1 PURPOSE AND NEED

The Federal Highway Administration (FHWA) and the District Department of Transportation (DDOT), in cooperation with the National Park Service (NPS), are proposing the rehabilitation of the 1.7-mile segment of Oregon Avenue, NW, between Military Road and Western Avenue along the northwestern border of Rock Creek Park (see **Figure 1-1**). FHWA has oversight responsibility for the Federal-aid program and is participating in the funding of the project. The existing two-lane Oregon Avenue lies almost entirely within DDOT right-of-way and is maintained by DDOT. The eastern edge of roadway borders Rock Creek Park, which is owned and maintained by the National Park Service.

This Final Environmental Assessment (EA) addresses the range of viable alternatives considered for improvements to the roadway and the selection of the Preferred Alternative. Each of the Candidate Build Alternatives was developed to address deficiencies in the existing roadway infrastructure and stormwater management systems; improve the safety of motorists, pedestrians, and bicyclists; and enhance linkages with respect to serving pedestrian and bicycle travel. With minor exceptions, the proposed improvements for each alternative would occur within the existing DDOT right-of-way.

The EA has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR 1500-1508), FHWA's *Environmental Impact and Related Procedures* (23 CFR 771), FHWA's *Technical Advisory Guidance for Preparing and Processing Environmental and Section 4(f) Documents* (T6640.8A), DDOT's *Environmental Policy and Process Manual,* and NPS Director's Order #12: *Conservation Planning, Environmental Impact Analysis, and Decision-making*. The project also included the evaluation of potential effects to cultural resources in accordance with Section 106 of the National Historic Preservation Act.

1.1 PURPOSE OF THE PROPOSED ACTION

The purpose of the proposed action is to rehabilitate Oregon Avenue to satisfy operational, safety, and multi-modal transportation needs. Context sensitive solutions will take into account the adjoining land uses - residential developments to the west and Rock Creek Park to the east.

1.2 NEEDS FOR THE PROPOSED ACTION

The needs for improvements to Oregon Avenue relate primarily to deficiencies in the existing roadway infrastructure and stormwater management system; the safety of motorists, pedestrians, and bicyclists; and linkages with respect to serving pedestrian and bicycle travel.

