

3.0 ALTERNATIVES

The proposed New Design raw water transmission main will provide water to the New Design WTP that in turn serves Frederick County and City of Frederick service areas. The project will include approximately 0.5 miles (3,000 feet) of raw water transmission pipeline extending from the existing Potomac River intake to the existing New Design WTP, electrical and communications ductbanks for systems control and delivery analysis (SCADA), and approximately 0.8 miles (4,500 feet) of treated effluent pipeline extending from the proposed McKinney WWTP outfall at Tuscarora Road to the existing Eastalco Potomac River Diffuser. The project does not include improvements to the existing Eastalco diffuser or external improvements to the existing Potomac River intake. This project does not involve in-stream work within the Potomac River.

3.1 Alternative 1 – No Build Alternative

As stated above, the Ballenger Creek WWTP and the New Design WTP are existing water dependent facilities that must release into and draw from the Potomac River. The existing Frederick County Potomac River raw water intake is located in the C&O Canal NHP. The existing Eastalco wastewater effluent diffuser is also located in the C&O Canal NHP. The C&O Canal NHP parallels the Potomac River and is located between the Plants and River. The only means to avoid the C&O Canal NHP is to not construct the project. Failure to construct the project will not satisfy the demonstrated need for water/wastewater system improvements. Alternative 1, the No Build Alternative, is not a feasible alternative. Alternative 1, the No Build Alternative, provides a baseline upon which to compare the impacts of Alternatives 2 and 3.

3.2 Alternative 2

The New Design Raw Water Main and McKinney Treated Effluent Outfall Alternative 2 provides infrastructure to support proposed expansions in the Frederick County water and wastewater infrastructure [e.g., expansion of New Design WTP and construction of the McKinney WWTP]. The Alternative 2 study area is approximately 11,900 linear feet (LF). Alternative 2 involves approximately 17,110 LF of underground utility construction. Included in the alignment is a crossing of Tuscarora Creek, B&O/CSX Railroad, the C&O Canal and the canal towpath. The area of NPS parkland that would be affected by Alternative 2 is approximately 1,210 LF.

Alternative 2 involves the construction of a 42-inch raw water main, a 42-inch outfall, and a power and communications duct bank. The proposed raw water main and electrical/communications duct bank will parallel the existing 24-inch main, to the southeast of the towpath. The proposed 42-inch outfall pipe will parallel the existing 18-inch outfall and stops before crossing the canal.

The following items are included in Alternative 2:

- Raw Water Transmission Main –construction of a new 42-inch raw water main parallel to the existing 24-inch main. This new water main will extend approximately 2,570 LF, running from the existing Intake Pumping Station to the New Design WTP. The new pipe will cross approximately 1,210 LF on C&O Canal National Historical Park land. Modifications to the existing raw water intake pumping station are not included in this project.
- Treated Wastewater Effluent Outfall Pipe – construction of a new 42-inch outfall parallel to the existing 18-inch outfall. This new pipe will extend approximately 4,200 LF and will carry future flows from the proposed McKinney WWTP outfall at Tuscarora Road, along New Design Road, to a proposed junction box located near the existing Potomac River diffuser. Approximately 520 LF of the alignment will be within the C&O Canal NHP. The design of the outfall pipe has been modified to avoid crossing the C&O Canal. Modifications to the existing Potomac River Diffuser are not included in this project. The 42” outfall is a response to projected ultimate effluent needs. Projected effluent volumes are not anticipated to exceed the existing 18” pipeline capacity until approximately year 2020. The proposed improvements include converting the 18-inch line above the 42” outfall

connection by connecting to the raw water system, and reversing direction of conveyance to the New Design WTP.

- Second Electric Feed Duct Bank – an electric duct bank consisting of approximately 2,500 LF of underground primary electric feed, running from the New Design WTP to the Intake Pumping Station. This will follow a parallel alignment to the raw water transmission main.
- New Communications Duct Bank – a communications duct bank consisting of approximately 2,500 LF of duct, running from the New Design WTP to the Intake Pumping Station, and will follow the alignment of the raw water main. As shown on the drawings, four manholes and four handholds will be located within the C&O Canal NHP boundaries. These are necessary for the installation and maintenance of the electrical and communication duct banks.

Figure 2 provides an overview of the project and Alternative 2, including the locations of the proposed pipelines and duct banks within the C&O Canal NHP.

