American Electric Power
1 Riverside Plaza
Columbus, OH 43215
aep.com

Via Electronic Filing

January 28, 2019

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Subject: Niagara Hydroelectric Project (FERC No. 2466)
Notice of Intent and Pre-Application Document

Dear Secretary Bose:

Appalachian Power Company (Appalachian or Applicant), a unit of American Electric Power (AEP) is submitting to the Federal Energy Regulatory Commission (FERC or Commission) the Notice of Intent (NOI) to file an application for a subsequent license and Pre-Application Document (PAD) for the Niagara Hydroelectric Project (FERC No. 2466) (Project) located on the Roanoke River in Roanoke County, Virginia. The existing FERC license for the Project expires on February 29, 2024.

The Applicant is distributing this letter to the stakeholders listed on the distribution list in Appendix A of the PAD. For stakeholders listed in Appendix A who have provided an email address, the Applicant is distributing this letter via e-mail; otherwise, the Applicant is distributing this letter via U.S. mail. Stakeholders interested in the relicensing process may obtain a copy of the NOI and PAD electronically through FERC's eLibrary at https://elibrary.ferc.gov/idmws/search/fercgensearch.asp under docket number P-2466 or on the Applicant's website http://www.aephydro.com/HydroPlant/Niagara. If any stakeholder would like to request a CD containing an electronic copy of the NOI and PAD, please contact the undersigned at the information listed below. In addition, the Applicant is providing two courtesy paper copies of the NOI and PAD to Commission Staff in the Office of Energy Projects and Office of General Counsel – Energy Projects, as required by the Commission's filing guidelines. The NOI and PAD are available for review at the Applicant's business office during regular business hours located at 40 Franklin Road SW Roanoke, VA 24011.

Appendix D of the PAD includes a single-line electrical diagram of the Project and an existing Exhibit F Project drawing, as required by the Commission's PAD content requirements under 18 CFR § 5.6(d)(2)(iii)(D). The information contained in these drawings are deemed as Critical Energy Infrastructure Information (CEII) under 18 CFR §388.113, thus Appendix D of the PAD is not being distributed to the public. The Applicant is filing Appendix D under the Commission's eFiling guidelines for filing CEII.

In accordance with 18 CFR §5.5(e) of the Commission's regulations, the Applicant requests that the Commission designate Appalachian as the Commission's non-federal representative for

purposes of consultation under Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470f and the NHPA implementing regulations at 36 CFR Part 800.

In addition, the Applicant requests that FERC designate Appalachian as the non-federal representative for the Project for the purpose of consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service, pursuant to Section 7 of the Endangered Species Act (ESA) and the joint agency ESA implementing regulations at 50 CFR Part 402.

We look forward to working with the Commission's staff, resource agencies, Indian Tribes, local governments, non-governmental organizations, members of the public, toward developing a license application for this renewable energy facility. If there are any questions regarding this letter or the NOI or PAD, please contact me at jmmagalski@aep.com or via phone at (614) 716-2240.

Sincerely,

Jonathan M. Magalski
Environmental Specialist Consultant
American Electric Power Service Corporation, Environmental Services

Niagara Hydroelectric Project (FERC No. 2466)
Distribution List

Federal Agencies

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Secretary
Federal Energy Regulatory Commission
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Washington, DC 20426

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George Washington and
Jefferson National Forest
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Roanoke, VA 24019

Mr. John Bullard
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NOAA Fisheries Service
Greater Atlantic Regional Fisheries Office
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Mr. John A. Bricker
State Conservationist
US Department of Agriculture
Natural Resources Conservation Service
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Ms. Lindy Nelson
Regional Environmental Officer, Office of Environmental Policy & Compliance
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US Environmental Protection Agency
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Philadelphia, PA 19103-2029

Mr. Martin Miller
Chief, Endangered Species - Northeast Region (Region 5)
US Fish and Wildlife Service
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Niagara Hydroelectric Project (FERC No. 2466)
Distribution List

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US House of Representatives
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US National Park Service
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Washington, DC 20240

