receiving stream(s). Using existing monitoring data, calculate the non-degrading effluent limits for this discharge (mass balance). Describe the technology and details of the practices that will be used to achieve these effluent limits and assess the costs. Attach separate sheets as necessary labeled "Non-degrading ABACT". **See attached Section 2A. Non-degrading ABACT.**

**B. Anti-degradation Best Available Combination of Technologies (ABACT)**

Identify the combination of Best Management Practices (BMPs) to be used during the mining operations to achieve a non-degrading discharge.

**Best Management Practices (BMPs)**

|   |  |
|---|--|
| <input checked="" type="checkbox"/> 1. Oversized sediment basin (8600 ft <sup>3</sup> /ac or greater)   | <input type="checkbox"/> 11. Sediment traps with infiltration trench       |
| <input checked="" type="checkbox"/> 2. Sediment basin ratio of 4:1 or greater (flow length:basin width)   | <input type="checkbox"/> 12. Diversions                                    |
| <input checked="" type="checkbox"/> 3. Sediment basin with 4-7 day detention*   | <input type="checkbox"/> 13. Constructed wetlands                          |
| <input checked="" type="checkbox"/> 4. Alternate/additional sediment controls during basin construction   | <input type="checkbox"/> 14. Vegetated swales                              |
| <input type="checkbox"/> 5. Flocculants   | <input type="checkbox"/> 15. Manufactured devices                          |
| <input checked="" type="checkbox"/> 6. Manual dewatering device   | <input type="checkbox"/> 16. Bio-retention                                 |
| <input checked="" type="checkbox"/> 7. Vegetated Riparian buffers   | <input checked="" type="checkbox"/> 17. Mulch immediately after topsoiling |
| <input type="checkbox"/> 8. Street sweeping   | <input checked="" type="checkbox"/> 18. Land Preservation or non-use       |
| <input checked="" type="checkbox"/> 9. Channels, collectors and diversions lined with permanent vegetation, rock, geotextile or other non-erosive materials | <input type="checkbox"/> 19. Other _____                                   |
| <input checked="" type="checkbox"/> 10. Water reuse   | <input type="checkbox"/> 20. Other _____                                   |

Are the ABACT BMPs selected sufficient to protect the existing surface water quality?  Yes\*\*  No

If no, and the project is located in a HQ water, complete Module 24, Social or Economic Justification (SEJ), in the permit application. **\*\*With implementation of the ABACT measures set forth in the application, no reduction in water quality in Toms Creek is anticipated as a result of the very rare discharges associated with the Northern Tract project that would only occur in the case of a storm above a 100 year/24 hour event. Such rare discharges would occur only during high flow conditions in Toms Creek, and during such conditions, the receiving waters of Toms Creek would likely contain elevated concentrations of total suspended solids and other parameters contributed from the entire Toms Creek watershed. If and to the extent that there would be any potential change in water quality in Toms Creek during such rare discharge events, such changes are necessary to accommodate important economic or social development in the area as explained in the attached Social or Economic Justification (SEJ).**

**STOP:** Section 2 must be reviewed by the department before proceeding.

**Department use only**

\* The ponds are designed to accommodate a 4-7 day retention; however, standard pumps used by SGI would likely result in a 2-7 day detention time, depending on the intensity of the storm event.

## **SECTION 1C. NON-DISCHARGE ALTERNATIVES EVALUATION**

### **1.0 Introduction**

Specialty Granules LLC (SGI) extracts non-coal materials through existing Pennsylvania Department of Environmental Protection (PA DEP) Surface Mine Permits at the Charmian Quarry complex located north of the town of Blue Ridge Summit in Hamiltonban Township, Adams County, Pennsylvania. The Charmian Site generally consists of an active quarry (Pitts Quarry - SMP 01930302), an inactive quarry (West Ridge Quarry – SMP 6477SM5, which is in the reclamation phase), stockpile storage areas, rock crushers, manufacturing plants, and related erosion and sediment control/stormwater control features (e.g. sediment ponds and traps, collection ditches, and other best management practices features). SGI extracts metabasalt at the Charmian Site to produce multiple products for SGI customers. The main product is manufactured roofing granules that are used to coat asphalt roofing shingles. SGI is currently applying for a new surface mine permit to expand its permitted metabasalt quarry operations to the north onto the “Northern Tract,” an approximately 112-acre parcel contiguous to the Pitts Quarry. The addition of this Northern Tract permit area will be a logical continuation of the existing quarry and processing area currently encompassing some 856± acres owned by SGI, including the 620± acres which are authorized under the two above-referenced surface mine permits. The 112-acre Northern Tract permit area will essentially serve as an expansion of the active Pitts Quarry.

Due to the Northern Tract’s location in the Toms Creek Watershed, which is a high quality (HQ) cold water fishes (CWF)/migratory fishes (MF) stream, the proposed operation has been evaluated in accordance with antidegradation requirements in 25 Pa. Code §93.4c and PADEP’s Water Quality Antidegradation Technical Guidance Document No. 391-0300-002. Where a new, additional or increased discharge to HQ waters is proposed, the antidegradation rules and guidance require several steps, including: (1) an evaluation of non-discharge alternatives, and use of such non-discharge alternative that are environmentally sound and cost-effective when compared with the cost of the proposed discharge; (2) where non-discharge alternatives are not environmentally sound and cost-effective, evaluation and selection of the best available combination of cost-effective treatment, land disposal, pollution prevention and wastewater reuse technologies; and (3) a demonstration that any discharge either will not cause a reduction in water quality of the HQ water or that any resulting reduction in water quality is necessary to accommodate important economic or social development in the area. This document addresses the evaluation of potential non-discharge alternatives. Sections 2A - Non-degrading ABACT (separate attachment) and Section 2B on the Antidegradation Supplement for Mining address the ABACT requirements. The Social or Economic Justification (SEJ) and Water Use Demonstration (for projects in high quality [HQ] waters) discusses why no reduction in water quality is anticipated as a result of the very rare discharges associated with the Northern Tract project, and explains that any potential reduction is offset by social and economic justification.

The proposed design allows for capture and control of all stormwater up to a 100 year/24 hour storm event (which by definition is a rare occurrence). In the case of a storm above a 100 year/24 hour event, the portion of the storm up to the 100 year/24 hour event limit will be captured and controlled in Northern Tract (NT) Pond Nos. 1 and 2; it is only the portion of the storm above this level that will have the potential to discharge from NT Pond Nos. 1 and 2 to Toms Creek. And even in these circumstances an active pumping system is in place which increases the retention capacity to that above a 100year/24 hour event. This design is extremely close to a complete non-discharge alternative, there will be no discharges in all circumstances except an extremely rare 100+ year storm event.

### **1.1 Non-Discharge Alternatives Analysis**

All non-discharge alternatives identified in the Anti-degradation Supplement for Mining Permits were considered and evaluated for implementation as part of the proposed activities. These alternatives were evaluated individually, and in various combinations, for their ability to minimize discharge of stormwater runoff through the erosion and sedimentation controls (NT Pond Nos. 1 and 2 and all their contributing drainage and appurtenances for conveyance). Through this evaluation process and the subsequent incorporation of the combination of feasible components, the result is a stormwater management system that will not discharge to Toms Creek except in the case of an extraordinary precipitation event that is greater than a 100-year, 24-hour storm. Non-discharge alternatives as described below were utilized or considered for implementation at this facility.

### **1.2 Alternative Project Siting**

Siting of the Northern Tract permit area and related stormwater management facilities at the SGI Charmian Facility is constrained primarily by the location of the geologic formation planned for mineral extraction. The primary constraint is the presence of metabasalt rock which defines the location of the quarry operation. In turn, secondary constraints govern the location of some of the components of stormwater management features associated with those operations. Such secondary physical constraints include: property boundaries, required regulatory setbacks, utilities and infrastructure, and the conservation buffers mandated under the Conditional Use permit issued by Hamiltonban Township.

As previously mentioned, SGI extracts metabasalt for its roofing granule manufacturing process. Metabasalt is a rare, unique geologic formation from which SGI's roofing granule can be manufactured. Roofing granule manufacturing requires a specialized rock that is inert, competent and holds color for long periods (ex. 50+ year asphalt shingle warranty) of time when placed on roofs in harsh weather conditions. The geologic boundaries of the suitable metabasalt formation lie within a narrow southwest-to northeast-trending belt, which define the limits and location of the operation, and therefore does not lend itself well to regional alternate siting as a non-discharge alternative. Further proof of the rare and



unique geology at the site is the fact that there are no other roofing granule quarries located in the northeastern United States. The progression of SGI's mining operation and establishment of the infrastructure necessary to conduct their business over the 90+ years of its existence has followed the occurrence of metabasalt within this band from the West Ridge Quarry to the Pitts Quarry. Based upon the primary limitation to alternative siting being the occurrence of suitable extractable metabasalt, there is no alternate site for SGI to conduct its business regionally. Although there may be other locations nationally with suitable rock, such locations remain extremely rare. There are only 12 roofing granule quarries in North America (including the SGI Charmian Quarry). An alternative national location is not feasible as, due to the size and weight of the roofing granule product, there are regional limitations on shipping longer distances which are financially prohibitive. Also, such shipping would require the consumption of large quantities of fossil fuels. Additionally, expanding an existing quarry would have less environmental impact as compared to developing a new quarry. Developing a new facility would involve finding a rare geological formation, completing the required permitting and engineering design activities, developing the site to establish a quarry, and establishing the necessary infrastructure, support facilities, roads and manufacturing plants to support operations. There is no reasonable expectation that such hypothetical alternative site (even if one could be discovered) would have less of an impact on streams, and would have a much larger environmental impact, particularly since the proposed Northern Expansion has been designed to involve no discharges to Toms Creek except for conditions that exceed 100 year/24 hour storm events.

Other limitations that affect the extent of the mining operation within this site and limit expansion of the mining operation in another direction are the presence of surface waters (e.g. Toms Creek and its adjacent tributaries) and wetlands. SGI has purchased adjacent and adjoining land over the years to evaluate for use in aiding stormwater management and to provide additional buffers to protect Toms Creek but they are not suitable for mine expansion. Additionally, there are no alternative accessible areas of rock reserve within the current Mine Permit area due to the area occupied by mining support operations, buffer/setback areas, and appropriately-sized drainage control structures.

With regard to alternative siting of the proposed NT Pond Nos. 1 and 2, and considering all of the secondary constraints of property boundaries, regulatory constraints, environmental resource protection constraints, and infrastructure, there are no alternative sites available. In addition, SGI provides substantial buffers beyond PADEP requirements for additional protection of natural resources downslope of this operation at the Northern Tract. Relocating quarry operations away from this rare unique geologic setting is therefore not feasible.

