4.4.1 Water Resources

Surface water and ground water are sensitive to changes in land cover and uses, such as converting areas of grass to impervious materials. Surface water and ground water resources can be affected temporarily or permanently and directly or indirectly by actions such as the construction of Airport improvements or operational changes. An increase in impervious surfaces could influence storm water runoff patterns of the multiple water resources near the Airport.

4.4.1.1 Regulatory Background

Applicable laws and regulations related to water resources include:

- Section 401 of the Clean Water Act and Section 404 of the Clean Water Act, which regulates placing fill in Waters of the United States.
- Section 10 of the Rivers and Harbors Act, which regulates construction and obstructions in navigable waters.
- Safe Drinking Water Act, as amended, also known as the Public Health Service Act, which prohibits Federal agencies from funding actions that would contaminate a sole source aquifer or its recharge area.
- District of Columbia Municipal Regulations on Water Quality Standards.
- Virginia Erosion and Sediment Control Law.
- Virginia Water Protection Permit Program.
- Commonwealth of Virginia, Sediment and Erosion Control Handbook.
- Code of Virginia Water Quality Standards.

Section 404 of the Clean Water Act invokes Section 401, the Water Quality Certification requirement, which specifically addresses water quality. Because the Potomac River at the Airport is under the jurisdiction of the District of Columbia, the requirements of the District’s 401 Water Quality Certification programs and water quality standards would apply. The Section 401 permitting process in the District of Columbia is administered by the Washington, D.C., Department of Health, Bureau of Environmental Quality, Water Quality Division. The Airport currently operates under an

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31 The Rivers and Harbors Act of 1899 [33 CFR 403, Section 10].
32 Safe Drinking Water Act, as amended, 42 USC § 300.f, et seq.
33 District of Columbia Municipal Regulations, Title 21, Chapter 11, “Water Quality Regulations,” District of Columbia Official Code § 8-103.01 et seq.
34 Virginia Stormwater Management Act and Virginia Stormwater Management Regulations. The law is codified at Code of Virginia Title 10.1, Chapter 6, Article 1.1, and Section 4VAC3-20 of the Virginia Administrative Code.
35 Virginia Erosion and Sediment Control Law, Title 10.1, Chapter 5, Article 4 of the Code of Virginia.
36 Code of Virginia [§§ 62.1-44.15 and 62.1-44.15:5].
38 State Water Quality Standards (9 VAC 25-260) under § 62.1-44.15(3) of the Code of Virginia.
NPDES permit for industrial activities. This permit is issued by the U.S. EPA for storm water discharges from the Airport to Roaches Run, Four Mile Run, and the Potomac River.

4.4.1.2 Methodology

To determine the extent, condition, and jurisdiction of water resources present in and near the LOPD, the following methodology was used:

- Reviewed readily available studies and data maintained by the various state and local agencies and organizations (including data published online). These included data contained in previous environmental analyses conducted at the Airport and for the Woodrow Wilson Bridge Improvement Study.
- Contacted relevant agencies to ensure that the data and reports reviewed contained the most current information available.
- Conducted representative sediment sampling in the Potomac River to assess the potential for any pollutants contained in the sediment to affect water quality if disturbed by construction.
- Determined locations of groundwater aquifers and public wells in the vicinity of the Airport from published information.
- Interpreted groundwater recharge areas from the Arlington County Geologic Map.
- Obtained information regarding public water sources for the Airport and adjacent communities from local government agencies and the U.S. EPA.
- Reviewed an Authority map of Airport drainage basins and outfall locations.
- Reviewed relevant published information to assess water quality.

4.4.1.3 Affected Environment

The Airport is located on a peninsula on the Virginia side of the Potomac River immediately south (downstream) of Gravelly Point. The Airport is surrounded by water on three sides: Roaches Run to the north (including a 53-acre lake at Roaches Run Waterfowl Sanctuary), the Potomac River to the east, and Four Mile Run to the south. The confluence of Roaches Run with the Potomac River is immediately adjacent to the north side of the Airport. The confluence of Four Mile Run with the Potomac River is immediately adjacent to the south side of the Airport. The confluence of the Anacostia River with the Potomac River is on the opposite shore of the Potomac River from the Airport, as shown on Exhibit IV-2. Of these water bodies, an unnamed tributary to Roaches Run (spanned by Runway 15), Roaches Run, Four Mile Run, and the Potomac River receive runoff from the LOPD.

The Airport lies within the Potomac-Shenandoah River Basin, the Middle Potomac River Sub-basin, and the Potomac River Watershed. The Airport was constructed, in part, by placing fill in areas of the Potomac River between Roaches Run and Four Mile Run. One jurisdictional Water of the United States (a concrete-lined tidal channel) exists on the Airport, flowing under the existing pavement prior to the Runway 15 end before emptying into Roaches Run (refer also to Section 4.5.3 of this EA). Portions of the exposed channel are located within the LOPD at the Runway 15 end. The channel is considered a perennial stream and, along with Four Mile Run and Roaches Run, is regulated by the Norfolk District of the U.S. ACE, VMRC, and the VDEQ.

Ronald Reagan Washington National Airport

The Baltimore District of the U.S. ACE and the D.C. Department of Environment, Water Quality Division, have Section 404 and 401 jurisdiction over the Potomac River, respectively. The NPS manages the tidal basin of Roaches Run and the river bottom of the Potomac River.

There are no public water supply intakes from the Potomac River in the vicinity of the Airport. The nearest intake is at Little Falls, which is over 6 miles north (upstream) of the Airport. No public groundwater supply wells are located on the Airport. It is understood that Arlington County, including the Airport, acquires its public water from the Dalecarlia Treatment Plant of the Washington Aqueduct Division of the U.S. ACE. The City of Alexandria purchases its public water from the Fairfax County Water Authority, which obtains and treats water from the Potomac River and the Occoquan Reservoir.

Surface Water Resources

Although the stretch of the Potomac River adjacent to the Airport is not listed as wild and scenic, it is listed as an American Heritage River by the U.S. EPA. American Heritage Rivers include rivers that represent the natural, historical, cultural, social, and economic diversity of American waterways. An American Heritage River designation requires Federal agencies to ensure that their actions have a positive effect on the natural, historical, economic, and cultural resources of American Heritage River communities.

Based on the Code of Virginia, Water Quality Standards, Four Mile Run is designated as Class II (freshwater-tidal) waterways. The District of Columbia section of the Potomac River is designated by the District of Columbia Municipal Regulations in the five following use classifications:

- A – Primary contact recreation
- B – Secondary contact recreation and aesthetic enjoyment
- C – Protection and propagation of fish, shellfish, and wildlife
- D – Protection of human health related to the consumption of fish and shellfish
- E – Navigation

The U.S. Geological Survey (USGS), as part of the National Water Quality Assessment program, and the VDEQ monitor water quality in the Potomac River; the Northern Virginia Regional Commission monitors water quality in Four Mile Run. As of 2008, water quality had not been monitored in Roaches Run.

Potomac River Water Quality

The District of Columbia’s 2008 report on water quality indicates that, of the five designated use categories, the portion of the Potomac River within the District fully supports uses B and E. The section from Haines Point to the Woodrow Wilson Bridge (the section nearest the Airport) also supports use C. The sections north of the Airport, from the Montgomery County, Maryland, line to Haines Point, does not support use C. None of the Potomac River within the District supports use A.

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44 District of Columbia, Department of the Environment, The District of Columbia Water Quality Assessment 2008 Integrated Report to the Environmental Protection Agency and the U.S. Congress Pursuant to Section 305(b) and 303(d) Clean Water Act, September 2008.
or D. The reason for nonattainment of uses A and D includes high fecal coliform levels; a 1994 District Commissioner of Public Health advisory urged no consumption of fish caught within District waters. Refer to Appendix I.

USEPA lists the Upper Tidal Potomac River in the study area vicinity on the 303(d) list of impaired waters and identifies high coliform bacteria levels, toxics in sediments, and toxin-contaminated fish as the primary factors for noncompliance. Further, data revealed issues related to elevated pH; however, dissolved oxygen and temperature observations were in full compliance with relevant standards. Due to fecal coliform noncompliance, this section of the Potomac River is not suitable for primary contact recreation (swimming); likewise, due to observed levels of toxics in fish and sediments, this section of the river is not suitable for fish consumption.

VDEQ data indicate that nitrogen and phosphorous loads in the Potomac River watershed have decreased over the past 20 years and that the Potomac River is not designated as a nutrient-enriched waterway of concern. As documented by the City of Alexandria in 2001, the Potomac River failed water quality standards for available sunlight and suspended solids. USGS water quality data indicate that the Potomac River can exceed the suspended sediment standard of 500 milligrams per liter (mg/l) at drinking water intakes during high discharge events. High sediment loads were also observed in the Potomac River during the 2004 water monitoring period. As of September 2005, the most recent USGS water quality data on record for Arlington County indicate that the Potomac River is in compliance with the dissolved oxygen, pH, and temperature standards for Class II waterways in Virginia. As of September 2009, the most recent USGS water analysis at Chain Bridge indicated that the Potomac River is in compliance with the dissolved oxygen, pH, and temperature standards for Class II waterways in Virginia.