Ms. Catherine Turton
Architectural Historian, Northeast Region
US National Park Service
US Custom House, 3rd Floor
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Philadelphia, PA 19106

Hon. Tim Kaine
US Senate
231 Russell Senate Office Building
Washington, DC 20510

Hon. Mark Warner
US Senate
703 Hart Senate Office Building
Washington, DC 20510

State Agencies

Dr. Elizabeth Moore
President
Archaeological Society of Virginia
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Richmond, VA 23255

Blue Ridge Soil and Water Conservation District
1297 State Street
Rocky Mount, VA 24151

Mr. Jess Jones
Freshwater Mollusk Conservation Center
Virginia Tech
1B Plantation Road
Blacksburg, VA 24061

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Office of the Governor
PO Box 1475
Richmond, VA 23218

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Niagara Hydroelectric Project (FERC No. 2466)
Distribution List

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Blue Ridge Regional Office
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Senior Area Forester
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Mr. Scott Smith
Region 2 Fisheries Manager
Virginia Department of Game and Inland Fisheries
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Ms. Julie Langan
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Virginia Department of Historic Resources
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Richmond, VA 23221

Mr. Tim Pace
Chairman
Virginia Roanoke River Basin Advisory Committee
PO Box 1105
Richmond, VA 23218

Local Governments

Mr. Sherman P. Lea, Sr.
Mayor
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Noel C. Taylor Municipal Building
215 Church Avenue
Roanoke, VA 24011

Mr. Richard Caywood
Assistant County Administrator
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Tri-County Lakes Administrative Commission
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Western Virginia Water Authority
601 South Jefferson Street
Roanoke, VA 24011

Tribes

Chief Bill Harris
Catawba Indian Nation
996 Avenue of the Nations
Rock Hill, SC 29730

Deborah Dotson
President
Delaware Nation
P.O. Box 825
Anadarko, OK 73005

Niagara Hydroelectric Project (FERC No. 2466)
Distribution List

Chief Dean Branham
Monacan Indian Nation
PO Box 1136
Madison Heights, VA 24572

Chief Robert Gray
Pamunkey Indian Tribe
1059 Pocahontas Trail
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Non-Governmental

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Headquarters
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Roanoke, VA 24019

Blue Ridge Land Conservancy
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Roanoke, VA 24016

Blue Ridge Parkway Foundation
717 South Marshall Street, Suite 105 B
Winston-Salem, NC 27101

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PO Box 20986
Roanoke, VA 24018
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257 Dancing Tree Lane
Hollins, VA 24019

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Roanoke, VA 24008-1750

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roanokeriverblueway@gmail.com

Ms. Amanda McGee
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amcgee@rvarc.org

Ms. Liz Belcher
Roanoke Valley Greenway
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Salem, VA 24153
liz.belcher@greenways.org

Mr. Steve Moyer
Trout Unlimited
1777 N. Kent Street, Suite 100
Arlington, VA 22209

Upper Roanoke River Roundtable
PO Box 8221
Roanoke, VA 24014

NIAGARA HYDROELECTRIC PROJECT
FERC PROJECT NO. 2466
NOTICE OF INTENT TO FILE APPLICATION FOR NEW LICENSE

Appalachian Power Company ("Appalachian" or "Licensee"), a unit of American Electric Power (AEP) and the licensee of the existing Niagara Hydroelectric Project (FERC Project No. 2466), hereby notifies the Federal Energy Regulatory Commission ("FERC" or "Commission") of its intent to file an Application for New License for the Niagara Hydroelectric Project.

Pursuant to 18 C.F.R. §5.5(b) of the Commission's regulations, Appalachian provides the following information:

(1) Licensee's Name, Address, and Phone Number:

Appalachian Power Company
40 Franklin Road SW
Roanoke, VA 24011
Phone: (540) 985-2441

(2) FERC Project Number:

FERC Project No. 2466

(3) License Expiration Date:

February 29, 2024

(4) Statement of Intent to File Application for New License:

Appalachian hereby unequivocally declares its intent to file an Application for New License for the Niagara Hydroelectric Project on or before February 28, 2022. Appalachian will utilize the Commission's Integrated Licensing Process (ILP) in support of this relicensing.

