

ENCLOSURE C – DESCRIPTION OF AQUATIC HABITAT

A. AQUATIC HABITAT

Based on field surveys, the proposed Pennsylvania Pipeline Project (Project) crosses a total of 9 wetlands and 58 streams in Delaware County (refer to Resource Tables 2 and 3 included with the Environmental Assessment Form). The resources crossed represent a variety of different cover types including palustrine emergent (PEM), palustrine scrub-shrub (PSS), palustrine forested (PFO), and combinations of these cover types, as well as a number of different flow regimes such as perennial, intermittent, and ephemeral.

All wetlands and streams crossed by the Project will be restored to their original conditions (i.e., elevation, flow, stream substrate, hydrologic conditions, etc.) except for a few limited areas of forested cover. These areas will retain their overall function, providing wetland habitat, but will have a long-term change in cover type.

A.1 Food Chain Production

All of the wetlands and streams crossed by the proposed Project are considered to have some potential for food chain production. Growth of herbaceous plants within the emergent wetlands constitutes the food chain base that supports primary consumers such as invertebrates and small mammal herbivores. Secondary and tertiary consumers, including both omnivores and carnivores, are supported by the diversity and abundance of prey items in the wetland and stream ecosystems.

In addition, most of the streams along the proposed Project support photosynthetic algae, overhanging woody vegetation, and/or small aquatic vascular plants that support invertebrate herbivores (i.e., aquatic insects). Such invertebrates are consumed by small reptiles and fish that inhabit some of the streams along the proposed Project.

A.2 General Habitat

a. Nesting

Nesting habitat within the wetlands and streams is limited in areas where the proposed Project parallels existing right-of-way (ROW). Vegetation is routinely mowed or cut within the existing ROW and at station facilities, limiting the nesting habitat to low growing, herbaceous plants and some limited shrubs. These areas may provide suitable nesting habitat for various bird species that nest on, or near, the ground. Within wetlands and streams, the forest edge provides suitable woody cover for bird species that commonly nest in shrubby edge habitats.

b. Spawning

Most of the wetlands do not include bodies of water large enough for fish spawning but may provide seasonal breeding habitats for amphibians, such as frogs and salamanders. Wetlands

fed by a permanent source of surface water may also provide seasonal spawning habitat for small, non-game fish species.

Most of the 17 perennial streams crossed by the proposed Project provide potential habitat for seasonal spawning of game and non-game fish species. A total of 1 stream in Delaware County is designated as an Approved Trout Water, 3 are designated as Trout Natural Reproduction, and 41 are designated as Stocked Trout Streams and Approved Trout Waters, which designates waters that contain sufficient portions that are open to public fishing and are stocked with trout by PAFBC (PAFBC 2015a).

In addition to the trout water classifications, 3 of the streams in Delaware County have a designation of High Quality Cold Water Fisheries (HQ-CWF), 42 are designated as Trout Stocked Fisheries (TSF), and 13 streams are designated as Warm Water Fisheries (WWF). Resource Table 3 in the Environmental Assessment Form provides a summary of all the existing use and designated use classifications associated with the streams crossed in Delaware County.

c. Rearing

In areas where the proposed Project parallels existing ROW wetlands are not considered to have a high potential for wildlife rearing. This assessment is based on the routine maintenance activities conducted along the existing ROW within wetland and stream areas. The maintenance of the existing ROW limits the value of these wetlands for wildlife rearing.

Although some small mammals and birds may utilize the Project area for rearing purposes, the habitat provided in the adjacent undisturbed areas provides more shelter and food sources than the existing ROW. Consequently, the majority of rearing activities will not occur in the Project area but rather the adjacent areas.

d. Resting

All of the wetlands and streams provide habitat that has the potential to be used for resting by a variety of birds and mammals. However, as previously stated the existing ROW provides a limited number of roosts (shrubs/trees) and has limited protective cover due to the routine maintenance activities. Therefore, although the Project area does provide some resting habitat/areas for songbirds and possibly small mammals, these species are more likely to utilize the adjacent areas that provide more cover and/or perches.

e. Migration

The wetlands in the proposed Project area are not believed to be substantially utilized during the migration of wildlife or birds. However, some of the wetland complexes that support large areas of open water, including ponds or reservoirs, may be utilized by migrating waterfowl. Other areas along the Project that may be used during migration include the forested edge habitat along the existing ROW that may be used by migrating songbirds.

