

Module 14: Streams/Wetlands

[Chapter 105/§77.504/§77.523]

Note: The United States Army Corp of Engineers (Corps) authorizes a Pennsylvania State Programmatic General Permit – 4 (PASPGP-4) when there will be a discharge of dredged or fill materials, or the placement of both temporary and/or permanent structures, which individually or cumulatively result in impacts to 1.0 acre or less of waters including wetlands. Projects will be sent to the Corps as a Category III activity for review. The Commonwealth has issued 401 Water Quality Certification for projects eligible under PASPGP-4.

If there will be a discharge of dredged or fill materials, or the placement of both temporary and/or permanent structures, which individually or cumulatively result in impacts to more than 1.0 acre of waters including wetlands, or such activities are otherwise ineligible for a PASPGP-4, the Corps may require an individual permit in accordance with Section 404 of the Clean Water Act and separate 401 Water Quality Certification.

Stream/Wetland encroachments may also require authorization from the US Army Corps of Engineers (Corps) under Section 404 of the Clean Water Act. If this project requires a federal permit, you may be eligible for either PASPGP-4 authorization or you must file a separate application with the Corps. If you require a permit and are not eligible under the PASPGP-4 you must request a Section 401 Water Quality Certification from the Department using module 14A "Request for Federal Clean Water Act (CWA) Section 401 Certification for Mining Activities."

Does this project require a permit from the Corps? ☐ Yes ☒ No

If no, explain why not.

There will not be placement of fill or disturbance within the regulated 100 year storm floodplain.

14.1 Mining Activities Within 100 Feet of a Stream/Stream Relocation/Channel Change

If the mining activities are proposed within 100 feet of an intermittent or perennial stream, including haul road crossings, or the relocation or channel change of an intermittent or perennial stream provide the following information: (**Note:** Variance request for these and the expansion of pits must be included in the proof of publication. A separate Module 14.1 should generally be completed for each proposed encroachment.)

- a) Name and location of the stream; and location, length, and acreage disturbed by the proposed activities (Identify the location of the proposed activities on Exhibits 9 and 18);

The proposed stream variance will occur on Rhoades Creek, which is located south of Rockwood Borough and runs subparallel to Rockdale Road from the creek's confluence with the Casselman River. The variance site of proposed activity is approximately 0.6 miles upstream from the confluence. The proposed variance area is 0.12 acres, with a width of 50' and length of 100', going from the stream's bank up to the 100' stream barrier. A 50'x50' working area will be constructed 10' beyond the stream barrier with crushed aggregate to turn small trucks and place a pump for water intake. A portable pump, or similar electric pump type, will be used to provide clean water for aggregate washing activities. The pump will utilize a flexible hose with suction screen. The hose can be laid on the surface and placed in a localized depression in the stream bed. No excavation or disturbance is proposed within the FEMA delineated flood zone.

- b) A narrative giving a description and the purpose and justification of the proposed activities;

The proposed impacts are minimal and consist of installation of an access road and parking of a diesel-powered water-pump trailer near the banks of Rhoades Creek for the purpose of drawing water from the creek for mining usage. The site of proposed variance and pumping is on land leased by Rockwood Stone, LLC. Potential uses may include aggregate wash plant operation, road dust suppression, and use in various other activities associated with the mining operation. The impacts proposed are minimal and will not result in disturbance within the FEMA delineated flood zone. The intake piping will be portable, consisting of a flexible steel-cored hose running from the pump to the stream. The pump will be located outside of the FEMA delineated 100-year storm flood plain on a pad of crushed aggregate and may be placed only when pumping is needed. The proposed variance is requested due to the limited environmental impact and lack of other water sources on-site.

- c) A description of the character of the stream bed and banks, and a profile of the stream for a reasonable distance above and below the proposed site showing bed slopes, normal and flood water surfaces and a description of the riparian vegetation including a characterization of the resident aquatic community, a description of the riparian vegetation and an assessment of the probable hydrologic consequences of the proposed activities on the water quality and quantity and the resident aquatic community. Provide the name(s), address(es) and telephone number(s) of the individual(s) responsible for the collection and analysis of this data and provide a description of the methodologies used to collect and analyze the data;

See attached Exhibit 14.1a and 14.1b for the X-X' and Y-Y' stream profiles. The stream bed is rocky and alternates between stretches of steep riffles and shallow pools. The riparian vegetation is characterized by coniferous forest with little undergrowth. Stream data was gathered using the Stream Stats database and is included in the attached report. Rhoades Creek has a 50-year recurrence interval base flow of 2.13 cfs, or 956 gpm. This volume will be used as the average daily stream flow to provide a conservative analysis of stream characteristics. The proposed periodic pumping rate is 500 gpm (1.11 cfs). For a pass-by flow equivalent to 20% of the average daily stream flow the stream must have a flow of 0.43 cfs. With a withdrawal rate of 500 gpm a pass-by flow of 1.02 cfs can be achieved, which greatly exceeds pass-by flow requirements. The proposed withdrawal rate is based on a consideration of mining needs, and allows for sufficient pass-by flow for resident aquatic community needs. To acquire an adequate water supply for mining needs, pumping may be increased, however a sufficient pass-by flow will be maintained during pumping. A staff gauge will be installed in Rhoades Creek at the proposed pumping site with a visual indicator showing when stream conditions allow for pumping. No pumping will be performed if stream conditions are lower than 1.54 cfs, thus maintaining a pass-by flow of 0.43 and withdrawal rate of 500 gpm. It is noted that the Q 7-10 flow value is approximately 33 gpm, as is indicated in the attached Stream Stats report. A pump mounted on a trailer or similar type will be used to retrieve water. An example brochure of the type of trailer which may be used is attached.

It is believed that pumping the proposed volume from the stream will not negatively impact resident aquatic species. By implementing the proposed pass-by flow plan, a sufficient volume of water will be available for downstream aquatic species. It is noted that it is a short distance from the Rhoades Creek withdrawal to its confluence with the Casselman River. The Rhoades Creek banks become steeply incised which concentrates water flow. There are no known water intake structures in the downstream length prior to the confluence with the Casselman River. The pass-by staff gauge must be surveyed and properly calibrated to ensure accurate readings prior to commencing water withdrawal operations. This information was prepared by Earthtech, Somerset office, 966 Pleasant Hill Road.

