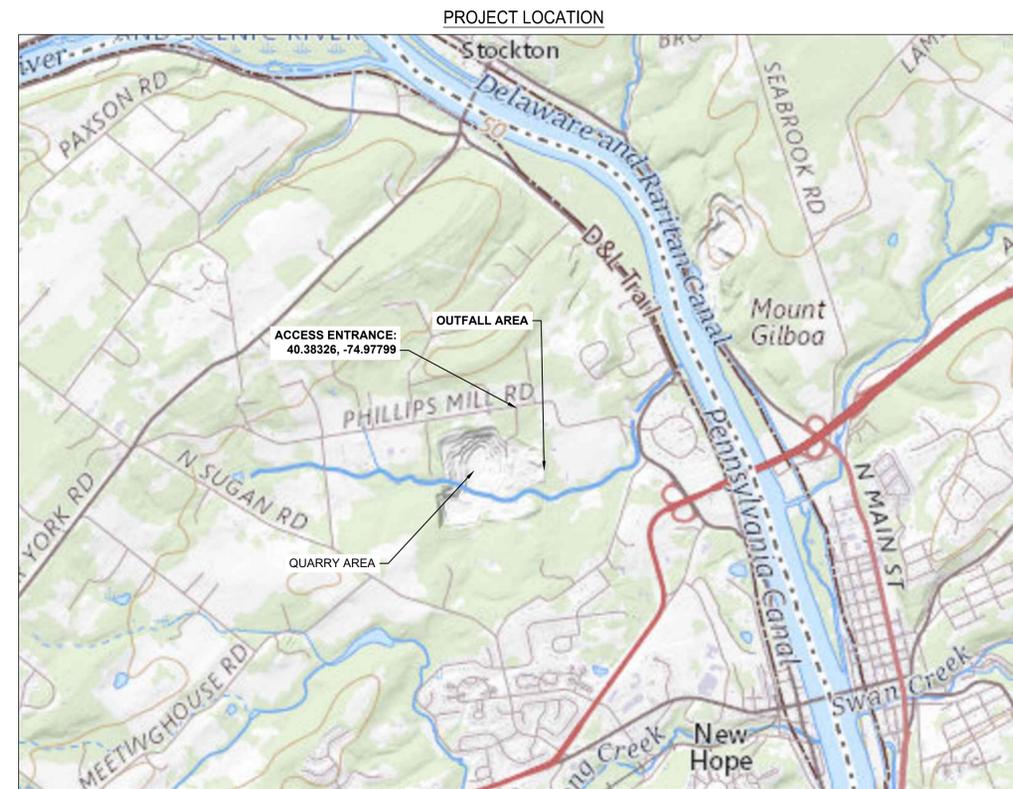
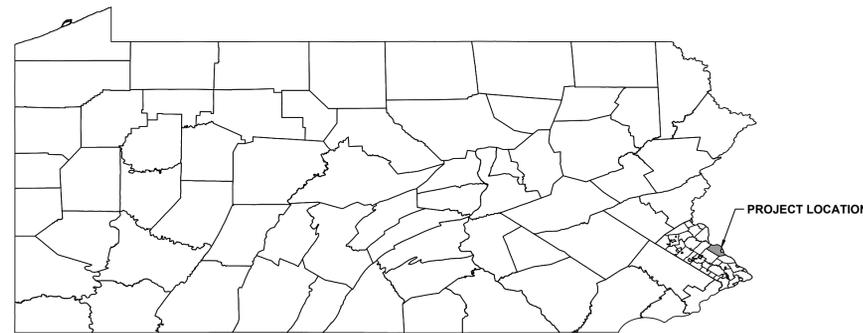


COMMONWEALTH OF PENNSYLVANIA

# QUARRY DISCHARGE OUTLET PROJECT NEW HOPE CRUSHED STONE & LIME CO.

SOLEBURY TOWNSHIP, BUCKS COUNTY, PENNSYLVANIA

NOVEMBER 2022



DRAWING INDEX	
COVER SHEET	-
NOTES & LEGEND	02248-C-001
NOTES & LEGEND	02248-C-002
EXISTING CONDITIONS PLAN	00814-C-100
PROPOSED SITE PLAN	00814-C-200
CHANNEL PROFILE AND SECTIONS	00814-C-201
EROSION & SEDIMENT DETAILS	00814-C-400
EROSION & SEDIMENT DETAILS	00814-C-401



**TOM WOLF**  
GOVERNOR

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SECRETARY  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN PATTERSON, P.E.  
CIVIL ENGINEER  
TETRA TECH, INC.

11-30-2022  
DATE

**GENERAL NOTES**

1. TOPOGRAPHIC MAPPING AND FEATURES FROM NORTHEAST SURVEYS, OCTOBER 2022.
2. THE PROJECT TAKES PLACE IN SOLEBURY TOWNSHIP, BUCKS COUNTY.

**CALL BEFORE YOU DIG! PENNSYLVANIA LAW REQUIRES 3 WORKING DAY NOTICE FOR CONSTRUCTION PHASE - STOP CALL 811 OR 1-800-242-1776**

**LEGEND:**

- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- EXISTING PRIMROSE CREEK
- EXISTING TEST PITS
- PROPOSED SILT FENCE
- PROPOSED MAJOR CONTOUR LINE
- PROPOSED MINOR CONTOUR LINE
- PROPOSED EROSION CONTROL BLANKET (ECB)
- PROPOSED Vmax SC250 TURF REINFORCEMENT MAT
- PROPOSED RIPRAP

**PROJECT DESCRIPTION**

New Hope Crushed Stone & Lime Co., Inc. (NHCS) operated a quarry in Solebury Township, Bucks County. The permittee, NHCS, has forfeited the site, and PADEP is taking over reclamation at the site. The site is accessed from Phillips Mill Road. The Quarry Discharge Outlet Project involves stream restoration of Primrose Creek where it exits the quarry pit and downstream to the existing stream channel. The project area surface water runoff drains to an unnamed tributary to the Delaware River, locally known as Primrose Creek, which is designated as trout stocked fishery (TSF) under PA Code 25 Chapter 93.

The project involves stream restoration of Primrose Creek where it exits the quarry pit and downstream to the existing channel. The channel design incorporates a wider floodplain to manage higher flows and a low flow notch to manage smaller storm events. The proposed channel is a trapezoidal, open channel designed to have a 2-tier configuration outlet channel from the quarry pit. The bottom tier of the channel will be lined with R-4 Riprap, and the upper tier of the channel will be lined with a vegetated channel liner.

Geotechnical test pits were performed to assess the depth to bedrock and native material at the proposed quarry outlet. The invert of the weir at the quarry outlet will be at elevation 93.3 ft, which is within native material. The closest test pit to the outlet channel, TP-3, was performed at ground surface elevation 100.8 ft, had fill from the ground surface down to 93.8 ft, and had native material from elevation 93.8 ft to elevation 84.8 ft. It is anticipated that excavation will occur primarily in fill and native material, but bedrock excavation may occur closer to the existing stream channel.

**E&S CONTROLS**

The contractor will install erosion and sediment controls as needed throughout the project. Specifications for Erosion and Sediment Controls are as follows:

All references to sections of Publication 408 are for the current Pennsylvania Department of Transportation Specifications, Publication 408. References to ASTM are for the current American Society for Testing and Materials specifications. References to the PA DEP Erosion Control Manual are for the Pennsylvania Department of Environmental Protection's Erosion and Sediment Pollution Control Program Manual, March 2012, Technical Guidance Number 363-2134-008.

- **Silt Fence** – Silt fence shall meet the requirements of Tables 4.3 and 4.4 of the PA DEP Erosion Control Manual.
  - **Geotextiles** - Geotextiles shall meet the physical requirements of the Construction Classes as specified in Section 735, "Geotextiles," of Publication 408.
    - o **Construction Class 4 (Type A) Geotextile** - shall be used as a fabric underlayment for rock in lined ditches, outlets, and spillways to control the separation of subgrade and other layers.
- **Rock** - Rock and riprap shall meet the gradation and quality requirements of Section 850.2(a), "Rock," of Publication 408. Rock size and nominal placement thickness of the rock shall be as shown on Channel Profile and Sections Sheet. Friable, stratified rocks, such as shales, rocks with high coal content, and rocks liable to decompose in water, such as claystones, will not be approved. Sources of rock shall be subject to approval by the Department, but approval of any source of rock shall not be construed as approval of all the material from this source. The right is reserved to reject localized areas, strata, or channels within an approved area or zone when, in the opinion of the Department, the material has disintegrated, weathered badly, or is otherwise unsatisfactory for the intended use.
 

On-site rock may be used if it meets this specification and size as indicated on the Drawings.
- **Erosion Control Blanket** – Erosion Control Blanket shall meet the materials requirements of Section 806.2(a), "Temporary Rolled Erosion Control Products (RECP)," of Publication 408. Anchoring staples shall meet manufacturer's recommendations.
  1. **Type 2.C RECP** - shall be used on slopes less than or equal to 3H:1V.
  2. **Type 2.D RECP** - shall be used on slopes less than or equal to 2H:1V.
- **NAGreen Vmax SC250 Turf Reinforcement Mat (TRM)** – NAGreen SC250 TRM shall meet the requirements of NAGreen Specification Sheet in the Detail drawings of this drawing package.
- **Timber Mats** – Temporary mats or pads shall meet the requirements of the detail drawings of this drawing package and Erosion and Sediment Control Manual and shall be underlain with Class 4 Geotextile.
- **Cofferdam** – Cofferdam shall include sandbags, concrete barriers, and fiber reinforced plastic (FRP) polypropylene liner materials. Concrete barriers shall be wide base type jersey barriers with a minimum 32-inch height. FRP liner material shall be minimum six mil thick.
- **Pumped Water Filter Bag** – Pumped water filter bags for use when dewatering the excavated channel or other areas shall be used in accordance with the specification shown on the applicable details on the Drawing. Low volume filter bags shall be made from non-woven geotextile material sewn with high strength, double stitched "J" type seams.

