COMMONWEALTH OF PENNSYLVANIA

**DEPARTMENT OF ENVIRONMENTAL PROTECTION**

**REGIONAL PERMIT COORDINATION OFFICE**

**SUPPLEMENTARY GEOLOGY
AND GROUNDWATER INFORMATION for stormwater Drainage wells**

|  |  |
| --- | --- |
| APPLICANT NAME |       |
| **LOCATION** |       |
| 1. The name and date of the latest edition of the 7.5-minute topographic map covering the area is: |
| a. Is the required copy or, if not available, a topographic map of equivalent scale attached? | [ ]  Yes | [ ]  No |
| b. Is the proposed and/or existing facility shown on the 7.5-minute topographic map? | [ ]  Yes | [ ]  No |
| c. Supply the location of the facility, in latitude and longitude (degrees, minutes and seconds). |
| (3) Other (describe): | Stormwater Drainage Well(s) |
| [ ]  PROPOSED [ ]  EXISTING | North      -     ; West      -     ; | Latitude      -     ; Longitude      -      |
| [ ]  PROPOSED [ ]  EXISTING | North      -     ; West      -     ; | Latitude      -     ; Longitude      -      |
| 2. Is the required large-scale map showing the facility attached? | [ ]  Yes | [ ]  No |
| a. Is the large-scale topographic map drawn to the following minimum scales? |
| (1) Topography | Scale 1” - 200’ | Contour interval 2’ | [ ]  Yes | [ ]  No | [ ]  N/A |
| b. Is the following information plotted on the large-scale map? |
| (1) Location of soils/geologic/and hydrologic test pits, wells or borings? | [ ]  Yes | [ ]  No |  |
| (2) The location(s) of stormwater drainage wells, piezometers, and monitoring wells? | [ ]  Yes | [ ]  No |  |
| 3. All of the following which occur within the site boundaries or within 0.25 mile of the site must be plotted on the large-scale map and/or the 7.5-minute topographic map. |
| Check the appropriate space: |
|  |  | **7.5-min. topo map** | Large-scale map | **Not applicable** |
| a. | Water wells | [ ]  | [ ]  | [ ]  |
| b. | Springs | [ ]  | [ ]  | [ ]  |
| c. | Swamps | [ ]  | [ ]  | [ ]  |
| d. | Streams | [ ]  | [ ]  | [ ]  |
| e. | Public and private water supplies | [ ]  | [ ]  | [ ]  |
| f. | Other bodies of water | [ ]  | [ ]  | [ ]  |
| g. | Sinkholes, depressions and other karst features | [ ]  | [ ]  | [ ]  |
| h. | Underground and/or surface mines | [ ]  | [ ]  | [ ]  |
| i. | Mine pool discharge points | [ ]  | [ ]  | [ ]  |
| j. | Mining spoil piles or mine dumps | [ ]  | [ ]  | [ ]  |
| k. | Quarries | [ ]  | [ ]  | [ ]  |
| l. | Sand and gravel pits | [ ]  | [ ]  | [ ]  |
| m. | Gas and oil wells | [ ]  | [ ]  | [ ]  |
| n. | Diversion ditches | [ ]  | [ ]  | [ ]  |
| o. | All water quality monitoring points | [ ]  | [ ]  | [ ]  |
| p. | Occupied dwellings | [ ]  | [ ]  | [ ]  |
| q. | Roads | [ ]  | [ ]  | [ ]  |
| r. | Power lines | [ ]  | [ ]  | [ ]  |
| s. | Pipelines and other underground utilities | [ ]  | [ ]  | [ ]  |
| t. | Public buildings | [ ]  | [ ]  | [ ]  |
| u. | Abandoned canal | [ ]  | [ ]  | [ ]  |
| **SOILS/GEOLOGY** |
| 1. List each of the soil series and phases present on the site. (Ensure that each soil type and its boundary is reflected on the site plan(s)) |
| Soil Series -- Phase |
| a.       |
| b.       |
| c.       |
| d.       |
| e.       |
| 3. Have a sufficient number of borings been made to describe soils and bedrock and determine their depth? | [ ]  Yes | [ ]  No |
| a. Are their locations shown on both the large-scale map and the soils map? | [ ]  Yes | [ ]  No |
| b. Are the required pit or boring descriptions (by horizon) attached? | [ ]  Yes | [ ]  No |
| 4. All of the following which occur within the site boundary or within 0.25 mile of the site are to be plotted on the large-scale map and the 7.5-minute topographic map. |
| Location(s) of maximum and minimum thickness of glacial deposits |
| Lithologies |
| Areas where bedrock outcrops |
| Faults |
| Lineaments |
| Fracture traces |
| Directions of groundwater flow |
| 5. Sediments |
| a. Are the required pit or boring descriptions (by horizon) attached? | [ ]  Yes | [ ]  No |
| b. Are there: |
