Roadway and Drainage Improvements
GREENBELT PARK, MARYLAND
GREE 11(1); PMIS # 151314

National Park Service
U.S. Department of the Interior

U.S. Department of Transportation
Federal Highway Administration

ENVIRONMENTAL ASSESSMENT

December 2012

ENVIRONMENTAL ASSESSMENT for IMPROVEMENTS
At
GREENBELT PARK
Prince George's County, Maryland

INTRODUCTION

The National Park Service (NPS), in cooperation with the Federal Highway Administration (FHWA), proposes to rehabilitate the Main Entrance Road (Route 10), Park Central Road (Route 11), Sweetgum Picnic Loop (Route 200) and Laurel Picnic Area (Route 201).

PURPOSE AND NEED

The purpose of the proposed project is to improve the safety of motorists, cyclists and pedestrians using Park roads, and improve visitor experience while minimizing impacts to natural resources within the Park.

The existing transportation related facilities, including roadways, parking lots, and drainage structures, have degraded and are approaching the end of their service lives, and have the potential to result in unsafe conditions for visitors.

OVERVIEW OF ALTERNATIVES

This Environmental Assessment (EA) examines the No Action Alternative (Alternative A) and two action alternatives; Alternative B and Alternative C. Alternative B would include resurfacing the roadways and parking lots, guardrail replacement and replacing the dual culverts at Still Creek with new culverts. Alternative C would include removing the culverts and constructing a new bridge that spans Still Creek in addition to the implementation of the actions in Alternative B. Alternative C is the Preferred Alternative. Implementation of the Preferred Alternative would result in negligible to minor, adverse impacts to some resources in the short- and long-term.

PUBLIC COMMENT: Note to Reviewers and Respondents

This EA will be on public review from January 18, 2013 through February 18, 2013. During this 30-day period, hardcopies of the EA will be available for review at the Greenbelt Park Headquarters.

In accordance with NEPA, Section 10 of Planning, Environment and Public Comment (PEPC) Public comments can be submitted on-line. The electronic version of this document can be found on the NPS's PEPC website at: http://parkplanning.nps.gov/greenbeltea

This site provides access to current plans, environmental impact analyses, and related documents on public review. An electronic version may also be found at the Federal Highway Administration, Eastern Federal Lands Highway Division's website at http://efl.fhwa.dot.gov/projects/environment.aspx.

If you wish to comment on the EA, you may submit comments through the PEPC website or mail

comments to the name and address below. Please note that the names and addresses of people who comment become part of public record. If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment. We will make all submissions from organizations, businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, available for public inspection in their entirety.

Mailed comments can be sent to:

Alexcy Romero, Superintendent
ATTN: Greenbelt Park EA
National Capital Parks–East
1900 Anacostia Park, SE
Washington, DC 2002

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CHAPTER 1: PURPOSE AND NEED

INTRODUCTION

This Environmental Assessment (EA) presents alternatives for improvements in Greenbelt Park, Greenbelt, Maryland and discloses the likely impacts from the implementation of those alternatives. The preparation of an EA by a Federal agency taking an action, and the contents of an EA are the result of legislation and implementing regulations issued to date. In this EA, Chapter 1 presents the purpose and need for the action, discusses the location and background of the project, identifies related plans and planning, and provides information regarding the scoping completed as a part of the project development process. Chapter 2 presents the alternatives proposed to meet the purpose and need of the action, and discusses alternatives that were dismissed from further consideration. Chapter 3 provides information regarding the resources present in the study area that would be impacted by the proposed action, and also discloses the impacts of each alternative to the resources. Chapter 4 documents the public involvement process throughout this project and includes the official list of recipients of the EA. Chapter 5 presents the list of references.

1.1 RELATIONSHIP TO LAWS, EXECUTIVE ORDERS, POLICIES, AND OTHER PLANNING EFFORTS

In 1969, the United States Congress passed the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 et seq.) to establish a national policy,

> "…which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; …"

NEPA also established the Council on Environmental Quality (CEQ) as an agency of the Executive Office of the President. In enacting NEPA, Congress recognized that nearly all Federal activities affect the environment in some way. Section 102 of NEPA mandates that before Federal agencies make decisions, they must consider the effects of their actions on the quality of the human and natural environment. NEPA assigns CEQ the task of ensuring that federal agencies meet their obligations under the Act.

The CEQ regulations (40 CFR 1500–1508) describe the means for Federal agencies to develop the Environmental Impact Statements (EIS's) mandated by NEPA in Section 102. The CEQ regulations developed the EA to be used when there is not enough information to decide whether a proposed action may have significant impacts. If an EA concludes that a Federal action will result in significant impacts, the Agency is required to prepare an EIS or alter the action proposed. Otherwise, the Agency is directed to issue a Finding of No Significant Impact (FONSI).

Section 1508.09 of the CEQ regulations states that the purposes of an EA are to:

1. Briefly provide sufficient evidence and analysis for determining whether to prepare an EIS or a FONSI.

2. Aid an Agency's compliance with the Act when no environmental impact statement is necessary.
3. Facilitate preparation of a statement when one is necessary.

Preparation of an EA is also used to aid in an Agency's compliance with Section 102(2)E of NEPA, which requires an Agency to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources."

This EA was prepared to meet the requirements of both the NPS and FHWA. The NPS is an agency within the Department of Interior. The Department of the Interior issued its NEPA regulations as Part 516 of its Departmental Manual (516 DM), last revised in March 2004. The NPS has issued several NEPA handbooks. In January 2001, the NPS released the Director's Order #12: *Conservation Planning, Environmental Impact Analysis, and Decision Making*. The FHWA's NEPA regulations are codified at 23 CFR Part 771. FHWA Tech Advisory T6640.8A was issued in 1987 to provide guidance on environmental documents. Compliance with Section 106 of the National Historic Preservation Act of 1966 and Section 7 of the Endangered Species Act has occurred in conjunction with the NEPA process.

The NPS *Management Policies* 2006 provides additional direction for the use, management and development of all parks within the national park system. The NPS *Management Policies* 2006 addresses only those policies applicable to the management of the national park system. It does not address policies applicable to NPS-administered programs that serve the conservation and recreation needs of the nation, but are not directly related to the national park system. The key principals of the NPS *Management Policies* 2006 were that policies must:

- Comply with current laws, regulations and executive orders;
- Ensure that conservation will be predominant when there is a conflict between the protection of resources and their use;
- Maintain NPS responsibility for making decisions and for exercising key authorities;
- Emphasize consultation and cooperation with local/state/tribal/federal entities;
- Support pursuit of the best contemporary business practices and sustainability;
- Encourage consistency across the system – "one national park system";
- Reflect NPS goals and a commitment to cooperative conservation and civic engagement;
- Employ a tone that leaves no room for misunderstanding the NPS' commitment to the public's appropriate use and enjoyment, including education and interpretation, of park resources, while preventing unacceptable impacts;
- Pass on to future generations natural, cultural, and physical resources that meet desired conditions better than they do today, along with improved opportunities for enjoyment.

In 1967 a *Master Plan* proposing extensive recreational development of Greenbelt Park was approved. Consequently, the Master Plan was re-evaluated in 1980 with the Development of an *Environmental Assessment* (EA).

None of the planning alternatives presented in the 1980 Environmental Assessment were found to

completely satisfy the needs of the Park management, visitors and neighboring communities. In February 1984, the *Development Concept Plan for Greenbelt Park* was issued by combining various elements of the alternatives developed in the EA and further consultation with interested parties, resource data and public involvement. The overall plan maximizes resource protection while providing a safe environment for Park visitors. The plan increases recreational capacity of the Park while minimizing impacts on natural resources.

1.2 PURPOSE AND NEED

The purpose of the proposed project is to improve the safety of motorists, cyclists and pedestrians using Park roads, and improve visitor experience while minimizing impacts to natural resources within the Park.

The objectives that must be met in order for this project to be considered a success are:

- Maintenance of Greenbelt Park roads as safe public access;
- Improvement of visitor access;
- Minimization of impacts to natural, cultural, and scenic and aesthetic resources.

The existing transportation related facilities, including roadways, parking lots, and drainage structures, have degraded and are approaching the end of their service lives, and have the potential to result in unsafe conditions for visitors.

The existing pavement of the Park's roads and parking lots has degraded. This degradation is evident from the visible fatigue cracking, rutting, settling, and potholes. A large storm in June 2009 caused Still Creek to come within a foot of overtopping the road. This storm accelerated stream channel degradation and eroded the roadway embankment. This erosion resulted in damage to the twin-culverts at Still Creek as well as pavement and guardrail displacement (see Figure 1).

The conditions of the roads and parking areas were inventoried in 2010. The following is a summary of the pavement conditions of the Park's roads:

a) The pavement condition of Main Entrance Road (Rte. 10 – 0.15 miles) varies from poor to fair, with the majority of the pavement in poor condition. Approximately 20% of the pavement exhibits distress.
b) The pavement condition of Park Central Road (Rte. 11– 2.3 miles) varies from poor to excellent, with the majority of the pavement in fair condition. Approximately 5% of the pavement has severe rutting. Most of the areas exhibiting pavement distress are located at the edges of the existing pavement. Some pavement cracking and sagging is present at the large pipe culvert locations.
c) The pavement condition of Sweetgum Picnic Loop (Rte. 200 – 0.21 miles) varies from poor to excellent, with the majority of the pavement in fair condition.
d) The pavement condition of Laurel Picnic Area (Rte. 201 – 0.27 miles) varies from fair to excellent, with the majority of the pavement considered to be in fair condition.

In addition to the pavement degradation, there are five pipe culverts in three locations (two locations have two culverts side by side) that have also degraded. Three of these culverts are corrugated metal

pipe and two are concrete. These culverts are damaged and corrosion through the corrugated metal culverts is visible. Scour holes are common at the culvert outlets due to the culverts being undersized and the localized flooding which causes obstructions in the stream and the pooling of backwater. The scouring of the stream bank and erosion at outlets has caused an invert drop that is not conducive for the passage of fish and other aquatic organisms. There is currently a lack of floodplain connectivity at the double culverts located at Still Creek. Currently the perched culverts and roadway fill are bisecting and separating the ecosystem.

Figure 1. Corroded double culverts at Still Creek (upstream)

1.3 PROJECT SITE DESCRIPTION AND HISTORY

Greenbelt Park is located in Prince George's County, Maryland approximately 13 miles from Washington D.C. (See Figures 2 and 3). Before its establishment as a park, this wooded 1,106 acre site was to be developed into a "new town" as one of several planned urban communities within a green belt around Washington D.C. The plans to develop the site were eventually dropped. During the late 1940s, the NPS National Capital Region became involved in the planning for this tract of mature woodlands, which ultimately grew into Greenbelt Park. The land of Greenbelt Park was acquired by the National Park Service in 1950 under Public Law 643 along with lands intended for the Baltimore-Washington Parkway. The ties with the Parkway stemmed from the planners' concept of using the Park as a stopover for through-travelers in addition to providing recreation opportunities for Washington area residents.

Principle development of Greenbelt Park took place between 1960 and 1970. Initial construction involved the Park's main road (completed in 1961) followed by parking areas. In 1962 a sewer line was installed partly along Main Park Road and partly in the stream valley, resulting in disturbance to stream banks and adjacent areas. By 1964, three miles of road and parking areas were completed along with 50 campsites and a comfort station. Most of the existing buildings and landscape were complete by 1965 (See Figure 4). (Robinson & Associates, Inc. 2006:68–80).

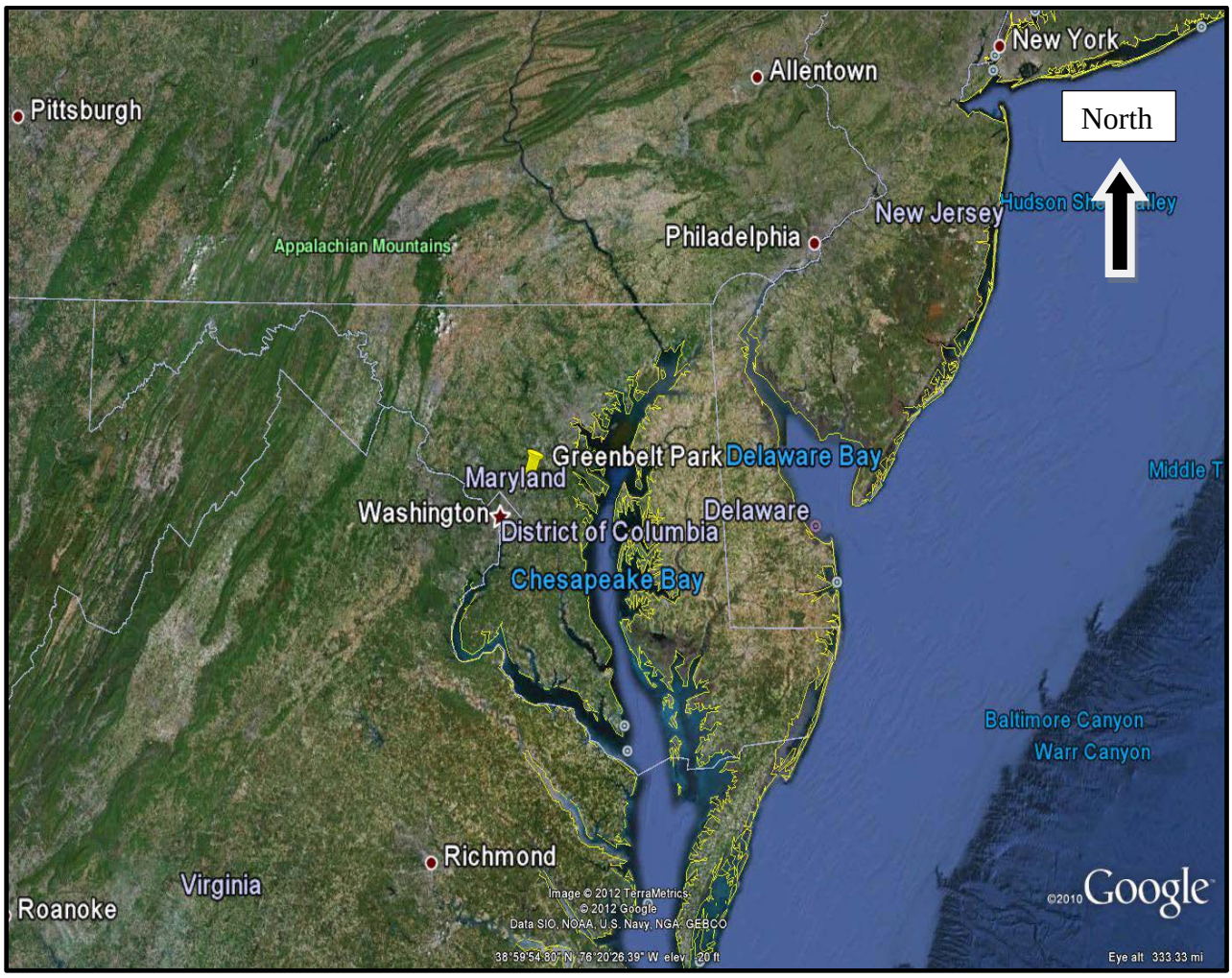


Figure 2. Project Location (Google Earth 2012)

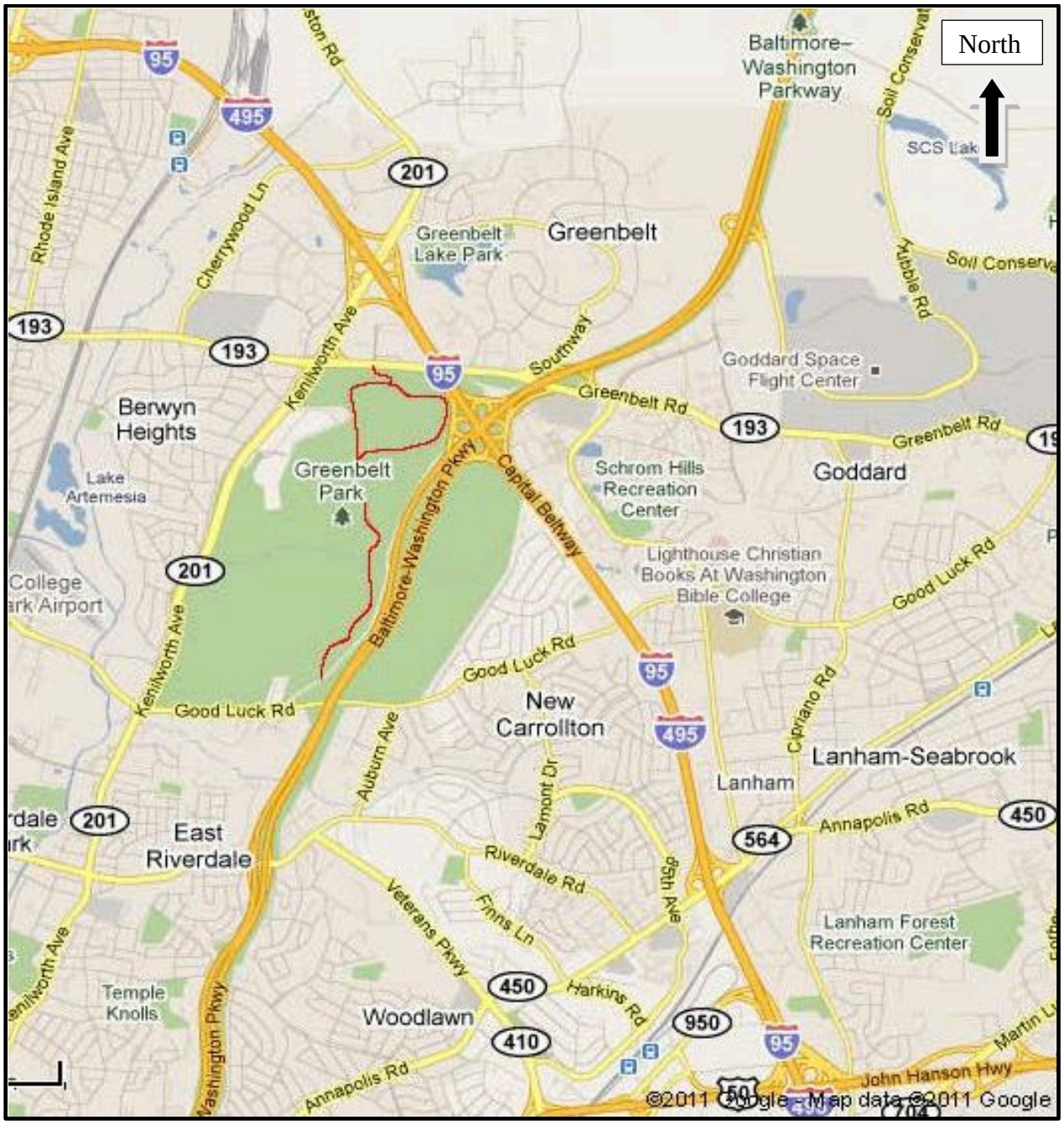


Figure 3. Project Area (Google Maps 2011)

Since the 1970s, the general vicinity of Greenbelt Park has undergone extensive building and economic development. The Park; however, was not significantly altered. Since then, there have been minor projects completed at the park, with much of the work related to maintenance and upgrades to existing facilities (See Figures 5 and 6). Today, Greenbelt Park is divided by the Baltimore–Washington Parkway into an east and west section. The east section, except for a fire road, is an undeveloped natural area. The west section receives the majority of park visitation and contains all of the Park's facilities, including a campground, picnic areas, hiking trails, a Park Police Substation and administrative and maintenance offices.

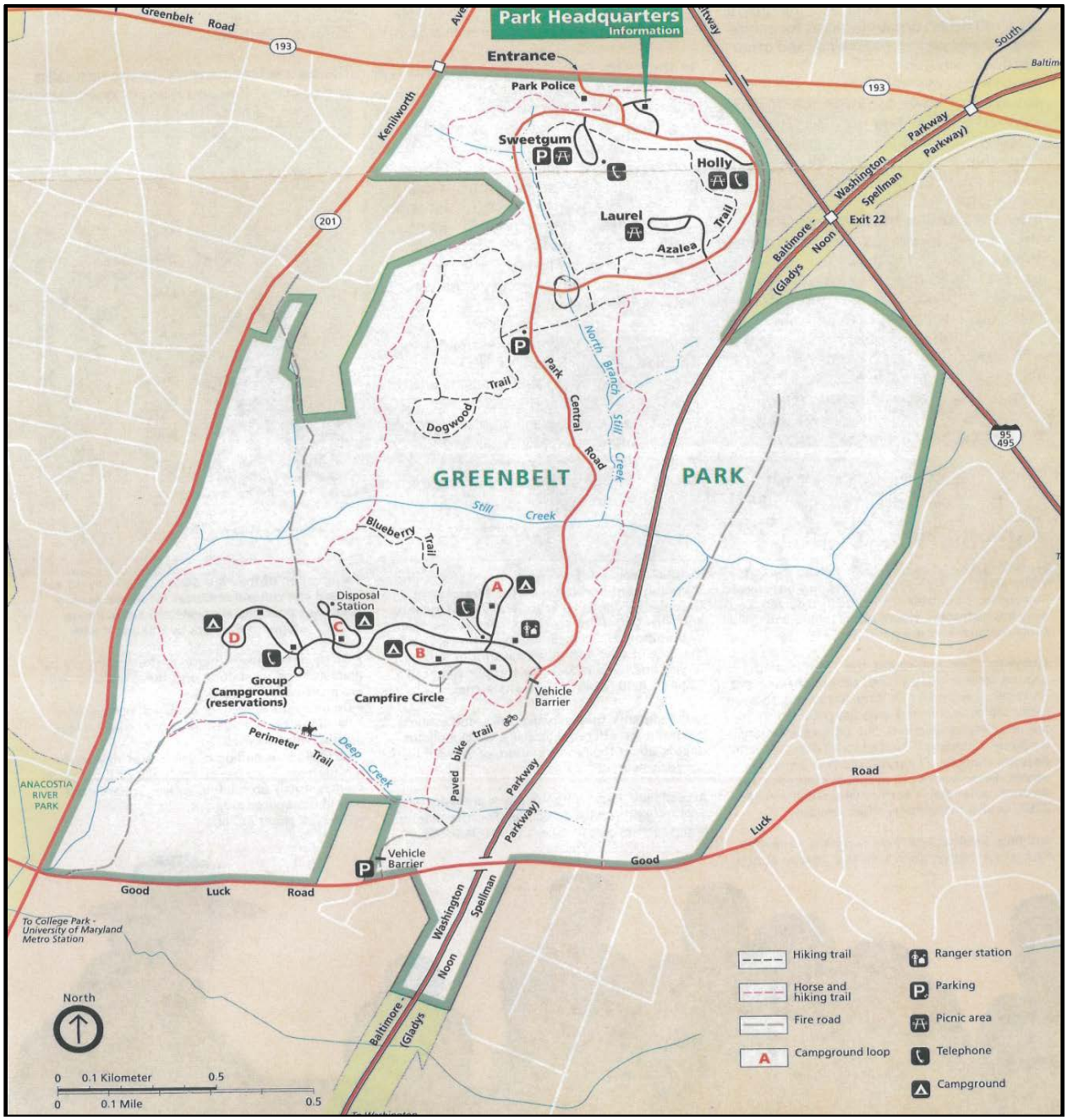


Figure 4. Greenbelt Park Map (NPS)

1.4 PROJECT BACKGROUND

In October 2009, FHWA – EFLHD conducted a site visit at the Park to assess the effects from the 25–year storm that occurred in June 2009. The large storm caused Still Creek to come within one foot of overtopping the road. The project was originally proposed to replace the culverts at Still Creek as the undersized culverts were reaching the end of their service life and causing severe erosion of the stream bank. The scope of the project was modified to include road rehabilitation and overlay due

to cracking and sagging of the pavement as well as additional drainage repairs. The NPS expressed an interest in analyzing the replacement of the double culvert at Still Creek with a bridge to restore hydrologic conditions, floodplain connectivity and enhance the watershed ecosystem. Additionally, safety improvements such as eliminating shoulder drop off and replacement of substandard timber guardrail were added. The updated project scope was added to the FHWA Fiscal Year 2011 Transportation Improvement Plan.

1.5 SCOPING

The CEQ guidelines (1978) for implementing NEPA and the NPS' NEPA guidelines contained in Director's Order # 12: *Conservation Planning, Environmental Impact Analysis and Decision Making Handbook* (NPS 2001a) provide the framework for scoping. Scoping is an early and open process to determine important issues, eliminate issues that are not important or relevant, identify relationships to other planning efforts or documents; define a time schedule or document preparation and decision-making, and define purpose and need, agency objectives and constraints, and the range of alternatives. For further scoping and public participation information, see "Chapter 4: Public Involvement and Coordination" and "Appendix A: Agency Coordination Letters."

Public Scoping

Information about the proposed project was made available to the public on the NPS's Planning, Environment, and Public Comment (PEPC) website during the public scoping comment period, from February 28, 2011 through March 28, 2011. Flyers providing details of the proposed project and contact information for comments were sent to a mailing list comprised of federal, state, and local agencies, elected officials, organizations, and advocacy groups. Public notices were run in the Washington Post on February 28, 2011 announcing the public scoping comment period. Comments were generally in support of the proposed project. Concerns were raised regarding impacts to storm water management, natural resources and impacts to traffic operations as a result of detours and lane/road closures.

Agency Scoping

Scoping letters were also sent to the Federal Consistency Coordinators at the Maryland Department of the Environment and the Maryland Department of Natural Resources to solicit comments regarding the proposed action on March 28, 2011. Comments related to storm water management were received from the Maryland Department of Environment (MDE). These comments provided recommendations for analysis to be provided in the EA, storm water design recommendations, and identified permits that may be necessary. Early Coordination Letters were sent to the U.S. Fish and Wildlife Service Chesapeake Bay Field Office and the Maryland Department of Natural Resources Wildlife and Heritage Program Coordinator in order to gather input regarding federally-listed, and state-listed rare species that may be present in the study area. Copies of the agency responses are located in "Appendix A: Agency Coordination Letters".

1.6 ISSUES AND IMPACT TOPICS

Issues as discussed in NEPA describe the relationships between the action being proposed and the environmental (natural, cultural and socioeconomic) resources. Issues describe an association or a link between the action and the resource. Issues are not the same as impacts, which include the intensity or results of those relationships. Internal and external scoping (defining the range of potential issues) was conducted for this EA to identify what relationships exist between the proposed action and environmental resources. These include:

- Closure of Park Central Road would route traffic to the southern entrance of the Park, which is a paved trail, from Good Luck Road in order to access the Park's campground and southern park pedestrian and horse trails. The paved trail would serve as the temporary access road. Safety and sight distance for cars and RV's or larger vehicles entering and exiting the Park are a concern for this detour. The observed high speed traffic on Good Luck Road may cause difficulty for vehicles turning to or from the temporary access road. Sight distance is a concern due to the paved trail's topography and geometry at the intersection with Good Luck Road.

- Additional asphalt would create additional impervious surfaces, and would therefore increase storm water runoff and necessitate the need to meet Maryland's storm water management requirements.

- Construction activities within vegetated areas may impact wildlife, particularly aquatic life using Still Creek.

Derivation of Impact Topics

Specific impact topics were developed to address potential natural, cultural, and social impacts that might result from the proposed construction work. These topics are derived from the issues identified above and address federal laws, regulations and orders, Park management documents, and Park knowledge of limited or easily impacted resources. Each impact topic relates to a specific aspect of the Park and its surrounding community, which are essential to protect.

1.7 IMPACT TOPICS INCLUDED IN THIS DOCUMENT

Floodplains

Executive Order 11988, "Floodplain Management," and NPS DO #77-2: Floodplain Management requires an examination of impacts to floodplains and potential risk involved in placing facilities within floodplains. According to FEMA Flood Insurance Rate Maps, a portion of the project area at the crossing of Still Creek is located within the 100-year flood zone, in zone A (FEMA 1996). The remainder of the project is located within Zone C (areas of minimal flooding). The proposed action may include the construction of new structures and the placement of fill material to construct the extended shoulders and culverts. Therefore, this impact topic was retained for further analysis. A Statement of Findings for Floodplains is included in this EA as Appendix C.

Wetlands

Executive Order 11990, "Protection of Wetlands," and NPS DO #77-1: Wetland Protection defines the NPS goal to maintain and preserve wetland areas. Wetlands are located in Greenbelt Park. The majority of the wetlands located in the study area are adjacent to Still Creek and are classified as palustrine, forested, broad-leaved deciduous, temporary flooded waterway. Wetlands/Waters of the U.S. are also present at the stream channels assocated with the culverts. The extension of culverts and placement of fill material would impact approximately 0.162 acres of wetland. Therefore, this impact topic has been retained for further analysis in this EA.

Surface Water Quality

NPS DO #77: Natural Resources Management, along with the Clean Water Act and other federal, state, and local regulations, provide general direction for the protection of surface waters. The pollution of surface waters by both point and nonpoint sources can impair the natural function of aquatic and terrestrial ecosystems and diminish the utility of park waters for visitor use and enjoyment. Ground disturbance during construction has the potential to impact surface water quality. After land is developed and built upon, impervious surfaces, such as asphalt roadways and parking areas, do not allow precipitation to percolate. As rainfall collects and flows along the impervious surface, pollutants from vehicles such as oil, emissions, etc., are concentrated in the storm water. There are currently no storm water management features located in the project area. Curb and gutter inlets convey storm water off of the parking lots. Storm water flows as sheet flow from the Park roads across the vegetated shoulders into the lands adjacent to the roadway and infiltrate into the groundwater. These sources of pollution are regulated by Section 402 of the Clean Water Act. Based on Maryland Department of the Environment regulations, areas where full depth reconstruction or new impervious surfaces are proposed would be subject to storm water management requirements. Permanent storm water quantity and quality treatment features may be constructed on this project. Therefore, this impact topic has been retained for further analysis in this EA.

Vegetation

The NPS policy is to protect the natural abundance and diversity of all naturally occurring communities. The 2006 NPS Management Policies (National Park Service, 2006), NPS DO #77: Natural Resources Management, and other NPS and Park policies, provides general direction for the protection of vegetation. Construction during culvert repairs or a new bridge structure would require the clearing of vegetation. The study area is comprised of three vegetation communities, the mowed-grass vegetation community, the wetland vegetation community and the forested area. The culvert repairs or replacement with a bridge on the same alignment would be done within the footprint of the existing dual culverts, and would have a minor impact to vegetation. The temporary detour road would also have minor impacts to vegetation. Therefore, this impact topic has been retained for further analysis in this EA.

Wildlife and Wildlife Habitat

NPS policy is to protect the natural abundance and diversity of all naturally occurring communities.

The 2006 NPS Management Policies (NPS 2006), NPS DO #77: Natural Resources Management and other NPS policies provide general direction for the protection of wildlife and wildlife habitat. According to the U.S. Fish and Wildlife Service, there are no federally proposed or listed threatened or endangered species within the project area. The project area may include aquatic habitat alteration and disturbance at the culvert locations. Habitat alteration and displacement of wildlife species that are commonly encountered within the Park would result from the proposed action. Therefore, this impact topic has been retained for further analysis in this EA.

Visual Resources

The NPS 2006 Management Policies (NPS 2006) notes that the enjoyment of park resources and values by the people of the Unites States is part of the fundamental purpose of all parks. The Organic Act also states that units of the National Park System are charged with conserving park scenery, along with all the natural and cultural resources which contribute to important views. In the evaluation of visual resources, both the visual character of the site and the quality of the viewshed are analyzed. A viewshed comprises the limits of the visual environment associated with the proposed action including the viewsheds within, into, and out of the site. The roadway resurfacing and culvert improvements as well as the potential for a new bridge would have a minimal impact to the appearance of the roadway and stream crossing will have effects on the visual environment. Therefore, this impact topic has been retained for further analysis in this EA.

Visitor Use and Experience

Enjoyment of park resources and values by the people of the United States is part of the fundamental purpose of all parks (NPS 2006a). The NPS strives to provide opportunities for forms of enjoyment that are uniquely suited and appropriate to the natural and cultural resources found in parks. The construction work and detoured access to visitor facilities would impact Visitor Use and Experience. Therefore, this impact topic has been retained for further analysis in this EA.

Park Operations

All Park roads and parking areas are currently maintained by the NPS. Maintenance of these areas includes pavement repairs such as crack sealing and pothole patching, culvert cleaning, mowing of the vegetated shoulders and recovery area, and re-striping of the pavement markings. The removal of existing pavement and placement of new pavement would impact park operations, as roadway conditions would be improved and maintenance needs would decrease. The replacement of culverts and addition of relief culverts would also impact the maintenance required for the drainage system. Certain staff operations would temporarily be disrupted during construction. Therefore, this impact topic has been retained for further analysis in this EA.

Traffic Operations

Main Entrance Road and Park Central Road are the primary routes providing access within the Park. The Average Daily Traffic for Greenbelt Park is 303 vehicles per day. Pavement improvements and culvert replacement would require partial and temporary full closures to these roads. These closures

would require traffic detours to an alternate route. The detour necessary during road closures would follow Kenilworth Avenue to the south and east on Good Luck Road to the temporary access road that would serve as the Park entrance. Greenbelt contains multiple businesses, including restaurants, and residences that could experience a temporary change in traffic volume during these times. Coordination with Maryland Department of Transportation and Prince George's County regarding the re-routing of traffic would also be necessary. Therefore, this impact topic has been retained for further analysis in this EA.

1.8 IMPACT TOPICS DISMISSED FROM FURTHER CONSIDERATION

The following impact topics were initially considered but were dismissed from further analysis because the resource is not present in the project site or because any potential impacts would be nonexistent, negligible, or minor. A brief rationale for the dismissal of each impact topic is provided below.

Archeology

The NPS defines an archeological resource as any material remains or physical evidence of past human life or activities that are of archeological interest, including the record of the effects of human activities on the environment. Archeological resources are capable of revealing scientific or humanistic information through archeological research (DO #28, 67). No known archeological sites exist in the project area. An archeological identification survey was conducted in the Park in November, 2011. The survey was transmitted to the Maryland Historical Trust (MHT). MHT concurred with the content of the report which concluded that no archeological sites would be affected by the proposed action and that no additional surveys were required. Therefore this impact topic was dismissed from further evaluation in this EA.

Historic Structures, Districts, and Landmarks

A historic structure is defined by the NPS as "a constructed work, usually immovable by nature or design, consciously created to serve some human act" (DO #28, 113). For a structure, building to be listed on or eligible for listing on the National Register, it must possess historic integrity of those features necessary to convey its significance, particularly with respect to location, setting, design, feeling, association, workmanship, and materials. No historic structures or districts are located within the project area of potential effect. Greenbelt Park is not considered a contributing feature of the National Register Listed Baltimore-Washington Parkway which bisects the Park. The undertaking would have no impact to the National Register Listed Parkway. Greenbelt Park is also not considered a contributing feature to the National Historic Landmark City of Greenbelt, Maryland. No historic structures, districts or landmarks will be affected by the proposed action. Therefore this impact topic was dismissed from further evaluation in this EA.

Museum Collections

The NPS defines a museum object as "a material thing possessing functional, aesthetic, cultural, symbolic, and/or scientific value, usually movable by nature or design. Museum objects include prehistoric and historic objects, artifacts, works of art, archival material, and natural history specimens

that are part of a museum collection" (DO #28, 137). No museum objects are located within the study area, and no museum objects would be impacted by the proposed action. Therefore this impact topic was dismissed from further evaluation in this EA.

Cultural Landscapes

As described in DO #28, a cultural landscape is "a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person, or exhibiting other cultural or aesthetic values" (DO #28, 87). Cultural landscapes are expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. NPS has not identified any cultural landscapes within the project area. This undertaking would not change the systems of circulation, or the organization of the land. Therefore this impact topic was dismissed from further evaluation in this EA.

