

S.R. 4007, Section 14B
PADEP Environmental Assessment Form

Enclosure C –Description of Aquatic Habitat

Cresheim Creek is the only water resource that exists within the project area. No jurisdictional wetlands were identified within the project limits. A “Letter of No Wetland Finding” (A.D. Marble & Company 2003) is included as Enclosure A. Photographs of Cresheim Creek are attached in this enclosure. The S.R. 4007, Section 14B Improvements Project will include the rehabilitation of the S.R. 4007 Bridge over Cresheim Creek.

8.A. AQUATIC HABITATS

(1) Food Chain Production – Cresheim Creek is not individually listed in Title 25, Chapter 93 of the Pennsylvania Code; however, Cresheim Creek is a tributary to Wissahickon Creek, a Trout Stocked Fishery (TSF), and carries the same designation of this Creek. Information from the Pennsylvania Fish and Boat Commission (PFBC) indicates that Cresheim Creek is not listed as a wild trout stream and it is not trout stocked. According to the United States Geological Service (USGS) topographic mapping for Germantown, PA, and confirmed by field observations, Cresheim Creek is a perennial stream.

Primary energy sources of food chain production in streams are based on the supply of surrounding riparian vegetation and in-stream aquatic plants (Plafkin et al. 1989). Leaf litter is essential for sustaining shredding and filtering macroinvertebrates and for providing nutrients to the stream. Vegetative cover around the waterway also provides cover and stabilizes the water temperature. Cresheim Creek is able to offer food chain production support for aquatic organisms within the bridge rehabilitation study area. Detrital material and vegetative cover is supplied to Cresheim Creek by its wooded stream banks both upstream and downstream of the S.R. 4007 Bridge. The riparian vegetation is able to supply the proper food sources and cover in which to provide a sustainable habitat for aquatic organisms within the waterway. The waterway also functions to transport detritus and nutrients downstream to Wissahickon Creek

During a field visit in August 2006, a brief stream survey was completed to assess the presence of benthic macroinvertebrates and fish species within the waterway. No fish species were observed at the time of the field view. Benthic macroinvertebrates were observed only downstream of the S.R. 4007 Bridge. Dominant macroinvertebrate species found included caddisflies, midge fly larva, and planaria.

(2) General Habitat – The project is located in an urban setting, with land consisting of residential, commercial, and transportation uses. Within the project limits, Cresheim Creek is surrounded by a narrow, forested riparian buffer both upstream and

downstream of the S.R. 4007 Bridge. The banks upstream of the bridge consist of a vertical retaining wall to the northeast and a mix of deciduous trees, shrubs, and herbaceous vegetation to the northwest. The downstream banks of the waterway consist of maintained grass, and planted deciduous trees and shrubs to the southwest, and a mix of deciduous trees, shrubs, and herbaceous vegetation to the southeast.

It is important to note that hydrology within Cresheim Creek has been highly disturbed. It appears that upstream of the S.R. 4007 Bridge much debris and a sanitary sewer line have created an impediment to baseflow. Downstream of the S.R. 4007 Bridge the flow is moderate due to additional sources of hydrology provided by stormwater outfalls underneath the bridge. Currently, a 3'-6" diameter brick pipe discharges through the south abutment and a 6'-0" (h) X 7'-6" (w) concrete box culvert discharges into the waterway through the north abutment. Significant scour in front of the north abutment was observed. Discharge from the stormwater outfalls, as well as heavy stormwater runoff during storm events, has also caused severe erosion along the downstream banks of the waterway and has created a large sandbar adjacent to the southwest bank of Cresheim Creek.

The substrate of the stream and degree of in-stream cover are also important to maintaining aquatic habitat. The streambed of Cresheim Creek consists of a mix of sand/silt, gravel, and cobble. Upstream of the S.R. 4007 Bridge the substrate is predominantly sand and silt, while downstream of the bridge gravel and cobble are the predominant substrate types. Fallen and submerged woody debris, along with roots that have been exposed along the banks by erosion, would be able to provide habitat for both fish and macroinvertebrates within Cresheim Creek. The type of substrate and degree of embeddedness observed within the main waterway can also provide potential suitable habitat for fish spawning and egg incubation. However, the disturbance of flow within Cresheim Creek limits the ability for fish and macroinvertebrate species to reproduce, particularly in the upstream reach of Cresheim Creek which has very low flow and may not be passable.