Of the 11,900 linear feet of the New Design Raw Water Main/McKinney Treated Effluent Outfall Alternative 2, approximately 1,210 feet occur within the C&O Canal NHP. The C&O Canal NHP parallels the Potomac River. The New Design Raw Water Transmission Main and McKinney Treated Effluent Outfall directly link to the existing Frederick County Potomac River Raw Water Intake and the existing Eastalco Potomac River effluent diffuser. These structures are water dependent and accessing them requires encroaching upon C&O Canal NHP. Upon completion of the project, the existing 24" raw water main will be unchanged, a new 42" raw water main will be installed, a new 42" effluent main will be installed to a new junction box (prior to crossing the canal), and the existing 18" effluent line will be converted to a raw water line, above the 42" junction box. Below the 42" junction box, the 18" effluent line will remain unchanged. Alternative 2 does not require modifications to the existing diffuser, nor in-stream work within the Potomac River.

Because Alternative 2 is contained almost entirely within the existing right-of-way, meets the project needs, and poses little to no impacts to park resources, Alternative 2 is the Environmentally Preferred Alternative.

3.2.1 Alternative 2 Design Considerations

Wherever constructible, a 10-foot clearance will be maintained between raw water and effluent forcemain, if the pipelines are at the same elevation. This distance could be reduced somewhat if the pipelines are separated vertically as well, especially if the raw water pipeline is located above the effluent pipeline. The separation of 10 feet cannot be maintained in some areas where existing 18-inch pipeline is converted to effluent forcemain or raw water forcemain due to the location of existing pipelines in the right-of-way. In areas where maintaining the required clearance would not be possible, the pipeline carrying raw water shall be encased in concrete.

Crossing of C&O Canal would occur in the existing access roadway, which was previously disturbed during construction of the existing 18-inch and 24-inch pipelines. Only the 42-inch raw water and duct bank would cross the C&O Canal. Tunneling options were considered for this crossing. Jack and bore or liner plate tunnel would be appropriate trenchless construction methods for this area. The cost for open cut construction across C&O Canal would be approximately \$42,000. The cost for trenchless construction across C&O Canal would be approximately \$425,000, thereby increasing the construction cost by approximately \$385,000.

In addition to an increasing the construction cost, the tunneling operations would require excavation of receiving and jacking pits on both sides of the canal, sized approximately 15 feet by 15 feet and 15 feet by 30 feet, respectively. The pipeline depth would also need to be increased from 13 feet to about 21 feet in approach of the trenchless crossing, resulting in added disruption on both sides of the C&O crossing. During the tunneling operations, New Design Road would likely need to be closed for an extended period of time (7 days or more). Alternatively, installing the pipeline via open cut construction would keep the

construction within trench width and the pipeline and duct bank could be constructed in about 20 foot sections. Road closures would be very limited as compared to the trenchless construction method and could be scheduled as night work. Disruption to the park area, by constructing large launching and receiving pits and increased excavation depths for the pipeline, coupled with increased cost and access issues along New Design Road make the tunneling option not preferred.

Alternative 2 will involve an underground vault to house an air release and vacuum valve (ARV) (Figure 2). This underground vault will be 8 feet by 8 feet. This apparatus is required at this location (i.e. the pipeline high point) for the pipeline to function properly. The access to the vault would be provided via a 3-foot by 3-foot access hatch. The vault would be located in the road and the top of the vault would be flush with ground surface, and would appear on the surface to match existing manhole pads at the Nolands Ferry C&O Canal region. The ARV vent stack would be a 6-inch diameter pipe. To allow for proper operation of the ARV, the vent stack outlet cannot be submerged during flood events. The 100-year flood plain elevation at this location requires the vent stack to extend approximately 16 feet above ground elevation. However, the vent stack location, at the surface, can be moved a short distance from the vault. The proposed ARV stack is located at the edge of the existing County right-of-way as close to the tree line as possible to soften its visual effect. In addition, the vent stack will be painted to further camouflage its visual presence.

3.3 Alternative 3

Alternative 3 is functionally identical to Alternative 2 and is a response to potential concerns of CSX railroad regarding proximity to the existing railroad crossing abutments. Alternative 3 involves approximately 17,240 LF of underground utility construction, including a 42-inch raw water main, a 42-inch outfall, and a power and communications duct bank. Alternative 3 is identical to Alternative 2 extending from the Potomac River to approximately 200 feet from the CSX railroad crossing. At approximately 200 feet from the CSX railroad crossing, both 42" mains diverge from New Design Road and extend on parallel alignments to perpendicular crossings of the CSX rail line. The locations of the ductbank and ARV are the same as Alternative 2.

Figure 3 provides an overview of the project and Alternative 3, including the locations of the proposed pipelines and duct banks within the C&O Canal NHP.