They shall be capable of trapping particles larger than 150 microns. High-volume filter bags shall be made from woven geotextiles that meet the following standards:

Property	Test Method	Minimum Standard
Avg. Wide Width Strength	ASTM D-4884	60 lb/in
Grab Tensile	ASTM D-4632	205 lb
Puncture	ASTM D-4833	110 lb
Mullen Burst	ASTM D-3786	350 psi
UV Resistance	ASTM D-4355	70%
AOS % Retained	ASTM D-4751	80 Sieve

- **Temporary Seeding** - Annual ryegrass. The Contractor can optionally place the Permanent Seed mix in areas that are not at final grade if the growing season allows for the Permanent Seed mix to achieve an acceptable vegetative coverage.
- **Permanent Seeding** – Provide seeding mixtures as indicated on Erosion & Sediment Details Sheet.
- **Mulch and Soil Supplements** – Provide as indicated on the on Erosion & Sediment Details Sheet.
- **Topsoil** - It is unknown if there are topsoil stockpiles at the quarry. The best available material on-site will be used to establish vegetation. During the course of excavation if material classified as topsoil or suitable for a substitute soil as determined by the Department is encountered it will be removed and stockpiled for placement as a final top layer. If separate stockpiles are constructed, topsoil stockpiles shall not exceed twenty-five feet (25') in height, and side slopes shall not be steeper than 2H:1V. The temporary topsoil stockpile(s) shall be stabilized in accordance with temporary seeding requirements.

**PROCEDURE**

The E&S Control Plan consists of minimizing sediment transport from the site primarily through the use of temporary items such as: silt fence and stabilization of graded areas as soon as practical with vegetative cover and mulching.

Additional E&S controls, other than those specified, may be required for stockpiled materials and areas disturbed during stockpiling operations.

Runoff from graded areas to adjacent undisturbed areas shall be kept to minimum and directed into the quarry pit if able.

**Silt fence** – Silt Fence shall be installed as perimeter protection and along stream. The fence shall be placed at a constant elevation with both ends of the fence turned up-slope to a higher elevation. Any sediment removed from the compost filter socks is to be blended into the surrounding topography on the project site.

**Geotextiles** – Geotextile fabric used as a separation layer shall be installed longitudinally along the direction of flow. Whenever more than one section of fabric is required, the fabric must be overlapped a minimum of one foot, with the underneath fabric section downslope. The fabric shall be anchored in a satisfactory manner to prevent displacement. Do not drop rocks two feet or larger in dimension, directly on the fabric from a height greater than one foot. Do not allow the rock placement procedure to puncture or damage the fabric.

**Rock and Aggregate** – Rock and Aggregate shall be carefully placed on either the prepared grade, geotextiles, or filter material, whichever is applicable, to produce an even distribution of pieces, with a minimum of voids, and without tearing any required geotextiles. The full coarse thickness shall be placed in one operation, in a manner to prevent segregation and to avoid displacement of the underlying material.

**Erosion Control Blankets** – After the areas have been graded, seeded, mulched, and approved by the Department, the Erosion Control Blanket shall be installed as shown on Site Plan, and to the requirements of Section 806.3(a), "Temporary RECPs," of Publication 408, except for the following:

- a. Adjoining sections of Erosion Control Blanket shall be overlapped instead of butted.
- b. Erosion Control Blanket roll ends will be overlapped by 12", with the up-slope end on top. Where two or more widths of blanket are placed side by side, the upper blanket shall overlap the lower by not less than four inches. The blanket shall be stapled along the overlaps at one-foot intervals. Unlapped edges shall be stapled at three-foot intervals.
- c. The blanket will be stapled at three-foot intervals in a staggered pattern. Staples shall engage a portion of the blankets' plastic netting. Staples shall be driven flush with the soil surface.

**NAGreen Vmax SC250 TRM** – After the upper channel portion has been graded, the SC250 TRM will be installed as shown on the Site Plan. Install per manufacturers recommendations.

**Timber Mats** – Install temporary mats or pads as needed to cross installed channel.

**Cofferdam** – Install sand bags as needed to divert water within the channel for construction and maintenance.

**Pumped Water Filter Bag** – Pumped Water Filter Bags shall be used for treatment of water encountered during channel excavation activities. Pumped Water Filter Bags shall be replaced when they become ½ full of sediment. Spare Pumped Water Filter Bags shall be kept available for replacement of those that have failed or are filled. Pumped Water Filter Bags shall be placed on straps to facilitate removal unless bags come with lifting straps already attached. Pumped Water Filter Bags shall be located in well-vegetated (grassy) area, and discharge onto stable, erosion resistant areas, and be provided with downslope silt fence through which Pumped Water Filter Bag effluent must travel prior to final discharge toward the surface waters. Where this is not possible, a Geotextile underlayment and flow path shall be provided. Pumped Water Filter Bags may be placed on filter stone to increase discharge capacity. Pumped Water Filter Bags shall not be placed on slopes greater than five percent (5%). For slopes exceeding five percent (5%), clean rock or other non-erodible and non-polluting material may be placed under the bag to reduce slope steepness. The pump discharge hose shall be inserted into the Pumped Water Filter Bags in the manner specified by the manufacturer and securely clamped. A piece of PVC pipe is recommended for this purpose. The pumping rate shall be no greater than 750 gpm or half the maximum specified by the manufacturer, whichever is less. Pump intakes shall be screened. Filter bags shall be inspected daily. If any problem is detected, pumping shall cease immediately and not resume until the problem is corrected.

**Site Access**

Contractor to use existing access road from Phillips Mill Rd.

**Clearing and Grubbing**

The removal and disposal of all woody natural growth, trees, tree stumps, brush may be required at the existing Primrose Creek. Limit clearing and grubbing as much as possible to a minimum area needed for proposed grading.

**CHANNEL INSTALLATION**

Excavation of the channel will begin starting on the downslope end/at the existing Primrose Creek channel. At the connection of the new and existing stream channel, the new channel will be graded to match geometry (width, depth, slope) of the existing channel for Primrose Creek. Excavation of the channel will stop upslope to allow a barrier between the excavated channel and the pond to remain.

Water will be pumped out through a filter bag, as necessary, from excavation areas within the channel.

Riprap will be installed in the lower tier of the excavated channel. Lower tier shall be sufficiently over-excavated to allow for the volume of rock placed within the channel while providing the specified finished dimensions.

NAGreen Vmax SC250 TRM will then be installed on the upper tier of the excavated channel. Grading will be completed on the downslope end of the channel. Excess material will then be spread on site.

The upslope end of the channel and interface to the pond will remain until the pond pool elevation is lowered by a pump. At the quarry outlet, a pump will be used to lower the quarry pool elevation incrementally for safety purposes. The water will be pumped into the lower tier of the portion of the channel that has been constructed. The pond elevation will be lowered to just below the proposed invert of the weir outlet. The channel excavation will then be completed up until the interface of the channel to the pond. Water will then be pumped, as necessary, out of the new or existing excavation areas. Install riprap in the remaining portion of the lower tier of the channel. Install NA Green Channel lining on the remaining upper tier portion of the channel.

**SEQUENCE OF BMP INSTALLATION**

**GENERAL**

1. All earth disturbance activities shall proceed in accordance with the sequence provided below.
2. At least 3 days prior to starting any earth disturbance activities, or expanding into an area previously unmarked, the Pennsylvania One Call System Inc. shall be notified at 1-800-242-1776 for the location of the existing underground facilities.
3. All earth disturbance activities shall proceed in accordance with the sequence provided on the plan drawings. Deviation from that sequence must be approved by the Department in writing prior to implementation.
4. Clearing, grubbing and topsoil stripping will be limited to those areas described in each stage of the construction sequence. General site clearing, grubbing and topsoil stripping may not commence in any stage or phase of the project until the E&S BMPs specified by the BMP sequence for that stage or phase have been installed and are functioning as described in this Plan.
5. Topsoil required for the establishment of vegetation shall be stockpiled in the amount necessary to complete the finish grading of all areas that are to be stabilized by vegetation. Stockpile heights shall not exceed 35 feet. Stockpile slopes shall be 2H:1V or flatter.
6. Immediately upon discovering unforeseen circumstances posing the potential for accelerated erosion and/or sediment pollution, the operator shall implement appropriate best management practices (BMPs) to minimize the potential for erosion and sediment pollution.
7. All off-site waste and borrow areas must have an E&S Plan approved by the local conservation district or the Department fully implemented prior to being activated.