(5) Principal Works of the Niagara Hydroelectric Project:

The Project works consist of: (1) a 52-foot-high, 452-foot-long concrete dam creating a 62-acre reservoir; (2) an 11-foot-diameter, 500-foot-long, corrugated metal pipe penstock with associated entrance and discharge structures; (3) a 92-foot-long by 58-foot-wide by 42-foot-high concrete powerhouse on the north end of the dam containing two generating units with a total installed capacity of 2.4 megawatts (MW); (4) transmission facilities consisting of the 2.4-kilovolt (kV) generator leads and a 3-phase, 2.4/12-kV, 2500-kilovolt ampere (kVA) step-up transformer; and (5) appurtenant facilities.

(6) Project Location:

The Niagara Project is located on the Roanoke River in the City of Roanoke, Roanoke County, Virginia.

(7) Plant Installed Capacity:

The Project's installed capacity is 2.4 MW.

(8)(i) The names and mailing addresses of every county in which any part of the project is located and in which any federal facility that is used by the project is located are:

Daniel R. O'Donnell
County Administrator
Roanoke County
P.O. Box 29800
Roanoke, VA 24018-0798

There are no federal lands or facilities associated with the Project.

(8)(ii)(A) The names and mailing addresses of every city, town, or similar political subdivision in which any part of the project is or is to be located and any federal facility that is or is to be used by the project is located:

Sherman P. Lea Sr.
Mayor
City of Roanoke
Noel C. Taylor Municipal Building
215 Church Ave.
Roanoke, VA 24011

There are no federal lands or facilities associated with the Project.

(8)(ii)(B) The names and mailing addresses of every city, town, or similar political subdivision that has a population of 5,000 or more people and is located within 15 miles of the Project dam:

Cline Brubaker
Blackwater District Supervisor
1255 Franklin Street
Rocky Mount, VA 24151

Charles Wagner
Rocky Mount District Supervisor
1255 Franklin Street
Rocky Mount, VA 24151

Ronnie Thompson
Boone District Supervisor
1255 Franklin Street
Rocky Mount, VA 24151

Bob Camicia
Gills Creek District Supervisor
1255 Franklin Street
Rocky Mount, VA 24151

Tommy Cundiff
Union Hall District Supervisor
1255 Franklin Street
Rocky Mount, VA 24151

Robert Cowell, Jr.
City Manager
215 Church Avenue SW
Room 364
Roanoke, VA 24011

Kevin Boggess
City Manager
114 North Broad Street
Salem, VA 24153

Martha Hooker
Catawba Magisterial District Supervisor
5204 Bernard Drive
Fourth Floor
Roanoke, VA 24018

George Assaid
Cave Spring Magisterial District Supervisor
5204 Bernard Drive
Fourth Floor
Roanoke, VA 24018

Al Bedrosian
Hollins Magisterial District Supervisor
5204 Bernard Drive
Fourth Floor
Roanoke, VA 24018

P. Jason Peters
Vinton Magisterial District Supervisor
5204 Bernard Drive
Fourth Floor
Roanoke, VA 24018

Joseph McNamara
Windsor Hills Magisterial District Supervisor
5204 Bernard Drive
Fourth Floor
Roanoke, VA 24018

Todd Dodson
Amsterdam District Supervisor
1 West Main Street
Fincastle, VA 24090

Billy Martin, Sr.
Blue Ridge District Supervisor
1 West Main Street
Fincastle, VA 24090

John Williamson
Buchanan District Supervisor
1 West Main Street
Fincastle, VA 24090

L.W. "Jack" Leffel
Fincastle District Supervisor
1 West Main Street
Fincastle, VA 24090

Donald "Mac" Scothorn
Valley District Supervisor
1 West Main Street
Fincastle, VA 24090

Bill Thomasson
District 1 – Blue Ridge District Supervisor
3915 Thomasson Mill Road
Goodview, VA 24095