### **1.3 Alternative Discharge Locations to Another Non-Special Protection Watershed**

The proposed Northern Tract mine permit plan utilizes an alternative discharge location which will collect runoff from the Northern Tract area and discharge such waters to a non-specially protected watershed via the Lower Mill Three Pond System in all instances except for a storm that is of greater intensity or magnitude than a 100 years/24 hour storm event, when there would be the potential for a discharge via an auxiliary spillway to reach Toms Creek.

SGI has designed its proposed operation and management of stormwater runoff at the Northern Tract site to avoid, to the extent practicable, discharge to Toms Creek and its unnamed tributaries designated as HQ-CWF, MF watersheds from any area disturbed as part of mining operations. Such a discharge is being avoided by designing the proposed stormwater management system to contain and control up to a 100 year/24 hour storm event without mechanical means. This stormwater runoff collected in the proposed system will be pumped from proposed NT Pond Nos. 1 and 2 to the Lower Mill Three Pond treatment system in a controlled manner and discharging through Outfall 001 of NPDES PA 0009059 to Miney Branch, which is designated a CWF, MF in 25 Pa. Code Chapter 93, and is not a special protection watershed. The NT pond system will not have the potential to discharge to Toms Creek except in the case of extraordinary precipitation events that are greater than the 100-year, 24-hour design event. NT Pond Nos. 1 and 2 will each be equipped with an auxiliary spillway. As in the adjacent Pitts Quarry, SGI will invest substantial capital to achieve the capability to collect, manage, pump and treat stormwater from existing and proposed ponds in a manner that avoids, to the extent practical, discharges to the Toms Creek special protection watershed. These efforts have included recent improvements to the Lower Mill three pond system to provide the capacity to handle the additional flow from the adjacent Pitts Ponds System. Such efforts have involved substantial engineering analysis, upgrades of level control and discharge controls, implementation of flocculant addition at the entry point of Lower Mill Pond 2, and spillway improvements. In addition, SGI will further upgrade pumping capabilities and install additional dedicated facilities to pump stormwater from the Northern Tract drainage structures to the Lower Mill Pond System.

NT Pond Nos. 1 and 2 both have the capacity (without pumping) to collect and store (with no discharge to Toms Creek) the runoff from a storm event up to and including a 100-year/24-hour storm event. Through these measures, except in the case of extraordinary rainfall events, stormwater runoff from the Northern Tract area will be effectively managed in a manner that avoids any potential discharge to Toms Creek. In the normal course, water from storm events will be detained in the NT Ponds. After peak flows dissipate, particulates settle, and flow subsides, water will be pumped from the NT Pond Nos. 1 and 2 to the Lower Mill Pond system using staged pumping. The measures proposed for implementation will result in relocation of stormwater discharges to Miney Branch to the extent feasible, avoiding discharges to Toms Creek under conditions involving precipitation up to and including the equivalent of a 100-year 24-hour

storm event. Therefore, the alternative discharge to another non-special protection watershed has been utilized to limit discharge to Toms Creek to the extent practicable.

Water collected at the Northern Tract will be subjected to several forms of treatment prior to being released into Miney Branch. During rainfall or snowmelt events, runoff will either be collected in the Pitts Quarry or the proposed NT ponds. The runoff will be temporarily detained in these structures to allow for sedimentation to occur. NT Ponds 1 and 2 are designed with greater than the PADEP required settling and sediment storage capacities applicable for HQ watersheds. The collected and treated water will be pumped into the Lower Mill Pond system in a controlled manner so that the capacity of the Lower Mill Pond system will not be compromised. The Lower Mill Pond system will provide additional settling and polishing opportunities for any remaining sediment in the runoff. After being conveyed through Pond 1, Pond 2, and Pond 3 of the Lower Mill Pond system, excess water that cannot be reused will be released into Miney Branch at a controlled rate in accordance with the associated National Pollutant Discharge Elimination System (NPDES) permit.

#### **1.4 Infiltration**

Storm water infiltration has been considered for all available areas of the Northern Tract expansion area permit. Based on the current footprint of adjacent operations and having exhausted potential adjacent land purchase options within the drainage area, the number of areas where storm water infiltration could potentially occur is very limited. The footprint of the proposed operation is confined by the required setback limits and buffer obligations. In consideration of storm water infiltration, the only option identified with suitable infiltration capacity would be located within the footprint of the proposed Northern Tract quarry which is not a possible site. Also, under the proposed design, the only discharge potential is for the portion of an extremely rare storm event above a 100 year/24 hour storm. During this time period above the 100 year/24 hour rainfall threshold, infiltration capacity of surrounding soil is likely to be already at capacity. To be a relevant addition to the proposed design, infiltration capacity would have to exist after a 100 year/24 hour rainfall event has fallen.

Monitoring wells (MWs), Piezometers (PZs), and Infiltration Test Borings (ITBs) were installed along the perimeter of the proposed Northern Tract Expansion area to identify and evaluate soil, bedrock, and groundwater conditions. The results of this field investigation showed unfavorable conditions for encouraging storm water infiltration, dictated by limiting groundwater conditions (presented by the shallow depth to groundwater of standing water above well screen at a depth of less than 5 feet in ITB-1) and in situ soils and bedrock possessing relatively low permeability (most infiltration rates in the range of 0.17 inches/hour to 3.51 inches/hour). However, four isolated areas identified at the northeast (ITB-12, ITB-14 and ITB-16) and northwest (ITB-26) corners of the Northern Tract Expansion area possess infiltration rates in the range of 23.90 inches/hour (ITB-26) and substantially greater than 23.90 inches/hour (ITB-12,

ITB-14, and ITB-16). In addition to these areas of high infiltration rates, several of the Northern Tract perimeter monitoring well locations are underlain by soils with apparent higher than average permeability which may be favorable as sites for storm water infiltration. These permeable soils vary in thickness and composition ranging from 23 to 27 feet of silt with coarse gravel (MW-8S and MW-8D) to roughly 40 feet of sandy silt with coarse gravel (MW-9S and MW-9D) to roughly 50 feet of silt, sand, and gravel with cobbles and boulders (MW-14S and MW-14D). In relation to the Northern Tract Expansion area mine permit boundary, these monitoring wells are located at the southwest corner (MW-14S/D), eastern perimeter (MW-9S/D), and immediately south (MW-8S/D). Additionally, the depth to groundwater at these well locations suggests that there are isolated areas of well-drained unsaturated soils with the potential to serve as suitable areas for storm water infiltration. Based on field measurements, the typical unsaturated soil thicknesses are 23 to 27 feet (MW-8S/D), 28-41 feet (MW-9S/D), and 20-30 feet (MW-14S/D).

Although seven locations at the Northern Tract area exhibited conditions that could support stormwater control by infiltration, these locations are inaccessible due to geometric or permitting constraints, or very isolated. Only four (4) of the thirty-eight (38) infiltration test borings indicated that favorable conditions could exist to facilitate infiltration. The other infiltration test borings, many of which were completed in the immediate vicinity these four borings, indicated unfavorable infiltration conditions. MW-8S/D and MW-14S/D are located outside of the Northern Tract permit boundary and at locations higher in elevation than much of the Northern Tract area, making them inaccessible for inclusion as part of an infiltration control structure. The conditions encountered at MW-9S/D could be favorable for infiltration, however; several infiltration test borings were completed adjacent this monitoring well which indicated unfavorable conditions. Furthermore, the project site is characterized by steep sloping topography. The USDA soil survey identifies slopes ranging from 15 to 70% across the permit area. In general, steep sloping topography promotes rainfall runoff and limits opportunity for infiltration. In summary, based upon the steep slope topography and relatively small, isolated areas of potentially higher permeability soil potential, soil infiltration opportunities would be limited and not meaningfully effective.

Smaller adjacent sites within the drainage basin are not owned by SGI and attempts to purchase them have not been successful, other owned adjacent sites are currently designated as conservation areas that preclude construction activities. Conditions are substantially different and less favorable for infiltration on the remaining portions of the Northern Tract Expansion area due to similar topography (lowlands adjacent streams and wetlands), soil types, and anticipated shallow depth to groundwater (e.g., ITB-1 with standing water above the well screen at a shallow depth of less than 5 feet below ground surface).

Results of the field evaluations conducted in the area of the Northern Tract Expansion area indicate although there may be a few isolated areas for which the in-situ soils possess favorable characteristics for

infiltration, the steep sloping topography, required setbacks and buffers, and isolated zones limit the opportunity for use of infiltration as a non-discharge alternative.

### **1.5 Limiting Disturbed Area**

SGL's proposed mining and reclamation plans for the Northern Tract area were developed to minimize and limit disturbed areas to the maximum extent practicable, while allowing for the extraction of the resource within the project footprint. The proposed mineral extraction area at the Northern Tract permit area will be limited by two surrounding buffers, referred to as a maintained buffer and an operational buffer (shown on attached permit mapping). The maintained buffer is designed to protect the vegetated riparian buffer along Toms Creek and the unnamed tributaries to Toms Creek. No activities other than to add or replace damaged/dead trees will occur within this area. The Maintained Buffer is a minimum distance of 300 feet from Toms Creek. Within the additional 150-foot wide operational buffer, only non-extractive mine support activities will be permitted, such as stormwater/erosion control systems, access roads, and temporary stockpiles. The location of these buffer areas limits the area that will be disturbed for mineral extraction activities.

Initial development of the Northern Tract operations will occur in three general phases so that the area will be incrementally disturbed, to limit the initial amount of disturbed area within the drainage to the NT ponds. Phase 1 will initially be completed to facilitate mining. Areas that are not yet actively mined (e.g. those areas in Phase 2 and Phase 3) will remain undisturbed and vegetated. Disturbed areas will be stabilized by grading and covering with vegetative cover according to the proposed reclamation plan as they reach final grade.

Through evaluation of alternatives and with the goal of limiting disturbance, SGL will operate in a well-controlled disturbed area that will be developed in a phased manner. Also, the established buffers and protected areas outside of the disturbed areas are anticipated to reduce the amount and loading of stormwater runoff to the minimal extent possible. Limiting disturbed area further is not feasible.

### **1.6 Recycling/Reuse of Water On-site**

On-site water reuse has been considered, and is maximized for the operational water needs identified at the site. SGL reuses much of the water collected on-site for two main applications including: 1) use in cooling at the manufacturing plant, and 2) dust suppression throughout the operations as described below.

Stormwater that will be captured in the two proposed ponds will be pumped to the Lower Mill Pond system in a managed way as described in Module 12. SGL uses a substantial volume of stormwater withdrawn from Lower Mill Pond 3 (and hence including pumped water from NT Pond Nos. 1 and 2) for

use on-site for wetting and cooling in the roofing granule manufacturing process. SGI's best estimates of annual withdrawal of stormwater to support the manufacturing process based upon roofing granule production rates range from approximately 33 million gallons per year to 50 million gallons per year, or averaged to a daily rate are approximately 90,000 to 140,000 gallons per day.

In addition, a relatively minor amount of stormwater, in comparison to the water needs of the manufacturing process, is used for dust suppression on stockpiles, process equipment, conveyors, and internal facility roads by a mobile tanker truck equipped with spray nozzles to apply to the ground surface to suppress dust.