**TETRA TECH**  
www.tetrattech.com

**pennsylvania**  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
POTTSVILLE OFFICE

NO.	BY	DATE	DESCRIPTION
0	JNB	11/30/2022	ISSUED FOR CONSTRUCTION
REVISIONS			



SUBMITTED BY: Heather Trexler, PG, Project Manager TETRA TECH, INC.	DATE: 07/06/2022	PLOT DATE: 12/8/2022	SCALE:
APPROVED BY:	DRAWN BY: JNB	CHECKED BY: HT	ACAD FILE NAME:
ALL EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR AT THE SITE			

<b>QUARRY DISCHARGE OUTLET PROJECT</b>	
<b>NEW HOPE CRUSHED STONE &amp; LIME CO.</b>	
SOLEBURY TOWNSHIP	BUCKS COUNTY
DRAWING NUMBER: <b>02248-C-001</b>	

<b>NOTES</b>
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8. All sediment removed from BMPs shall be disposed of in the manner described on the on-site E&S Plan.
9. Sediment tracked onto any public roadway or sidewalk shall be returned to the construction site by the end of each work day and disposed in the manner described in this plan. In no case shall the sediment be washed, shoveled, or swept into any roadside ditch, storm sewer, or surface water.
10. Until the site is stabilized, all erosion and sediment BMPs shall be maintained properly. Maintenance shall include inspections of all erosion and sediment BMPs after each runoff event and on a weekly basis. All preventative and remedial maintenance work, including clean out, repair, replacement, regrading, reseeding, remulching and renetting must be performed immediately. If the E&S BMPs fail to perform as expected, replacement BMPs, or modifications of those installed will be required.
11. Areas which are to be topsoiled shall be scarified to a minimum depth of 3 to 5 inches. Compacted soils should be scarified 6 to 12 inches along contour wherever possible prior to seeding. Areas to be vegetated shall have a minimum 4 inches of topsoil in place prior to seeding and mulching. Fill outlopes shall have a minimum of 2 inches of topsoil.
12. All fills shall be compacted as required to reduce erosion, slippage, settlement, subsidence or other related problems. Fill intended to support buildings, structures and conduits, etc. shall be compacted in accordance with local requirements or codes.
13. All earthen fills shall be placed in compacted layers not to exceed 9 inches in thickness.
14. All pumping of water from any work area shall be over undisturbed vegetate areas.
15. An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other permanent non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movements.
16. If earth disturbance activities are to cease for more than 4 days, the operator shall stabilize any areas disturbed by the activities. During non-germinating periods, mulch must be applied. Disturbed areas which are not at finished grade and which will be redisturbed within 1 year must be stabilized in accordance with temporary vegetative stabilization. Disturbed areas which are at finished grade or which will not be redisturbed within 1 year must be stabilized with permanent vegetative stabilization.
17. Erosion control blankets are recommended to be installed on all slopes 3:1 or greater.
18. The operator shall remove from the site, recycle, or dispose of all building materials and wastes in accordance with the PADEP's solid waste management regulations at 25 pa. Code 260.1 et seq., and 287.1 et seq. The contractor shall not illegally bury, dump, or discharge any building material or wastes at the site.
19. The Contractor is responsible for ensuring that any material brought on site is clean fill. Form FP-001 Must be retained by the property owner for any fill material affected by a spill or release of a regulated substance but qualifying as clean fill due to analytical testing.
20. Fill materials shall be free of frozen particles, brush, roots, sod, or other foreign or objectionable materials that would be interfere with or prevent construction of satisfactory fills.
21. Frozen materials or soft, mucky, or highly compressible materials shall not be incorporated into fills.
22. Fill shall not be placed on saturated or frozen surfaces.
23. Seeps or springs encountered during construction shall be handled in accordance with the standard and specification for subsurface drain or other approved method.
24. All graded areas shall be permanently stabilized immediately upon reaching finished grade. Cut slopes in competent bedrock and rock fills need not be vegetated. Seeded within 50 feet of a surface water, or as otherwise shown on the plan drawings, shall be blanketed according to the standards of this plan.
25. Immediately after earth disturbance activities cease in any area or subarea of the project, the operator shall stabilize all disturbed areas. During non-germinating months, mulch or protective blanketing shall be applied as described in the plan. Areas not at finished grade, which will be reactivated within 1 year, may be stabilized in accordance with the temporary stabilization specifications. Those areas which will not be reactivated within 1 year shall be stabilized in accordance with the permanent stabilization specifications.
26. Permanent stabilization is defined as a minimum uniform, perennial 70% vegetative cover or other permanent non-vegetative cover with a density sufficient to resist accelerated erosion. Cut and fill slopes shall be capable of resisting failure due to slumping, sliding, or other movements.
27. E&S BMPs shall remain functional as such until all areas tributary to them are permanently stabilized or until they are placed by another BMP approved by the Department.

28. Upon completion of all earth disturbance activities and permanent stabilization of all disturbed areas, the owner and/or operator shall contact the Department for an inspection prior to removal/conversion of the E&S BMPs.
29. After final site stabilization has been achieved, temporary erosion and sediment BMPs must be removed or converted to permanent post construction stormwater management BMPs. Areas disturbed during removal or conversion of the BMPs shall be stabilized immediately. In order to ensure rapid revegetation of disturbed areas, such removal/conversions are to be done only during the germinating season.
30. Upon completion of all earth disturbance activities and permanent stabilization of all disturbed areas, the owner and/or operator shall contact the Department to schedule a final inspection.
31. Clean Fill - Uncontaminated, non-water soluble, non-decomposable, inert, solid material. This includes soil, rock, stone, dredged material, used asphalt, and brick, block or concrete from construction and demolition activities that is separate from other waste and is recognizable as such. It does not include materials placed in or on the surface waters unless otherwise authorized, milled asphalt, or asphalt that has been processed for re-use.
32. Environmental Due Diligence - Regarding clean fill, Investigative techniques, including but not limited to, visual property inspections, electronic data base searches, review of property ownership, review of property use history, Sanborn maps, environmental questionnaires, transaction screens, analytical testing, environmental assessments or audits.

**Construction Sequence:**

A generalized construction sequence is provided below. The construction sequence is intended to provide a general course of action in order to assist the contractor with construction of the channel. Necessary parts for proper and complete execution of work pertaining to this plan, whether specifically mentioned or not, are to be performed by the contractor. The contractor shall comply with all requirements listed in this section. The contractor may be required to alter construction based on differing conditions encountered in the field.

1. Use and maintain existing access road.
2. Locate the channel centerline and extent of grading, with staking and/or flagging, prior to construction.
3. Install silt fence near the existing stream as necessary before excavation. After excavation practices, silt fence may be installed within excavation areas if necessary.
4. Strip and stockpile topsoil if encountered.
5. Begin excavation of the channel, starting on the downslope end. At the connection of the new and existing stream channel, grade new channel to match geometry (width, depth, slope) of existing channel for Primrose Creek. Excavation of the channel will stop upslope, to allow a barrier between the excavated channel and the pond to remain. Excavated material to be spread around the quarry at the Department's direction.
6. Pump water, as necessary, out of excavation areas.
7. Install riprap in the lower tier of the channel.
8. Install NA Green Channel lining on the upper tier of the channel.
9. Complete grading on the downslope end of the channel. Spread excess material on site. The upslope end of the channel and interface to the pond will remain until the pond pool elevation is lowered by a pump.
10. At the quarry outlet, use existing pump or approved alternate method to lower the quarry pool elevation incrementally for safety purposes. The water will be pumped into the lower tier of the portion of the channel that has been constructed. The pond elevation will be lowered to just below the proposed invert of the weir outlet.
11. Complete the channel excavation up until the interface of the channel to the pond.
12. Install riprap in the remaining portion of the lower tier of the channel.
13. Install NA Green Channel lining on the remaining upper tier portion of the channel.
14. Install topsoil and erosion control blankets on disturbed areas outside of the channel.
15. Apply temporary and permanent seeding to areas that has been disturbed for the installation of the channel. Apply permanent stabilization measures immediately to any disturbed area where work has reached final grade.

**MAINTENANCE AND INSPECTION PROCEDURES**

- Silt Fence – Silt fence should be inspected weekly and after each runoff event. Needed repairs should be initiated immediately after the inspection.
- Geotextiles – Where visible, geotextile should be inspected weekly and after runoff event. If geotextile is damaged, it will be repaired immediately after the inspection.
- Rock – All riprap shall be inspected at least weekly and after each runoff event. Displaced riprap shall be replaced immediately.

- Erosion Control Blanket – Blanketed areas shall be inspected weekly and after each runoff event until perennial vegetation is established to a minimum uniform 70% coverage throughout the blanketed area. Damaged or displaced blankets shall be restored or replaced within 4 calendar days.
- Pumped Water Filter Bag – Filter bags shall be inspected daily. If any problem is detected, pumping shall cease immediately and not resume until the problem is corrected.
- Temporary Seeding – Seeded areas will be inspected weekly and after each runoff event until perennial vegetation is established to a minimum uniform 70% coverage. If areas that have been vegetated are observed to have any riles, gullies or eroded areas, the area will be repaired and new seeding will be applied as soon as practicable.
- Permanent Seeding – Seeded areas will be inspected weekly and after each runoff event until perennial vegetation is established to a minimum uniform 70% coverage. If areas that have been vegetated are observed to have any riles, gullies or eroded areas, the area will be repaired and new seeding will be applied as soon as practicable.
- Mulch and Soil Supplements – Mulched areas will be inspected weekly and after each runoff event. If areas that have been mulched are observed to have any riles, gullies or eroded areas, the area will be repaired and new mulch will be applied as soon as practicable.

**PUMPING PLAN**

An existing portable pump is attached to a floating raft within the quarry pit. The pump is a Flygt high head impeller. According to the manufacturer, the pump may be capable of pumping 780 gpm, but that would be the maximum and at the end of the pump curve. The pump may be no lower than 65 ft under water. The pump discharges to a buried discharge line that discharges at the existing Primrose Creek channel. The contractor or Department will verify the buried pipe discharge diameter.

The pump has reportedly maintained pumping 0.78 million gallons per day (541 gpm).

The current water level in the quarry is at approximately 95 ft. The quarry is to be lowered in a safe and controlled manner for the installation of the weir outlet.