**Four Mile Run Water Quality**

The 20-square-mile Four Mile Run watershed is one of the most urbanized drainage basins in Virginia. After seven major floods in the 1960s and 1970s, the U.S. ACE channelized the 2.3 miles of the Run farthest downstream to manage storm water runoff and flooding. The Clean Water Act

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49 Federal Highway Administration, Virginia Department of Transportation, Maryland State Highway Administration, and D.C. Department of Public Works, Woodrow Wilson Bridge Improvement Study Final Environmental Impact Statement/Section 4f Evaluation, Baltimore, Maryland, 1997.
requires states to publish a list of streams that violate water quality standards, known as the 303(d) List of Impaired Waters. The 2008 draft 303(d) List of Impaired Waters for Virginia\textsuperscript{53,54} includes Four Mile Run for multiple pollutants, as identified below:

- Swimming-use impaired due to excessive fecal coliform and \textit{e. coli} bacteria levels\textsuperscript{55,56} primarily due to domestic waterfowl populations.\textsuperscript{57}

- Fish-consumption impaired due to the presence of excessive PCBs in fish tissue sampled from the waterway in 1997; VDEQ has issued a fish consumption advisory for the tidal portion of Four Mile Run, recommending carp or channel catfish larger than 18 inches not be consumed and limited consumption of multiple fish species.\textsuperscript{58}

- Macrophyte-impaired (macroscopic aquatic plant) due to excessive nutrients.\textsuperscript{59}

The watercourse has been targeted as a “high priority watershed” for controlling non-point-source pollution by the Commonwealth of Virginia.\textsuperscript{60} A Total Maximum Daily Load Implementation Plan was completed for the nontidal portion of Four Mile Run in 2002.\textsuperscript{61} Although Four Mile Run is not located within the LOPD, any future changes in runoff patterns from the Airport or impervious surface cover within the drainage basins outfalling near the confluence of Four Mile Run with the Potomac River, permanent or temporary, will need to be managed in the LOPD.

**Groundwater Resources**

As depicted on Exhibit IV-7, the groundwater recharge area closest to the Airport is located west of I-395, near Arlington National Cemetery. This recharge area is well beyond Airport property and more than one mile from the LOPD.

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\textsuperscript{61} Northern Virginia Regional Commission, \url{http://www.novaregion.org/tmdlresource.htm} (accessed October 3, 2008).
Site Geology and Groundwater Recharge Area


Exhibit IV-7
Based on information from the District of Columbia, the regional groundwater table is located approximately 15 feet below the surface, except in areas where building foundations or tunnels exist, where groundwater may be as much as 25 feet below the surface. The groundwater table fluctuates seasonally by 3 to 5 feet. Geotechnical investigations in the Potomac River near the Runway 22 and 33 ends were conducted in August and September 2006. During these investigations, it was not logistically feasible to maintain dry conditions within the boreholes, so the existence of any subsurface water body could not be determined.

**River Bottom Resources and Sediment Quality**

Activities that could affect the Potomac riverbed are regulated by the National Park Service. In 2006/2007, the quality of the sediment in the Potomac River was assessed in support of the Authority’s Phase III Study. The investigations indicated that surface water depths vary from 10.5 feet to 16.5 feet. Collected samples indicate that the local river sediments are predominantly fine sand and silt (with high organic content) between 0 and 15 feet deep. Boreholes for these investigations were driven until refusal, which varied from elevation -35 feet to -93 feet. Water and mud extended to a depth of -35 feet surface elevation near the Runway 22 end and to a depth of -49 feet surface elevation at the Runway 33 end. Beneath the mud, relatively firm subsurface material, consisting of sand and gravel with some silt and clay, was found in all borehole locations. Varying concentrations of metals, pesticides, semivolatile organic compounds (SVOCs), arsenic, tributyl tin, dioxins, and petroleum hydrocarbons were detected in the sediment samples. Refer to Appendix I for the results of the chemical analysis of these sediment samples.

4.4.2 Floodplains

4.4.2.1 Regulatory Background

Applicable laws and regulations related to floodplains include:

- National Flood Insurance Program (NFIP)
- Virginia Flood Damage Reduction Act
- Virginia Floodplain Management Program
- Arlington County Code of Ordinances, Chapter 48, “Floodplain Management”
- Four Mile Run Management Program

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67 Code of Virginia, Section 10.1-602.

68 Flood Damage Reduction Act, Code of Virginia, Section 10.1-602.

Federal and state regulation and local ordinances protect areas prone to flooding by assessing flood risks and preventing or mitigating flood damage. Executive Order 11998, *Floodplain Management*, requires that Federal actions, to the extent possible, avoid impacts to floodplains and avoid floodplain development where a practicable alternative exists. Multiple local ordinances govern floodplains in the vicinity of the Airport given that the boundary between Virginia and the District of Columbia is the mean high-water mark along the Virginia shoreline of the Potomac River and that the NPS manages the tidal basin of Roaches Run. The VDCR regulates floodplains based on the Code of Virginia §10.1-602 and implements the Virginia Floodplain Management Program to include coordination with the NFIP. Arlington County regulates floodplain development under the Arlington County Code of Ordinances, Chapter 48, “Floodplain Management,” which stipulates that the floodplain regulations are adopted from the NFIP regulations. It should be noted that the Airport is not subject to Arlington County floodplain regulations.

### 4.4.2.2 Methodology

To determine the existence, extent, and governing jurisdictions of any floodplains within the LOPD, the following information from multiple sources was reviewed:

- FEMA data for Federal Insurance Rate Map (FIRM), Panel Number 5155200013B (May 3, 1982)
- National Park Service, George Washington Memorial Parkway Unit
- United States Geological Survey, *Streamflow Measurements for the Nation*
- National Oceanic and Atmospheric Administration, *Nautical Chart number 12289*, June 2005

### 4.4.2.3 Affected Environment

Based on a review of available floodplain information, floodplains do exist on Airport property and within the LOPD. Approximately 214 acres of the Airport are located within the 100-year floodplain and the majority of the 100-year floodplain acreage is located within the airfield (see Exhibit IV-8). The LOPD encompasses approximately 143 acres. Of these 143 acres, approximately 65 acres are within the 100-year floodplain (approximately 21 acres of paved surfaces for runways, taxiways, and service roads and 44 acres of unpaved airfield or areas in the Potomac River within the LOPD). Of the 78 acres within the LOPD that are not within the 100-year floodplain, approximately 46 acres are paved surfaces and 32 acres are open airfield areas.

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70 U.S. Department of the Interior, National Park Service, George Washington Memorial Parkway Unit, August 1, 2006 (Brent Steury, Natural Resources Manager).


In a 1991 watershed analysis for an earlier project at the Airport, the 100-year base flood elevation for the Potomac River was found to occur at 11.4 feet above mean sea level, with approximately 3 feet of tidal range.

**4.4.3 Air Quality**

The air quality regulations that apply to Airport improvement projects are summarized below, and the existing air quality conditions in the Washington, D.C., area are described.

**4.4.3.1 Regulatory Background**

The Federal Clean Air Act of 1970, 42 USC 7401, et seq., as amended, requires that states identify those areas where the NAAQS are not met for specific air pollutants. The U.S. EPA designates such areas as nonattainment areas. A state with one or more nonattainment areas must prepare a SIP for each nonattainment area, detailing the programs and requirements that the state will implement to meet the NAAQS by the deadlines specified in the Clean Air Act Amendments of 1990 (CAAA). SIPs must address all pollutants for which the NAAQS are not met.

The U.S. EPA, under mandates of the CAAA, has established primary and secondary NAAQS for seven air contaminants, or criteria pollutants. These contaminants include carbon monoxide, nitrogen dioxide, ozone, lead, sulfur dioxide, particulate matter, and fine particulates. The primary standards were established at levels sufficient to protect public health with a satisfactory margin of safety. The secondary standards were established to protect public welfare from other adverse effects of air pollution. The criteria pollutants are described below.

**Carbon Monoxide**

Carbon monoxide (CO) is an odorless, colorless gas that is highly toxic. It is formed by the incomplete combustion of fuels. The primary sources of CO are automobiles and other ground-based vehicles. The health effects associated with exposure to CO are related to its affinity for hemoglobin in the blood. At high concentrations, CO reduces the amount of oxygen in the blood, causing heart difficulties in people with chronic diseases, reduced lung capacity, and impaired mental abilities.

**Nitrogen Dioxide**

Nitrogen dioxide (NO₂) is a poisonous, reddish-brown to dark brown gas with an irritating odor. NO₂ forms when nitric oxide (NO) reacts with atmospheric oxygen (O₂). Most sources of NO₂ are manmade; the primary source is high-temperature combustion. Significant sources of NO₂ at airports are boilers, aircraft operations, and vehicle movements. NO₂ emissions from these sources are highest during high-temperature combustion, such as in aircraft takeoff mode.

NO₂ may produce adverse health effects, such as nose and throat irritation, coughing, choking, headache, nausea, stomach or chest pain, and lung inflammation (e.g., bronchitis, pneumonia).

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Ozone

Ozone (O$_3$), a common constituent of smog, is formed in the atmosphere rather than being directly emitted from pollutant sources. Ozone forms as a result of volatile organic compounds (VOCs) and oxides of nitrogen (NO$_X$) reacting in the presence of sunlight in the atmosphere. Ozone levels are highest in warm-weather months. VOCs and NO$_X$ are termed “ozone precursors” and their emissions are regulated to control the creation of ozone.

Ozone damages lung tissue and reduces lung function. Scientific evidence indicates that ambient levels of ozone not only affect people with impaired respiratory systems (e.g., asthmatics), but also healthy children and adults. Ozone can cause health effects, such as chest discomfort, coughing, nausea, respiratory tract and eye irritation, and decreased pulmonary function.