- d) A stream profile for the existing and proposed channel for a reasonable distance upstream, downstream and within the proposed change, showing bed slopes, pool-riffle ratios, normal and flood water surfaces, and existing obstructions;

See Exhibit 14.1a and 14.1b for stream profiles, bed slopes, pool-riffle ratios, and normal and flood water surfaces. There are no proposed changes to the stream bed or banks. There are no existing man-made obstructions. Some large cobbles/boulders are present in the stream channel.

- e) A hydrologic and hydraulic analysis which shall include:
1. data on size, shape, and characteristics of the watershed;
 2. the size and frequency of the design storm;
 3. the hydraulic capacity of any structures or replacement channel;
 4. the hydraulic capacity of the channel upstream and downstream of the structure or the relocation/channel change;

The attached Stream Stats report for Rhoades Creek was used for watershed data. The drainage area for Rhoades Creek is 4.6 square miles and consists of an approximately even balance of cropland and forestland. Based on visual estimations using Google Earth Imagery, the forest is approximately 70% deciduous and 30% coniferous within the drainage area, and nearly 100% coniferous in the vicinity of the proposed installation. This project was designed to avoid impacts to FEMA delineated 100-year floodplains. See the attached National Flood Hazard Layer FIRMette for information on the floodplains. The water-pump trailer will be portable via pick-up truck and easily removed from the staging pad in case of a flood event. The suction hose can be handled by one man and can be removed during high flow or freezing conditions.

- f) Where a bridge, culvert or other water obstruction is proposed, provide the following information:

(Note: General Permit (BMR-GP-102) is available for construction of access roads.)

- 1) Plans and details showing the location, type, size, and height of the structure;

N/A – no bridge, culvert, or other water obstruction is proposed.

- 2) A narrative description of the construction methods and sequence including water handling during construction, and erosion and sedimentation controls;

N/A

- 3) Indicate if the structure will be temporary or permanent (include plans for removal of temporary structures).

N/A

- g) For a Channel Change or Stream Relocation:

A detailed plan and cross-sections of the existing and proposed channel upstream, downstream and within the proposed channel change showing the limits and configuration of the proposed activities, dimensions, channel linings, and normal and flood water surfaces;

A description of the construction methods and sequence including: water handling during construction, erosion and sedimentation controls, and measures to be taken to prevent adverse impacts to water quality and quantity, water users and the aquatic communities.

- h) A characterization of the existing water quality and quantity of the stream including downstream water uses, and 25 Pa Code Chapter 93 Protected Water Use Classification.

N/A

14.2 Wetland Related Information

- a) Provide the name(s), address(es), telephone number(s) and qualifications of the person(s) who made the determination if wetlands exist within the proposed permit area.

N/A – no wetlands exist in the vicinity of proposed water intake. Steep hillsides and rocky terrain dominate the local landscape.

- b) Show the location of wetlands on Exhibits 6.2, 9 and 18.

- c) What is the total wetland acreage (which will be affected) for the proposed permit area?

N/A _____ acres.

- d) Provide responses to the following for each wetland which will be affected by the proposed mining activities:

Exceptional Value Wetland Characteristics

- 1) Does the wetland serve as habitat for flora and fauna listed as "threatened" or "endangered" under the Endangered Species Act of 1973, Wild Resource Conservation Act, Fish and Boat Code, or Game and Wildlife Code?

☐ yes

☐ no

- 2) Is the wetland hydrologically connected to or located within 1/2 mile of the wetlands identified in d)1) and does it maintain the habitat of the "threatened" or "endangered" species within the wetlands identified in d)1) above)?

☐ yes

☐ no

NOTE: If this wetland is located more than 1000 feet from the permit area, show its location (and the location of the wetland that is hydrologically connected to or located within ½ mile of) on the Exhibit 6.1 Map.

- | | | |
|--|------------------------------|-----------------------------|
| 3) Is the wetland located in or along the floodplain of a wild trout stream (as designated by the Pennsylvania Fish and Boat Commission), or the floodplain of a tributary to a wild trout stream? | ☐ yes | ☐ no |
| 4) Is the wetland located in or along the floodplain of a stream listed as exceptional value (under 25 Pa Code Chapter 93) or the floodplain of a tributary to an exceptional value stream? | ☐ yes | ☐ no |
| 5) Is the wetland within the corridor of a waterway which has been designated as a wild or scenic river in accordance with the Wild and Scenic Rivers Act of 1968 or the PA Scenic Rivers Act? | ☐ yes | ☐ no |
| 6) Is the wetland part of, or located along, an existing public or private drinking water supply and does it maintain the quality or quantity of the drinking water supply? | ☐ yes | ☐ no |
| 7) Is the wetland located in areas designated by the Department as "natural" or "wild" areas within state forest or park lands? | ☐ yes | ☐ no |
| 8) Is the wetland located in areas designated as Federal wilderness areas under the Wilderness Act or the Federal Eastern Wilderness Act of 1975? | ☐ yes | ☐ no |
| 9) Is the wetland located in areas designated as National natural landmarks by the Secretary of the Interior under the Historic Sites Act of 1935? | ☐ yes | ☐ no |

NOTE: If a "yes" response is indicated for any question in d)1) through d)9), the wetlands would be "exceptional value" (as defined in 25 Pa Code Section 105.17) and a demonstration must be made that the requirements of subsection (a) of 25 Pa Code Section 105.18(a) have been met.

Wetland Functions

- | | | |
|---|------------------------------|-----------------------------|
| 10) Does the wetland serve natural biological functions, including food chain production; general habitat; and nesting, spawning, or resting sites for aquatic or land species? | ☐ yes | ☐ no |
| 11) Does the wetland provide areas for study of the environment, or as sanctuaries or refuges? | ☐ yes | ☐ no |
| 12) Does the wetland aid in, or maintain natural drainage characteristics, natural water filtration processes, current (flow) patterns or other environmental characteristics? | ☐ yes | ☐ no |
| 13) Does the wetland serve as storage areas for flood and storm waters, or does it shield other areas from erosion or storm damage? | ☐ yes | ☐ no |
| 14) Does the wetland provide a groundwater recharge area that maintains minimum baseflows? | ☐ yes | ☐ no |
| 15) Does the wetland serve as a prime natural recharge area where surface water and groundwater are directly connected? | ☐ yes | ☐ no |
| 16) Does the wetland aid in the prevention of pollution? | ☐ yes | ☐ no |
| 17) Is the wetland used for, or does it provide the opportunity to be used for recreation? | ☐ yes | ☐ no |
- e) If a "yes" response is indicated for the question in d)1) or d)2), identify how the determination was made and indicate any contacts with state or federal agency personnel.