Curry Martin
District 2 – Center District Supervisor
431 Surrey Drive
Huddleston, VA 24104

John Sharp
District 4 – Lakes District Supervisor
105 Oakdale Terrace
Forest, VA 24551

Tommy Scott
District 5 – Peaks District Supervisor
128 Mill Acres Drive
Lynchburg, VA 24503

(8)(iii) **The names and mailing addresses of every irrigation district, drainage district, or similar special purpose political subdivision (A) in which any part of the project is located, and any federal facility that is or is proposed to be used by the project is located, or (B) that owns, operates, maintains, or uses any project facility or any federal facility that is or is proposed to be used by the project:**

There are no irrigation or drainage districts or similar special purpose political subdivisions associated with or in the general area of the Project. There are no federal lands or facilities associated with the Project.

8(iv) **The names and mailing addresses of every other political subdivision in the general area of the project that there is reason to believe would likely be interested in or affected by the notification:**

Western Virginia Water Authority
601 S. Jefferson St.
Roanoke, VA 24011

Blue Ridge Soil and Water Conservation District
USDA Rocky Mount Service Center
1297 State St.
Rocky Mount, VA 24151

8(v) The names and mailing addresses of affected Indian Tribes:

Chief Robert Gray
Pamunkey Indian Tribe
1059 Pocahontas Trail
King William, VA 23086

Chief Bill Harris
Catawba Indian Nation
996 Avenue of the Nations
Rock Hill, SC 29730

Deborah Dotson
President
Delaware Nation
P.O. Box 825
Anadarko, OK 73005

Chief Dean Branham
Monacan Indian Nation
PO Box 1136
Madison Heights, VA 24572

Appalachian is filing this Notice of Intent (NOI) concurrently with a Pre-Application Document (PAD). In accordance with 18 C.F.R. §5.5(c), the Licensee is sending notification of these filings to the distribution list included in Appendix A of the PAD; the list includes applicable resource agencies, local governments, Indian Tribes, and non-government organizations.

In accordance with 18 C.F.R. §5.5(e), Appalachian is requesting designation as the non-federal representative for consultation under Section 7 of the Endangered Species Act and Section 106 of the National Historic Preservation Act.

If there are any questions concerning this NOI or the PAD, please contact the undersigned at the address or telephone number listed.

Respectfully submitted,

Robert A Gallimore

Robert A. Gallimore
Plant Manager Hydro
American Electric Power Service Corporation
c/o Jonathan M. Magalski
Environmental Specialist Consultant
American Electric Power Service Corporation
1 Riverside Plaza
Columbus, OH 43215
(614) 716-2240

PRE-APPLICATION DOCUMENT

Niagara Hydroelectric Project
FERC NO. 2466

Appalachian Power Company

January 2019

APPALACHIAN POWER℠

An AEP Company

BOUNDLESS ENERGY℠

NIAGARA HYDROELECTRIC PROJECT
FERC PROJECT NO. 2466
PRE-APPLICATION DOCUMENT

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°C	degrees Celsius
µS/cm	micro-Siemens per centimeter
AEP	American Electric Power
APE	area of potential effect
Appalachian or Licensee	Appalachian Power Company
CEII	Critical Energy Infrastructure Information
CFR	Code of Federal Regulations
cfs	cubic feet per second
CWA	Clean Water Act
DO	dissolved oxygen
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FERC or Commission	Federal Energy Regulatory Commission
FPA	Federal Power Act
HUC	hydrologic unit code
ILP	Integrated Licensing Process
kV	kilovolt
kVA	kilovolt ampere
kW	kilowatt
mg/L	milligram per liter
mm	millimeter
MW	megawatt
MWh	megawatt hour
NEPA	National Environmental Policy Act
NGO	non-governmental organization
NGVD	National Geodetic Vertical Datum of 1929
NHPA	National Historic Preservation Act of 1966
NMFS	National Marine Fisheries Service
NOI	Notice of Intent
NPS	National Park Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
PAD	Pre-Application Document
PCB	polychlorinated biphenyls
pH	acidity/alkalinity scale