It is estimated that the volume of water to be removed could range from 37 to 56 million gallons. Using the existing pump at a rate of 541 gpm, constant inflow, and assuming pumping 24 hours per day, 7 days per week, the water level could be lowered to the quarry outlet elevation in 72 days. If pumping at 780 gpm, the water level could be at the quarry outlet elevation in 50 days. A 2-year storm event could increase the water level in the quarry by 0.78 feet.

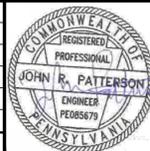
The lower tier of the channel is sized for a higher flow rate than the current pump capacity. The existing discharge line may be directed into the completed channel where it meets Primrose Creek while the remaining channel and outlet is constructed.

**Dewatering Sequence**

The contractor may propose an alternative to pumping plan and sequence to lower the quarry water level in a safe and controlled manner to allow for installation of the quarry outlet.

1. The existing decant pipe condition is unknown but is currently used for dewatering. A second temporary overland discharge pipe from the pump location at the quarry to the proposed discharge point may be installed to facilitate pumping.
2. The recommended temporary pipe is 12-inch HDPE and shall discharge to the lower tier channel.
3. Provide air bridges or protective soil cover for the piping at anticipated construction crossings, otherwise the temporary piping may be placed at grade.
4. Mobilize and setup the active pumping system including:
  - a. Fuel storage containment system in accordance with an approved spill prevention control and countermeasures plan.

- b. Suction hose attached with floatation buoys and intake screen
  - c. Pipe connections for suction and discharge lines.
5. Alternative to initial pumping in step 4; mobilize and setup a siphon system including:
- a. 12-inch manual shutoff valves with anchors and fittings. One valve must be located near the proposed 12-inch HDPE pipe discharge. A second valve may be used near the inlet depending on the contractor's plan and preferences for filling/charging the line.
  - b. Air release valve located toward the downstream side of the pipeline high point to allow air to escape from the 12-inch pipeline during line filling
  - c. Supply pump, fittings, and intake screen as required to fill the entire 12-inch siphon pipeline with water
  - d. General siphon procedure:
    - i. Close the 12-inch valve near the pipe discharge, open the air release valve, fill the line by pumping until all air is removed from the pipeline
    - ii. Close the air release, open the inlet of the 12-inch pipe with the inlet submerged by removing the pump connection and/or closing the inlet isolation valve (if used)
    - iii. Open the 12-inch valve near the pipe discharge and operate the siphon as directed by the owner
    - iv. After siphoning is discontinued or no longer possible, convert to the pumping system as described in step 5 above.
6. Connect all piping and position suction hoses attached to floatation buoys with positioning ropes secured to the shore with intake screen to limit debris entering the suction pump.
  7. Initiate pumping dewatering operations (or siphoning) at an anticipated flow rate of 780 gallons per minute with an impoundment drawdown rate of approximately 0.03 ft per day and discharge pumped clear water to the pipe outlet protection at the outlet of the temporary 12-inch HDPE pipe. It is the contractor's responsibility to lower the water level in the pit in a manner that does not endanger the properties along the receiving stream.
  8. Monitor the areas around the impoundment for signs of seepage or instability during drawdown. Adjustments to allowable drawdown rates may be considered based on observations during initial pumping.
  9. Keep a daily record of the estimated impoundment water level, pipe and pipe outlet condition, condition of the downstream channel.
  10. As the water level decreases, move pumping operations to a new elevation as needed. Reposition suction hoses, floatation buoys, positioning ropes, discharge pipe, and spill controls as required.
  11. Continually monitor the discharge for any potential solids transfer. When solids are encountered, suspend pumping and utilize a combination of adjustment of the suction hose and floatation buoy until solids/sits are no longer discharged. If necessary, utilize filter bags and/ or settling sumps to control any silt discharge.
  12. Allow dewatering to continue to about elevation 90' msl so that the quarry outlet can be installed in relatively dry conditions.
  13. Maintain low water levels in the impoundment by pumping as needed until the channel can be constructed and rip and vegetation is completed.



NO.	BY	DATE	DESCRIPTION
0	JNB	11/30/2022	ISSUED FOR CONSTRUCTION

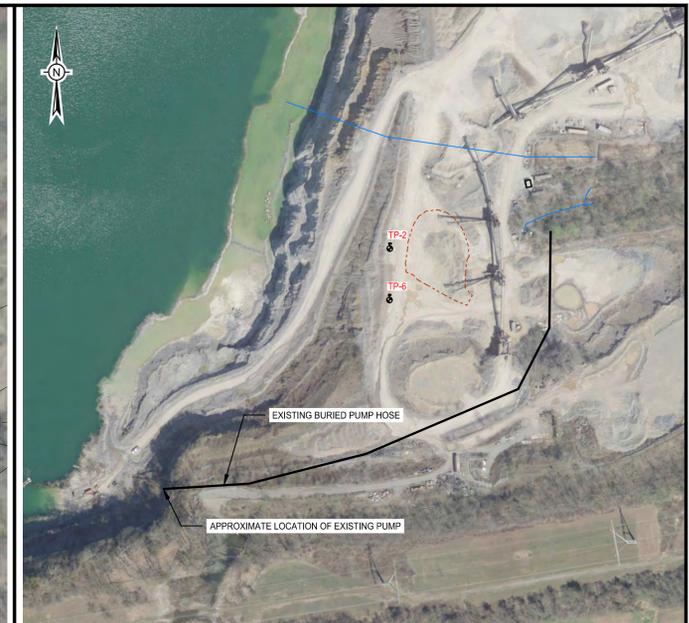
SUBMITTED BY:	DATE:	PLOT DATE:	SCALE:
Heather Trexler, PG, Project Manager	07/06/2022	12/8/2022	
TETRA TECH, INC.	DRAWN BY:	CHECKED BY:	
	JNB	HT	
APPROVED BY:	ACAD FILE NAME:		
	ALL EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR AT THE SITE		

**QUARRY DISCHARGE OUTLET PROJECT**  
**NEW HOPE CRUSHED STONE & LIME CO.**

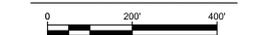
SOLEBURY TOWNSHIP      BUCKS COUNTY

**NOTES**

DRAWING NUMBER:  
**02248-C-002**



**PUMPING LOCATION PLAN**



MON WELL CAP #1  
 EL=100.54'  
 LAT: N40° 22' 42.86"  
 LONG: W74° 58' 22.56"  
 N: 392930.8293  
 E: 2742059.8463

MON WELL CAP #2  
 EL=99.85'  
 LAT: N40° 22' 42.87"  
 LONG: W74° 58' 22.42"  
 N: 392931.6184  
 E: 2742070.4116

**NOTES:**

1. EXISTING GROUND CONTOUR DATA SURVEYED BY NORTHEAST SURVEYORS, LLC, DATED OCTOBER 2022.
2. ALL AND ANY UTILITY LOCATIONS ARE UNKNOWN.
3. TEST PIT LOCATIONS SHOWN WERE VISUALLY IDENTIFIED.
4. AERIAL IMAGERY SHOWN IS PER PASDA LIDAR MAPPING DATED 2018. THE LATEST POND ELEVATION IS AT APPROXIMATELY ELEVATION 95, WHICH IS NOT SHOWN ON THE AERIAL IMAGE.
5. TETRA TECH IS NOT RESPONSIBLE FOR ANY DAMAGE TO THE EXISTING DISCHARGE SPILLWAY.



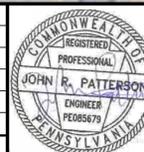
www.tetrattech.com



POTTSVILLE OFFICE

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REVISIONS



SUBMITTED BY:  
 Heather Trexler, PG, Project Manager  
 TETRA TECH, INC.

APPROVED BY:

DATE: 07/06/2022  
 PLOT DATE: 12/8/2022

DRAWN BY: JNB  
 CHECKED BY: HT

SCALE: 0 50' 100'

ACAD FILE NAME:

ALL EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR AT THE SITE

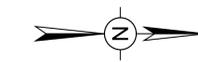
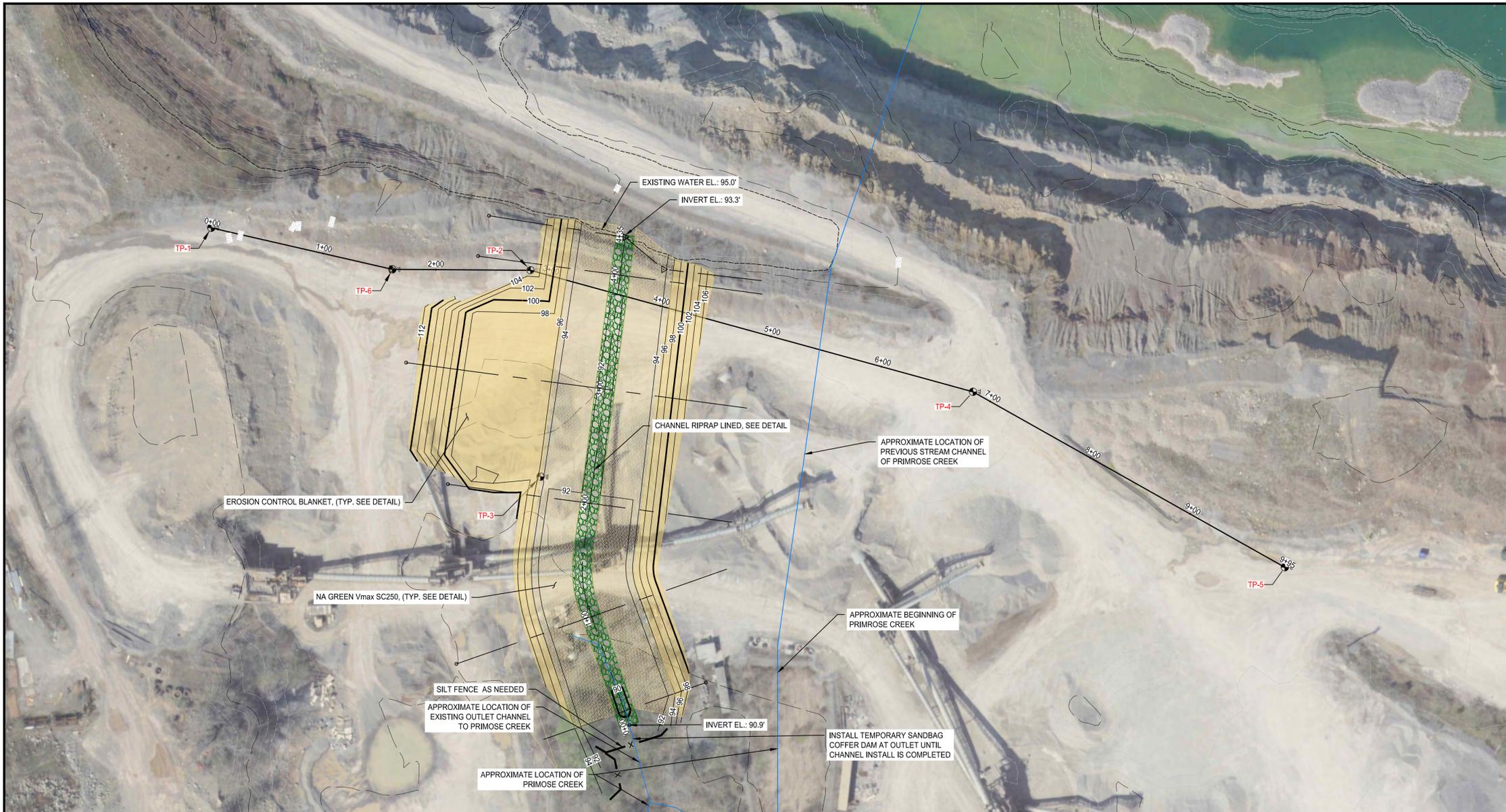
**QUARRY DISCHARGE OUTLET PROJECT  
 NEW HOPE CRUSHED STONE & LIME CO.**

SOLEBURY TOWNSHIP

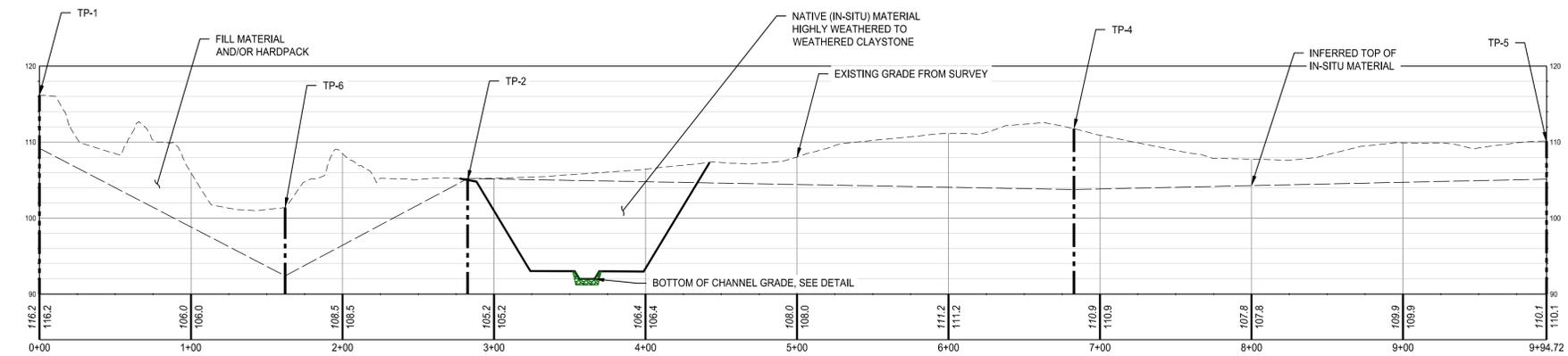
BUCKS COUNTY

DRAWING NUMBER: 02248-C-100

EXISTING SITE PLAN



SITE QUANTITY ESTIMATE		
DESCRIPTION	QUANTITY	UNITS
R-4 RIPRAP	515	C.Y.
MATERIAL EXCAVATED	31,750	C.Y.
GEOTEXTILE	774	S.Y.
NA GREEN Vmax SC250	3,586	S.Y.
EROSION CONTROL BLANKET	3,755	S.Y.
SEEDING	68,016	S.F.
SILT FENCE	120	L.F.



**TEST PITS PROFILE**  
 Scale - Horizontal: 1" = 50'  
 Vertical: 1" = 10'

- NOTES:**
- EXISTING GROUND CONTOUR DATA SURVEYED BY NORTHEAST SURVEYORS, LLC, DATED OCTOBER 2022.
  - ALL AND ANY UTILITY LOCATIONS ARE UNKNOWN.
  - TEST PIT LOCATIONS SHOWN WERE VISUALLY IDENTIFIED.
  - AERIAL IMAGERY SHOWN IS PER PASDA LIDAR MAPPING DATED 2018. THE LATEST POND ELEVATION IS AT APPROXIMATELY ELEVATION 95, WHICH IS NOT SHOWN ON THE AERIAL IMAGE.
  - TETRA TECH IS NOT RESPONSIBLE FOR ANY DAMAGE TO THE EXISTING DISCHARGE SPILLWAY.



NO.	BY	DATE	DESCRIPTION
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REVISIONS



SUBMITTED BY:  
 Heather Trexler, PG, Project Manager  
 TETRA TECH, INC.

APPROVED BY:

DATE: 07/06/2022  
 PLOT DATE: ----  
 DRAWN BY: JNB  
 CHECKED BY: HT

ACAD FILE NAME:

SCALE: 0 50' 100'  
 HORIZONTAL SCALE 1" = 20'  
 VERTICAL SCALE

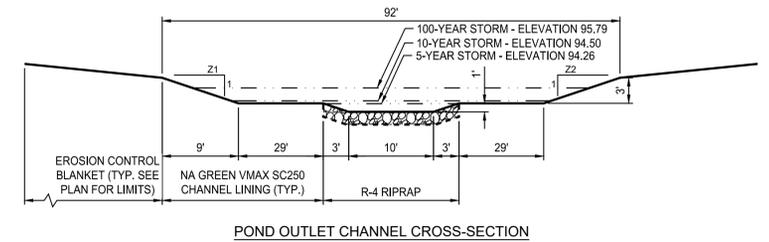
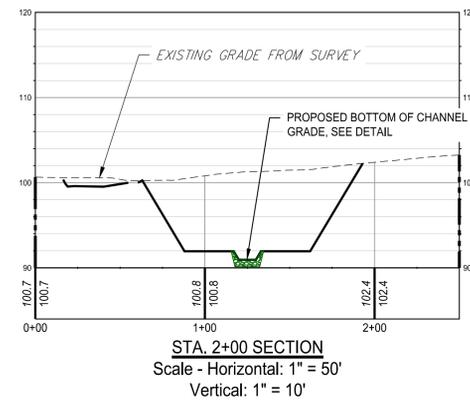
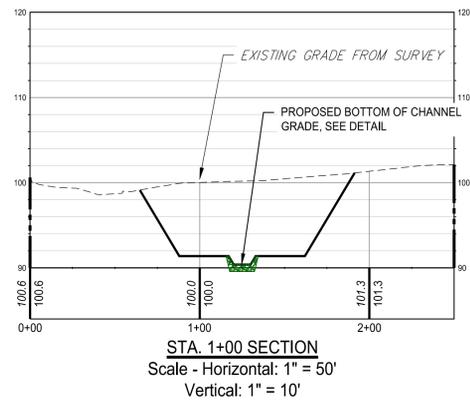
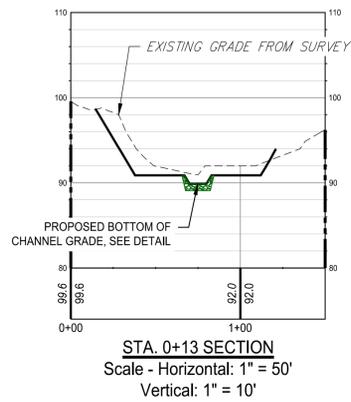
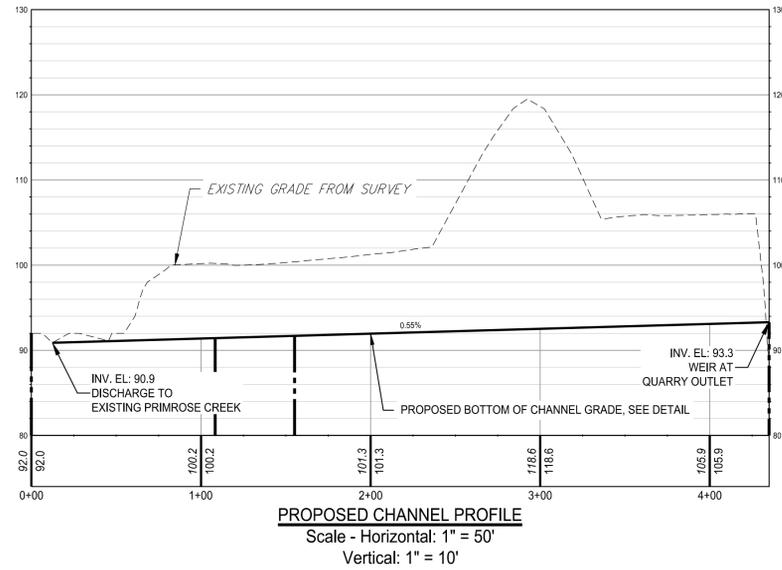
ALL EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR AT THE SITE