14.3 Wetland Impact Analysis/Assessment

- a) Describe the alternatives to the proposed mining activities that have been considered to avoid or minimize impacts on wetlands. An alternative analysis should include alternatives to the proposed mining activities, including alternative locations, routings or designs to avoid adverse impacts on the wetlands (e.g. relocating spoil/topsoil storage areas, rerouting haul roads).

N/A

- b) Discuss whether any of the alternatives are practical to achieve the basic purposes of the project taking into account availability, cost, technology and logistics of the other possible project sites which would not affect the wetlands.

N/A

- c) For any wetlands within the proposed permit area, provide the following:

- 1) Identify and delineate the wetland and the areal extent of the impact (wetlands must be identified and delineated in accordance with 25 Pa Code Section 105.451 Identification and delineation of wetlands – statement of policy).

N/A

- 2) Submit a cross-sectional view showing the wetland and the proposed mining area.

N/A

- 3) Explain how the proposed mining activities will directly affect the wetlands.

N/A

- aa) If the proposed mining activities will affect less than 1.0 acre of wetland and the wetland is not an exceptional value wetland (in accordance with 25 Pa Code Section 105.17), provide a description of the wetland functions which will be impacted by the proposed mining activities. **Note:** If a “yes” response is indicated for any question in Module 14.2 d)1) through d)9), the wetlands would be exceptional value (as defined in Section 105.17).

N/A

- bb) If the proposed mining activities will affect 1.0 or more acres of wetlands or may affect an exceptional value wetland, provide a detailed assessment of the wetland functions identified in Module 14.2 d)10) through d)17).

N/A

- d) If any wetlands within the proposed permit or adjacent area will be indirectly affected (e.g. altering the wetland hydrology), provide the following:

N/A

- 1) Identify and delineate the wetland and provide an estimate of the total wetland acreage affected (wetlands must be identified and delineated in accordance with 25 Pa Code Section 105.451 Identification and Delineation of Wetlands – statement of policy).

N/A

- 2) A description of how the proposed mining activities will indirectly affect the wetlands.

N/A

- e) Will the cumulative impact of the proposed and anticipated mining activities result in a major impairment of the wetland resource in the general area?

☐ yes

☐ no

Provide an explanation of the determination and identify any contacts with state or federal agencies involved in making the determination.

N/A

14.4 Wetland Mitigation/Replacement

Note: If a total of one-half (.5) acres or less of wetlands will be affected, participation in Pennsylvania's Wetlands Replacement Project may be authorized by the Department in lieu of onsite replacement of the wetlands.

a) If wetland mitigation measures or wetland replacement are proposed, address the following:

- 1) Identify the wetlands where mitigation measures will be employed.

N/A

- 2) Identify the wetlands that will be replaced and the location of the replacement wetland site. Provide the number of acres for each wetland to be replaced and the acreage of the replacement wetland.

N/A

- 3) Provide a plan for mitigation/replacement following the guidelines in the Department's technical guidance titled "Design Criteria - Wetlands Replacement Monitoring" document 363-0300-001. This guidance is available from the Division of Waterways, Wetlands and Erosion Control, Post Office Box 8854, Harrisburg, Pennsylvania 17105-8554 or through the Department's website.

N/A

Show the location of replacement wetland sites on the Operations Map (Exhibit 9) and the Land Use and Reclamation Map (Exhibit 18).

Note: At a minimum, wetland replacement must be at a 1:1 ratio (replacement acres: affected acres). The Department may require the ratio to exceed 1:1 based on the functions and values of the wetlands to be affected. Wetland replacement sites will generally not be approved unless the site is located within the same general area as the existing wetland to be replaced.

14.5 United States Army Corp of Engineers Permits

- a) If the United States Army Corp of Engineers (Corps) requires a Pennsylvania State Programmatic General Permit – 4 (PASPGP-4) for your proposed activity:

Completed and attach the "PASPGP-4 Cumulative Impacts Project Screening Form (3150-PM-BWEW0050)" and supporting documents listed below.

- 1) the PASPGP-4 Cumulative Impact Project Screening Form (3150-PM-BWEW0050);
- 2) Exhibits (pdf format):
 - a) U.S.G.S. Map 6.1 (site location map),
 - b) Environmental Resources Map 6.2,
 - c) Operations Map 9,
 - d) Land Use and Reclamation Map 18, and
 - e) a CD or DVD with any plans that are larger than 8 ½ by 11 inches.
- 3) Module 1: Large Noncoal (Industrial Minerals) Mine Permit Application
- 4) Module 14 and any detail drawings for stream / wetland encroachment activities (including Form 14A, Request for Federal Clean Water Act (CWA) Section 401 Certification For Mining / Coal Refuse Disposal Activities).
- 5) the Endangered Species Act /Pennsylvania Natural Diversity Inventory receipt,
- 6) the Pennsylvania Historical and Museum Commission correspondence (Section 106 coordination)

FORM 14A - Request for Federal Clean Water Act (CWA) Section 401 Certification For Mining / Coal Refuse Disposal Activities

General requirements: A mining or coal refuse disposal activity that involves encroachment into a stream or wetland requires a DEP mining activity permit and a US Army Corps of Engineers (Corps) permit issued pursuant Section 404 of the Federal Clean Water Act (FWPCA). An applicant proposing this type of activity must file a state mining activity permit application with the DEP district mining office and a separate federal permit application with the Corps district office.

Need for a Section 401 certification: As a matter of coordination, the Corps district office will not issue the federal Section 404 permit until DEP issues an Individual Water Quality Certification pursuant to Section 401 of the FWPCA, certifying that the activity will comply with the provisions of sections 301-303, 306 and 307 of the FWPCA and will not violate applicable federal and state water quality standards. The DEP district mining office issues this certification based on the information presented in the state permit application, public comments received with respect to the state permit application, and consultation with the Corps district office in regard to the federal permit application.

To ensure timely processing of both state and federal permit applications, the applicant is encouraged to:

- Contact the Corps district office to determine if a Section 404 permit is required for the proposed activity, and what type of permit is needed (an individual permit or nationwide permit).
- Complete and submit this form with the state mining activity permit application to the DEP district mining office.