PM&E	protection, mitigation, and enhancement
Project	Niagara Hydroelectric Project
PSP	Proposed Study Plan
PURPA	Public Utility Regulatory Policies Act of 1978
rpm	rotations per minute
RTE	rare, threatened, or endangered
SD1	Scoping Document 1
SD2	Scoping Document 2
Section 106	Section 106 of the National Historic Preservation Act of 1966
SHPO	State Historic Preservation Office
TMDL	Total Maximum Daily Load
USACE	U.S. Army Corps of Engineers
USCB	U.S. Census Bureau
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VAC	Virginia Administrative Code
VDCR	Virginia Department of Conservation and Recreation
VDEQ	Virginia Department of Environmental Quality
VDGIF	Virginia Department of Game and Inland Fisheries
VDH	Virginia Department of Health
VPDES	Virginia Pollutant Discharge Elimination System

Section 1
Introduction and Background

Appalachian Power Company (Appalachian or Licensee), a unit of American Electric Power (AEP), is the Licensee, owner, and operator of the run-of-river, 2.4-megawatt (MW) Niagara Hydroelectric Project (Project) (Project No. 2466), located on the Roanoke River in Roanoke County, Virginia.

The Project consists of a concrete ogee spillway dam creating a 62-acre reservoir, a metal pipe penstock with associated entrance and discharge structures, and a concrete powerhouse on the north end of the dam containing two generating units with a total installed capacity of 2.4 MW.

The Project is currently licensed by the Federal Energy Regulatory Commission (FERC or Commission) under the authority granted to FERC by Congress by the Federal Power Act (FPA), 16 United States Code §791(a), et seq., to license and oversee the operation of non-federal hydroelectric projects on jurisdictional waters and/or federal lands. The current operating license for the Project expires on February 29, 2024. In accordance with the Commission's regulations, Appalachian must file its application with FERC no later than 24 months before the existing license expires.

In support of preparing an application for a new license, Appalachian has elected to use FERC's Integrated Licensing Process (ILP). The ILP is designed to bring efficiencies to the licensing process by integrating the applicant's pre-filing consultation activities with FERC's National Environmental Policy Act (NEPA) scoping responsibilities. The Licensee believes that the ILP is the most effective and efficient process for this relicensing.

The ILP is formally initiated by Appalachian's filing of this Pre-Application Document (PAD) and Notice of Intent (NOI) with FERC to relicense the Project. The PAD and NOI are distributed to federal and state resource agencies, local governments, Indian Tribes, and interested members of the public simultaneously upon filing with FERC.

Under the Commission's regulations at 18 Code of Federal Regulations (CFR) §5.8, FERC will review this PAD and associated NOI and, within 60 days of receipt, notice the commencement of the licensing proceeding, request comments on the PAD, and issue Scoping Document 1 (SD1). A public scoping meeting and site visit will then be conducted within 30 days of issuing SD1, or within 90 days of the submittal of the PAD.

Section 2
Purpose of the Pre-Application Document

The filing of this PAD and the associated NOI by Appalachian marks the formal start of the relicensing process for the Project. The purpose of the PAD is to provide a description of the existing Project facilities and operations, and to also provide existing, relevant, and reasonably available information related to the Project area. Further, the PAD is intended to assist the Commission, resource agencies, Indian Tribes, non-governmental organizations (NGOs), and other interested parties to identify potential resource areas of interest and informational needs, to develop study requests, and to establish the information necessary to analyze the license application [18 CFR §5.6(b)].

2.1 Search for Existing, Relevant, and Reasonably Available Information

In support of preparing this PAD, HDR, Inc. (HDR), on behalf of and in collaboration with Appalachian, has undertaken an extensive search to identify and review information that is reasonably available and relevant to the Project. These efforts consisted of the following five primary activities:

1. A comprehensive search of AEP's files and documentation;
2. The distribution of a PAD questionnaire to 61 parties requesting any information related to the Project, Project area, and the region;
3. A search and review of publicly available sources and databases;
4. Consultation with select resource agencies and other relicensing parties with potential information applicable to the Project area; and
5. A review of the Virginia State and Federal Comprehensive Plans relevant to the Project.