4.0 **AFFECTED ENVIRONMENT**

The affected environment includes natural, cultural, and social resources located within the study area of the C&O Canal NHP that would be potentially impacted by the proposed project. The project area includes 1.36 acres within the C&O Canal NHP. After a review of background information and site visits, it has been determined that submerged aquatic vegetation, forest legacy easements, rural legacy easements, county parks, private conservation easements, wetlands of special state concern, natural heritage boundaries, and environmental trust easements are not located within the study area. Wetlands and socioeconomic resources are not anticipated to be affected by the project. Table 2 lists background data sources used for determining the affected environment for the project.

Table 2
Background Data Sources

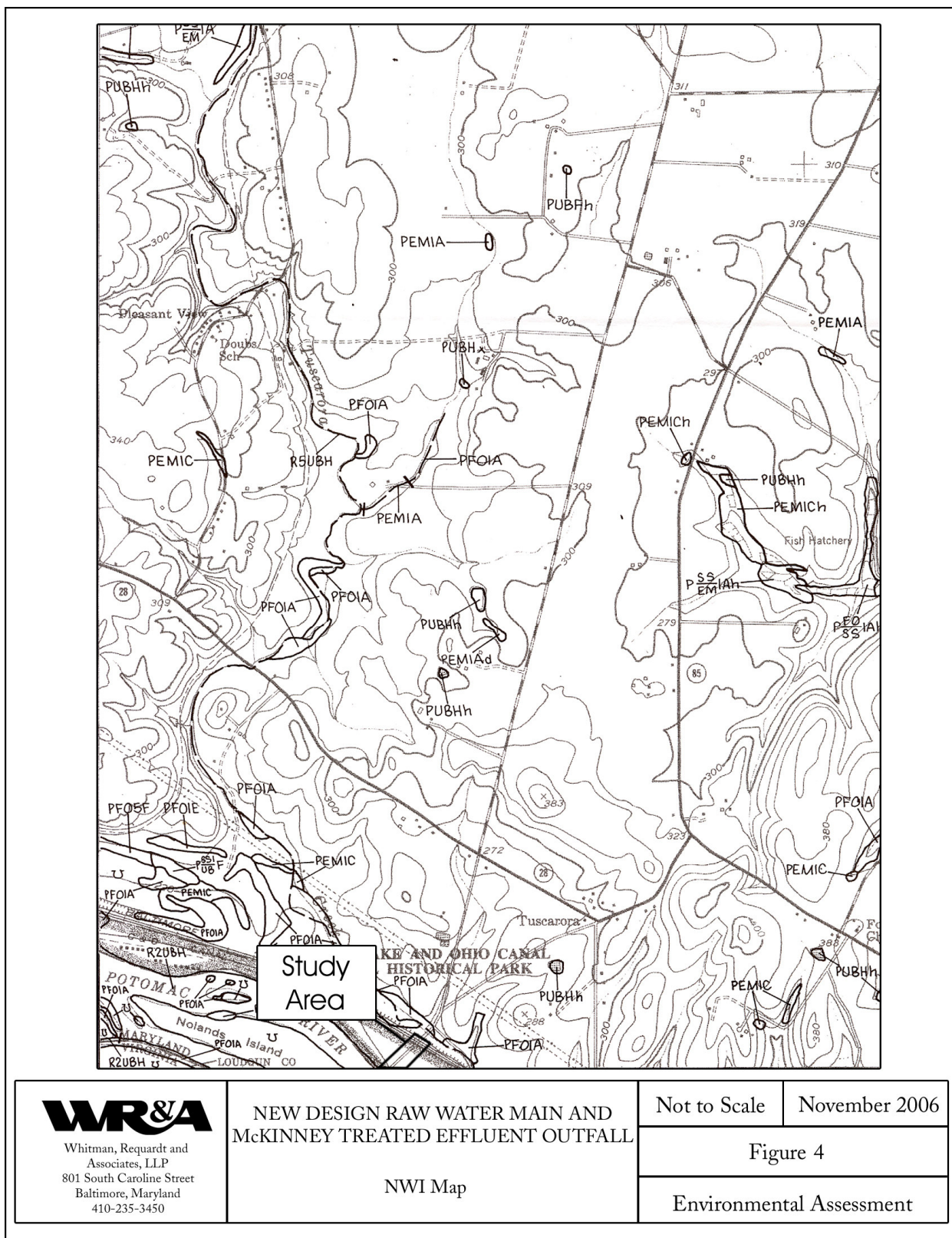
Source	Reference	Date	Agency
7.5 Minute Topographic Quadrangle Maps	Buckeystown, MD-VA Poolesville, MD-VA	1984 1995	United States Geological Survey (USGS)
National Wetland Inventory Map	Buckeystown, MD-VA Poolesville, MD-VA	1984 1995	United States Fish and Wildlife Service (USFWS)
Soil Survey Map	Frederick County, Maryland	2001	United States Department of Agriculture (USDA)
Maryland Dept. Natural Resources (MD DNR) website	www.msgic.state.md.us	2003	Maryland Department of Natural Resources (MD DNR)