While neither of these water re-uses are metered to quantify the exact amount of water re-use achieved at the site, the plant's needs are substantial, such that currently, during times of low precipitation rates and subsequent low flow, water re-use can temporarily exceed the in-flow of rainfall to the Pitts and Lower Mill Ponds, resulting in periods of non-discharge.

Another potential use for collected water would be for potable use, the demand for which would be minimal compared to the two uses identified above. However, SGI does not have a treatment system or permit for such activities, and when compared to using well water and bottled water, it would not be as cost-effective or reliable as such alternatives that are readily available. No other feasible methods or needs for on-site water re-use were identified.

## **1.7 Constructed Treatment Wetlands**

Constructed wetlands have been considered in the non-discharge alternatives evaluation for the Northern Tract, but no suitable location has been identified to achieve any meaningful level of treatment. In order to construct effective wetlands for treatment as a non-discharge alternative, a minimum of several acres of adjacent land would be necessary. The only potentially feasible location would be adjacent to the existing wetland complex identified on the attached mapping in the southeastern area of the permit; however, this area is located within the maintained buffer which restricts all construction activities (See Section 1.9 below), including constructed treatment wetlands, if that were even feasible. In addition, there is an extensive population of nodding trillium (*Trillium cernuum*; proposed PA Threatened) within this location, which would make disturbance in this area likely prohibited by the Pennsylvania Department of Conservation and Natural Resources (DCNR). The combination of site and environmental constraints and establishment of protected maintained buffer makes the alternative of constructing wetlands for stormwater treatment infeasible.

## **1.8 Holding Facilities and/or Wastewater Hauling**

The Northern Tract ponds are over-sized to provide stormwater capacity (i.e. to detain the 100-year, 24-hour storm event) which is beyond the requirements of PADEP guidance, which for mining generally refers to management of a 10 year, 24 hour storm for HQ watersheds (per “Engineering Manual for Mining Operations”). The proposed NT ponds, in conjunction with other BMPs discussed, will provide sufficient storage capacity to limit (or eliminate) discharges to Toms Creek while also providing the required sediment storage and settling volumes. Without taking pumping volumes into account, the NT ponds provide storage/holding capacity to preclude discharges for storm events of a magnitude up to the 100-year/24-hour storm event.

In addition to the holding facilities volume, dedicated pumping facilities at the proposed NT ponds will convey stormwater to the Lower Mill Pond System. Since the proposed NT ponds provide the required sediment storage and settling volumes, the pumping water to the Lower Mill Pond system is essentially equivalent to “stormwater hauling.” This component of the non-discharge evaluation provides SGI the ability to manage stormwater proactively from the Northern Tract by conveyance to the Lower Mill Pond System in a controlled manner.

Oversizing the proposed NT ponds to increase holding and “stormwater hauling” capability through controlled pumping, SGI has proposed a viable alternative that, in conjunction with the other components identified, will accomplish a near non-discharge system to Toms Creek.

## **1.9 Injection**

Substantial subsurface investigation has been completed at the SGI property. Previous site characterization work completed by others included the installation of interior and perimeter groundwater monitoring wells and piezometers in the area surrounding SGI’s adjacent Pitts Quarry as well as the Northern Tract. A total of 10 groundwater monitoring wells (7 deep wells and 3 shallow wells) currently exist along the perimeter of the Northern Tract Expansion area and were used to evaluate the hydraulic characteristics and stratigraphy within SGI’s proposed Northern Tract operation. These groundwater monitoring wells have been completed to depths ranging from 30 feet to a maximum depth of 394 feet in very consistent stratigraphy, with metabasalt being the primary bedrock unit encountered along with some metarhyolite and phyllite (MW-9S, MW-9D, and MW-10D) in a few of the groundwater monitoring wells proximate to the east-northeast perimeter of the proposed expansion area. Metabasalt is a bedrock type that can be characterized as being very dense, massive, and sparsely fractured, with very poor interconnection of fractures over any significant extent. This correlates to this rock type having a very poor capacity for groundwater storage or transmission at any appreciable volume or rate. In the local project area, metabasalt is not typically sufficient for functioning as an aquifer capable of providing anything more than the minimal amount of water needed for household use. These characteristics will

also cause the metabasalt bedrock aquifer to function very poorly for potential projects involving the application of stormwater injection.

Through the completion of aquifer slug tests performed in these bedrock groundwater monitoring wells, hydraulic conductivity (K) and transmissivity (T) values were calculated for the bedrock aquifer comprised predominantly of metabasalt. These hydraulic parameters represent the capability of the underlying geologic units to store and transmit groundwater. Table 1 below summarizes the hydraulic properties calculated from analysis of the slug testing data performed on the Northern Tract perimeter wells. A number of slug (falling and rising head) tests were performed on each well and average values of T and K were computed. The average K values obtained from testing all of the perimeter wells range from 0.0047 ft/day ( $1.66 \times 10^{-6}$  cm/sec) to 1.31 ft/day ( $4.62 \times 10^{-4}$  cm/sec) and calculated average values of T range from 1.55 ft<sup>2</sup>/day to 98.25 ft<sup>2</sup>/day. These hydraulic conductivity values are representative of the typical range for fractured igneous and metamorphic rocks similar to the metabasalt present in the project area.

**Table 1**  
**Summary of Proposed Northern Tract Expansion Metabasalt Aquifer Characteristics**

| Well Location | Total Depth (ft) | Depth to Water (ft) (9-11-15) | Aquifer Thickness (ft) | Transmissivity (T) (ft <sup>2</sup> /day) | Hydraulic Conductivity (K) (ft/day) | Hydraulic Conductivity (K) (cm/sec) |
|---------------|------------------|-------------------------------|------------------------|---|-------------------------------------|-------------------------------------|
| MW-8S         | 30               | 29.90                         | 2.5                    | NA  | NA                                  | NA                                  |
| MW-8D         | 374              | 28.00                         | 346.43                 | 3.00                                      | 0.0058                              | $2.04 \times 10^{-6}$               |
| MW-9S         | 45               | 36.30                         | 75                     | 1.87                                      | 0.025                               | $8.81 \times 10^{-6}$               |
| MW-9D         | 325              | 32.45                         | 295.48                 | 2.14                                      | 0.0074                              | $2.61 \times 10^{-6}$               |
| MW-10D        | 314.5            | 68.27                         | 248.99                 | 1.63                                      | 0.0693                              | $2.44 \times 10^{-5}$               |
| MW-11D        | 350              | 41.45                         | 324.97                 | 1.55                                      | 0.0058                              | $2.04 \times 10^{-6}$               |
| MW-12D        | 380              | 17.10                         | 365.61                 | 2.03                                      | 0.0047                              | $1.66 \times 10^{-6}$               |
| MW-13D        | 382              | 42.19                         | 349.19                 | 5.89                                      | 0.1591                              | $5.61 \times 10^{-5}$               |
| MW-14S        | 74               | 32.70                         | 75                     | 98.25                                     | 1.31                                | $4.62 \times 10^{-4}$               |
| MW-14D        | 394              | 32.77                         | 354.53                 | 23.62                                     | 0.6384                              | $2.25 \times 10^{-4}$               |

As summarized in Table 2 below, K values were obtained by others from aquifer pumping and slug testing performed on several wells located southwest of the proposed Northern Tract Expansion area and adjacent to the Pitts Quarry operation. These calculated aquifer parameters yielded K values that ranged from  $3.0 \times 10^{-7}$  cm/sec to  $3.3 \times 10^{-6}$  cm/sec, and T values ranged from 0.75 ft<sup>2</sup>/day to 6.81 ft<sup>2</sup>/day. Based upon the aquifer characteristics determined from these previous site investigations proximate to the Northern Tract Expansion area, and in particular the recent aquifer testing results from the Northern Tract perimeter wells, it has been determined that hydraulic conductivity and transmissivity of the underlying geology is extremely low in the area of Pitts Quarry and only marginally higher proximate to the proposed Northern Tract Expansion area. Based on these results, we have concluded that on-site injection of



stormwater runoff is unfeasible at any rate that would provide a benefit, and certainly is not capable of achieving any rate even remotely close to a non-discharge condition.

**Table 2**  
**Summary of Adjacent Pitts Quarry Metabasalt Aquifer Characteristics**

| Well Location | Total Depth (ft) | Depth to Water (ft) | Aquifer Thickness (ft) | Drawdown ( $\Delta s$ ) (ft) | Transmissivity (T) (ft <sup>2</sup> /day) | Hydraulic Conductivity (K) (ft/day) | Hydraulic Conductivity (cm/day) |
|---------------|------------------|---------------------|------------------------|------------------------------|---|-------------------------------------|---------------------------------|
| MW-3R         | 560              | 37.26               | 522.74                 | 50.18                        | 3.52                                      | 5.13 x 10 <sup>-3</sup>             | 1.8 x 10 <sup>-6</sup>          |
| MW-4R         | 720              | 51.56               | 668.44                 | 84.302                       | 0.837                                     | 1.22 x 10 <sup>-3</sup>             | 4.0 x 10 <sup>-7</sup>          |
| MW-5          | 550              | 8.65                | 541.35                 | 31.076                       | 6.81                                      | 9.59 x 10 <sup>-3</sup>             | 3.3 x 10 <sup>-6</sup>          |
| MW-7          | 500              | 28.15               | 471.85                 | 94.271                       | 0.75                                      | 1.07 x 10 <sup>-3</sup>             | 3.0 x 10 <sup>-7</sup>          |

### 1.10 Vegetated Riparian Buffers and Riparian Forest Buffers

A riparian buffer is defined as a vegetated area (a "buffer strip") near a stream, usually forested, which helps shade and partially protect a stream from the impact of adjacent land uses. It plays a key role in increasing water quality in associated streams, rivers, and lakes, thus providing environmental benefits.

Oversized riparian buffers have been included as part of the mining plan. Those buffers are consistent with requirements set forth in zoning approvals for the project and of greater size than the regulatory minimums. In 2014, SGI received an approved Conditional Use Permit (CUP) for the Northern Tract from Hamiltonban Township. The approved CUP has a number of special conditions including setbacks and buffers, including a riparian buffer, with designated uses described below. Those buffers are included as part of the mining plan.

The proposed mineral extraction area at the Northern Tract permit area will be surrounded by two buffers, referred to as a maintained buffer and an operational buffer (shown on attached permit mapping). The maintained buffer is designed to protect the vegetated riparian buffer along Toms Creek and the unnamed tributaries to Toms Creek. No activities other than to add or replace damaged/dead trees are anticipated to occur within this area. The Maintained Buffer is a minimum distance of 300 feet from Toms Creek and serves as a vegetated riparian buffer and riparian forest buffer. Within the additional 150-foot wide operational buffer, only non-extractive mine support activities are permitted, such as stormwater/erosion control systems, access roads, and temporary stockpiles.