**QUARRY DISCHARGE OUTLET PROJECT**  
**NEW HOPE CRUSHED STONE & LIME CO.**

SOLEBURY TOWNSHIP      BUCKS COUNTY

SITE PLAN

DRAWING NUMBER:  
**02248-C-200**

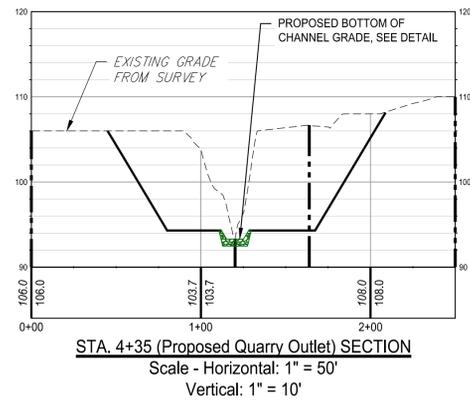
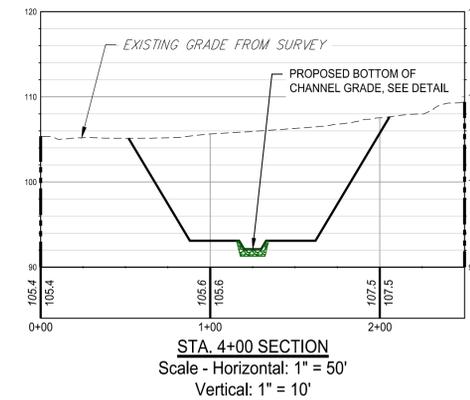
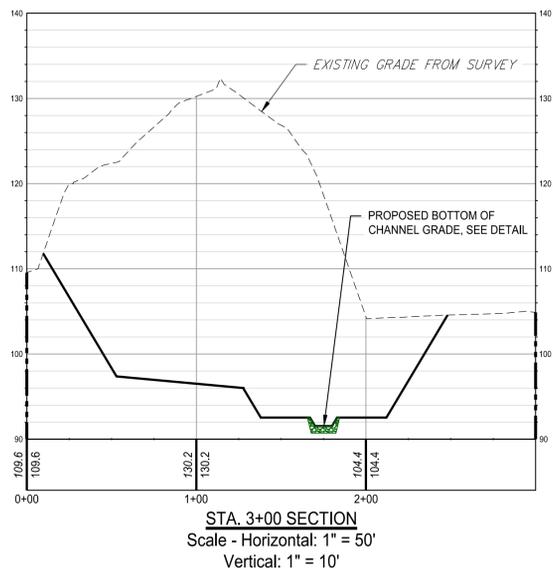


CHANNEL NO.	STATIONS	BOTTOM WIDTH B (FT)	DEPTH D (FT)	Z1 (FT)	Z2 (FT)	RIPRAP GRADUATION (R- )	RIPRAP DEPTH t (IN)	UNDERLAYMENT
1	ALL	10'	VARIES *	3	3	R-4	18	CLASS 4, TYPE A GEOTEXTILE

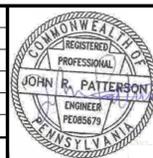
**NOTES:**

- CHANNEL DIMENSIONS ARE FOR THE COMPLETED CHANNEL AFTER ROCK PLACEMENT. CHANNEL MUST BE OVER-EXCAVATED A SUFFICIENT AMOUNT TO ALLOW FOR THE VOLUME OF ROCK PLACED WITHIN THE CHANNEL WHILE PROVIDING THE SPECIFIED FINISHED DIMENSIONS.
- DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.
- THE MINIMUM ROCK THICKNESS (t) SHALL BE 1.5 TIMES THE MAX ROCK SIZE.
- WATER ELEVATIONS SHOWN ABOVE ARE AT THE OUTLET OF POND INTO THE WEIR AND CHANNEL. WATER DEPTH WILL CHANGE AFTER VEGETATION GROWS IN THE CHANNEL. THE DEPTH OF CHANNEL WILL BE FROM GROUND SURFACE TO THE BOTTOM OF CHANNEL, VARYING FROM ELEVATION 93.3 TO ELEVATION 90.9. IN NO LOCATION WILL THE CHANNEL DEPTH BE LESS THAN 5'.
- PORTIONS OF THE LOWER CHANNEL THAT CONTAIN EXISTING BEDROCK WILL NOT REQUIRE R-4 RIPRAP.
- A GEOTEXTILE UNDERLAYMENT WILL BE INSTALLED UNDER THE RIPRAP IN THE CHANNEL.
- ALL ELEVATIONS SHOWN ARE AT STA. 4+35.

**TIERED CHANNEL DETAIL**



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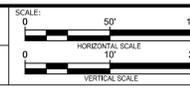


SUBMITTED BY:  
Heather Trexler, PG, Project Manager  
TETRA TECH, INC.

APPROVED BY:

DATE: 07/06/2022  
DRAWN BY: JNB

PLOT DATE: ----  
CHECKED BY: HT

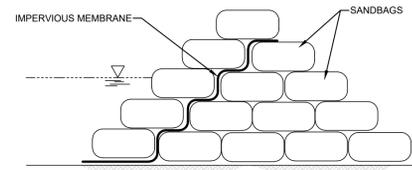


ACAD FILE NAME:  
ALL EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR AT THE SITE

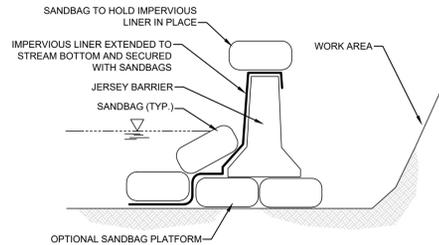
**QUARRY DISCHARGE OUTLET PROJECT**  
**NEW HOPE CRUSHED STONE & LIME CO.**

SOLEBURY TOWNSHIP      BUCKS COUNTY

**CHANNEL PROFILE AND SECTIONS**      DRAWING NUMBER: **02248-C-201**

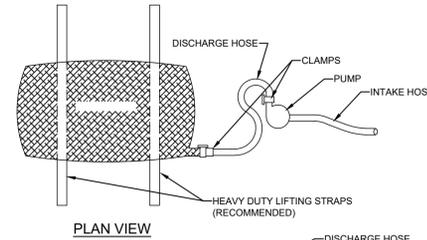


STACKED SANDBAGS OPTION

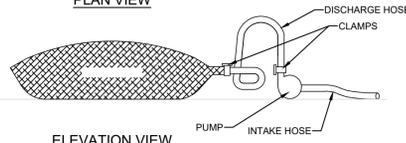


JERSEY BARRIER OPTION

STANDARD CONSTRUCTION DETAIL #3-15  
SANDBAG DIVERSION DAM OR COFFERDAM



PLAN VIEW



ELEVATION VIEW

NOTES:

LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS SHALL BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS:

PROPERTY	TEST METHOD	MINIMUM STANDARD
AVG. WIDE WIDTH STRENGTH	ASTM D-4884	60 LB/IN
GRAB TENSILE	ASTM D-4632	205 LB
PUNCTURE	ASTM D-4833	110 LB
MULLEN BURST	ASTM D-3786	350 PSI
UV RESISTANCE	ASTM D-4355	70%
AOS % RETAINED	ASTM D-4751	80 SIEVE

A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES SHALL BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS SHALL BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.

BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE UNDERLAYMENT AND FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%. FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.

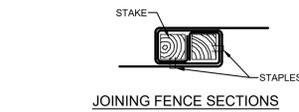
NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.

THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE.

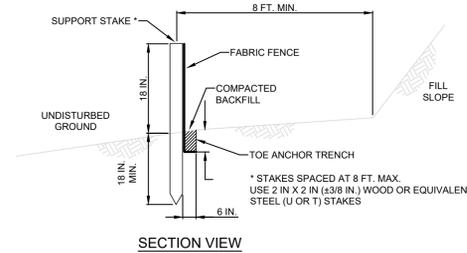
THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED.

FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

STANDARD CONSTRUCTION DETAIL #3-16  
PUMPED WATER FILTER BAG



JOINING FENCE SECTIONS



SECTION VIEW

NOTES:

FABRIC SHALL HAVE THE MINIMUM PROPERTIES AS SHOWN IN TABLE 4.3 OF THE PA DEP EROSION CONTROL MANUAL.

FABRIC WIDTH SHALL BE 30 IN. MINIMUM. STAKES SHALL BE HARDWOOD OR EQUIVALENT STEEL (U OR T) STAKES.

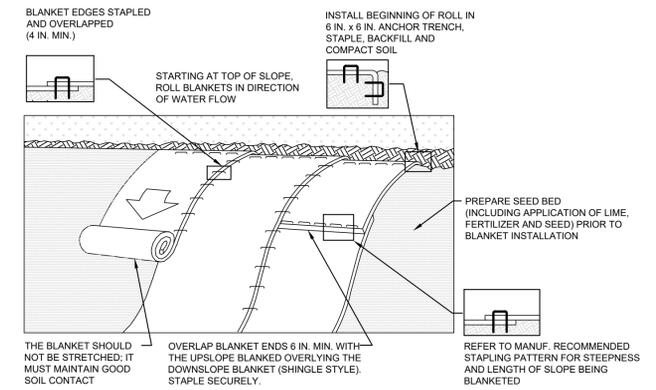
SILT FENCE SHALL BE PLACED AT LEVEL EXISTING GRADE. BOTH ENDS OF THE FENCE SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.

SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH HALF THE ABOVE GROUND HEIGHT OF THE FENCE.

ANY SECTION OF SILT FENCE WHICH HAS BEEN UNDERMINED OR TOPPED SHALL BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET (STANDARD CONSTRUCTION DETAIL # 4-6).

FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.

STANDARD CONSTRUCTION DETAIL #4-7  
STANDARD SILT FENCE (18" HIGH)



NOTES:

SEED AND SOIL AMENDMENTS SHALL BE APPLIED ACCORDING TO THE RATES IN THE PLAN DRAWINGS PRIOR TO INSTALLING THE BLANKET.

PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE.

SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.

BLANKET SHALL HAVE GOOD CONTINUOUS CONTACT WITH UNDERLYING SOIL THROUGHOUT ENTIRE LENGTH. LAY BLANKET LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.

THE BLANKET SHALL BE STAPLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.

STANDARD CONSTRUCTION DETAIL #11-1  
EROSION CONTROL BLANKET INSTALLATION



Specification Sheet  
VMax<sup>®</sup> SC250<sup>®</sup> Turf Reinforcement Mat

DESCRIPTION

The composite turf reinforcement mat (CTRM) shall be a machine-produced mat of 70% straw and 30% coconut fiber matrix incorporated into permanent three-dimensional turf reinforcement matting. The matrix shall be evenly distributed across the entire width of the matting and stitch bonded through a heavy duty UV stabilized nettings with 0.50 x 0.50 inch (1.27 x 1.27 cm) openings, an ultra heavy UV stabilized, dramatically corrugated (crimped) intermediate netting with 0.5 x 0.5 inch (1.27 x 1.27 cm) openings, and covered by an heavy duty UV stabilized nettings with 0.50 x 0.50 inch (1.27 x 1.27 cm) openings. The middle corrugated netting shall form prominent closely spaced ridges across the entire width of the mat. The three nettings shall be stitched together on 1.50 inch (3.81cm) centers with UV stabilized polypropylene thread to form permanent three-dimensional turf reinforcement matting. All mats shall be manufactured with a colored thread stitched along both outer edges as an overlap guide for adjacent mats.

The SC250 shall meet Type SA, SB, and SC specification requirements established by the Erosion Control Technology Council (ECTC) and Federal Highway Administration's (FHWA) FP-03 Section 713.18

Material Content		
Matrix	70% Straw Fiber	0.35 lb/sq yd (0.19 kg/sm)
	30% Coconut Fiber	0.15 lbs/sq yd (0.18 kg/sm)
Netting	Top and Bottom, UV-Stabilized Polypropylene	5 lb/1000 sq ft (2.44 kg/100 sm)
	Middle, Corrugated UV-Stabilized Polypropylene	24 lb/1000 sf (11.7 kg/100 sm)
	Thread	Polypropylene, UV Stable

Standard Roll Sizes		
Width	6.5 ft (2.0 m)	8 ft (2.44m)
Length	55.5 ft (16.9 m)	90 ft (27.4 m)
Weight ± 10%	34 lbs (15.42 kg)	70 lbs (31.8 kg)
Area	40 sq yd (33.4 sm)	80 sq yd (66.8 sm)

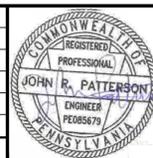


Index Property	Test Method	Typical
Thickness	ASTM D6525	0.62 in. (15.75 mm)
Resiliency	ASTM E524	95.2%
Density	ASTM D792	0.891 g/cm <sup>3</sup>
Mass/Unit Area	ASTM 6566	16.13 oz/sy (548 g/sm)
UV Stability	ASTM D4355/1000 HR	80%
Porosity	ECTC Guidelines	99%
Stiffness	ASTM D1388	222.65 oz-in.
Light Penetration	ASTM D6567	4.1%
Tensile Strength - MD	ASTM D6818	709 lbs/ft (10.51 kN/m)
Elongation - MD	ASTM D6818	23.9%
Tensile Strength - TD	ASTM D6818	712 lbs/ft (10.56 kN/m)
Elongation - TD	ASTM D6818	36.9%
Biomass Improvement	ASTM D7322	441%

	Design Permissible Shear Stress	
	Short Duration	Long Duration
Phase 1: Unvegetated	3.0 psf (144 Pa)	2.5 psf (120 Pa)
Phase 2: Partially Veg.	8.0 psf (383 Pa)	8.0 psf (383 Pa)
Phase 3: Fully Veg.	10.0 psf (480 Pa)	8.0 psf (383 Pa)
Unvegetated Velocity	9.5 fps (2.9 m/s)	
Vegetated Velocity	15 fps (4.6 m/s)	



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REVISIONS			



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Heather Trexler, PG, Project Manager	07/06/2022	11/30/2022	
TETRA TECH, INC.	DRAWN BY:	CHECKED BY:	
	JNB	HT	
APPROVED BY:	ACAD FILE NAME:		
	ALL EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR AT THE SITE		

**QUARRY DISCHARGE OUTLET PROJECT**  
**NEW HOPE CRUSHED STONE & LIME CO.**

SOLEBURY TOWNSHIP

BUCKS COUNTY  
DRAWING NUMBER:  
**02248-C-400**

**EROSION & SEDIMENT DETAILS**

**PERMANENT AND TEMPORARY VEGETATIVE PRACTICES**

PERMANENT VEGETATIVE STABILIZATION. DISTURBED AREAS WILL RECEIVE TOPSOIL (IF NEEDED) AND PERMANENT VEGETATIVE STABILIZATION, DEFINED AS A MINIMUM UNIFORM 70 PERCENT PERENNIAL VEGETATIVE COVER OF EROSION RESISTANT PERENNIAL SPECIES. IF SEEDING DATES ARE EXTENDED, FULL TEMPORARY SEEDING MIXTURE WILL BE APPLIED IN ADDITION TO 50 PERCENT OF THE PERMANENT SEEDING AND SOIL SUPPLEMENTS. THE REMAINING 50 PERCENT WILL BE APPLIED WITHIN THE NEXT SEEDING DATES. SEEDING SHALL BE IN ACCORDANCE WITH TABLE 11.4, UNLESS OTHERWISE DIRECTED BY THE OWNER.

TEMPORARY VEGETATIVE PRACTICES (INTERIM STABILIZATION). UPON TEMPORARY CESSATION OF AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OR PHASE OF AN ACTIVITY WHERE A CESSATION OF EARTH DISTURBANCE ACTIVITIES WILL EXCEED FOUR DAYS, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHED, OR OTHERWISE PROTECTED FROM ACCELERATED EROSION PENDING FUTURE EARTH DISTURBANCE ACTIVITIES. FOR AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OR PHASE OF AN EARTH DISTURBANCE ACTIVITY TO BE CONSIDERED TEMPORARILY STABILIZED, THE DISTURBED AREAS SHALL BE COVERED WITH ONE OF THE FOLLOWING: A MINIMUM UNIFORM COVERAGE OF MULCH AND SEED, WITH A DENSITY CAPABLE OF RESISTING ACCELERATED EROSION, OR AN ACCEPTABLE BMP WHICH TEMPORARILY MINIMIZES ACCELERATED EROSION. TEMPORARY STABILIZATION WILL NOT OCCUR ON ACTIVE VEHICULAR TRAVEL WAYS, STOCKPILES, AND DITCH SPOIL AREAS UNLESS THESE ACTIVITIES ARE CEASED FOR MORE THAN THREE DAYS. SEEDING SHALL BE IN ACCORDANCE WITH TABLE 11.4, UNLESS OTHERWISE DIRECTED BY THE OWNER.

SOIL AMENDMENT	PER ACRE	PER 1,000 SQ. FT.	PER 1,000 SQ. YD.	NOTES
<b>PERMANENT SEEDING APPLICATION RATE</b>				
AGRICULTURAL LIME	6 TON	240 LB.	2,480 LB.	OR AS PER SOIL TEST; MAY NOT BE REQUIRED IN AGRICULTURAL FIELDS
10-20-20 FERTILIZER	1,000 LB.	25 LB.	210 LB.	OR AS PER SOIL TEST; MAY NOT BE REQUIRED IN AGRICULTURAL FIELDS
<b>TEMPORARY SEEDING APPLICATION RATE</b>				
AGRICULTURAL LIME	1 TON	40 LB.	410 LB.	TYPICALLY NOT REQUIRED FOR TOPSOIL STOCKPILES
10-10-10 FERTILIZER	500 LB.	12.5 LB.	100 LB.	TYPICALLY NOT REQUIRED FOR TOPSOIL STOCKPILES

- A COMPOST BLANKET WHICH MEETS THE STANDARDS OF THE PADEP EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL (CHAPTER 11) MAY BE SUBSTITUTED FOR THE SOIL SUPPLEMENTS SHOWN IN TABLE 11.2.
- SOIL TESTING IS RECOMMENDED PRIOR TO SEEDING AND MULCHING TO DETERMINE THE PROPER SOIL AMENDMENTS AND APPLICATION RATES FOR THE PROPOSED SEED MIXTURES.
- NO SOIL AMENDMENTS SHOULD BE USED IN WETLAND AREAS.