Lead

Lead (Pb) is a bluish-white to silvery-gray heavy metal solid. Lead occurs in the atmosphere as lead oxide aerosol or lead dust. Historically, ground access vehicles operating on leaded gasoline were a significant source of lead in the air at airports. The amount of lead emissions from vehicles has decreased, however, as a result of the significant Federal controls on leaded gasoline, and the resultant increase in the use of unleaded gasoline in catalyst-equipped cars. Another source of lead at airports is the combustion of leaded aviation gasoline in piston-engine aircraft.

Sulfur Dioxide

Sulfur dioxide (SO$_2$) is formed when fuel containing sulfur (typically coal and oil) is burned during the metal smelting process and during other industrial processes. High SO$_2$ concentrations are found in the vicinity of large industrial facilities. The physical effects of SO$_2$ include temporary breathing impairment, respiratory illness, and aggravation of existing cardiovascular disease. Children and the elderly are most susceptible to the negative effects of exposure to SO$_2$.

Particulate Matter and Fine Particulates

Particulate matter (PM$_{10}$) and fine particulates (PM$_{2.5}$) consist of solid and liquid particles of dust, soot, aerosols, and other matter small enough to remain suspended in the air for a long period of time. PM$_{10}$ consists of particulate matter with an aerodynamic diameter less than or equal to 10 micrometers and PM$_{2.5}$ consists of particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers. Particulates smaller than 10 micrometers (i.e., PM$_{10}$ and PM$_{2.5}$) represent that portion of particulate matter thought to represent the greatest hazard to public health. PM$_{10}$ and PM$_{2.5}$ can accumulate in the respiratory system and are associated with a variety of negative health effects. Exposure to particulates can aggravate existing respiratory conditions, increase respiratory symptoms and disease, decrease long-term lung function, and possibly cause premature death. The segments of the population that are most sensitive to the negative effects of particulate matter are the elderly, individuals with cardiopulmonary disease, and children. Aside from the physical negative effects, particulate matter in the air reduces visibility and damages paints and building materials.

A portion of the particulate matter in the air comes from natural sources, such as windblown dust and pollen. Mannmade sources of particulate matter include combustion of materials, automobiles, aircraft operations, field burning, factories, vehicle movements or other manmade disturbances of unpaved areas, and photochemical reactions in the atmosphere. Secondary formation of particulate matter may occur in some cases where gases such as sulfur oxides (SO$_X$) and NO$_X$ interact with other

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compounds in the air to form particulate matter. Fugitive dust generated by construction activities can be a major source of particulate matter.

The secondary creators of particulate matter, SO\(_X\), and NO\(_X\) are also major precursors to acidic deposition (acid rain). While SO\(_X\) is a major precursor to particulate matter formation, NO\(_X\) has other environmental effects. NO\(_X\) has the potential to change the composition of some species of vegetation in wetland and terrestrial systems, create the acidification of freshwater bodies, impair aquatic visibility, create eutrophication\(^{77}\) of estuarine and coastal waters, and increase the levels of toxins harmful to aquatic life.

**Air Quality Standards**

Federal and Commonwealth of Virginia ambient air quality standards are summarized in Table IV-6. The Virginia Department of Environmental Quality’s Air Pollution Control Board has adopted ambient air quality standards that are identical to the Federal standards. The Air Pollution Control Board has also adopted regulations prohibiting most types of open burning in the state, effective October 18, 2006.\(^{78}\)

**Table IV-6**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Time</th>
<th>Primary Standard</th>
<th>Secondary Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone (O(_3))</td>
<td>1 hour (^a)</td>
<td>0.12 ppm</td>
<td>Same as primary</td>
</tr>
<tr>
<td></td>
<td>8 hours (1997 standard)</td>
<td>0.08 ppm</td>
<td>Same as primary</td>
</tr>
<tr>
<td></td>
<td>8 hours (2008 standard) (^b)</td>
<td>0.075 ppm</td>
<td>Same as primary</td>
</tr>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>8 hours</td>
<td>9.0 ppm</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>1 hour</td>
<td>35.0 ppm</td>
<td>None</td>
</tr>
<tr>
<td>Nitrogen Dioxide (NO(_2))</td>
<td>AAM</td>
<td>0.053 ppm</td>
<td>Same as primary</td>
</tr>
<tr>
<td></td>
<td>1 hour</td>
<td>0.100 ppm</td>
<td>None</td>
</tr>
<tr>
<td>Sulfur Dioxide (SO(_2))</td>
<td>AAM</td>
<td>0.03 ppm</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td>24 hours</td>
<td>0.14 ppm</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td>3 hours</td>
<td>--</td>
<td>0.50 ppm</td>
</tr>
<tr>
<td>Particulate Matter (PM(_{10}))</td>
<td>AAM</td>
<td>Revoked (^c)</td>
<td>Revoked (^c)</td>
</tr>
<tr>
<td></td>
<td>24 hours</td>
<td>150 µg/m (^b)</td>
<td>Same as primary</td>
</tr>
<tr>
<td>Fine Particulate Matter (PM(_{2.5}))</td>
<td>AAM</td>
<td>15 µg/m (^b)</td>
<td>Same as primary</td>
</tr>
<tr>
<td></td>
<td>24 hours</td>
<td>35 µg/m (^b)</td>
<td>Same as primary</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>Quarterly average</td>
<td>1.5 µg/m (^b)</td>
<td>Same as primary</td>
</tr>
<tr>
<td></td>
<td>Rolling 3 month average</td>
<td>0.15 µg/m</td>
<td>Same as primary</td>
</tr>
</tbody>
</table>

**Notes:**

- AAM = Annual arithmetic mean
- µg/m\(^3\) = Micrograms per cubic meter
- ppm = Parts per million
- a/ The one-hour ozone standard was revoked by the U.S. EPA on June 15, 2005, for all areas except those in nonattainment of the 8-hour ozone standard where the responsible governmental agency entered into an Early Action Compact (EAC). Arlington County is not an EAC area.
- b/ Effective May 27, 2008.
- c/ Because of the lack of evidence linking health problems to long-term exposure to coarse particulate matter, the U.S. EPA revoked the annual PM\(_{10}\) standard in 2006 (effective December 17, 2006).


\(^{77}\) Nitrogen-rich discharge/runoff into marine waters causes rapid growth and accumulation of algae (eutrophication), which depletes the oxygen supply in the water. Phosphates are the primary nutrient that causes eutrophication in fresh waters.

\(^{78}\) Article 40 (9 VAC 5-40-5600 et seq.) of Part II of 9 VAC 5 Chapter 40; 23 Virginia Register 28, September 18, 2006.
4.4.3.2 Methodology

Regulations governing air quality in the Commonwealth of Virginia and air quality planning documents covering the Airport environs were reviewed and are summarized in the following subsection. Ambient air quality datasets for air quality monitors in the vicinity of the Airport were also reviewed.

4.4.3.3 Affected Environment

Existing air quality conditions in the Washington, D.C., area are described below.

Attainment Status

The Airport is located in the Metropolitan Washington region. The Airport and adjacent areas are all within Arlington County in the Commonwealth of Virginia. The areas north and east of the Airport and across the Potomac River are within the District of Columbia. Arlington County, Virginia, has been designated by the U.S. EPA as nonattainment for the 8-hour ozone and PM$_{2.5}$ NAAQS. The U.S. EPA designated the region as a moderate nonattainment area for the 8-hour ozone standard in April 2004. The region was designated a nonattainment area for the 1997 PM$_{2.5}$ standard in January 2005. However, effective January 12, 2009, the U.S. EPA changed the region’s classification to attainment/maintenance for the 1997 PM$_{2.5}$ standard. Arlington County is designated as a moderate attainment/maintenance area for CO and as an attainment area for all other criteria pollutants.

State Implementation Plans

The Virginia Air Pollution Control Board (VAPCB) considers and adopts air pollution regulations and controls throughout the state. The VDEQ administers the regulations adopted by the VAPCB through implementation of air pollution programs and the issuance and enforcement of permits. The Metropolitan Washington Air Quality Committee is the entity that prepares air quality plans (i.e., SIPs) for the Metropolitan Washington region, which includes Washington, D.C., and areas of southern Maryland and northern Virginia. Each state and the District of Columbia then submit the same SIP under separate state covers for approval.

The MWAQC prepared an 8-hour ozone SIP for the Metropolitan Washington region in May 2007 and a PM$_{2.5}$ SIP in March 2008. The ozone SIP and the PM$_{2.5}$ SIP were then submitted to the U.S. EPA by each state and the District of Columbia. The U.S. EPA designated the region as moderate nonattainment for the 8-hour ozone standard in April 2004 with a deadline of June 15, 2010, to meet the standard. The region is to attain the standard for PM$_{2.5}$ no later than April 2010.

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80 70 Federal Register 3, January 5, 2005.
81 74 Federal Register 7, January 12, 2009.
83 The Metropolitan Washington region includes Arlington County and the City of Alexandria in Virginia, and the District of Columbia, among other counties and cities in the region.
84 Metropolitan Washington Air Quality Committee, State Implementation Plan (SIP) for Fine Particle (PM$_{2.5}$) Standards and 2002 Base Year Inventory for the Metropolitan Washington, D.C.-MC-VA Nonattainment Area, March 7, 2008.
The MWAQC also prepared a maintenance plan for CO,86 which was approved by the U.S. EPA on March 16, 1996. As part of the maintenance demonstration for CO, the MWAQC must demonstrate that emissions would not exceed the levels presented in the attainment inventory through 2016.87

**Ambient Air Quality Monitoring**

The U.S. EPA Office of Air Quality Monitoring operates one ambient (i.e., outdoor) air monitoring site in Arlington County for the following criteria pollutants: CO, NO₂, O₃, and PM₂.₅. Air monitoring sites in Fairfax County provide ambient data for SO₂ and PM₁₀. **Table IV-7** presents a summary of air quality monitoring data collected at three monitoring sites in 2009. The reported averaging periods presented in the monitoring dataset are consistent with the NAAQS. **Exhibit IV-9** depicts the locations of the three ambient air quality monitor locations in relation to the Airport.