Ethnographic Resources

An ethnographic resource is defined 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" (DO #28, 157). Greenbelt Park contains no known ethnographic resources. Therefore this impact topic was dismissed from further evaluation in this EA.

Indian Trust Resources

Secretarial Order 3175 requires that any anticipated impacts to Indian Trust resources from a proposed action by U.S. Department of the Interior agencies be explicitly addressed in environmental documents. The federal Indian Trust responsibility is a legally enforceable obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal laws with respect to American Indian tribes. There are no known Indian Trust resources in the study area. Therefore this impact topic was dismissed from further evaluation in this EA.

Summary of Cultural Resource Impact Topics

In accordance with Section 106 of the National Historic Preservation Act, the NPS and FHWA determined that the project would have no adverse effects on cultural resources. The MHT reviewed the proposed action and on April 3, 2010 concurred with the determination that there would be *no adverse effect on historic properties* by the project as proposed including the widening of paved shoulders, replacement of culverts, and overlay. The concurrence letter can be found in Appendix B of this EA.

Soils

NPS policy is to protect the abundance and diversity of all naturally occurring soils. The 2006 NPS Management Policies (NPS 2006a), NPS DO #77: Numerous soil types are found in the study area: Beltsville silt loam (BaB), Christiana– Downer complex (CcC), Downer–Hamonton complex (CrB),

Evesboro- Downer complex (EwB), Issue-Urban landcomplex (Iu) Russet-Christiana complex, Sassafras sandy loam (SaC), Sassafras and Croom soils (SOD), Udorthents, highway (UdaF) and Zekiah and Issue soils (ZS). Impacts to wetland soils will be discussed under the Wetlands impact topic. Impacts to sediments and erosion are addressed in the Surface Water Quality and Quantity impact topic. Impacts of installing new fill materials are discussed in the Floodplains impact topic. The proposed action would be constructed in an area comprised of previously disturbed soils and fill material from the original construction of the existing Park roads. Therefore this impact topic was dismissed from further evaluation in this EA.

Ground Water Quality

Development and construction projects have the potential to negatively impact ground water quality by contributing additional pollutants and diminishing natural infiltration processes. Groundwater is recharged by precipitation that infiltrates through the soil. The rate of infiltration is affected by the soil characteristics and rate of precipitation. Once water has infiltrated the soil, it percolates downward in the open pore spaces between soil particles or in cracks and fissures in bedrock to the ground water table. This percolation process filters or cleans the water before it reaches the saturated zone; however, certain pollutants, such as petroleum products, solvents, and arsenic, can be retained in the groundwater. The proposed project will not significantly alter the existing infiltration processes within the Park. Proposed storm water management features will enhance the existing capacity to filter and remove pollutants. Best Management Practices, such as the careful handling of fuel, will reduce or eliminate temporary impacts to groundwater quality during construction. Vehicle capacity would not be added as a result of the project, so the amount of motorized vehicle-born pollutants impacting ground water would not increase. Therefore this impact topic was dismissed from further evaluation in this EA.

Geologic Resources

The NPS Management Policies (NPS 2006) states that the NPS will "…preserve and protect geologic resources as integral components of park natural systems. As used here, the term 'geologic resources' includes both geologic features and geologic processes." Greenbelt Park is located within the Atlantic Coastal Plain physiographic province within the western shore uplands region. Landforms within the Park are rolling to steep hills with ravines associated with two creeks. Elevation ranges in the Park are from 25 to 200 feet. The study area is also not located in a High Flood Hazard Area. The installation of rock material to protect the culvert inlet and outlets will be analyzed under Floodplains. Therefore this impact topic was dismissed from further evaluation in this EA.

Prime and Unique Farmlands

In August 1980, the Council on Environmental Quality (CEQ) directed that federal agencies must assess the effects of their actions on farmland soils classified by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) as prime or unique. Prime or unique farmland is defined as soil that particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. According to NRCS, none of the soils in the project area are classified as prime and unique farmlands. Therefore

this impact topic was dismissed from further evaluation in this EA.

Lightscape

In accordance with NPS 2006 Management Policies (NPS 2006a), the NPS strives to preserve natural, ambient lightscapes, which are natural resources and values that exist in the absence of human caused light. The proposed action would not change the location of lighting fixtures, or alter the lightscape in the study area. No nighttime construction or artificial lighting would be necessary to construct the project. Therefore this impact topic was dismissed from further evaluation in this EA.

Air Quality

The 1963 Clean Air Act (CAA), as amended, (42 U.S.C. 7401 et seq.) requires land managers to protect air quality. Section 118 of the CAA further requires parks to meet all federal, state, and local air pollution standards, and NPS 2006 Management Policies (NPS 2006) addresses the need to analyze potential impacts to air quality during park planning. Prince George's County is located in the Environmental Protection Agency's Ozone Nonattainment Area. Although construction and demolition activities proposed would have some impacts to air quality, they would be short-term and negligible. Therefore, this impact topic was dismissed from further evaluation in this EA.

Soundscape

The NPS Management Policies 2006 state that the NPS will preserve, to the greatest extent possible, the natural soundscapes of parks. Park natural soundscape resources encompass all the natural sounds that occur in parks, including the physical capacity for transmitting those natural sounds and the interrelationships among park natural sounds of different frequencies and volumes. This is the basis for determining the "affected environment" and impacts on a Park soundscape. Traffic capacity would not increase as a result of this project, but there would be short-term minor impact to the soundscape from the presence of heavy equipment during construction. Therefore this impact topic was dismissed from further evaluation in this EA.

Species of Special Concern

In addition to NPS polices and management guidelines, the Endangered Species Act of 1973, as amended provides for the protection of rare, threatened, and endangered species (floral and faunal). No Federally proposed for listing threatened or endangered species, regulated by the U.S. Fish and Wildlife Service are found in Prince George's County. Correspondence from the U.S. Fish and Wildlife Service dated October 5, 2010 concurred with this finding. A listing of one state listed rare plant was obtained from the Maryland Wildlife and Heritage Service's Natural Heritage Program database. The Woodland Agrimony (*Agrimonia striata*) is documented as being located just west the Park entrance and therefore not in the project study area and does not require protection measures. Therefore, this impact topic was dismissed from further evaluation in this EA. Correspondences from these two agencies are included in Appendix B of this EA.

Ecologically Critical Areas

Pavement reconstruction, culvert replacement and placement of fill for grading and armoring may impact wetlands and waterways connecting to the ecologically sensitive areas; however the adverse impacts to these areas would be short-term and minor. Therefore, this impact topic was dismissed from further evaluation in this EA.

Socioeconomic Environment

The study area is located within the Greenbelt Park, which is indicated as a conservation land use classification. The proposed improvements would neither change local and regional land use nor impact local businesses or other agencies. Therefore, socioeconomic environment was dismissed from further evaluation in this EA.

Public Health and Safety

The NPS Management Policies 2006 state that while recognizing that there are limitations on its capability to totally eliminate all hazards, the NPS and its concessionaires, contractors, and cooperators will seek to provide a safe and healthful environment for visitors and employees. The existing roadway has deteriorated, creating an uneven driving surface. No crashes involving bicycles or pedestrians have been noted in crash reports. Construction activities would require temporary changes to park traffic patterns. In the short term, all OSHA safety requirements would be followed for construction workers and park staff during construction. Park visitors would be prevented from accessing any active construction zones through temporary road closures and detour routes. In the long term, upgrades to signs, guardrails, deteriorated pavement, culverts and the addition of a roadway safety edge would benefit visitors by providing improved and safer road conditions. Therefore, this impact topic was dismissed from further evaluation in this EA.

Environmental Justice

Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high and/or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. Per Environmental Protection Agency/CEQ Guidance (Final Guidance for Incorporating Environmental Justice Concerns in the EPA's NEPA Compliance Analysis and the CEQ's Environmental Justice: Guidance Under NEPA), a community minority population is greater than 50% or "meaningfully greater" than minority population percentage in the general population or other appropriate geographic area. Approximately 44% of the population demographics in the adjacent communities is considered minority and 6% of the persons are considered below poverty level (U.S. EPA). The proposed action and alternatives would not result in disproportionate high and/or adverse effects to minority or low-income communities since the current study area is not a low-income community and the proposed project location is within the Greenbelt Park boundary. Implementation of the proposed alternatives would not result in any identifiable adverse human effects that would be specific to any minority or low-income community. Therefore, this impact topic was dismissed from

further evaluation in this EA.

Energy Requirements and Conservation Potential

The CEQ guidelines for implementing NEPA require examination of energy requirements and conservation potential as a possible impact topic in environmental documents. Greenbelt Park strives to incorporate the principles of sustainable design and development into all facilities and park operations. The objectives of sustainability are to design structures to minimize adverse impacts on natural and cultural values; to reflect their environmental setting; to maintain and encourage biodiversity; to construct and retrofit facilities using energy efficient materials and building techniques; to operate and maintain facilities to promote their sustainability; and to illustrate and promote conservation principles and practices through sustainable design and ecologically sensitive use. Essentially, sustainability is living within the environment with the least impact on the environment. The proposed improvements would minimize adverse impacts on natural and cultural values to the extent possible, and would upgrade the existing roadway to promote sustainability. Therefore, this impact topic was dismissed from further evaluation in this EA.

CHAPTER 2: DESCRIPTION OF ALTERNATIVES

This chapter describes alternatives for the improvement of roads and parking lots within Greenbelt Park. Alternatives for the proposed action are intended to rehabilitate and/or upgrade existing transportation-related facilities that have reached, or are approaching the end of their service lives. This EA examines three alternatives: a No Action Alternative (Alternative A) and two action alternatives (Alternative B and Alternative C). Each alternative includes a discussion of the following components: drainage structures, travel-lane pavement, parking areas, detours, staging areas, and mitigation. Alternative A serves as a baseline for comparison, although it doesn't meet the purpose and need for the proposed project.

The CEQ has provided guidance on the development and analysis of alternatives under NEPA. A full range of alternatives, framed by the purpose and need, must be developed for analysis for any federal action. The alternatives should meet the project/proposal purpose and need, at least to a large degree. They should also be developed to minimize impacts to environmental resources. Alternatives should also be "reasonable," which CEQ has defined as those that are economically and technically feasible, and show evidence of common sense. Alternatives that could not be implemented if they were chosen (for economic or technical reasons) are not considered reasonable, and have not been analyzed in this document. A summary of the impacts for each alternative can be found on Table 1.

2.1 ALTERNATIVE A – NO ACTION ALTERNATIVE

Under Alternative A, the No Action Alternative, no substantial improvements would be performed other than in accordance with routine maintenance operations. Routine road maintenance operations include pavement repairs such as crack sealing and pothole patching. The culverts would be maintained, but not replaced. Emergency repairs and replacements may be necessary, particularly as the embankments and guardrails adjacent to the Still Creek culverts continue to deteriorate.

2.2 ACTION ALTERNATIVES

ALTERNATIVE B – IN-KIND REPAIRS

Under Alternative B, the existing deteriorated roadways (Main Entrance Road and Park Central Road) and parking lots (Park Headquarters Parking, Sweetgum Picnic Parking, Laurel Picnic Parking, Holly Picnic Parking and Dogwood Nature Trail Parking) would be repaved. Full depth reclamation would be the primary resurfacing method (See Figure 8). This process involves pulverizing the existing deteriorated asphalt pavement (See Figures 9 and 10), and reusing it on-site. Full depth reconstruction of the pavement and underlying aggregate base would occur as needed. In places where the existing pavement is still in fair condition, chip sealing and microsurfacing would occur. This involves the application of a thin pavement layer on top of the existing asphalt. Culverts would be replaced in-kind. Safety enhancements including new guardrails, pavement striping, and road signs would be installed.

There are currently no storm water management features in the roadway corridor. Storm water collects on the impervious roadway and travels as sheet flow across the pavement and vegetated shoulders or ditches into the adjacent woodlands and wetlands. Based on the Maryland *Storm Water*

Management Act of 2007, storm water management would be required for all reconstructed portions of the roadways or parking lots unless a waiver was granted by the Maryland Department of the Environment. No additional impervious surface would be added under Alternative B.

Figure 5. Existing stretch of Main Entrance Road

Figure 6. Existing stretch of Park Central Road

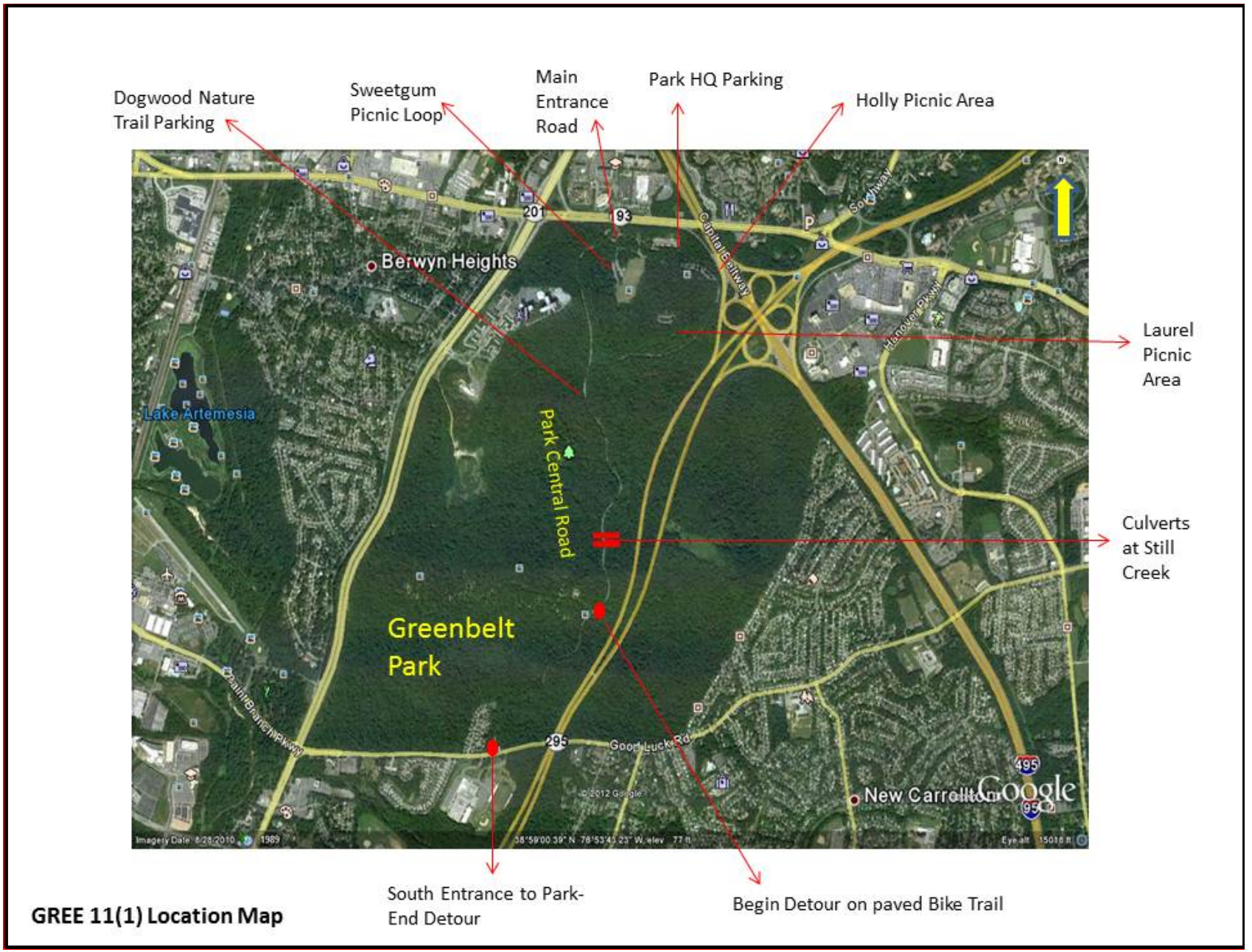
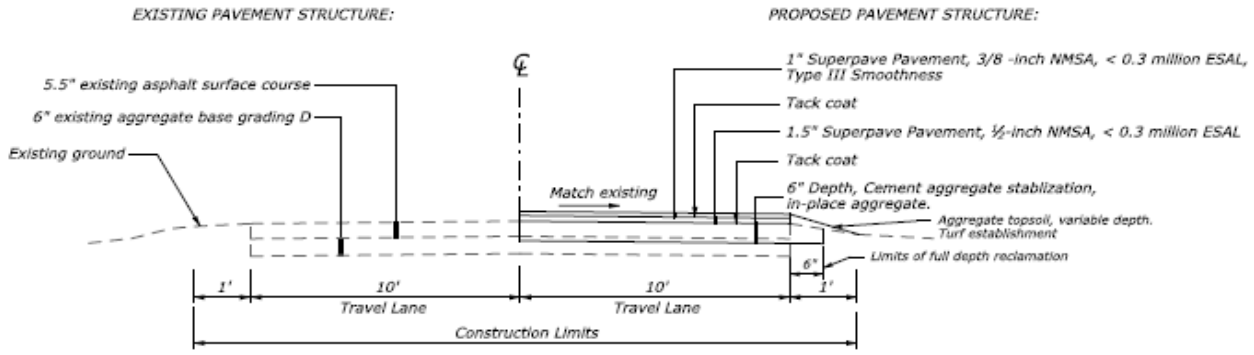
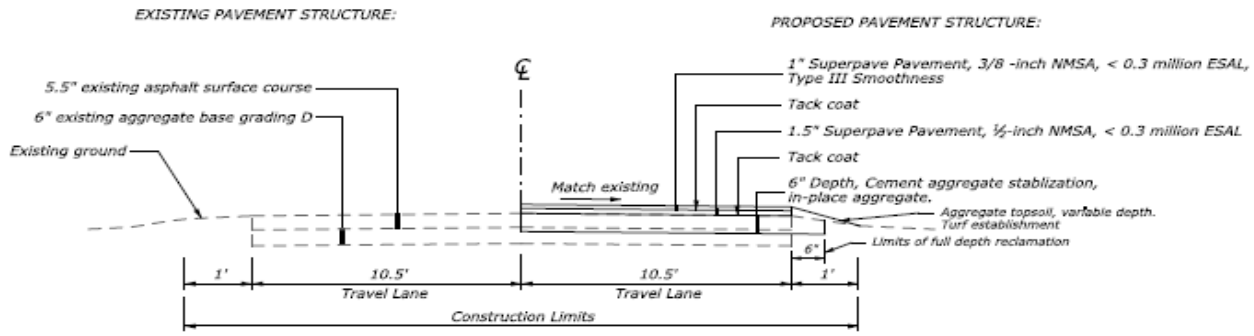


Figure 7. Detailed Location Map showing Picnic Areas and Detour



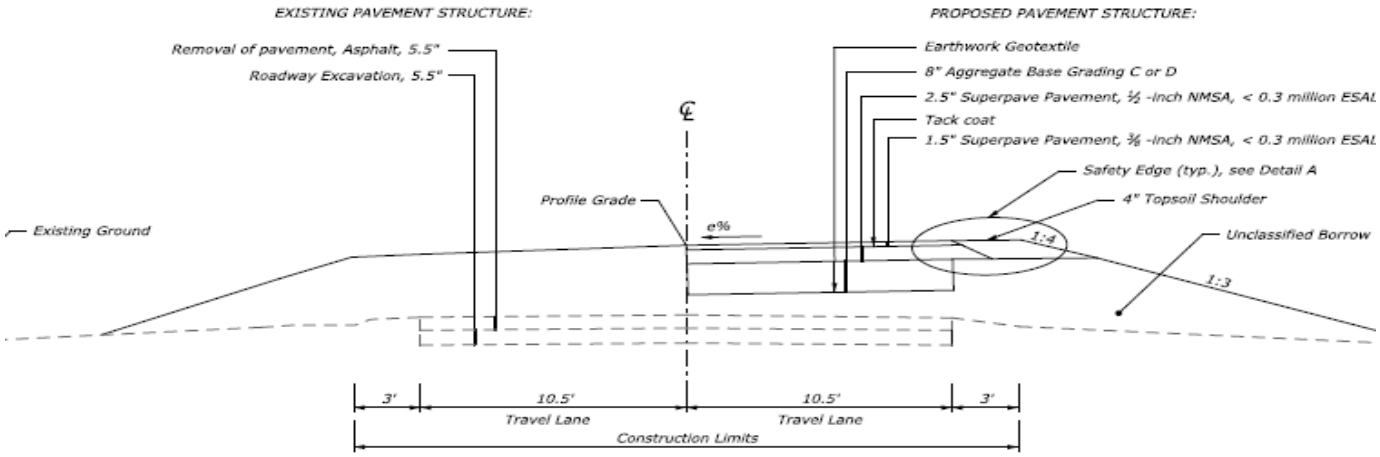
Full Depth Reclamation Sections

ROUTE 0010 (Main Entrance Rd)
STA 200+00 - STA 207+82.35



Full Depth Reclamation Sections

ROUTE 0011 (Park Central Rd)
STA 0+00 - STA 98+00
STA 108+97 - 121+17.22



FULL-DEPTH RECONSTRUCTION RTE 0011
STA 98+00 - STA 108+97

Figure 8. Typical Sections for proposed resurfacing methods

Figure 9. Roadway cracking and settling

Figure 10. Edge of pavement cracking

Detour

The replacement of the Still Creek double culvert on Park Central Drive would require partial closure of the road. A detour and temporary access road from the south would be needed to provide access to the campground. Temporary access would utilize an existing bike path that will be temporarily widened for safety reasons to accommodate vehicular traffic. After construction, the temporary road will be returned to a bike path and the temporary paved area will be removed and re-vegetated with NPS-approved native vegetation and/or trees. The path was formerly a roadway used as a park entrance at the southern end of the Park (See Figures 7 and 11).

Figure 11. Widen the 250' long section of 9'-7" wide pavement to use as a temporary detour during construction – reset fence at the end of the project & restore to original conditions

The replacement of the other culverts would also result in temporary road closures and detours. Resurfacing of the parking lots would result in the temporary closure of picnic areas.

Staging

Existing parking lots and pull-offs would be used for the staging of equipment and materials.

Sustainability

The NPS has adopted the concept of sustainable design as a guiding principle of facility planning and development. The objectives of sustainability are to design monument facilities to minimize adverse

effects on natural and cultural values, to reflect their environmental setting, and to maintain and encourage biodiversity; to construct and retrofit facilities using energy–efficient materials and building techniques; to operate and maintain facilities to promote their sustainability; and to illustrate and promote conservation principles and practices through the sustainable design and ecologically sensitive use. Essentially, sustainability is living within the environment with the least impact on the environment. Alternative B subscribes to and supports the practice of sustainable planning, design, and use of the facility.

Mitigation Measures

NPS places a strong emphasis on Avoidance, minimization and mitigation measures and Best Management Practices (BMPs) would prevent or minimize potential adverse effects associated with the implementation of the Action Alternative. These measures and practices would be incorporated into the project design and construction plans. The NPS would implement an appropriate level of monitoring throughout the construction process to ensure that protective measures are being properly implemented and are achieving their intended results. Please find the summary of mitigation measures for the action alternatives described after Alternative C.

2.3 ALTERNATIVE C – (NPS Preferred Alternative) REPLACE DOUBLE CULVERTS AT STILL CREEK WITH A SINGLE SPAN BRIDGE AND FLANKING RELIEF CULVERTS

Under Alternative C, all activities listed under Alternative B would occur; however a bridge, and five flanking relief culverts on both the north and south sides of the proposed bridge that would further aid in establishing floodplain connectivity, would be constructed at Still Creek (See Figure 11). The proposed bridge would incorporate design features that would enhance aquatic organism passage and restore a more naturally functioning Still Creek watershed ecosystem. This multiple opening stream crossing would provide a freeboard of 3.70 feet for the 50 year storm event for the bridge.

Detour

Detour options would be similar to Alternative B; however the construction of the bridge would lengthen the duration of the road closure.

Staging

Staging would take place in the same areas specified under Alternative B.

Sustainability

The preferred alternative subscribes to and supports the practice of sustainable planning, design and use of the facility by limiting and mitigating resource impacts and promoting conservation principles.

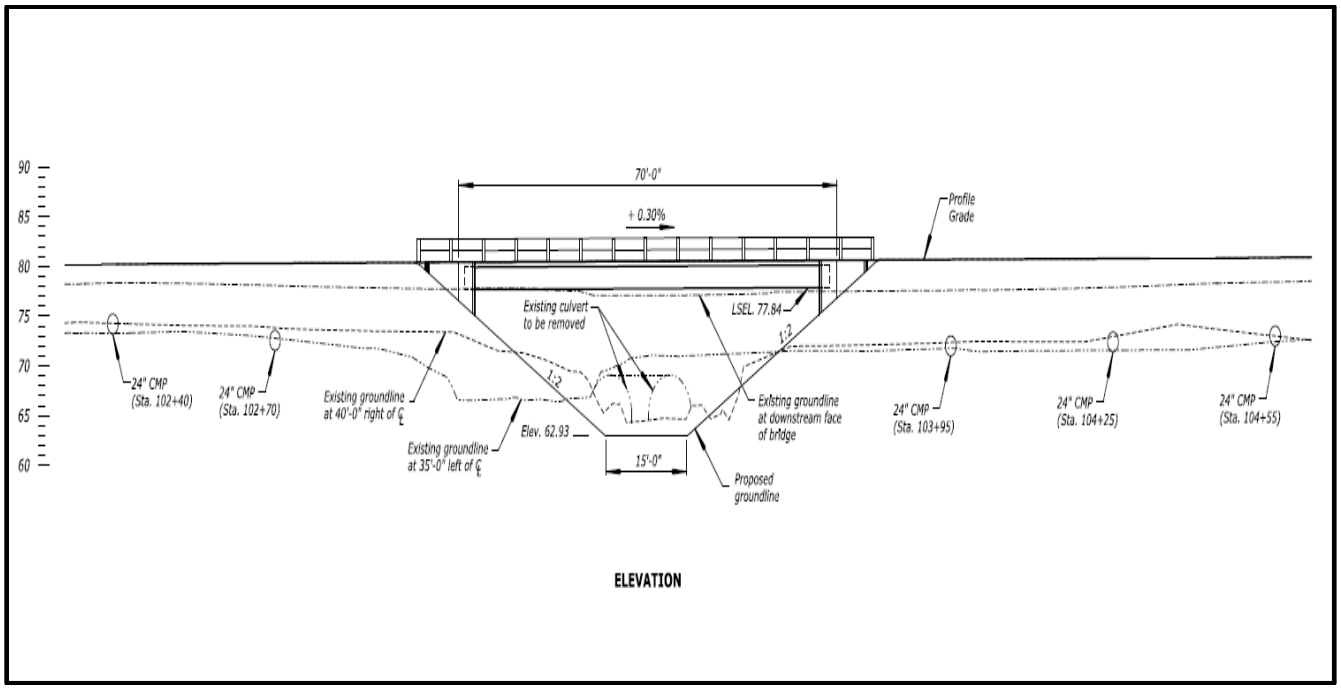


Figure 12. Profile of proposed bridge and relief culverts

Mitigation Measures

To help ensure the protection of natural and cultural resources and the quality of the visitor experience, the following protective measures would be implemented as part of the selected action alternative:

- Project plans would comply with the Maryland *Storm Water Management Act of 2007* and the Maryland Department of the Environment *2011 Standards and Specifications for Soil Erosion and Sediment Control.*

- BMPs would be utilized to minimize erosion and sedimentation from ground disturbing activities that expose bare soil. These BMPs would be used only during construction and we be removed once the disturbed area has been permanently stabilized. BMPs include instructing the construction contractor to:

    - Install silt fence, sediment logs, and/or erosion matting as appropriate
    - Do not drive construction equipment across flowing waterways
    - Do not allow construction vehicles to track sediment outside the project limits
    - Do not allow any construction equipment to operate or access the down-slope side of the perimeter control measures
    - Regularly inspect all mechanized equipment
    - Provide watering for dust control within the construction limits, on active haul roads, and in pits and staging areas
    - Collect and store all solid waste

- Develop a Spill Prevention Control and Countermeasures Plan
- Heavy equipment used in wetlands must be placed on mats or other measures must be taken to minimize soil and plant root disturbance.

- Where plantings or seeding are required, native plant material must be obtained and approved and used in accordance with NPS policies and guidance. Disturbed soil would be re-vegetated using specific seed mixes that do not include invasive or exotic species. Only NPS approved seed mixtures, trees and plants would be used.

- Should construction unearth previously undiscovered archeological resources, work would be stopped in the area of any discovery and NPS/FHWA would consult with the state historic preservation officer/tribal historic preservation officer and the Advisory Council on Historic Preservation (ACHP), as necessary, according to § 36 CFR 800.13, Post Review Discoveries. In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) would be followed as appropriate.

- Previously disturbed and/or paved areas would be used for staging and temporary access to the campground.

- It is anticipated that approximately 0.1 to 0.5 acres of wetlands would be impacted by the project. Per NPS DO #77-1 Procedural Manual, when authorizations are issued for activities which would cause unavoidable loss of nontidal wetlands, the losses must be countered with wetland gains to meet the "no net loss" goal. The primary means of accomplishing wetland gains is through wetland mitigation or compensation. Every practicable effort would be made to maintain the integrity of the affected wetlands and their attendant organisms and biological processes. Individual project goals must meet permit conditions, which would be aimed at replacing the wetland acreage and functions impacted by the project. Wetland compensation sites could be within Greenbelt Park, within the same wetland system as the impacted wetland or within the same watershed or mitigation banking could be utilized. Out-of-kind mitigation may include enhancements such as tree plantings, stream restoration, invasive plant removal, restoring hydrology of wetlands, especially to restore adjacent floodplains and groundwater levels.

Storm water management requirements would be increased for Alternative C if additional impervious surfaces or roadway reconstructions are required for the bridge construction. Storm water management for new impervious areas would include vegetative roadside swales. Wetland mitigation requirements would be increased due to fill required to construct the bridge and flanking relief culverts. Approximately 0.162 acres of wetland impacts would occur and would require mitigation. Approximately 1.50 acres of ground disturbance impacts would occur from the bridge footprint, flanking culverts and temporary impacts generated from equipment access for construction.

2.4 ALTERNATIVES CONSIDERED BUT DISMISSED

As mentioned previously, alternatives should be "reasonable." Unreasonable alternatives may be those that are unreasonably expensive; that cannot be implemented for technical or logistic reasons; that do not meet park mandates; that are inconsistent with carefully considered, up-to-date park statements of purpose and significance or management objectives; or that have severe environmental impacts (DO-12 Handbook).

ALTERNATIVE D – REPLACE DOUBLE CULVERTS AT STILL CREEK WITH A SINGLE SPAN BRIDGE WITH NO FLANKING RELIEF CULVERTS

This alternative was originally looked at as an improvement to the repair in kind alternative. During the hydraulics analysis for a single span bridge it was determined that while AOP and stream stabilization was restored, lateral floodplain connectivity was not achieved. The roadway embankment adjacent to the bridge would still be an impediment to flow of the creek reaching the floodplain during storm events. The freeboard needed for the 50 year storm event may also not allow for the passage of woody debris which is a concern at the Still Creek crossing. Additionally there would be safety concerns when large storm events could have the potential to overtop the roadway. A single span bridge without relief culverts changes the cost nominally, but continues to significantly reduce the functionality of the floodplain.

Therefore to reconnect the floodplain upstream and downstream of the crossing, this alternative D was dismissed and floodplain relief culverts flanking the bridge were added to the considered alternatives as Alternative C.

ALTERNATIVE E – MULTI-SPAN BRIDGE

Under this alternative, several two and three span bridges were analyzed for the project. This alternative does achieve the purpose and need for the project by improving safety, or minimization of impacts to natural resources such as wetlands, floodplains, trees, vegetation and wildlife. It was determined that while there are benefits to a multi-span bridge alternative, it would cause an increased area of disturbance (190' of roadway/embankment removal and clearing) and fill to wetlands resulting in increased mitigation requirements compared to other build alternatives. Scuppers with downspouts would be necessary for drainage from the bridge. The piers for the bridge spans would need to be located off-center to avoid debris accumulation during storm events in the stream channel and will require riprap as countermeasures for scour. It was ultimately determined by hydraulics engineers that a multi-span bridge was deemed unnecessary to span the existing defined stream channel of 30 feet and that floodplain connectivity could be achieved by other alternatives.

Due to the length and additional materials needed, the bridge construction, maintenance and inspection costs would be much greater than all other alternatives. Maintenance that would be required by NPS could include: cleaning of scuppers and downspouts, joint cleaning and seal replacement, concrete sealing and patching repairs, bearing pad replacement, bridge guardrail repair or replacement, and rip rap replacement. The additional time that would be needed to construct the

bridge would mean longer temporary road closures and detours for park visitors and staff.
These potentially severe environmental impacts do not demonstrate minimization efforts to the NPS, combined with the high cost of a multi-span bridge caused alternative E to be dismissed from further consideration in this EA.

2.5 ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The Environmentally Preferred Alternative is defined by CEQ as the alternative that would promote the national environmental policy as expressed in Section 101 of NEPA.

The environmentally preferable alternative is the alternative that causes the least damage to the biological and physical environment; it also means it is the alternative that best protects, preserves, and enhances historic, cultural and natural resources.

The implementation of Alternative A, Alternative B, and Alternative C are analyzed in this EA to minimize undesirable or unintended consequences.

After completing the environmental analysis, NPS and FHWA identified Alternative C, which is also the NPS preferred alternative, as the environmentally preferable alternative in this EA. Alternative C would provide the infrastructure improvements needed to satisfy NPS operational needs while enhancing visitor experience and promoting environmental preservation. The double culvert at Still Creek would eliminate the potentially hazardous roadway deterioration and provide improvements to floodplain and ecological connectivity. Alternative C would improve the hydrologic conditions of the site and enhance the quality of renewable resources by improving the Still Creek watershed.

Alternative A would allow the continued deterioration of Park roads and parking areas. Although regularly scheduled maintenance activities would continue, the deteriorated pavement, culverts and guardrails would not be safe or pleasing to visitors. Alternative B would improve roadway conditions, provide safer vehicular access, and would provide a smooth asphalt surface that would be pleasing to visitors; however, neither Alternative A nor Alternative B would provide the ecological and hydrological improvements associated with Alternative C. None of the three Alternatives would adversely impact historical or cultural sites.

A summary of the environmental consequences for each Alternative follows in Table 1, and in in-depth discussion of the potential impacts is documented in Chapter 3.