Seasonal migration of trout during spawning is likely to occur within Approved Trout Waters and Stocked Trout Streams. Additionally, there is potential for anadromous fish migration to occur within streams designated as HQ-CWF, WWF and TSF.

f. Feeding

As indicated under Section A.1, Food Chain Production, the wetlands and streams along the proposed route provide a food source for invertebrates, birds, reptiles, amphibians, and mammals. In general, this function is limited relative to the areas located outside the proposed Project area which provide higher rates of primary productivity. However, wetland areas within the proposed Project area support small numbers of aquatic insects, mollusks, or amphibians that meet specific prey requirements of birds and mammals with an affinity for wetland and stream habitats such as raccoon (*Procyon lotor*). In addition, streams traversed by the Project are likely utilized by a variety of wildlife species as a source of drinking water.

g. Escape Cover

The Project primarily parallels existing pipeline ROW; therefore, there is limited escape cover provided in the Project area due to lack of habitat diversity and structure. Specifically, vegetation on the existing ROW is limited to shrubs and herbaceous plants as compared to the diversity of habitat structure provided in the adjacent and surrounding vegetated areas.

Streams and other waterbodies within the proposed Project area provide escape cover for aquatic organisms when there is a presence of submerged stream bank vegetation/roots, aquatic plants, undercut banks, rocky substrates, and woody debris present.

h. Other

No other general habitat considerations were identified during either the wetland delineations or stream characterization surveys.

A.3 Habitat for Threatened and Endangered Plant and Animal Species

Detailed coordination and field surveys regarding the presence of species of concern have been initiated with the various state and Federal agencies and are summarized in Attachment 6 of the Joint Application. All survey reports have been submitted to the appropriate regulatory agency for review. Clearance letters received to date are provided in Attachment 6 of the Joint Application.

A.4 Environmental Study Areas

a. Sanctuaries

There are no wildlife, bird, fish, or plant sanctuaries that would be crossed by the proposed Project in Delaware County.

b. Refuges

No National Wildlife Refuges or management areas, designated critical habitat, or significant habitats were identified within the proposed Project area in Delaware County.

A.5 Stream Relocation, Enclosure, or Dredging

There are no stream relocations, enclosures, or waterway dredging/deepening activities proposed in conjunction with the proposed Project. Therefore, a description of the instream macroinvertebrate communities is not required as part of this Environmental Assessment Form (EAF).

B WATER QUANTITY AND STREAMFLOW

B.1 Natural Drainage Patterns

The waterbodies in Delaware County within the proposed Project ROW are located in the Delaware River Basin. The Project crosses the following HUC 12 watersheds in Delaware County: Chester Creek, Repaupo Creek-Delaware River, and Ridley Creek.

The proposed Project ROW crosses two physiographic provinces of Pennsylvania in Delaware County. The general drainage pattern of the streams located in the Piedmont Upland and Lowland and Intermediate Upland sections is dendritic, which is similar to the branching of tree roots. Dendritic drainage patterns develop in regions underlain by homogeneous material that is subject to a similar resistance to weathering.

B.2 Flushing Characteristics

The ability of a stream to maintain its flushing characteristics of both natural and introduced material is primarily defined by its width, flow velocity, and substrate. Most of the streams in the Project area are low to medium-gradient streams that are best characterized as having moderate rates of flushing and residence times.

The majority of wetlands located within the proposed Project area do not contain surface waters that support continuous flow; therefore, the majority of the wetlands crossed by the Project are considered to have a very low flushing ability based on their topography (low-lying depressions), limited sustained flows, and thick vegetation.

B.3 Current Patterns

Except in the wetlands that are associated with perennial streams, there are no sustained currents present within the wetlands crossed by the proposed Project.

The drainage pattern for the streams in Delaware County is dendritic and does not generally contain complex current patterns. Natural meanders with minimal obstructions are present.