4.1 **Wetlands**

A wetland investigation was conducted by Whitman, Requardt and Associates in November, 2002 August, 2004, and October 2004 for the McKinney WWTP Treated Effluent Outfall and Raw Water Transmission Main project. The only wetlands identified within the study area limits of the park are found within the bed of the C&O Canal. The National Wetlands Inventory (NWI) (Figure 4) does not show any wetlands within the study area limits of the C&O Canal NHP. The wetland delineation was reviewed in the field and verified by the U.S. Army Corps of Engineers.

4.2 **Waterways**

The major waterway in the area park is the Potomac River. The C&O Canal was built parallel to the River. The canal is still considered a navigable waterway by the Army Corps of Engineers even though many miles of the canal are not rewatered. The Potomac River and C&O Canal are directly connected at numerous locations and the canal could not have existed without the river. Additionally, 0.972 acres of the C&O Canal remnants are located within the study area. The canal was first proposed in 1823 after the success of the Erie Canal. The proposed canal was to run 360 miles from Washington D.C. to the Ohio River at Pittsburgh. Actual construction of the canal began in 1828. Sections of the canal were opened as they were completed, due to slow progress from unforeseen difficulties. In 1850 the Canal was completed to Cumberland, MD. Because of financial difficulties and competition with the B&O Railroad, the final 180 miles to the Ohio River in Pittsburgh, PA was never completed. The completed canal is 184.5 miles long. The C&O Canal Company operated the canal until 1889 when a large flood left the canal in ruin. The B&O Railroad bought out the canal and ran it from 1891 to 1934 when another large flood severely damaged the canal. The B&O later traded the property to the US Government and in 1971 the C&O Canal National Historical Park was created.



4.3 Floodplains

According to the U.S. Department of Housing and Urban Development (HUD) Flood Insurance Rate Maps (FIRM), the entire C&O Canal NHP study area (31.737 acres) is located within the 100-year floodplain for the Potomac River (HUD FIRM Panel Number 240027 0275 B, Figure 5). Floodplain elevation at Noland's Ferry is at the approximate 15 foot above ground elevation. In accordance with NPS DO-77-2, Appendix C includes a Statement of Findings for EO11988 (Floodplain Management).

4.4 Wildlife/Habitat

On April 10, 2003 and October 21, 2004, correspondence was directed to the Maryland Department of Natural Resources (MDNR) and the U.S. Fish and Wildlife Service (USFWS) to identify areas of valuable wildlife habitat within the C&O Canal NHP study area. On June 6, 2003 MD DNR responded there is the potential for FID habitat to exist within the project area. On May 22, 2003 and December 13, 2004, USFWS responded that no federally proposed or listed endangered or threatened species are known to exist within the project area. No further Section 7 Consultation with the USFWS is required.