Table 1: Impact Summary

	Alternative A	Alternative B	Alternative C
Floodplains and Hydrology	No disturbance to the floodplain would occur because there would be no construction-related actions and no changes to the road or existing culverts. Scour at the base of the culverts would continue to worsen over time as well as corrosion of the pipe culverts, affecting stability of the roadway and eventually could cause culvert failure. There would be no improvement made in the flood storage capacity or connectivity of the floodplain ecosystem. Short term impact: minor, adverse impact. Long-term Impact: moderate, adverse impact. Cumulative impact: would contribute an imperceptible increment to the long-term, moderately adverse cumulative impact to floodplains/hydrology caused by adjacent projects that would create the potential for increased runoff and sediment load to the waters of Still Creek and its surrounding floodplain.	Approximately 40 cubic yards of fill material would be placed in the form of riprap, large sized rock, used to protect the new culverts from scour from water movement though the stream channels. The placement of riprap would introduce rock materials into the study area; however the displacement of floodwaters as a result would not be noticeable. The culverts would be replaced with culverts of a similar size and capacity, so there would be no rise in water surface elevation or backwater, however there would continue to be limited connectivity of the floodplain. The floodplain and the stream hydrology have been constricted from approximately 250 feet upstream and downstream of the structure to 50 feet at the culvert crossing. The culverts create a restriction on the lateral exchange of energy, material and aquatic organism passage onto the floodplain for feeding and reproduction. Therefore, the impacts resulting from the implementation of Alternative B would be short-term minor adverse and long-term, local minor and adverse. Short term impact: minor, adverse impact. Long-term Impact: local, minor, adverse impact. Cumulative impact: Implementation of Alternative B would contribute an imperceptible adverse increment to the cumulatively long-term, minor, adverse, impact to floodplains/hydrology.	The new bridge structure and the flanking relief culverts on each side would provide a benefit by allowing for more natural hydrology and ecologic function within the floodplain. Approximately 850 cubic yards of earth/fill would be removed as the existing dual culverts are replaced with a bridge structure. The bridge structure would allow more unrestricted movement of the stream and dissipate the energy in the channel. The value of stream daylighting should also be recognized as producing a measureable improvement to floodplains. Fill material would be added to construct shoulders at the bridge approaches. Approximately 3,500 cubic yards of fill would be added to the study area, in addition to the 60 cubic yards of riprap added at the culverts to reduce scour and erosion. A change in the function of the floodplain such as the frequency, duration, or extent of flooding, would be noticeably improved. Short term impact: moderate, adverse impact. Long-term Impact: beneficial impact. Cumulative impact: Other future actions would have a long-term, minor and adverse impact to floodplains/hydrology by creating the potential for increased, runoff and sediment load to the waters of Still Creek and its surrounding floodplain. When combined, the long-term beneficial impact of Alternative C would result in long-term, noticeable, beneficial cumulative impacts to floodplains/hydrology.

Table 1: Impact Summary

	Alternative A	Alternative B	Alternative C
Wetlands	Deteriorated roadways and parking areas would eventually develop drainage issues that could result in erosion and sedimentation that would accumulate in wetlands. Impacts to riverine wetlands resulting from the inadequate culverts, including stream bed scour and stream bank erosion, would be exacerbated and would extend farther away from the road and into currently stable areas. Short term impact: negligible, adverse impact Long-term impact: moderate, adverse impact Cumulative impact: Implementation of Alternative A, combined with other future actions would have a long-term moderate adverse cumulative impact to wetlands by creating the potential for increased, runoff and sediment load to the waters of Still Creek and its surrounding wetlands and through the potential loss of adjacent wetland areas due to development.	Reconstruction of the road and replacement of the culverts would temporarily impact wetlands at the Still Creek stream channel and at several culvert locations. Impacts to wetlands would be avoided to the maximum extent practicable. However, construction activities would be confined to the smallest area necessary to complete the work; approximately 0.05 acres of riverine wetlands would be impacted by the removal and reconstruction of the dual culverts, rip rap placement in the stream channel and construction access to the dual culverts. Two culvert replacements and rip rap placement at a third culvert site will be approximately .06 acres of impacts to riverine wetlands. The total acreage of riverine wetland impacts is 0.11 acres. All areas of temporarily disturbed vegetation would be restored with native or NPS- approved vegetation following construction. Short term impact: negligible, adverse impact. Long-term impact: local beneficial impact. Cumulative impact: Other future actions would have a long-term minor adverse impact to wetlands by creating the potential for increased, runoff and sediment load to the waters of Still Creek and its surrounding wetlands and through the potential loss of adjacent wetland areas due to development. When combined with the long-term beneficial impact of Alternative B there would be long-term, beneficial, cumulative impacts to wetlands.	The impacts associated with the implementation of Alternative C would temporarily impact wetlands at the perennial Still Creek stream channel crossing under Park Central Road and rip rap at several culvert locations. Reconstruction of the road and the removal and replacement of the dual culverts with a bridge and flanking relief culverts as well as stream channel rehabilitation and revetment would temporarily impact 0.089 acres of riverine wetlands in the Still Creek stream channel and adjacent palustrine wetlands deriving from impacts for construction equipment access. Additionally, .073 acres of riverine wetlands would be impacted at the two other culvert replacement locations in the Park and added rip rap at a third culvert location. The total acreage of wetland impacts (both riverine and palustrine) for the project is approximately 0.162 acres. Short term impact: negligible, adverse impact from temporary disturbance of the channel and the construction of the bridge structure and flanking relief culverts. Long-term impact: moderate, beneficial impact. Cumulative impact: Implementation of Alternative C would contribute a beneficial increment to the cumulative long-term, beneficial impacts to wetlands.

Table 1: Impact Summary

	Alternative A	Alternative B	Alternative C
Surface Water Quality	The steep topography and continuing scour around the culverts would release sedimentation into the creek and adversely impact surface water quality. Short term impact: negligible, adverse impact. Long-term impact: minor, adverse impact. Cumulative impact: The other past, present and future actions would have long-term minor adverse impacts to water quality. When combined with the long-term minor adverse impact from the No Action Alternative there would be long-term minor adverse cumulative impacts to surface water quality.	Alternative B would have short-term minor adverse impacts due to construction disturbances and long-term beneficial impacts to surface water quality by correcting existing scour issues, preventing additional sedimentation and erosion of the stream bank/ bed and by implementing SWM features. Short term impact: minor, adverse impact. Long-term impact: beneficial impact. Cumulative impact: Implementation of Alternative B would contribute a beneficial increment to the cumulative long-term, minor, and adverse impacts to surface water quality.	Construction activities would cause short-term, minor, and adverse impacts to surface water quality because although there would be ground disturbance, BMPs would be implemented to reduce erosion of the exposed soil and sedimentation of adjacent waters. The implementation of Alternative C would cause long-term, beneficial impacts to surface water quality. Stream daylighting would result in a measureable long-term improvement to water quality. Additional improvements to surface quality would result from the design and construction of storm water management features to treat the runoff from new impervious surfaces and reconstructed portions of the roadway. Short term impact: minor, adverse impact. Long-term impact: beneficial impact. Cumulative impact: Implementation of Alternative B would contribute a beneficial increment to the cumulative long-term, minor, and adverse impacts to surface water quality.

Table 1: Impact Summary

	Alternative A	Alternative B	Alternative C
Vegetation	Alternative A would not require any direct impacts to wetland vegetation, or the removal of any trees from forested areas. Drivers avoiding deteriorated pavement areas, particularly at the pull-offs, may drive and park vehicles on the grass areas adjacent to the road. Deteriorated roadways and parking areas would eventually develop drainage issues that could result in erosion and a loss of vegetation. Other past, present and future actions would have no direct impact on the vegetation in Greenbelt Park but would result in less vegetation in the surrounding areas due to development. Loss of adjacent vegetation could impact long-term biodiversity and vegetative health within the Park. The impact of adjacent development may be reduced if proposed conservation measures are implemented. Alternative A would contribute an imperceptible increment to the cumulative long-term, minor, and adverse impacts to vegetation. Short term impact: negligible, adverse impact. Long-term impact: minor, adverse impact. Cumulative impact: would contribute a imperceptible adverse increment to the cumulative long-term, minor, and adverse impacts to vegetation.	Approximately 0.8 acres of vegetation (including wetland vegetation) would be temporarily impacted around the culverts during replacement; however, these areas would be re-vegetated using an NPS approved wetland plants and native seed mix. The grasses impacted would be replaced with NPS-approved native species based on MDE Standards and Specifications for Soil Erosion and Sediment Control; Also under Alternative B, approximately 0.068 acres of vegetation would be temporarily impacted due to the installation of the temporary detour road; however, these areas would be re-vegetated using NPS-approved plants, trees and/or native seed mix or sod. Long-Term impacts would be mitigated through the use of native plantings and continued monitoring and eradication of exotic and/or invasive species by NPS. Other past, present and future actions would have no direct impact on the vegetation in Greenbelt Park but would result in less vegetation in the surrounding areas due to development. Loss of adjacent vegetation could impact long-term biodiversity and vegetative health within the Park. The impact of adjacent development may be reduced if proposed conservation measures are implemented. Short term impact: minor, adverse impact. Long-term impact: negligible, adverse impact. Cumulative impact: would contribute an imperceptible adverse increment to the long-term, minor, and adverse cumulative impact.	All of the impacts associated with the implementation of Alternative B would also be associated with the implementation of Alternative C. Additional temporary impacts to vegetation, particularly wetland vegetation, would occur at the bridge location due to construction equipment access and a larger construction footprint; however, in the long-term stream daylighting would produce a measureable improvement to vegetation. The implementation of Alternative C would result in short-term minor and adverse impacts due to temporary construction disturbance. Long-term beneficial impacts to vegetation would occur due to the more-natural restoration of Still Creek and the careful rehabilitation of disturbed areas using native vegetation and careful monitoring by NPS to ensure the eradication of exotic/invasive species. Other past, present and future actions would have no direct impact on the vegetation in Greenbelt Park but would result in less vegetation in the surrounding areas due to development. Loss of adjacent vegetation could impact long-term biodiversity and vegetative health within the Park. The impact of adjacent development may be reduced if proposed conservation measures are implemented. Short term impact: minor, adverse impact. Long-term impact: beneficial impact. Cumulative impact: would contribute a beneficial increment to the cumulative long-term, minor, and adverse impacts to vegetation.

Table 1: Impact Summary

	Alternative A	Alternative B	Alternative C
Wildlife and Wildlife Habitat	Alternative A would not require any direct impacts to wildlife or wildlife habitat. Drivers avoiding deteriorated pavement areas, particularly at the pull-offs, may drive and park vehicles on the grass areas adjacent to the road. This would eventually result in a loss of these areas that are used as habitat by some wildlife, including birds and deer. Deteriorated roadways and parking areas would eventually develop drainage issues that could result in erosion, sedimentation and a loss of habitat. Development of surrounding areas for transportation, commercial, and residential purposes would reduce the availability of suitable wildlife habitat nearby and increase the demand for remaining habitat in Greenbelt Park, thereby reducing habitat quality. Noise related to nearby development would further reduce the quality of habitats and impact wildlife within the Park. Remaining wildlife populations would become more isolated, less diverse, and less healthy Short term impact: negligible, adverse impact. Long-term impact: minor, adverse impact. Cumulative impact: would contribute a imperceptible adverse increment to the cumulative long-term, minor, and adverse impacts to vegetation.	Noise from construction activities as a result of Alternative B would disrupt wildlife in the area. Construction would occur only during the day, limiting disruptions to wildlife from artificial light at night. Wildlife would be temporarily impacted by construction noise and vibration. Potential dewatering of the culvert areas would negatively impact any aquatic species present in the water or substrate. Wetland and aquatic wildlife and wildlife habitat may be temporarily impacted by the culvert replacement, temporary access, and stream diversion during construction activities. Small changes to local population numbers might occur. Repairs to the existing scour hole/erosion would provide better stream connectivity for aquatic organisms after construction, and the proposed revegetation of disturbed areas using native plants would improve the long-term quality of wildlife habitat. Development of surrounding areas for transportation, commercial, and residential purposes would reduce the availability of suitable wildlife habitat nearby and increase the demand for remaining habitat in Greenbelt Park, thereby reducing habitat quality. Noise related to nearby development would further reduce the quality of habitats and impact wildlife within the Park. Remaining wildlife populations would become more isolated, less diverse, and less healthy. Short term impact: minor, adverse impact. Long-term Impact: beneficial impact. Cumulative impact: would contribute a beneficial increment to the cumulative long-term, minor, adverse impacts to wildlife and wildlife habitat.	All of the impacts and mitigations associated with the implementation of Alternative B would also be associated with the implementation of Alternative C. Additionally, ground disturbance to construct the vegetated swales would temporarily reduce the amount of mowed grass habitat available; however, this habitat would return after construction is completed. The construction of the bridge and flanking relief culverts would create a temporary impact to aquatic wildlife and habitat from the stream dewatering and diversion and small changes to local population numbers might occur. Ultimately the bridge crossing would be beneficial to aquatic wildlife by allowing for fish and aquatic organism passage that does not currently exist. Connectivity of the floodplain would also benefit wildlife passage. Stream daylighting would produce a measureable improvement to aquatic habitat. Development of surrounding areas for transportation, commercial, and residential purposes would reduce the availability of suitable wildlife habitat nearby and increase the demand for remaining habitat in Greenbelt Park, thereby reducing habitat quality. Noise related to nearby development would further reduce the quality of habitats and impact wildlife within the Park. Remaining wildlife populations would become more isolated, less diverse, and less healthy. Short term impact: minor, adverse impact. Long-term Impact: beneficial impact. Cumulative impact: would contribute a beneficial increment to the cumulative long-term, minor, adverse impacts to wildlife and wildlife habitat.

Table 1: Impact Summary

	Alternative A	Alternative B	Alternative C
Visual Resources	Visible deterioration of the Park's developed zone, including drainage structures, guardrails, and roadway surfaces, would increase incrementally. Impacts to Still Creek and its floodplain resulting from the inadequate culverts, including stream bed scour and stream bank erosion, would be exacerbated and would extend farther away from the developed zone and into the natural zone. Short term impact: minor, adverse impact. Long-term impact: minor, adverse impact. Cumulative impact: Would contribute a noticeable adverse increment to the long-term, minor, and adverse cumulative impact. Other contributing factors include the development of adjacent areas outside of the Park boundaries and diminished views due to air quality issues, light pollution, and other development-related impacts.	Deteriorated portions of the developed zone, including drainage structures, guardrails and roadway surfaces, would be restored to their original condition resulting in an improved visual condition. Inadequacies of the existing culvert functionality would not be corrected, resulting in continued floodplain, stream bank, and stream bed impacts extending into the natural zone. The culverts and associated embankments would be vulnerable to repeated flood damage. Short-term impacts to visual resources would be beneficial as the visual conditions of the developed zone would improve steadily throughout the duration of construction. Long term impacts would be minor and adverse as the deficient culverts continue to cause scour, erosion, and other visually detrimental effects within the Park's developed and natural zones. Short term impact: beneficial impact. Long-term impact: minor, adverse impact. Cumulative impact: Would contribute a noticeable adverse increment to the long-term, minor and adverse cumulative impact.	Deteriorated portions of the developed zone, including drainage structures, guardrails and roadway surfaces, would be rehabilitated resulting in an improved visual condition. Certain features within the developed zone, including guardrails and drainage structures, would be upgraded to improve functionality and/or safety, but these changes would be specified to avoid adverse visual impacts. Inadequacies of the existing Still Creek culvert functionality would be corrected resulting in improved visual conditions in the developed and natural zones. Short-term impacts to visual resources would be major and range from adverse (due to disturbance and vegetation clearing in the natural zone) to beneficial as the visual conditions of the developed zone would improve steadily throughout the duration of construction. Long term impacts would be beneficial after rehabilitation of the developed areas and the reestablishment of vegetation and other stream bank and stream bed improvements within the Park's natural zones. Short term impact: minor, adverse to beneficial impact. Long-term impact: minor, beneficial impact. Cumulative impact: would contribute a noticeable beneficial increment to the cumulatively long-term, minor, and adverse impacts to visual resources of the Park as a whole. Other contributing factors include the development of adjacent areas outside of the Park boundaries, diminished views due to air quality issues, light pollution, and other development-related impacts.

Table 1: Impact Summary

	Alternative A	Alternative B	Alternative C
Visitor Use and Experience	The roadway would continue to deteriorate, creating a riding surface that is not enjoyable to bicyclists or motorists. The sealed cracks and patched potholes would detract from enjoyment of the roadway. The parking areas at the Park headquarters and picnic areas would also continue to deteriorate. As this is the first contact opportunity for the NPS with visitors, visitors would likely express a negative opinion regarding the condition of the developed portions of the Park including roads and parking lots. Short term impact: minor, adverse impact as the developed zone of the Park continues to deteriorate Long-term Impact: moderate, adverse impact as the incremental deterioration of roadways and parking lots becomes increasingly noticeable to visitors. Cumulative impact: would contribute a noticeable adverse increment to the cumulatively long-term, moderate, and adverse impacts to visitor use and experience. Other cumulative factors affecting Visitor Use and Experience include development of the areas surrounding the park for commercial, residential, and transportation related purposes which would impact access to the Park, contribute to reduced air and water quality, and increase ambient noise. Increased development could contribute to additional Park visitation which would result in increased traffic and visitor use impacts.	During construction, visitor access to features and facilities along Good Luck Road would be disrupted. Access to the picnic areas would be restricted while pavement activities are completed for the parking area. Visitors would likely express a negative opinion about lane closure and detour delays. During construction, impacts would be short-term, minor, and adverse. Construction duration would be shorter than Alternative C; however, cancellation or rescheduling of bike races or other group events within the Park may be necessary. New pavement would provide a more enjoyable driving experience for visitors traveling in both vehicles and bicycles. Other cumulative factors affecting Visitor Use and Experience include development of the areas surrounding the park for commercial, residential, and transportation related purposes which would impact access to the Park, contribute to reduced air and water quality, and increase ambient noise. Increased development would likely contribute to additional Park visitation which would result in increased traffic and visitor use impacts. The adverse impacts of these other actions would be somewhat offset by the beneficial impacts of Alternative B. Short term impact: minor, adverse impact. Long-term Impact: beneficial impact. Cumulative impact: would contribute a noticeable beneficial increment resulting in cumulatively long-term, negligible and adverse impacts to visitor use and experience.	During construction, visitor access to features and facilities along Good Luck Road would be disrupted. Access to the picnic areas would be restricted while pavement activities are completed for the parking area. Visitors would likely express a negative opinion about lane closure and detour delays. The duration of the lane and road closures would likely be longer in order to construct the bridge and expanded paved shoulders. The longer construction duration could result in cancellation or rerouting of scheduled bike races; however, once construction is completed, wider shoulders would provide a more enjoyable experience for cyclists, as they would be further away from vehicle traffic. NPS and FHWA would specify context-sensitive designs for the bridge abutments, minimize riprap placement, and implement context sensitive solutions to preserve the character of the Park's developed areas. Development of the areas surrounding the park for commercial, residential, and transportation related purposes would impact access to the Park, contribute to reduced air and water quality, and increase ambient noise. Increased development would likely contribute to additional Park visitation which would result in increased traffic and vistor use impacts. The adverse impacts of these other actions would be somewhat offset by the beneficial impacts of Alternative C. Short-term impact: minor, adverse. Long-term impact: beneficial impact Cumulative impact: would contribute an appreciable beneficial increment resulting in cumulatively long-term, negligible and adverse impacts to visitor use and experience.

Table 1: Impact Summary

	Alternative A	Alternative B	Alternative C
Park Operations	The Park would continue with ongoing maintenance and administrative operations under the no action alternative. Pavement would continue to deteriorate, which would cause increased maintenance to patch potholes and fill cracks in the pavement. The increase in maintenance activities would expend additional funding and time. Under Alternative A, maintenance activities for the road and culverts would increase over time. Continued deterioration of the culverts and pavement in combination with higher traffic counts due to increased local development may also create a safety concern. Future severe weather events would contribute to adverse cumulative conditions. Short term impact: minor, adverse impact. Long-term Impact: moderate, adverse impact. Cumulative impact: would contribute a noticeable, adverse increment to the cumulative long-term, moderate, and adverse impacts on park operations	The removal of existing pavement and placement of new pavement would beneficially impact park operations, as roadway conditions would be improved and maintenance needs (both time and expenditures) would decrease. The replacement of existing signs would decrease the need to replace and/or maintain these signs for the near future. The new culverts would also have a longer life span, and would decrease maintenance needs. Short term impact: minor, adverse impact. Long-term Impact: beneficial impact. Cumulative impact: would contribute a noticeable, beneficial increment to the cumulative long-term, minor, and adverse impacts on park operations. Higher traffic counts due to increased local development may create a safety concern. Future severe weather events would contribute to adverse cumulative conditions	All of the impacts associated with the implementation of Alternative B would also be associated with the implementation of Alternative C. In addition, the construction of vegetated swales would change the conditions and topography of the recovery area, which may impact mowing. The conversion of a portion of the mowed grass clear zone to pavement would reduce the area that requires mowing, but would increase the amount of pavement requiring maintenance. The construction of the new bridge would require inspections and maintenance for staff to maintain safety standards. Additional demands would be placed on park staff during construction for contractor coordination and management of traffic disruptions. Future traffic on the bridge and road would continue to contribute to a potential increase in maintenance and safety concerns for the park. Other cumulative factors affecting park operations include development of the areas surrounding the park for commercial, residential, and transportation related purposes which could impact access to the Park. Short term impact: moderate, adverse impact. Long-term Impact: beneficial impact. Cumulative impact: would contribute a noticeable, beneficial increment to the cumulative long-term, minor, and adverse impacts on park operations.

Table 1: Impact Summary

	Alternative A	Alternative B	Alternative C
Traffic Operations	Traffic operations in the Park would continue under the no action alternative. However, pavement and drainage structures would continue to deteriorate, which would cause increased maintenance repairs that could impact traffic operations. Short term impact: local minor, adverse impact. Long-term Impact: local, minor, adverse impact. Cumulative impact: Would contribute a noticeable adverse increment to the long-term, minor, and adverse cumulative impact.	The removal of existing pavement and placement of new pavement would beneficially impact traffic operations, as roadway conditions would be improved and motorists could drive at a more consistent speed. The new culverts would also have a longer life span, and would decrease impacts to traffic operations by minimizing road closures for maintenance projects. Short term impact: moderate, adverse impact. Long-term Impact: moderate, beneficial impact. Cumulative impact: The lane closures and traffic delays associated with the projects as well as future projects would have an adverse impact to traffic operations. However, once these projects are completed they would have a beneficial impact to traffic operations. The repaired roadway would also minimize future maintenance needs and reduce the need for any future emergency repairs, limiting inconveniences and delays to motorists. Would contribute a noticeable beneficial increment to the long-term, minor, and adverse cumulative impact.	All of the impacts associated with the implementation of Alternative B would also be associated with the implementation of Alternative C. In addition, the expanded paved shoulders would create more space between bicyclists and/or pedestrians and the vehicles in the travel lanes. This would also allow motorists to drive at a more consistent speed, instead of slowing down to avoid potential conflicts with bicyclists and/or pedestrians Short term impact: moderate, adverse impact. Long-term Impact: moderate, beneficial impact. Cumulative impact: The lane closures and traffic delays associated with the project and future projects would have an adverse impact to traffic operations. However, once the projects are completed they would have a beneficial impact to traffic operations. The repaired roadway would also minimize future maintenance needs and reduce the need for any future emergency repairs, limiting inconveniences and delays to motorists. Would contribute a noticeable beneficial increment to the long-term, minor, and adverse cumulative impact.

CHAPTER 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the existing environmental conditions in and around the project area and the environmental consequences associated with the alternatives presented in "Chapter 2: Alternatives". Chapter 3 is organized by impact topic, and includes the impact topics presented in "Chapter 1: Purpose and Need" that required further analysis: floodplains, wetlands, surface water quality, storm water management, vegetation, wildlife and wildlife habitat, visitor use and experience, park operations, traffic operations, and gateway communities.

For each impact topic identified in Chapter 2, a process for impact assessment was developed based on the directives of Sections 2.9 and 4.5(g) of the DO-12 Handbook. NPS units are directed to assess the extent of impacts on Park resources as defined by the context, duration, and intensity of the effect. While measurement by quantitative means is useful, it is even more crucial for the public and decision-makers to understand the implications of those impacts in the short and long term, cumulatively, and within context, based on an understanding and interpretation by resource professionals and specialists. With that interpretation, one can ascertain whether certain impact intensity to a Park resource is "minor" compared to "major" and what criteria were used to base that conclusion.

3.1 METHODOLOGY

To determine impacts, methodologies were identified to measure the change in park resources that would occur with the implementation of each alternative. Thresholds were established for each impact topic to help understand the severity and magnitude of changes in resource conditions, both adverse and beneficial, of the various alternatives.

Potential impacts are described in terms of type (Are the effects beneficial or adverse?), context (Are the effects site-specific, local, or even regional?), duration (Are the effects short-term, lasting during construction, or long-term, lasting permanently?), and intensity (Are the effects negligible, minor, moderate, or major?). Definitions of these descriptors include:

> ***Beneficial:*** A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.
>
> ***Adverse:*** A change that declines, degrades and/or moves the resource away from a desired condition or detracts from its appearance or condition.
>
> ***Context:*** The affected environment within which an impact would occur, such as local, park-wide, regional, global, affected interests, society as a whole, or any combination of these. Context is variable and depends on the circumstances involved with each impact topic. As such, the impact analysis determines the context, not vice versa.
>
> ***Duration:*** The duration of the impact is described as short-term or long-term. Duration is variable with each impact topic; therefore, definitions related to each impact topic are provided in the specific impact analysis narrative.

Intensity: Because definitions of intensity (negligible, minor, moderate, or major) vary by impact topic, intensity definitions are provided separately for each impact topic analyzed in this document.

Each alternative is compared to a baseline to determine the context, duration, and intensity of resource impacts. For purposes of impact analysis, the baseline is the continuation of current management (the No Action Alternative) projected over the next 10 years. In the absence of quantitative data, best professional judgment was used to determine impacts. In general, the thresholds used come from existing literature, Federal and State standards, and consultation with subject matter experts and appropriate agencies.

3.2 CUMULATIVE IMPACTS

The CEQ regulations (40 CFR 1508.7) require the assessment of "cumulative impacts" which are defined as:

> *The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.*

In January 1997, the CEQ published a handbook entitled Considering Cumulative Effects Under the National Environmental Policy Act (see http://ceq.eh.doe.gov/nepa/ccenepa/ccenepa.htm). The introduction to the handbook opens with, "Evidence is increasing that the most devastating environmental effects may result not from the direct effects of a particular action, but from the combination of individually minor effects of multiple actions over time."

Cumulative impacts are considered for all alternatives, including the no-action alternative. They were determined by looking at each resource (impact topic), determining which past, present, and future actions would impact the resource for the determined spatial and temporal boundaries, and then combining the impacts of the alternative being considered with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects at the Park and, if applicable, the surrounding region.

These cumulative actions are evaluated in the cumulative impact analysis in conjunction with the impacts of particular resources. The evaluation of cumulative impacts was based on a general description of the action. Cumulative impacts are considered for all alternatives, and are presented at the end of each impact topic discussion. In defining the contribution of each alternative to cumulative impacts, the following terminology is used:

Imperceptible: The incremental effect contributed by the alternative to overall cumulative impacts is such a small increment that it is impossible or extremely difficult to discern.

Noticeable: The incremental effect contributed by the alternative, while evident and observable, is still relatively small in proportion to the overall cumulative impacts.

Appreciable: The incremental effect contributed by the Alternative constitutes a large portion of the

overall cumulative impact.

Past Actions:

Past actions include activities that influenced and affected the current conditions of the environment near the project area. Greenbelt Park has not had any recent substantial rehabilitation work other than periodic maintenance to existing facilities by the NPS.

Development of Historic Greenbelt, Maryland

Since the late 1930s, the general vicinity surrounding Greenbelt Park has undergone extensive building and economic development. The city of Greenbelt, Maryland is the intersecting point for four major highways including the Baltimore-Washington Parkway, the Capital Beltway, Maryland Route 201, and Maryland Route 193. The Park has not been significantly altered.

Present and Future Actions:

Methods for improving transportation between Montgomery and Prince George's counties in Maryland have been under study since 1992 as part of the Capital Beltway and Purple Line studies. Planning and consideration for a transit facility along the Georgetown Branch right-of-way in Bethesda and Chevy Chase date back to the early 1970's and an east-west transportation link has been on the Montgomery County Master Plans for more than 20 years. The transitway along the Georgetown Branch and a line between Silver Spring and New Carrollton were combined as the Bi-County Transitway in 2003.

In early spring 2007, Secretary of Transportation, John Porcari, directed the Maryland Transit Administration (MTA) to restore the project to its former name, the Purple Line. While the Bi-County Transitway name reflected the two county area of the proposed project, the Purple Line was the original name for the project and had continued to be used by most people. The project study has not changed, and the Purple Line continues to be a high transportation priority.

In October of 2008 the Purple Line's Alternatives Analysis/Draft Environmental Impact Statement (AA/DEIS) was released. The AA/DEIS was available for public review for 90 days from October 17, 2008 to January 14, 2009. During this time, the MTA accepted and recorded public comments on the document and the project. These comments were taken into consideration when on August 4, 2009 Governor Martin O'Malley announced his selection of the Locally Preferred Alternative (LPA) for the Purple Line. This was a major milestone for the project and marked the completion of the AA/DEIS phase of the project.

The Purple Line is a proposed 16-mile light rail line extending from Bethesda in Montgomery County to New Carrollton in Prince George's County. It would provide a direct connection to the Metrorail Red, Green and Orange Lines; at Bethesda, Silver Spring, College Park, and New Carrollton. The Purple Line would also connect to MARC, AMTRAK, and local bus services. The Purple Line will be light rail, and will operate mainly in dedicated or exclusive lanes, allowing for fast, reliable transit operations. 21 initial station locations have been identified with additional stations under consideration.

MTA is taking the lead on this project, with the support and close coordination of a team that includes the Washington Metropolitan Area Transit Authority, Montgomery and Prince George's counties, the Maryland-National Capital Park and Planning Commission (M-NCPPC), State Highway Administration, and local municipalities in the project area. Information related to this project can be found at the project's website http://www.purplelinemd.com/

In November 2009, the *Approved Countywide Master Plan of Transportation* for Prince George's County was completed by the M-NCPPC. This plan updates the earlier Prince George's County Master Plan of Transportation, which was approved in 1982 and has since been updated by the transportation recommendations in 34 master and sector plans that have been adopted and approved. The plan's goals, policies and strategies seek to ensure an efficient multimodal transportation infrastructure in the county that accommodates the needs of all user groups. Amendments of this plan will be reflected on the Countywide Master Plan of Transportation web page at www.mncppc.org/county/Transportation_MP/.

In July of 2012, M-NCPPC released the *Preliminary Greenbelt Metro Area and MD-193 Corridor Sector Plan and Proposed Sectional Map Amendment.* The document recommends goals, policies, strategies and actions pertaining to land use, urban design, environmental infrastructure, multimodal transportation networks, housing, economic development, health/wellness, public facilities, recreation, parks, historic preservation, zoning, and implementation. The plan includes specific proposals for major redevelopment along Greenbelt Road/ MD 193, the primary access road for Greenbelt Park.

Of particular relevance to this EA are several proposals in the *MD-193 Sector Plan* immediately adjacent to the park including the reconstruction of the MD-193 intersection with Kenilworth Avenue located at the northwest corner of Greenbelt Park. The proposed intersection would use an innovative design known as a Diverging Diamond which is thought to be more efficient and safer than the existing intersection. The plan also includes phased commercial and residential redevelopment, primarily to the north and east of Greenbelt Park. Despite the intensive development proposals, the plan highlights environmentally sustainable concepts including pedestrian/bike oriented facilities, a reduction of impervious surfaces, tree-banking sites, and other "green" infrastructure improvements intended to preserve, enhance and restore the natural environment. The plan can be viewed at the following web page:
http://www.pgplanning.org/Assets/Planning/Programs+and+Projects/Community+Plans/Greenbelt+Metro/GMA+Joint+Public+Hearing+2-10-12.pdf.

Congressman Ruppersberger, who represents Maryland's second district, received $1 million for a "Baltimore Washington Parkway Feasibility Study" in the FY2010 Appropriations bill. The funding will pay for an FHWA study authorized by the 2008 Transportation, Housing and Urban Development and Related Agencies Appropriations bill to determine if a third lane can be added to Interstate 295, the Baltimore-Washington Parkway, from Interstate 695 to New York Avenue in the District of Columbia. Congestion on 295 is expected to increase significantly in the near future as a result of the Defense Base Realignment and Closure (BRAC) decision that will bring thousands of jobs to the corridor. FHWA/Office of Federal Lands will work with the National Park Service and the Maryland State Highway Administration. The study shall include an assessment of the impact of the BRAC process on traffic throughout the Maryland 295 corridor between Baltimore, MD and Washington, D.C.

FHWA- EFLHD has initiated the study to assess the feasibility of widening the Baltimore-Washington

Parkway (Maryland Route 295). Specifically, the study will consider the costs and benefits of adding a third northbound and third southbound lane along the Parkway from the interchange with I-695 in Anne Arundel County, Maryland to New York Avenue in the District of Columbia. This would include the portion of the Parkway that bisects Greenbelt Park. The first public meeting for this study was conducted on July 20, 2011. Feasibility will be assessed against environmental, economic and engineering factors and transportation system performance, as well as the specific concerns of Parkway users and other regional stakeholders.

Baltimore-Washington Parkway maintenance
FHWA- EFLHD, in cooperation with the NPS are planning routine maintenance work for a project located on Baltimore-Washington Parkway from Route 50 to Route 175. The project scope involves repaving and spot reconstruction of the mainline (north and southbound lanes) and entrance and exit ramps between the beginning of the Parkway and Jessup Road. (PMIS # 151204 or BAWA 1(1) 2(1)) Only ramps that have NPS maintenance responsibility will be repaved or reconstructed. Due to the size of the work area, the project and construction work may be divided up into several separate projects. Construction began in the summer of 2012.

The *MD-193 Sector Plan* immediately adjacent to the park including the reconstruction of the MD-193 intersection with Kenilworth Avenue located at the northwest corner of Greenbelt Park. The proposed intersection would use an innovative design known as a Diverging Diamond which is thought to be more efficient and safer than the existing intersection. The plan also includes phased commercial and residential redevelopment, primarily to the north and east of Greenbelt Park. Despite the intensive development proposals, the plan highlights environmentally sustainable concepts including pedestrian/bike oriented facilities, a reduction of impervious surfaces, tree-banking sites, and other "green" infrastructure improvements intended to preserve, enhance and restore the natural environment. A public Hearing was conducted for the MD-193 Sector Plan and Proposed Sectional Map Amendment in October, 2012. District Council approval of the Plan is anticipated for spring of 2013.

3.3 FLOODPLAINS AND HYDROLOGY

Affected Environment

Floodplains are a vital part of our environment and their flooding is a natural occurrence. During high precipitation events flooding of the land (or floodplain) occurs. The floodplain then acts to convey and store this water. By definition floodplains are transitional environments between terrestrial and aquatic ecosystems. Hydrology plays a key role in determining the type and functional nature of the floodplain ecosystem. Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps show that a portion of the study area is within the 100-year floodplain, specifically Zone A. Zone A is defined as an area with a one percent chance of annual flooding. Because detailed analyses are not performed in such areas; no depths or base flood elevations are shown within these zones. The floodway is the channel of the stream (Still Creek) plus any adjacent floodplain area that must be kept free of encroachment so that the one percent annual chance flood can be carried without substantial increases in flood heights. The remainder of the project area is located in FEMA zone C, which is an area of minimal flood hazard, usually depicted on Flood Insurance Rate Maps as above the 500-year flood level. The floodplain has been constricted from approximately 250 feet upstream and downstream of the structure to approximately 50 feet at the crossing. This hydrologic constriction of

the Still Creek stream diminishes the value of the floodplain due to the roadway embankment fill and culvert crossing inhibiting the floodplain from conveying and storing water as it should. The culverts create a restriction on the creek's hydrologic lateral exchange of energy, material and aquatic organism passage onto the floodplain for feeding and reproduction.