Applicant _____	Application No. _____
Address _____	Operation Name _____
_____	Municipality _____
Telephone _____	County _____

Section 1: Corps Determination:

This project requires 401 certification for:

- ☐ An individual 404 permit
☐ Modification to an existing 404 permit
☐ Authorization to operate under Nationwide Permit No. _____

Section 2: Activity Description:

Please describe the activities that are the subject of this request:

If the scope of activities (including any mitigation to be performed as compensation for the unavoidable impacts of fill placement) proposed under the federal permit application is the same as the scope of activities proposed under the state permit application, check here ☐ and provide the application number assigned by the Corps _____ and the date on which the application was filed _____.

If the scope of activities described under the federal permit application differs from the scope of activities described under the state permit application, attach a copy of the federal permit application.

Note that any substantial revisions required as part of the federal application review process must be provided to the DEP district mining office.

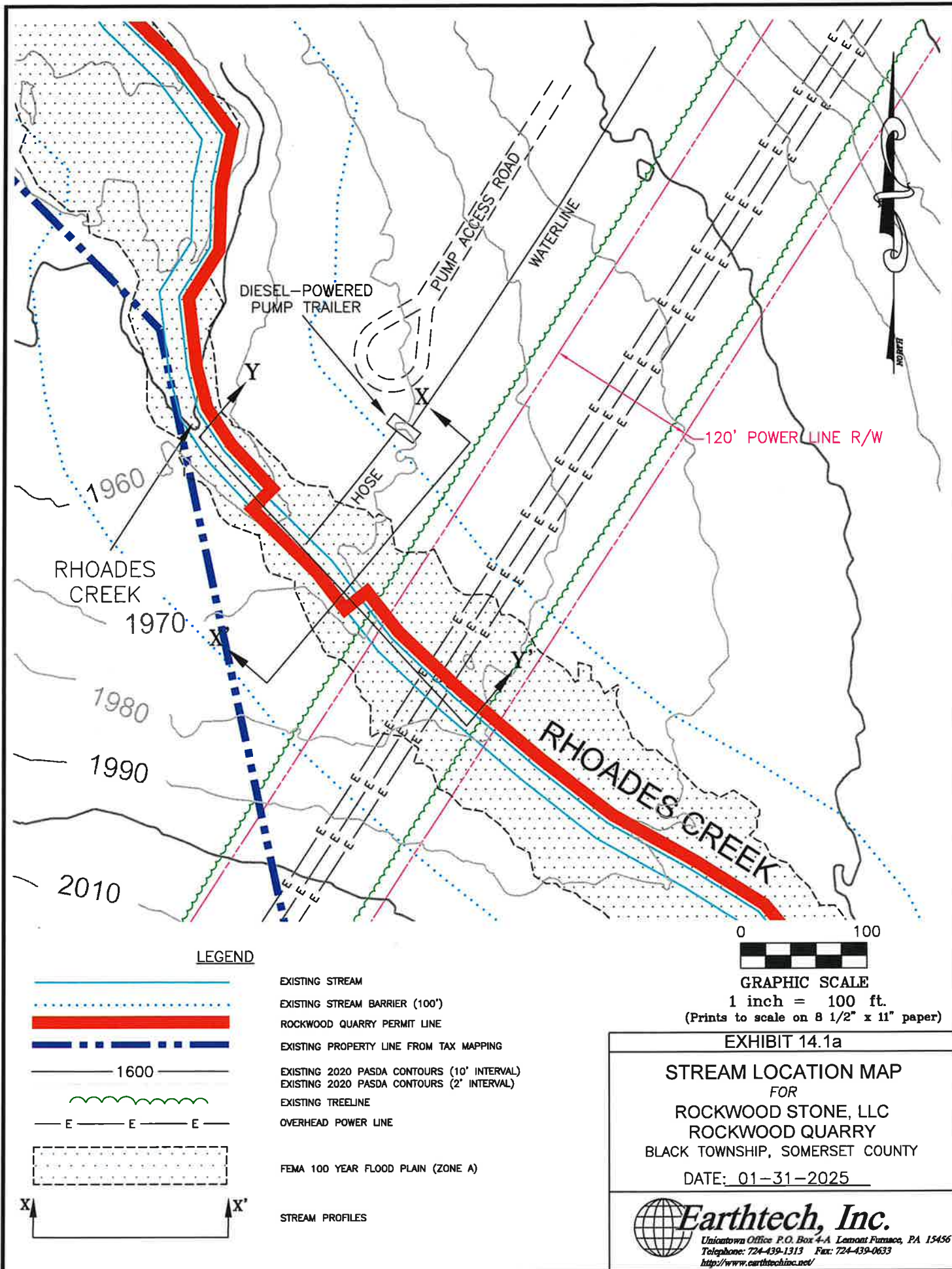
Section 3: Signature(s)

I (am the applicant) (am an officer of the applicant) (have the authority to file a Section 404 application for this project) and certify that the plans, reports and documents submitted as part of the application are true and correct to the best of my knowledge and belief, I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. **(Note: Cross out inapplicable portions in parenthesis).**

Signature of Applicant or Responsible Official

Name (typed)