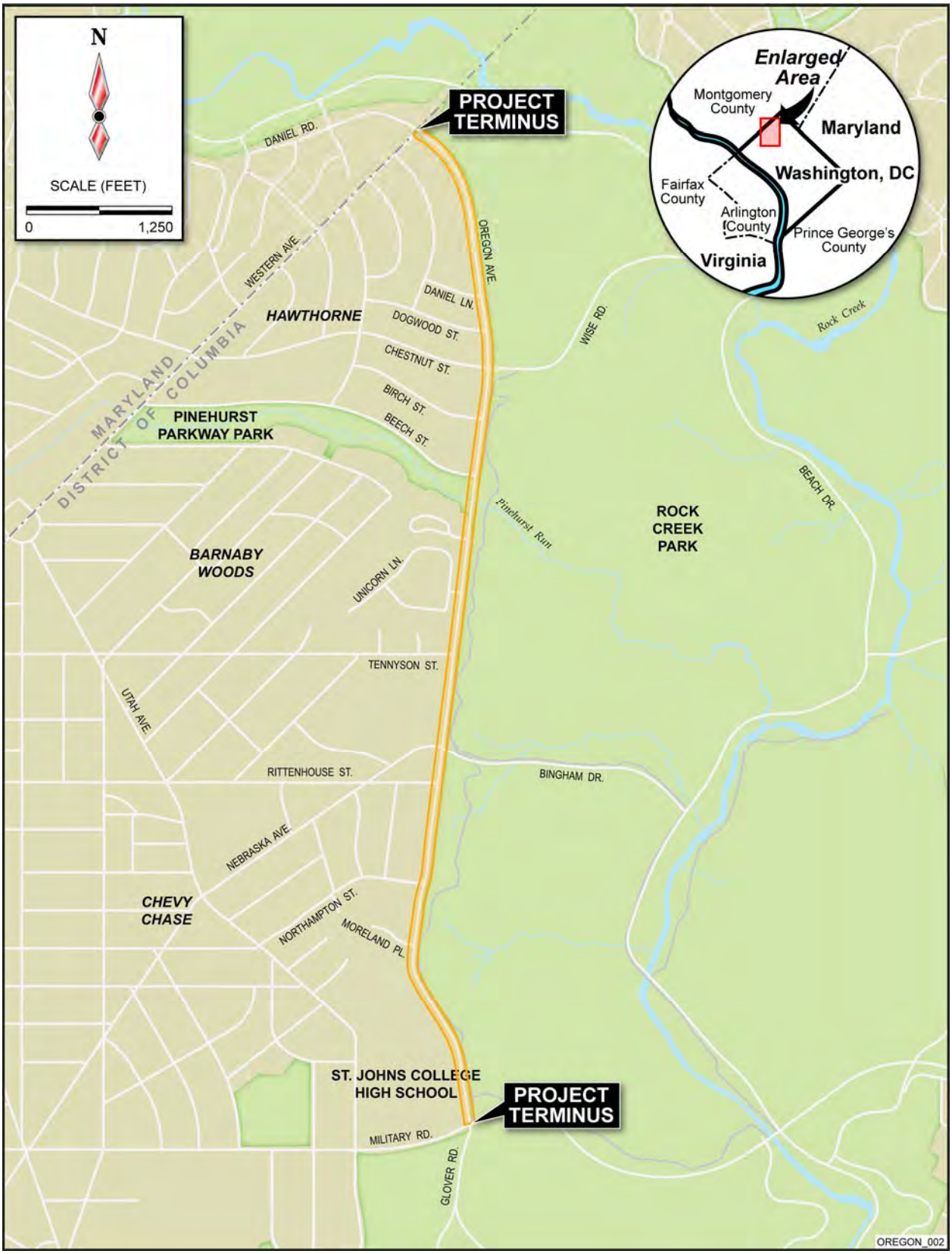

Figure 1-1. Project Location

1.2.1 Infrastructure Deficiencies

There are a number of deficiencies with respect to the current physical condition of Oregon Avenue, including deteriorating pavement and substandard roadway geometry, inadequate stormwater drainage, and aging and inadequate structures, as described further below.

Roadway Pavement and Geometry

With respect to its physical condition, the existing Oregon Avenue roadway is deteriorated and crumbling in many locations (see **Figure 1-2**), a problem exacerbated by stormwater drainage issues. The existing roadway has an apparent failed base, inadequate pavement, and roadway width less than required by current roadway design standards. Asphalt curb is provided sporadically along the roadway, and a sidewalk is currently available only in front of a few homes on the west side of the roadway near Moreland Place. The pictures in Figure 1-2 illustrate the deteriorating pavement, side-slope erosion, steep roadway slopes, and the impact of ponding runoff due to inadequate stormwater management.