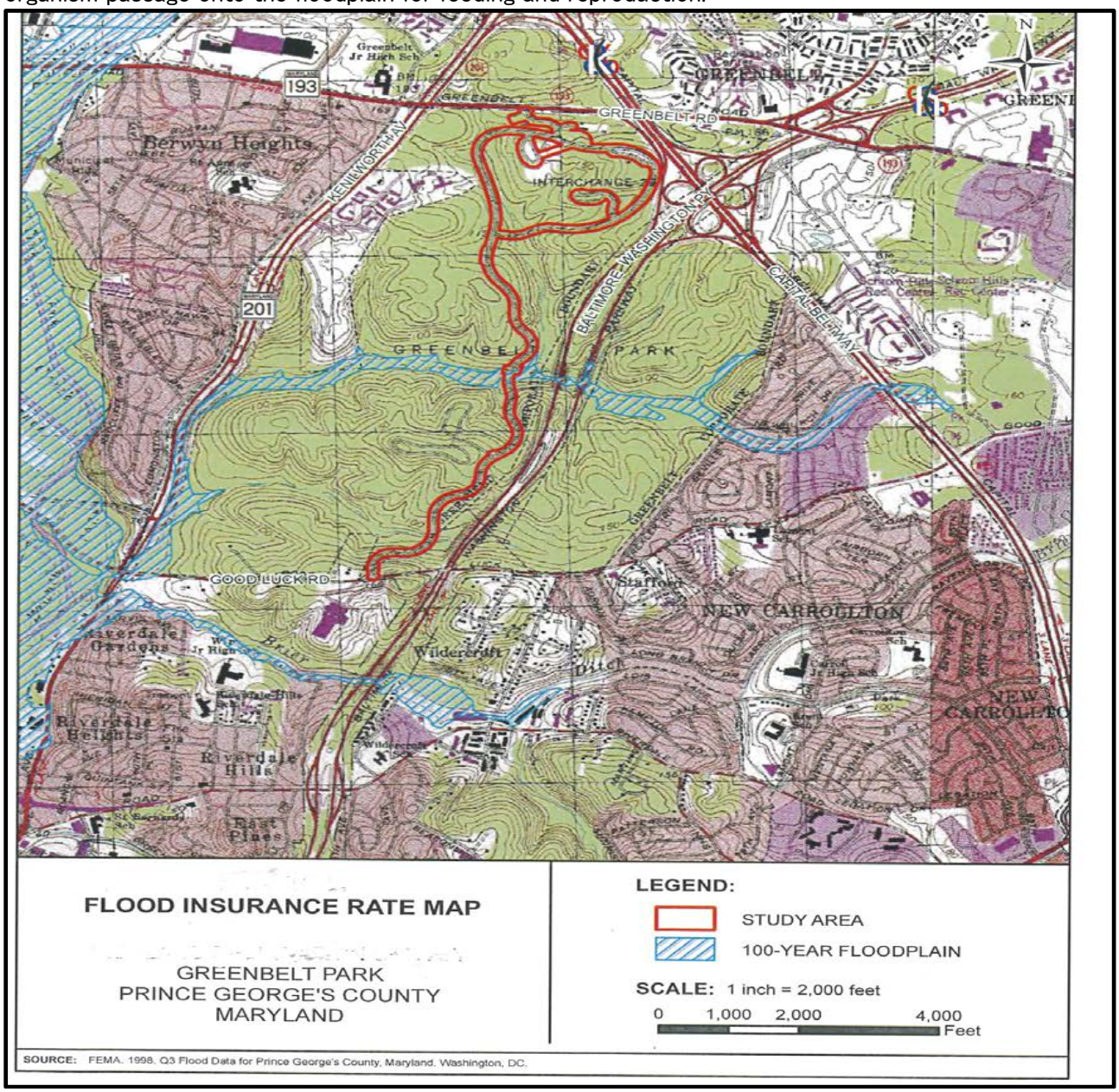


Figure 13. Flood Insurance Rate Map (FEMA)

The project area is located on the boundary between the Piedmont and the Atlantic Coastal Plain physiographic provinces, a geologic area commonly referred to as the Fall Line. It is characterized by an abrupt change in the valley slope, with a corresponding increase in stream gradient. The project area hydrology includes Still Creek, a non–tidal tributary of the Northeast Branch of the Anacostia River which is a tributary of the Potomac River. Still Creek is a subwatershed of the Anacostia River Watershed and part of the greater Chesapeake Bay Watershed. Still Creek subwatershed has approximately 7 miles of open stream channel length. The channel banks of Still Creek through the project area are highly incised and eroded, most likely due to the existing culverts being undersized

and the velocity of the rainfall due to the high gradient slopes. Increases in impervious areas also disrupt the hydrologic cycle and affect the environmental health of the watershed. Urbanization causes many environmental changes including fragmented forest lands, excessive runoff, higher pollutant loads from land sources into receiving streams and a decrease in infiltration of precipitation into soils and ultimately groundwater. Approximately 19 percent of the Still Creek watershed consists of impervious surface, with roads being the predominant contributor (Anacostia Watershed Environmental Baseline Conditions and Restoration Report– January 2010). The increase in storm water runoff increases peak discharges that create the energy necessary to erode stream banks causing Still Creek to be highly incised. Still Creek's designated water class is a Use I stream suitable for water recreation and support of aquatic life, by the MDE.

Environmental Consequences

Methodology

A FEMA Flood Insurance Rate Map was obtained and evaluated for the study area (See Figure 12). The area was surveyed to determine the ground elevations. Impact analysis was based on the on–site inspection of the study area, review of existing literature and studies, and professional judgment. A portion of the proposed action was found to be in an applicable regulatory floodplain. Therefore, flood conditions and associated hazards must be quantified as a basis for management decision making. A formal Statement of Findings for Floodplains has been prepared. The Statement of Findings can be found in Appendix C.

Definition of Intensity Levels:

Negligible	Impacts would result in a change to floodplain functions and values, but the change would be so slight that it would not be of any measurable or perceptible consequence.
Minor	Impacts would result in a detectable change to floodplain functions and values, but the change would be expected to be small, of little consequence, and localized. There would be no appreciable increased risk to life or property. Mitigation measures, if needed to offset adverse effects, would be simple and successful.
Moderate	Impacts would result in a change to floodplain functions and values that would be readily detectable and relatively localized. Location of operations in floodplains would increase risk to life or property. Mitigation measures, if needed to offset adverse effects, would be extensive, but would likely be successful.
Major	Impacts would result in a change to floodplain functions and values that would have substantial consequences on a regional scale. Location of operations would increase risk to life or property. Extensive mitigation measures would be needed to offset any adverse effects, and their success would not be guaranteed.

Definition of Duration:

The duration for short–term impacts to floodplains was determined to be one year, the maximum duration of construction. During construction additional materials may be placed in the floodplain in order to construct the project; however, upon the completion of the project, those materials would be removed. Long–term impacts would extend after the construction of the project is completed, and could be permanent.
Short–term: Effects lasting less than one year

Long-term: Effects lasting longer than one year

Alternative A

Impact Analysis

No disturbance to the floodplain would occur because there would be no construction-related actions and no changes to the road or existing culverts. Scour at the base of the culverts would continue to worsen over time as well as corrosion of the pipe culverts, affecting stability of the roadway and eventually could cause culvert failure resulting in no connectivity for the stream or floodplains/hydrology. A functional floodplain must be connected to the adjacent stream to allow the exchange of flow, sediment, nutrients and organisms. Floodplain ecosystems are created, maintained and influenced by a wide variety of flow levels and events ranging from extreme low flows to high flows and flood events. These flow levels provide a variable flow regime that support important floodplain processes. These processes include: the exchange of nutrients, organisms, organic matter between the stream and floodplain, stream bank erosion and subsequent deposition of sediment on the floodplain that cause patches of vegetation growth with varying species, and ecological benefits such as fish spawning, algal food web productivity and benefits to terrestrial animals and insects. The No Action Alternative would not provide floodplain connectivity and the result would be an ecosystem that would suffer the effects of lacking primary elements needed for restoration/conservation. The No Action Alternative would have short-term minor adverse impact and a long-term moderate adverse impact to floodplains/hydrology because there would be no improvement made in the flood storage capacity or connectivity of the stream to the floodplain ecosystem.

Cumulative Impacts

The other past, present and future actions would have a long-term, minor, adverse impact to floodplains/hydrology by creating the potential for increased, runoff, suspended solids and sediment load to the waters of Still Creek and its surrounding floodplain. The project located on Baltimore-Washington Parkway from Route 50 to Route 175. The project scope involves repaving and spot reconstruction of the mainline (north and southbound lanes) and entrance and exit ramps between the beginning of the Parkway and Jessup Road. (PMIS # 151204 or BAWA 1(1) 2(1)) Only ramps that have NPS maintenance responsibility will be repaved or reconstructed. Due to the size of the work area, the project and construction work may be divided up into several separate projects.

The *MD-193 Sector Plan* immediately adjacent to the park including the reconstruction of the MD-193 intersection with Kenilworth Avenue located at the northwest corner of Greenbelt Park. The proposed intersection would use an innovative design known as a Diverging Diamond which is thought to be more efficient and safer than the existing intersection. The plan also includes phased commercial and residential redevelopment, primarily to the north and east of Greenbelt Park. This project is in the planning stages and is unknown when construction and associated impacts could occur.

Alternative A would contribute an imperceptible increment to the long-term, moderately adverse cumulative impact to floodplains/hydrology caused by adjacent projects that would create the potential for increased, runoff and sediment load to the waters of Still Creek and its surrounding

floodplain.

Conclusions

The No Action Alternative would have short-term minor, adverse impact and a long-term moderate adverse impact to floodplains/hydrology. There would be imperceptible adverse increment to the cumulative impacts to floodplains/hydrology.

Alternative B

Impact Analysis

Under Alternative B, approximately 40 cubic yards of fill material would be placed in the form of riprap, large sized rock, used to protect the new culverts from scour from water movement though the stream channels. The placement of riprap would introduce rock materials into the study area; however the displacement of floodwaters as a result would not be noticeable. The culverts would be replaced with culverts of a similar size and capacity, so there would be no rise in water surface elevation or backwater, however there would continue to be limited connectivity of the floodplain. The floodplain and the stream hydrology have been constricted from approximately 250 feet upstream and downstream of the structure to 50 feet at the culvert crossing and would continue to be constricted after replacement. The culverts would continue to create a restriction on the hydrologic lateral exchange of energy, material and aquatic organism passage onto the floodplain for feeding and reproduction. Minimal floodplain connectivity will result in an ecosystem that would suffer the effects of lacking primary elements needed for restoration/conservation. Additionally, the constriction of Still Creek could potentially cause overtopping of the roadway during high flood events. Therefore the impacts resulting from the implementation of Alternative B would be short-term minor adverse and long-term, local and minor adverse.

Cumulative Impacts

The other past, present and future actions would have a long-term, minor, adverse impact to floodplains/hydrology by creating the potential for increased, runoff and sediment load to the waters of Still Creek and its surrounding floodplain. The project located on Baltimore-Washington Parkway from Route 50 to Route 175 involves repaving and spot reconstruction of the mainline (north and southbound lanes) and entrance and exit ramps between the beginning of the Parkway and Jessup Road. (PMIS # 151204 or BAWA 1(1) 2(1)) Only ramps that have NPS maintenance responsibility will be repaved or reconstructed. Due to the size of the work area, the project and construction work may be divided up into several separate projects.

The *MD-193 Sector Plan* immediately adjacent to the park including the reconstruction of the MD-193 intersection with Kenilworth Avenue located at the northwest corner of Greenbelt Park. The proposed intersection would use an innovative design known as a Diverging Diamond which is thought to be more efficient and safer than the existing intersection. The plan also includes phased commercial and residential redevelopment, primarily to the north and east of Greenbelt Park. This project is in the planning stages and is unknown when construction and associated impacts could occur.

Implementation of Alternative B would contribute an imperceptible adverse increment to the cumulatively long-term, minor adverse, impact to floodplains/hydrology.

Conclusions

Alternative B would have long-term, minor impacts to floodplains/hydrology. Implementation of Alternative B when combined with other actions would result in cumulative, minor and adverse impacts to floodplains/hydrology.

Alternative C – Preferred Alternative

Impact Analysis

The new bridge structure and the flanking relief culverts on each side would provide a benefit by allowing for more natural hydrology and ecologic function within the floodplain. Approximately 850 cubic yards of earth/fill would be removed as the existing dual culverts are replaced with a bridge structure. The bridge structure would allow more unrestricted movement of the stream and dissipate the energy in the channel, thereby minimizing velocity, sediment transport and erosion. The value of stream daylighting should also be recognized as producing a measureable functional improvement to floodplains and hydrology. The term daylighting describes projects that deliberately expose some or all of the flow of a previously covered river, creek or storm water drainage. In short, daylighting projects usually remove a stream from an underground pipe and restore the waterway to open air and light. Stream daylighting can improve riparian buffer habitat and water quality along stream banks and reduce flood impacts by increasing storage capacity over that of a culvert.

Additionally, fill material would be added to construct shoulders at the bridge approaches. This fill material would consist of aggregate base, asphalt and aggregate topsoil. Approximately 3,500 cubic yards of fill would be added to the study area, in addition to the 60 cubic yards of riprap added at the culverts to reduce scour and erosion. The additional fill material would be visibly noticeable but the fill surrounding the former dual culverts (850 cubic yards) would be removed when replaced with the bridge. The placement of riprap would introduce rock materials into the study area; however the displacement of floodwaters as a result would not be noticeable. A change in the function of the floodplain such as the frequency, duration, or extent of flooding, would be noticeably improved. The function of the Still Creek hydrology would be noticeably improved by repairing the stream channel and allowing for more natural stream flow to be conveyed through the bridge opening as well as the relief culverts that will handle excess flow during larger storm events. Therefore, Alternative C would have a short-term moderate, adverse impact and a long-term beneficial impact to floodplains and hydrology.

Cumulative Impacts

The other past, present and future actions would have a long-term, minor, adverse impact to floodplains/hydrology by creating the potential for increased, runoff and sediment load to the waters of Still Creek and its surrounding floodplain. A nearby project located on Baltimore-Washington Parkway from Route 50 to Route 175 involves repaving and spot reconstruction of the mainline (north and southbound lanes) and entrance and exit ramps between the beginning of the Parkway and Jessup Road. (PMIS # 151204 or BAWA 1(1) 2(1)) Only ramps that have NPS maintenance

responsibility will be repaved or reconstructed. Due to the size of the work area, the project and construction work may be divided up into several separate projects.

The *MD-193 Sector Plan* immediately adjacent to the park including the reconstruction of the MD-193 intersection with Kenilworth Avenue located at the northwest corner of Greenbelt Park. The proposed intersection would use an innovative design known as a Diverging Diamond which is thought to be more efficient and safer than the existing intersection. The plan also includes phased commercial and residential redevelopment, primarily to the north and east of Greenbelt Park. This project is in the planning stages and is unknown when construction and associated impacts could occur.

When combined the long-term beneficial impact of Alternative C there would be long-term, noticeable, beneficial cumulative impacts to floodplains/hydrology.

Conclusions

Alternative C would have short-term, moderately adverse impacts and long-term, local and beneficial impacts to floodplains/hydrology. Implementation of Alternative C would contribute moderate benefit to the cumulative long-term, beneficial impacts to floodplains/hydrology. The Statement of Findings for Floodplains can be found in Appendix C.

3.4 WETLANDS

Affected Environment

Pursuant to 33CFR (Section 328.3) Waters of the United States (WOUS) also include wetlands are under the jurisdiction limits of authority of the US Army Corps of Engineers (USACE) under the Clean Water Act. Wetlands defined the USACE manual are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions. The wetland definition used for the USACE and associated 404 permit program is narrower than the Cowardin et. Al. (Cowardin et al., 1979) wetland definition used for NPS compliance under the *Director's Order #77-1: Wetland Protection* (NPS, 2002). Therefore a broader range of aquatic habitat types fall under the NPS definition of a wetland than do under the USACE 404 permit program. Under the Cowardin definition, a wetland must have one or more of the following three attributes:

1. At least periodically, the land supports predominant wetland vegetation.
2. The substrate is predominantly undrained hydric soil; or
3. The substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season each year.

Wetlands in the study area function as fish and wildlife habitat, aquatic plant communities, flood attenuation, and provide an aesthetically pleasing view for visitors. A wetland delineation survey was conducted in the study area in July and August, 2011 (See Figure 13). The wetlands in the project area are classified as a palustrine, forested, broad-leaved deciduous, temporarily flooded or saturated (PFO1A & PF01B) wetlands. The wetland areas are primarily dominated by trees and plants such as blackgum (*Nyssa sylvatica*), red maple (*Acer rubrum*) and sweetbay magnolia (*Magnolia virginiana*) in the tree stratum; highbush blueberry (*Vaccinium corymbosum*), common winterberry (*Ilex verticillata*),

sweetgum (*Liquidambar styraciflua*)and swamp azalea (*Rhododendron viscosum*) in the shrub stratum; and cinnamon fern (Osmunda cinnamomea), netted chainfern (*Woodwardia areolata*) and lowbush blueberry (*Vaccinium angustifolium*) in the herbaceous stratum. (Straughan Environmental 2011)

Still Creek and several unnamed tributaries flow in and out of the project area several times. Still Creek is classified by the USACE as a WOUS and as a riverine wetland by NPS Cowardin definition. These waterways and wetlands are heavily influenced by urban storm water runoff from upstream areas outside of Greenbelt Park. The crossing of the drainageway by Park Central Road has resulted in backwater conditions upstream of the culverts beneath Park Central Road and the concentration of flows downstream of the culverts. These conditions have led to the formation of ephemeral channels and wetland areas that would not likely have formed without these structural influences. (Straughan Environmental 2011)

Figure 14. Delineated Wetlands

Environmental Consequences

Methodology

Available information on wetlands potentially impacted by the proposed alternatives was based on a review of existing literature and studies and by viewing National Wetland Inventory maps. The project area was walked by the project team to determine possible wetland areas that may be impacted by the proposed action. A wetland delineation of these areas was performed in July 2011, to gather site-specific data in accordance with the 1987 Corps of Engineers Wetland Delineation Manual

(Environmental Laboratory 1987) and Director's Order Procedural Manual #77-1(NPS 2002). In areas containing vegetation and soils, the Corps manual was used. In unvegetated areas, such as stream channels, the "limits" of these systems were determined as described in Cowardin et al. (1979).

Predictions about short-term and long-term impacts to wetlands were based on previous experience with projects of similar scope and characteristics. Analyses of the potential intensity of impacts on wetlands were derived from the available information and the professional judgment of the resource specialists. The following thresholds were used to determine the magnitude of impacts on wetlands.
Definition of Intensity Levels:

Negligible	Wetlands would not be affected or the effects would be at or below the level of detection. There would be no measurable or perceptible effects on wetland plant and animal populations, soils, or hydrology. The effects would be below or at the lower levels of detection (0.0 to 0.5 acres).
Minor	Effects on wetland plant and animal populations, soils, or hydrology would be measurable or perceptible. Mortality of individual plants and animals might occur, but the viability of wetland populations and habitats would not be affected and the community, if left alone, would recover. Changes in wetland soils or hydrology might occur but if left alone, the wetland would recover in time. The effects to wetlands would be detectable and relatively small in terms of area (0.5 to 1.0 acres) and the nature of the change. The action would affect a limited number of individuals of plant or wildlife species within the wetland.
Moderate	A readily measurable change in abundance, distribution, quantity, or quality of populations of plants and animals would occur. Readily measurable changes in soils or hydrology would occur. The wetland would be slow to recover from these changes, or might not recover fully over time. Mitigation measures would be necessary to offset adverse effects, and would likely be successful. The effects to wetlands would be readily apparent over a relatively small area (1.0 acres to 1.5 acres) but the impact could be mitigated by restoring previously degraded wetlands. The action would have a measurable effect on plant or wildlife species within the wetland, but all species would remain indefinitely viable.
Major	Effects on wetland plant and animal populations, soils, or hydrology would be readily apparent, and measurable. Extensive mitigation would be needed to offset adverse effects, and the success of mitigation measures could not be assured. The effects to wetlands would be readily apparent over a relatively large area (1.5 acres or more). The action would have measurable consequences for the wetland area that could not be mitigated. Wetland species dynamics would be upset, and plant and/or animal species would be at risk of extirpation from the area.

Definition of Duration:

The duration for short-term impacts to wetlands was determined to be two years. Construction would be completed in one year, and the wetlands would require another year to regain their functions. During construction temporary measures, such as dewatering, may be necessary. After construction is completed these measures would be removed. Long-term impacts would not recover within one year after the construction is complete, and could be permanent.

Short-term: Effects lasting less than two years
Long-term: Effects lasting longer than two years

Environmental Consequences

Alternative A

Impact Analysis

Deteriorated roadways and parking areas would eventually develop drainage issues that could result in erosion and sedimentation that would accumulate in wetlands. Impacts to riverine wetlands resulting from the inadequate culverts, including stream bed scour and stream bank erosion, would be exacerbated and would extend farther away from the road and into currently stable areas. Additionally, if the floodplain remains disconnected from the stream, the hydrology, vegetation and soils would change and would negatively alter the function and value of the palustrine forested and riverine wetlands. Short-term impacts from Alternative A would be minor and adverse. Long-term impacts would be moderate and adverse to wetlands.

Cumulative Impacts

The other past, present, and future actions would have long-term minor, cumulative impacts to wetlands. The project located on Baltimore-Washington Parkway from Route 50 to Route 175 involves repaving and spot reconstruction of the mainline (north and southbound lanes) and entrance and exit ramps between the beginning of the Parkway and Jessup Road. (PMIS # 151204 or BAWA 1(1) 2(1)) Only ramps that have NPS maintenance responsibility will be repaved or reconstructed. Due to the size of the work area, the project and construction work may be divided up into several separate projects.

The *MD-193 Sector Plan* immediately adjacent to the park including the reconstruction of the MD-193 intersection with Kenilworth Avenue located at the northwest corner of Greenbelt Park. The proposed intersection would use an innovative design known as a Diverging Diamond which is thought to be more efficient and safer than the existing intersection. The plan also includes phased commercial and residential redevelopment, primarily to the north and east of Greenbelt Park. This project is in the planning stages and is unknown when construction and associated impacts could occur.

These actions would have a long-term minor adverse cumulative impact to wetlands by creating the potential for increased, runoff and sediment load to the waters of Still Creek and its surrounding wetlands. Potential loss of wetland areas due to development could also occur. Implementation of Alternative A would contribute an appreciable increment to the cumulative impacts and result in a cumulatively moderate adverse impact.

Conclusions

Under Alternative A, there would be short-term, minor and adverse impacts and long-term moderate adverse impacts to Wetlands. Implementation of Alternative A, combined with other future actions would have a long-term moderate adverse cumulative impacts.

Alternative B

Impact Analysis

Reconstruction of the road and replacement of the culverts would temporarily impact wetlands at the Still Creek stream channel and at several culvert locations. Impacts to wetlands would be avoided to the maximum extent practicable. However, construction activities would be confined to the smallest area necessary to complete the work; approximately 0.05 acres of riverine wetlands would be impacted by the removal and reconstruction of the dual culverts, rip rap placement in the stream channel and construction access to the dual culverts. Two culvert replacements and rip rap placement at a third culvert site will be approximately .06 acres of impacts to riverine wetlands. The total acreage of riverine wetland impacts is 0.11 acres. All areas of temporarily disturbed vegetation would be restored with native or NPS- approved vegetation following construction. Alternative B would have a short-term negligible, adverse impact and a long-term, local and beneficial impact to wetlands by reconnecting the stream channel that is currently undercut and disconnected on either side of the culvert, repairing the scour hole in the stream bed and improving the viability of the wetland.

Cumulative Impacts

The other past, present, and future actions would have long-term minor, cumulative impacts to wetlands. The project located on Baltimore-Washington Parkway from Route 50 to Route 175 involves repaving and spot reconstruction of the mainline (north and southbound lanes) and entrance and exit ramps between the beginning of the Parkway and Jessup Road. (PMIS # 151204 or BAWA 1(1) 2(1)) Only ramps that have NPS maintenance responsibility will be repaved or reconstructed. Due to the size of the work area, the project and construction work may be divided up into several separate projects.

The *MD-193 Sector Plan* immediately adjacent to the park including the reconstruction of the MD-193 intersection with Kenilworth Avenue located at the northwest corner of Greenbelt Park. The proposed intersection would use an innovative design known as a Diverging Diamond which is thought to be more efficient and safer than the existing intersection. The plan also includes phased commercial and residential redevelopment, primarily to the north and east of Greenbelt Park. This project is in the planning stages and is unknown when construction and associated impacts could occur.

These actions would have a long-term minor adverse cumulative impact to wetlands by creating the potential for increased, runoff and sediment load to the waters of Still Creek and its surrounding wetlands. Potential loss of wetland areas due to development could also occur. When combined with the long-term beneficial impact of Alternative B there would be long-term, beneficial, cumulative impacts to wetlands.

Conclusions

Alternative B would have long-term, local negligible and beneficial impacts and short-term, negligible, adverse impacts to wetlands. Implementation of Alternative B would contribute a negligible, adverse increment to the cumulative long-term, imperceptible, and beneficial impacts to wetlands by reconnecting the stream channel that is currently undercut and disconnected on either side of the

culvert, repairing the scour hole in the stream bed and improving the viability of the surrounding wetland.

Alternative C – Preferred Alternative

Impact Analysis

The impacts associated with the implementation of Alternative C would temporarily impact wetlands at the perennial Still Creek stream channel crossing under Park Central Road and rip rap at several culvert locations. Reconstruction of the road and the removal and replacement of the dual culverts with a bridge and flanking relief culverts as well as stream channel rehabilitation and revetment would temporarily impact 0.089 acres of riverine wetlands in the Still Creek stream channel and adjacent palustrine wetlands deriving from impacts for construction equipment access. Additionally, .073 acres of riverine wetlands would be impacted at the two other culvert replacement locations in the Park and added rip rap at a third culvert location. The total acreage of wetland impacts (both riverine and palustrine) for the project is approximately 0.162 acres. Per the DO 77-1 Procedure Manual (Section 4.2.1), actions may be "Excepted" from the requirements for a Wetlands Statement of Findings and compensation requirements if they do not exceed 0.25 acres of wetland impacts. According to the manual, the removal of the dual culverts and replacement with a bridge and flanking relief culverts falls under 4.2.1(h) titled "Actions designed to restore degraded (or completely lost) wetland, stream, riparian or other aquatic habitats or ecological processes." This would encompass the riverine wetlands impacted by the construction of a new bridge structure. Section 4.2.1(g) "maintenance, repair or renovation" would cover the minimal wetland impacts at the culvert replacement locations at other parts of the project. The NPS Water Resources Division has determined that no Wetland Statement of Findings is required for the preferred alternative.

Overall impacts to wetlands would be local, short-term, negligible and adverse from temporary disturbance of the channel and the construction of the bridge structure and flanking relief culverts. A non-structural temporary diversion channel would be utilized at Still Creek to divert the water from Still Creek to allow for the construction of the bridge. Over the long-term, the construction of the bridge and the flanking relief culverts would benefit the hydrology of the wetlands within and adjacent to Still Creek by providing greater connectivity of the stream, floodplain and promote regrowth of fringe wetlands in this area. The value of stream daylighting should also be recognized as producing a measureable improvement to wetlands. The term daylighting describes projects that deliberately expose some or all of the flow of a previously covered river, creek or storm water drainage. In short, daylighting projects usually remove a stream from an underground pipe and restore the waterway to open air and light. Stream daylighting can improve riparian buffer habitat and water quality along stream banks and reduce flood impacts by increasing storage capacity over that of a culvert.

Any disturbed wetland areas would be re-vegetated on site with similar native wetland plant species approved by the NPS. Restoration to the stream (riverine wetland) would also be conducted at Still Creek to improve the function of the stream channel that is currently highly eroded and scoured. Stream restoration may include grade control structures such as cut off walls, step pools or cross vanes to prevent erosion and maintain stream bed elevation. Alternative C would have a short-term negligible, adverse impact and a long-term negligible, local, beneficial impact to wetlands.

The proposed action would impact waters of the United States (WOUS) as defined by the Clean

Water Act and are therefore subject to review by the U.S. Army Corps of Engineers. Section 404 of the Clean Water Act requires a permit for any activity which may result in the discharge of dredged or fill material into WOUS or wetlands. Additionally, wetland mitigation for Alternative C would be below the threshold required by the USACE 404 permitting program; however mitigation for stream impacts (WOUS) may be required. NPS will be responsible for developing, implementing and monitoring on site wetland mitigation for the 0.162 acres as part of the NPS "no net loss" goals for wetlands.

Cumulative Impacts

The other past, present, and future actions would have long-term, minor, cumulative impacts to wetlands. The project located on Baltimore-Washington Parkway from Route 50 to Route 175 involves repaving and spot reconstruction of the mainline (north and southbound lanes) and entrance and exit ramps between the beginning of the Parkway and Jessup Road. (PMIS # 151204 or BAWA 1(1) 2(1)) Only ramps that have NPS maintenance responsibility will be repaved or reconstructed. Due to the size of the work area, the project and construction work may be divided up into several separate projects.

The *MD-193 Sector Plan* immediately adjacent to the park including the reconstruction of the MD-193 intersection with Kenilworth Avenue located at the northwest corner of Greenbelt Park. The proposed intersection would use an innovative design known as a Diverging Diamond which is thought to be more efficient and safer than the existing intersection. The plan also includes phased commercial and residential redevelopment, primarily to the north and east of Greenbelt Park. This project is in the planning stages and is unknown when construction and associated impacts could occur.

These actions would have a long-term minor adverse cumulative impact to wetlands by creating the potential for increased, runoff and sediment load to the waters of Still Creek and its surrounding wetlands. Potential loss of wetland areas due to development could also occur. When combined with the long-term beneficial impact of Alternative C there would be long-term beneficial, cumulative impacts to wetlands.

Conclusions

Alternative C would have short-term, negligible, adverse impacts and long-term, local beneficial impacts to wetlands. Implementation of Alternative C would contribute a beneficial increment to the cumulative long-term, beneficial impacts to wetlands by reconnecting the stream channel that is currently undercut and disconnected on either side of the culvert, repairing the scour hole in the stream bed and improving the viability of the surrounding wetland. Over the long-term, the construction of the bridge and the flanking relief culverts would benefit the hydrology of the wetlands within and adjacent to Still Creek by providing greater connectivity of the stream, floodplain and promote regrowth of fringe wetlands in this area.

3.5 SURFACE WATER QUALITY

Affected Environment

Earth disturbing activities impact the quality of water by disturbing vegetated areas and exposing bare soil. These areas are vulnerable to erosion from wind and water. The eroded soils in water become suspended solids within the water course, and eventually settle to the bottom of the water course as sediment. Suspended solids and excessive sedimentation can have adverse impacts to surface water quality if not controlled.

Still Creek is a free-flowing tributary of the Northeast Branch of the Anacostia River; the stream joins the Northeast Branch near the eastern edge of the city limits of Riverdale Park. The subwatershed is bound by Greenbelt Road and I-495 to the north and east, Good Luck Road to the south, and Edmonston Road to the west. The Still Creek subwatershed is 2,554 acres in size. Approximately 43% of the watershed is within Greenbelt Park. The State of Maryland has designated Still Creek as suitable for recreation and protection of wildlife. From the limited data available, it seems that Still Creek supports a fairly healthy fish population, while the benthic macro invertebrate population is rather poor. The amount of Total Suspended solid loads for all of Still Creek is approximately 261 tons per year. The NPS National Capital Region Network (NCRN) has conducted Perennial Nontidal Stream Chemistry Monitoring in Still Creek since 2006 as part of the NCRN Inventory and Monitoring Program. Samples have been collected for data such as temperature, depth, pH, salinity, dissolved oxygen, total phosphorus, nitrogen/nitrate and acid neutralizing capacity. The NCRN has not yet conducted a long term analysis on the data but some noticeable results are high levels of phosphorus (approximately 1,150 pounds per year), which is similar to most streams in the region, and occasional spikes for nitrate (approximately 13,590 pounds per year), which could generate from nonpoint agricultural activities such as the application of inorganic fertilizers, manure or composted materials, automotive exhaust and atmospheric deposition. Further explanation to the cause of these results has yet to be analyzed by the NCRN. Nitrogen and phosphorus are essential elements in aquatic ecosystems and are used by plants and algae for growth. Excess nutrients, however, can lead to increased algal production or blooms and loss of dissolved oxygen affecting water quality as decaying organic matter is broken down by microorganisms.

The terrain of the Park is sharply dissected and encompasses a series of narrow to medium-width ridges overlooking Still Creek and its smaller tributaries of surface water. The stream valleys are generally narrow with moderately sloped to steep flanks. Drainage patterns in the project vicinity follow a dendritic pattern in which the tributaries branch irregularly in all directions from almost any angle to the larger stream of Still Creek. The annual average precipitation at Greenbelt is 43.76 inches. Rainfall is fairly evenly distributed throughout the year. The wettest month of the year is May with an average rainfall of 4.54 inches (National Climatic Data Center 2012). The rate of infiltration is affected by the soil characteristics and rate of precipitation.

Storm water management encompasses approaches to capturing and reusing storm water to maintain or restore natural hydrology. Storm water BMPs are implemented to reduce the impact that development activities have on the surface water hydrology of the local watershed. Any storm water treatment measures (i.e. vegetative buffer strips/swales) added as part of the project would ultimately be beneficial to the surface water quality in the Park by slowing down runoff, minimizing

pollutants (such as petroleum products, solvents and suspended solids) and allowing for infiltration. The strongest regional effects on water quality in the Park are due to increased urban surface runoff which results from the addition of impervious surfaces. The NPS has little control over water quality, flow and sediment load, particularly in Greenbelt Park since it is entirely surrounded by highly developed urban areas. The surface waters of Still Creek are affected by runoff from the residential and commercial development surrounding the Park and the Baltimore–Washington Parkway, which bisects the watershed.

Environmental Consequences

Methodology

Available information on water quality potentially impacted by the proposed alternatives was compiled from recent studies and the Maryland Department of the Environment was consulted for the steps required for the protection of water quality of the project site. Information regarding existing water quality concerns was obtained through reports and studies done in the study area. Predictions about short–term and long–term impacts to water quality were based on previous experience with projects of similar scope and characteristics. Analyses of the potential intensity of impacts on water quality were derived from the available information and the professional judgment of the resource specialists.

Definition of Intensity Levels:

Negligible	Impacts are chemical, physical or biological effects that would not be detectable, would be well below water quality standards or criteria, and would be within historical or desired water quality conditions.
Minor	Impacts would be detectable but would be well below water quality standards or criteria and within historical or desired water quality conditions.
Moderate	Impacts would be detectable but would be below water quality standards or criteria; however, historical baseline or desired water quality conditions would be altered on a short–term basis.
Major	Impacts would be detectable and would be frequently altered from the historical baseline or desired water quality conditions; and chemical, physical, or biological quality standards or criteria would be slightly and singularly exceeded on a short–term basis

Definition of Duration:

The duration for short–term impacts to water quality was determined to be one year because the construction is expected to be completed in one year. During construction, the ground would be disturbed, exposing bare soil. Erosion from the bare soil, as well as contaminants from construction equipment, would occur during construction and would alleviate once construction is completed and the area is re–vegetated. Long–term impacts would extend beyond the re–vegetation, and could be permanent.

Short–term: Effects lasting less than one year
Long–term: Effects lasting longer than one year

Alternative A

Impact Analysis

Implementation of Alternative A would have a short-term negligible adverse impact and a long-term minor adverse impact. The steep topography and continuing scour around the culverts would release sedimentation into the creek and adversely impact surface water quality.

Cumulative Impacts

Some present and future actions such as the resurfacing of Baltimore Washington from Route 50 to Route 175 involves repaving and spot reconstruction of the mainline (north and southbound lanes) and entrance and exit ramps between the beginning of the Parkway and Jessup Road. (PMIS # 151204 or BAWA 1(1) 2(1)) Only ramps that have NPS maintenance responsibility will be repaved or reconstructed. Due to the size of the work area, the project and construction work may be divided up into several separate projects.

The *MD-193 Sector Plan* immediately adjacent to the park including the reconstruction of the MD-193 intersection with Kenilworth Avenue located at the northwest corner of Greenbelt Park. The proposed intersection would use an innovative design known as a Diverging Diamond which is thought to be more efficient and safer than the existing intersection. The plan also includes phased commercial and residential redevelopment, primarily to the north and east of Greenbelt Park. This project is in the planning stages and is unknown when construction and associated impacts could occur.