**Table IV-7**

2009 Air Quality Monitoring Data – Arlington County, Virginia

<table>
<thead>
<tr>
<th>AQS Station Number</th>
<th>Geographic Station Location</th>
<th>Distance/ Direction from the Airport</th>
<th>Pollutant Monitored</th>
<th>Averaging Time</th>
<th>Maximum Recorded Concentration</th>
<th>NAAQS a/</th>
<th>Above NAAQS</th>
</tr>
</thead>
<tbody>
<tr>
<td>51-013-0020</td>
<td>38° 51’ 27&quot; -77° 03’ 33&quot;</td>
<td>1.2 miles west</td>
<td>CO</td>
<td>1 hour</td>
<td>1.7 ppm</td>
<td>35 ppm</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8 hours</td>
<td>1.6 ppm</td>
<td>9 ppm</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NO₂</td>
<td>1 hour</td>
<td>0.059 ppm</td>
<td>0.100 ppm</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Annual</td>
<td>n.a.</td>
<td>0.053 ppm</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>O₃</td>
<td>1 hour</td>
<td>0.086 ppm</td>
<td>0.12 ppm</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8 hour</td>
<td>0.078 ppm</td>
<td>0.08 ppm</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PM₂.₅</td>
<td>24 hours</td>
<td>40.7 µg/m³</td>
<td>35 µg/m³</td>
<td>Yes</td>
</tr>
<tr>
<td>51-059-005</td>
<td>38° 53’ 38&quot; -77° 27’ 55&quot;</td>
<td>23.2 miles west</td>
<td>SO₂</td>
<td>3 hours</td>
<td>0.031 ppm</td>
<td>0.5 ppm</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24 hours</td>
<td>0.016 ppm</td>
<td>0.14 ppm</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Annual</td>
<td>n.a.</td>
<td>0.030 ppm</td>
<td>No</td>
</tr>
<tr>
<td>51-059-0018</td>
<td>38° 44’ 33” -77° 04’ 39”</td>
<td>7.8 miles south (monitor 2)</td>
<td>PM₁₀</td>
<td>24 hours</td>
<td>48 µg/m³</td>
<td>150 µg/m³</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Annual</td>
<td>n.a.</td>
<td>Revoked  b/</td>
<td>No</td>
</tr>
</tbody>
</table>

Notes:
- AQS = Air Quality System database
- µg/m³ = Micrograms per cubic meter
- n.a. = Not available
- NAAQS = National Ambient Air Quality Standards
- ppm = Parts per million
- a/ The one-hour ozone standard was revoked by the U.S. EPA on June 15, 2005, for all areas except those in nonattainment of the 8-hour ozone standard, where the responsible governmental agency entered into an Early Action Compact (EAC). Arlington County is not an EAC area.
- b/ Because of the lack of evidence linking health problems to long-term exposure to coarse particulate pollution, the U.S. EPA revoked the annual PM₁₀ standard in 2006 (effective December 17, 2006).


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87 70 Federal Register 63, April 4, 2005.
Ambient Air Quality Monitor Locations


Legend

- Air Quality Stations
- Jurisdictional Boundary
- Highways

Exhibit IV-9
Although ozone continues to be an issue across the Metropolitan Washington region, ozone concentrations have generally declined since 2000 as a result of emission reduction programs and controls aimed at industrial sources and motor vehicles. As shown in Table IV-7, the PM$_{2.5}$ NAAQS in Arlington County was exceeded in 2009. No exceedances of the other NAAQS were recorded in 2009 at the three monitoring locations.

### 4.4.4 Hazardous Materials

Properties where hazardous materials have either been generated or stored have the potential to be contaminated. Contaminants that are contained and stable have a low risk of release that could adversely affect human health and safety or the natural environment. Construction projects have the potential to disturb hazardous sites, thus increasing the risk of release and exposure.

#### 4.4.4.1 Regulatory Background

Applicable laws, regulations, and guidance related to hazardous materials include the following:

- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)$^{88}$
- Superfund Amendments and Reauthorization Act (SARA)$^{89}$
- Resource Conservation and Recovery Act (RCRA)$^{90}$

Under CERCLA, the U.S. EPA maintains a National Priorities List of the most serious uncontrolled or abandoned places that contain hazardous waste. The U.S. EPA, with the cooperation of state and local agencies, then seeks to clean up these sites. Commonly referred to as “Superfund,” CERCLA also provides funds for cleaning up these sites. SARA was enacted to improve the administration of the CERCLA Superfund moneys. RCRA authorizes the U.S. EPA to control hazardous materials generation, transportation, treatment, storage, and disposal. The RCRA Information System is the U.S. EPA’s inventory of sites where hazardous wastes are managed.

#### 4.4.4.2 Methodology

To determine the existence of any known hazardous material sites within or near the LOPD, documentation from previous studies and Phase I Environmental Site Assessments at the Airport were reviewed. These studies include:

- *Ronald Reagan Washington National Airport, Runway 1-19 Safety Area Study – Phase III*$^{90}$
- *Phase I Environmental Site Assessment Report Runway 15-33 and 4-22 Safety Area Study*$^{91}$
- *South Investigation Site, Supplemental Site Investigation Sampling and Analysis Plan*$^{92}$

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$^{88}$ 42 USC §9601, et seq. In particular, see Sections 101, 102, 103, 105, 107, and 120.

$^{89}$ 42 USC § 6901 et seq., P.L. 94 580, Sections 3001, 3010.


4.4.4.3 Affected Environment

The Phase III Study focused on an investigation area generally located in and around the southern RSA of Runway 1. In this study, a site was identified that had previously been used by the Airport’s fire safety crew as a training area. At this site, excavated pits were used to train crews on ways to extinguish solvent/gas fires. The depth of those pits was not specified. The Authority’s Engineering Maintenance Department anticipated the soil at that site to be contaminated. That study also documented:

- **One Federal Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) site**: The “Washington National Airport – South End of Airport” site along the south end of the Airport, in the general area of the Runways 1 and 4 ends, was listed in 1988 when buried corroded and leaking drums were discovered during grading for the now existing satellite parking lot east of the Runway 4 RSA. The contaminants were removed and a site inspection was completed in 1995. This site, referred to as the South Investigation Site (SIS), is listed on the Federal Agency Hazardous Waste Compliance Docket and has not yet received the designation of “No Further Remedial Action Planned” (NFRAP) from the U.S. EPA.

- **One underground storage tank (UST)**: In total, seven permanently out-of-use USTs and three removed USTs were identified at the Airport. One of these was near the general study area. Because these USTs were either out-of-use or removed from the ground, they are not expected to pose an environmental threat or be a source of contamination.

- **Three leaking UST cases**: Commonwealth of Virginia records identified two cases of leaking USTs at the old terminal facility, outside of the LOPD. The three cases of leaking USTs have all been remediated and the USTs closed and, therefore, they are not expected to pose an environmental threat. The records also identified a case of a leaking UST at the National Car Rental facility. No further information was available at the time; however, this facility is located outside of the LOPD.

- **Thirteen Commonwealth spill cases and three Federal Emergency Response Notification System (ERNS) incidents**: These spills occurred at several places throughout the Airport, were contained by the Airport’s emergency response team, and were reported to the appropriate Federal and state agencies. As of 2005, several of the cases had been closed and others were lacking definitive status information. According to information from interviews with the Authority’s Engineering Maintenance Department staff, none of these spills occurred in the general study area. The Authority’s Office of Engineering believes that the all reported spill cases have been resolved.

The LOPD for the Proposed Action in relation to the area referred to as the South Investigation Site is shown on Exhibit IV-10. The improvements to the RSA at the Runway 4 end would extend into the SIS. Given the history of heavy industrial operations along the Potomac River and the use and undocumented disposal of hazardous substances as well as unconfirmed fill materials, sediments in the Potomac River may have been affected by nearby releases of hazardous materials. A separate representative sediment sampling study\(^{93}\) was completed in 2006, the results of which are discussed in Section 4.4.1.

South Investigation Site Areas

Source: AirPhotoUSA, 2001 (Aerial); Metropolitan Washington Airports Authority, 2009 (South Investigation Site Areas); Ricondo & Associates, Inc., October 2010 (limits of physical disturbance).
4.4.5 **Natural Resources and Energy Supply**

Airport development projects have the potential to change energy requirements or use consumable natural resources.

4.4.5.1 **Regulatory Background**

Applicable statutes and regulations related to natural resources and energy supply include:

- 40 CFR Part 1502.16(e) and (f) requires the consideration of potential impacts to energy requirements, energy conservation, and the use of natural or consumable resources, resulting from a proposed action and its reasonable alternatives.
- Executive Order 13123, *Greening the Government through Efficient Energy Management*, encourages Federal agencies to increase the use of renewable energy.

4.4.5.2 **Methodology**

Facilities that would be affected by the Proposed Action were reviewed for their use of electrical, natural gas, water, and sewage utilities.

4.4.5.3 **Affected Environment**

Scarce or rare resources are not used by the Authority.