Title



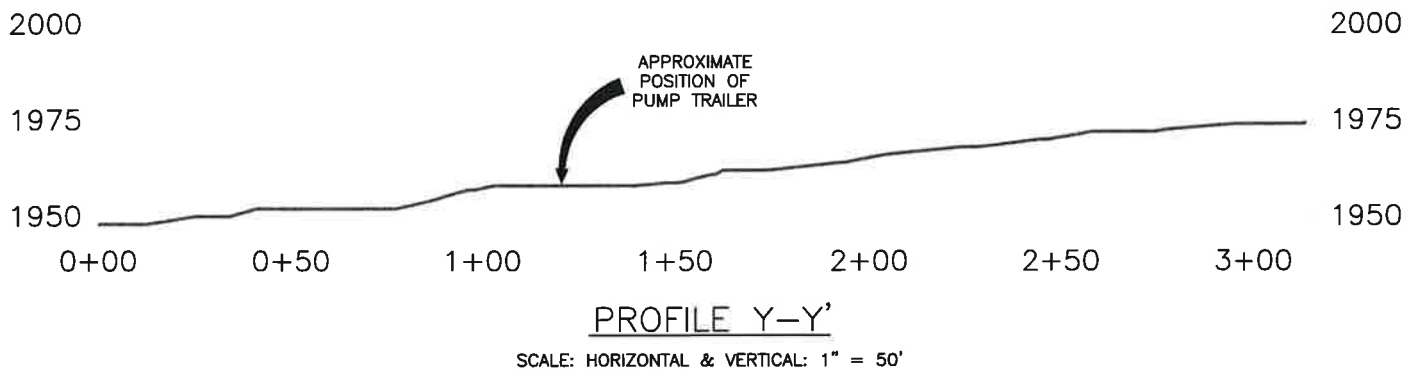
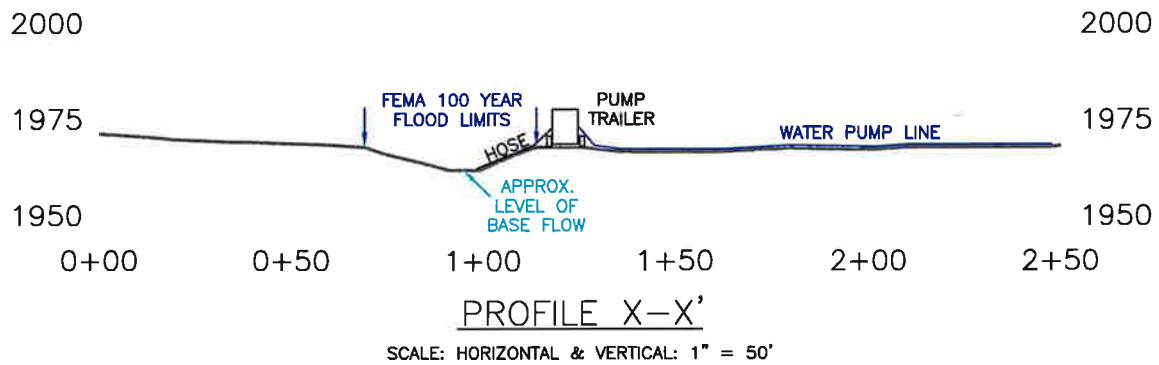


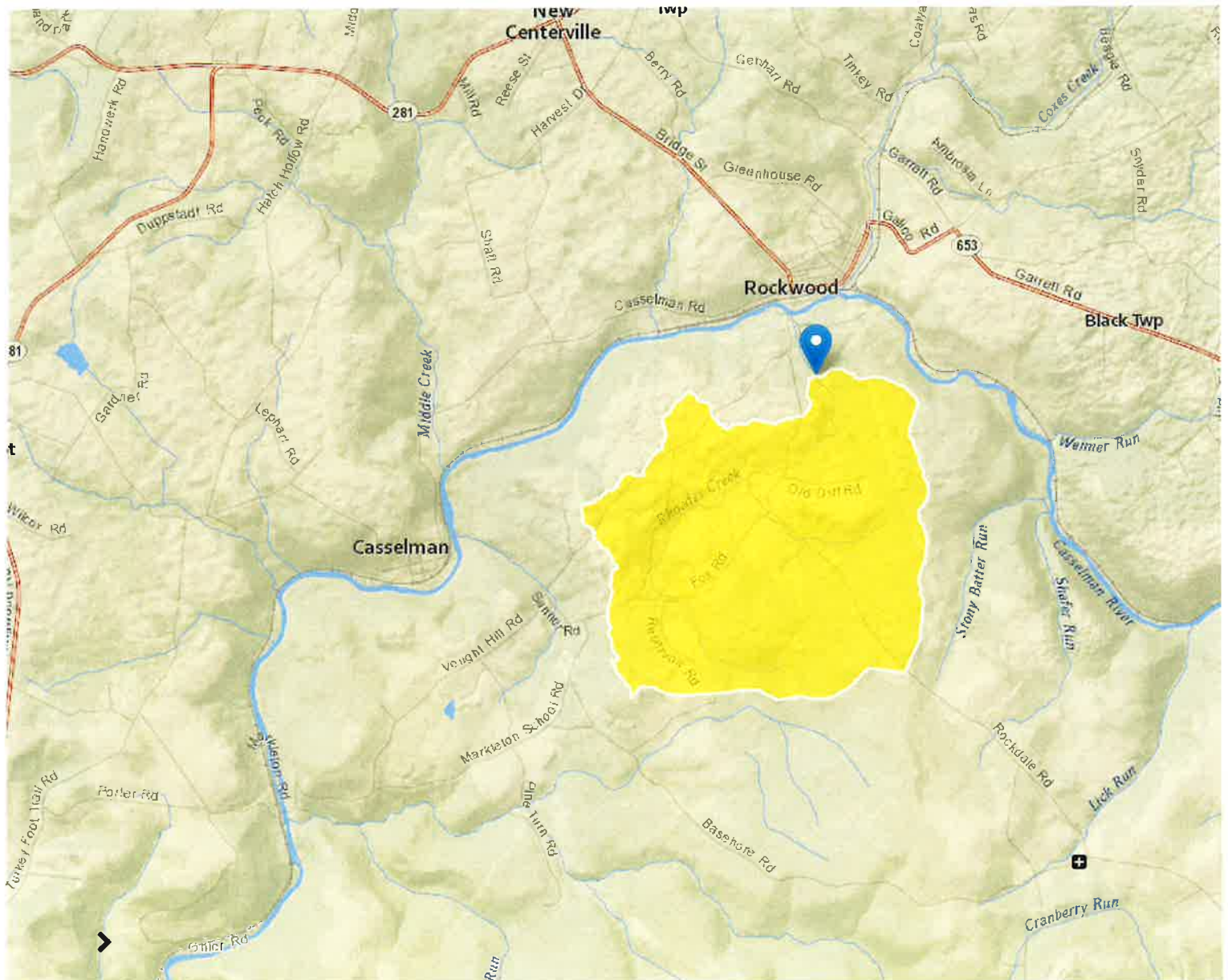
EXHIBIT 14.1b

STREAM PROFILES
FOR
ROCKWOOD STONE, LLC
ROCKWOOD QUARRY
BLACK TOWNSHIP, SOMERSET COUNTY
DATE: 01-31-2025



Earthtech, Inc.