It is assumed the BMPs will be utilized for these projects to minimize erosion of soil and sediment control for storm water runoff; however, they create the potential for increased, runoff and sediment load to the waters of Still Creek.

Implementation of Alternative A would contribute a minor adverse increment to the cumulative long-term, minor and adverse impacts on surface water quality.

Conclusion

Implementation of Alternative A would have a short-term negligible adverse impact and a long-term minor adverse impact. There would be long-term minor adverse cumulative impact to surface water quality.

Alternative B

Impact Analysis

The disturbance of roadside vegetation and excavation of soils to replace the culverts under the implementation of Alternative B would expose bare soil and increase erosion. BMPs as defined in the Maryland General National Pollution Discharge Elimination System (NPDES) permit would be utilized during construction to prevent erosion and sedimentation, such as the placement of silt fence, filter berms, and re-vegetation. Exposed soil areas would be re-vegetated within 7 or 14 calendar days,

depending on slope. Any water removed to dewater the culvert area would be pumped out and filtered prior to being released. The removal of the existing culverts and the streambed transitioning would disrupt the substrate at the bottom of the channels, and the adjacent shoulder soils. Approximately 170 linear feet of stream (surface water) impacts for revetment and streambed transitioning would occur. This would temporarily increase turbidity of the water, and degrade surface water quality. Reconstructed portions of the roadway would require the design and construction of storm water management features. Construction activities would cause short-term, minor, and adverse impacts to surface water quality. Alternative B would have a long-term beneficial impact to surface water quality by correcting existing scour issues, preventing additional sedimentation and erosion of the stream bank and bed, and, and implementing enhanced storm water management features.

Cumulative Impacts

Implementation of Alternative B would contribute a beneficial increment to the cumulative long-term, minor and adverse impacts on surface water quality. Some present and future actions such as the resurfacing of Baltimore Washington from Route 50 to Route 175 involves repaving and spot reconstruction of the mainline (north and southbound lanes) and entrance and exit ramps between the beginning of the Parkway and Jessup Road. (PMIS # 151204 or BAWA 1(1) 2(1)) Only ramps that have NPS maintenance responsibility will be repaved or reconstructed. Due to the size of the work area, the project and construction work may be divided up into several separate projects.

The *MD-193 Sector Plan* immediately adjacent to the park including the reconstruction of the MD-193 intersection with Kenilworth Avenue located at the northwest corner of Greenbelt Park. The proposed intersection would use an innovative design known as a Diverging Diamond which is thought to be more efficient and safer than the existing intersection. The plan also includes phased commercial and residential redevelopment, primarily to the north and east of Greenbelt Park. This project is in the planning stages and is unknown when construction and associated impacts could occur.

It is assumed the BMPs will be utilized for these projects to minimize erosion of soil and sediment control for storm water runoff; however, they create the potential for increased, runoff and sediment load to the waters of Still Creek. When combined with the long-term, beneficial impact of Alternative B there would be long-term, imperceptible adverse, cumulative impacts to surface water quality.

Conclusions

Alternative B would have short-term minor adverse impacts due to construction disturbances and long-term beneficial impacts to surface water quality by correcting existing scour issues, preventing additional sedimentation and erosion of the stream bank and bed, and implementing enhanced storm water management features. Implementation of Alternative B would contribute a beneficial increment to the cumulative long-term, minor, and adverse impacts to surface water quality.

Alternative C – Preferred Alternative

Impact Analysis

All of the impacts associated with the implementation of Alternative B would also be associated with the implementation of Alternative C. Construction activities would cause short-term, minor, and adverse impacts to surface water quality because although there would be ground disturbance, BMPs would be implemented to reduce erosion of the exposed soil and sedimentation of adjacent waters.

The implementation of Alternative C would cause long-term, beneficial impacts to surface water quality. Stream daylighting would result in a measureable long-term improvement to surface water quality. The term daylighting describes projects that deliberately expose some or all of the flow of a previously covered river, creek or storm water drainage. In short, daylighting projects usually remove a stream from an underground pipe and restore the waterway to open air and light. Stream daylighting can improve riparian buffer habitat and water quality within the streams and reduce flood impacts by increasing storage capacity of the floodplain over that of a culvert. Additional improvements to surface quality would result from the design and construction of storm water management features to treat the runoff from new impervious surfaces and reconstructed portions of the roadway.

Cumulative Impacts

Implementation of Alternative C would contribute a beneficial increment to the cumulative long-term, minor, and adverse impacts on surface water quality. Some present and future actions such as the resurfacing of Baltimore Washington Parkway and the MD-193 Sector plan that proposes reconstruction of the MD-193 intersection with Kenilworth Avenue located at the northwest corner of Greenbelt Park. The reconstruction of the MD-193 intersection with Kenilworth Avenue located at the northwest corner of Greenbelt Park. The proposed intersection would use an innovative design known as a Diverging Diamond which is thought to be more efficient and safer than the existing intersection. The plan also includes phased commercial and residential redevelopment, primarily to the north and east of Greenbelt Park. Despite the intensive development proposals, the plan highlights environmentally sustainable concepts including pedestrian/bike oriented facilities, a reduction of impervious surfaces, tree-banking sites, and other "green" infrastructure improvements intended to preserve, enhance and restore the natural environment. It is assumed the BMPs will be utilized for these projects to minimize erosion of soil and sediment control for storm water runoff. These projects could have long-term minor cumulative impacts to surface water by the additional storm water runoff containing suspended solids, solvents or petroleum constituent pollutants.

Conclusions

Alternative C would have short-term, minor, adverse impacts, and long-term beneficial impacts to surface water quality. Vehicle capacity would not be added to the project, so the amount of motorized vehicle-born pollutants entering the water would not increase. Implementation of Alternative C would contribute a beneficial increment to the cumulative long-term, minor adverse impacts to surface water quality

3.6 VEGETATION

Affected Environment

The study area is comprised of three vegetation communities, the mowed grass shoulder community, the wetland community and forested area. Immediately adjacent to the paved roadway are mowed grass roadway shoulders.

Dominant vegetation of the region is classified as oak–hickory–pine forest and southern floodplain forest. Wetland vegetation consists of eastern skunk cabbage (*Symplocarpus foetidus*), fowl mannagrass (*Glyceria striata*), perennial shallow sedges (*Cyperaceae*), swamp maple (*Acer rubrum*), cinnamon fern (*Osmundastrum cinnamomeum*), common greenbrier (*Smilax rotundifolia*), fescue grass (*Festuca*), and Japanese stiltgrass (*Microstegium vimineum*). The dominant vegetation consists of evergreens and areas of deciduous broad–leaved forests. The main forest cover is loblolly pine (*Pinus taeda*) and hardwood species include sweetgum (*Liquidambar styraciflua*), water oak (*Quercus nigra*), white ash (*Fraxinus americana*), yellow poplar (*Liriodendron tulipifera*) and swamp hickory (*Carya myristiciformis*). Species on bottomlands include green ash (*Fraxinus pennsylavanica*), sugarberry (*Celtis laevigata*), American sycamore (*Platanus occidentalis*) and American elm (*Ulmus Americana*) (McNab and Avers 1994). Exotic invasive plant species such as kudzu (*Pueraria lobata*), bush honeysuckle (*Lonicera x spp.)* and English ivy (*Hedera helix*) are a threat to biodiversity and ecosystem function in the Park as well. The National Park Service has vegetation monitoring and invasive eradication strategies for their Parks. Additionally, the Anacostia Watershed Society leads a stewardship program focused on controlling exotic invasive plant species in parks and natural areas including Greenbelt Park. The many hours of volunteer service are crucial to the success of the program.

Environmental Consequences

Methodology

Available information on vegetation and vegetative communities potentially impacted by the proposed alternatives was compiled during the wetland delineation. The Natural Heritage Database was also accessed to compile lists of vegetation found in the project area. Predictions about short–term and long–term impacts to vegetation were based on previous experience with projects of similar scope and vegetative characteristics. Analyses of the potential intensity of impacts on vegetation were derived from the available information on the Park and the professional judgment of the Park resource specialists.

Definition of Intensity Levels:

Negligible	Individual plants would be affected, but changes in the natural function and character of the native vegetation communities in terms of growth, abundance, reproduction, distribution, structure, or diversity of native species would not be measurable or perceptible.
Minor	Effects on multiple plants would be measurable or perceptible. However, the natural function and character of native vegetation communities in terms of growth, abundance, reproduction, distribution, structure, or diversity of native species would only be perceptible in small localized areas.

Moderate	A change would occur in the natural function and character of the native vegetation communities in terms of growth, abundance, reproduction, distribution, structure, or diversity of native species, but not to the extent that vegetation community properties (i.e., size, integrity, or continuity) change.
Major	Effects on native vegetation community properties would be readily apparent and would substantially change the natural function and character of the vegetation community.

Definition of Duration:

The duration for short-term impacts to vegetation was determined to be two years because the construction is expected to be completed in one year, and vegetation would fully re-establish in two years.

Short-term: Effects lasting less than two years
Long-term: Effects lasting longer than two years

Alternative A

Impact Analysis

Alternative A would not require any direct impacts to wetland vegetation, or the removal of any trees from forested areas. Drivers avoiding deteriorated pavement areas, particularly at the pull-offs, may drive and park vehicles on the grass areas adjacent to the road. Repeated driving on the vegetation would eventually destroy vegetation in these areas. Deteriorated roadways and parking areas would eventually develop drainage issues that could result in erosion, sedimentation, and a loss of vegetation. Alternative A would have short-term negligible adverse impacts on vegetation. Long-term impacts to vegetation would become minor and adverse as conditions worsen.

Cumulative Impacts

Other past, present and future actions would have no direct impact on the vegetation in Greenbelt Park but would result in less vegetation in the surrounding areas due to development. Loss of adjacent vegetation could impact long-term biodiversity and vegetative health within the Park. The impact of adjacent development may be reduced if proposed conservation measures are implemented. Alternative A would contribute an imperceptible increment to the cumulative long-term, minor, and adverse impacts to vegetation.

Conclusions

Implementation of Alternative A would have short-term negligible adverse impacts and long-term, minor adverse impacts to vegetation. Implementation of Alternative A would contribute an imperceptible adverse increment to the cumulative long-term, minor, and adverse impacts to vegetation.

Alternative B

Impact Analysis

Under Alternative B, approximately 0.8 acres of vegetation (including wetland vegetation) would be temporarily impacted around the culverts during replacement; however, these areas would be re-vegetated using an NPS approved wetland plants and native seed mix. The grasses impacted would be replaced with NPS-approved native species based on MDE Standards and Specifications for Soil Erosion and Sediment Control; Also under Alternative B, approximately 0.068 acres of vegetation would be temporarily impacted due to the installation of the temporary detour road; however, these areas would be re-vegetated using NPS-approved plants, trees and/or native seed mix or sod. Therefore Alternative B would have a short-term, minor and adverse impact and a long-term negligible and adverse impact to vegetation. Long-Term impacts would be mitigated through the use of native plantings and continued monitoring and eradication of exotic and/or invasive species by NPS.

Cumulative Impacts

Other past, present and future actions would have no direct impact on the vegetation in Greenbelt Park but would result in less vegetation in the surrounding areas due to development. Loss of adjacent vegetation could impact long-term biodiversity and vegetative health within the Park. The impact of adjacent development may be reduced if proposed conservation measures are implemented. Alternative B would contribute an imperceptible increment to the cumulative long-term, minor, and adverse impacts to vegetation.

Conclusions

Implementation of Alternative B would result in short-term, minor, and adverse impacts, and long-term, negligible adverse impacts on vegetation. Alternative B would contribute an imperceptible, adverse increment to the cumulative long-term, minor, and adverse impacts to vegetation.

Alternative C – Preferred Alternative

Impact Analysis

All of the impacts associated with the implementation of Alternative B would also be associated with the implementation of Alternative C. Additional temporary impacts to vegetation, particularly wetland vegetation, would occur at the bridge location due to construction equipment access and a larger construction footprint; this equates to approximately 2.1 acres of total disturbed vegetation. In the long-term stream daylighting would produce a measureable improvement to vegetation. The term daylighting describes projects that deliberately expose some or all of the flow of a previously covered river, creek or storm water drainage. In short, daylighting projects usually remove a stream from an underground pipe and restore the waterway to open air and light. Stream daylighting can improve riparian vegetation and create a wider and more diverse riparian buffer close to the stream's edge. All of the vegetation, grasses impacted would be replaced with NPS-approved native species plants, trees and/or native seed mix or sod based on MDE Standards and Specifications for Soil Erosion and Sediment Control.

The implementation of Alternative C would result in short-term minor and adverse impacts due to temporary construction disturbance. Long-term beneficial impacts to vegetation would occur due to the more-natural restoration of Still Creek and the careful rehabilitation of disturbed areas using native vegetation and careful monitoring by NPS to ensure the eradication of exotic/invasive species.

Cumulative Impacts

Other past, present and future actions would have no direct impact on the vegetation in Greenbelt Park but would result in less vegetation in the surrounding areas due to development. Loss of adjacent vegetation could impact long-term biodiversity and vegetative health within the Park. The impact of adjacent development may be reduced if proposed conservation measures are implemented. Alternative B would contribute a beneficial increment to the cumulative long-term, minor, and adverse impacts to vegetation.

Conclusions

Implementation of Alternative C would result in short-term, minor, adverse impacts and long-term beneficial impacts to vegetation. Implementation of Alternative C would contribute a beneficial increment to the cumulative long-term, minor, and adverse impacts to vegetation.

3.7 WILDLIFE AND WILDLIFE HABITAT

Affected Environment

Wildlife habitat in the study area is comprised of several types. Immediately adjacent to the roadway is a mowed grassed corridor. The noise from the roadway and disruption through regular mowing make this marginal wildlife habitat. Adjacent to the mowed grass corridor is a palustrine, forested, broad-leaved deciduous temporarily flooded wetland habitat and narrow stream valleys with moderately sloped flanks to steep ridges of mixed pine forest. This habitat extends along both sides of the roadway. This habitat is exceptional for wildlife, as there is limited contact and disturbance from human activities. It is utilized by species such as whitetail deer (*Odocoileus virginianus*), chipmunk (*Tamias striatus*), red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), cottontail rabbit (*Sylvilagus floridanus*), gray squirrel (*Sciurus carolinensis*), flying squirrel (*Glaucomys volans*), white-footed mouse (*Peromyscus leucopus*), skunk (*Mephitis mephitis*), eastern mole (*Scalopus aquaticus*), beaver (*Castor Canadensis*), woodchuck (*Marmota monax*), and little brown bat (*Myotis lucifugus*). Aquatic habitat in the study area is primarily in the form of ditches/stream channels. This habitat is utilized by turtles, snakes, migratory water birds, macroinvertebrates and fish. According to the 2004 Maryland Biological Stream Survey, the types of fish found in Still Creek include: blacknose dace (*Rhinichthys atratulus)*, longnose dace (*Rhinichthys catarctae*), bluegill (*Lepomis macrochirus*), creek chub (*Semotilus atromaculatus*), cutlips minnow (*Exoglossum maxillingua*), goldfish (*Carassius auratus auratus*), and largemouth bass (*Micropterus salmoides*). Macroinvertebrates found in Still Creek include: Hydrophilidae (*Hydrophilius piceus*) aquatic beetle, Acinonyx (*Natica aynonyx*) snail, and Cricotopus (*Cricotopus trifasciatus*) non-biting midges/insects.
Additionally, a catadromous species the American eel (*Anguilla rostrata*) was found in Still Creek. This is a species that lives in fresh water and migrates to the Sargasso Sea (a region of Sargassum or seaweed in the Atlantic Ocean) to lay eggs, where the larvae use the sargassum as cover from predation until they mature.

Environmental Consequences

Methodology

Predictions about short-term and long-term impacts to wildlife and wildlife habitat were based on previous experience with projects of similar scope and characteristics. Analyses of the potential intensity of impacts on vegetation were derived from the available information and the professional judgment of the resource specialists.

Definition of Intensity Levels:

Negligible	There would be no observable or measurable impacts to native species, their habitats, or the natural processes sustaining them.
Minor	Impacts on native species, their habitats, or the natural processes sustaining them would be detectable. Occasional responses by some individuals to disturbance would be expected, but without interference to feeding, reproduction, resting, or other factors affecting population levels. Small changes to local population numbers, population structure, and other demographic factors might occur. However, some impacts might occur during critical reproduction periods for a species, but would not result in injury or mortality. Sufficient habitat in the Park would remain functional to maintain the viability of the species in the Park.
Moderate	Impacts on native species, their habitats, or the natural processes sustaining them would be detectable. Frequent responses to disturbance by some individuals would be expected, with some adverse impacts to feeding, reproduction, resting or other factors affecting local population levels. Some impacts might occur during critical periods of reproduction or in key habitats in the Park and result in harassment, injury, or mortality to one or more individuals. However, sufficient population numbers or habitat in the Park would remain functional to maintain the viability of the species in the Park.
Major	Impacts on native species, their habitats, or the natural processes sustaining them would be detectable. Frequent responses to disturbance by some individuals would be expected, with adverse impacts to feeding, reproduction, or other factors resulting in a decrease in park population levels. Impacts would occur during critical periods of reproduction or in key habitats in the Park and result in direct mortality or loss of habitat that might affect the viability of a species in the Park. Local population numbers, population structure, and other demographic factors might experience large declines.

Definition of Duration:

The duration for short-term impacts to wildlife and wildlife habitat was determined to be two years because the construction is expected to be completed in one year, and habitat would re-establish in a year. Long-term impacts would last beyond the recovery period after construction is completed, and could be permanent.

Short-term: Effects lasting less than two years
Long-term: Effects lasting longer than two years

Alternative A

Impact Analysis

Alternative A would not require any direct impacts to wildlife or wildlife habitat. Drivers avoiding deteriorated pavement areas, particularly at the pull-offs, may drive and park vehicles on the grass areas adjacent to the road. This would eventually result in a loss of these areas that are used as habitat by some wildlife, including birds and deer. Deteriorated roadways and parking areas would eventually develop drainage issues that could result in erosion, sedimentation and a loss of habitat. Alternative A would have short-term negligible adverse impacts on wildlife and wildlife habitat. Long-term impacts would become minor and adverse as conditions worsen.

Cumulative Impacts

Development of surrounding areas for transportation, commercial, and residential purposes would reduce the availability of suitable wildlife habitat nearby and increase the demand for remaining habitat in Greenbelt Park, thereby reducing habitat quality. Noise related to nearby development would further reduce the quality of habitats and impact wildlife within the Park. Remaining wildlife populations would become more isolated, less diverse, and less healthy. Alternative A would contribute an imperceptible adverse increment to the cumulative long-term, minor, adverse impacts to wildlife and wildlife habitat.

Conclusions

Implementation of Alternative A would have short-term negligible adverse impacts and long-term, minor adverse impacts to wildlife and wildlife habitat. Implementation of Alternative A would contribute an imperceptible adverse increment to the cumulative long-term, minor, and adverse impacts to wildlife and wildlife habitat.

Alternative B

Impact Analysis

Noise from construction activities as a result of Alternative B such as milling of the pavement, paving, and running of construction equipment would disrupt wildlife in the area. Construction would occur only during the day, limiting disruptions to wildlife from artificial light at night. Wildlife would be temporarily impacted by construction noise and vibration. Potential dewatering of the culvert areas would negatively impact any aquatic species present in the water or substrate. Wetland and aquatic wildlife and wildlife habitat may be temporarily impacted by the culvert replacement, temporary access, and stream diversion during construction activities. Small changes to local population numbers might occur. Repairs to the existing scour hole/erosion would provide better stream connectivity for aquatic organisms after construction, and the proposed revegetation of disturbed areas using native plants would improve the long-term quality of wildlife habitat. Alternative B results in short-term minor, adverse impacts and long-term beneficial impacts to wildlife and wildlife habitat.

Cumulative Impacts

Development of surrounding areas for transportation, commercial, and residential purposes would

reduce the availability of suitable wildlife habitat nearby and increase the demand for remaining habitat in Greenbelt Park, thereby reducing habitat quality. Noise related to nearby development would further reduce the quality of habitats and impact wildlife within the Park. Remaining wildlife populations would become more isolated, less diverse, and less healthy. Alternative B would contribute a beneficial increment to the cumulative long-term, minor, adverse impacts to wildlife and wildlife habitat.

Conclusions

Alternative B results in short-term minor, adverse impacts and long-term beneficial impacts to wildlife and wildlife habitat. Alternative B would contribute a beneficial increment to the cumulative long-term, minor, and adverse impacts to wildlife and wildlife habitat.

Alternative C – Preferred Alternative

Impact Analysis

All of the impacts and mitigations associated with the implementation of Alternative B would also be associated with the implementation of Alternative C. Additionally, ground disturbance to construct the vegetated swales would temporarily reduce the amount of mowed grass habitat available; however, this habitat would return after construction is completed. The construction of the bridge and flanking relief culverts would create a temporary impact to aquatic wildlife and habitat from the stream dewatering and diversion and small changes to local population numbers might occur. Ultimately the bridge crossing would be beneficial to aquatic wildlife by allowing for fish and aquatic organism passage that does not currently exist. Connectivity of the floodplain would also benefit wildlife passage. Stream daylighting would produce a measureable improvement to aquatic habitat. The term daylighting describes projects that deliberately expose some or all of the flow of a previously covered river, creek or storm water drainage. In short, daylighting projects usually remove a stream from an underground pipe and restore the waterway to open air and light. Stream daylighting can improve riparian buffer vegetation growth and habitat as well as aquatic habitat for fish, aquatic insects and other aquatic wildlife. Daylighting may also help to improve ecosystems downstream of the crossing.

Implementation of Alternative C would result in short-term minor, adverse impacts and long-term beneficial impacts to wildlife and wildlife habitat.

Cumulative Impacts

Development of surrounding areas for transportation, commercial, and residential purposes would reduce the availability of suitable wildlife habitat nearby and increase the demand for remaining habitat in Greenbelt Park, thereby reducing habitat quality. Noise related to nearby development would further reduce the quality of habitats and impact wildlife within the Park. Remaining wildlife populations would become more isolated, less diverse, and less healthy. Alternative C would contribute a beneficial increment to the cumulative long-term, minor, adverse impacts to wildlife and wildlife habitat.

Conclusions

Implementation of Alternative C would result in short-term, minor, and adverse impacts and long-term beneficial impacts to wildlife and wildlife habitat. Alternative C would contribute a beneficial increment to the cumulative long-term, minor adverse impacts to wildlife and wildlife habitat.

3.8 VISUAL RESOURCES

Affected Environment

As mandated under the Organic Act, all visual resources and scenic quality within National Parks are to be conserved and managed in an unimpaired condition for the enjoyment of future generations. Visual resources consist of landform (topography and hydrology) and land cover (vegetation, buildings, roads, etc.). In the evaluation of visual resources, both the visual character of the site and the quality of the viewshed are analyzed. A viewshed comprises the limits of the visual environment associated with the proposed action including the viewsheds within, into, and out of the site.

Visual Resources within Greenbelt Park fall into two general zones- the natural zone and the developed zone. The natural zone consists of forest and wetlands including Still Creek. Proposed modifications to the natural zone, including the clearing of vegetation and modifications to the crossing over Still Creek, have the potential to impact the Park's scenery and visual resources.

The developed zone includes the park roadway system, pull-offs, parking lots, park headquarters, picnic areas, and the vegetated roadway shoulders. The design of specific roadway components, including guardrails, abutments, headwalls, storm water management features, and riprap, should be specified in a visually compatible manner in order to avoid unacceptable impacts to the Park's visual resources.

Environmental Consequences

Methodology

Predictions about short-term and long-term impacts to visual resources were based on previous experience with projects of similar scope and characteristics. Analyses of the potential intensity of impacts were derived from the available information and the professional judgment of the resource specialists.

Definition of Intensity Levels:

Negligible	No short-term or long-term changes to the views of the right-of-way would occur. Some transient (temporary) visual changes may occur, caused by temporary alterations in vehicular traffic patterns or by the movement of equipment.
Minor	Changes to visual resources would be short-term and non-substantive only, and would be limited to the immediate right-of-way. Only limited mitigation or interpretive measures would be required.
Moderate	Short-term changes to visual resources may occur both within and beyond the right-of-way. Long-term changes would be limited to the roadway prism.

Major Both short-term and long-term changes may occur both within and beyond the roadway prism, and some of these changes may be substantive throughout.

Definition of Duration:

The duration for short-term impacts to visual resources was determined to be one year because the construction is expected to be completed in one year. Long-term impacts would extend beyond the end of construction, and could be permanent.

Short-term: Effects lasting less than one year
Long-term: Effects lasting longer than one year

Alternative A

Impact Analysis

Visible deterioration of the Park's developed zone, including drainage structures, guardrails, and roadway surfaces, would increase incrementally. The road is currently exhibiting moderate to severe fatigue cracking and although periodic maintenance such as sealing roadway cracks and pothole repairs will continue in the Park, the visual aesthetics of the developed zone created by pavement cracking and settling detracts from the visual experience by not providing a visibly appealing or uniformly smooth surface course for automobiles and/or bicyclists. Impacts to Still Creek and its floodplain resulting from the inadequate culverts, including stream bed scour and stream bank erosion, would be exacerbated and would extend farther away from the developed zone and into the natural zone. Short-term impacts from Alternative A would be minor and adverse. Long-term impacts would be minor and adverse to visual resources.

Cumulative Impacts

Alternative A would continue to contribute a noticeable adverse increment to the cumulatively long-term, minor, and adverse impacts to visual resources of the Park as a whole. Other contributing factors include the development of adjacent areas outside of the Park boundaries, diminished views due to air quality issues, light pollution, and other development-related impacts.

Conclusions

Impacts from Alternative A would be short-term, minor and adverse, and long-term, minor, and adverse. Alternative A would continue to contribute a noticeable adverse increment to the cumulatively long-term, minor and adverse impacts to visual resources.

Alternative B

Impact Analysis

Deteriorated portions of the developed zone, including drainage structures, guardrails and roadway surfaces, would be restored to their original condition resulting in an improved visual condition. Inadequacies of the existing culvert functionality would not be corrected, resulting in continued

floodplain, stream bank, and stream bed impacts extending into the natural zone. The culverts and associated embankments would be vulnerable to repeated flood damage. Short-term impacts to visual resources would be beneficial as the visual conditions of the developed zone would improve steadily throughout the duration of construction. Long term impacts would be minor and adverse as the deficient culverts continue to cause scour, erosion, and other visually detrimental effects within the Park's developed and natural zones.

Cumulative Impacts

Alternative B would contribute a noticeable adverse increment to the cumulatively long-term, minor, and adverse impacts to visual resources of the Park as a whole. Other contributing factors include the development of adjacent areas outside of the Park boundaries, diminished views due to air quality issues, light pollution, and other development-related impacts.

Conclusions

Short-term impacts to visual resources resulting from Alternative B would be beneficial; however, long-term impacts would be minor and adverse. Alternative B would contribute a noticeable adverse increment to the cumulatively long-term, minor, and adverse impacts to visual resources.

Alternative C – Preferred Alternative

Impact Analysis

Deteriorated portions of the developed zone, including drainage structures, guardrails and roadway surfaces, would be rehabilitated resulting in an improved visual condition. Certain features within the developed zone, including guardrails and drainage structures, would be upgraded to improve functionality and/or safety, but these changes would be specified to avoid adverse visual impacts. Inadequacies of the existing Still Creek culvert functionality would be corrected resulting in improved visual conditions in the developed and natural zones. Short-term impacts to visual resources would be minor and range from adverse (due to disturbance and vegetation clearing in the natural zone) to beneficial as the visual conditions of the developed zone would improve steadily throughout the duration of construction. Long term impacts would be beneficial after rehabilitation of the developed areas and the reestablishment of vegetation and other stream bank and stream bed improvements within the Park's natural zones.

Cumulative Impacts

Alternative C would contribute a noticeable beneficial increment to the cumulatively long-term, minor, and adverse impacts to visual resources of the Park as a whole. Other contributing factors include the development of adjacent areas outside of the Park boundaries, diminished views due to air quality issues, light pollution, and other development-related impacts.

Conclusions

Short-term impacts to visual resources resulting from Alternative C resources would be minor and range from adverse to beneficial. Long term impacts would be beneficial. Alternative C would

contribute a noticeable beneficial increment to the cumulatively long-term, minor, and adverse impacts to visual resources of the Park as a whole.

3.9 VISITOR USE AND EXPERIENCE

Affected Environment

Greenbelt Park is often called an urban oasis based on its proximity to Washington D.C. and surrounding suburban cities. The Park is also adjacent to the historic city of Greenbelt, Maryland. The proximity to the Nation's Capital brings both international and national visitors to the Park. Annually, nearly 1,000 people visit the Park.

For visitors, the Park offers recreational opportunities such as camping, picnicking, hiking trails and biking. The forested surroundings, meandering two-lane access roads, and rustic amenities provide a rural experience within an otherwise developed urban landscape.

The Greenbelt campground is known for its affordability, peaceful surroundings and NPS hospitality and is open year round. A number of Park partnerships promote activities and enhance visitor experience. Bicycle groups utilize the park for training and for races. The Greenbelt campground periodically hosts special events, such as the Girl Scouts 100th Anniversary weekend held in June, 2012. Bridging the Watershed (BTW) is an outreach program of the Alice Ferguson Foundation, in partnership with the NPS and area schools whose purpose is to provide meaningful, educational experiences that connect students to their place in the natural and cultural world. The key experience in BTW is students visiting National Parks in their area and providing a meaningful watershed field experience.

Methodology

NPS *Management Policies* 2006 state that the enjoyment of Park resources and values by the people of the United States is part of the fundamental purpose of all parks and that the NPS is committed to providing appropriate, high-quality opportunities for visitors to enjoy the parks. Part of the purpose of the Park is to offer opportunities for recreation, education, inspiration and enjoyment.

For the purposes of this EA, the analysis of Visitor Use and Experience is limited to the developed areas within and surrounding the park, defined previously as including the park roadway system, pull-offs, parking lots, park headquarters, picnic areas, and the vegetated roadway shoulders. These developed areas are a crucial component of the Visitor Experience, facilitating the enjoyment of all Park resources, within and outside the developed zone. It should be noted, however, that the Park roads and parking lots themselves are a source of enjoyment for visitors hoping to immerse themselves in a minimally developed environment that contrasts starkly to the surrounding urbanized area. Factors impacting visitor enjoyment of park developed areas include: increased travel times caused by detours; inability to access certain park facilities during construction; visual/physical impacts of deteriorated versus improved roadway features; and the implementation of context-sensitive rehabilitation.

Available information regarding visitor use was compiled by talking to Park staff and the Park website.

Information regarding visitor counts was compiled by researching NPS visitor statistics. Predictions about short-term and long-term impacts to visitor use and experience were based on previous experience of projects of similar scope and characteristics. Analyses of the potential intensity of impacts to visitor use and experience were derived from the available information and best professional judgment.

Definition of Intensity Levels:

Negligible	Changes in visitor use and/or experience would be below or at the level of detection. The visitor would not likely be aware of the effects associated with the alternative.
Minor	Changes in visitor use and/or experience would be detectable, although the changes would be slight. The visitor would be aware of the effects associated with the alternative, but the effects would be slight.
Moderate	Changes in visitor use and/or experience would be readily apparent. The visitor would be aware of the effects associated with the alternative and would likely express an opinion about the changes during incidental conversations with Park staff, friends, family, and through social media.
Major	Changes in visitor use and/or experience would be readily apparent and severely adverse. The visitor would be aware of the effects associated with the alternative . In addition to expressing a strong opinion about the changes during incidental conversations, the visitor may elevate their concerns by contacting Park management, the media, politicians, environmental organizations, etc.

Definition of Duration:

The construction of an action alternative would most likely be one year; therefore the short-term duration is one year. Long-term impact duration would extend beyond the construction of the project and could be permanent.

Short-term: Effects lasting one year or less
Long-term: Effects lasting beyond one year

Environmental Consequences

Alternative A

The roadway would continue to deteriorate, creating a riding surface that is not enjoyable to bicyclists or motorists. The sealed cracks and patched potholes would detract from enjoyment of the roadway. The parking areas at the Park headquarters, Sweetgum, Holly and Laurel picnic areas would also continue to deteriorate. As this is the first contact opportunity for the NPS with visitors, visitors would likely express a negative opinion regarding the condition of the developed portions of the Park including roads and parking lots. Short-term impacts from Alternative A would be minor and adverse as the developed zone of the Park continues to deteriorate at a slow rate. Long-term impacts would be moderate and adverse to visitor use and experience as the incremental deterioration of roadways and parking lots becomes increasingly noticeable to visitors.

Cumulative Impacts

Alternative A would continue to contribute a noticeable adverse increment to the cumulatively long-

term, moderate, and adverse impacts to visitor use and experience. Other cumulative factors affecting Visitor Use and Experience include development of the areas surrounding the park for commercial, residential, and transportation related purposes which would impact access to the Park, contribute to reduced air and water quality, and increase ambient noise. Increased development would likely contribute to additional Park visitation which would result in increased traffic and visitor use impacts.

Conclusions

Impacts from Alternative A would be short–term, minor and adverse, and long–term, moderate, and adverse. Alternative A would contribute a minor adverse increment to the cumulatively long–term, moderate, and adverse impacts to visitor use and experience.

Alternative B

During construction, visitor access to features and facilities along Good Luck Road would be disrupted. Access to the picnic areas would be restricted while pavement activities are completed for the parking area. Visitors would likely express a negative opinion about lane closure and detour delays. During construction, impacts would be short–term, minor, and adverse. Construction duration would be shorter than Alternative C; however, cancellation or rescheduling of bike races or other group events within the Park may be necessary.

New pavement would provide a more enjoyable driving experience for visitors traveling in both vehicles and bicycles. Therefore, long–term impacts from Alternative B would be beneficial.

Cumulative Impacts

Other cumulative factors affecting Visitor Use and Experience include development of the areas surrounding the park for commercial, residential, and transportation related purposes which would impact access to the Park, contribute to reduced air and water quality, and increase ambient noise. Increased development would likely contribute to additional Park visitation which would result in increased traffic and visitor use impacts. The adverse impacts of these other actions would be somewhat offset by the beneficial impacts of Alternative B. Alternative B would contribute a noticeable beneficial increment resulting in cumulatively long–term, negligible, and adverse impacts to visitor use and experience.

Conclusions

Impacts from Alternative B would be short–term, minor, and adverse, and also long–term beneficial. Alternative B would contribute a noticeable beneficial increment to the cumulatively long–term, negligible, and adverse impacts to visitor use and experience.

Alternative C – Preferred Alternative

During construction, visitor access to features and facilities along Good Luck Road would be disrupted. Access to the picnic areas would be restricted while pavement activities are completed for the parking area. Visitors would likely express a negative opinion about lane closure and detour

delays. During construction, impacts would be short-term, minor, and adverse. The duration of the lane and road closures would likely be longer in order to construct the bridge and expanded paved shoulders. The longer construction duration could result in cancellation or rerouting of scheduled bike races; however, once construction is completed, wider shoulders would provide a more enjoyable experience for cyclists, as they would be further away from vehicle traffic. NPS and FHWA would specify context-sensitive designs for the bridge abutments, minimize riprap placement, and implement context sensitive solutions to preserve the character of the Park's developed areas. Visitors would be able to safely cross Still Creek. During construction, impacts would be short-term, minor, and adverse. Long-term impacts as a result of the implementation of Alternative C would be beneficial.