The Airport’s airfield is a well-illuminated environment that includes lighting of the three runways and associated taxiways, hold aprons, and the terminal/gate area apron. The Authority anticipates the continued availability of sufficient electricity to operate the Airport and specifically the lighting associated with Runways 4-22 and 15-33 and their associated facilities (e.g., taxiways, hold aprons).

4.5 **Biological and Natural Environment**

The natural environment in the Airport area consists of an interdependent group of species and their associated habitats.

4.5.1 **Fish, Wildlife, and Plants**

A variety of Federal and state agencies and local wildlife organizations manage public resources and monitor wildlife habitat, including settings such as the Potomac River that contain open water, tidal wetland, and riparian forest habitats for fish, wildlife, and plants.

4.5.1.1 **Regulatory Background**

Applicable statutes and guidance relating to fish, wildlife, and plants include:

- Fish and Wildlife Coordination Act
- Migratory Bird Treaty Act
- Magnuson-Stevens Fishery Conservation and Management Act, Public Law 94-265, as amended through October 1996

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95 Fish and Wildlife Coordination Act of 1958 (16 USC Sections 661-666, PL 85-624).
96 Migratory Bird Treaty Act of 1918 (16 USC Sections 703-711).
The following Federal and state agencies maintain jurisdiction over plant and animal species and habitats on or near the Airport:

- U.S. Fish and Wildlife Service
- National Marine Fisheries Service (NMFS)
- Virginia Department of Conservation and Recreation
- Virginia Department of Game and Inland Fisheries (VDGIF)
- Virginia Department of Agriculture and Consumer Services (VDACS)
- District of Columbia’s Fisheries and Wildlife Division

These agencies work cooperatively to ensure the continued survival and biodiversity of the District’s and Virginia’s flora and fauna. The VDCR also administers the Virginia Natural Heritage Program and works closely with other Federal and state agencies, local governments, conservation organizations, and individuals to seek adequate protection of Virginia’s plants, animals, and ecosystems.

### 4.5.1.2 Methodology

To determine the existence and extent of fish, wildlife, and plants in the vicinity of the Airport, the agencies listed above were contacted and readily available studies and data collected and maintained by these and other local and state organizations were reviewed. Information contained in previous environmental studies conducted at the Airport and for the Woodrow Wilson Bridge were reviewed, as well as field observations conducted for this EA. The collected information was evaluated relative to the LOPD.

### 4.5.1.3 Affected Environment

The Potomac River, Four Mile Run, and Roaches Run Waterfowl Sanctuary provide a variety of open water, tidal wetland, and riparian forest habitats for fish, wildlife, and plants. The District of Columbia’s Wildlife Action Plan states that “the Potomac and Anacostia rivers and several streams provide habitat to over 62 species of greatest conservation need, making them the highest priority habitat.” Forested, turf, and paved surfaces located on and adjacent to the Airport property provide terrestrial habitat. Although the Wildlife Action Plan identifies several Species of Greatest Conservation Need (including fish, birds, mammals, reptiles, amphibians, and invertebrates), the DCFWD acknowledged that not all of them use the habitats on or immediately adjacent to the Airport. Based on a review of its files, the Virginia Department of Conservation and Recreation’s Division of Natural Heritage indicated that no State Natural Area Preserve under its jurisdiction existed in the vicinity of the Proposed Action.

The following paragraphs describe the biotic resources in the vicinity of the Airport by primary habitat type: aquatic, terrestrial, and avian. Endangered and threatened species and critical habitat are discussed in Section 4.5.2.

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97 Agency correspondence and the minutes of the Agency Scoping Meeting are included in Appendix B.
99 Bryan King, District of Columbia Fisheries and Wildlife Division, “National Airport-Fish and Wildlife Info,” e-mail to Kevin Clarke, Straughan Environmental Services, Inc., August 20, 2008; and Daniel Ryan, District of Columbia Fisheries and Wildlife Division, communication with L. Thurston, Straughan Environmental Services, Inc., April 23, 2010.
Aquatic Habitat

Aquatic habitats associated with the Potomac River, Four Mile Run, and Roaches Run capable of supporting populations of fish include unvegetated subtidal bottoms, intertidal flats, submerged aquatic vegetation, emergent marshes, and deepwater habitats.

Table F-1, provided in Appendix F, presents the combined results of several inventories of fish species in the upper tidal Potomac River in the vicinity of the Airport, recent field surveys conducted for the Woodrow Wilson Bridge Improvement Study\textsuperscript{101} (the bridge is located approximately 3 miles downstream from the Airport and has similar tidal regimes), review of data maintained by the VDGIF,\textsuperscript{102} and review of correspondence received from the VDGIF and DCFWD.\textsuperscript{103,104} The Potomac River is used by species exhibiting unique life cycles that inhabit fresh, salt, and/or estuarine waters, including anadromous, semianadromous, and catadromous fish species. The Potomac River provides a migratory pathway for these fish and spawning grounds for some migratory species.

Essential Fish Habitat refers to those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity. Subsequent to the release of the Draft EA, the FAA, with assistance from the Authority, consulted with the NMFS and DCDOE with respect to the potential impacts on fish habitat that could result from the placement of fill over SAV in the Potomac River. The FAA prepared and transmitted a biological assessment (BA) discussing the potential impacts of the Proposed Action on Atlantic and Shortnose sturgeon on March 18, 2011. A copy of the BA is included in Appendix J, Attachment J-9. The FAA’s determination is included in Appendix J, Attachment J-9. .

The Potomac River and Four Mile Run provide habitat for benthic macroinvertebrates, which serve an important role in the aquatic food chain and also serve as indicators of water quality. Benthic macroinvertebrates collected in the Potomac River and Four Mile Run in the vicinity of the Airport are listed in Table F-2 in Appendix F. Macroinvertebrate data collected in 2001\textsuperscript{105} were assigned a biological integrity ranking of “fair” based on an index good, fair, and poor. The in-stream habitat was assigned an optimal rating on a scale of marginal, suboptimal, and optimal. Data collected in 2005 from the lower mainstream of Four Mile Run\textsuperscript{106} showed, on average, low diversity of organisms and marginal abundance of pollution-sensitive organisms, but yielded an acceptable ratio of pollution-sensitive organisms to pollution-insensitive organisms. These data indicate that water quality is less than ideal yet not degraded to the point that pollution-sensitive species have been

\textsuperscript{101} Federal Highway Administration, Virginia Department of Transportation, Maryland State Highway Administration, and D.C. Department of Public Works, *Woodrow Wilson Bridge Improvement Study, Final Environmental Impact Statement/Section 4f Evaluation*, Baltimore, Maryland, 1997.


\textsuperscript{103} Virginia Department of Game and Inland Fisheries, *ESSLOG #225542, Reagan National Airport, Runways 15-33 and 4-22 Safety Area Study*, October 24, 2006.

\textsuperscript{104} Daniel Ryan, District of Columbia, Fisheries and Wildlife Division, e-mail to Lisa Thurston, Straughan Environmental Services, Inc., April 23, 2010.


suppressed. It should be noted that several species of macroinvertebrates are also listed as Species of Greatest Conservation Need by the DCFWD. These are identified in Table F-3 in Appendix F.

SAV has been documented by the Virginia Institute of Marine Science (VIMS) in the vicinity of the Airport. SAV refers to vascular plants that remain below the water surface during the growing season. SAV provides food and cover for fish and wildlife, nutrient absorption, sediment retention, and shoreline stabilization. SAV beds are important to the regional fisheries resources relative to food, cover, and spawning habitat. Salinity, water quality, water temperature, and water depths are the major factors that influence the distribution, abundance, and species composition of the SAV beds. Common species of SAV found in the upper tidal section of the Potomac River in which the Airport is located are listed in Table F-4 in Appendix F.

Information on the distribution and abundance of SAV beds in the Chesapeake Bay, its tributaries, and the coastal bays of the Delmarva Peninsula is presented annually in the Submerged Aquatic Vegetation Monitoring Reports prepared by VIMS. As of March 2010, DCFWD has been conducting a site specific inventory of SAV in the areas surrounding the Airport. Based on a review of VIMS survey data, both the distribution and density of SAV are expected to fluctuate due to varying precipitation levels from year to year, affecting the turbidity of the water within the mainstem of the Potomac River.

SAV beds vary in species composition, density coverage, and extent, from year-to-year and season-to-season throughout the year. The DCFWD monitors these fluctuations and completes annual field surveys of SAV beds in the District. In 2009, SAV inhabited the Middle Potomac (Section 7, Upper National Airport) and included a 24.6 acre bed with moderate coverage (10-40 percent density) composed of 90 percent Hydrilla verticillata and 10 percent Najas guadalupensis in the area. Hydrilla is an invasive species that is considered a noxious weed. This bed inhabited the area ranging from the eastern edge of the RSA of Runway 19 (the northern extent of the Airport) to a point south of the end of Runway 33. Although the graphics in the DCFWD report do not include a scale, it appears that the Middle Potomac SAV bed at the Airport extended well over 200 feet from shore at its upper limit, but extended only 60 feet from shore along most of the upper two-thirds of the Airport. In 2009, SAV also inhabited the Lower Potomac (Section 8, Lower National Airport) and included a 12.0 acre bed of sparse coverage (under 10 percent density) consisting of 50 percent Hydrilla and 50 percent Najas. This Lower Potomac SAV bed inhabited the lower third of the Airport’s eastern shore, extending 20 to 30 yards from shore.