The feasibility of utilizing additional riparian forest buffer to meet the requirements of non-discharge was evaluated and has guided efforts to enhance the riparian buffer(s) around the downslope perimeter of the Northern Tract permit area, providing additional protection to the quality of Toms Creek. The entire site is

currently designed to maintain a vegetated/forested riparian buffer between Toms Creek and its tributaries and the primarily upland proposed disturbed areas within the Northern Tract permit area.

The required Pennsylvania regulatory setbacks stipulate a minimum of a 100-ft setback between areas of development and the natural stream channels (§ 77.126). The riparian buffer provided in the mining plan will promote the preservation of the ecosystem and habitats found in the riparian corridor. However, it is not possible to use a riparian buffer or riparian forest buffer as a complete non-discharge alternative for the Northern Tract drainage area and there is no additional land downstream of the Northern Tract permit area available to support installation of additional buffers.

### **1.11 Specific Pollution Prevention Processes**

Water entering and exiting the proposed NT ponds will be runoff from rainfall or snowmelt. Quarry water will not be pumped to the NT ponds. As part of the construction of the ponds, pumping capability will be available to improve storage, flow control, and ultimately limit potential discharges from the Northern Tract ponds to only times of extraordinary rainfall conditions. These additional "Pollution Prevention Processes" are purely mechanical, and contribute to the reduction in frequency and volume of potential discharges to Toms Creek. No other Pollution Prevention Processes have been identified to achieve non-discharge.

As demonstrated above, there is no feasible non-discharge alternative that can achieve complete non-discharge at the facility, but the combination of existing and planned non-discharge alternatives described above have resulted in the implementation of many BMPs that result in a near non-discharge facility which is designed to only have the potential to discharge thru an auxiliary spillway to Toms Creek during a storm event greater than a 100 year/24 hour storm event.

Environmentally sound and cost-effective BMPs will continue to be evaluated and employed to demonstrate that any resulting discharges will maintain and protect the existing quality and water uses of receiving surface waters.

## **SECTION 2A. NON-DEGRADING ABACT**

### **General**

SGI is proposing a combination of environmentally sound and cost-effective stormwater collection and management measures, and associated treatment, pollution prevention and stormwater reuse best management practices as summarized in Section 1 and further discussed in Section 2B below, which together constitute the anti-degradation best available combination of technologies (ABACT) to protect the Toms Creek watershed.

Given the topography and conditions associated with the Northern Tract Expansion, SGI has implemented extraordinary measures in efforts to avoid discharges to the designated HQ waters of Toms Creek. Those measures include (1) the installation of oversized ponds (NT Pond Nos. 1 and 2) and related drainage structures, (2) collection and transfer of water from the Northern Tract Pond System to the Lower Mill Pond System, and (3) the water use technologies that are part of the Lower Mill Pond System.

The foundation of the proposed plan involves installation of an extensive, oversized stormwater collection system including conveyances and ponds designed to accommodate a 100-year 24-hour duration storm event with the additional protection of pumping the stormwater from the Northern Tract ponds to the Lower Mill Pond System for discharge to Miney Branch, a stream which is designated with water uses of cold water fishes (CWF) and migratory fishes (MF) under 25 Pennsylvania Code Chapter 93.

The initial site development of the Northern Tract to establish the stormwater collection system will consist of three phases. For Phase 1, two collection ditches (CD-1 and CD-2) will be constructed around the upper portion of the Northern Tract area to allow for initial development and overburden removal of the Northern Tract Quarry. The ditches will collect runoff from roughly a 45 acre drainage area and convey the runoff to the existing Pitts Quarry. The accumulated water in the Pitts Quarry will then be pumped to the Lower Mill Pond system. At the beginning of Phase 2, a pond (NT Pond No. 1) and the associated collection ditches will be constructed to begin Phase 2 of development of the Northern Tract area. NT Pond No. 1 will collect stormwater runoff from roughly 18 acres downstream of Collection Ditch CD-1 to facilitate development of the western portion of the Northern Tract. Finally, another pond (NT Pond No. 2) and associated collection ditches will be constructed along the eastern portion of the Northern Tract to begin Phase 3 development. NT Pond No. 2 will collect stormwater runoff from roughly 28 acres. Collected stormwater runoff detained by both NT Pond No. 1 and NT Pond No. 2 will be pumped to the Lower Mill Pond system for discharge to Miney Branch.

Temporary erosion and sediment control (E&SC) features will initially be established to facilitate installation of the primary collection ditch and pond systems. These E&SC features include temporary diversions ditches, stilling basins, and compost filter sock barriers.

Temporary diversion ditches and associated stilling basins will be established during Phases 2 and 3 of the site development to facilitate installation of the collection ditches, roads, and ponds. The diversion ditches are intended to convey runoff from upslope, undisturbed areas around the active working areas to limit the amount of runoff that is tributary to disturbed areas. Temporary diversion ditches are typically required to have capacity to convey the peak discharge due to a 2-year, 24-hour design storm per the Pennsylvania Department of Environmental Protection (PADEP) Engineering Manual for Mining Operations. The proposed diversion ditches are an oversized designed to safely convey the peak discharge due to a 10-year, 24-hour storm event. Therefore, the proposed temporary diversion ditches are conservatively designed.

A compost filter sock barrier is proposed to be established around the downslope limit of the proposed NT Ponds and associated roads and collection ditches during Phase 2 and Phase 3. The compost filter sock barrier will collect and treat runoff from the disturbed area of the NT Ponds and related features, including the areas beneath the proposed diversion ditch system. As previously mentioned, compost filter socks are an ABACT structure for HQ watersheds per the PADEP E&S Manual.

The temporary E&SC features will remain in place until the more permanent pond and ditch systems are established. Once established, the proposed NT Pond Nos. 1 and 2 are designed to store the runoff from their respective collection areas resulting from the 100-year design storm without discharging without any accounting for any pumping during the storm (i.e. entire runoff volume is passively stored in the pond). Passive discharge from the ponds would only occur through their respective auxiliary spillways during storms exceeding the equivalent of a 100-year, 24-hour rainfall. A two tiered pumping system will be established at the site to provide active stormwater control. Electric turbine pumps will be established at each of the Northern Tract ponds to control the ponds' normal pools and provide for dewatering subsequent to storm events. A diesel powered back-up pumping system will also be available on site to provide redundancy. The associated collection ditches proposed for the initial site development are also designed to safely convey the peak discharge due to a 100-year design storm while providing at least 6 inches of freeboard. Thus, the proposed pond and collection ditch system is anticipated to be very reliable and manageable.

The majority of the Northern Tract area will be graded to drain towards the existing Pitts Quarry during overburden removal and mining operations. The two NT Ponds and associated collection ditches will provide for stormwater control around the site perimeter for areas that cannot initially be directed to the Pitts Quarry. This incremental site development will effectively limit the total amount of disturbed area that exists on the site at a given time. Additionally, configuring the working surface of the site to drain towards the Pitts Quarry is anticipated to be a reliable method of stormwater control.

Thermal impacts to Toms Creek will be negligible, as the proposed Northern Tract drainage structures are only anticipated to discharge to Toms Creek during extremely rare storm events greater than the 100-year, 24-hour event. Additionally, since the discharge of water would occur during relatively large storm events, the temperature of the discharged water would likely be reflective of the ambient air temperature and is not anticipated to differ significantly from the water temperature in the adjacent Toms Creek and tributary.

SEJ Form Section 1(f), sets forth in detail the impacts to of Toms Creek that are anticipated as a result of the project. The proposed activity involves collecting and transferring the stormwater flow from the approximately 66 acre Northern Tract mineral extraction area to Miney Branch, which is a stream with a protected water use of Cold Water Fishes (CWF) and Migratory Fishes (MF) is expected to have negligible effect (basically unmeasurable) on the base flow of the stream, as only a negligible percentage of stormwater is being removed from Toms Creek during high flow conditions following a storm event. Additionally, the total watershed area tributary to Toms Creek adjacent to the Northern Tract project area is approximately 3,080 acres; therefore, the proposed 66.3 acres of re-direction associated with the Northern Tract represents approximately 2.2 percent. No intermittent or perennial streams providing base flow to Toms Creek on the Northern Tract site will be impacted, so no specific tributaries to Toms Creek will be eliminated as a result of the project.

The proposed mineral extraction area and the Operational Buffer at the Northern Tract permit area will be surrounded by a maintained buffer (shown on attached permit mapping) where no activities other than to add or replace damaged/dead trees are allowed to occur within this area. The Maintained Buffer is a minimum distance of 300 feet from Toms Creek, and 150 feet from Toms Creek tributaries. This Maintained Buffer will effectively serve as a riparian buffer along the outer perimeter of the Northern

Tract. A riparian buffer is defined as a vegetated area (a "buffer strip") near a stream, usually forested, which helps shade and partially protect a stream from the impact of adjacent land uses. It plays a key role in increasing water quality in associated streams, rivers, and lakes, thus providing environmental benefits. In the event of a discharge from the Northern Tract area, the Maintained Buffer or riparian buffer is anticipated to provide additional protection of Toms Creek and its tributaries.

### **Monitoring Plan in the Event of Discharges**

Under normal circumstances, stormwater collected in the Northern Tract Pond Nos. 1 and 2 will be pumped to adjacent permit No. 6477SM5 and discharged to Miney Branch via permitted Outfall 001 (PA0009059). This discharge will be subject to all applicable effluent limitations in effect for Outfall 001 (PA0009059).

SGI expects stormwater discharge to Toms Creek to occur from the Northern Tract ponds only during extremely rare events. The ponds are each designed to store the runoff volume without discharge from a 100-year, 24-hour storm event. Hydraulic modeling has determined that no discharge will occur from either pond up to or including a 100-year, 24-hour storm event (which at the Northern Tract location is approximately 8.03 inches of precipitation). It is possible, although extremely unlikely, that consecutive storms of slightly less than the 100-year/24-hour storm event could also result in a discharge from the Northern Tract ponds. As such, during these extremely rare occurrences and conditions when a potential stormwater discharge could occur from the Northern Tract ponds, it is proposed that any discharges be managed under monitoring and control conditions that compare the quality of the discharge to natural stream conditions at the time of such extreme conditions, recognizing that during heavy precipitation events the receiving streams will naturally contain higher sediment loads.