Uniontown Office P.O. Box 4-A, Lemont Furnace, PA 15456
Telephone: 724-439-1313 Fax: 724-439-0633
<http://www.earthtechinc.net/>



Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	4.632	degrees
CARBON	Percentage of area of carbonate rock	0	percent
DRNAREA	Area that drains to a point on a stream	4.44	square miles
ELEV	Mean Basin Elevation	2244	feet
FOREST	Percentage of area covered by forest	67.3562	percent
PRECIP	Mean Annual Precipitation	43	inches
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	0.19	percent
URBAN	Percentage of basin with urban development	0.133	percent

➤ Peak-Flow Statistics

Peak-Flow Statistics Parameters [Peak Flow Region 2 SIR 2019 5094]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.44	square miles	0.92	1160
STORAGE	Percent Storage	0.19	percent	0	8.9

Peak-Flow Statistics Flow Report [Peak Flow Region 2 SIR 2019 5094]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR²: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	ASEp
50-percent AEP flood	221	ft ³ /s	26.1
20-percent AEP flood	359	ft ³ /s	27
10-percent AEP flood	467	ft ³ /s	28.9
4-percent AEP flood	626	ft ³ /s	31.6
2-percent AEP flood	756	ft ³ /s	34.8
1-percent AEP flood	899	ft ³ /s	37.8
0.5-percent AEP flood	1060	ft ³ /s	41.6
0.2-percent AEP flood	1290	ft ³ /s	46.1

Peak-Flow Statistics Citations

Roland, M.A., and Stuckey, M.H., 2019, Development of regression equations for the estimation of flood flows at ungaged streams in Pennsylvania: U.S. Geological Survey Scientific Investigations Report 2019–5094, 36 p. (<https://doi.org/10.3133/sir20195094>)

➤ Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.44	square miles	2.26	1400
ELEV	Mean Basin Elevation	2244	feet	1050	2580

Low-Flow Statistics Flow Report [Low Flow Region 4]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR²: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.259	ft ³ /s	43	43
30 Day 2 Year Low Flow	0.483	ft ³ /s	38	38
7 Day 10 Year Low Flow	0.0734	ft ³ /s	66	66
30 Day 10 Year Low Flow	0.149	ft ³ /s	54	54
90 Day 10 Year Low Flow	0.326	ft ³ /s	41	41

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)

➤ General Flow Statistics

General Flow Statistics Parameters [Statewide Mean and Base Flow]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CARBON	Percent Carbonate	0	percent	0	99
DRNAREA	Drainage Area	4.44	square miles	2.26	1720
FOREST	Percent Forest	67.3562	percent	5.1	100
PRECIP	Mean Annual Precipitation	43	inches	33.1	50.4
URBAN	Percent Urban	0.133	percent	0	89

General Flow Statistics Flow Report [Statewide Mean and Base Flow]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR²: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
Harmonic Mean Streamflow	1.4	ft ³ /s	38	38

General Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)

➤ Base Flow Statistics

Base Flow Statistics Parameters [Statewide Mean and Base Flow]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CARBON	Percent Carbonate	0	percent	0	99
DRNAREA	Drainage Area	4.44	square miles	2.26	1720
FOREST	Percent Forest	67.3562	percent	5.1	100
PRECIP	Mean Annual Precipitation	43	inches	33.1	50.4
URBAN	Percent Urban	0.133	percent	0	89

Base Flow Statistics Flow Report [Statewide Mean and Base Flow]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR²: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
Base Flow 10 Year Recurrence Interval	2.61	ft ³ /s	21	21
Base Flow 25 Year Recurrence Interval	2.3	ft ³ /s	21	21
Base Flow 50 Year Recurrence Interval	2.13	ft ³ /s	23	23

Base Flow Statistics Citations

Stuckey, M.H., 2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)

➤ Maximum Probable Flood Statistics

Maximum Probable Flood Statistics Parameters [Crippen Bue Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.44	square miles	0.1	10000

Maximum Probable Flood Statistics Flow Report [Crippen Bue Region 4]

Statistic	Value	Unit
Maximum Flood Crippen Bue Regional	12800	ft ³ /s

Maximum Probable Flood Statistics Citations

Crippen, J.R. and Bue, Conrad D. 1977, Maximum Floodflows in the Conterminous United States, Geological Survey Water-Supply Paper 1887, 52p. (<https://pubs.usgs.gov/wsp/1887/report.pdf>)

➤ Bankfull Statistics

Bankfull Statistics Parameters [Statewide Bankfull Noncarbonate 2018 5066]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CARBON	Percent Carbonate	0	percent		
DRNAREA	Drainage Area	4.44	square miles	2.62	207

Bankfull Statistics Parameters [Appalachian Highlands D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.44	square miles	0.07722	940.1535

Bankfull Statistics Parameters [Appalachian Plateaus P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.44	square miles	0.081081	536.995602

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.44	square miles	0.07722	59927.7393

Bankfull Statistics Flow Report [Statewide Bankfull Noncarbonate 2018 5066]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR²: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE
Bankfull Area	40.4	ft ²	64
Bankfull Streamflow	168	ft ³ /s	74
Bankfull Width	28.3	ft	59
Bankfull Depth	1.47	ft	56

Bankfull Statistics Flow Report [Appalachian Highlands D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	28.2	ft
Bieger_D_channel_depth	1.72	ft
Bieger_D_channel_cross_sectional_area	49.2	ft ²

Bankfull Statistics Flow Report [Appalachian Plateaus P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	29.8	ft
Bieger_P_channel_depth	1.73	ft
Bieger_P_channel_cross_sectional_area	51.2	ft ²

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	20.9	ft
Bieger_USA_channel_depth	1.66	ft
Bieger_USA_channel_cross_sectional_area	38.2	ft ²

Bankfull Statistics Flow Report [Area-Averaged]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR²: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE
Bankfull Area	40.4	ft ²	64
Bankfull Streamflow	168	ft ³ /s	74
Bankfull Width	28.3	ft	59
Bankfull Depth	1.47	ft	56
Bieger_D_channel_width	28.2	ft	
Bieger_D_channel_depth	1.72	ft	
Bieger_D_channel_cross_sectional_area	49.2	ft ²	
Bieger_P_channel_width	29.8	ft	
Bieger_P_channel_depth	1.73	ft	
Bieger_P_channel_cross_sectional_area	51.2	ft ²	
Bieger_USA_channel_width	20.9	ft	
Bieger_USA_channel_depth	1.66	ft	
Bieger_USA_channel_cross_sectional_area	38.2	ft ²	

Bankfull Statistics Citations

Clune, J.W., Chaplin, J.J., and White, K.E., 2018, Comparison of regression relations of bankfull discharge and channel geometry for the glaciated and nonglaciated settings of Pennsylvania and southern New York: U.S. Geological Survey Scientific Investigations Report 2018-5066, 20 p. (<https://doi.org/10.3133/sir20185066>)

Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G., 2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. (https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_campaign=PDFCoverPages)

➤ Annual Flow Statistics

Annual Flow Statistics Parameters [Statewide Mean and Base Flow]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.44	square miles	2.26	1720
ELEV	Mean Basin Elevation	2244	feet	130	2700
FOREST	Percent Forest	67.3562	percent	5.1	100
PRECIP	Mean Annual Precipitation	43	inches	33.1	50.4
URBAN	Percent Urban	0.133	percent	0	89

Annual Flow Statistics Flow Report [Statewide Mean and Base Flow]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR²: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
Mean Annual Flow	7.42	ft ³ /s	12	12

Annual Flow Statistics Citations

Stuckey, M.H., 2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)

➤ NHD Features of Delineated Basin

NHD Streams Intersecting Basin Delineation Boundary

This functionality attempts to find the stream name at the delineation point. The name of the nearest intersecting National Hydrography Dataset (NHD) stream is selected by default to appear in the report above. NHD streams do not correspond to the StreamStats stream grid and may not be accurate. If you would like a different stream to appear in the above section, please make a selection below.