A copy of the PAD information questionnaire and associated distribution list is provided in Appendix A. Copies of completed questionnaires provided by Project stakeholders are included in Appendix B. Appalachian and HDR reviewed the responses and information applicable to the Project. Relevant information has been summarized in the applicable resource sections of this PAD.

2.2 Description of Consultation Process Undertaken by Appalachian Prior to Submittal of the PAD

Appalachian performed preliminary consultation with potential stakeholders in support of preparing this PAD to obtain available information, to determine the potential relationship between stakeholders'

interests and Project operations, and to identify potential information gaps and study needs in advance of the formal relicensing process.

Appalachian's preliminary consultation began with the identification of parties that may have an interest in the Project relicensing. Based on the information obtained during this process, a stakeholder list of 61 parties was compiled and used as the distribution list for the PAD information questionnaire. Existing, relevant, and reasonably available information regarding the Project and the surrounding environment were requested. Parties were also requested to identify resource areas of interest.

Additionally, Appalachian has conducted initial consultation with (1) the Virginia Department of Conservation and Recreation (VDCR) and the U.S. Fish and Wildlife Service (USFWS) regarding rare, threatened, and endangered (RTE) species and (2) the Virginia Department of Environmental Quality's (VDEQ) Federal Consistency Office to confirm that the Project is located outside the state's coastal zone.

Section 3
Process Plan, Schedule, and Communication Protocol

3.1 Overall Process Plan and Schedule

Appalachian proposes to use the Commission's ILP in support of obtaining a new license for the Project. As presented in Table 3.1-1, Appalachian has prepared a Process Plan and Schedule that incorporates the overall ILP schedule for this relicensing.

Table 3.1-1
Niagara Hydroelectric Project ILP Process Plan and Schedule

Activity	Responsible Party	Timeframe	Proposed Date
File NOI and PAD (18 CFR §5.5(d))	Appalachian	As early as 5.5 years, but no later than 5 years prior to license expiration	1/28/2019
Initial Tribal Consultation Meeting (18 CFR §5.7)	FERC	No later than 30 days of filing NOI and PAD	2/27/2019
Issue notice of NOI/PAD and SD1 (18 CFR §5.8(a))	FERC	Within 60 days of filing NOI and PAD	3/29/2019
Conduct scoping meetings and site visit (18 CFR §5.8(b)(viii))	FERC	Within 30 days of NOI/PAD notice and SD1 issuance	4/28/2019
Comments on PAD, SD1, and Study Requests (18 CFR §5.9(a))	Stakeholders	Within 60 days of NOI/PAD notice and issuance of SD1	5/28/2019
File Proposed Study Plan (PSP) (18 CFR §5.11)	Appalachian	Within 45 days of deadline for filing comments on PAD	7/12/2019
Issuance of Scoping Document 2 (SD2), if necessary (18 CFR §5.10)	FERC	Within 45 days of deadline for filing comments on SD1	7/12/2019
PSP Meeting (18 CFR §5.11(e))	Appalachian	To be held within 30 days of filing PSP	8/11/2019
Comments on PSP (18 CFR §5.12)	Stakeholders	Within 90 days after PSP is filed	10/10/2019
File Revised Study Plan (RSP) (18 CFR §5.13(a))	Appalachian	Within 30 days of deadline for comments on PSP	11/9/2019
Comments on RSP (18 CFR §5.13(b))	Stakeholders	Within 15 days following RSP	11/24/2019
Issuance of Study Plan Determination (18 CFR §5.13(c))	FERC	Within 30 days of RSP	12/9/2019
Formal Study Dispute Resolution Process if requested (18 CFR §5.14(a))	Agencies with mandatory conditioning authority	Within 20 days of Study Plan Determination	12/29/2019