SGI proposes the following procedure (and possible incorporation into permit conditions) for the Department's consideration to address the issue of discharges from the Northern Tract sedimentation ponds:

- (1) Discharges from the NT Ponds during any precipitation event or series of immediately sequential precipitation events which cumulatively exceed 8.03 inches will be governed by Condition (2) below.
- (2) In order to confirm that discharges from the Northern Tract ponds are nondegrading during storms that require discharge as described in (1), SGI shall establish and maintain the following monitoring program:
  - a) During any precipitation event or series of events where a discharge from either of the Northern Tract ponds occurs or is likely to occur, SGI will measure flow rates and collect samples from the following sample locations (see Exhibit 6.2) (note that two of these sample locations are from monitoring stations in place for adjacent Pitts Quarry):

#### **For a discharge from Outfall 001:**

- TC-7 – Toms Creek - upstream of Northern Tract NT Pond No. 1
- Outfall 001 - Stormwater Discharge Point from Northern Tract NT Pond No. 1
- SS-4 – Toms Creek downstream of Northern Tract NT Pond No. 1

**For a discharge from Outfall 002:**

- SS-CHN1-US – Unnamed tributary to Toms Creek - upstream of Northern Tract NT Basin No. 2
- Outfall 002 - Stormwater Discharge Point from Northern Tract NT Pond No. 2
- SS-CHN1-DS – Unnamed tributary to Toms Creek downstream of Northern Tract NT Pond No. 2

These samples will be analyzed for the following parameters: Carbonaceous Biochemical Oxygen Demand (COBD5), Total Suspended Solids (TSS), Ammonia (NH3-N), Nitrates/Nitrites (NO2/NO3-N), Phosphorus, Total Residual Chlorine (TRC), Lead, Copper, Iron, Sulfate, Aluminum, Total Dissolved Solids (TSS, in accordance with USEPA Method S2540D-97), and Zinc.

- b) Samples and flow measurements will be taken at each sampling location during any precipitation event or series of events when a discharge from either NT Pond No. 1 or NT Pond No.2 occurs. In order to obtain representative samples, SGI will attempt to collect multiple samples during the storm event (e.g. during the initiation of the storm, the middle of the storm, and near the storm's end), with the intention of collecting data that represents variable flow conditions during the precipitation event. Grab samples will be taken at the upstream and downstream locations listed in (a) in as concurrent a manner as practicable.
- c) If a discharge occurs from the NT Ponds during any month, SGI will report the sample results for any such discharges, together with the results of any required upstream and downstream sampling conducted as part of the monitoring for the related precipitation event at the time that SGI submits its applicable Discharge Monitoring Report.
- d) After the monitoring program required under this condition has developed a sufficient database of sample results (a minimum of three precipitation events exceeding the 100-year, 24-hour storm event accumulation of 8.03 inches) to permit a statistically valid analysis of the data, SGI will prepare and submit to the Department a report providing an analysis of the data.

Note: While it is expected that monitoring will show that the extremely rare discharges that would occur from the NT-1 and NT-2 ponds under storm events greater than a 100-year, 24-hour event would have no adverse impact on the water quality in Toms Creek during such events, any potential impact is addressed and justified by the social and economic justification provided in the enclosed Social or Economic Justification (SEJ) and Water Use Demonstration.

## Social or Economic Justification (SEJ) and Water Use Demonstration (for projects in high quality [HQ] waters only)

**Instructions:** If the applicant cannot demonstrate that the discharge will protect the existing *quality* of the receiving surface waters, for projects in HQ waters, the applicant may pursue the SEJ process for demonstrating that lowering water quality is necessary to accommodate important economic or social development in the area in which the waters are located.

**Prior to completing this form, an Anti-degradation Supplement for Mining Permits (5600-PM-BMP0007) must be submitted to the Department.** Only complete this SEJ form if prior communication with the Department confirmed that it was necessary. Provide as much detail as possible. This document should be inclusive and not refer to other parts of the permit application. Provide references as needed about how and where the data was collected to support any of the answers.

**The Department has not requested an SEJ; however, the applicant believes the information may be useful to the Department's review and therefore is completing the SEJ Form.**

The term "streams" used throughout this form refers to those streams identified in the Anti-degradation Supplement for Mining Permits Form (5600-PM-BMP0007).

Associated Mining Permit No.: 01170301 Permittee Name: Specialty Granules LLC  
Name of HQ stream(s) to be affected: Toms Creek and unnamed tributary (HQ - CWF, MF per PA Code Chapter 93)

### 1. **Water Quality Considerations**

- a) Are the streams stocked regularly by the Pennsylvania Fish and Boat Commission?  Yes  No

If yes, complete the following:

- 1) Where does stocking occur in relation to the permit area?  
**Stocking occurs in the stream from near the intersection of Mount Hope Road and Lower Gum Springs Road to a downstream area near Charnita Lake. The stream generally travels along the northern limit of the permit boundary with the distance from the permit boundary to the stream ranging from zero to 275 feet.**
- 2) What species are stocked?  
**Trout**
- 3) Are any of these streams classified as special regulation areas (fly fishing only, handicapped, etc.)?  
 Yes  No
- 4) Are any of these streams identified by the Pennsylvania Fish and Boat Commission as Wild Trout Waters?  
 Yes  No
- If yes, are any of these streams identified as Class A Wild Trout Waters?  Yes  No

- b) Are there any specific recreational areas within five miles downstream of the permit area (public beach, state parks, etc.)?  
 Yes  No

If yes, describe.

- c) Will any wetlands be affected?  Yes  No

**Indirect wetland impacts to wetlands may occur as a result of the proposed project. An additional narrative regarding indirect wetland impacts is provided as Attachment No. 1 to this document.**

- d) Have the stream or wetland areas to be impacted been identified as potentially supporting or providing critical habitat for threatened or endangered species?  Yes  No

If yes, provide details.

- e) If there have been public water supply intakes identified within 10 miles downstream of the discharge(s), describe the potential to impact this water quality and any mitigation measures. (Check here if no downstream intakes )

- f) Explain how mining will impact water quality with consideration of each of these factors. Identify mitigation measures for each as applicable:

- 1) Acid producing potential;

**The metabasalt material and overburden material that will be handled as part of the proposed quarry development have a very low acid producing potential based upon a series of laboratory testing conducted on samples of soil, caprock, and rock from the Charmian Site from 2010 to 2014<sup>1</sup>. Per the report identified in footnote 1, the sampled materials exhibited a net neutralization potential greater than 5.7 tons CaCO<sub>3</sub>/1000 tons with most samples greater than 34 tons CaCO<sub>3</sub>/1000 tons. In comparison, acid drainage sources typically exhibit negative net neutralization potential values.**

- 2) Volume of water anticipated in the discharge;

**Water discharges from the Northern Tract are only anticipated to occur during storm events that exceed a 100-year, 24-hour storm; therefore, the discharges that may occur would likely occur over a relatively short period of time and would occur very infrequently. As such, the overall volume of water that is anticipated to discharge during the operation of the Northern Tract Quarry is very small compared to the overall flow of Toms Creek. The amount discharged would only be that in excess of the 100 year, 24 hour storm which can be handled by the designed system completely by gravity flow. However, there will be a pumping system at each pond available to be operated in the event of a storm which would pump NT Ponds 1 and 2 down even further, resulting in the potential with mechanical pumping to handle a storm greater than a 100 year/24 hour storm without discharging. The volume of water discharged will be that portion the storm in excess of the 100 year/24 hour design and any extra capacity managed by pumping.**

- 3) Temperature of proposed discharge water;

**Thermal impacts to Toms Creek will be negligible, as the proposed Northern Tract drainage structures are only anticipated to discharge to Toms Creek during extremely rare storm events greater than the 100-year, 24-hour event. Since the discharge of water would occur during extremely large storm events, runoff water temperature and the temperature of the water discharged from NT Pond Nos. 1 and 2 would likely reflect ambient air temperature and would not be anticipated to differ from other runoff entering Toms Creek during such a storm event. Hence, such a discharge is not expected to impact the water temperature in the adjacent Toms Creek during such events.**

**Additionally, as discussed further in item 6 below, the watershed area of the Northern Tract is very small compared to the total watershed in Toms Creek at this location. Therefore, the potential for runoff from the Northern Tract to affect the temperature in Toms Creek is limited.**

- 4) Performance and reliability documentation of proposed water treatment processes;

**The primary treatment facilities proposed at the Northern Tract consist of several collection ditches and two ponds (NT Pond Nos. 1 and 2) designed to collect runoff from the site without discharging to Toms Creek during storm events less than or equal to a 100-year, 24-hour storm event. Both of the NT Ponds are designed to have 2,000 cubic-feet per tributary disturbed drainage acre for sediment storage, consistent with Pennsylvania Department of Environmental Protection (PADEP) requirements. Since the NT Ponds are designed 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 settling volume required by the PADEP Engineering Mining Manual of Mining Operations of 8,600 cubic feet per acre. The NT ponds, and quarry pit areas, will be equipped with electric turbine pumps to subsequently dewater the ponds/pits in less than 7 days so that detention for future storm events will be maintained. Water**

<sup>1</sup> Demonstration of Unique Geologic and Hydrogeologic Characteristics of Metabasalt, Prepared by URS, Prepared for SGI, January 2015.



pumped from the ponds during storms less than or equal to the 100-year, 24-hour storm event will be directed to the Lower Mill Pond System. Much of this water will be reused for cooling at the manufacturing plant and dust suppression. Water not needed for reuse will be discharged to Miney Branch, which is not a HQ stream. SGI will also have other portable, diesel pumps available on site which could be used to dewater the ponds/pits in the event of operational difficulties associated with the electric turbine pumps. Given that the proposed drainage system is a relatively passive system that can collect a substantial amount of runoff, it is considered to be very reliable and practical to operate effectively.

- 5) Dilution potential of receiving stream(s);

The contributory watershed to Toms Creek, at the confluence of Toms Creek and its unnamed tributary near the northeastern corner of the Northern Tract site, is approximately 3,080 acres. The area to be disturbed as part of the Northern Tract development will be approximately 66 acres. As noted in item 4) above, most of the runoff from those 66 acres will be managed via ponds that avoid discharge except during events that exceed a 100-year storm, when only the excess flow (greater than their 100-year detention capacity of the ponds) would be discharged. Therefore, there is substantial dilution potential in Toms Creek considering the ratio of the proposed project area to the stream watershed and the fact that most of the water even in an extreme storm is being detained by the ponds for transfer to the Lower Mill Pond system. At the time of a discharge in the event of a storm greater than 100 year, 24 hour storm event, Toms Creek will be receiving the entire flow from the storm at all other locations in the watershed. However, the potential discharge from the site is only that portion exceeding the 100 year, 24 hour storm. Therefore, the dilution potential of the stream under this circumstance is likely even greater than the watershed acreage ratio (the watershed acreage ratio is 46:1), because the discharge from the site is not 66 acres of stormwater flow but 66 acres of stormwater flow minus holding and diversion capacity of at least the 100 year, 24 hour portion of the storm.

- 6) Connection of mine workings to underground natural or man-made conduits;

Per the information provided in Modules 7 and 8 of this permit application and a previously submitted report<sup>1</sup>, the metabasalt unit that exists at the site is a dense, massive rock unit which generally has isolated joints and fractures that are poorly interconnected. This is evident by the observed dry conditions in the existing Pitts Quarry where very little groundwater accumulates in the quarry pit. Features such as mine workings or natural or man-made conduits are not anticipated to be encountered at the site given the local geology. Additionally, these features were not encountered in the existing Pitts Quarry.