**SEED MIXTURE**

SEE LINE LIST FOR LANDOWNER REQUIREMENTS. IN ABSENCE OF A SPECIFIED MIXTURE, SEED MIXTURE SHALL BE IN GENERAL ACCORDANCE WITH THE TABLE PROVIDED, AS COMMERCIALY AVAILABLE.

**MULCHING**

THE PURPOSE OF MULCH IS TO REDUCE RUNOFF AND EROSION, PREVENT SURFACE COMPACTION OR CRUSTING, CONSERVE MOISTURE, AID IN ESTABLISHING PLANT COVER, AND CONTROL WEEDS. MULCH SHALL BE APPLIED ON ANY AREA SUBJECT TO EROSION, OR WHICH HAS UNFAVORABLE CONDITIONS FOR PLANT ESTABLISHMENT AND GROWTH. THE PRACTICE MAY BE USED ALONE OR IN CONJUNCTION WITH OTHER STRUCTURAL AND VEGETATIVE CONSERVATION PRACTICES, SUCH AS WATERWAYS, PONDS, SEDIMENTATION TRAPS OR CRITICAL AREA PLANTING. ON SEDIMENT PRODUCING AREAS WHERE THE PERIOD OF EXPOSURE IS LESS THAN TWO MONTHS, MULCH MATERIALS SHALL BE APPLIED ACCORDING TO THE FOLLOWING GUIDELINES:

- STRAW MULCH SHALL BE APPLIED AT THE RATE OF THREE TONS PER ACRE. CHEMICALLY TREATED OR SALTED STRAW IS NOT ACCEPTABLE AS MULCH.
- STRAW MULCH SHALL BE ANCHORED IMMEDIATELY AFTER APPLICATION BY AT LEAST ONE OF THE FOLLOWING METHODS.
  - "CRIMPED" INTO THE SOIL USING TRACTOR DRAWN EQUIPMENT (STRAIGHT BLADED COULTER OR SIMILAR). THIS METHOD IS LIMITED TO SLOPES NO STEEPER THAN 3:1. MACHINERY SHOULD BE OPERATED ON THE CONTOUR. (CRIMPING OF HAY OR STRAW BY RUNNING IT OVER WITH TRACKED MACHINERY IS NOT RECOMMENDED).
  - SYNTHETIC BINDERS (CHEMICAL BINDERS) MAY BE USED AS RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH PROVIDED SUFFICIENT DOCUMENTATION IS PROVIDED TO SHOW THAT IT IS NON-TOXIC TO NATIVE PLANT AND ANIMAL SPECIES.
  - LIGHTWEIGHT PLASTIC, FIBER, OR PAPER NETS MAY BE STAPLED OVER THE MULCH ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

MULCHED AREAS SHALL BE CHECKED PERIODICALLY AND AFTER EACH RUNOFF EVENT (E.G. RAIN, SNOWMELT, ETC) FOR DAMAGE UNTIL THE DESIRED PURPOSE OF THE MULCHING IS ACHIEVED. DAMAGED PORTIONS OF THE MULCH OR TIE-DOWN MATERIAL SHALL BE REPAIRED AS SOON AS PRACTICAL.

MULCH SHALL BE APPLIED AT RATES SHOWN IN TABLE 11.6.

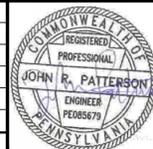
MULCH TYPE	APPLICATION RATE (MINIMUM)			NOTES
	PER ACRE	PER 1,000 SQ. FT.	PER 1,000 SQ. YD.	
STRAW	3 TONS	140 LB.	1,240 LB.	EITHER WHEAT OR OAT STRAW, FREE OF WEEDS, NOT CHOPPED OR FINELY BROKEN
HAY	3 TONS	140 LB.	1,240 LB.	TIMOTHY, MIXED CLOVER AND TIMOTHY OR OTHER NATIVE FORAGE GRASSES
WOOD CHIPS	4 TO 6 TONS	185 TO 275 LB.	1,650 TO 2,500 LB.	MAY PREVENT GERMINATION OF GRASSES AND LEGUMES
HYDROMULCH	1 TON	47 LB.	415 LB.	SEE LIMITATIONS ABOVE

MIXTURE NO.	SPECIES	SEEDING RATES - PLS(1)	
		MOST SITES	ADVERSE SITES
1 (1)	SPRING OATS (SPRING), OR	64	96
	ANNUAL RYEGRASS (SPRING OR FALL), OR	10	15
	WINTER WHEAT (FALL), OR	90	120
	WINTER RYE (FALL)	56	112
2 (2)	FINE FESCUE, OR	35	40
	KENTUCKY BLUEGRASS, PLUS	25	30
	REDFOP (3), OR	3	3
	PERENNIAL RYEGRASS	15	20
8	FLATPEA, PLUS	20	30
	PERENNIAL RYEGRASS	20	25
11	DEFERTONGUE, PLUS	15	20
	BIRDSFOOT TREFOIL	6	10
12 (4)	SWITCHGRASS, OR	15	20
	BIG BLUESTEM, PLUS	15	20
	BIRDSFOOT TREFOIL	6	10
13	ORCHARDGRASS, OR	20	30
	SMOOTH BROMEGRASS, PLUS	25	35
	BIRDSFOOT TREFOIL	6	10

- IF HIGH-QUALITY SEED IS USED, FOR MOST SITES SEED SPRING OATS AT A RATE OF 2 BUSHELS PER ACRE, WINTER WHEAT AT 11.5 BUSHELS PER ACRE, AND WINTER RYE AT 1 BUSHEL PER ACRE. IF GERMINATION IS BELOW 90%, INCREASE THESE SUGGESTED SEEDING RATES BY 0.5 BUSHELS PER ACRE.
- THIS MIXTURE IS SUITABLE FOR FREQUENT MOWING. DO NOT CUT SHORTER THAN 4 INCHES.
- KEEP SEEDING RATE TO THAT RECOMMENDED IN TABLE. THESE SPECIES HAVE MANY SEEDS PER POUND AND ARE VERY COMPETITIVE. TO SEED SMALL QUANTITIES OF SMALL SEEDS SUCH AS WEEPING LOVEGRASS AND REDTOP, DILUTE WITH DRY SAWDUST, SAND, RICE HULLS, BUCKWHEAT HULLS, ETC.
- DO NOT MOW SHORTER THAN 9 TO 10 INCHES.

SITE CONDITIONS	NURSE CROP	SEED MIXTURE (SELECT ONE MIXTURE)
SLOPES AND BANKS (NOT MOWED)		
WELL-DRAINED	1 PLUS	8 OR 12
VARIABLE DRAINAGE	1 PLUS	8
SLOPES AND BANKS (MOWED)		
WELL-DRAINED	1 PLUS	2
SLOPES AND BANKS (GRAZED/HAY)		
WELL-DRAINED	1 PLUS	2 OR 13
GULLIES AND ERODED AREAS	1 PLUS	12
EROSION CONTROL FACILITIES (BMPS)		
SOD WATERWAYS, SPILLWAYS, FREQUENT WATER FLOW AREAS	1 PLUS	2
DRAINAGE DITCHES		
SHALLOW, LESS THAN THREE FEET DEEP	1 PLUS	2
DEEP, NOT MOWED	1 PLUS	8
POND BANKS, DIKES, LEVEES, DAMS, DIVERSION CHANNELS AND OCCASIONAL WATER FLOW AREAS		
MOWED AREAS	1 PLUS	2
NON-MOWED AREAS	1 PLUS	8
FOR HAY OR SILAGE ON DIVERSION CHANNELS AND OCCASIONAL WATER FLOW AREAS	1 PLUS	13
HIGHWAYS (2)		
NON-MOWED AREAS		
WELL-DRAINED	1 PLUS	8
VARIABLE DRAINED	1 PLUS	8
POORLY DRAINED	1 PLUS	8
AREAS MOWED SEVERAL TIMES PER YEAR	1 PLUS	2
UTILITY ROW		
WELL-DRAINED	1 PLUS	8 OR 12
VARIABLE DRAINED	1 PLUS	8
WELL-DRAINED AREAS FOR GRAZING/HAY	1 PLUS	2 OR 13
EFFLUENT DISPOSAL AREAS	1 PLUS	2 OR 8
SANITARY LANDFILLS	1 PLUS	11 OR 12
SURFACE MINES		
SPOILS, MINE WASTES, FLY ASH, SLAG, SETTLING BASIN	1 PLUS	8, 11 OR 12
RESIDUES AND OTHER SEVERELY DISTURBED AREAS (LIME TO SOIL TEST)		
SEVERELY DISTURBED AREAS FOR GRAZING/HAY	1 PLUS	13

- FOR SEED MIXTURES 11 AND 12, ONLY USE SPRING OATS OR WEEPING LOVEGRASS (INCLUDED IN MIX) AS NURSE CROP.
- CONTACT THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION DISTRICT ROADSIDE SPECIALIST FOR SPECIFIC SUGGESTIONS ON TREATMENT TECHNIQUES AND MANAGEMENT PRACTICES.



SUBMITTED BY:	DATE:	DATE:	SCALE:
Heather Trexler, PG, Project Manager	07/06/2022	12/9/2022	
TETRA TECH, INC.	DRAWN BY:	CHECKED BY:	
	JNB	HT	
APPROVED BY:	ACAD FILE NAME:		
	ALL EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR AT THE SITE		

<b>QUARRY DISCHARGE OUTLET PROJECT NEW HOPE CRUSHED STONE &amp; LIME CO.</b>	
SOLEBURY TOWNSHIP	BUCKS COUNTY
<b>EROSION &amp; SEDIMENT DETAILS</b>	
<b>02248-C-401</b>	