Two riffle/pool complexes were observed within the project limits. Riffle areas can provide good spawning habitat for fish and the pool areas can provide optimal habitat for rearing; however, the disturbance of upstream flow within the waterway limits opportunities for fish propagation.

Because of the urban setting of the project area, the forested riparian buffer along Cresheim Creek provides only limited nesting, rearing, feeding and resting areas for mammals and bird species. Mammalian and avian species typical to urban settings, such as the eastern gray squirrel and songbirds, were observed during the field view in August 2006.

(3) Habitat for Threatened and Endangered Plant and Animal Species – According to the PNDE Environmental Review website, one potential impact to a species of special concern was noted with the Department of Conservation and Natural Resources (DCNR). However, correspondence directly with DCNR indicated that no project

impacts to species of special concern are anticipated for this project (see response letter from February 16, 2006).

(4) Environmental Study Area – A field visit, in conjunction with examination of the USGS topographic map of Germantown, PA indicates that there are no sanctuaries or refuges located within the project study area or surrounding vicinity.

(5) Stream Related Impacts – Permanent stream relocation or channel dredging will not be required for this project. This project will consist of the rehabilitation of the existing stone arch bridge. Permanent impacts to Cresheim Creek will be minimal as a result of the placement of grout bags and rip-rap along the north abutment of the bridge, which is necessary to prevent future scour. Temporary impacts to Cresheim Creek will be due to the use of sandbag dams within the streambed, which will be utilized during the rehabilitation of the bridge to create dry work areas. No long-term impact is anticipated to the macroinvertebrate community of Cresheim Creek. Impacts to Cresheim Creek are described in detail in Enclosure D.

8.B. WATER QUANTITY AND STREAMFLOW

(1) Natural Drainage Patterns – Cresheim Creek is located within the Wissahickon Creek Watershed. Measurements using USGS mapping show that the project drainage area of Cresheim Creek is approximately 0.79 square miles. Cresheim Creek flows northeast to southwest through the project study area. Within the project study area, the main channel of Cresheim Creek averages approximately 10.0 to 20.0 feet in width, and approximately 0.5 to 1.0 feet in depth.

(2) Flushing Characteristics –Field observations within the project study area noted low base flow within Cresheim Creek upstream of the S.R. 4007 Bridge. Downstream of the S.R. 4007 Bridge the flow is moderate due to additional sources of hydrology provided by stormwater outfalls underneath the bridge. Currently, a 3'-6" diameter brick pipe discharges through the south abutment and a 6'-0" (h) X 7'-6" (w) concrete box culvert discharges into the waterway through the north abutment.

A HEC-RAS hydraulic analysis was performed for this project in accordance with USACE standards. This project will involve the rehabilitation of the S.R. 4007 Bridge with no change to the hydraulic capacity of the bridge opening. Therefore, the proposed conditions at the bridge site will remain the same as existing conditions.

(3) Current Patterns – Cresheim Creek flows through a narrow, forested riparian corridor both upstream and downstream of the S.R. 4007 Bridge. The banks and streambed of the waterway are naturalized with the exception of the upstream northeast bank, which contains a vertical retaining wall. The banks of Cresheim Creek appear to be unstable as they show evidence of heavy erosion and undercutting, particularly along the southwest bank.

(4) Groundwater Discharge for Baseflow –Groundwater discharge into Cresheim Creek does not appear to exist within the project area. No groundwater seeps were observed within the vicinity of the waterway.

(5) Natural Recharge Area for Ground and Surface Waters – The dense vegetation within the forested riparian corridor of Cresheim Creek provide natural recharge for ground and surface water to a limited degree. The forested area receives surface water flow from the adjacent landscape and flood flow from Cresheim Creek during storm events.