- 7) Identify pollutants that may or will occur in this discharge. Are they toxic to aquatic life?

The metabasalt formation being mined is chosen for use in roofing granules because it is rare and unique among rock formations for its characteristics. It is exceptionally competent, inert and non-toxic. It has extremely limited leaching potential which is necessary to perform its function as a roofing shingle granule. The function of a roofing shingle granule is to withstand weathering for the duration of the asphalt shingle warranty (ex. 50+ years) without leaching, weathering, or cracking. Only stormwater would be discharged to Toms Creek during the exceptional storm event above the 100 year, 24 hour storm event. No artificial chemicals or water from the crushing or processing plant which is located on the existing mine footprint and not the expansion would be discharged to Toms Creek. The primary constituent that would be discharged during extremely rare storm events would be total suspended solids (TSS) contained in the portion of a storm event above the 100 year, 24 hour design capacity. However, the proposed ponds and other control features at the site are designed to well exceed PADEP standards and provide for suspended sediment removal processes which will greatly reduce the potential for release of suspended sediments, even during extreme storm events. Because the rock being mined is exceptionally inert and non-toxic, it contains low levels of naturally occurring metals. Detectable levels of naturally occurring metals may be present in discharges from the site, although not in toxic quantities. Per laboratory testing (completed by URS and cited below) that was completed as part of a previous evaluation<sup>1</sup>, low levels of naturally occurring metals including aluminum, barium, boron, chromium, cobalt, iron, lead, magnesium, manganese, and titanium were observed in water samples obtained from existing stormwater control ponds and the Pitts Quarry pit. Per the report<sup>1</sup>, "... none of these materials leach metals at concentrations that are harmful to human health or the environment, ..." Other pollutants that could occur in a site discharge could include nitrates/nitrites, sulfates, and nitrogen; however, these pollutants, if present, occur at very low concentrations below concentrations that are harmful to human health or the environment.

- 8) Length of time the discharge will occur: short-term/permanent and continuous/intermittent.

Discharges that could potentially occur would be short in duration and would occur very intermittently given that they would be associated with very extreme storm event scenarios exceeding a 100 year, 24 hour event.

- 9) Other positive or negative factors particular to the geologic or hydrologic conditions of this site (recharge, other discharges, reclamation of abandoned land, nonpoint source loading, etc.) that may impact water quality, aquatic biota and or water uses.

Developing the proposed Northern Tract Quarry will result in a decrease in the contribution of stormwater from approximately 66 acres of watershed that currently drains into Toms Creek and its tributary. Stormwater runoff from this 66 acre area (including all associated sediment and other constituents in such runoff) will be collected and conveyed to Miney Branch through the existing Lower Mill Pond system at the Charmian Site. Due to the size of the watershed, negligible (basically unmeasurable) impact is anticipated to the base flow of Toms Creek, water quality, aquatic biota or water uses.

Additionally, some indirect wetland impacts may occur as a result of the development of the Northern Tract. Attachment No. 1 provided with this document provides additional discussion in this regard.

2. Social and Land Use Considerations

- a) What are the present land use(s) of the proposed permit area and the percentages of each?

The current land use within the proposed new permit area is Unmanaged Forestland. This area is adjacent to existing quarry operations (i.e., the SGI Pitts Pond permit area). The area is zoned "Industrial District" by Article XIII, Section 1300 of the Hamiltonban Township zoning ordinance "to encourage the construction on and continued use of the land for industrial purposes...". Mining is consistent with the Industrial District zoning. This area has received a conditional use permit allowing mining.

- b) What are the predominant land uses of this watershed?

Forestland and Sparse/Low Density Residential

- c) Describe land uses within 1000 feet of the permit area that are different from a. or b. above (schools, hospitals, private campgrounds, etc.).

None – Except the existing quarry operations and some isolated residential areas.

- d) What are the present recreational uses of the proposed permit area? Are similar recreational facilities available within the surrounding area? Will the recreational uses of the site be available following mining?

There are no present recreational uses within the permit area or on the properties owned by SGI. Hunting is a potential recreational use at the site; however, site access is very limited given the geologic constraints (e.g. surrounding streams and steep topography), the fact that it is private property, and the presence of the existing mining facilities at adjacent portions of the SGI Charmian property, of which the Northern Tract site is a part. Surrounding areas on other properties theoretically may provide opportunities for hunting depending upon landowner consent. Hunting, and potentially fishing, will be available at the proposed Northern Tract site after reclamation subsequent to the completion of mining.

- e) What is the proposed postmining land use of the mining site? Is this proposed use different from present use?

Yes  No

If a change in land use is proposed explain how the new land use will be at least as protective of stream quality as the existing land use.

The overall land use after reclamation will be an unmanaged natural habitat, similar to the current land use, except that a permanent freshwater impoundment may potentially exist in the location of the former quarry surrounded by a forested buffer area. It is anticipated that although the land use type will differ after reclamation, no change in the quality of Toms Creek and its tributary is anticipated.

f) Has the watershed been previously mined?  Yes  No

If yes, complete the following:

1) Has this site been adversely impacted by previous mining?  Yes  No

If yes, explain.

2) Will this operation correct any abandoned mine lands features?  Yes  No

Describe the corrective measures.

g) Are there currently active mines in the watershed?  Yes  No

If yes, then complete the following:

1) How many? What percentage of the watershed is actively mined?

**Two existing metabasalt mines including the West Ridge Quarry (SMP #6477SM5) and Pitts Quarry (SMP #01930302), which are operated by SGI, exist in the watershed of Toms Creek adjacent to the Northern Tract. Roughly 325 acres may ultimately be located in the Toms Creek watershed subsequent to site reclamation. Roughly 138 acres of the existing metabasalt mine permit area, consisting of adjacent support areas and previously reclaimed mining areas, are located in the Toms Creek watershed. The watershed tributary to Toms Creek adjacent to the proposed Northern Tract, and including the Northern Tract, is approximately 3,080 acres. Therefore, the percentage of the Toms Creek watershed area that is currently associated with mining is approximately 4 percent.**

2) Where are they in relation to this permit application?

**The existing Pitts Quarry is located immediately south of the proposed Northern Tract. The Northern Tract is an expansion of that existing mine. The West Ridge Quarry is located roughly ¾ of a mile southwest of the Pitts Quarry.**

3) Do they discharge to the same stream(s) you propose as discharge points?  Yes  No

**The existing metabasalt mine has NPDES Permit No. PA0009059 which permits discharge into Toms Creek, actual discharge is rare (no discharge has occurred for over 6 years) as runoff from the active mining areas is normally conveyed into Miney Branch. As discussed above, the proposed Northern Tract may potentially discharge into Toms Creek at a different location on the unnamed tributary during extremely rare storm events. In all but rare events, the stormwater runoff from the Northern Tract will be conveyed to Miney Branch however.**

h) What percentage of the watershed will be disturbed by the proposed mining?

**The total permit area, which is generally bounded by Toms Creek and its tributary and the existing Pitts Quarry, is 112.3 acres. The area to be developed for mining will be approximately 66.3 acres, or 59 percent of the permit area. Additionally, as previously mentioned, the total watershed area tributary to Toms Creek adjacent to the Northern Tract project area is approximately 3,080 acres; therefore, the proposed 66.3 acres of disturbance associated with the Northern Tract represents approximately 2.2 percent.**

i) Describe the effect of the mining project on the quality of life for residents and visitors of the area.

**There currently exists a metabasalt quarry in the area adjacent to the south of this expansion area. This proposed permit is for a northerly expansion of an existing facility. The proposed mining project is anticipated to have little effect on residents and visitors of the area except for providing stable employment, good paying job opportunities, and tax revenues as described below. A maintenance buffer will be preserved 300 feet from Toms Creek and 150 feet from the unnamed tributary to Toms Creek along the western, northern, and eastern site perimeter. No activities other than re-planting or maintenance of trees and vegetative growth will be completed within the maintenance buffer such that a visual screen to the mining operations will be provided. This maintenance buffer will also serve as a riparian buffer along Toms Creek and its tributary which will provide an environmental benefit.**

**The Northern Tract is fairly isolated given the presence of the maintenance buffer and the existing mine facilities to the south. Therefore, accessibility to the public is very limited. The type of mining that will be conducted at the proposed Northern Tract will use similar practices and technologies that are currently being implemented at the existing Pitts Quarry and have been used at this location for over 90 years. Some potential for noise during blasting operations exists; however, the noise associated with developing the**

Northern Tract is not expected to be substantially different than the noise currently generated at the Pitts Quarry. The proposed Northern Tract is an expansion of the current mining operation at the Charmian Site which will extend the life of the mine. The generation rate or volume of operations at the site is not anticipated to change substantially from what is currently being implemented. Therefore, no significant changes to traffic volumes or related roadway distress in the local area are anticipated.

The project will provide a benefit to the quality of life for local residents as it will be an economic resource which provides job opportunities, taxes, and income to the local area.

- j) Describe any effects on public health and safety (disease vectors, water supplies, flood issues, reclamation of features, disturbed area, etc.)

The proposed project is not anticipated to have negative impacts to the water quality or quantity of the adjacent waterways as discussed elsewhere in this document and the other associated permit documents. Impact to local water supplies are not anticipated per the response provided in Part 1.e of this document. The reclamation of the Northern Tract Quarry and related facilities will be carried out in accordance with the provisions of Title 25, Chapter 77.593 and 77.594 of the Pennsylvania Code to promote a final site configuration that will not present a public safety hazard.

3. Economic Statistics

- a) For each mineral and/or seam of coal to be mined, provide the following site specific information:

Mineral/Geological Name Metabasalt  
Geologic Formation Catoclin  
Thickness 1,800 feet +/-  
Acres to be mined 66.3 acres  
Total tonnage to be mined 50 million, approximately  
Maximum Depth of proposed pit floor EI. 740  
Stream(s) and designation Toms Creek and unnamed tributary HQ - CWF, MF

- b) Coal only:

Provide a chemical analysis of coal. (Submit on separate attachment. This is confidential information and will not be included as part of public record.)

Provide at least one representative analysis of the following for each seam of coal to be mined:

- o Analysis of raw product
- o Percent sulfur content
- o BTU content
- o Percent ash

Provide name, address, and telephone number of certified lab performing chemical analysis, dates collected, method of analysis, and copies of the laboratory analysis sheets:

- c.) Mineral only:

What is the intended use of the mineral product? (cement, crushed stone, fill, etc.)

The metabasalt extracted from the proposed Northern Tract Quarry will be processed for use as a durable, weather resistant roofing granule that will be used in shingle manufacturing.

How many other providers of this commodity exist within a 20 mile radius?