Cumulative Impacts

Other cumulative factors affecting Visitor Use and Experience include development of the areas surrounding the park for commercial, residential, and transportation related purposes which would impact access to the Park, contribute to reduced air and water quality, and increase ambient noise. Increased development would likely contribute to additional Park visitation which would result in increased traffic and visitor use impacts. The adverse impacts of these other actions would be somewhat offset by the beneficial impacts of Alternative C. Alternative C would contribute an appreciable beneficial increment resulting in cumulatively long-term, negligible and adverse impacts to visitor use and experience.

Conclusions

Impacts from Alternative C would be short-term, minor, and adverse, and also long-term and beneficial. Alternative B would contribute a noticeable beneficial increment to the cumulatively long-term, negligible, and adverse impacts to visitor use and experience.

3.10 PARK OPERATIONS

Affected Environment

Park maintenance and operations include daily activities required to ensure the proper functioning, repair, and rehabilitation of the Park's assets and infrastructure, including tasks related to buildings, trails, roads, utilities, campgrounds, and on-going operational monitoring. The five-mile segment of Greenbelt, including parking areas, is currently maintained by the NPS. Maintenance of these areas includes pavement repairs such as crack sealing and pothole patching, mowing of the vegetated shoulders and recovery area, and re-striping of the pavement markings.

Park operations also includes protection and visitor services and interpretation activities related to providing visitors a safe experience, emergency services, and law enforcement; and providing visitors with the desired educational experience. Protection and visitor services in the project area include patrols by Park rangers.

Environmental Consequences

Methodology

Park operations refer to the ability of park staff to maintain park infrastructure, protect and preserve vital resources, and provide for a safe high-quality visitor experience.

Available information regarding Park operations was compiled by talking to Park staff. Predictions about short-term and long-term impacts to Park operations were based on previous experience of projects of similar scope and characteristics. Analyses of the potential intensity of impacts to operation were derived from the available information and best professional judgment.

Definition of Intensity Levels:

Negligible	Park operations would not be impacted or the impact would not have a noticeable or measurable impact on Park or agency operations.
Minor	Impacts would be noticeable and would result in a measurable, but small, change in park operations. Any required changes in Park staffing and funding would be accommodated within normal budget cycles and expected annual funding without appreciably affecting other operations within the Park. Current levels of funding and staffing would not be reduced or increased, but priorities would need to be changed.
Moderate	Impacts would be readily apparent and would result in a substantial change in park operations that would be noticeable to staff and the public. Required changes in Park staffing and/or funding would not be accommodated within expected annual funding and would measurably affect other operations within the Park by shifting staff and funding levels between operational divisions. Increases or decreases in staff and funding would be needed or other park operations would have to be reduced and/or priorities changed.
Major	Impacts would be readily apparent and would result in a substantial change in park operations that would be noticeable to staff and the public and would be markedly different from existing operations. These changes in Park staffing and/or funding would not be accommodated by expected annual funding and would require the Park to readdress its ability to sustain current Park operations. Increases or decreases in staff and funding would be needed and/or other park programs would have to be substantially changed or eliminated.

Definition of Duration:

Construction would most likely be one year or less. The duration for short-term impacts would be two years because any impacts associated with construction would last only until all construction related actions were completed. Long-term impacts would extend beyond one year, and could be permanent.

Short-term: Effects lasting one year or less
Long-term: Effects lasting beyond one year

Alternative A

Impact Analysis

The Park would continue with ongoing maintenance and administrative operations under the no action alternative. Pavement would continue to deteriorate, which would cause increased maintenance to patch potholes and fill cracks in the pavement. The increase in maintenance activities would expend additional funding and time. Alternative A would have both a short-term, minor, and adverse impact

and a long–term, moderate, and adverse impact to park operations.

Cumulative Impacts

Under Alternative A, maintenance activities for the road and culverts would increase over time. Continued deterioration of the culverts and pavement in combination with higher traffic counts due to increased local development may also create a safety concern. Future severe weather events would contribute to adverse cumulative conditions. Implementation of Alternative A would contribute a noticeable, adverse increment to the cumulative long–term, moderate, and adverse impacts on park operations.

Conclusions

Alternative A would have a short–term, minor, adverse impact and a long–term, moderate, and adverse impact to park operations. Implementation of Alternative A would contribute a noticeable, adverse increment to the cumulative long–term, moderate, and adverse impacts on park operations.

Alternative B

Impact Analysis

The removal of existing pavement and placement of new pavement would beneficially impact park operations, as roadway conditions would be improved and maintenance needs (both time and expenditures) would decrease. The replacement of existing signs would decrease the need to replace and/or maintain these signs for the near future. The new culverts would also have a longer life span, and would decrease maintenance needs. Therefore, Alternative B would have a short–term minor, adverse impact due to temporary construction activities, and a long–term beneficial impact to park operations.

Cumulative Impacts

Implementation of Alternative B would contribute a noticeable, beneficial increment to the cumulative long–term, minor, and adverse impacts on park operations. Higher traffic counts due to increased local development may create a safety concern. Future severe weather events would contribute to adverse cumulative conditions.

Conclusions

Alternative B would have a short–term, minor, adverse impact and a long–term beneficial impact to park operations. Implementation of Alternative B would contribute a noticeable, beneficial increment to the cumulative long–term, minor, and adverse impacts on park operations.

Alternative C – Preferred Alternative

Impact Analysis

All of the impacts associated with the implementation of Alternative B would also be associated with the implementation of Alternative C. In addition, the construction of vegetated swales would change

the conditions and topography of the recovery area, which may impact mowing. The conversion of a portion of the mowed grass clear zone to pavement would reduce the area that requires mowing, but would increase the amount of pavement requiring maintenance. The construction of the new bridge would require inspections and maintenance for staff to maintain safety standards. Additional demands would be placed on park staff during construction for contractor coordination and management of traffic disruptions. Under Alternative C, the impacts would be short-term moderate and adverse and long-term beneficial to park operations.

Cumulative Impacts

Future traffic on the bridge and road would continue to contribute to a potential increase in maintenance and safety concerns for the park. Other cumulative factors affecting park operations include development of the areas surrounding the park for commercial, residential, and transportation related purposes which could impact access to the Park. Implementation of Alternative C would contribute a noticeable, beneficial increment to the cumulative long-term, minor, and adverse impacts on park operations.

Conclusions

Alternative C would have short-term moderate and adverse, and long-term beneficial impacts to park operations. Implementation of Alternative C would contribute a noticeable, beneficial increment to the cumulative long-term, minor, and adverse impacts on park operations.

3.11 TRAFFIC OPERATIONS

Affected Environment

Due to the construction activities for the project the build alternatives (Alternatives B and C), Park Central Road would have periodic closures and a detour. The Park has identified the paved bike trail located at the southern end of the park near Good Luck Road as a temporary alternate entrance to provide access for park visitors and campground visitors during the construction period. Park and campground visitors would be required to take the three-mile detour route to the Park's south entrance on Good Luck Road (See Figure 7). This detour should take approximately seven to ten minutes. Good Luck Road borders the southern portion of the Park and is a 4 lane undivided country road with a 35 mph posted speed limit. The bike trail would be temporarily reconditioned and widened to accommodate the detour traffic. The segment of Good Luck Road adjacent to the south park entrance is designated as a school zone with an intermittent 25 mph speed limit flashing beacon when school is in session. Required intersection sight distance is not provided at the Good Luck Road and south park entrance intersection. Since redesign of the south park entrance intersection is not in the scope of the project, possible solutions for speed limit and sight distance traffic concerns would be: trimming vegetation that is obstructing sight distance on the north side of Good Luck Road; maintaining the school zone beacon flashing light during the construction period; including a W3-5 sign (reduce speed limit ahead: 25 mph) as part of the work zone temporary traffic control; installing a driver feedback sign to measure and display vehicle speed; and installing warning signs to alert drivers of stop condition ahead. Permanent improvements would include installation of a stop sign and a stop bar at the park exit onto Good Luck Road.

Environmental Consequences

Methodology

Available information regarding visitor counts was compiled by researching NPS visitor statistics. Predictions about impacts were based on previous experience of projects of similar scope and characteristics. Analyses of the potential intensity of impacts to safety were derived from the available information on the Park and best professional judgment.

Definitions of Intensity:

Negligible	The impact would be a change that would not be perceptible or would be barely perceptible by roadway users.
Minor	The impact would have an adverse change to travel times. The impact would be noticeable, but would result in little inconvenience or benefit to roadway users.
Moderate	The impact would impact the travel time of a large number of roadway users and would result in a noticeable change in travel time, convenience, or benefit.
Major	There would be a substantial impact on the travel time of a large number of roadway users and would result in a highly noticeable change in travel times, convenience, or benefit.

Definition of Duration:

Short–term impacts would be immediate during construction; which would last no longer than one year. Long–term impacts would be those persisting or resulting following implementation of the alternative, lasting one year or longer.

Short–term: Effects lasting one year or less
Long–term: Effects lasting beyond one year

Alternative A

Impact Analysis

Maintenance of park roads and associated culverts would continue, but eventually the culverts would fail. This failure would require closure of the road and emergency repairs. The detours and lane closures associated with the repairs could happen at any time of the year. Therefore, the impacts of Alternative A to traffic operations would be minor, adverse, for the short–term and long–term.

Cumulative Impacts

Implementation of Alternative A would contribute a noticeable, adverse increment to the cumulative long–term, minor, and adverse impacts on traffic operations.

Conclusions

Alternative A would have a long–term minor, adverse impact to traffic operations. Implementation of

Alternative A would contribute a noticeable, adverse increment to the cumulative long-term, minor, and adverse impacts on traffic operations.

Alternative B

Impact Analysis

Alternative B would have a short-term, moderate, and adverse impact to traffic operations due to lane closures and traffic delays.

Once construction is completed, and Park Central Road is opened to traffic, the improved driving surface of the roadway would allow motorists to drive at a consistent speed. Therefore, Alternative B would have long-term, moderate, and beneficial impacts to traffic operations.

Cumulative Impacts

The lane closures and traffic delays associated with the projects as well as future projects would have an adverse impact to traffic operations. However, once these projects are completed they would have a beneficial impact to traffic operations. The repaired roadway would also minimize future maintenance needs and reduce the need for any future emergency repairs, limiting inconveniences and delays to motorists. Implementation of Alternative B would contribute a noticeable, adverse increment in the short-term and would contribute a noticeable, beneficial increment in the long-term to the cumulative long-term, minor, and adverse impacts on traffic operations.

Conclusions

Alternative B would have short-term, moderate, adverse and long-term, moderate, beneficial impacts to traffic operations. Implementation of Alternative B would contribute a noticeable, beneficial increment to the cumulative long-term, minor, and adverse impacts on traffic operations.

Alternative C – Preferred Alternative

Impact Analysis

All of the impacts associated with the implementation of Alternative B would also be associated with the implementation of Alternative C. Alternative C would have a short-term, moderate, and adverse impact to traffic operations.

The expanded paved shoulders would create more space between bicyclists and/or pedestrians and the vehicles in the travel lanes. This would also allow motorists to drive at a more consistent speed, instead of slowing down to avoid potential conflicts with bicyclists and/or pedestrians. Therefore, Alternative C would have long-term, moderate, and beneficial impacts to traffic operations.

Cumulative Impacts

The lane closures and traffic delays associated with the project and future projects would have an adverse impact to traffic operations. However, once the projects are completed they would have a

beneficial impact to traffic operations. The repaired roadway would also minimize future maintenance needs and reduce the need for any future emergency repairs, limiting inconveniences and delays to motorists. Implementation of Alternative C would contribute a noticeable, beneficial increment to the cumulative long-term, minor, and adverse impacts on traffic operations.

Conclusions

Alternative C would have short-term, moderate, adverse and long-term, moderate, beneficial impacts to traffic operations. Implementation of Alternative C would contribute a noticeable, beneficial increment to the cumulative long-term, minor, and adverse impacts on traffic operations.

CHAPTER 4: PUBLIC INVOLVEMENT AND COORDINATION

This chapter documents the scoping process for this project and includes the official list of recipients for the document. As required by NPS policies and planning documents, it is the Park's objective to work with State, Federal, and local governmental and private organizations to ensure that the Park and its programs are coordinated with theirs, and are supportive of their objectives, as far as proper management of the Park permits, and that their programs are similarly supportive of Park programs.

4.1 Public Involvement

Comments from the public are solicited at two stages in the project planning process; public scoping and the public comment period.

Public Scoping

Information about the proposed project was made available to the public on the NPS's Planning, Environment, and Public Comment website during the public scoping comment period, from February 28, 2011 through March 28, 2011. Flyers providing details of the proposed project and contact information for comments was sent to a mailing list comprised of federal, state, and local agencies, elected officials, organizations, and advocacy groups. Public notices were run in the Washington Post on February 28, 2011 announcing the public scoping comment period. Comments were generally in support of the proposed project. Concerns were raised regarding drainage improvements, storm water management, soil erosion, and scheduled timeframe for construction activities.

EA Public Comments

In order to give the public and all interested parties a chance to review the EA, it would be noticed for public comment through local newspapers. During the 30-day comment period, a hardcopy version of the EA would be available for review at the Park Visitor Center, and various local libraries. An electronic version of the EA would be available on the NPS's Planning Environment and Public Comment (PEPC) website at http://parkplanning.nps.gov/GREE. This site provides access to current plans, environmental impact analyses, and related documents for public review. Users of the site can submit comments for documents available for public review. An electronic version may also be found at the FHWA, Eastern Federal Lands Highway Division's website at http://efl.fhwa.dot.gov/planning/nepa.htm.
Copies of the EA would also be sent to applicable Federal, State and local agencies.

This EA will be available for public review from January 18, 2013 through February 18, 2013. During this 30-day period, hardcopies of the EA will be available for review at the Park Headquarters and the Greenbelt Public Library.

Those wishing to comment on the EA may submit comments through the PEPC website or mail comments to the name and address below. Please note that the names and addresses of people who comment become part of public record. If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment. We will make all submissions from organizations, businesses, and from individuals identifying themselves as representatives or officials

of organizations or businesses, available for public inspection in their entirety.

Alexcy Romero, Superintendent
ATTN: Greenbelt Park EA
National Capital Parks–East
1900 Anacostia Park, SE
Washington, DC 20002

4.2 AGENCY COORDINATION AND PERMITS

Agency Coordination

Other federal, state, and local governments were contacted during the planning process. Appendix A contains copies of written correspondence with those agencies.

Early Coordination Letters were sent to the U.S. Fish and Wildlife Service (USFWS) the MDE and Maryland Department of Natural Resources Natural Heritage Program in order to gather input regarding federally–listed and rare species that may be present in the study area. Copies of the agency responses are located in "Appendix A: Agency Coordination Letters".

An online certification request was submitted to the USFWS dated in October, 2010. No federally–listed species are known to exist in the study area, therefore it was determined that the proposed project would have no effect on any federally listed species. An online certification letter was received by the USFWS on October 5, 2010 concurring with this finding.

It was determined that the project would have no adverse effects to cultural resources. The MD State Historic Preservation Officer reviewed the proposed action and determined that there are no historic properties that are likely to be affected by the project as proposed including the paving of shoulders, replacement of culverts, and overlay.

A field review was conducted with Park staff, FWHA–EFL staff, Maryland Department of the Environment staff and Army Corps of Engineers staff on October 27, 2011. The purpose of the site visit was to serve as a permit pre–application and jurisdictional determination meeting of the delineated wetland areas on the project with the two agencies.

A mini Value Analysis was conducted on September 14, 2012 with staff members from various disciplines within the NPS and FHWA to analyze and document the best alternative for the crossing at Still Creek.

Permits

If the action alternative were implemented, several permits would be required in order to construct the project. These permits include:

Coastal Area Management Act (CAMA) Federal Consistency Review

A letter was sent to Mr. Elder Ghigiarelli, Jr., the Federal Consistency Coordinator on March 28, 2011. To this date, no response was received.

Erosion and Sediment Control Certificate of Approval

This project would likely disturb greater than one acre of soil, and therefore would need an erosion and sediment control Certificate of Approval from MDE, under GS 113A-50 thru GS 113A-66. Erosion and Sediment Control plans aim to protect adjoining properties, streams, and other water resources of the state. The permit requires a fee, and has a 30-day review period.

Clean Water Act Section 404 Permit

The Federal Water Pollution Control Act, more commonly known as the "Clean Water Act," under Section 404, directs the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill material into waters of the United States at specified disposal sites. This project would discharge dredged or fill material into the waters of the United States, including special aquatic sites such as wetlands. The proposed project would most likely qualify for coverage under Nationwide Permit 3, Maintenance, and/or Nationwide Permit 14, Linear Transportation Projects. There is no associated fee, and the review period is typically 45 calendar days for Nationwide Permits.

401 Water Quality Certification

The 401 Water Quality Certification is a "certification," needed for any federal permit involving impacts to water quality. Most 401 Certifications are triggered by Section 404 Permits issued by the U.S. Army Corps of Engineers. Typical types of projects involve filling in surface waters or wetlands. Section 401 of the Clean Water Act delegates authority to the states to issue a 401 Water Quality Certification for all projects that require a federal permit (such as a Section 404 Permit). The "401" is essentially a verification by the state that a given project will not remove or degrade existing, designated uses of "Waters of the State," or otherwise violate water quality standards. Mitigation of unavoidable impacts and inclusion of storm water management features are two of the most important aspects of water quality review. This certification is issued by the MDE, Surface Water Protection, 401 Oversight and Express Permits Unit under the authority of GS 143, Article 21, Part 1 and Section 401, Clean Water Act and GS 143-215.3 (a)(1); 143-215.3 (c); 143B-282 (1)(u). There is a fee associated with this certification and the review period can be up to 60 calendar days.

NPDES (National Pollutant Discharge Elimination System) Storm Water Permit

Construction activities that disturb one or more acres of land require an NPDES permit. This permit is issued by the MDE, Storm Water Permitting Unit under Section 402 of the Clean Water Act; 40 CFR Parts 122-125; Parts 130-131; and Part 133; 15A NCAC 2H .0100. Coverage under general permits requires a 30-60 day review period, and an associated permit fee. An Erosion, Sedimentation and Pollution Control plan would be designed, implemented and maintained for the entire project. This would include temporary measures to control erosion such as a stabilized construction entrance, silt fence around the perimeter of the limits of soil disturbance, a temporary diversion channel or a cofferdam (a temporary watertight enclosure pumped dry to expose the bottom of the creek for work

in the area of the abutments). Permanent measures would include re-establishment of vegetation in areas where the soil has been disturbed. A list of BMPs for erosion and sedimentation control (as defined in the General NPDES permit) would be followed because of the proximity of the project area to Still Creek.

4.3 List of Preparers and Reviewers

The following individuals contributed to the development of this document:

Federal Highway Administration
Richelle Ellis, Environmental Protection Specialist
Ryan Kimberley, Environmental Protection Specialist
Kevin Rose, Environmental Team Leader
Ramesh Kotadia, Project Manager
Chris Close, Design Engineer
Abhishek Kapoor, Hydraulics Engineer

National Park Service,
Christine Snyder, NPS Denver Service Center
Stephen Syphax, NPS Supervisory Resource Management Specialist
Stephen Potter, NPS Cultural Resource Manager
Doug Curtis, NPS Hydrologist
Fred Cunningham, NPS Park Manager
Tomas Maclosky, NPS Project Specialist

CHAPTER 5: REFERENCES

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National Park Service
U.S. Department of the Interior
Greenbelt Park, Maryland

Open Scoping Comment Period for Proposed Improvements to the Greenbelt Park

Greenbelt, Maryland – The National Park Service (NPS), in cooperation with the Federal Highway Administration (FHWA), has initiated an Environmental Assessment to analyze the potential impacts of proposed improvements to the Main Entrance Road (Maryland Route 10), Park Central Road, Sweetgum Picnic Loop (Route 200) and Laurel Picnic Area (Route 201). The improvements would include rehabilitation of the roadways, parking lots, guardrails and drainage structures. One alternative under consideration involves the replacement of an existing double culvert with a bridge over Still Creek. The proposed activities may include temporary road closures and detours within the Park.

Public input is an important part of the assessment process. You are invited to comment on the scope and potential impacts of this project beginning **February 28, 2011.** The project information can also be viewed online at http://parkplanning.nps.gov/parkHome.cfm?parkID=184
Written comments will be accepted for consideration until **March 28, 2011**. For more information, please contact Richelle Ellis, FHWA Environmental Protection Specialist, at (703) 404-6333, Richelle.Ellis@dot.gov or Christina Snyder, Project Manager NPS/DSC at (202) 619-6392, Christina_Snyder@nps.gov.

OPEN SCOPING COMMENT PERIOD FOR PROPOSED IMPROVEMENTS TO

Open Scoping Comment Period
for Proposed Improvements to the Greenbelt National Park

Greenbelt, Maryland - The National Park Service (NPS), in cooperation with the Federal Highway Administration (FHWA), has initiated an Environmental Assessment to analyze the potential impacts of proposed improvements to the Main Entrance Road (Maryland Route 10), Park Central Road, Sweetgum Picnic Loop (Route 200), Laurel Picnic Area (Route 201). The improvements would include rehabilitation of the roadways, parking lots, guardrails and drainage structures. One alternative under consideration involves the replacement of an existing double culvert with a bridge over Still Creek. The proposed activities may include temporary road closures and detours within the park.

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Appeared in: ***Washington Post*** on Monday, 02/28/2011

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2/28/11 Spoke with Jeffrey Travis
His concern was the construction schedule as he is the organizer for an annual bike race. He was mostly concerned if the race for 2011 would be impacted…which it will not.

Hi, Christina --

I received a flyer in the mail this morning regarding the proposed improvements and repairs to the roadways in Greenbelt Park.

I see from the flyer that the comment period has not yet opened. I tried to go the website shown in the flyer but the site was not available. Can you tell me what the proposed start and completion dates for the project are?

The reason I ask is that I am the promoter of a bicycle race series that has taken place in Greenbelt Park in the summer months for over 30 years. This series is attended by over 1200 cyclists each year, and is a fixture of the Washington metro area bicycle racing calendar.

If there is any flexibility in the scheduling of the project it would be greatly appreciated by the racing community if the work could take place between Labor Day of one year and April of the following year so that the safety or availability of the loop road for the race series is not affected.

Other than scheduling, I have no concerns, and in fact all the cyclists will no doubt appreciate the end result of the project.

I will be happy to submit these same comments again when the official comment period opens if that is appropriate.

Thank you for your time.

Jeffrey W. Travis
Route 1 Velo
Promoter, Greenbelt Park Training Race Series

3/2/11 via email
Good Afternoon Amy,
It was nice speaking with you today. I didn't realize when we spoke that you had submitted these questions via email. I hope I was able to answer your questions adequately for you today.

The purpose and need for the project is to rehabilitate and/or upgrade existing Park transportation-related facilities that have reached, or are approaching, the end of their service lives. These improvements are needed before additional degradation results in an unsafe condition for visitors.

As I had mentioned the construction schedule as it stands now is for notice to proceed in January 2014 and completion in January 2015. We are still very early into our study.

The National Environmental Policy Act (NEPA) document for this project is an environmental assessment (EA). EA's are prepared for projects where it is not known if the action will have a significant impact on the environment. Should the environmental analysis and interagency review during the EA process find the project to have no significant impacts on the quality of the environment a Finding of No Significant Impact (FONSI) is issued.

During this study we will analyze and consider all potential environmental impacts of the proposed action on sensitive resources (i.e. Natural resources, cultural resources, visitor use and experience and socioeconomic environment). The EA is a balanced decision-making process that considers a range of factors of both impacts to the resources and transportation needs. All efforts will be made to avoid or minimize impacts to the environment, including the trees.

We would be happy to share preliminary design plans and information with you as the project progresses. As of now, I am not aware of any changes to the traffic light on Greenbelt Road. There will however, be temporary road closures, temporary detours and limited access to certain areas of the park at times during construction.

Richelle J.Ellis
Environmental Protection Specialist
Federal Highway Administration
Eastern Federal Lands Highway Division
21400 Ridgetop Circle
Sterling, VA 20166
Phone: (703) 404-6333 Fax: (703) 404-6217 richelle.ellis@dot.gov P Please consider the environment before printing this email.

----- Forwarded by Christina Snyder/NCR/NPS on 02/28/2011 11:32 AM -----

"Amy Hofstra"
<ahofstra@greenbe
ltmd.gov> To

<Christina_Snyder@nps.gov>

02/27/2011 04:22 PM

cc

Subject

Greenbelt Park Study

Hello –

I recently got a copy of your flyer regarding the open scoping period for improvements to Greenbelt park. Could you provide more information such as..

When will the work be done and when will it be completed?
What actions will be taken to protect the environment and limit tree loss?
Will there be any associated changes to the traffic light on Greenbelt Road.
Is there any preliminary design information for review?

Thank you, Amy

Amy Hofstra
Community Planner
City of Greenbelt
(240) 542-2042

From: Cary Coppock <ictribs@gmail.com>
Date: Fri, Mar 4, 2011 at 3:06 PM
Subject: Greenbelt Nat. Park rehab comments
To: christina_Stnder@nps.gov, richelle.ellis@dot.gov

Hello,
I want to participate in the comment period for Greenbelt National Park rehab projects.
I visited the web site and only found one project listed. Is there already a proposal for the bridge repair that I can review. I suppose part of this effort is dredging the channel to eliminate the blockage to fish migration. As a runner I am interested in trail projects, but a more urgent civic need lies with stormwater management.

Can FHWA affect runoff that enters the west side of the park to reduce the scouring that is so evident. According to the Anacostia Restoration Project Team, this bridge replacement is to cost approx. $1M. Upstream remediation would be a good investment to prevent managing the same problem again within a decade, since in the last decade we have had several "ten year storms."

Please reply with necessary information to review and comment on current proposals, and a description of the scope of requested comments.

Cheers,
Cary Coppock

3/14/11 via email
Dear Cary,

Thank you for your inquiry regarding the Greenbelt Park project. The Federal Highway Administration (FHWA) and the National Park Service (NPS) are in the early planning stages of a proposal to rehabilitate many of the Park's roads, parking lots, drainage structures, signs, and guardrails. The purpose of the project is to rehabilitate and/or upgrade existing Park transportation-related facilities that have reached, or are approaching, the end of their service lives. These improvements are needed before additional degradation results in an unsafe condition for visitors.

The National Environmental Policy Act (NEPA) requires FHWA and NPS to consider the impacts that proposed projects could have on the environment. NEPA also requires the analysis of multiple alternatives for achieving the purpose and need of the project. The various alternatives and their impacts will be described in a document called an Environmental Assessment (EA). Currently FHWA engineers and environmental staff are gathering the necessary data that will be needed to prepare the EA. Another critical component of the EA is public involvement. During the current public scoping period, we hope to make the public aware of the upcoming improvements and compile any suggestions or concerns that may exist.

The EA will include an alternative to replace a pair of damaged culverts with a bridge over Still Creek. The approximate completion date of the EA is April 2012. There will be a 30-day public review period for the Draft EA which will give you an opportunity to provide comments on the specific proposal. Should the environmental analysis and public review during the EA process find the project to have no significant negative impacts on the quality of the environment, a Finding of No Significant Impact (FONSI) will be issued, and the project will proceed as planned.

During this study we will analyze and consider many potential environmental impacts of the proposed action. The topics of concern specified in your recent correspondence- fish migration, scouring problems,

upstream remediation, and storm water management- are among the impacts that will be analyzed, along with other natural, cultural, and socioeconomic topics. All efforts will be made to avoid or minimize negative impacts to the Park and its natural systems. In fact, FHWA and NPS hope that the proposal will have beneficial impacts to the Still Creek watershed by addressing the very concerns expressed in your comments.

A complete answer to your questions will not be available until the EA is released for public comment, however, we can provide some additional information to you now to help alleviate your concerns. Your observation that the existing condition hinders fish migration is certainly valid. This is mainly due to the scouring at the culvert outlets which creates an artificial waterfall. The corrugated metal culvert pipes are also an unsuitable habitat for fish and other aquatic organisms. These culverts, which were installed many decades ago, were not engineered using the type of environmentally sensitive designs that are used today. In order to create a more natural condition for aquatic organisms, FHWA is analyzing the use of a "bottomless" culvert or a bridge. Both of these options would eliminate the scouring problem at the outlet and recreate a natural stream bottom.

The use of a bridge or a larger culvert would also result in the type of "upstream remediation" that you mentioned. Currently, in the event of a large rain storm, the undersized Still Creek culverts and associated embankment create a dam which significantly increases the upstream water level. In some cases, the roadway has overtopped, resulting in the damage seen currently. FHWA is analyzing the effects of improving the hydraulic conditions on site by increasing the culvert capacity or spanning the floodplain with a bridge. This would restore a more natural condition both upstream and downstream.

Finally, in regard to stormwater management (SWM), FHWA and NPS are coordinating very closely with the Maryland Department of the Environment (MDE) to assure that the project includes a strategy that will improve the existing SWM conditions and satisfy Maryland state regulations, which are among the most stringent in the nation.

We hope that your initial questions have been addressed, and that you will continue to participate in the EA review process as more information becomes available. Please feel free to contact us at any time to provide you with additional information or answer any questions that may arise.

Sincerely,
Richelle Ellis

From: hank meyer [mailto:hankmeyer@hotmail.com]
Sent: Sunday, March 06, 2011 1:44 PM
To: Ellis, Richelle (FHWA); christina_snyder@nps.gov
Subject: proposed improvements for Greenbelt Park

--
CC
Dear Ms. Ellis and Ms. Snyder: as a long time runner in this magnificent little-heard-of park (more than 2700 laps on the perimeter trail since 1988 (and absent for 12 years overseas, returning in the summer of 2007), I first want to thank you for the current level of maintenance of the park trails. I know that REI helped finance the replacement of a couple of foot bridges, during the years when the NPS received little funding, but recently I've noticed that shortly after violent weather, fallen trees are removed from the paths fairly quickly, and several segments of the main path have been 'refurbished', improving drainage and reducing erosion (some of it no doubt caused by yours truly, running around the park!).
One of the areas suggested for improvements is the culvert. Presently as you know, there is sort of a bridge composed of the slope of the embankment and a guard rail; however, this area is often slushy after a rainstorm, and there are several rocks sticking up from the path that inhibit fast running. Perhaps this segment needs some of that sandy gravel treatment, with an underlying layer of support provided by compacted dirt over a planed out pathway. I am not sure that a bridge is needed, since it would be subject to tree damage should another windy storm blow through the area.
Drainage improvement are always welcome, and I think the paths within the park are in excellent shape overall, again, something I appreciate a great deal during my frequent runs. There are some areas in the Dogwood segment that could also use some of the sandy gravel/crushed stone 'repaving' - especially in areas where numerous tree roots are exposed.

Thank for you listening, and for maintaining what I consider my own private running trail!!!
Regards

Hank Meyer
26 Woodland Way
Greenbelt, MD 20770

Response 3/14/11
Dear Mr. Meyer,

Thank you very much for the comments that you submitted recently regarding the proposed improvements within Greenbelt Park. We are happy to hear from people like you who return to the Park time and time again to experience and enjoy the trails and other resources.

As you know, maintaining the Park facilities is a very complicated and never-ending cycle that involves coordination with numerous organizations and funding sources. Fortunately the Park has access to various paid and volunteer workers who do an outstanding job maintaining the trails. The Park has to make difficult decisions about when, where, and how to best utilize their resources. Portions of the paths and trails are sometimes treated with gravel to improve tread or repair erosion, while other areas

are left in a more “natural” state, including the occasional protruding rock. Of course protruding rocks are not a welcome sight to avid runners, but other visitors may actually enjoy the ruggedness of a rocky trail.

The purpose of this project, however, is not to improve the Park trails, but rather to improve the roads and parking lots that people use to gain access to the trails and other Park facilities. For example, the Dogwood Nature Trail Parking area will be resurfaced, but improvements to the trail itself will not be included with this project. The Park will continue to maintain the trail in the same way that it has in the past.

You also expressed concern about the conditions of the roadway where Park Central Drive crosses Still Creek. According to your comment, the existing embankment area is not very conducive to walking/running. Currently this area is not maintained as a walking trail, it is considered to be the roadway shoulder. Although pedestrian traffic is allowed, Park staff tries to confine the majority of pedestrian traffic to one of the official trails, such as the Dogwood Nature Trail. FHWA and NPS are considering replacing the embankment and culverts with a bridge. This replacement would significantly benefit the Still Creek ecosystem. The bridge would also eliminate the “slushy” embankment and provide you with a more stable passageway across the Creek. Falling trees will not be an issue, as problematic trees will be removed, if needed, as part of the project. The area is not being designed as a pedestrian route, however, and people will still be encouraged to use the formal trail system.

I hope that your initial questions and concerns have been resolved through this correspondence. As our engineers and environmental staff continue to develop plans for the project, more information will be available for you to review. Currently we expect to release an Environmental Assessment of the proposal for public review in April 2012. We appreciate your interest in the project, and encourage you to continue participating in the planning process. Feel free to contact me at any time if you have additional comments or questions.

Sincerely,

Richelle Ellis
FHWA

From: hank meyer [mailto:hankmeyer@hotmail.com]
Sent: Monday, March 14, 2011 4:51 PM
To: Ellis, Richelle (FHWA)
Subject: RE: proposed improvements for Greenbelt Park

Dear Ms Ellis:

thank you for your thoughtful and detailed response. Greenbelt Park is certainly a little known jewel within the DC area, and I appreciate all of the efforts made to keep this park in as good condition as possible, given budget constraints, etc.
Out of curiosity, is the Laurel picnic area in use or is it by reservation only? I rarely see park visitors within its picnic and parking area.
I hope to join the group of volunteers after retirement in order to help maintain the trails inside the park.
Again, thank you for the information...and thank you for looking after my favorite running place!
Hank Meyer
Greenbelt, MD

Hank:
Holly and Laurel picnic areas are by reservation only and Sweetgum is first come first served.

Regards,
Richelle

Richelle J.Ellis
Environmental Protection Specialist
Federal Highway Administration
Eastern Federal Lands Highway Division
21400 Ridgetop Circle
Sterling, VA 20166
Phone: (703) 404-6333 Fax: (703) 404-6217
richelle.ellis@dot.gov

3/8/11 via email
Good Afternoon Ms. Craze:

Thank you for your inquiry regarding the Greenbelt Park project. I have recently spoken and corresponded with Amy Hofstra, who is a City of Greenbelt employee as well.

The purpose and need for the project is to rehabilitate and/or upgrade existing Park transportation-related facilities that have reached, or are approaching, the end of their service lives. These improvements are needed before additional degradation results in an unsafe condition for visitors.

The scoping flyer you received initiating the EA, is to advise you of the current open comment period on the scope of the project. The closing date for this comment period is March 28, 2011. Please use this opportunity to document any concerns you have at this time.

As you know, the National Environmental Policy Act (NEPA) document for this project is an environmental assessment (EA). EA's are prepared for projects where it is not known if the action will have a significant impact on the environment. Should the environmental analysis and interagency review during the EA process find the project to have no significant impacts on the quality of the environment a Finding of No Significant Impact (FONSI) is issued. The approximate completion date of the EA is April 2012. There will be a 30 day public review period for the EA document as well.

During this study we will analyze and consider all potential environmental impacts of the proposed action on sensitive resources (i.e. Natural resources, cultural resources, visitor use and experience and socioeconomic environment). The EA is a balanced decision-making process that considers a range of factors of both impacts to the resources and transportation needs. All efforts will be made to avoid or minimize impacts to the Park and its natural systems.

The construction schedule as it stands now is for a notice to proceed to occur in January 2014 and completion in January 2015. Obviously, we are still very early into our study. We would be happy to share preliminary design plans and information with you as the project progresses. There will be temporary road closures, temporary detours and limited access to certain areas of the park at times during construction.

In the future, we would like to schedule a teleconference and/or coordination meeting with you to discuss items such as local activities, local construction projects, traffic data etc. as well as address any concerns the City of Greenbelt may have. We look forward to speaking with you in the future.