GNIS ID	GNIS Name	Distance from Clicked Point (ft)	Selected Stream Name
01184981	Rhoades Creek	17.00	☒ Rhoades Creek

Watershed Boundary Dataset (WBD) HUC 8 Intersecting Basin Delineation Boundary

This functionality attempts to find the intersecting HUC 8 of the delineated watershed. HUC boundaries do not correspond to the StreamStats data and may not be accurate.

HUC 8**Name**

05020006

Youghiogheny

NHD Hydrologic Features Citations

U.S. Geological Survey, 2022, USGS TNM - National Hydrography Dataset, accessed July 21, 2022 at URL

<https://hydro.nationalmap.gov/arcgis/rest/services/nhd/MapServer/6>.

(<https://hydro.nationalmap.gov/arcgis/rest/services/nhd/MapServer/6>) U.S. Geological Survey, 2022, USGS TNM - National Hydrography Dataset, accessed July 21, 2022 at URL

<https://hydro.nationalmap.gov/arcgis/rest/services/wbd/MapServer/4>.

(<https://hydro.nationalmap.gov/arcgis/rest/services/wbd/MapServer/4>)

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Application Version: 4.25.0

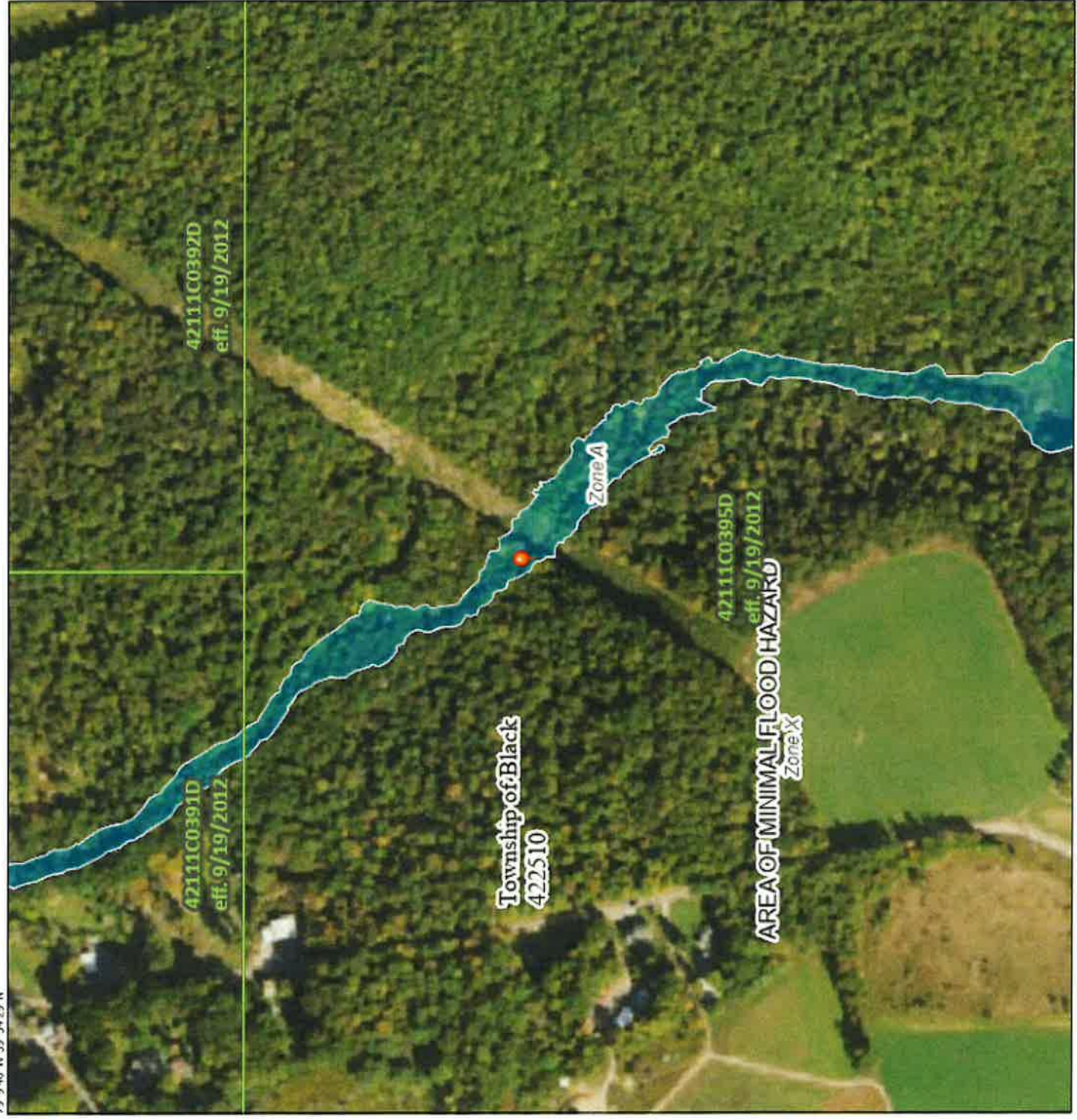
StreamStats Services Version: 1.2.22

NSS Services Version: 2.2.1

National Flood Hazard Layer FIRMette



79°59'40"W 39°54'29"N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

Without Base Flood Elevation (BFE)
Zone A, V, X, Y, Z

With BFE or Depth Zone AE, AG, AH, VE, AP

Regulatory Floodway

0.2% Annual Chance Flood Hazard. Are of 1% annual chance flood with average depth less than one foot or with drainai areas of less than one square mile