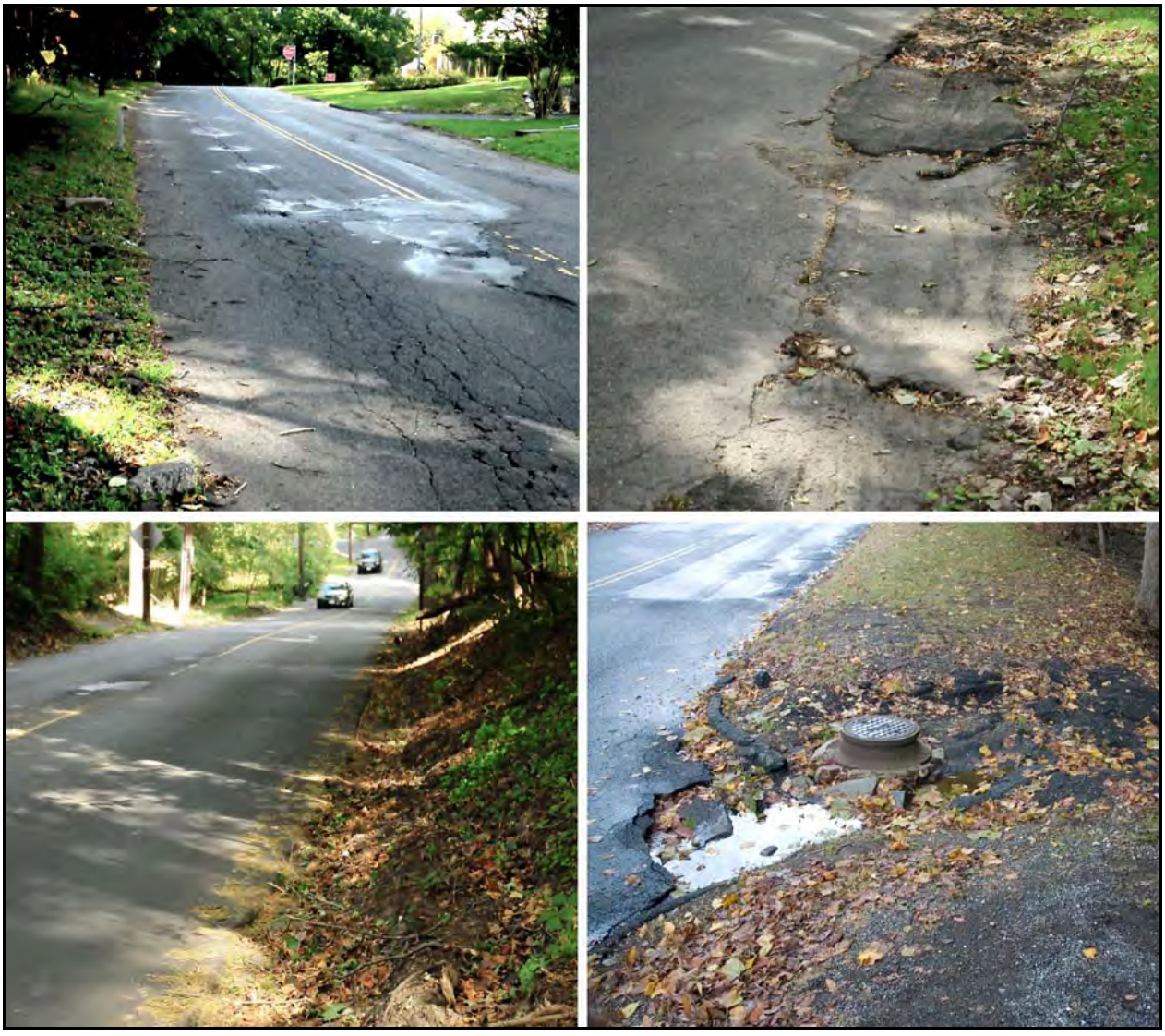

Figure 1-2. Deteriorated Infrastructure along Oregon Avenue

The majority of Oregon Avenue is classified as a collector roadway. Based on roadway design standards developed to provide for safe travel, the minimum design speed for a collector roadway is 30 miles per hour (mph) with a posted speed limit of 25 mph (DC Department of Transportation Design and Engineering Manual). While Oregon Avenue is currently posted for 25 mph, the roadway geometrics at two locations require speed reductions (to either 20 mph or 15 mph). In addition, four of 16 vertical curves[1] on Oregon Avenue do not meet the minimum requirements for this design speed and afford limited sight distance. The geometrics of the roadway reflect the topography within the study area, which is dominated by rolling hills.

STORMWATER DRAINAGE

The existing stormwater drainage system includes several storm sewer systems collecting runoff from the highlands to the west of the project; these systems flow to existing outfall channels that flow through Rock Creek Park to the east. Other upland areas to the west drain directly to the roadway. The roadway drainage system consists of a few catch basins in the areas where there are existing storm sewer systems, and these basins discharge into the park via existing outfalls. The remainder of the roadway runoff, and off-site runoff from upstream parcels on the west side of the roadway, drains along the roadside cut-slopes, across the pavement, and then ultimately flows into Rock Creek Park.

This uncontrolled runoff has contributed in large part to the deterioration of the roadway and the slopes of Rock Creek Park adjacent to Oregon Avenue. The current conditions are unsafe because of these drainage issues; the lack of adequate stormwater management combined with the topography results in areas along the roadway where ponding often occurs and where ice sheets form in the winter (in particular, at the intersections with Moreland Place and Western Avenue). **Figure 1-3** shows some examples of stormwater runoff and ponding within the roadway corridor.

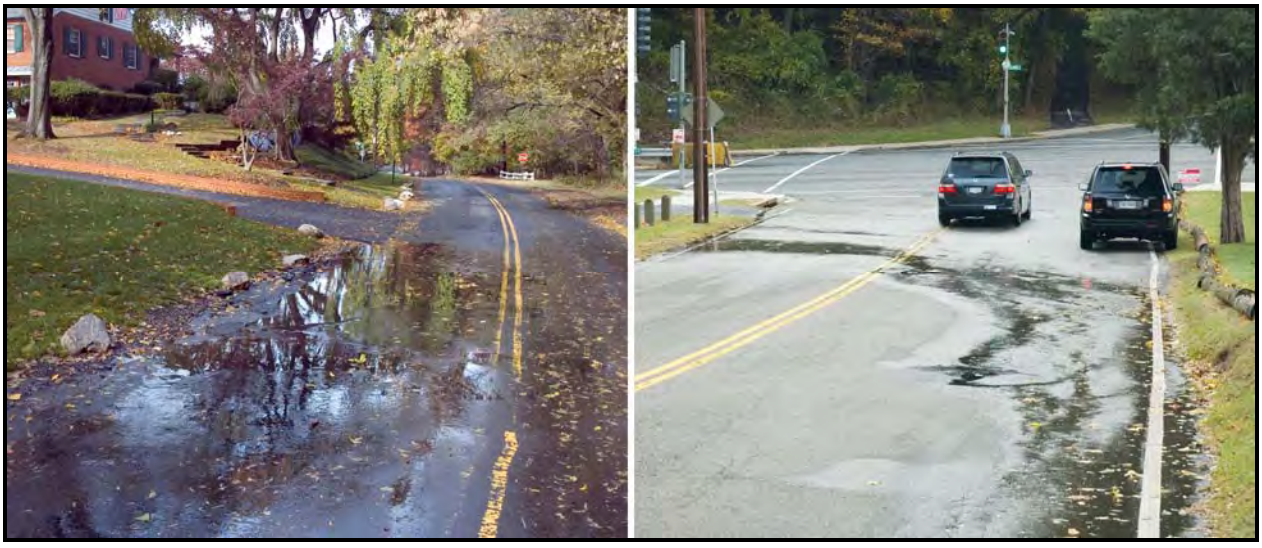

Figure 1-3. Examples of Drainage Issues

[1] A vertical curve is a civil engineering term used to describe the smooth curve that is inserted between two sections of a road that are at different slopes in order to avoid an abrupt transition in passing from one to the other.