| (1) Glacial deposits present under the proposed site? | [ ]  Yes | [ ]  No |
| (2) Colluvial deposits? | [ ]  Yes | [ ]  No |
| (3) Alluvial deposits? | [ ]  Yes | [ ]  No |
| (4) Lacustrine deposits? | [ ]  Yes | [ ]  No |
| c. Describe the type and texture of the unconsolidated materials.       |
| d. What is their maximum thickness? |       Feet |
| e. What is their minimum thickness? |       Feet |
| 6. Bedrock |
| a. Formation Name |       |
| b. Lithologies (plot on large-scale map if more than one lithology)       |
| c. Is the location of all places where the bedrock is less than 5 feet plotted on the large-scale map? | [ ]  Yes | [ ]  No |
| d. How were the locations determined? |       |
| e. Does bedrock crop out within the boundaries or within 200 feet of the proposed facility? | [ ]  Yes | [ ]  No |
| f. Are all outcrops shown on the large-scale map? | [ ]  Yes | [ ]  No |
| 7. Weathering |
| a. Characterize the degree of weathering. |       |
| b. Has saprolite developed on the bedrock? | [ ]  Yes | [ ]  No |
| (1) What is the shallowest depth from the surface to bedrock? |       Feet |
| (2) Describe the texture. |       |
| c. If bedrock is a carbonate rock: |
| (1) Are there any undrained surface depressions or sinkholes at the site? | [ ]  Yes | [ ]  No |
| (2) Are all sinkholes and other karst features within 0.25 mile of the site shown on the 7.5-minute topographic map and/or on the large-scale map? | [ ]  Yes | [ ]  No |
| (3) Characterize the results of on-site geologic investigation from borings and other appropriate methods.       |  |  |
| 8. Structure |
| a. Are all lineaments and fracture traces on the site and within 0.25 mile of the site located on the 7.5-minute topographic map and/or the large-scale map? | [ ]  Yes | [ ]  No |
| b. Briefly characterize these fractures, joints, etc. and discuss their control on the movement of infiltrating water and groundwater. |
|       |
| c. Describe the regional structure of bedrock in the area of the site. |
|       |
| d. Give a detailed description of the local structure. |
|       |
| e. Describe folding as it applies to the site. |  |
| (1) Strike and plunge of fold axis are: | Strike |       | Plunge |       |
| (2) Location of site in relation to local structure |
|       |
| f. Attitude of bedding |
| (1) Strike |       | and dip |       | of |       | formation. |
| (2) Strike |       | and dip |       | of |       | formation. |
| (3) Strike |       | and dip |       | of |       | formation. |
| g. Attitude of jointing |
| (1) Strike |       | and dip |       | of |       | formation. |
| (2) Strike |       | and dip |       | of |       | formation. |
| (3) Strike |       | and dip |       | of |       | formation. |
| h. What is the respective spacing of these joints? |
| (1)       |
| (2)       |
| (3)       |
| i. Are joints open? (explain) |       | [ ]  Yes | [ ]  No |
| (1)       |
| (2)       |
| (3)       |
| j. Cleavage |
| (1) Strike |       | and dip |       | of cleavage. |
| (2) Strike |       | and dip |       | of cleavage. |
| (3) Strike |       | and dip |       | of cleavage. |
| k. Faults |
| (1) Strike |       | and dip |       | of faults. |
| (2) Strike |       | and dip |       | of faults. |
| (3) Strike |       | and dip |       | of faults. |
| Are the locations of all faults that occur within 0.25 mile of the site’s boundaries shown on the large-scale map and 7.5-minute topographic map? | [ ]  Yes | [ ]  No |
| 9. Land Use |
| a. Are there any active or inactive surface mines at the site or within 0.25 mile of the site? | [ ]  Yes | [ ]  No |
| b. Are there any active or inactive deep mines at the site or within 0.25 mile of the site boundaries? | [ ]  Yes | [ ]  No |
| Sources of Data: |
|       |
| Comments:  |
|       |
| Name and address of the Licensed Professional Geologist supplying the above data: |
| Name |       |
| Street |       |
| City and State |       | Zip |       |
| Phone number (include area code):PA License No.       | (     )       |