Activity	Responsible Party	Timeframe	Proposed Date
Dispute Resolution Panel Convenes (18 CFR §5.14(d))	Dispute Resolution Panel	Within 20 days of notice of study dispute	1/18/2020
Comments on Study Plan Disputes (18 CFR §5.14(i))	Appalachian	Within 25 days of notice of study dispute	1/23/2020
Third Panel Member Selection Due (18 CFR §5.14(d)(3))	Dispute Resolution Panel	Within 15 days of when Dispute Resolution Panel convenes	2/2/2020
Dispute Resolution Panel Technical Conference (18 CFR §5.14(j))	Dispute Resolution Panel, Appalachian, Stakeholders	Prior to engaging in deliberative meetings	-
Dispute Resolution Panel Findings and Recommendations (18 CFR §5.14(k))	Dispute Resolution Panel	No later than 50 days after notice of dispute	2/17/2020
Study Dispute Determination (18 CFR §5.14(1))	FERC	No later than 70 days after notice of dispute	3/8/2020
Conduct First Season of Studies (18 CFR §5.15)	Appalachian	--	March to September 2020
Study Progress Reports (18 CFR §5.15(b))	Appalachian	Appalachian will provide summary updates every 3 months	June 2020 to September 2021
Initial Study Report (18 CFR §5.15(c))	Appalachian	Pursuant to the Commission-approved study plan and schedule provided in § 5.13 or no later than 1 year after Commission approval of the study plan	12/8/2020
Initial Study Report Meeting (18 CFR §5.15(c)(2))	Appalachian and Stakeholders	Within 15 days of filing the Initial Study Report	12/23/2020
File Initial Study Report Meeting Summary (18 CFR §5.15(c)(3))	Appalachian	Within 15 days of study results meeting	1/7/2021
File Meeting Summary Disagreements (18 CFR §5.15(c)(4))	Stakeholders	Within 30 days of study results meeting summary	2/6/2021
File Responses to Meeting Summary Disagreements (18 CFR §5.15(c)(5))	Appalachian	Within 30 days of filing meeting summary disagreements	3/8/2021
Resolution of Disagreements (18 CFR §5.15(c)(6))	FERC	Within 30 days of filing responses to disagreements	4/7/2021
Conduct Second Season of Studies (if necessary)	Appalachian	--	March to September 2021

Activity	Responsible Party	Timeframe	Proposed Date
File Updated Study Report (18 CFR §5.15(f)) (if necessary)	Appalachian	Pursuant to the Commission-approved study plan and schedule provided in § 5.13 or no later than 2 years after Commission approval	12/8/2021
Updated Study Report Meeting (18 CFR §5.15(f)) (if necessary)	Appalachian and Stakeholders	Within 15 days of Updated Study Report	12/23/2022
File Updated Study Report Meeting Summary (18 CFR §5.15(f)) (if necessary)	Appalachian	Within 15 days of Updated Study Report meeting	1/7/2022
File Meeting Summary Disagreements (18 CFR §5.15(f))	Stakeholders	Within 30 days of study results meeting summary	2/6/2022
File Responses to Meeting Summary Disagreements (18 CFR §5.15(f)(5))	Appalachian	Within 30 days of filing meeting summary disagreements	3/8/2022
Resolution of Disagreements (18 CFR §5.15(f))	FERC	Within 30 days of filing responses to disagreements	4/7/2022
File Draft License Application (18 CFR §5.16(a))	Appalachian	No later than 150 days prior to the deadline for filing a new or subsequent license application	10/1/2021
Comments on Draft License Application (18 CFR §5.16(a))	Stakeholders	Within 90 days of filing Preliminary License Proposal or Draft License Application	12/30/2021
File License Application (18 CFR §5.17)	Appalachian	No later than 24 months before the existing license expires	2/28/2022
Tendering Notice (18 CFR §5.19)	FERC	Within 14 days of filing of License Application	3/14/2022
Commission Decision on Any Outstanding Pre-filing Additional Information Requests (18 CFR §5.19)	FERC	Within 30 days of filing of License Application	3/30/2022
Notice of Acceptance and Notice of Ready for Environmental Analysis (18 CFR §5.22)	FERC	Within 60 days of issuance of Tendering Notice	5/13/2022
File 401 Water Quality Certification Application with VADEQ and proof of application with FERC (18 CFR §5.23)	Appalachian	Within 60 days of issuance of Notice of Ready for Environmental Analysis	7/12/2022
Comments, Interventions, Preliminary Terms and Conditions (18 CFR §5.23)	Stakeholders	Within 60 days of issuance of Notice of Acceptance and Ready for Environmental Analysis	7/12/2022
Parties Submit Alternatives	Stakeholders and Appalachian	Within 30 days of Comments, Interventions, Preliminary Terms and Conditions	8/11/2022