ROADWAY STRUCTURES

Oregon Avenue crosses over Pinehurst Run on a single-cell concrete box culvert that is aging and substandard in terms of condition and its ability to convey floodwaters from major periodic storms (see **Figure 1-4**). An inspection of the culvert conducted in 2003 found the structure to be in poor condition with deficiencies in the outlet headwall and abutments due to scour and aging, deterioration of concrete parapets, failed guardrails, and a need for in-stream stabilization (Wilbur Smith Associates, 2003).

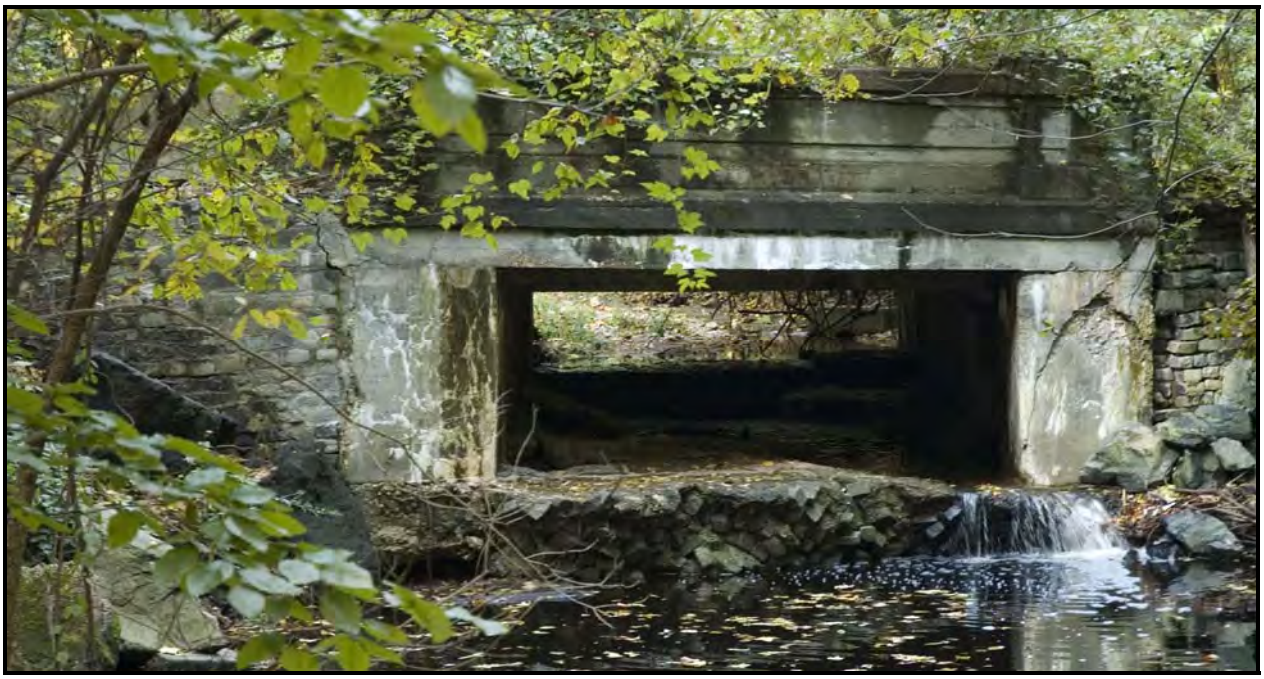

Figure 1-4. Pinehurst Run Culvert

1.2.2 SAFETY

Oregon Avenue can generally be characterized as a low-speed roadway (posted at 25 miles per hour) with a mix of straight and curved roadway sections. Rolling topography and steep grades play a role with respect to both the vertical geometrics of the roadway itself as well as adjacent lands, resulting in areas with limited sight distances that adversely affect the safety of motorists, pedestrian, and bicyclists. As a result, several locations on the roadway have advisory speed limits of 15 miles per hour in order to allow vehicles to safely navigate the curves in the roadway and minimize incidences of running off the road or suddenly coming upon pedestrians, bicyclists, or other vehicles using the roadway. Poor lighting within the roadway corridor also reduces available reaction time for the motorists, bicyclists, and pedestrians.

Safety is a primary concern on Oregon Avenue due to the lack of separate facilities for pedestrians and bicycles and due to speeding along the roadway, as reported by local residents. The lack of both sidewalks and areas for bicycles to travel means that the roadway is shared by motorized vehicles, bicycles, and pedestrians. Pedestrians walking within the project area (for exercise and recreation; to bus stops, schools, and Rock Creek Park; or to visit neighbors) must

walk within the roadway. The fact that users of each mode must be aware of two other types of users within a constrained roadway corridor exacerbates safety concerns substantially.

The topography of the area also creates safety issues on Oregon Avenue with respect to drainage and the accommodation of stormwater. While pooling of water does not present a major concern for the relatively slow-moving vehicles on Oregon Avenue, it does present safety concerns to motor vehicles when the water freezes during winter months and to bicyclists year-round.