Terrestrial Habitat

Terrestrial habitat on and adjacent to the Airport includes forest, turf, and paved areas. Aerial photography indicates a relatively large forest stand in the vicinity of Roaches Run Waterfowl

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109 Bryan King, District of Columbia, Fisheries and Wildlife Division, e-mail to Kevin Clarke, Straughan Environmental Services, Inc., August 20, 2008; and email to L. Thurston, Straughan Environmental Services, Inc., April 23, 2010.
110 Brian King and Daniel Ryan; Project Performance Report F-2-R-22, District of Columbia, Fisheries Management Studies, Job 3.1, Aquatic Vegetation Monitoring (January, 2009 to December, 2009); March 2010.
111 Brian King and Daniel Ryan; Project Performance Report F-2-R-22, District of Columbia, Fisheries Management Studies, Job 3.1, Aquatic Vegetation Monitoring (January, 2009 to December, 2009); March 2010.
Sanctuary, including a narrow portion along the GWMP. Based on field observations, the forest community along Roaches Run Waterfowl Sanctuary is characterized as early successional. Species observed in the vicinity of Roaches Run Waterfowl Sanctuary and the GWMP include green ash (Fraxinus pennsylvanica), black willow (Salix nigra), and silky dogwood (Cornus amomum). The shrub layer associated with the forest on site is generally composed of bush honeysuckle (Lonicera sp.).

Table F-5, provided in Appendix F, provides a list of mammal, reptile, and amphibian species likely to be found in the vicinity of the Airport. This list is based on surveys conducted in support of the Woodrow Wilson Bridge Improvement Study, the Maryland Biological Stream Survey, and field observations. The setting of the Airport is similar to that of the Woodrow Wilson Bridge in that both are major transportation facilities situated near parks and riparian wildlife habitat adjacent to the Potomac River. Compared to the Airport, however, the Woodrow Wilson Bridge has more extensive areas of surrounding forests and park land habitats capable of supporting a wider variety and abundance of species. The diversity and abundance of species are likely to be lower at the Airport because of the prevalence of maintained turf areas and airfield operations. While many of these species could be within the general vicinity, the DCFWD acknowledged that not all of them use the habitats on or immediately adjacent to the Airport.

Avian Habitat

Because of the variety of aquatic and terrestrial habitats surrounding the Airport, several classes of resident and migratory birds, including waders (herons and egrets), shorebirds (sandpipers and plovers), aerial-searching birds (gulls and terns), waterfowl (ducks, geese, and swans), and birds of prey (hawks and owls) may be found in the vicinity. Roaches Run Waterfowl Sanctuary is part of the Great Falls Loop of the Virginia Birding and Wildlife Trail. Bird species observed at the Airport, Roaches Run Waterfowl Sanctuary, the mouth of Four Mile Run, and Daingerfield Island are presented in Table F-6 in Appendix F.

4.5.2 Threatened and Endangered Species
4.5.2.1 Regulatory Background

Applicable laws related to threatened and endangered species include:

- Endangered Species Act of 1973
- Sikes Act Amendments of 1974
- Fish and Wildlife Coordination Act of 1958

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112 Straughan Environmental Services, Inc., field observations on July 13, 2006.
114 Straughan Environmental Services, Inc., field observations on July 13, 2006. No reptile or amphibian species were observed.
115 Bryan King, District of Columbia Fisheries and Wildlife Division, “National Airport-Fish and Wildlife Info,” e-mail to Kevin Clarke, Straughan Environmental Services, Inc., August 20, 2008.
117 Endangered Species Act, 16 USC §§1531-1544.
118 Public Law 93-452.
119 16 USC 661-666c; Public Law 85-624.
Ronald Reagan Washington National Airport

- Bald and Golden Eagle Protection Act\textsuperscript{120} (16 USC 668-668c)
- Lacey Act\textsuperscript{121}
- Migratory Bird Treaty Act\textsuperscript{122}
- Animal Damage Control Act of 1931\textsuperscript{123}
- Virginia Endangered Species Act\textsuperscript{124}
- Virginia Natural Area Preserves Act of 1989\textsuperscript{125}
- Virginia Endangered Plant and Insect Act\textsuperscript{126}

The U.S. FWS is the primary agency responsible for Federally listed threatened and endangered species. In Virginia, VDGIF and VDACS have legal authority for state-listed threatened and endangered species and are responsible for their conservation. The Virginia Natural Area Preserves Act of 1989 established the Virginia Natural Heritage Program, which is managed by the VDCR. The Natural Heritage Division of the VDCR produces an inventory of the Commonwealth’s natural resources and maintains a data bank of ecologically significant sites. The Virginia Endangered Plant and Insect Act gives the VDACS Office of Plant Protection the regulatory responsibility for listing and protecting Virginia’s threatened and endangered plants and insects. The District of Columbia Fisheries and Wildlife Division prepares and implements a \textit{Wildlife Action Plan}\textsuperscript{127} that identifies Species of Greatest Conservation Need and strategies to protect the associated habitats.

VDGIF and VDACS databases of threatened and endangered species contain the legal status of Virginia’s native animals (including vertebrates, invertebrates, and insects) and plants believed to be sufficiently threatened to merit an inventory of their status and location. The Virginia Natural Heritage Program identifies natural communities, habitats, and ecosystems that are considered the most likely to be lost without conservation action in the near future. These listings include all species that are federally protected by the U.S. FWS, but may include additional species and resources of importance to the Commonwealth.

4.5.2.2 Methodology

To determine the presence of known populations, or potential presence, of Federally or state-listed threatened and endangered species or supporting habitats within the vicinity of the Airport, the following steps were taken:

- Consultations were conducted with the U.S. FWS, VDGIF, VDCR, NMFS, and DCFWD.\textsuperscript{128}
- Searches of online databases maintained by Virginia agencies regarding threatened and endangered species and habitat were conducted, including the VDCR natural heritage resources information database and the Virginia Fish and Wildlife Information Service geographic search database. Natural heritage resources are rare plant and animal species, rare and exemplary natural communities, and significant geologic features. The VDCR natural heritage resources information database allows for searches of species with Federal or state

\textsuperscript{120} 16 USC 668-668c.
\textsuperscript{121} 16 USC 3371-3378.
\textsuperscript{122} 16 USC 703-712.
\textsuperscript{123} 7 USC 426-426c; 46 stat. 1468.
\textsuperscript{125} Virginia Natural Area Preserves Act of 1989, Code of Virginia, Section 10.1-209 through 217.
\textsuperscript{126} Virginia Endangered Plant and Insect Act, Code of Virginia, Section 3.1 -1020 through 1030.
\textsuperscript{128} Agency correspondence and the minutes of the Agency Scoping Meeting are included in Appendix B.
legal status by county. The Virginia Fish and Wildlife Information Service database is maintained by the VDGIF, provides information on all wildlife in Virginia, and includes data on state and Federal listings.

4.5.2.3 Affected Environment

The U.S. FWS identifies species meriting protection under the Endangered Species Act (ESA). During coordination with the U.S. FWS on the RSA studies for crosswind Runways 15-33 and 4-22, the U.S. FWS commented that “except for occasional transient individuals, no proposed or Federally listed endangered or threatened species are known to exist within the project impact area.” See Appendix B for a copy of this letter. Additional coordination with the U.S. FWS in 2006 revealed concern over the Federally endangered shortnose sturgeon (*Acipenser brevirostrum*).  

Correspondence with the NMFS stated that the shortnose sturgeon has been documented in the Potomac River. Surveys revealed shortnose sturgeon migrating to suspected spawning grounds north of the Airport, just above the Maryland-District line, from overwintering habitat approximately 13 stream miles downriver from the Airport.

The VDCR maintains a statewide inventory of natural heritage resources and their status under the Virginia Natural Heritage Program. One state-protected species (threatened), the wood turtle (*Glyptemys insculpta*), has been identified in Arlington County. The wood turtle has no Federal status, and it is not known to exist on or near the Airport.

Table F-7 in Appendix F provides a list of threatened species, endangered species, and species of concern identified by the VDGIF within a 3-mile radius of the Airport. Species listed in Table F-7 that have been confirmed at the Airport include the bald eagle and upland sandpiper. Both species have been observed engaging in flying, feeding, and loafing behavior. Bald eagle observations were recorded yearly between 1997 and 2006, and most recently in December 2009. Upland sandpipers were observed between 1997 and 1999 and in 2001. The bald eagle’s status is state-listed (threatened) in Virginia and a Federal Species of Concern. While the bald eagle was delisted from the U.S. FWS ESA Federal Threatened list in 2007, the species is still monitored by U.S. FWS under the delisting plan, and protected by the Federal Bald and Golden Eagle Protection Act, the Lacey Act, and the Migratory Bird Treaty Act. The upland sandpiper is state-listed (threatened) in Virginia and listed as a species of concern in the District of Columbia.

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4.5.3 Wetlands and Waterways

Wetlands, waterways, and special aquatic sites (together referred to as “Waters of the United States”) are protected under Federal and state regulations and have important functions and values.

The U.S. ACE defines wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands provide valuable water quality functions as well as wildlife habitat. Some of the functions of wetlands are groundwater recharge, sediment/toxicant retention, nutrient removal, and flood-flow alteration.

Recognized functions and values of wetlands include the following:

- Flood-flow alteration, shoreline stabilization, storm protection, and climate control
- Groundwater recharge, water purification, and sediment and nutrient retention and modification
- Commercial products, recreation, and tourism
- Biodiversity, including fish, shellfish, and wildlife habitat, and the associated scientific and cultural benefits

4.5.3.1 Regulatory Background

Laws, regulations, and policies related to wetlands include:

- Section 10 of the Rivers and Harbors Act of 1899
- Clean Water Act, Sections 401 and 404
- Executive Order 11990, Protection of Wetlands, May 24, 1977
- DOT Order 5660.1A, Preservation of the Nation’s Wetlands
- Virginia Wetlands Act of 1972
- District of Columbia, Department of Health, Water Pollution Control Act of 1984, D.C. Law 5-188, D.C. Code §6-923
- Definition of Navigable Waters of the United States

These wetland laws, regulations, and policies, as they relate to the affected environment, are described in more detail below.