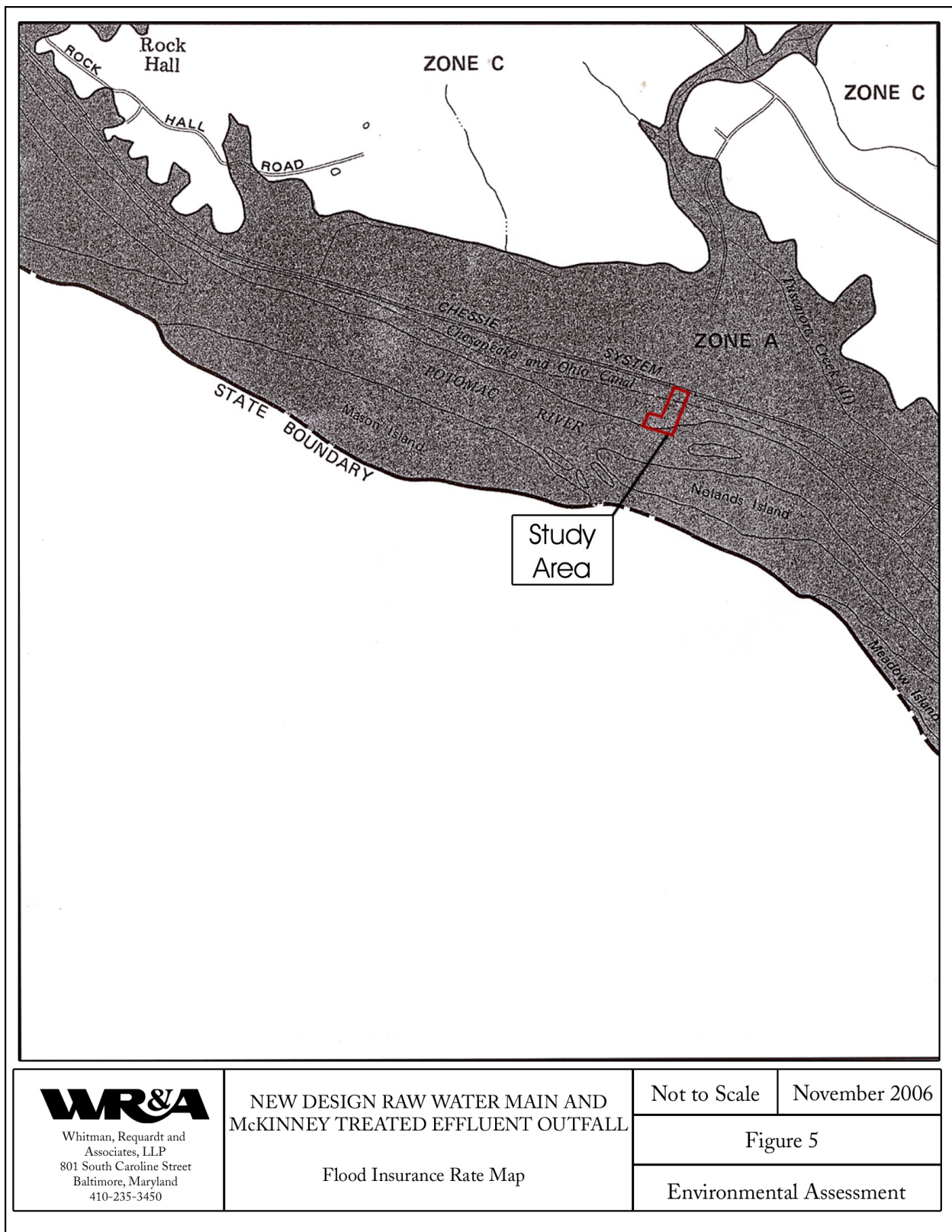
Maryland has 84 species of mammals, 85 species of reptiles and amphibians, 233 species of birds, and 116 species of fishes. The C&O Canal NHP contains forest and waterway land use. Common species such as white-tailed deer, squirrels, raccoons, songbirds, water snakes, frogs, toads, and salamanders can be found within the Park. Large forested areas within this region of Frederick County are potential Forested Interior Dwelling (FID) bird habitat. The total amount of forest disturbed within the NPS boundaries has been calculated at 0.17 acres for Alternative 2 and 0.13 acres for Alternative 3. No forest interior areas will be impacted. Forest losses within and outside the C&O Canal National Park are addressed through the requirements of the Maryland Forest Conservation Act.

4.5 Rare, Threatened, Endangered, and Species of Special Concern

The entire study area is located within a Sensitive Species Project Review Area (SSPRA). SSPRA is a digital GIS data layer, created by the Wildlife and Heritage Service of the MD DNR, which primarily represents the general locations of documented rare, threatened and endangered species. The data layer contains non-attributed, buffered polygons and does not delineate or strictly represent habitats of threatened and endangered species.

On April 10, 2003 and October 21, 2004, correspondence was directed to the MDNR and U.S. Fish and Wildlife Service (USFWS) to identify areas of rare and protected species and unique habitat area within the C&O Canal NHP study area. On May 22, 2003 and December 13, 2004, the USFWS responded that no federally proposed or listed endangered or threatened species are known to exist within the project area. No further Section 7 Consultation with the USFWS is required. On January 5, 2005, MDNR responded that there are no State or Federal records for rare, threatened, or endangered species within the boundaries of the project site.

Agency correspondence is located in Appendix B.



4.6 Forests

Under the State of Maryland Forest Conservation Act (COMAR Title 08, Subtitle 19, Forest Conservation), forest stand delineation studies were conducted within the potential areas of disturbance along the New Design Raw Water Main and McKinney Treated Effluent Outfall alignments. The forest stand delineation evaluates forest stand structure, forest species composition, relative age, and amount of human disturbance or disease to determine the types and quality of forest resources.