B.4 Groundwater Discharge for Baseflow

A number of the wetlands associated with the proposed Project are associated with seeps or springs and are therefore located in areas of groundwater discharge, which may contribute to the baseflow of the streams. However, details on the amount of groundwater discharge associated with the Project area wetlands/seeps has not been determined.

Based on the local topography and geology, there is a potential for some Project streams to be substantially augmented by groundwater discharge. However, no studies have been conducted to quantify the contribution of groundwater discharge to the baseflow of the streams located within the Project area.

B.5 Natural Recharge Area for Ground and Surface Waters

Most of wetlands in the proposed Project area are either located at points of seasonal groundwater discharge such as seeps or springs, or are associated with streams. Therefore, some of the wetlands within the proposed Project area are considered natural recharge areas for surface water. Similarly, some of the wetlands and streams in the Project area may act as groundwater recharge areas based on their geographic location/setting and underlying material.

B.6 Storm and Floodwater Storage and Control

One of the primary functions of wetlands and floodplains is to store stormwater and attenuate floodwaters. In addition, baseflow conditions of the majority of the streams traversed is much lower than their bankfull condition; consequently, they all have additional capacity for storm and floodwater storage and control. Given the abundance of wetlands and streams within the Project area storm and floodwater storage and control is considered to be moderate to high.

C. WATER QUALITY

A total of 17 perennial streams, 12 intermittent streams, and 29 ephemeral streams would be crossed by the proposed Project in Delaware County. The water quality of the Project waterbodies in Delaware County is considered good as is evidenced by the HQ-CWF, TSF, WWF, and trout classifications. In Delaware County, 1 of the Project area streams are classified as Approved Trout Waters, 3 are classified as Trout Natural Reproduction, and 41 are classified as Stocked Trout Streams and Approved Trout Waters. Of the streams crossed

in Delaware County, 3 of them have a designated use as HQ-CWF, 42 have a designated use for TSF, and 13 have a designated use for WWF. Resource Table 3 in the Supplement to Environmental Assessment Form, Attachments with Additional Information provides a summary of all the existing use and designated use classifications associated with the Project streams.

C.1 Preventing Pollution

Most of the land surrounding the proposed Project area is either forested or agricultural. Consequently, potential sources of pollution are minor and mainly limited to possible agricultural runoff. A majority of the waterbodies traversed by the proposed Project have good water quality as is evidenced by the presence of anadromous fish species (based on state classifications), and the trout and water quality state designations (for designated and existing uses). There is not a great concern of pollution in the general proposed Project area.

The wetlands within the proposed Project area have some limited capacity to mitigate pollution. The water detention capacities and growth of vegetation allow the wetlands to filter some pollutants. However, no studies have been conducted to quantify either the pollution prevention capacities of the wetlands, or the need for such functions in the proposed Project area.

C.2 Sedimentation Control and Patterns

As stated above in Section C.1, the proposed Project area is primarily located within or adjacent to either forested or agricultural areas. Many of the agricultural fields in the proposed Project area have vegetation buffers bordering the streams. As a result, the existing sources of sediment within the proposed Project area are limited to potential runoff from plowed agricultural fields, or runoff from unpaved roads. Generally, clear water was evident in most of the streams surveyed within the proposed Project area.

During periods of high precipitation and runoff, the wetlands within the proposed Project area can be expected to limit the transport of sediments to downstream or downslope areas. However, no studies have been conducted to quantify the volume of sediments retained by, or deposited in, these wetlands.

C.3 Salinity Distribution

Only freshwater wetlands and streams were identified in the Project area. There is no evidence of any naturally occurring or man-induced salinity associated with the wetlands and streams identified within the proposed Project area.

C.4 Natural Water Filtration

As previously stated, the wetlands and streams crossed by the proposed Project are located in relatively undeveloped, forested or agricultural areas and there does not appear to be a great need for the natural filtration of water. Based on field observations, the surface water is considered to be of good quality.

D. RECREATION

D.1 Game Species

Hunting is a common and popular recreational activity in the vicinity of the proposed Project area, which contains an abundance of both small and large game species. Although the level of hunting activities and specific game species hunted in the Project area are unknown, the Project traverses several areas where game hunting is assumed to occur.