None

Is there an existing market and/or established processing infrastructure for the product?  Yes  No

The primary market for the products produced at the Charmian Site is the roofing granule for the shingle industry. Various shingle manufacturers rely on roofing granules, such as those that will be provided from

the proposed Northern Tract Quarry, in producing their product. There are many characteristics required of the base rock that goes into making roofing granules, which, when combined, make the geology at the Northern Tract (and entire Charmian facility) so unique. Some of these important properties distinctive to the geology of the Northern Tract include opaqueness to ultraviolet light (to defend the shingles against ultraviolet damage); chemical and physical inertness (to allow resistance to acid rain, leaching, freeze/thaw, wet/dry cycling, oxidation and rusting); low porosity (to improve physical strength, binding between coating and rock, and efficiency with which the pigment coating covers the surface); and resistance to high firing temperatures. Other unique physical properties that are critical to the manufacturing of roofing granules which are present within the metabasalt at Northern Tract include moderate hardness, which assists in keeping the rock intact during the granule coloring process; moderate density (to ground the shingle against wind); uniformity, and crush equidimensionality (to prevent directional embedment in the shingle manufacturing process, which changes shingle appearance).<sup>2</sup> Thus, the metabasalt that is present at the Northern Tract is very unique and not widely available. In fact, due to the rarity of appropriate rock formations there are only 12 active roofing granule quarries in North America (including the existing Charmian Pitts Quarry), and the Charmian facility is the only facility in the northeastern United States.

The roofing granule customer base is largely defined by geographic proximity and as such the SGI Charmian facility is the sole source of roofing granules for most of its customer base. The market for the product is the same market that currently exists for the adjacent Pitts Quarry. This market is well established, as SGI and its predecessors have been selling roofing granules from this location for 90 years.

d) Local Benefit Information

- 1) How many employees will be working full time on this operation?

**147 jobs, which already exist at the current Pitts Quarry, are expected to be retained at the Northern Tract permit area. Failure to allow for the expansion will result in the loss of these jobs. These jobs are well paid (hourly range: \$21.47 - \$32.89) with benefits. SGI paid \$15.1 million in wages and benefits in 2016. Because these jobs are highly prized, most SGI employees are retained for 15 years or greater. There are many second and third generation miners at the Charmian location.**

- 2) What percent of these employees reside within a 30 mile radius of this operation?

**91%**

- 3) Will a bond be posted with the local municipality to cover costs of road repair?  Yes  No

**No formal bonding process exists at Hamiltonban Township. However, SGI has historically and continues to be willing to give due consideration to financial and other contributions to the Township relative to the maintenance and repair of the Township roads.**

- 4) Estimate the amount of taxes you expect to be paid to the local economy as a result of this operation.

**SGI pays \$255K annually (2016) in combined property and sales taxes.**

- 5) Describe how this operation may affect the local tax base and property values.

**The proposed mining operation would allow continuation of a mining and processing operation which is well established in the community and is a significant source of local tax revenues. Property values in the area already reflect the presence of such mining, which is conducted in a manner consistent with local zoning and also reflect the high local taxes contributed to the township. In contrast, the inability to expand and continue the mining operations at this site would result in shutdown of the Charmian operations. The resultant loss of property taxes and employee income taxes from the ongoing SGI operations would either result in a reduction in local services and schools or a significant increase in property taxes for residential property owners, having a negative effect on housing values. Either way the loss of the SGI mine taxes would have a significant negative economic impact on the Township. In addition, SGI supports the local economy directly by the purchase of goods and services locally or state-wide, and indirectly by our employees spending money in the local and regional communities.**

- 6) Compared to existing land assessment, do you expect the postmining land use assessment to increase, decrease or remain the same? Provide reasoning for this.

**The post mining land use will include wetlands, forestland, and may include a permanent, freshwater impoundment with forested sideslopes and surrounding forested buffer providing wildlife habitat.**

<sup>2</sup> Review of Residential Roofing Materials, Part I, Western Roofing, Akbari, H. Levinson, R. & Berdahl, P., Heat Island Group, Lawrence Berkeley National Laboratory, January/February 2005.

Such use is the preference of the Hamiltonban Township. Thus, the postmining land use assessment will be different than the existing land assessment. For instance, the opportunity for future land development after mining will be limited given the presence of the permanent impoundment. However, this impoundment can provide for a stationary water source, fishing or other recreational opportunities, or a water habitat for wildlife. Since this post mining use was chosen by Hamiltonban Township as their preferred post mining use of the site, it is assumed that it is viewed by the Township as a beneficial use.

- 7) Will there be a positive or negative effect on tourism?  Yes  No

The proposed project is anticipated to have no effect on local tourism. The applicant is unaware of any major tourist activities that exist in the project area. One potential attraction is the fishing provided by Toms Creek and its tributaries. However, per other explanations in this form and in the other permit documents associated with this application, negligible impacts to these waterways are anticipated as a result of the Northern Tract development. The quarry is already a known entity in the area as it has been in existence and operating on the SGI property for over 90 years. This application is for an expansion of existing facilities to the north.

e) Market Information

- 1) Is there a confirmed market for the sale of the coal/mineral?  Yes  No  
If yes: Who is the buyer?

**Multiple long-term Northeastern USA shingle manufacturing customers.**

- 2) Mineral: Describe if the mineral is of good quality or has unique characteristics. If applicable, specify the percent calcium carbonate equivalent.

**As described above, the metabasalt that is present at the Northern Tract is a unique rock material that has a hardness, and durability which makes the material well suited for producing the roofing granule product. As the rock is used as a roofing granule, it must be durable over long time periods, as indicated by the current asphalt shingle warranty of 50+ years. It must not leach and it must also retain its color. Only a few rock formation nationwide are suitable for this purpose of durability, inertness and color fastness. The rock deposit must be located in relative geographic proximity to the customer base so not to be cost prohibitive to ship. The metabasalt formation at the Northern Tract is of exceptional quality for the purpose of roofing shingle granules.**

**A report<sup>1</sup> discussing the unique characteristics of the metabasalt material present at the Northern Tract has previously been submitted to the PADEP as referenced herein. Per the report, the sampled materials exhibited a net neutralization potential greater than 5.7 tons CaCO<sub>3</sub>/1000 tons with most samples greater than 34 tons CaCO<sub>3</sub>/1000 tons.**

**Further proof of the rare and unique geology at the site is the fact that there are no other roofing granule quarries in the northeastern United States despite a robust customer base in the region. Were this formation or other formations with its qualities available elsewhere in the northeast, it is likely it would be mined. SGI is unaware of other viable regional options. Although there may be other locations nationally with suitable rock, such locations remain extremely rare. Additionally, shipping to the northeast from these other locations would be economically unfeasible and require the consumption of large amounts of fossil fuels. Due in part to the rarity of suitable rock formations, there are only 12 active roofing granule quarries in North America, including the existing Charmian Pitts Quarry.**

Coal: Is the coal of sufficient quality to be sold without blending? Will this coal be blended with lower quality coals to improve their marketability?

- 3) List the name(s) and address(es) of each person or company from which the coal/mineral rights are leased and the percent of the coal/mineral held by each.

**All property and mineral rights are owned by Specialty Granules LLC.**

- 4) What other coal/mineral leases do you hold in this area?

**None.**

- 5.) Describe the overall market value of this operation.

**SGI will submit this information separately and confidentially to the PA-DEP upon request.**

#### 4. *Impact Summary*

- a) Demonstrate that the resulting discharge will support the existing water uses (other than the High Quality uses). (This can be submitted as a separate attachment labeled "Demonstration of protection of water uses for "stream name")

The primary water uses of Toms Creek and its tributaries are fishing and the support of other local aquatic life. Per the information provided in Module 8 of this permit application, the proposed mining operation is anticipated to have negligible (basically unmeasurable) impacts to the base flow of Toms Creek and its tributaries. Thus, the typical flow conditions in these waterways will be unaffected. Discharges from the Northern Tract drainage system would only occur during very extreme storm conditions (a storm greater than a 100-year, 24-hour event) and for relatively short durations. As described in item 1.f.7 of this document: (1) the primary constituent that could be discharged during extremely rare storm events would be total suspended solids (TSS) contained in the portion of a storm event above the 100 year, 24 hour design capacity; and during the periods of such rare discharges, the receiving waters of Toms Creek would be anticipated to have somewhat higher TSS concentrations as a result of runoff contributions from other portions of the watershed, such that the contribution from the mining area would have negligible impact; and (2) because the metabasalt rock and being mined and associated overburden materials are exceptionally inert and non-toxic, any other pollutants that may exist in such rare discharge would be at low concentrations that will not impact the environment. Considering that discharges would occur only during extremely large storm events (> 100 year), when the volume of receiving waters is high and such waters will contain constituents from runoff across the entire watershed, impacts would be anticipated to be unmeasurable. Therefore, if pollutants were present in the rare discharges that may occur from the Northern Tract area, which would primarily consist of stormwater, these pollutants would be similar in nature to those in the receiving streams. The water being discharged would be the overflow water from a storm event exceeding 100 year, 24 hour event. Only that portion above the 100 year storm would be discharged. Thus, this overflow water will have been subjected to some treatment by sediment settlement prior to being discharged. For these reasons, the existing water uses in Toms Creek and its tributaries will be preserved during development, operation, and reclamation of the proposed Northern Tract. All existing water uses are supportable.

SGI and its predecessors have been operating the existing metabasalt mine at the Charmian facility for 90 years. SGI has had operations within the watershed of Toms Creek for approximately 53 of those years. Toms Creek remains a HQ stream demonstrating SGI's commitment to protect the water uses for Toms Creek.

- b) Describe the net benefits of this operation. Using the information submitted above and any appropriate additional info, contrast the environmental impact of this operation with the social or economic benefits.

As discussed throughout this document, SGI and its predecessors have been mining metabasalt in this location for 90 years currently with 147 full time, well-paying manufacturing and mining jobs (expected to be retained) spanning in many cases three generations of miners. SGI paid \$15.1 million annually (2016) in salaries, wages and benefits. Also in 2016, total salary and hourly withholdings (combined Federal, State, and Local) was \$2.0 million. In order to protect Toms Creek, SGI has designed the Northern Tract stormwater control system above and beyond standard engineering requirements which are targeted to control an approximate 10 year, 24 hour storm event, and instead has designed a system to limit discharges to Toms Creek to only the stormwater flow above a 100 year, 24 hour storm event. SGI knows of no other similarly situated mine who is willing to invest the resources to control a 100 year, 24 hour storm+, we have dedicated our best engineers and environmental scientists to create this extremely protective design.

The site will continue to provide 147 good paying mining and manufacturing jobs, with strong compensation packages and outstanding employee retention. Our average employee has worked at the mine for 15 years. We are proud of our second and third generation miners. But it is not just a benefit to our employees to keep the mine operational. SGI paid \$255K annually (2016) in combined property and sales taxes. Were the mine to close, the loss of property taxes to the Township would either result in a reduction in local services and schools or a significant increase in property taxes for residential property owners. Raising taxes would have a negative effect on housing values. Either way the loss of the SGI mine taxes would have a significant negative economic impact on the Township. In addition, SGI supports the local economy directly by the purchase of goods and services locally or state-wide, and indirectly by our employees spending money in the local and regional communities.