1.2.3 System Linkage

As a roadway that is designated as a collector over most of its length, Oregon Avenue serves its intended function of providing access to residences along the roadway. In addition, daily commuters also use Oregon Avenue as a "cut through" route: Nebraska Avenue to Oregon Avenue to Wise Road (through Rock Creek Park). Additional vehicular linkages or capacity are neither needed nor intended for this roadway. The roadway, however, does not provide needed linkages for both pedestrians and bicycles.

With the exception of a very short stretch of sidewalk north of Moreland Place, Oregon Avenue currently lacks amenities to serve pedestrians and bicycles. As shown in Figure 1-1, an off-street multi-use path parallels Oregon Avenue on the east side of the road, between Wise Road and Military Road within the boundaries of Rock Creek Park. The trail has limited connectivity to Oregon Avenue due to differences in vertical elevation between the roadway and the trail. In addition, along most of its length, the trail is over 50 feet to the east of the roadway, which limits its use for day-to-day activities. Oregon Avenue is included in the DC Bicycle Master Plan as an on-street bicycle route that provides for needed linkages for bicycle travel within this portion of the District. Improvements to enhance its ability to safely carry bicycles are needed to support the viable use of Oregon Avenue as a key linkage in the overall bicycle system.

Other than crosswalks and stop signs connecting Tennyson Street to Rock Creek Park, there are no internal linkages or crosswalks for pedestrians to the parks, schools, and residential areas adjacent to Oregon Avenue, nor are there pedestrian connections to serve those who ride the Metrobus E-6 route, which serves seven bus stops in the northern portion of the roadway.

1.2.4 Legislation

As described in FHWA Technical Advisory T6640.8a, federal, state, and local government mandates are appropriate elements of the need for a proposed action. A key piece of local legislation related to the need for improvements to Oregon Avenue is the District of Columbia's Priority Sidewalk Assurance Act of 2010 (Law #L18-0227) enacted on July 7, 2010 and effective September 24, 2010. This law requires the installation of sidewalks "to ensure a safe and accessible environment for pedestrians and persons with disabilities." The law requires that, for roadways with no sidewalks on either side of the roadway, reconstruction shall include installation of a sidewalk. It further states that, for "roadways that are missing sidewalks, but are not undergoing major construction, sidewalk installation shall be prioritized for the following areas: (1) Missing sidewalks in school areas; (2) Routes that provide access to parks and recreational facilities; (3) Transit stops; (4) Locations where the absence of a sidewalk

creates substantial pedestrian safety risks; and (5) Roadway segments for which residents petitioned to have sidewalks." Oregon Avenue meets the criteria for prioritization based on considerations 1, 2, 3, and 4. A copy of the Act is presented in Appendix K.

1.3 PROJECT OVERVIEW

1.3.1 BACKGROUND

The rehabilitation of Oregon Avenue was originally placed on DDOT's schedule of planned improvements because of the apparent needs for roadway repair and the desire for a safer facility. The roadway is unsafe because of drainage issues, as well as poor lighting and the tendency for drivers to exceed the posted speed limit.

The uncontrolled runoff from elevated parcels to the west of the roadway has contributed in large part to the deterioration of this two-lane roadway. The large volume of stormwater has also had detrimental effects on the adjacent streambeds in Rock Creek Park. Extensive erosion at culvert outfalls as well as at streambeds of the receiving waterways has been attributed to the high, erosive powers of the stormwater. The need for a total solution involving improvements on national park properties has resulted in the NPS serving as a Cooperating Agency in the development of the EA. Other notable environmental issues associated with this project include Section 106 (cultural resources), Section 4(f) resources (cultural resources and parklands), habitat concerns (fish and wildlife), water quality, and residential concerns (noise and visual intrusion and bike/pedestrian safety).

Aging infrastructure has contributed to the deficiencies in the roadway corridor. The culvert carrying Oregon Avenue over Pinehurst Run has been found to be in poor condition with deficiencies in the outlet headwall and abutments due to scour and aging, deterioration of concrete parapets, failed guardrails, and a need for in-stream stabilization (Wilbur Smith Associates, 2003). Improvement opportunities for this bridge culvert will be addressed as a part of the upgrades planned for Oregon Avenue.

The District Department of the Environment (DDOE) is currently working with the NPS in conducting stream restoration projects within Rock Creek Park in the vicinity of Oregon Avenue.

1.3.2 DESCRIPTION OF THE PROJECT AREA

Oregon Avenue is a two-lane roadway located in northwest Washington, DC, extending from Military Road to the Maryland state line at Western Avenue, a distance of approximately 1.7 miles. As shown in Figure 1-1, Rock Creek Park (owned by NPS) is located immediately east of Oregon Avenue over its entire length, which creates a bucolic or rural-like setting in the project area, as shown in **Figure 1-5**. Rock Creek Park is one of the largest forested urban parks in the United States, nearly a mile wide in some places, and contains a wide variety of natural, historical, and recreational features in the midst of Washington, DC. It is this rural-like context within an otherwise urbanized area that residents suggest make this roadway very unique.