The proposed Pennsylvania Pipeline Project does not cross any Pennsylvania State Game Land (SGL) nor privately-owned hunting clubs in Delaware County (PAGC 2013).

D.2 Non-Game Species

The level of recreational activities involving non-game species, such as bird watching, wildlife photography, and amateur naturalist study, occurring in wetlands/streams located within the Project area is not known. Due to the location of the majority of the proposed Project area near forested lands, the wetlands and streams traversed by the proposed Project offer a high potential for recreational observation.

D.3 Fishing

Many of the streams associated with the proposed Project offer high quality recreational and sport fishing opportunities. In Delaware County, 1 of the Project streams have been designated by the PAFBC as Approved Trout Waters, 3 as Trout Natural Reproduction, and 41 as both Stocked Trout Streams and Approved Trout Waters. Additionally 3 of the streams in Delaware County have a designated use as HQ-CWF, 42 of the streams have a designated use for TSF and 13 of the streams have a designated use for WWF. Resource Table 3 in the Environmental Assessment Form provides a summary of all the existing use and designated use classifications associated with the Project streams.

D.4 Hiking

In Delaware County the Project crosses Rocky Run Trail (PA DCNR and Rails-to-Trails Conservancy 2013). The Project does not cross any water trails in Delaware County (PAFBC 2006).

D.5 Observation (Plant/Wildlife)

Based on background data searches and field observations one Core Habitat will be crossed by the proposed Project in Delaware County (PANHP 2015). Core habitats are areas that are most closely associated with the habitat for species of concern. These areas can support little disturbance without adversely affecting the habitat of the species of concern.

Core Habitat for Ridley Creek Headwaters is crossed by the proposed Project. Ridley Creek Headwaters is characterized by occasional small wetlands, spring seeps, and successional old fields along and adjacent to the creek floodplain where it widens and the water slows. The riparian zones are for the most part tightly bounded by agricultural fields, residential development, and other infrastructure. Wetland H34 is the only Project wetland located in the Core Habitat. Streams S-H28, S-H29, S-H34, S-H35, S-H36, S-H37, S-H38, S-H39, S-H41, S-H43, and S-H44 are the Project waterbodies located within the Core Habitat.

There is a high potential for recreational plant or wildlife observation within the proposed Project area.

D.6 Other Recreation

The Project does not cross any state forests in Delaware County. However, the proposed Project may cross areas that provide additional recreational activities, including biking, backpacking, camping, picnicking, horseback riding, canoeing, kayaking, boating, rafting, scenic drives, cross-country skiing, and motorized vehicle use (i.e., all-terrain vehicles, snowmobiles).

E. UPSTREAM AND DOWNSTREAM PROPERTY

The proposed Project is located within relatively undeveloped agricultural or forested areas. In many instances, individuals who own wetlands and riparian areas also own most of the adjacent property. The proposed Project will not cause long-term degradation of water quality, alter flow volumes, or change the direction of flow. In addition, operation of the proposed Project is not expected to interfere with the normal riparian rights of upstream or downstream landowners.

F. OTHER ENVIRONMENTAL FACTORS

There were no other environmental factors of concern identified during the field surveys conducted for the proposed Project.

G. REFERENCES

Pennsylvania Department of Conservation and Natural Resources and Rails-to-Trails Conservancy. 2013. Explore PA Trails – Trails. <http://www.explorepatrails.com>. Accessed on 23 June 23, 2015.

Pennsylvania Fish and Boat Commission. 2015a. Summary Book, 2015 Pennsylvania Fishing Laws & Regulations. Trout Fishing Regulations. Approved Trout Waters. <http://www.fishandboat.com/fishpub/summary/troutwaters.html>. Accessed June 18, 2015.

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Pennsylvania Game Commission. 2013. Pennsylvania State Game Lands. http://www.portal.state.pa.us/portal/server.pt/community/state_game_lands/11363. Accessed June 18, 2015.

Pennsylvania Natural Heritage Program. 2015. Statewide County Natural Heritage Inventory Map. <http://www.gis.dcnr.state.pa.us/maps/index.html?nha=true>. Accessed June 18, 2015.