According to the locally approved Forest Stand Delineation, two forest stands occur within the park boundaries. Figure 2 shows locations of forest stands within the project area. Stand 1 is composed of mainly Hackberry (*Celtis occidentalis*), American Sycamore (*Platanus occidentalis*), and Box-elder (*Acer negundo*). Other species include White Ash (*Fraxinus Americana*), American Elm (*Ulmus americana*), and Tree-of-Heaven (*Ailanthus altissima*). The average size class of the canopy trees ranges from 20 to 30 inches dbh. This stand is a mid successional river floodplain community. Stand 2 is a mature mid to late-succession floodplain forest community, dominated by large specimens of American Sycamore and Silver Maple (*Acer saccharinum*). Other common canopy species include White Ash and Pignut Hickory (*Carya glabra*). The average tree size class range is 30 inches and greater dbh.

Common understory species include Pawpaw (*Asimina triloba*), Spicebush (*Lindera benzoin*) and Poison Ivy (*Toxicodendron radicans*). Evidence of invasive species is present, including Multiflora Rose (*Rosa multiflora*) and Japanese Honeysuckle (*Lonicera japonica*) in the herbaceous and shrub layers. Evidence of human disturbance includes trails leading down the banks of the Potomac River and scattered locations of tree-carving. This forest provides a number of functions including wildlife habitat, floodplain control, stream shading, soil stabilization, and aesthetics to the park

4.7 Cultural Resources

Construction of the Chesapeake and Ohio (C&O) Canal began on July 4, 1828. The canal was opened in sections as they were completed. The first section from Georgetown to Seneca was opened in 1831; the second was opened in 1834 to Harpers Ferry; the third was opened to Hancock in 1839 and the final segment was opened in 1850 to Cumberland. The proposed project occurs in the section of the canal between Seneca and Harpers Ferry. The constructed canal was 184.5 miles long and included 74 lift locks, 7 dams, 11 stone aqueducts, hundreds of culverts, and a number of waste weirs, lock houses, river locks, stop locks, bridges, shops, and section houses. The canal was operated by the C&O Canal Company until 1889 when a large flood left the canal in ruin. The B&O Railroad bought out the canal and ran it from 1891 to 1924 when another large flood severely damaged the canal. The B&O later traded the property to the US Government (for a \$2,000,000 debt). The impending purchase of the property was made public on March 24, 1938. In 1961, the C&O Canal was designated by presidential proclamation as a National Monument. Under the proclamation, the monument was not authorized funding, expansion, or development opportunities with regard to park activities. Understanding this, President Nixon signed legislation in 1971 creating the C&O Canal National Historical Park. The C&O Canal is the only 19th century canal to remain completely intact today throughout the United States.

Several sites within and adjacent to the study area for the New Design Raw Water Transmission Main and McKinney Treated Effluent Outfall project have been listed or have been nominated for listing in the National Register of Historic Places. These National Register Listed sites are:

- **The Chesapeake and Ohio Canal National Historical Park:** The Park is listed from Georgetown, D.C. to Cumberland, MD. It was listed on 1966-10-15.
- **Nolands Ferry I Archeological Site (18FR17):** A national register listed archeological site associated with the Late Woodland time period. It was listed on 1985-10-18.

The sites in Frederick County that have been Nominated for National Register are:

- **Culvert 71:** Is located at mile 44.04 of the C&O Canal NHP. The culvert was built circa 1831 of red sandstone with a 130' long, 16' wide arched passage for the Tuscarora Creek. The outflow end face wall, with arch and wing walls, is intact but is missing stones and erosion of mortar

joints makes it vulnerable to flood conditions. Portions of the barrel are exposed in the canal bed with collapsed sections. The inflow face wall above the head of the arch is gone, as are the wing walls. One-third of the ringstones are gone on the down-canal side which will trigger further collapse. The berm bank above the arch is badly eroded. (This information is dated June 4, 1979)