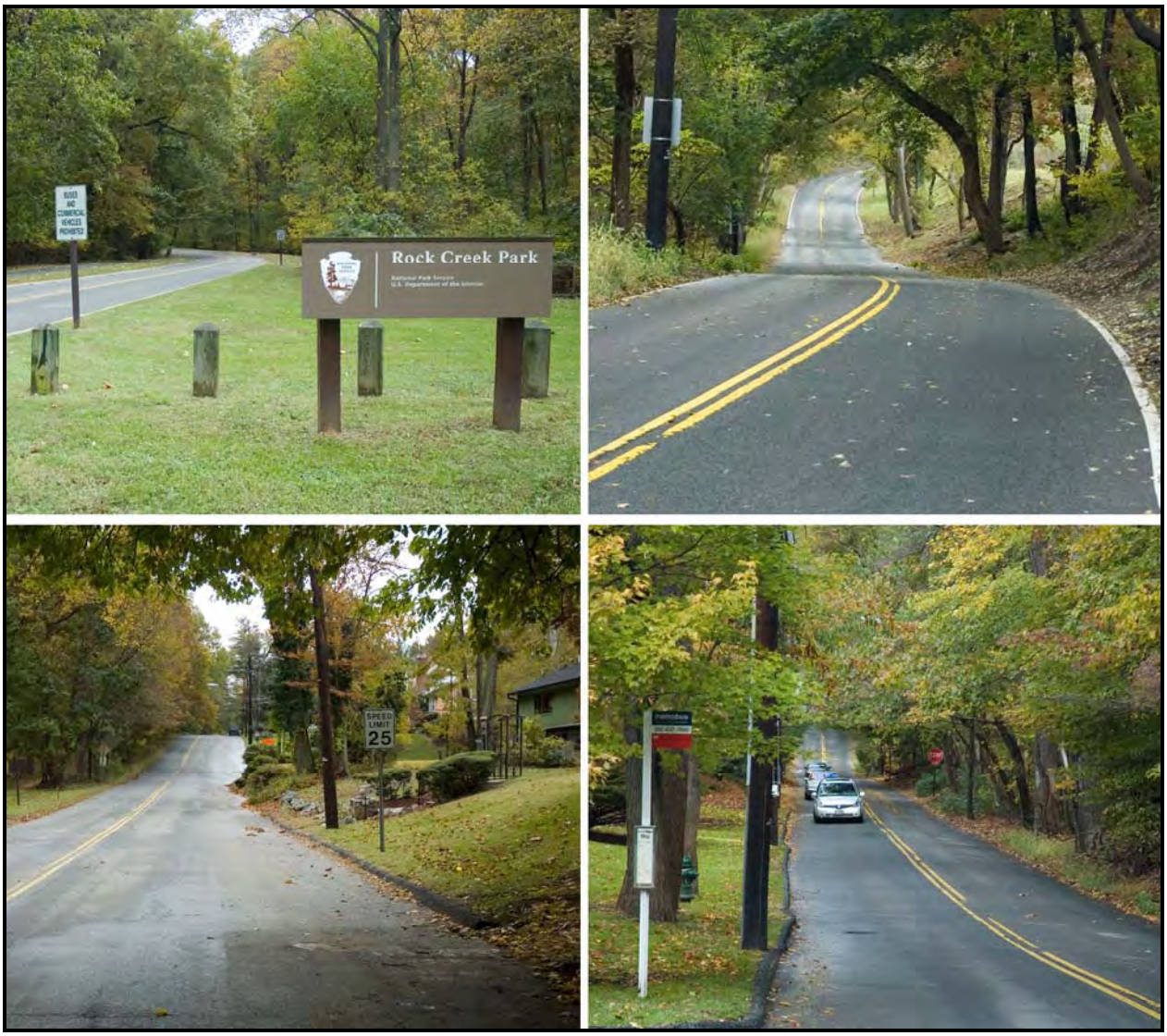

Figure 1-5. Rural-like Setting of Roadway Corridor

Areas to the west of Oregon Avenue include the neighborhoods of Chevy Chase, Barnaby Woods, and Hawthorn; St. John's College High School; the Knollwood retirement community; and a short section of NPS property on the south side of Beech Street.

At its southernmost point, Oregon Avenue intersects with Military Road at a signalized intersection. South of Military Road, the roadway continues as Glover Road. St. John's College High School is located in the northwest quadrant of the intersection, and Rock Creek Park lies to the northeast and continues along the length of the roadway corridor.

North of St. John's College High School is the residential neighborhood of Chevy Chase. Nebraska Avenue, one of the streets in this neighborhood that continues into Rock Creek Park as Bingham Drive, was recently upgraded to include an updated intersection with Oregon Avenue, which features two rain gardens for stormwater mitigation. Knollwood, a military retirement residence, is located in the northeast corner of Chevy Chase on Oregon Avenue between Nebraska Avenue and Tennyson Street.

