

ATTACHMENT O
Risk Assessment

RISK ASSESSMENT

1. Base Flood

FEMA has selected the 100-year flood as having special significance for floodplain management. Leet Township Ordinance 2018-4 requires culverts to be designed for the 100-year event; therefore, the 100-year event was used for this study.

2. Determination of Significance of Encroachments

The proposed project is located in a relatively undeveloped property adjacent to an urban area. The proposed stream encroachments will not cause changes to existing flooding conditions. Culverts 1 and 2 will be 48-inch culverts which are larger in hydraulic capacity than the existing 30-inch culverts. These culverts are designed to manage storm events up to the 100-year event. Culvert 5 conveys uncontrolled flow from UNT2 upstream of the project site plus outflow from SWMF1. The encroachments will not increase downstream flows or cause flooding of upstream properties. The stormwater management facilities SWMF1 and SWMF2 will reduce peak flows in UNT2 to downstream areas. The encroachments are not considered to be significant encroachments, and a qualitative risk assessment is performed.

An agreement between Leetsdale Borough and QVSD requested that the project provide stormwater management to compensate for the untreated runoff from a residential area in the upper reach of UNT1. The project has accomplished this request through design of the stormwater management facilities SWMF1 and SWMF2, as presented in the project's PCSM Plan.

3. Environmental Impacts

The hydraulic analysis indicates that the risk of flooding will not increase either upstream or downstream of the stream encroachments. The 100-year flows will be confined to their respective channels. Buildings and public roads will not be impacted. Therefore, impacts to the environment are not expected to be significant. Environmental impacts to the site as a result of the project are described in more detail in the *Environmental Assessment* in the Joint Permit application.

4. Frequency of Inundation

The frequency of inundation in UNT1 or UNT2 is not expected to increase. The stream encroachments will not change the frequency of flooding.

5. Impacts to Community Development

The project will provide a new high school campus for the surrounding communities. A new access to the campus site is proposed between SWMF1 and SWMF2 to reduce school-related traffic on Camp Meeting Road near the residential areas. Per the request of Leetsdale Borough, SWMF1 and SWMF2 will provide stormwater management that will reduce downstream flood flows up to the 100-year event. The project is not anticipated to change land use on adjacent properties. The project will provide reduced flood flows to Leetsdale Borough. Negative impacts to the community are not anticipated.

6. Potential threats to life and property

The proposed project will result in a slight decrease in the 100-year event for the majority of the stream reaches. Exceptions are at the upstream section of the new culverts. The new culverts result in an increase in hydraulic head at the inlet compared to the hydraulic depth in an unobstructed channel. The location where the developed head at culverts may exceed the unobstructed flow depth are in areas where the flood profiles between existing and proposed conditions merge within a few feet of the culvert and well away from offsite property. Based on the computed depths, the 100-year flood will be contained within the existing channel banks. No potential threats to life or property are anticipated due to the stream encroachments.

7. Potential Threats to Safe Navigation

The streams at the site are not wide or deep enough to provide navigation of commercial vessels. During normal conditions, these streams are too shallow and rocky to allow for passage of even small manned boats. Impacts to navigation are not anticipated.

8. Effects of the stream encroachments on Property or Riparian Rights of Owners, Downstream or Adjacent of the Project

The stream encroachments will not cause significant backwater effects. All backwater will be contained on QVSD property and within the channels. The property or riparian rights of the owners upstream, downstream, or adjacent to the project will not be impacted.

9. Changes in Regime Flow

No changes to the flow regime are expected due to the stream encroachments.

Computed channel velocities for the streams during post development are anticipated to decrease due to a reduction in flow as a result of stormwater management. Only at isolated areas at the outfalls of the proposed culverts will the stream velocities increase. These areas will be managed using riprap aprons.

10. Impacts to Ecology and Aquatic Habitat

A wetland and water resource determination study was conducted in October 2023. Three wetlands and six streams were found within the project LOD. One wetland, W1, will be impacted. Wetlands W2 and W3 will not be impacted. Wetland W1, 0.03 acre, will be removed as part of the school construction. Streams UNT1, UNT2, UNT4/5, and UNT6 will be impacted by the project. Specifics on the aquatic resources and predicted impacts are presented in the *Environmental Assessment* of the JPA. Riparian buffers will be established along the remaining natural stream reaches on the site. The Mitigation Plan is described in more detail in the *Environmental Assessment*.

11. Impacts to Natural Areas

The project site is not in a wildlife sanctuary, public water supply, National Wildlife Refuge, National Natural Landmarks, National State or local parks or recreation areas.