Section 10 of the Rivers and Harbors Act of 1899 prohibits the creation of an obstruction within Navigable Waters of the United States unless affirmatively authorized by Congress. The Rivers and Harbors Act defines “Navigable Waters” as those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use, to transport interstate or foreign commerce. To determine if a body of water is appropriate for inclusion as Navigable Waters, there must be past, present, or potential presence of foreign or interstate commerce.

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138 Clean Water Act, Section 404, 33 USC 1344, PL 92-500, as amended by PL 95-217 and PL 100-4.


140 Definition of Navigable Waters of the United States [33 CFR Part 329], ], November 13, 1986, unless otherwise noted.
commerce, physical capabilities for use by commerce, and defined geographic limits of the water body.

Section 401 of the Clean Water Act\textsuperscript{141} gives the U.S. EPA, the Commonwealth of Virginia, and the District of Columbia certification responsibility and authority over violation of water quality standards.

Section 404 of the Clean Water Act\textsuperscript{142} gives the U.S. ACE responsibility and authority over activities that result in the discharge of dredge or fill material into wetlands and waterways.

Executive Order 11990,\textsuperscript{143} *Protection of Wetlands*, requires consideration of indirect effects on wetlands, provides a long-term goal of no net loss of wetlands, and requires Federal agencies to adopt procedures that ensure compliance with Executive Order 11990.

DOT Order 5660.1A, *Preservation of the Nation’s Wetlands*, sets U.S. DOT policy to assure the protection, preservation, and enhancement of the nation’s wetlands to the fullest extent practicable, and establishes procedures for implementation of the policy.

The 1972 Virginia Wetlands Act established a permitting system for the protection of wetlands, authorized the creation of local wetland boards to make judgments on local wetlands issues, and empowered the VDEQ and VMRC to issue wetland permits.

The District of Columbia’s Water Pollution Control Act prohibits the discharge of pollutants into District waters to protect and preserve aquatic life and resources for recreation, aesthetic enjoyment, and industry.

The following paragraphs describe regulated resources.

“Waters of the United States” are defined by the U.S. ACE as “coastal and inland waters, lakes, rivers, and streams that are Navigable Waters of the United States, including their adjacent wetlands,” “tributaries to Navigable Waters of the United States, including adjacent wetlands,” and special aquatic sites.\textsuperscript{144}

The “Specification of Disposal Sites for Dredged or Fill Material”\textsuperscript{145} identifies six categories of Special Aquatic Sites. Of the six, coral reefs and riffle pool complexes are not applicable to the surroundings of the Airport. Following are the four Special Aquatic Sites that could be present within the vicinity of the Airport:

- Sanctuaries and refuges are areas to be managed principally for the use of fish and wildlife resources.
- Wetlands are areas that are saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of


\textsuperscript{144} United States Department of the Army, Waterways Experiment Station, Vicksburg, Mississippi, Environmental Laboratory, *Corps of Engineers Wetlands Delineation Manual*, 1987.

vegetation typically adapted for life in saturated soil conditions.

- Mudflats are broad flat areas along the sea coast and in coastal rivers to the head of tidal influence and in inland lakes, ponds, and riverine systems.
- Vegetated shallows are permanently inundated areas that under normal circumstances support communities of rooted aquatic vegetation, such as turtle grass and eelgrass, in estuarine or marine systems as well as a number of freshwater species in rivers and lakes.

The mean high-water line of the Potomac River in the vicinity of the Airport is the division between the Commonwealth of Virginia and the District of Columbia. The Baltimore District of the U.S. ACE serves as the regulatory authority for projects within the Potomac River. The NPS maintains jurisdiction over the Potomac River bottom. Any wetlands or Waters of the United States found on Airport property would be regulated by the Norfolk District of the U.S. ACE, the VMRC, and the VDEQ.

4.5.3.2 Methodology

To determine the existence and extent of wetlands and Waters of the United States present in the LOPD, the National Wetlands Inventory (NWI) map information was first reviewed. Field investigations were then conducted within and in the proximity of the LOPD to confirm the presence of wetlands identified in the NWI maps and to identify any additional wetlands or Waters of the United States that may be present within the LOPD. The first field investigation was conducted in October 2006 for the areas beyond the ends of Runways 4, 22, 15, and 33, and resulted in a Jurisdictional Determination being issued from the U.S. ACE in January 2008.146 The second field investigation was conducted in August 2008 for the areas near the ends of Runways 1 and 19 and resulted in the issuance of a Jurisdictional Determination from the U.S. ACE in October 2008.147 A third field investigation was conducted in the area proposed for relocation of a boathouse on Airport property between Runway 22 and Runway 33 on November 20, 2009. The Potomac River is a traditional navigable waterway and is regulated by Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act.

All fieldwork was conducted according to the Corps of Engineers Wetlands Delineation Manual148 using the Routine Determination, On-Site Inspection Necessary Method. The manual outlines a three-parameter approach to delineating wetlands. All three parameters (hydrophytic vegetation, hydric soils, and hydrology) must be evident to classify an area as a wetland, unless the site has been disturbed (atypical) or is considered a problem area. In the case of atypical situations, where one or more parameters have been significantly altered, additional studies must be conducted to determine whether positive indicators of any of the three parameters were present prior to the alteration. If this is the case, then that parameter is considered to be met and a wetland determination can be based

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148 United States Department of the Army, Waterways Experiment Station, Vicksburg, Mississippi, Environmental Laboratory, Corps of Engineers Wetlands Delineation Manual, 1987.
solely upon the parameters that are still present. Each wetland and waterway was classified as to system, subsystem, class, and subclass according to the *Classification of Wetlands and Deep Water Habitats of the United States.*

4.5.3.3 Affected Environment

The U.S. ACE Jurisdictional Determination concurred with the findings of the field investigation for the areas near the ends of Runways 4-22 and 15-33, confirming that no vegetated jurisdictional or nonjurisdictional wetlands are present within the LOPD, but Waters of the United States are present within the LOPD.

4.5.3.4 Coastal Resources

Federal, state, and local laws protect coastal zone resources. Under the Federal Coastal Zone Management Act of 1972 (CZMA), each state is encouraged “to exercise effectively their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone, giving full consideration to ecological, cultural, historic, and esthetic values as well as the needs for compatible economic development.” Coastal zones are sensitive to changes in land cover and land use, such as converting areas of grass to impervious materials.

4.5.3.5 Regulatory Background

The primary legislation and orders related to coastal resources include:

- Coastal Barrier Resources Act of 1982\textsuperscript{151} as amended by the Coastal Barrier Improvement Act of 1990\textsuperscript{152}
- Coastal Zone Management Act of 1972\textsuperscript{153}

According to FEMA’s Coastal Barrier Resources System, no coastal barrier resources are located near the Airport or within the adjacent counties or cities. Furthermore, no coral reef resources are located in the mid-Atlantic region.

The CZMA declares that the preservation of coastal zones is a national priority and provides the framework for coastal states to develop a Coastal Zone Management Program. NOAA reviews and approves state plans, which are required to include a definition of the state’s coastal zone and to identify the enforceable policies that support the overall goal of the CZMA. Developed pursuant to the CZMA, the Virginia Coastal Zone Management (CZM) Program is the NOAA-approved management program for the Commonwealth. All Federal or Federally funded activities with any reasonably foreseeable effect on coastal zones must be consistent with the approved state plan.


\textsuperscript{150} The Coastal Zone Management Act of 1972, 16 USC §1452, *Congressional Declaration of Policy* (Section 303).

\textsuperscript{151} Coastal Barrier Resources Act of 1982, 96 Stat. 1653; 16 USC 3501 et seq.

\textsuperscript{152} Coastal Barrier Improvement Act of 1990, P.L. 101-591; 104 Stat. 2931.

\textsuperscript{153} Coastal Zone Management Act of 1972, 16 USC §§ 1451-1464, October 27, 1972, as amended.
Ronald Reagan Washington National Airport

The Virginia CZM Program, established by executive order of the Office of the Governor of the Commonwealth of Virginia, outlines how a network of state agencies and local governments work cooperatively to administer the enforceable laws, regulations, and policies that protect coastal resources. The VDEQ serves as the lead agency for Virginia’s networked coastal program and helps agencies and localities develop and implement coordinated coastal policies and solve coastal management problems. Eight Coastal Planning District Commissions and 87 localities (including Arlington and Alexandria) constitute Virginia’s network of coastal resource managers. The localities are responsible for implementing many of the Virginia CZM Program policies. The Airport is located within Arlington County, and is therefore subject to the Virginia CZM Program.

Under the Virginia CZM Program, specific enforceable policies address many of the coastal-related resources near the Airport. As the political boundary between the Commonwealth of Virginia and the District of Columbia is the high-water mark of the Potomac River, many of the coastal resources in the vicinity of the Airport are outside the jurisdiction of the Virginia CZM Program. The District does not have a commensurate coastal zone management program. The policies and the resource agency responsible for enforcing each policy in the Virginia CZM Program are listed in Table IV-8. VDEQ’s Office of Environmental Impact Review acts as the Commonwealth’s clearing house for coordinating the review of this EA and the Authority’s “coastal zone consistency certification” relevant to the Proposed Action and these policies.