Regards,
Richelle Ellis

Richelle J.Ellis

Environmental Protection Specialist
Federal Highway Administration
Eastern Federal Lands Highway Division
21400 Ridgetop Circle
Sterling, VA 20166
Phone: (703) 404-6333 Fax: (703) 404-6217
richelle.ellis@dot.gov


Please consider the environment before printing this email.

From: Celia Craze [mailto:ccraze@greenbeltmd.gov]
Sent: Tuesday, March 08, 2011 1:18 PM
To: christina_snyder@nps.gov; Ellis, Richelle (FHWA)
Subject: Replace Culverts on Still Creek

We have taken notice of the initiation of an EA for the above referenced project. Since the Greenbelt National Park is within the City of Greenbelt, we are very interested in any projects which would impact the park and its natural systems. Could you advise when more detailed information on this project will be available, what is the time frame for the EA process, and at what point your agencies will be taking public comment on the project.

Thank you.

Celia Craze

Celia W. Craze, AICP
Director, Department of Planning and Community Development
City of Greenbelt
15 Crescent Road, Suite 200
Greenbelt, MD 20770
Main Office: 301-345-5417
Fax: 301-345-5418
Private: 301-474-2760

U.S. Department of Transportation
Federal Highway Administration

Eastern Federal Lands
Highway Division

21400 Ridgetop Circle
Sterling, VA 20166-6511

MAR 2 8 2011

In Reply Refer to: HFPP-15

FEDERAL EXPRESS

Mr. Elder Ghigiarelli, Jr.
Federal Consistency Coordinator
Maryland Department of the Environment
1800 Washington Blvd., Suite 430
Baltimore, MD 21230-1708

Subject: Project PRA-GREE 11(1), Greenbelt Park, Prince George's County, MD
Federal Coastal Zone Management Consistency Determination

Dear Mr. Ghigiarelli:

The Federal Highway Administration (FHWA), in cooperation with the National Park Service (NPS), is preparing an Environmental Assessment (EA) related to the subject project. The project alternatives include the construction of a bridge across Still Creek to replace existing culverts that were damaged during a storm event in June 2009. The bridge will improve the hydrologic deficiencies of the existing corrugated metal culverts. The project will also include minor drainage rehabilitation, storm water management features, and the rehabilitation of several roads and parking lots.

FHWA has determined that the proposed action affects the land, water, and natural resources of coastal Maryland. This correspondence provides the State of Maryland with FHWA's Federal Consistency Determination under the Coastal Zone Management Act of 1972 and the Maryland Coastal Zone Management Program (MCZMP) which includes the following relevant enforceable policies:

Erosion and Sediment Control Plan Approval
Storm Water Management Plan Approval
Nontidal Wetland and Waterways Permit
Water Quality Certification
Wetland Mitigation Plan Approval

FHWA will comply with these policies through coordination with the Maryland Department of the Environment. Related approvals are being sought through the U.S. Army Corp of Engineers, U.S. Fish and Wildlife Service, Maryland Historical Trust, and Maryland Department of Natural Resources. Public participation and comments have been solicited during the scoping phase,

including the publication and distribution of a scoping flyer, a copy of which was transmitted to you previously. Additional opportunities for public and interagency comments will occur during the draft EA review period.

FHWA finds that the proposed activity is consistent to the maximum extent practicable with the enforceable policies of the MCZMP. The use of best management practices, implementation of erosion and sediment control plans during construction, and the installation of permanent storm water management features will address impacts to Non-point Source Pollution Control and Point Source Pollution Control. Any other enforceable policies or requirements will be identified and resolved prior to the issuance of required permits or approvals.

Pursuant to 15 CFR Section 930.41, the MCZMP has 60 days from the receipt of this letter in which to concur with or object to this Consistency Determination, or to request an extension under 15 CFR Section 930.41(b). Maryland's concurrence will be presumed if no response has been received by FHWA within 60 days following the submittal of this determination.

Enclosed for your review is a copy of the scoping report which includes vicinity maps and photographs. If there are questions concerning the project, please feel free to contact Mr. Ryan Kimberley, Environmental Protection Specialist, at (703) 404-6211 or Ryan.Kimberley@dot.gov.

Sincerely,

Kevin Rose
Environmental Compliance Specialist

Enclosures

cc:
Mr. Fred Cunningham, Park Manager, NPS/NACE/Greenbelt Park, Prince George's County, MD
Mr. Stephen Syphax, Resource Management Division Chief, NPS/NACE, Washington, DC
Ms. Christina Snyder, Project Manager, NPS/DSC, Washington, DC

U.S. Department
of Transportation
**Federal Highway
Administration**

Eastern Federal Lands
Highway Division

21400 Ridgetop Circle
Sterling, VA 20166-6511

MAR 28 2011 In Reply Refer to: HFPP-15

FEDERAL EXPRESS

Ms. Elizabeth Cole
Review and Compliance Administrator
Maryland Historical Trust
100 Community Place
Crownsville, MD 21032

Subject: Project PRA-GREE 11(1), Greenbelt Park, Prince George's County, MD
National Historic Preservation Act, Section 106 Consultation Initiation

Dear Ms. Cole:

The Federal Highway Administration (FHWA), in cooperation with the National Park Service (NPS), is preparing an Environmental Assessment related to the subject project. The project alternatives include the construction of a bridge across Still Creek to replace existing culverts that were damaged during a storm event in June 2009. The bridge will improve the hydrologic deficiencies of the existing, non-historic, corrugated metal culverts. The project will also include minor drainage rehabilitation, storm water management features, and the rehabilitation of several roads and parking lots.

The project area primarily consists of 2.93 miles of roadway rehabilitation and the resurfacing of several parking areas. Impacts outside of the roadway prism, which includes the shoulders, embankments and drainage ditches, are expected to be minimal; however, some previously undisturbed soils could be within the area of potential effect (APE). FHWA intends to conduct Phase I archaeological investigations in these areas which include several culvert replacements, grading outside of the roadway prism, the construction of storm water management features, and the establishment of a temporary access road. The scope of work required to adequately survey the project area will be determined in consultation with NPS.

Enclosed for your review are a Maryland Historic Trust Project Review Form, preliminary project plans, a scoping report, and a topographical map showing the APE. FHWA is currently developing the scope of work and will award the contract to a qualified cultural resource management firm within the next few weeks. A draft Phase I archaeological report summarizing the survey results will be transmitted to your office as soon as it is available. FHWA will also provide a determination of effect or recommendations for additional archaeological survey at that time.

RECOVERY.GOV

If there are questions concerning the project or the proposed archaeological survey, please feel free to contact Mr. Ryan Kimberley, Environmental Protection Specialist, at (703) 404-6211 or Ryan.Kimberley@dot.gov.

Sincerely,

Kevin Rose
Environmental Compliance Specialist

Enclosures

cc:
Mr. Fred Cunningham, Park Manager, NPS/NACE/Greenbelt Park, Prince George's County, MD
Mr. Stephen Syphax, Resource Management Division Chief, NPS/NACE, Washington, DC
Ms. Christina Snyder, Project Manager, NPS/DSC, Washington, DC
Mr. Stephen Potter, Regional Archeologist, NPS/NCR, Washington, DC

20120432

F
FHWA

U.S. Department of Transportation
Federal Highway Administration

Eastern Federal Lands Highway Division

21400 Ridgetop Circle
Sterling, VA 20166-6511

EJR/TJT

MAR 20 2012

In Reply Refer to: HFPP-15

RECEIVED
MAR 23 2012
BY:_____

FEDERAL EXPRESS
Ms. Elizabeth Cole
Review and Compliance Administrator
Maryland Historical Trust
100 Community Place
Crownsville, MD 21032

Subject: Project PRA-GREE 11(1), Greenbelt Park, Prince George's County, Maryland
Transmittal of Archaeological Survey Report and Determination of Effect

Dear Ms. Cole:

The Federal Highway Administration (FHWA), in cooperation with the National Park Service (NPS), is preparing an Environmental Assessment (EA) related to the subject project. On March 28, 2011, FHWA submitted a preliminary project review form to your office describing the alternatives under consideration, the Area of Potential Effect (APE), and our proposal to conduct an archaeological survey within the APE.

FHWA, in consultation with Dr. Stephen Potter, NPS Regional Archaeologist, developed a scope of work and obtained the services of an experienced archaeological contractor to thoroughly survey the APE. A draft Phase I archaeological report summarizing the survey results is included with this correspondence for your review. The draft report incorporates comments that were previously submitted by Dr. Potter.

In brief, the survey identified two low density prehistoric finds. NPS has determined that these finds might represent portions of archaeological sites, but until they can be fully documented and evaluated by the agency, there is not enough information to make a decision regarding their status. However, the prehistoric materials were recovered in a disturbed context and the APE does not have the potential to contain intact deposits that could contribute to the significance of larger sites. No further archaeological investigations are recommended for the proposed undertaking.

Based on this information, and in accordance with 36 CFR § 800.5(b), FHWA has determined that the project will have "no adverse effect" on historic properties. Please provide your comments or concurrence with the enclosed report and determination of effect within 30 days of receiving this correspondence.

The Maryland Historical Trust has determined that this undertaking will have no adverse effect on historic properties.
Beth Cole 4/3/2012
Date

HBE: IA PBT
Archeo: Zum PBL 4/3/2012
Ph I 3rd.

If additional information is required in order to complete your review, please feel free to contact Mr. Ryan Kimberley, Environmental Protection Specialist, at (703) 404-6211 or Ryan.Kimberley@dot.gov.

Sincerely,

Kevin Rose
Environmental Compliance Specialist

Enclosures

cc:
Mr. Fred Cunningham, Park Manager, NPS/NACE/Greenbelt Park, Prince George's County, MD
Mr. Stephen Syphax, Resource Management Division Chief, NPS/NACE, Washington, DC
Ms. Christina Snyder, Project Manager, NPS/DSC, Washington, DC
Mr. Stephen Potter, Regional Archeologist, NPS/NCR, Washington, DC (hardcopy w/enclosure)

United States Department of the Interior
U.S. Fish & Wildlife Service
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401
410/573 4575

Online Certification Letter

Today's date: October 5, 2010

Project: Greenbelt Park, Prince George's County,MD. NPS/FHWA Project PRA GREE 11(1),Routes 10, 11, 200, and 201. New bridge over Still Creek; rehabilitation of park roads and parking lots.

Dear Applicant for online certification:

Thank you for choosing to use the U.S. Fish and Wildlife Service Chesapeake Bay Field Office online list request certification resource. This letter confirms that you have reviewed the conditions in which this online service can be used. On our website (www.fws.gov/chesapeakebay) are the USGS topographic map areas where **no** federally proposed or listed endangered or threatened species are known to occur in Maryland, Washington D.C. and Delaware.

You have indicated that your project is located on the following USGS topographic map
Washington East (Maryland)
Based on this information and in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*), we certify that except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project area. Therefore, no Biological Assessment or further section 7 consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For additional information on threatened or endangered species in Maryland, you should contact the Maryland Wildlife and Heritage Division at (410) 260-8540. For information in Delaware you should contact the Delaware Natural Heritage and Endangered Species Program, at (302) 653-2880. For information in the District of Columbia, you should contact the National Park Service at (202) 535-1739.

The U.S. Fish and Wildlife Service also works with other Federal agencies and states to minimize loss of wetlands, reduce impacts to fish and migratory birds, including bald eagles, and restore habitat for wildlife. Information on these conservation issues and how development projects can avoid affecting these resources can be found on our website (www.fws.gov/chesapeakebay).

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interest in these resources. If you have any questions or need further assistance, please contact Chesapeake Bay Field Office Threatened and Endangered Species

program at (410) 573-4531.

Sincerely,

Leopoldo Miranda
Field Supervisor

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
John R. Griffin, Secretary
Joseph P. Gill, Deputy Secretary

March 15, 2011

Richelle Ellis
National Park Service
Greenbelt Park
Richelle.Ellis@dot.gov

RE: Environmental Review for Proposed Improvements to Main Entrance Road, Park Central Road, Sweetgum Picnic Loop and Laurel Picnic Area – Greenbelt Park, Prince George's County, Maryland.

Dear Ms. Ellis:

The Wildlife and Heritage Service's Natural Heritage database indicates that there is a record for state-listed endangered Woodland Agrimony (*Agrimonia striata*) documented for the project site. It is documented as being located along Greenbelt Road, just west of the park entrance. If this species still occurs there, we would ask for protection measures to avoid disturbance to the plants and their habitat, from this project as proposed.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne

Lori A. Byrne
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER # 2011.0241.pg
Cc: K. McCarthy, DNR

U.S. Department of Transportation
Federal Highway Administration

Eastern Federal Lands
Highway Division

21400 Ridgetop Circle
Sterling, VA 20166-6511

JUL 29 2011

In Reply Refer to: HFPP-15

Ms. Kathy Anderson
Regulatory Branch
U.S. Army Corps of Engineers
Baltimore District
P.O. Box 1715
Baltimore, MD 21203-1715

Subject: Jurisdictional Determination (JD) Request for Greenbelt Park
Project GREE 11(1)

Dear Ms. Anderson:

The Federal Highway Administration (FHWA), in cooperation with the National Park Service (NPS), is preparing an Environmental Assessment for the improvement of Main Entrance Road, Park Central Road, Sweetgum Picnic Loop and Laurel Picnic Area within Greenbelt Park. The proposed project will involve rehabilitation of the roadways, parking lots, guardrails and drainage structure improvements. Additionally, one alternative under consideration involves replacement of the existing double culvert, conveying Still Creek under the Park Central Road, with a bridge.

As this project will likely impact nontidal wetlands and waters of the United States (WOUS), a delineation of these areas is currently underway. In addition, a survey of wetland functions and values is being undertaken to assist NPS and FHWA in determining avoidance, minimization and potential compensation for unavoidable impacts that may be required by the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act.

At this time, we would like to schedule a JD field review of delineated wetlands and WOUS within the study area. The study area consists of a 2.9 mile long corridor extending 60 feet from the existing roadway edge and 100 feet upstream and downstream of Still Creek at the existing double culvert. The GPS survey of the delineated wetlands will be completed no later than 29 July 2011, at which time we can provide you with detailed mapping of the potential jurisdictional areas.

The preparation of the jurisdictional delineation and WOUS boundaries is in accordance with the 1987 USACE Delineation Manual (Environmental Laboratory Technical Report Y-87-1) and modified by the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region, November 2010,* the Cowardin classification system and in compliance with NPS wetland delineation procedures (Procedural Manual #77-1: Wetland Protection).

Attached with this request are a JD checklist, JD form, study area and locator maps, NPS project summary, and graphics depicting soils, National Wetlands Inventory (NWI) wetlands, and floodplains within the study area. If you have any questions or need more information, please contact Ms. Richelle Ellis, Environmental Protection Specialist, at 703-404-6333 or Richell.Ellis@dot.gov.

Sincerely,

Kevin S. Rose
Environmental Compliance Specialist

Enclosures

cc:
Mr. Kenneth Brown, Straughan Environmental, Inc.
Mr. Justin Haynes, Straughan Environmental, Inc.
Ms. Jennie Geiger, Prizim Inc.

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, U.S. ARMY CORPS OF ENGINEERS
P.O. BOX 1715
BALTIMORE, MD 21203-1715

REPLY TO
ATTENTION OF

MAY 25 2012

Operations Division

Ms. Christina Snyder
National Park Service
Denver Service Center Annex
1100 Ohio Drive S.W.
Washington, DC 20242

Dear Ms. Snyder:

This is in response to a letter dated July 29, 2011 in cooperation with the National Park Service, requesting a jurisdictional determination (JD) and verification of the delineation of waters of the United States, including jurisdictional wetlands, on the National Park Service Greenbelt Park property within the area designated for improvement of the Main Entrance Road and Park Central Road located on Greenbelt Road, west of Interstate 495 in Greenbelt, Prince Georges County, Maryland. Your project has been assigned the file name, CENAB-OP-RMS (GREENBELT PARK PROJECT GREEN 11/JD) 2011-02726.

We have reviewed and concur with the wetland determination conducted by your environmental consultant, Straughan Environmental, for the study area consisting of a 2.9 mile long corridor extending 60 feet from the existing roadway edge and 100 feet upstream and downstream of Still Creek at the existing double culvert. A field inspection was conducted on October 27, 2011, by Mr. Steven Harman of this office. This inspection indicated that the delineation of waters of the United States, including jurisdictional wetlands within the "Area of Review" on the drawing dated September 2011, is accurate. Those areas indicated as waters of the United States, including jurisdictional wetlands, are regulated by this office pursuant to Section 404 of the Clean Water Act. Enclosed is a document that outlines the basis of our determination of jurisdiction over these areas.

This letter contains an approved jurisdictional determination for your subject site. This approved jurisdictional determination is valid for five years from the date of this letter unless new information warrants revision of the determination before the expiration date, or a District Engineer has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and request for Appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the North Atlantic Division Office at the following address:

Mr. Michael G. Vissichelli
Administrative Appeals Review Officer
North Atlantic Division, Corps of Engineers
Fort Hamilton Military Community
General Lee Avenue Building 301
Brooklyn, NY 11252-6700

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit a RFA form, it must be received at the above address by JUL 24 2012

It is not necessary to submit an RFA form to the Division office if you do not object to the determination in this letter.

Please be advised that various development activities, within waters of the United States, including jurisdictional wetlands may be regulated by the Corps. Wetlands and other waters under the jurisdiction of the Maryland Department of the Environment (MDE) may also be located on the parcel. You may contact the MDE at (410) 537-3768 for information regarding jurisdiction and permitting requirements.

You are reminded that any grading or filling of waters of the United States, including jurisdictional wetlands, is subject to Department of the Army authorization. State and local authorizations may also be required to conduct activities in these locations. In addition, the Interstate Land Sales Full Disclosure Act may require that prospective buyers be made aware, by the seller, of the Federal authority over any waters of the United States, including wetlands, being purchased.

In future correspondence and permit applications regarding this parcel please include the file number located in the first paragraph of this letter.

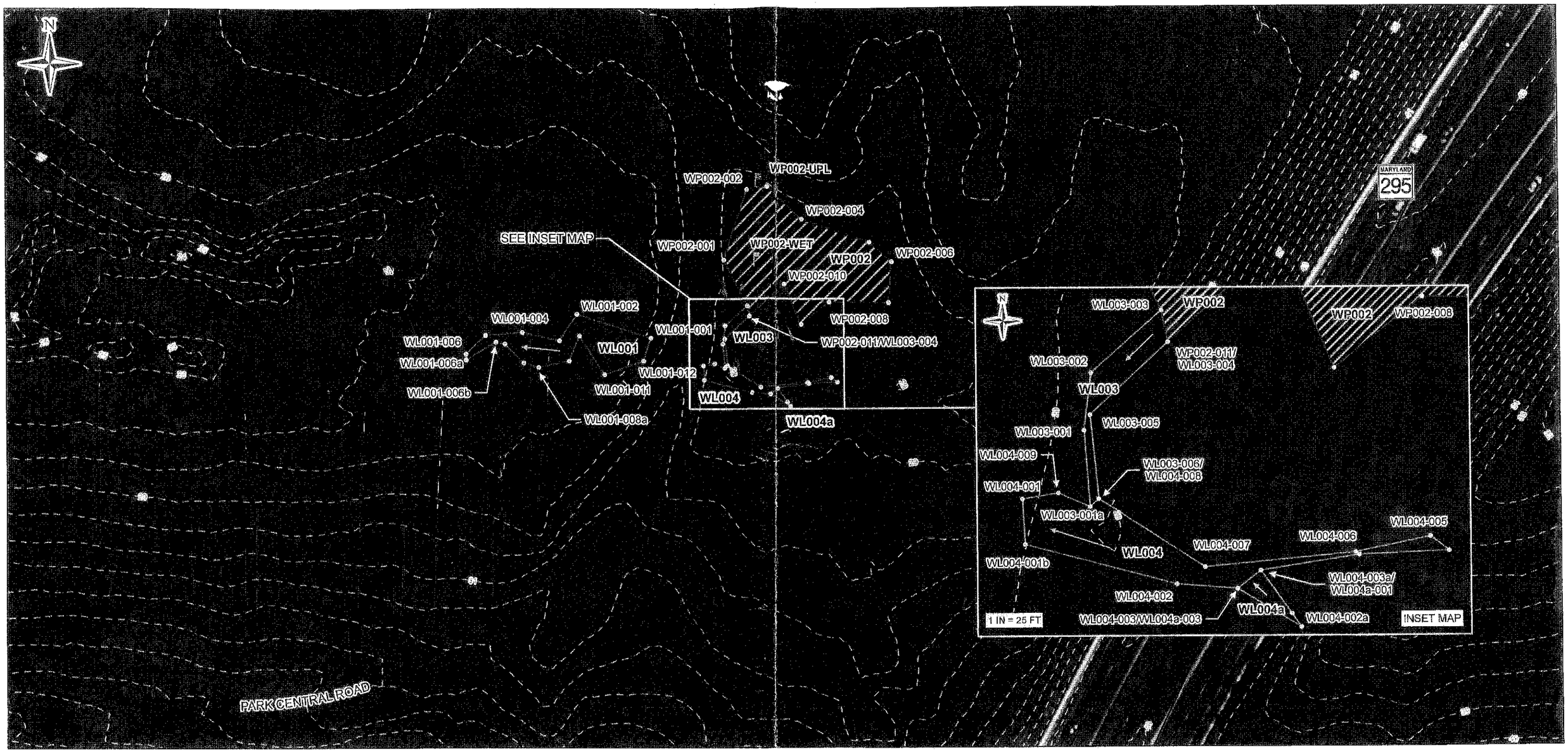
A copy of this letter is being furnished to the Maryland Department of the Environment and Mr. Kevin S. Rose, Federal Highway Administration for informational purposes. If you have any questions concerning this matter, please call Mr. Steven Harman of this office at (410) 962-6082.

Sincerely,

Kathy Anderson

Kathy B. Anderson
Chief, Maryland Section Southern

Enclosures



NOTES:

1. WETLAND WP002 EXTENDS BEYOND THE DELINEATED BOUNDARY TO THE EAST.

U.S. ARMY ENGINEER DISTRICT, BALTIMORE

JURISDICTIONAL DETERMINATION VERIFICATION MAP

FOR: (GREENBELT PARK PROJECT GREE 11/JD)

CENAB-OP-RMS 2011-02726

SIGNATURE: DATE: April 10, 2012

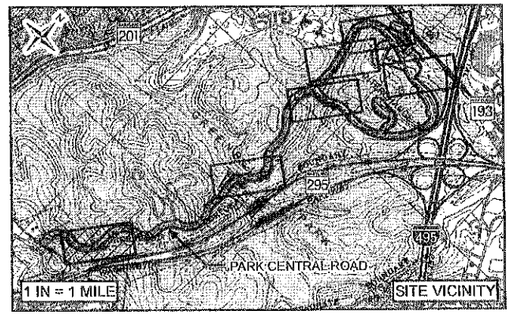
SOURCE: Microsoft Corporation and/or its suppliers. *bing Maps Aerial*. 2010. Redmond, WA.
USDA, NRCS. 2000. *Digital Raster Graphic Mosaic for Prince George's County, MD*. Fort Worth, TX.
USGS, NHD. 1999. *National Hydrography Dataset*.
USGS. 2011. *Washington, D.C., and Environs, 2008, 1/9-Arc Second National Elevation Dataset*. Sioux Falls, SD.

LEGEND:

- STUDY AREA
- WETLAND
- WATERWAY
- NHD FLOWLINE
- SAMPLE PLOT LOCATION
- WETLAND FLAG
- 1-FOOT CONTOUR
- FLOW DIRECTION
- ROADWAY

SCALE: 1 INCH = 80 FEET

0 40 80 160 FEET



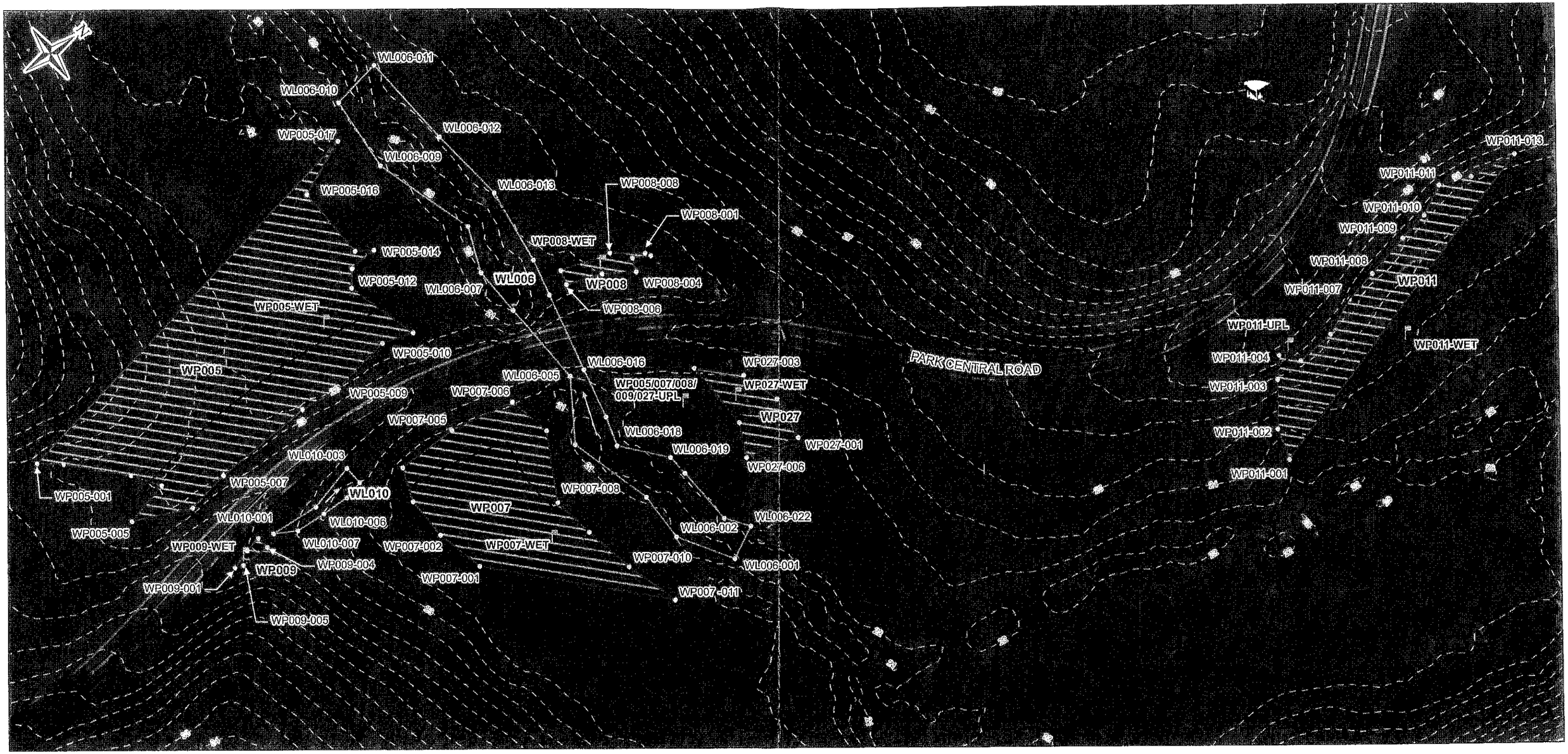
WETLAND LOCATION MAP
SHEET 1 OF 6

WASHINGTON SUBURBAN SANITARY COMMISSION

WETLAND DELINEATION SURVEY
GREENBELT PARK

PRINCE GEORGE'S COUNTY
MARYLAND

SEPTEMBER 2011



NOTES:

1. WATERWAY WL006 IS IDENTIFIED AS STILL CREEK.
2. WETLAND WP007 EXTENDS BEYOND THE DELINEATED BOUNDARY TO THE EAST.
3. WETLAND WP005 EXTENDS BEYOND THE DELINEATED BOUNDARY TO THE WEST WITHIN THE FLOODPLAIN OF WATERWAY WL006.
4. WETLAND WP027 EXTENDS BEYOND THE DELINEATED BOUNDARY TO THE EAST.
5. WETLAND WP011 EXTENDS BEYOND THE DELINEATED BOUNDARY TO THE NORTHEAST.

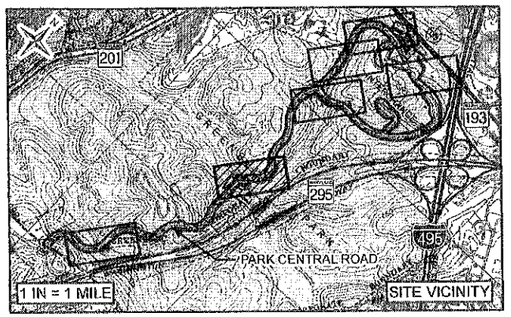
LEGEND:

- STUDY AREA
- WETLAND
- WATERWAY
- NHD FLOWLINE
- SAMPLE PLOT LOCATION
- WETLAND FLAG
- 1-FOOT CONTOUR
- FLOW DIRECTION
- ROADWAY

SCALE: 1 INCH = 80 FEET

0 40 80 160 FEET

SOURCE: Microsoft Corporation and/or its suppliers. *bing Maps Aerial*. 2010. Redmond, WA.
USDA, NRCS. 2000. *Digital Raster Graphic Mosaic for Prince George's County, MD*. Fort Worth, TX.
USGS, NHD. 1999. *National Hydrography Dataset*.
USGS. 2011. *Washington, D.C., and Environs, 2008, from the Second National Elevation Dataset*. Sioux Falls, SD.



U.S. ARMY ENGINEER DISTRICT, BALTIMORE
JAN JANUARY 2012
JURISDICTIONAL DETERMINATION
VERIFICATION MAP
GREENBELT PARK PROJECT (CASE # TBD)
FOR: CENAB-OP-RMS Gail Castle
FOR SIGNATURE: Alan Hansen DATE April 13 2012

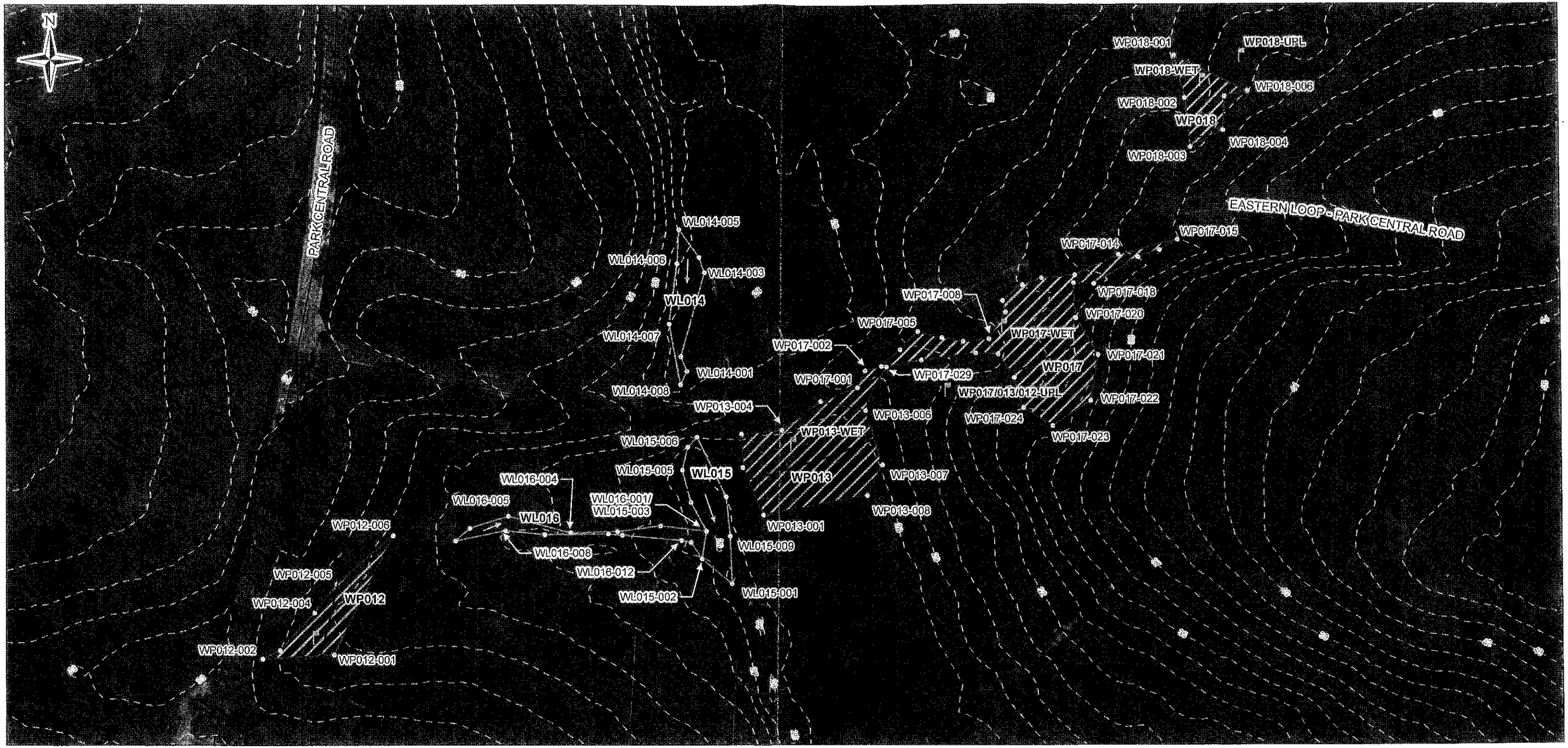
WETLAND LOCATION MAP
SHEET 2 OF 6

WASHINGTON SUBURBAN SANITARY COMMISSION

WETLAND DELINEATION SURVEY
GREENBELT PARK

PRINCE GEORGE'S COUNTY
MARYLAND

SEPTEMBER 2011



NOTES: U.S. ARMY ENGINEER DISTRICT, BALTIMORE

1. WETLAND WP013 EXTENDS BEYOND THE DELINEATED BOUNDARY TO THE SOUTH WITHIN THE FLOODPLAIN OF WATERWAY WL015.

JURISDICTIONAL DETERMINATION
VERIFICATION MAP

FOR: (GREENBELT PARK PROJECT GREENBELT/JD)
CENAB-OP-RMS 2011-92726
COE SIGNATURE _____ DATE September 19, 2012

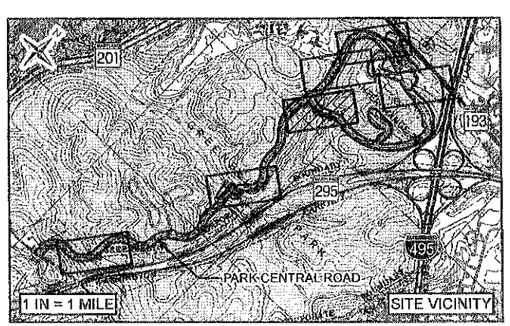
SOURCE: Microsoft Corporation and/or its suppliers. *bing Maps Aerial*. 2010. Redmond, WA.
USDA, NRCS. 2000. *Digital Raster Graphic Mosaic for Prince George's County, MD*. Fort Worth, TX.
USGS, NHD. 1999. *National Hydrography Dataset*.
USGS. 2011. *Washington, D.C., and Environs, 2008, 1/9-Arc Second National Elevation Dataset*. Sioux Falls, SD.