- **Nolands Ferry Bridge:** Is located at mile 44.58 of the C&O Canal NHP. It was built in 1840 by Louis Wernwag. The Noland family operated a ferry service as early as 1758 at the crossing established by earlier Indian trails of the Potomac between the areas that are now VA and MD. This was the crossing used by VA farmers to bring their produce to Baltimore markets. Although originally not scheduled by the Canal Company, complaints by the farmers forced the construction of the bridge. The Bridge consisted of red sandstone abutments, 20' in width and 11' high above the towpath, which were placed 70'-6" apart with a wood bridge crossover. Sidewalls ramped up on each side to the pier and bridge level. Shortly after the construction of the bridge, robberies caused commercial abandonment of this river crossing. The wood bridge is now gone and the abutments now support mature trees with resulting damage of the roots forcing stones out and widening of joints that formerly contained mortar. (This information is dated June 4, 1979)
- **Tuscarora Feeder:** Is at mile 45.10 of the C&O Canal NHP. It was an auxiliary feeder of Potomac water into the canal. It is 40 miles above the Seneca feeder at Dam No. 2 and 17 miles below the feeder at Harpers Ferry falls. Earthen dikes were built approximately 30' apart, creating a channel about 5' in depth. The inlet into the channel is much overgrown with underbrush and mature trees. (This information is dated June 4, 1979)
- **Calico Rocks:** Is at mile 46.8 of the C&O Canal NHP. There are several outcroppings of Frederick limestone breccia, sometimes referred to as Potomac marble, such as is used in the rotunda of the Capitol, located in this area. (This information is dated June 4, 1979)

R. Christopher Goodwin and Associates, Inc. has completed a Cultural Resources Investigation report for the proposed project. Archeological excavations within the Noland's Ferry Site (18FR0017) and the C&O Canal National Historical Park were performed. Site 18FR0017 is a historically significant archeological site for the information it contains pertaining to Native American settlements and material culture from the Paleo-Indian period through the 18th century. Investigations recovered materials associated with Site 18FR0017, a National Register-listed property. Based on RCG recommendations, the proposed underground electric duct bank corridor was relocated to avoid adverse effects to Site 18FR0017. Site 18FR839 is also located within the park. Based on RCG recommendations, the project was redesigned to avoid this significant site. RCG is coordinating with the Maryland Historical Trust (MHT) and C&O Canal NHP regarding compliance with Section 106 issues.

4.8 Indian Trust Resources

Secretarial Order 3175 requires that any anticipated impacts authorized by the Department of the Interior (e.g., National Park Service) to Indian trust resources be explicitly address in environmental documents. Indian trust resources do not exist in this portion of the C&O Canal NHP. Therefore, Indian trust resources will not be affected by this project, and are dropped from further evaluation.

4.9 Ethnographic Resources

The NPS defines ethnographic resources as any "site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence or other significance in the cultural system of a group traditionally associated with it". Ethnographic resources are not known to exist within this portion of the C&O Canal NHP. Therefore, ethnographic resources will not be affected by this project, and are dropped from further evaluation.

4.10 Aesthetics and Visual Resources

The aesthetic and visual resources within the study area consist of the Potomac River, the forested riparian buffer along the Potomac, and remnants of the historic C&O Canal. Views of the above resources are readily seen from the towpath extending through the study area. The view of the area of effect includes the C&O Canal, towpath, forested riparian zone, and the Potomac River. The view from the area of effect consists of forest and agricultural lands to the north in addition to the B&O/CSX railroad and the Tuscarora Creek, an extension of the canal and towpath to the east and west, and a view of the Potomac River and its riparian zone to the south.

In accordance with NPS Management Policies (2001), Sound Preservation and Noise Management is an important objective of the National Park Service mission. The proposed project is an underground utility and will be located adjacent to existing similar utilities. This project will not affect the natural ambient soundscape. The proposed action would have no adverse, long-term impacts on sound preservation and noise management.

4.11 Socioeconomic Environment and Land Use

According to the Frederick County Zoning Map No. 109 (revised 6/21/02), the study area is zoned as resource conservation and the current land use is forest, agriculture, and waterway. The land use surrounding the study area is primarily agriculture, with smaller amounts of forest. The local economy and businesses include light industry and commercial development, mostly existing to the north. The small town of Urbana is located five miles south of the Noland's Ferry section of the park. The City of Frederick is located 3 miles to the northwest of the Noland's Ferry section of the park.