The neighborhood of Barnaby Woods is situated in the center of the project corridor, north of Tennyson Street. It is bordered on the north by Pinehurst Valley, an arm of NPS land that extends west from Rock Creek Park.

The northern end of the project area serves as the eastern edge of Hawthorn. The main east-west roadway in this neighborhood is Chestnut Street, which originates in Maryland as Winnett Road and continues through Rock Creek Park as Wise Road. The northern limit of the project and this neighborhood is Western Avenue, after which Oregon Avenue continues as Daniel Road in Maryland.

1.4 PROJECT GOALS

Project goals were established by the study team to aid in the development of improvement concepts for Oregon Avenue. These goals were developed by considering the purpose and need, agency/public comments, and project area constraints. The goals for the Oregon Avenue project are listed below:

- Create a safe facility for all users of the roadway (motorists, pedestrians, bicyclists, etc.)
- Effectively manage stormwater runoff
- Avoid/minimize use of parkland by staying within the DDOT right-of-way to the extent possible
- Preserve and protect environmental resources – both man-made and natural – and retain the current context of the corridor (i.e., visual aesthetic, using context-sensitive solutions in the design phase of the project)
- Provide improved access to Rock Creek Park
- Utilize environmentally sensitive materials and practices

In addition to the project goals, the proposed improvements for Oregon Avenue consider design criteria outlined in the American Association of State and Highway Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities* (AASHTO, 1999); DDOT *Design and Engineering Manual*, Chapter 28 (DDOT, 2009b); DDOT *Bicycle Master Plan* (Toole Design, 2005); DDOT *Bicycle Facility Design Guide* (DDOT, 2005a); DDOT *Environmental Policy and Process Manual*; the *Manual on Uniform Traffic Control Devices (MUTCD) Traffic Controls for Bicycle Facilities, Part 9* (FHWA, 2003); *District of Columbia Pedestrian Master Plan* (DDOT, 2009e); AASHTO *Guide for the Planning, Design, and Operation of Pedestrian Facilities*, (AASHTO, 2009); and other design guidance.

1.5 DESIGN CONSIDERATIONS

Based on data collection, field observation, and input from the project's stakeholders, the study team formulated an array of considerations to help with the development of concepts and options for the proposed improvements to Oregon Avenue. Field reviews were conducted with DDOT and NPS staff to gain first-hand knowledge about issues in the roadway corridor. Stakeholder input was gathered at agency and public scoping meetings. Finally, data collection and research, as documented by the environmental conditions and considerations presented in

Chapter 3, were used to best address necessary Oregon Avenue improvements while incorporating community needs and resource preservation.

The following considerations led to the formation of concepts and alternatives that were carried forward for detailed study or dismissed (see Chapter 2 for a discussion of the Proposed Action and Alternatives).

1.5.1 Roadway Considerations

Roadway improvements consist of reconstructing the roadway subgrade, repaving, and realigning to improve sight distances as necessary. The width of the roadway's travel surface varies depending on the inclusion of various elements. These elements include:

- Varying lane widths – 10, 11, and 12 feet
- Travel lanes with and without shoulders, curbs and gutter
- Shared travel lanes that include bike lanes

1.5.2 Bicycle and Pedestrian Considerations

In order to accommodate other modes of transportation, consideration was given to bicyclist and pedestrian facilities.

- Bike lanes – on and off the travel lanes
- Sidewalks and walking trails
- Shared-use paths for walking and biking

1.5.3 Stormwater Management Considerations

Stormwater runoff can be controlled by a series of improvements that are located on or adjacent to the roadway. Within the roadway, curb and gutter can be incorporated to convey waters to storm sewers. Adjacent to the roadway, the project may implement Low Impact Development (LID) principles and practices so that water can be managed in a way that reduces the impact of built areas and promotes the natural movement of water within the ecosystem and watershed. There are many practices that can be used to adhere to these principles and include, but are not limited to, the following:

- Vegetated grass swales
- Tree Boxes
- Planting Strips
- Bioretention cells or swales
- Rain gardens

1.6 Relationship to Other Plans and Studies

The project is consistent with the District's planning documents and projects, including the following.

1.6.1 District of Columbia Bicycle Master Plan

The DDOT *2005 Bicycle Master Plan* includes several core goals and recommendations in order to establish a world-class bicycle transportation system in the District of Columbia. Several strategies are named to increase bicyclist safety and security while improving the connectivity and accessibility of destinations and activity centers within the District of Columbia. The proposed improvements to Oregon Avenue, which will enhance pedestrian and bicycle facilities along the roadway, is consistent with the first goal of the plan: to provide "more and better facilities."

1.6.2 District of Columbia Pedestrian Master Plan

The proposed improvements to Oregon Avenue are consistent with the *District of Columbia Pedestrian Master Plan*, which seeks to reduce the number of pedestrian/motor vehicle crashes and increase pedestrian activity by making walking a comfortable and accessible mode of travel throughout all parts of the District. The Plan also encourages improved facilities and policies to promote the benefits of walking for transportation, recreation, and health. The project will add pedestrian facilities along the entire length of the roadway to ensure a safe and accessible environment for pedestrians and persons with disabilities.