LEGEND:

- STUDY AREA
- WETLAND
- WATERWAY
- NHD FLOWLINE
- SAMPLE PLOT LOCATION
- WETLAND FLAG
- 1-FOOT CONTOUR
- FLOW DIRECTION
- ROADWAY

SCALE: 1 INCH = 80 FEET

0 40 80 160 FEET



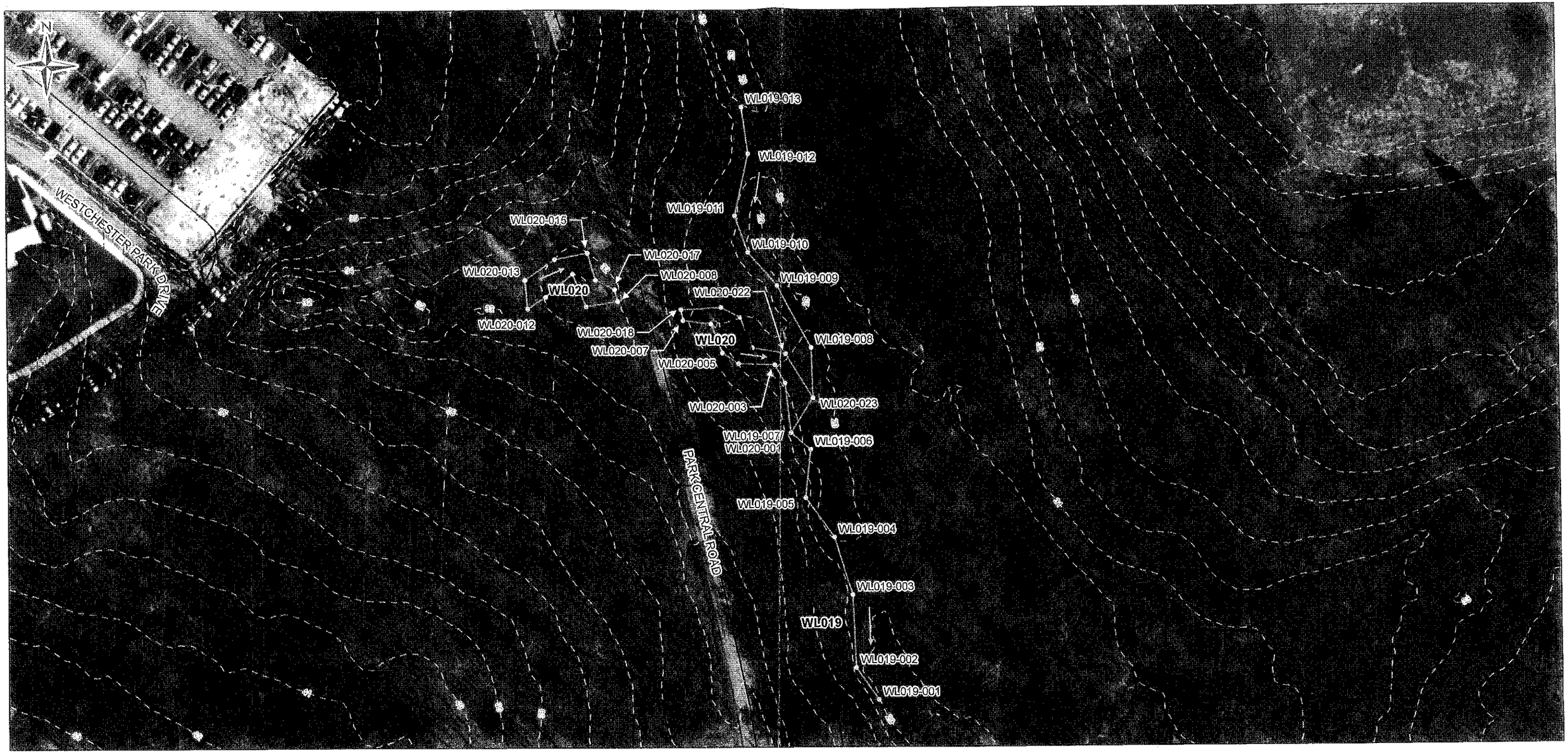
WETLAND LOCATION MAP
SHEET 3 OF 6

WASHINGTON SUBURBAN SANITARY COMMISSION

WETLAND DELINEATION SURVEY
GREENBELT PARK

PRINCE GEORGE'S COUNTY
MARYLAND

SEPTEMBER 2011



NOTES:

1. THERE ARE NO DELINEATED WETLANDS LOCATED ON THIS MAP.
2. ONLY THE RIGHT BANK OF WATERWAY WL019 WAS DELINEATED.

ARMY ENGINEER DISTRICT, BALTIMORE
JURISDICTIONAL DETERMINATION
VERIFICATION MAP
JAN 03 2012
NAB-CP-RMS 2011-00706
SIGNATURE DATE

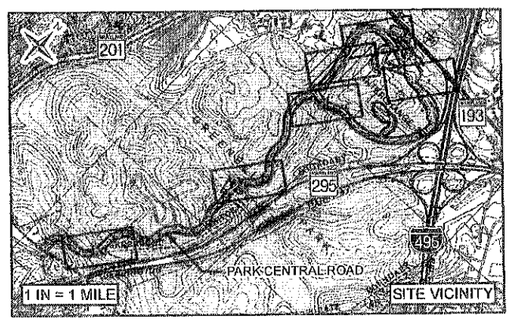
SOURCE: Microsoft Corporation and/or its suppliers. *bing Maps Aerial*. 2010. Redmond, WA.
USDA, NRCS. 2000. *Digital Raster Graphic Mosaic for Prince George's County, MD*. Fort Worth, TX.
USGS, NHD. 1999. *National Hydrography Dataset*.
USGS. 2011. *Washington, D.C., and Environs, 2008, 1/9-Arc Second National Elevation Dataset*. Sioux Falls, SD.

LEGEND:

- STUDY AREA
- WETLAND
- WATERWAY
- NHD FLOWLINE
- SAMPLE PLOT LOCATION
- WETLAND FLAG
- 1-FOOT CONTOUR
- FLOW DIRECTION
- ROADWAY

SCALE: 1 INCH = 80 FEET

0 40 80 160 FEET



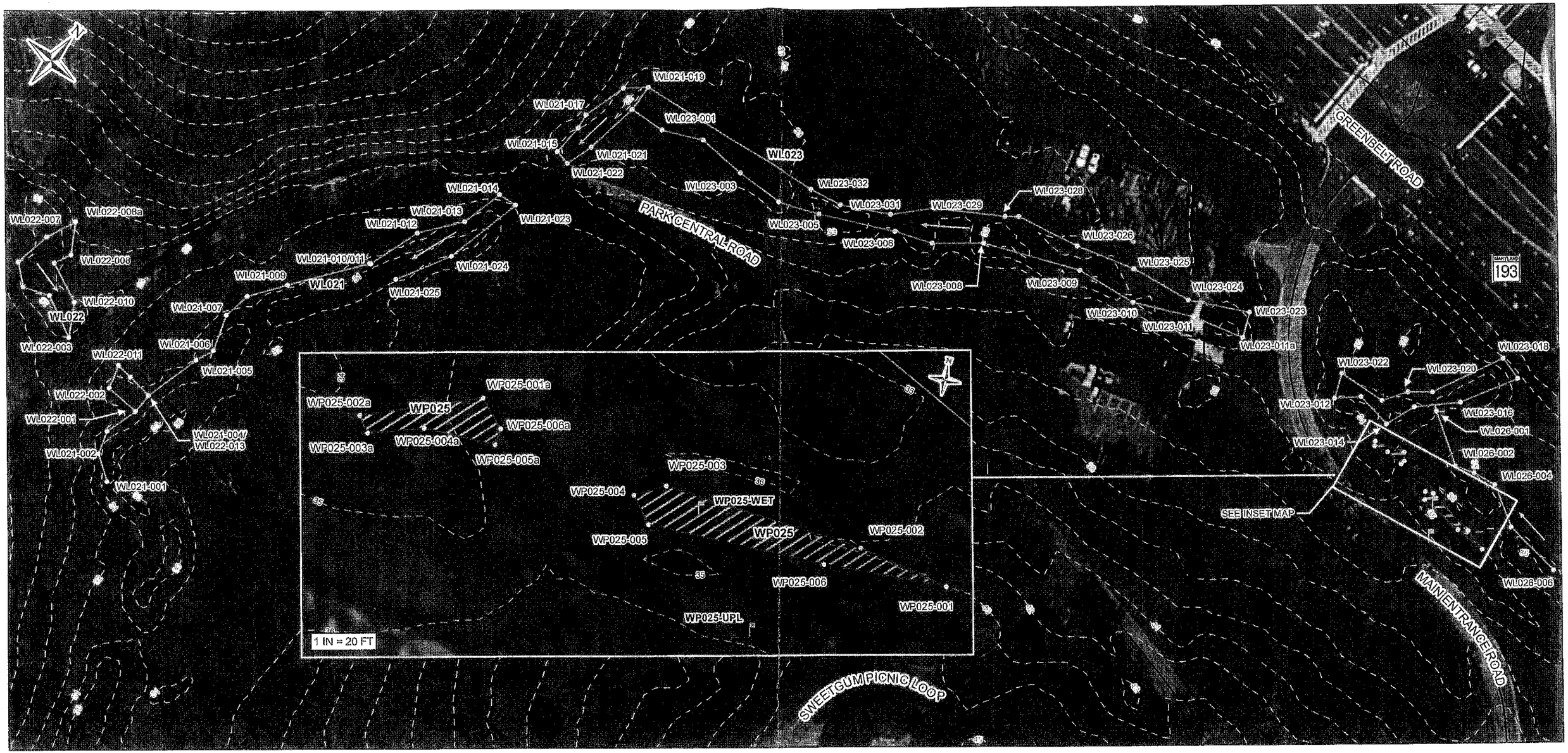
WETLAND LOCATION MAP
SHEET 4 OF 6

WASHINGTON SUBURBAN SANITARY COMMISSION

WETLAND DELINEATION SURVEY
GREENBELT PARK

PRINCE GEORGE'S COUNTY
MARYLAND

SEPTEMBER 2011



NOTES:

1. ONLY PART OF THE RIGHT BANK OF WATERWAY WL021 WAS DELINEATED BECAUSE IT DOES NOT FURTHER INTERCEPT THE STUDY AREA SOUTH OF WL021-025.
2. ONLY THE LEFT BANK OF WATERWAY WL023-[illegible] WAS DELINEATED.

ARMY ENGINEER DISTRICT, BALTIMORE

JURISDICTIONAL DETERMINATION

VERIFICATION MAP

FOR: (GREENBELT Park Master GREENBELT) JAN 03 2012

CENAB-OP-RMS 2011-02706

FOR SIGNATURE [signature] DATE [illegible] 2012

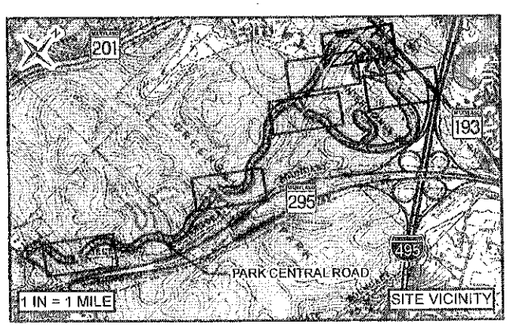
SOURCE: Microsoft Corporation and/or its suppliers. *bing Maps Aerial*. 2010. Redmond, WA.
USDA, NRCS. 2009. *Digital Raster Graphic Mosaic for Prince George's County, MD*. Fort Worth, TX.
USGS, NHD. 1999. *National Hydrography Dataset*.
USGS. 2011. *Washington, D.C., and Environs, 2008, 1/9-Arc Second National Elevation Dataset*. Sioux Falls, SD.

LEGEND:

- STUDY AREA
- WETLAND
- WATERWAY
- NHD FLOWLINE
- SAMPLE PLOT LOCATION
- WETLAND FLAG
- 1-FOOT CONTOUR
- FLOW DIRECTION
- ROADWAY

SCALE: 1 INCH = 80 FEET

0 40 80 160 FEET



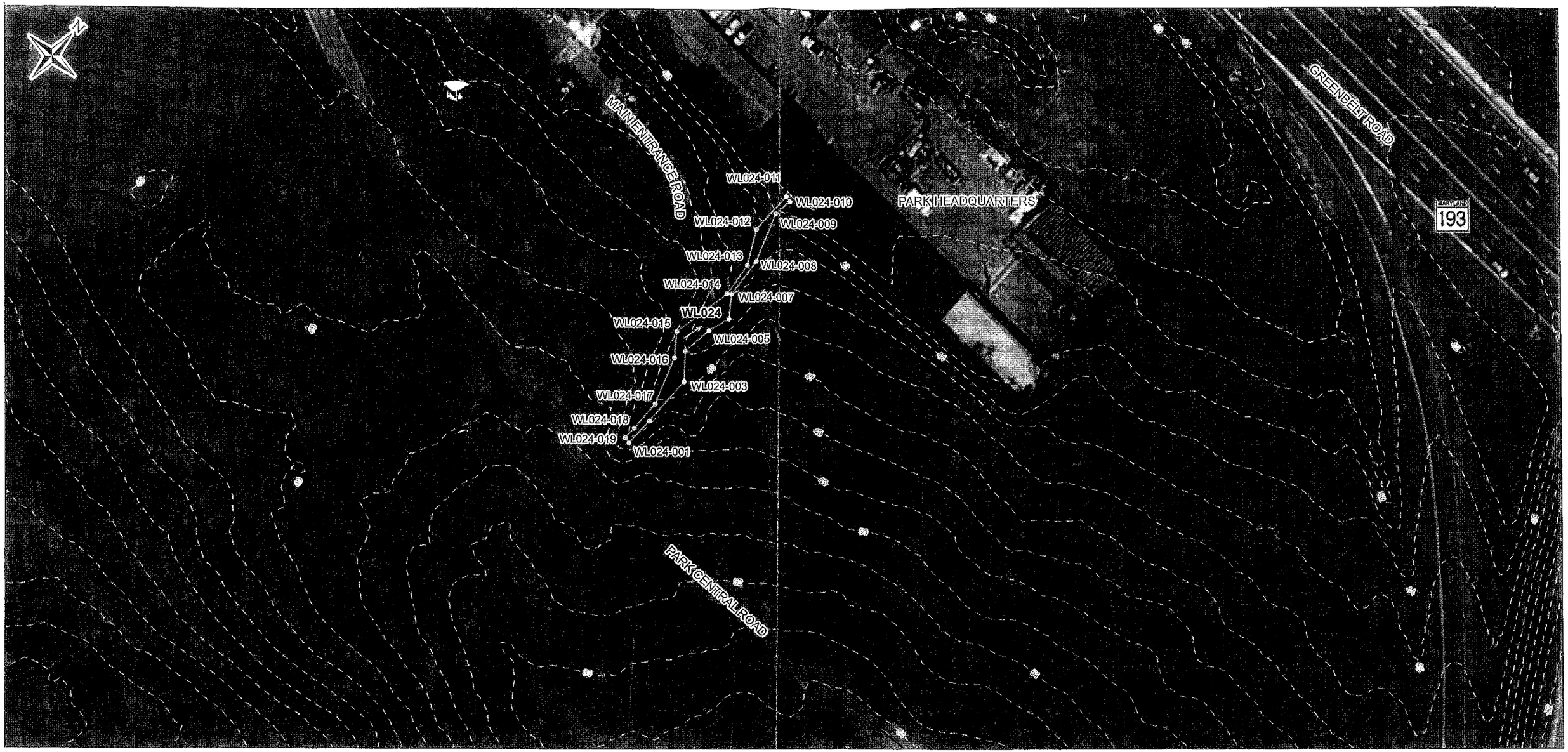
WETLAND LOCATION MAP
SHEET 5 OF 6

WASHINGTON SUBURBAN SANITARY COMMISSION

WETLAND DELINEATION SURVEY
GREENBELT PARK

PRINCE GEORGE'S COUNTY
MARYLAND

SEPTEMBER 2011



NOTES: ARMY ENGINEER DISTRICT, BALTIMORE

1. THERE ARE NO DELINEATED WETLANDS WITHIN THIS MAP.

JURISDICTIONAL DETERMINATION
VERIFICATION MAP
JAN 09 2014
FOR: GREENBELT PARK PROTECT GREE 11/JD)
CENAB-OP-R NAB 2011-02726
COE SIGNATURE _____ DATE April 19 2012

SOURCE: Microsoft Corporation and/or its suppliers. *bing Maps Aerial*. 2010. Redmond, WA.
USDA, NRCS. 2000. *Digital Raster Graphic Mosaic for Prince George's County, MD*. Fort Worth, TX.
USGS, NHD. 1999. *National Hydrography Dataset*.
USGS. 2011. *Washington, D.C., and Environs, 2008, 1/9-Arc Second National Elevation Dataset*. Sioux Falls, SD.

LEGEND:

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- WETLAND
- WATERWAY
- NHD FLOWLINE
- SAMPLE PLOT LOCATION
- WETLAND FLAG
- 1-FOOT CONTOUR
- FLOW DIRECTION
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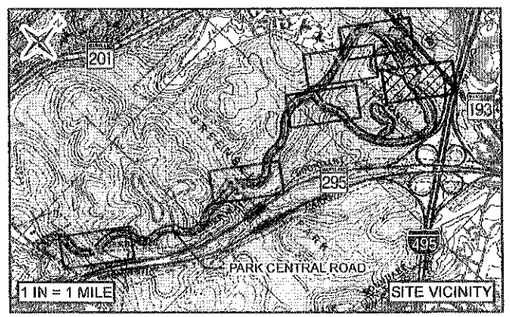
0 40 80 160 FEET



WETLAND LOCATION MAP
SHEET 6 OF 6

WASHINGTON SUBURBAN SANITARY COMMISSION

WETLAND DELINEATION SURVEY
GREENBELT PARK

PRINCE GEORGE'S COUNTY
MARYLAND

SEPTEMBER 2011

MDE

MARYLAND DEPARTMENT OF THE ENVIRONMENT
1800 Washington Boulevard • Baltimore MD 21230
410-537-3000 • 1-800-633-6101

Martin O'Malley
Governor

Anthony G. Brown
Lieutenant Governor

Robert M. Summers, Ph.D.
Acting Secretary

April 22, 2011

Federal Highway Administration
Eastern Federal Lands Highway Division
21400 Ridgetop Circle
Sterling, Virginia, 20166

Attention: Mr. Kevin Rose

Subject: MDE No.: 11-SF-0286
Project PRA-GREE 11(1)
Greenbelt Park, Prince George's County
Stormwater, Erosion, and Sediment Control Review

Re: HFPP-15

Dear Mr. Rose,

The Water Management Administration (WMA) has reviewed the April 4, 2011 submittal for the above referenced project in Prince George County. The review was in accordance with Sections 4-106 and 4-205 of the Department of the Environment Article, Annotated Code of Maryland with regard to Sediment Control and Stormwater Management. The following comments are a result of the review:

General

1. The Maryland Department of the Environment (MDE) number that has been assigned to this project is 11-SF-0286. Please be sure to include it on all future submissions and correspondence.

2. The concept plan is unacceptable because no preliminary estimates of stormwater management (SWM) requirements or preliminary location and specific type of Environmental Site Design (ESD) practices are included.

3. For projects with a disturbed area equal to or greater than 1 acre, a notice of intent (NOI) to comply with the NPDES General Permit for Construction Activity must be submitted to and approved by the WMA Compliance Division prior to commencing with earth disturbance. The application for the "General Permit for Construction Activity" is available on MDE's website: www.mde.state.md.us. Please note that due to the public comment period, attaining an approved application will require a minimum of 30 days for projects equal to or under 3 acres and 45 days for projects over 3 acres.

4. Please be advised that projects submitted for sediment control approval are subject to the requirements of the Maryland Forest Conservation Act (FCA), Annotated Code of Maryland, Natural Resources Article Section 5-1601, et seq., and regulations adopted thereunder. Failure to comply with the FCA may result

Exempt only for state/local (see attached.)

in enforcement actions, such as monetary penalties, as imposed by the Act. For further information, please contact the appropriate regional office.

5. Disturbance is shown within the wetland buffer, and stream crossing work is proposed. The MDE Wetlands and Waterways Program must be contacted at (410)-537-3768.

6. Please provide full sized drawings with the next submission.

Stormwater Management

1. MDE agrees with the Federal Highway Administration's (FHWA) logic that it will be more beneficial to treat the stormwater runoff from one or more of the parking lots as opposed to at the site of the impervious increase at the bridge or culvert replacement. However, this practice can only be used if site of the proposed ESD treatment is in the same watershed as the site of the impervious increase.

2. Regarding the above comment, it is recommended that a nonstructural or micro-scale ESD practice from Chapter 5 be considered for SWM instead of a Chapter 3 Urban BMP design. For example, the shown parking lots may prove to be strong candidates for permeable pavement.

3. The 3.3.A Stormwater Management Waiver will be recommended for approval. However, please be advised that this approval is only valid for mill and overlay areas only. Please see the comment below.

4. If it is determined during milling that the entire thickness of asphalt in any area must be removed and replaced down to the base soils, then the 3.3.A SWM Waiver will be void for that area. For that section of pavement a modification request would have to be submitted, and 50% of the existing impervious area would have to be treated for SWM per redevelopment requirements if the existing project area is determined to be over 40% impervious. Please be forewarned that the modification process can require as much time as a full MDE Stormwater Management and Erosion and Sediment Control approval review. It is strongly advised that any areas in poor condition that are felt may need full removal and repaving be investigated, and included if necessary, in the scope of this project prior to approval.

Erosion and Sediment Control

Please include an Erosion and Sediment Control Plan with the site development submission.

Review of this project will continue upon receipt of a satisfactory response to the above comments. Please call 410-537-4024 or email me at mkeenan@mde.state.md.us with any questions or comments.

Sincerely,

Matthew Keenan
Regulatory and Compliance Engineer
Sediment and Stormwater Plan Review Division
Water Management Administration

APPENDIX C: STATEMENT OF FINDINGS FOR FLOODPLAINS

STATEMENT OF FINDINGS
EXECUTIVE ORDER 11988: Floodplain Management

PRA-GREE 11(1) Greenbelt Park Improvements
Prince Georges County, MD

Recommended:

_____ _____
Superintendent, National Capital Parks East Date

Certified for Technical Adequacy and Servicewide Consistency:

_____ _____
Chief, Water Resources Division Date

Approved:

_____
Director, National Capital Region Date

INTRODUCTION

Executive Orders 11988 (Floodplain Management) requires the National Park Service (NPS), the Federal Highway Administration (FHWA) and other federal agencies to evaluate the likely impacts of actions in floodplains. The objective of E.O. 11988 is to avoid, to the extent possible, the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. NPS Director's Order #77-2 Floodplain Management and Procedural Manual #77-2 provide NPS policies and procedures for complying with E.O. 11988. This Statement of Findings (SOF) documents compliance with these NPS floodplain management procedures.

Greenbelt Park is one of the units in the National Capital Parks -East. The park covers more than 1,176 acres in Prince George's County, Maryland (Figure 1). The entire park is located within the Atlantic Coastal Plain physiographic province in the western shore uplands region. (NPS) The project area lies within the City of Greenbelt, approximately 9.3 miles northeast of Washington D.C. The principal watercourse associated with Greenbelt Park is Still Creek, a third-order tributary of Anacostia River Northeast Branch. North Branch Still Creek is the largest tributary of the stream but low-order and intermittent tributaries also contribute to it. The terrain of Greenbelt Park is sharply dissected and encompasses a series of narrow to medium-width ridges overlooking ravines associated with Still Creek and the smaller tributaries. Still Creek enters the Anacostia River just southwest of the intersection at Kenilworth Avenue (Maryland 201) and Calvert Road. Elevations in the park are from about 60 feet above sea level to a maximum of 200 feet above sea level on some of the ridge crests. The *National Wetlands Inventory Map for Prince George's County, Maryland* (USFWS, 1981-2002) identifies Still Creek as a palustrine, forested, broad-leaved deciduous, temporarily flooded waterway.

The purpose of this SOF is to represent the rationale for the proposed improvements to Park Central Road in the floodplain area and to document the anticipated effects on these resources. The project area is located in a Class I Action, per DO #77-2. Avoidance of impacts to floodplains is not possible because Still Creek in Greenbelt Park is a perennial waterway currently located in the 100-year floodplain; therefore, any improvements made to the existing road and culverts at Still Creek would be located in the floodplain.

Improvements are proposed for Greenbelt Park with the intent of meeting the following objectives:

- Maintenance of Park Central Road as safe public access;
- Restore floodplain connectivity, preserve the local ecosystem and reduce flooding; and
- Minimization of impacts to natural, cultural, and scenic and aesthetic resources.

PROPOSED ACTION

Under the Alternative C (Preferred Alternative) as described in the *Greenbelt Park Improvements Environmental Assessment*, the existing deteriorated roadway along Park Central Road would be resurfaced. The double culvert at Still Creek would be replaced with a single span bridge and five flanking 24" reinforced concrete pipe culverts adjacent to the bridge to serve as relief during larger

storm events. Portions of the existing pavement would be removed, and new pavement would be placed to restore the asphalt paved roadway. Additional aggregate topsoil will be added to the roadway shoulders as a safety edge to eliminate shoulder drop off. The amount of impervious surface removal would be determined through pavement core samples taken by Eastern Federal Lands Highway Division and stormwater management coordination with the Maryland Department of Environment. Six parking lot areas located along the project area would also be milled and paved to match their existing dimensions. Along Park Central Road, several locations contain culverts that have deteriorated and require replacement.

An erosion and sediment control plan would be prepared that describes the temporary construction and permanent erosion and sediment control best management practices to be implemented. A temporary diversion channel will be utilized to aid in the removal of the double culverts at Still Creek and to construct the new bridge. These measures would prevent debris and sediment from entering the floodplain at and downstream of the Still Creek bridge to the maximum extent practicable. Staging would take place in previously disturbed parking areas in the Park. Construction vehicles would park at the staging location when not in use. Materials such as aggregate and topsoil would also be stockpiled within the existing parking areas.

SITE DESCRIPTION

Federal Emergency Management Agency (FEMA) Flood Insurance Rate maps show that a portion of the project area at Still Creek is within Zone A, of the 100-year-flood floodplain (Figure 2). Zone A is defined as areas inundated by 100-year flooding for which base flood elevations and flood hazard factors have not been determined. Flooding of Still Creek has been observed in the project area by Park staff during strong storms. Park staff indicated that in June 2009, a 25-year storm event caused flooding that brought the water level in Still Creek to come within a foot of overtopping the roadway. The storm caused pipe damage to the culverts; large scour holes were created in the stream bed; stream channel degradation was accelerated and sagging and cracking of the roadway pavement was observed. The remainder of the Park is within Zone C. Zone C is defined as areas of minimal flooding.

JUSTIFICATION FOR USE OF THE FLOODPLAIN

A hydraulic and floodplain analysis was completed for the project. The project proposes improvements to an existing transportation facility, a portion of which is located within the 100-year floodplain. The existing double culvert at Still Creek is located within the 100-year floodplain; therefore use of a site outside of the 100-year floodplain cannot occur. The improvements are needed in order to address the deterioration of the roadway facility, including the pavement, signs, and undersized culverts. Continued deterioration poses a potential safety hazard to park visitors and staff. Replacing the double culverts at Still Creek with the proposed bridge and flanking floodplain relief culverts, will restore connectivity of the floodplain. Flood storage volumes would improve from existing conditions and natural flow patterns would be less restricted. The floodplain is currently constricted from approximately 250 feet upstream and downstream of the structure to 50 feet at the culvert crossing. The constriction caused by the existing undersized culverts has resulted in stream channel

degradation, scour holes at the culvert outlet, and does not allow for unrestricted fish or aquatic organism passage. The multiple opening stream crossing will provide a freeboard of 3.70 feet for the 50 year storm event for the bridge. The new bridge will not increase the flood danger to nearby property, residents or visitors.

IMPACTS TO FLOODPLAIN FUNCTIONS AND VALUES

Implementation of Alternative C, the Preferred Alternative, would result in temporary impacts to the floodplain during removal of and construction of the bridge and relief culverts. After construction is completed, the diversion channel, and any cofferdams would be removed. Construction materials may be stockpiled in parking lots the project area to be ready for use during construction.

Implementation of Alternative C, the Preferred Alternative, would also result in permanent impacts to the floodplain. Since the culverts would be replaced with a bridge, there would be no rise in water surface elevation or backwater. The five flanking floodplain relief culverts will be placed adjacent to the bridge in order to aid in widening the floodplain at the stream crossing during larger storm events. New material would be placed in the project area in the form of fill for the bridge approaches and riprap (large sized rock). The riprap would be used to protect the bridge abutments and culverts from scour from water movement through the channel. The displacement of floodwaters as a result of the riprap placement would not be noticeable. A change in the function of the floodplain such as the frequency, duration, or extent of flooding, would be an improvement from existing conditions. The proposed bridge is not expected to significantly impact the flood zone or floodplain values. The floodplain will be restored to provide connectivity in which the natural functions of the floodplain can again operate. **This project will improve the safety of motorists, cyclists and pedestrians using Park roads improve visitor experience and preserve natural resources within the Park.**

MINIMIZATION OF HARM OR RISKS TO LIFE AND PROPERTY

The proposed new bridge would be located in a flood hazard area subject to inundation by the 1% annual chance flood. Minimization and mitigation include the protection of human health and safety, protection of investment, and protection of floodplain resources and processes. Flooding in the project area is usually caused by traceable storm events, such as nor' easters, tropical storms or hurricanes that allow for adequate warning time. Harm or risks to human health and safety is minimized through warnings and/or Park closures.

The improvements to Greenbelt Park would construct a new investment at Still Creek; the rehabilitation and resurfacing invests in the existing facility. Risk to the investment exists and will continue to exist after the improvements to Greenbelt Park are completed. However, the risk is greatly reduced by constructing a bridge and relief culverts compared to the existing undersized culverts in the base floodplain. The investment should result in a localized lessening of flood severity and decreased damages to the bridge and associated roadway facility. The NPS would repair or reconstruct the facility if and when damage occurs.

Protection of floodplain resources and processes was achieved to the extent possible. The single span bridge will have no pilings in the channel and the flanking culverts will restore connectivity to the

floodplain and associated ecosystems. Soil disturbance and the addition of fill materials will be minimized to the greatest extent possible. The project area will be re-vegetated. The amount of riprap proposed to protect the bridge abutments and culvert inlets and outlets will be minimized to the extent possible.

COMPLIANCE

National Environmental Policy Act

The *Greenbelt Park Environmental Assessment* has been prepared for the proposed project pursuant to the National Environmental Policy Act. A Finding of No Significant Impact is expected to be signed. The proposed actions would impact waters of the United States as defined by the Clean Water Act and are therefore subject to review by the U.S. Army Corps of Engineers. Section 401 of the Clean Water Act is a certification by the state that the project impacts to water quality will not exceed those allowed under the state's water quality standards. Section 404 of the Clean Water Act requires a permit for any activity which may result in the discharge of dredged or fill material into navigable waters. Therefore, acquiring Section 401, Section 404, and NPDES permits would be required for this project.

CONCLUSION

The National Park Service concludes that there is no practical alternative for improving Park Central Road at Still Creek other than its existing location. Mitigation and compliance with regulations and policies to prevent impacts to water quality, floodplain values, and loss of property or human life would be strictly adhered to during and after the construction. Permits with other federal and cooperating state and local agencies would be obtained prior to construction activities. No long-term adverse impacts would occur from Alternative C, the Preferred Alternative. Therefore, the National Park Service finds the Preferred Alternative to be acceptable under Executive Order 11988 for the protection of floodplains.

REFERENCES

Federal Emergency Management Agency. 2012 Map Viewer. Available on the Internet at https://hazards.fema.gov/femaportal/wps/portal/

National Park Service. 2004 Procedural Manual #77-2: Floodplains Management. Available on the Internet at http://www.nature.nps.gov/rm77/floodplain.cfm

Federal Highway Administration. Eastern Federal Lands Highway Division. GREE 11(1) Final Bridge Hydraulics Memo.

Straughn Environmental. 2011 Wetland Delineation Survey, Greenbelt Park, Prince George's County, Maryland. Prepared for Federal Highway Administration, Eastern Federal Lands Highway Division. November.

Figure 1. Greenbelt Park Map (NPS)

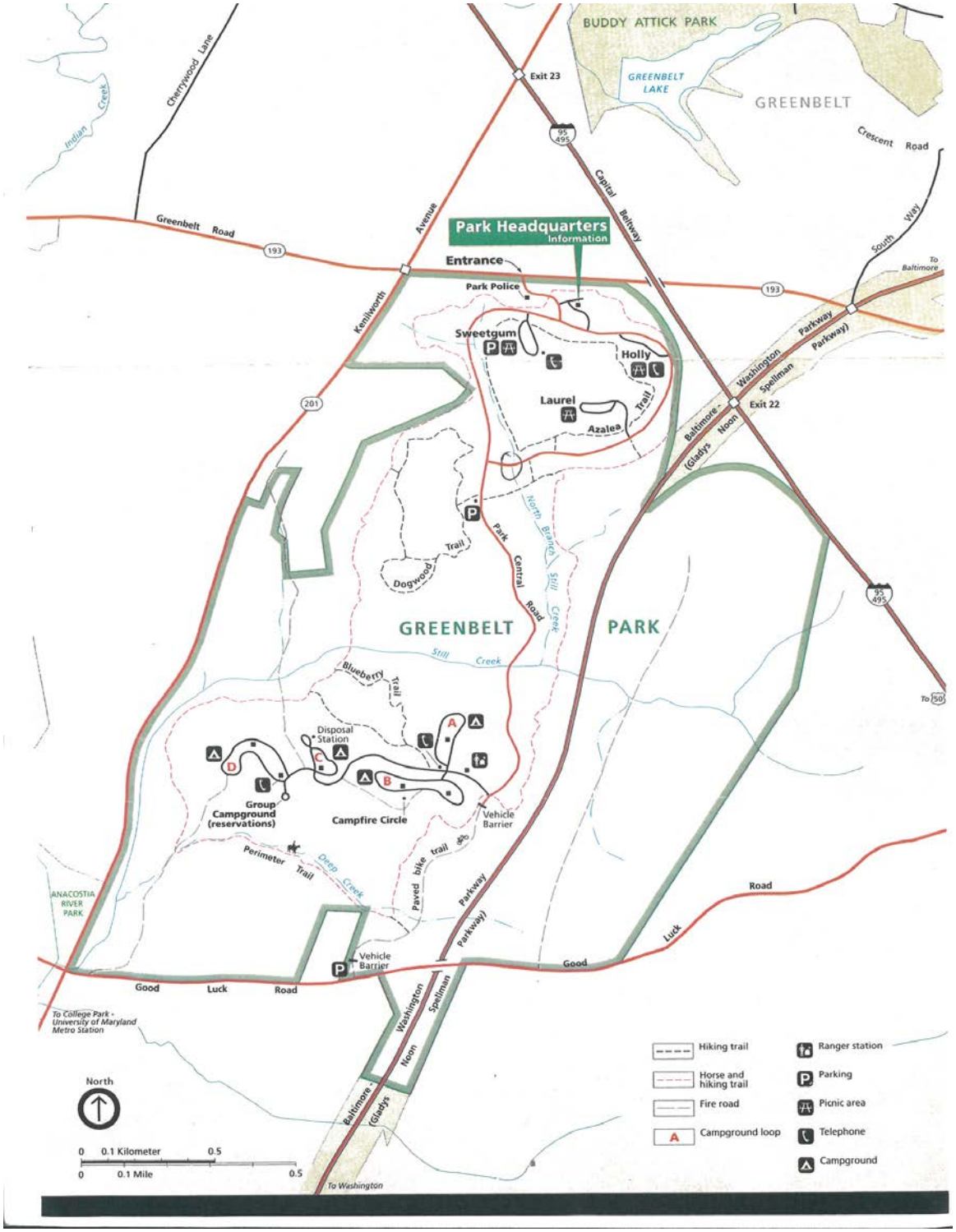


Figure 2. Flood Insurance Rate Map (FEMA)