(6) Storm and Floodwater Storage and Control – During storm events, Cresheim Creek serves to transport and direct surface water flow downstream. Narrow, forested floodplains associated with Cresheim Creek exist within the project study area. The forested floodplains contribute to floodwater control during storm events because they contain dense vegetation which is able to withstand major flood events or erosive incidents and stabilize the shoreline.

The following information was provided in the Hydrologic & Hydraulic (H&H) report and Floodplain Management Analysis prepared for this project: Cresheim Creek is an ungauged stream and has not been studied in detail by FEMA; Cresheim Creek has not been identified as a FEMA-delineated waterway, therefore a floodway has not been defined within the project limits; there are no records of flooding at the S.R. 4007 bridge crossing; and there are no flood control projects located along Cresheim Creek within the City of Philadelphia (Pennoni Associates Inc. 2006).

8.C. WATER QUALITY

(1) Preventing Pollution – Cresheim Creek is subject primarily to chemical contamination that has been applied to S.R. 4007 and the surrounding commercial and residential properties. Within the project area, the forested riparian corridor is able to function in trapping sediment and other contaminants and pollutants because of the presence of dense vegetation.

(2) Sedimentation Control and Patterns – The forested riparian corridor located along Cresheim Creek functions in sedimentation control. The presence of dense vegetation and root masses offers frictional resistance to flowing water allowing the entrapment of sediments before they reach the waterway.

(3) Salinity Distribution – Salinity distribution of Cresheim Creek is typical of streams in this non-tidal region.

(4) Natural Water Filtration – Natural water filtration occurs within the project area during flood events due to the presence of dense vegetation along the banks of the Cresheim Creek. Dense vegetation enables filtration to occur by decreasing the velocity of the water through the project area.

8.D. RECREATION

(1) Game Species – Cresheim Creek is not stocked with game fish. Resident/transient game species may exist within the project area; however, no fish were observed at the time of the August 2006 field view. All land surrounding the waterway is located within a public park (Fairmount Park) and is not open for hunting or designated for fishing.

(2) Non-Game Species – Non-game species of fish, birds, and mammals common to urban environments are likely within the project area, including eastern gray squirrel and songbirds.

(3) Fishing – Within the project vicinity, Cresheim Creek is not stocked with game fish. Natural reproduction of resident stream fishes within Cresheim Creek may occur within the bridge rehabilitation area; however, no fish were observed at the time of the field view. Information from the Fairmount Park Commission indicates that the portion of Fairmount Park surrounding the bridge is not designated for fishing.

(4) Hiking – According to information from the Fairmount Park Commission, no hiking trails exist within the portion of Fairmount Park that is located in the study area.

(5) Observation (plant/wildlife) – The land surrounding the project area offers limited wildlife observation opportunities due to its urban setting and lack of safe public access.

8.E. UPSTREAM AND DOWNSTREAM PROPERTY

Land surrounding the S.R. 4007 Bridge is located within a Natural National Landmark and public park (Wissahickon Valley - Fairmount Park). The upstream and downstream property consists of a forested riparian corridor, and is publicly-owned and maintained by the Fairmount Park Commission.

8.F. OTHER ENVIRONMENTAL FACTORS DETERMINED BY SITE INVESTIGATION

A wetland identification/delineation was completed in accordance with the *U.S. Army Corps of Engineers Wetland Delineation Manual* (USACE 1987) on March 5, 2003. No jurisdictional wetlands were identified within the project limits. A field visit conducted by A.D. Marble & Company in August 2006 confirmed that no wetlands are present within the project area. Please refer to Enclosure A for the “Letter of No Wetland Finding” (A.D. Marble & Company 2003).

Cresheim Creek is located within Fairmount Park, a local park, and within the limits of the Wissahickon Valley, a Natural National Landmark. The stone arch bridge carrying

S.R. 4007 over Cresheim Creek is considered a contributing resource to Fairmount Park, which is listed in the National Register of Historic Places (NRHP).