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| **CLIMATOLOGY AND FLOODING** |
| 1. Will this be an all-season operation? | [ ]  Yes | [ ]  No |
| If seasonal, include operating dates: |       | to |       |
| 2. Precipitation data: |
| a. Maximum precipitation |       in./yr |
| b. Average precipitation |       in./yr |
| c. Maximum monthly precipitation |       Month |       in. |
| d. Minimum monthly precipitation |       Month |       in. |
| e. Station of record |       |
| f. Length of historical record |       |
| 3. Flooding Frequency |
| Will all or part of the site be inundated? (check one) |
| [ ]  Once in | 5 | years or more |
| [ ]  Once in | 10 | years |
| [ ]  Once in | 25 | years |
| [ ]  Once in | 50 | years |
| [ ]  Once in | 100 | years |
| [ ]  Never |  |  |
| 4. Source of flooding information: |
|       |
| **HYDROLOGY** |
| 1. Have test pits [ ] , borings [ ] , or wells [ ]  (check one or more) been made for the hydrologic investigation? | [ ]  Yes | [ ]  No |
| a. Is the required complete geologic description (log) of all earth materials penetrated included? | [ ]  Yes | [ ]  No |
| b. If a well, what was the method of drilling? |       |
| 2. Depth to groundwater table. |
| a. The maximum depth to the water table within the site is |       feet |
| (1) Date of measurement |       |
| (2) The location is shown on the (check one) [ ]  7.5-minute map [ ]  large-scale map. |
| (3) If measurement is from a well or pit, give date of completion for same. |       |
| b. The minimum depth to the water table within the site is |       feet |
| (1) Date of measurement |       |
| (2) The location is shown on the (check one) [ ]  7.5-minute map [ ]  large-scale map. |
| (3) If measurement is from a well or pit, give date of completion for same. |       |
| c. Describe seasonal water table fluctuations at the above locations. |
|       |
| d. Describe all perched or special water table conditions. |
|       |
| e. Does groundwater drain to deep mines? | [ ]  Yes | [ ]  No |
| 3. Have you shown the direction(s) of groundwater movement from the site on the [ ]  large-scale or [ ]  7.5-minute map (check one)? | [ ]  Yes | [ ]  No |
| a. Describe how the above was determined. |
|       |
| b. The location of the groundwater discharge point(s) affected by this facility is: |
|       |
| c. Discuss the rate of groundwater flow at this site as it applies to the operation of this facility. |
|       |
| 4. Describe below the proposed groundwater quality monitoring points for approval. (Monitoring point proposals are subject to final approval of the Engineering Design Plans. No wells are to be drilled until final approval of the Engineering Design Plans.) Use numbers only and number all monitoring points consecutively. |
| a. Wells (check one). For multiple wells indicate with monitoring point number (a) for existing and (b) for proposed. |
| [ ]  For existing wells complete the table below. |
| [ ]  For proposed new well construction, complete the table from your specifications. |
| **MONITORING POINT NUMBER** | **DRILLING METHOD** | **DEPTH** | **DIAMETER** | **CASING** | **LOCATION** | **SURFACE ELEVATION** |
| **SIZE & DEPTH** | **ZONES1 PERFORATED** | **LATITUDE** | **LONGITUDE** |
|       |       |       |       |       |       |       |       |       |
|       |       |       |       |       |       |       |       |       |
|       |       |       |       |       |       |       |       |       |
|       |       |       |       |       |       |       |       |       |
|       |       |       |       |       |       |       |       |       |
| *1 What zones or at what depth is the casing perforated?* |
| b. Springs |
| **MONITORING POINT NUMBER** | **ELEVATION** | **RATE OF FLOW (gpm)** | **DATE OF MEASUREMENT** | **LOCATION** |
| **LATITUDE** | **LONGITUDE** |
|       |       |       |       |       |       |
|       |       |       |       |       |       |
|       |       |       |       |       |       |
|       |       |       |       |       |       |
| 5. Do all springs listed have a continuous year-round flow? | [ ]  Yes | [ ]  No |
| If not, explain. |       |
| 6. Background groundwater quality must be determined. Describe how background water quality was determined? |
|       |
| 7. What is the background water quality? |
| a. Temperature |       | Degrees C |
| b. pH |       | SU |
| c. Alkalinity |       | mg/L |
| d. Total solids |       | mg/L |
| e. Suspended solids |       | mg/L |
| f. Settleable solids |       | mg/L |
| g. MBAS |       | mg/L |
| h. BOD 5-day |       | mg/L |
| i. COD .25 w K2Cr2O8 |       | mg/L |
| j. Specific conductance |       | Micromhos/cm (Microsiemens/cm) |
| k. Total iron |       | mg/L |
| l. Manganese |       | mg/L |
| m. Aluminum |       | mg/L |
| n. Copper |       | mg/L |
| o. Zinc |       | mg/L |
| p. Nickel |       | mg/L |
| q. Chromium |       | mg/L |
| r. Sulfate |       | mg/L |
| s. Chloride |       | mg/L |
| t. Fluoride |       | mg/L |
| u. Kjeldahl - Nitrogen |       | mg/L |
| v. Ammonia - Nitrogen |       | mg/L |
| w. Nitrate - Nitrogen |       | mg/L |
| x. Phosphorus |       | mg/L |
| 8. Other (describe) |
|       |
| Sources of Data: |
|       |
| Comments:  |
|       |
| Name and address of licensed professional geologist (or hydrogeologist) supplying the above data: |
| Name |       |
| Street |       |
| City and State |       | Zip |       |
| Phone number (include area code):PA License No.       | (     )       |
| **NOTE: Phase II must be completed within 60 days after the monitoring points are approved and the permit is issued.** |
| **FOR DEPARTMENT USE ONLY:** |
| Proposed monitoring point locations and construction approved: |
| Name: |       |  | Date: |       |
| Comments:  |       |
|  |