4.5.3.6 Methodology

To determine the existence of coastal resources in the vicinity of the Airport, as they pertain to the VCP, the study team:

- Contacted the state and local agencies (i.e., VDEQ and Arlington County) that manage the various components of the Virginia CZM Program.
- Identified enforceable policies relevant to the Proposed Action.
- Identified protected geographic areas based on Arlington County maps.
- Identified Arlington County review requirements for coastal resources identified within the LOPD.
- Consulted the FEMA Coastal Barrier Resource System website for the locations of any coastal barriers within the Commonwealth of Virginia and the District of Columbia.

4.5.3.7 Affected Environment

The information collected was evaluated relative to the Proposed Action and proximity to the LOPD. The following describes coastal resources that are subject to the enforceable policies of the Virginia CZM Program.

<table>
<thead>
<tr>
<th>Enforceable Policy</th>
<th>Applicable Statutes or Regulations</th>
<th>Responsible Virginia Agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fisheries Management</td>
<td>Code of Virginia § 28.2-200 through 28.2-713</td>
<td>VMCR, VDEQ</td>
</tr>
<tr>
<td></td>
<td>Code of Virginia § 29.1-100 through 29.1-570</td>
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<tr>
<td>Subaqueous Lands Management</td>
<td>Code of Virginia § 28.2-1200 through 28.2-1213</td>
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</tr>
<tr>
<td>Wetlands Management</td>
<td>Code of Virginia § 28.2-1301 through § 28.2-1320</td>
<td>VMCR</td>
</tr>
<tr>
<td></td>
<td>Code of Virginia § 62.1-44.15.5 Section 401 of the Clean Water Act of 1972</td>
<td></td>
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<tr>
<td>Dunes Management</td>
<td>Code of Virginia § 28.2-1400 through 28.2-1420</td>
<td></td>
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<tr>
<td>Non-Point Source Water Pollution Control</td>
<td>Code of Virginia § 10.1-560 et seq.</td>
<td></td>
</tr>
<tr>
<td>Point Source Water Pollution Control</td>
<td>Section 402 of the Federal Clean Water Act Act</td>
<td></td>
</tr>
<tr>
<td>Shoreline Sanitation</td>
<td>Code of Virginia § 32.1-164 through § 32.1-165</td>
<td></td>
</tr>
<tr>
<td>Air Pollution Control</td>
<td>Code of Virginia § 10-1.1300</td>
<td></td>
</tr>
<tr>
<td>Coastal Lands Management</td>
<td>Code of Virginia § 10-1.2-100 through § 10-1.2114</td>
<td></td>
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<td></td>
<td>Virginia Administrative Code 9 VAC 10-20-10 et seq.</td>
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</tbody>
</table>

Description:
- This management program stresses the conservation and enhancement of finfish and shellfish resources and the promotion of commercial and recreational fisheries to maximize food production and recreational opportunities.
- The management program for subaqueous lands establishes conditions for granting or denying permits to use state-owned bottomlands based on considerations of potential effects on marine and fisheries resources, wetlands, adjacent or nearby properties, anticipated public and private benefits, and water quality standards established by the VDEQ, Water Division.
- The tidal wetlands program is administered by the Virginia Marine Resources Commission. The purpose of the wetlands management program is to preserve tidal wetlands, prevent their despoliation, and accommodate economic development in a manner consistent with wetlands preservation.
- The Virginia Water Protection Permit Program administered by the VDEQ includes protection of wetlands, both tidal and nontidal.
- Dunes are protected pursuant to the Coastal Primary Sand Dune Protection Act to prevent destruction or alteration of primary dunes.
- Virginia’s Erosion and Sediment Control Law requires soil-disturbing projects to be designed to reduce soil erosion and to decrease inputs of chemical nutrients and sediments to the Chesapeake Bay, its tributaries, and other rivers and waters of the Commonwealth. This program is administered by the VDCR (through the issuance of Virginia Pollutant Discharge Elimination System individual permits for construction activities).
- The VDCR, Division of Chesapeake Bay, Local Assistance Department regulates activities in Chesapeake Bay Resource Management Areas and Resource Protection Areas within 84 localities along Virginia’s coastal zone.
- The VDEQ regulates discharges into state waters through Virginia Pollutant Discharge Elimination System and Virginia Pollution Abatement permits accomplished through the implementation of the National Pollutant Discharge Elimination System program. The point-source program—the Virginia Pollutant Discharge Elimination System permit program—is administered by the State Water Control Board.
- The Virginia Department of Health regulates the installation of septic tanks, sets standards concerning soil types suitable for septic tanks, and specifies minimum distances that tanks must be placed away from streams, rivers, and other waters of the Commonwealth. This program, which includes shellfish closures due to bacterial contamination, is administered by the Virginia Department of Health.
- The VDEQ implements the Federal Clean Air Act to provide a legally enforceable State Implementation Plan for the attainment and maintenance of National Ambient Air Quality Standards. This program is administered by the State Air Pollution Control Board.
- The Division of Chesapeake Bay Local Assistance* at VDCR regulates activities in Chesapeake Bay Resource Management Areas and Resource Protection Areas within 84 localities in Virginia’s coastal zone through a state-local cooperative program established pursuant to the Chesapeake Bay Preservation Act; and Chesapeake Bay Preservation Area Designation and Management Regulations.

Notes:
- VMCR: Virginia Marine Resources Commission
- VDEQ: Virginia Department of Environmental Quality
- VDOE: Virginia Department of the Environment
- VDOH: Virginia Department of Health
- VDCR: Virginia Department of Conservation and Recreation and the Chesapeake Bay Local Assistance Department
- VDGF: Virginia Department of Game and Inland Fisheries
- VAC: Virginia Administrative Code

Fisheries Management
Four Mile Run and Roaches Run are in Virginia and provide fish habitat in the vicinity of the Airport. The portion of the Potomac River at the Airport is in the District of Columbia and is not subject to Virginia CZM Program policies. The District does not have a commensurate Coastal Zone Management Program, and uses the Virginia CZM Program as a means of identifying and evaluating fisheries resources. (Please refer to Sections 4.5.1 and 4.5.2 for more information on fisheries management beyond the purview of the Virginia CZM Program.)

Subaqueous Lands Management
No Virginia subaqueous lands are located within the LOPD. The subaqueous lands in the Potomac River southeast of the Runway 33 end are managed by the NPS. The VMRC also claims the right to “exercise regulatory authority over all structures and improvements built or proposed by riparian property owners in the Potomac River appurtenant to the shore of the Commonwealth.”156

Wetlands Management
Tidal and nontidal wetlands associated with the Potomac River are present on and near the Airport. There are no jurisdictional or non-jurisdictional vegetated wetlands within the LOPD, but there are Waters of the United States within the LOPD.157 (Please refer to Section 4.5.3 for more information on wetlands beyond the purview of the Virginia CZM Program.)

Dunes Management
The Coastal Primary Sand Dune Act158 defines several localities in the Commonwealth of Virginia in which jurisdictional dunes are to be protected. Arlington County is not one of the localities identified in the Coastal Primary Sand Dune Act as containing VMRC-jurisdictional dune resources.

Non-Point Source Water Pollution Control
Soil-disturbing projects must be designed and constructed so as to reduce soil erosion and decrease potential inputs of chemical nutrients and sediments to the Chesapeake Bay, its tributaries, and other rivers and waters of the Commonwealth of Virginia. These waters include Roaches Run and Four Mile Run, which are adjacent to the Airport. The VDCR manages potential erosion through the issuance of Virginia Pollutant Discharge Elimination System construction permits in an effort to protect water resources.

Point Source Water Pollution Control
The Airport operates under an NPDES general storm water discharge permit as described in Section 4.4.1. There are no discharges into Virginia waters.

Shoreline Sanitation
There are no septic tanks in the LOPD.

158 Coastal Primary Sand Dune Act, Code of Virginia, §28.2-1400 et seq.
Air Pollution Control

The Proposed Action would not create any new point sources or modify any existing point sources. Section 4.4.3.3 provides detailed information on the air quality at the Airport and in adjacent areas.

Coastal Lands Management

The Chesapeake Bay Preservation Act was enacted in 1988 by the Virginia General Assembly following execution of the 1983 Chesapeake Bay Agreement among Virginia, Maryland, the District of Columbia, Pennsylvania, and the U.S. EPA. Virginia’s Chesapeake Bay Preservation Act requires local tidewater governments to designate and protect Chesapeake Bay Preservation Areas. Chesapeake Bay Preservation Areas are any areas delineated by a local government in accordance with criteria established pursuant to the Code of Virginia. Arlington County has adopted these Chesapeake Bay Preservation Areas in its Chesapeake Bay Preservation Ordinance. Arlington County separates Chesapeake Bay Preservation Areas into two categories of land use:

- Resource Protection Areas, which protect the existence and quality of state waters and a 100-foot buffer adjacent to and landward of these features. The Code of Virginia (§10.1-559.1) defines state waters as all water, on the surface or in the ground, wholly or partially within or bordering the Commonwealth or within its jurisdiction. Thus, the Potomac River, although under the jurisdiction of the District, is considered a state water by Virginia when defining Resource Protection Areas. The RSAs at each crosswind runway end are within the 100-foot buffers that define a Resource Protection Area.

- Resource Management Areas are areas in which improper development has the potential to degrade water quality. All of Arlington County is designated as a Resource Management Area except for the areas meeting the specific criteria of a Resource Protection Area.

159 Code of Virginia §10.1-2100 et seq.
160 Code of Virginia § 10.1-2107.