The product of roofing granules produced by the mine is a necessary part of almost every citizen's life. Asphalt roofing shingles are the most widely used type of roof in Pennsylvania. Because the SGI

Charmian mine is the only mine manufacturing roofing granules in the northeast, our customer base of asphalt roofing shingle manufacturers in the northeast depend on our roofing granules. These granules are only possible because of the rare type of geologic formation at the Northern Tract, which is hard, inert and non-toxic when placed on a roof and weathered for at least the 50+ years of an asphalt shingle warranty. The loss of the SGI mine could potentially disadvantage asphalt roofing shingle manufacturers in the northeast, potentially resulting in higher prices for asphalt shingles or loss of regional jobs.

Some of the local businesses who may benefit from the operation of the Northern Tract include the following:

- companies that provide equipment and supplies to SGI's mining and processing facilities;
- companies that provide equipment repair services;
- engineering and environmental firms who may provide services such as water sampling and engineering design;
- well drilling companies;
- laboratories who conduct water sample analysis;
- transportation businesses who haul the final product;
- gas stations, restaurants, and retail stores who service employees and visitors to the Northern Tract project area.

The potential for negative impacts to the local area from the expansion is minimal, and the benefits of jobs, taxes, and the product itself is great.

- **Environmental impacts** - As discussed previously the proposed development is anticipated to have negligible (basically unmeasurable) impacts to the base flow, water quality, and existing water uses of Toms Creek and its tributaries. Although some indirect impacts to wetlands may occur, no direct impacts to wetlands are anticipated as discussed in Module 14 of this application. The proposed project will have little effect on the existing groundwater level or quality outside of immediate project vicinity. The rock being mined is extremely inert and non-toxic and any naturally occurring toxic components exist in relatively small concentrations with little potential to leach, well below levels that are harmful to human health or the environment. The potential for discharges to Toms Creek and its tributary are very small given the conservative and protective design of the proposed drainage controls at the Northern Tract. Additionally, the proposed treatment controls (i.e. ponds and pumping systems) are expected to be reliable, as retention is gravity based, during storm events up to 100 year, 24 hour events and the proposed pumping systems will be provided with back-up equipment.
- **Health or safety risks to the public** - The site will ultimately be reclaimed to meet the standards of the Pennsylvania Code intended to preserve the public safety. Furthermore, the expansion is more isolated than the existing quarry from public access given that its western, northern, and eastern perimeter consists of existing steep topography leading up to the site.
- **Noise pollution** - Intermittent blasting at the Northern Tract will be done at specified times during daylight hours, similar to the blasting activities that are currently being implemented at the existing Pitts Quarry. Best management practices will be implemented to reduce noise in all aspects of the operation.
- **Air pollution** - Dust suppression will be accomplished during mining operations by routinely watering active roads and support areas during drier conditions as well as air pollution control devices on conveyors and other machinery. This practice has been successful previously at the existing Pitts Quarry.
- **Reduction in tourism and aesthetics of the local area** - As discussed in other sections, there has been an active quarry at this general location for over 90 years. Expanding the mine to the north is not expected to change the aesthetics of the local area. The proposed operation will not impact fishing in Toms Creek and its tributaries. Therefore, the current uses for Toms Creek and its tributaries will be preserved. Additionally, the site will be visually protected by the tree cover provided by the larger than regulation maintenance buffer around the site. Thus, the aesthetics of the area will be preserved.
- **Reduction in land use after reclamation** - The site will forest, wetlands, and potential development of a permanent freshwater impoundment, although different than current use, may provide for other opportunities (e.g. water source, fishing, wildlife habitat),



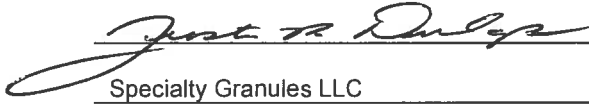
The proposed Northern Tract will enable the existing Charmian site to continue operations for another 25 to 50 years, depending upon market demand for the roofing granules product. The Charmian site will continually provide a substantial tax base to the local area as well as providing long-term, full time, well-paying jobs and supporting other local businesses who provide products or services to SGI. Given that the potential drawbacks to developing the site are fairly small and unlikely, the substantial economic benefit of the project is judged to warrant its approval.

5. **Affidavit**

Please complete and affix professional seal, if applicable.

I, Justin P. Dunlap do hereby certify to the best of my knowledge, information and belief, that the information submitted is true and correct. I further certify that it is within my expertise to verify the correctness of the information. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature

  
\_\_\_\_\_

Address

Specialty Granules LLC

Seal

13424 Pennsylvania Ave., Suite 303, Hagerstown, MD 21742

Telephone No.

301-733-4000

## ATTACHMENT NO. 1

### SUPPLEMENTAL NARRATIVE ON INDIRECT WETLAND IMPACTS

There are no direct impacts expected to wetlands from proposed mining or support activities at the Northern Tract. To estimate potential indirect impacts to wetlands within the Northern Tract Quarry permit area, various analyses were undertaken. First, the total flow loss, including base flow (loss from groundwater) contributions and overland flow to the surface water bodies was examined as part of the groundwater model report, presented in Module 8 of this permit application, for both low and high flow conditions. As discussed in Module 7 and Module 8 of this application, the geologic formation (bedrock) underlying the site has a significantly low hydraulic conductivity and is very poor at transmitting groundwater; therefore, base flow contribution to the streams is expected to be very low. Infiltration tests in the shallow overburden material also resulted in very low permeability (infiltration) of the overburden (saprolite /soil) material. This further suggests that very limited base flow discharge (from groundwater) is moving into the streams and the majority of the flow in the streams is likely a result of surface water run-off (overland flow). It was assumed that flow rates in the streams were associated with flow rates within the wetlands (the wetlands and streams generally have the same source). Areas and stream reaches within the domain of the groundwater model were queried to determine the baseline base flow rates (no quarry pumping) and compared to the same areas and stream reaches in simulated quarry bench levels (proposed by SGI). The difference in the two numbers provides the base flow loss in the streams and wetlands resulting from the quarry dewatering. No significant impact to the surface water bodies, including wetlands, was evident based on these results.

Some specific assumptions were required to be made in order to complete this analysis. As stated above, it was assumed that the wetlands (with the exception of Wetland D) receive the majority of their flow from surface water drainage based on their topographic location and proximity to the streams. This assumption is generally supported by observations made during the stream and wetland delineation conducted for the site. For this reason, the total flow volumes (low and high) through the streams were applied to the wetland areas to calculate flow loss for both low flow and high flow conditions. However, Wetland D which is 1.17 acres extends further up the hillside from the stream channel and has a higher topographic elevation with possible groundwater seep contributions. As a result, Wetland D likely does not receive the full volume of surface water flow from the adjacent stream (Stream Reach C). As a result, in the groundwater model, it was assumed that only 60% of the surface water flow in Stream Reach C was applied to Wetland D.

Due to the higher topographic elevation with possible groundwater seep conditions at Wetland D, Mr. Val Britton (hydrogeologist) of V.F. Britton Group, LLC and Mr. Andrew Brookens and Mr. Andrew Nevin

(wetland biologists) of Skelly & Loy, Inc. conducted a site visit on July 31, 2017 to perform reconnaissance at Wetland D to better assess its hydrology and supplement model predictions as discussed herein. Note that several inches of rain had occurred in the area during the 48 hours prior to the July 31, 2017 site reconnaissance. During the reconnaissance, various observations were made concerning the source of water to the Wetland D area. Evidence of overland flow from areas west (up-slope) of the defined Wetland D area was observed. In addition, surface channels developed by surface run-off were present throughout the Wetland D area suggesting that surface water run-off does provide water to the wetland areas. Some groundwater seeps were also observed in Wetland D close to the confluence with the stream.

As presented on project mapping, the delineated boundaries and shape of Wetland D are irregular and are not continuous along the same slope elevation with evident dry areas between the defined Wetland D areas. The defined Wetland D area soils were soft and wet; while adjacent areas were dry and did not support wetland vegetation. Areas within Wetland D were observed to exhibit an approximate 1 to 2-foot thickness of permeable (silty organic loam) material on the surface that allowed the apparent storage of water. Below this layer was a relatively impervious (low permeability) silty clay material which appeared to perch the water in the upper surface horizons of Wetland D.

Discharge from the Wetland D areas to the surface water stream was evident at several small channel locations with overall discharge to the stream estimated at 0.5 to 1.5 gallons per minute. The stream flow rate at the time was estimated at approximately 150 to 200 gallons per minute.

Geologic mapping of the area by the USGS suggests that a contact between the meta-basalt to the west and the meta-rhyolite to the east may run along the western edge of Wetland D suggesting that the wetland exists over the meta-rhyolite. This suggests that the mineralogy and associated weathering of the meta-rhyolite has resulted in irregular weathering creating shallow permeable saprolitic material (wetland areas) that are perched over a less weathered and less permeable parent rock material (silty clay). Water moving into these areas gets trapped and consequently supports wetland vegetation.

Based on groundwater modeling of the area, the estimated groundwater table (potentiometric surface) elevation currently coincides with the surface elevation of the Wetland D area suggesting that the wetland also receives some baseflow from groundwater. The low hydraulic conductivity of the bedrock material limits the flow of baseflow; however, during drought conditions the small amount of baseflow from the groundwater may sustain the wetlands when surface water run-off is scarce.

These observations suggest that development of the proposed Northern Tract Quarry may have some level of hydraulic impact on the Wetland D area. A potential exists for water loss to occur at Wetland D as

a result of both the reduction in the run-off area (watershed) and the predicted decrease in elevation of the water table (especially in the western edge of Wetland D) adjacent Wetland D caused by the dewatering of the proposed quarry.

Due to the complexity of the hydraulic characteristics associated with Wetland D, comprehensive studies of the area prior to quarry development are not recommended as they would likely prove to be inconclusive. For this reason, the applicant proposes periodic evaluation and bi-annual (two times per year) vegetative monitoring of the Wetland D area during the development of the proposed quarry.

Due to its minimal size and hydrologic contribution within the Toms Creek drainage basin, any resulting reduction in Wetland D from indirect hydrologic effects is expected to result in insignificant effects to the functions, values, and quality of the Toms Creek drainage basin. No indirect effects to Wetlands A, B, C, and E due to hydrologic alteration are anticipated from the development of the proposed Northern Tract Quarry. The hydrologic sources to these wetlands are primarily associated with the surface water and seasonal groundwater interflow contributed from the Unnamed Tributary to Toms Creek. Portions of Wetland C are associated with seepage along the lower hillside slope adjacent the floodplain of the Unnamed Tributary to Toms Creek. In contrast to Wetland D, indirect impacts to the hillside groundwater seepage hydrology attributed to Wetland C are anticipated to be insignificant due to the distance of the seepage from the proposed quarry pit, as well as, the location of the seepage at the toe of hillside slope adjacent the floodplain.