1.6.3 Rock Creek Trail Project

DDOT and NPS are developing plans to rehabilitate the Rock Creek Multi-Use Trail and Rose Park Trail in Rock Creek Park from M Street, NW on the south end to Broad Branch Road/Beach Drive on the north end, including a spur trail along the Piney Branch Parkway. The design plan will address several key elements, including development of new trail connections. The proposed improvements to Oregon Avenue would provide improved access to and from the multi-use trail system in Rock Creek Park.

1.6.4 Rock Creek Watershed Implementation Plan

The District Department of the Environment (DDOE) Watershed Protection Division (WPD) operates under a mission to conserve the soil and water resources of the District of Columbia and to protect its watersheds from nonpoint source pollution. Consistent with that mission, WPD has prepared a *Rock Creek Watershed Implementation Plan* (DDOE, 2010). The plan states that "(t)he Watershed Implementation Plan is an effort to create a watershed-based non-point source pollution control plan that meets EPA's requirements for acceptance while providing a realistic and adaptable guide for agencies responsible for the restoration of Rock Creek at the local level."

The proposed improvements to Oregon Avenue are consistent with the District's goals of improving water quality and managing nonpoint source pollution. An important component in addressing these issues is managing the large quantities of uncontrolled and untreated stormwater runoff flowing into Rock Creek due to impervious surfaces. Stormwater management for this project would support the goals set forth in the *Rock Creek Watershed Implementation Plan* by following its recommendations, including implementation of low impact development projects, bioretention measures, erosion and sediment control, restoration of eroded stream banks, and tree plantings.

1.6.5 Military Road/Missouri Avenue Transportation Study

The proposed improvements to Oregon Avenue are consistent with the Military Road/Missouri Avenue Transportation Study's recommendations to reduce the speed of vehicles traveling west along Military Road exiting Rock Creek Park. The speed limit is reduced in this area and slower traffic in the school zone is important for safety. .

1.6.6 Comprehensive Plan of the National Capital

The *Comprehensive Plan of the National Capital*, which was first adopted in 1984 and 1985 and is updated periodically, is a general policy document that provides overall guidance for future planning and development of the city. The plan is comprised of two parts, the District Elements and the Federal Elements, which are adopted by the DC Council and the National Capital Planning Commission (NCPC), respectively.

The proposed improvements to Oregon Avenue support the *Comprehensive Plan of the National Capital: District Elements'* 13 citywide elements that provide goals, objectives, and policies for land use issues that impact the whole city, e.g., transportation, environment, parks and open space, historic resources, cultural resources, arts, and culture. The plan contains recommendations for maintaining these goals including:

- Increasing investment in bus and rail transit, pedestrian and bicycle facilities, and other modes of travel to solve the region's traffic problems and sustain economic growth;
- Promoting natural resource conservation and environmental sustainability by protecting, restoring, and enhancing earth, water, air, and biotic resources of the District;
- Protecting, maintaining, and improving social, economic, historic, and physical qualities of residential neighborhoods;
- Improving the connections between different transportation modes, improving traveler safety and security, and increasing system efficiency;
- Improving connections to the city's celebrated spaces, such as Rock Creek Park;
- Retaining historic and unique qualities of Washington's streetscapes; and,
- Encouraging land use patterns and land uses that reduce air pollution and facilitate pedestrian and bicycle travel.

The proposed improvements to Oregon Avenue are consistent with each of these plan goals.

1.6.7 Rock Creek Park General Management Plan

The *Rock Creek Park General Management Plan* is a comprehensive and integrated plan that guides the management of Rock Creek Park and the Rock Creek and Potomac Parkway in a way that best meets diverse demands on park resources. The approved alternative, "Improved Management of Established Park Uses," retains the current scope of visitor uses while improving visitor safety, better controlling traffic volumes and speeds through the Park, enhancing interpretation and education opportunities, and improving the use of park resources, especially cultural resources. The proposed improvements to Oregon Avenue are consistent with the goals of the *General Management Plan* in that they would improve the safety of

pedestrian, bicycle, and roadway linkages to the Park while not detracting from the use of park resources.

1.6.8 Regenerative Stormwater Conveyance Project

The DDOE is coordinating the design and construction of a "regenerative storm water conveyance" (RSC) pilot project for two intermittent streams, Bingham Run and Milkhouse Run, which empty into Rock Creek. A RSC is an open-channel storm water design that utilizes a series of shallow aquatic pools, riffle weir stone grade controls, native vegetation, and underlying sand/compost filter to treat and convert storm water flows to groundwater. Installing RSCs in the Rock Creek watershed will improve water quality by reducing nutrient and sediment pollution from erosion, caused by fast-flowing storm water. The proposed stormwater management improvements for Oregon Avenue would contribute toward the improvement of water quality within the Rock Creek watershed. Selected techniques included in the RSC project, such as sand seepage berms, will be incorporated into the design of the project where practicable.