Future Conditions 1% Annual Chance Flood Hazard Zone X

Area with Reduced Flood Risk due to Levee. See Notes. Zone X

Area with Flood Risk due to Levee Zone X

NO SCREEN

Area of Minimal Flood Hazard Zone A

Effective LOMRs

Area of Undetermined Flood Hazard Zone A

OTHER AREAS

Channel, Culvert, or Storm Sewer

Levee, Dike, or Floodwall

GENERAL STRUCTURES

Cross Sections with 1% Annual Chance Water Surface Elevation

Coastal Transect

Base Flood Elevation Line (BFE)

Limit of Study

Jurisdiction Boundary

Coastal Transect Baseline

Profile Baseline

Hydrographic Feature

OTHER FEATURES

Digital Data Available

No Digital Data Available

Unmapped

MAP PANELS

Digital Data Available

No Digital Data Available

Unmapped

The pin displayed on the map is an approximal point selected by the user and does not repres an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/8/2025 at 6:01 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



RELIABLE FLOW ON THE GO.



VAUGHAN PORTABLE BYPASS TRAILER



VAUGHAN PORTABLE BYPASS TRAILER



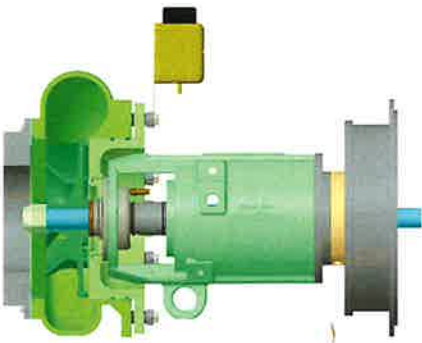
Vaughan's Portable Pump Line units are heavy duty solutions that provide unmatched reliability, anywhere. Available with Vaughan's signature Chopper Pump and Triton Screw Pump, these units can be used for tough solids reduction applications or low shear solids handling. Powered by diesel or electric drive motors, these portable pump units are ready for the toughest jobs in any location.

Contact us to get moving today.

MUNICIPAL APPLICATIONS

If you find your municipal facility needs a tough solution for bypass pumping, look no further than Vaughan. Some applications include but are not limited to:

- **Lift Stations - Bypass Pumping**
- **Digester Clean-out**
- **Storm Water**
- **Emergency Water Mitigation**
- **Sludge Transfer**
- **And Much More**



INDUSTRIAL MARKETS

With numerous set-up options and multiple pump choices, the Portable Bypass Trailer is ready to perform in any application. Including, but not limited to:

- **Chemical / Petrochemical**
- **Institutional & Correctional**
- **Mining / Sand & Gravel**
- **Paper & Wood Products**
- **Energy**
- **Agriculture**
- **Food Processing**
- **Contractor Services**



PUMP OPTIONS AND FEATURES

- Dry Prime Horizontal End Suction Chopper Pumps in 3"-12" models
- Dry Prime Horizontal End-Suction Triton Screw Pumps in 3"-12" models
- Wet Prime Self Priming Chopper Pumps in 4"-10" models

CHOPPER PUMP

- Flows over 10,000 gallons per minute
- Hydraulic efficiencies OVER 70%
- Heavy-duty power frames
- Vaughan's Flushless Cartridge Mechanical Seal
- Heat-treated and hardened components
- Non-clogging guarantee on all chopper pumps
- Externally Adjustable Cutter Clearances

TRITON® PUMP

- Flows up to 10,000 gallons per minute
- Low Shear - Gentle Pumping Action
- High efficient, non-clogging performance
- Vaughan's Flushless Cartridge Mechanical Seal
- Low NPSHr with steep performance curves
- Same heavy-duty power frame as the Chopper
- Back Pullout Casing for Ease of Maintenance
- Back Cutter to Protect Mechanical Seal

TRAILER

- Heavy-duty, powder coated fabricated steel frame with lifting bale
- Torsion Flex axles
- Integral HDPE fuel cells
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- LOFA CP750 auto start control panel standard
- Vacuum pump or Compressor priming systems
- Open and enclosed configurations available

TRAILER CONFIGURATIONS



OPEN

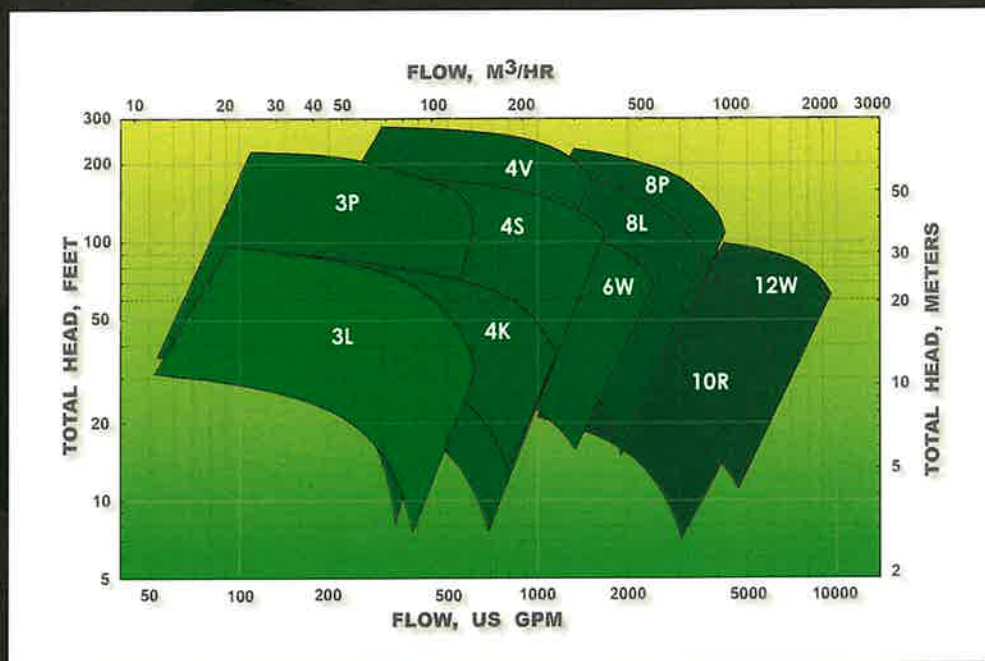


**ENCLOSED
"SOUND ATTENUATED"**



SKID MOUNT

CHOPPER PUMP PERFORMANCE MAP



TRITON PUMP PERFORMANCE MAP