Right-of-Way. Within the C&O Canal NHP, there are existing County utility easements. The existing County utility easements are best described in terms of two units. The first unit of existing County utility easement through the C&O Canal NHP extends from the CSX Railroad right-of-way (R.O.W.) to the Canal. This segment of County easement consists of a 75-foot wide permanent roadway/utility easement, roughly centered on the Park Entrance Road (New Design/Nolands Ferry Road). The easement was established in a Deed of Easement dated May 10, 1969 (prior to NPS ownership), deed reference number liber 806, folio 477-481. Currently, the easement contains the roadway, 24-inch raw water main, 18-inch outfall, overhead electric and telephone, and buried electric and telephone lines. Within the Park, from the CSX R.O.W to the Canal, the easement has the following approximate dimensions:

- Width: 75 feet
- Length: 520 feet
- Area: 0.9 Acre (39,000 square feet)

The second unit of existing County utility easement within the C&O Canal NHP extends from the Canal to the Potomac River. This segment of County easement consists of a 30-foot wide permanent utility easement centered on the 24-inch raw water main or the 18-inch outfall. Additional easement area is included around the Intake Pumping Station. The easement was established in a Deed of Easement dated April 17, 1973, deed reference number liber 913, folio 32-41. Currently, the easement contains the River Intake Pumping Station and service road, 24-inch raw water main, 18-inch outfall, and buried electric and telephone lines. Within the Park, from the Canal to the Potomac River, the easement has the following approximate dimensions:

- Width: 30 feet
- Length: 600 feet
- Area: 0.7 Acre (per easement document)

The total dimensions of the existing County utility easements within the C&O Canal NHP are 1120 feet length, maximum width 75 feet, minimum width 30 feet, and total area of 1.6 acres.

4.12 Community Facilities and Services

Community facilities and services are not located within the Park, but are located in communities north of the Park. Emergency Services for the County are under the Frederick County Emergency Services Division, which contain the Departments of Fire/Rescue Services, Animal Control, Emergency Communications, and the Office of Emergency/Disaster Management. The Frederick County Department of Fire and Rescue Services is responsible for fire and rescue emergency situations in the area. No impacts to these facilities will occur from this project; therefore this feature was dropped from further evaluation.

4.13 Environmental Justice

Neither disproportionate displacements nor impacts to communities of minority, elderly or low income populations will not occur. Environmental justice issues/populations will not be affected by this project, therefore this topic was dropped from further evaluation.

4.14 Air Quality

The Clean Air Act of 1967 includes a set of National Ambient Air Quality Standards (NAAQS). The U.S. Environmental Protection Agency sets levels for pollutants under the NAAQS. NAAQS have been set for six pollutants: carbon monoxide, nitrogen dioxide, sulfur dioxide, ozone, particulate matter, and lead. If an area exceeds the allowable concentrations for a pollutant, the local officials are required to develop a plan in order to comply with air quality standards.

Currently, Frederick County is considered to be in compliance with the NAAQS. Therefore, the project is not subject to the conformity requirements of the Clean Air Act. Local effects to air quality will be considered in the environmental consequences section.

4.15 Agricultural Land

The study area does not contain agricultural land, but adjacent areas to the north are zoned as agriculture and are actively farmed. The two soils located in the study area are Prime Farmland Soils. They are Combs silt loam (CnA) and Linside silt loam (LsA). Due to the absence of active agricultural production within the project study area, this topic was dropped from further evaluation.

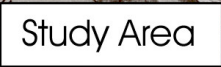
4.16 Soils, Geology and Topography

The study area lies within the Piedmont Plateau Province. It consists of the general soil unit Codorus-Hatboro-Combs. The elevations within the study area range from a low of 200 feet along the Potomac River to a high of 220 feet at the B&O/CSX railroad.

The Codorus-Hatboro-Combs unit consists of nearly level and gently sloping, very deep, well drained, moderately well drained, and poorly drained soils that formed in alluvium from limestone and mica-bearing igneous and metamorphic rocks. This map unit is located around perennial streams and major rivers. The unit is composed of approximately 30 percent Codorus soils, 25 percent Hatboro soils, 13 percent Combs soils and 32 percent minor soils. Codorus soils are moderately well drained and have a loamy substratum. Hatboro soils are poorly drained and have a loamy substratum. Combs soils are well drained.

The soils located within the study area are listed below and shown in Figure 6.

- Combs silt loam (CnA), 0 to 3 percent slopes (23.170 acres)
- Linside silt loam (LsA), 0 to 3 percent slopes (7.660 acres)



Environmental Assessment

4.17 Greenways and Green Infrastructure

The towpath and canal of the C&O Canal NHP are an existing greenway trail within Frederick County. The entire towpath is 185 miles long and extends from Cumberland, MD to Georgetown, DC. Sixteen miles of the towpath runs through Frederick County along the Potomac River with a portion of the towpath extending through the study area.

Areas of green infrastructure are measured and mapped for this region by the Maryland Department of Natural Resources (MD DNR). There are two types of green infrastructure mapped. These include green hubs, which are large contiguous areas of ecological importance and green links or corridors, which are linear features connecting green hubs together. The study area contains 12.263 acres of green hubs.