Activity	Responsible Party	Timeframe	Proposed Date
Parties Request Trial-Type Hearing	Stakeholders and Appalachian	Within 30 days of Comments, Interventions, Preliminary Terms and Conditions	8/11/2022
Reply Comments	Stakeholders and Appalachian	Within 45 days of Comments, Interventions, Preliminary Terms and Conditions	8/26/2022
Interventions and Responses	Stakeholders	Within 15 days of Parties Requesting Trial-Type Hearing	8/26/2022
Agency Response to Trial-Type Hearing	Mandatory Conditioning Agency	Within 30 days of Interventions and Responses	9/25/2022
Agency Hearing Referral	Mandatory Conditioning Agency	Within 5 days of agency response to trial type hearing	9/30/2022
Trial Type Hearing Decision	Mandatory Conditioning Agency	Within 90 days of agency hearing referral	12/29/2022
Commission issues Non-Draft Environmental Assessment (EA) (18 CFR §5.24)	FERC	Within 75 days of reply comments deadline	11/9/2022
Comments on Non-Draft EA (18 CFR §5.24)	Stakeholders	Within 30-45 days of Commission issuance of Non-Draft EA or Environmental Impact Statement (EIS)	12/24/2022
Modified Terms and Conditions Based on Any Hearing Decision, Comments, and Proposed Alternatives (18 CFR §5.24)	Stakeholders	Within 60 days of filing of comments on Draft EA or EIS	2/22/2023
Commission issues License Order (18 CFR §5.25)	FERC	--	2/28/2024

1. If the due date falls on a weekend or holiday, the deadline is the following business day.
2. All Director's determinations are subject to request for rehearing to FERC pursuant to 18 CFR § 375.301(a) and 385.713. Any request for rehearing must be filed within 30 days of determination.
3. Shaded actions are not necessary if there are no study disputes.
4. This schedule is based upon FERC's issuance of a Non-Draft EA. FERC can also issue a Draft EA, which would modify the schedule slightly.

3.2 Scoping Meeting and Site Visit

Pursuant to 18 CFR §5.8(b), FERC will hold a Scoping Meeting and Site Visit to the Project within 30 days of issuing notice of the PAD and NOI (estimated to be on April 25, 2019, and required to be before April 28, 2019) in accordance with its responsibilities under NEPA. The Scoping Meeting will be held at a location selected by FERC in the general vicinity of the Project. FERC will issue a public notice regarding the Scoping Meeting that will include the meeting date, meeting location, and additional instructions for attending the meeting.

3.3 ILP Participation

Appalachian has provided this PAD to representatives of relevant agencies, local governments, Indian Tribes, NGOs, and members of the public included on the distribution list attached to the cover letter transmitting this PAD. Any party that desires to be added to or removed from the distribution list should contact either of the individuals listed below:

Ms. Elizabeth Parcell
Process Supervisor
Appalachian Power Company
40 Franklin Road SW
Roanoke, VA 24011
(540) 985-2441
ebparcell@aep.com

Mr. Jonathan Magalski
Environmental Specialist Consultant
c/o Appalachian Power Company
1 Riverside Plaza
Columbus, OH 43215
(614) 716-2240
jmmagalski@aep.com

3.4 Communication Protocol

During the course of the Project relicensing process, communication will take place through public meetings, conference calls, and/or written correspondence. In order to establish the formal consultation record, all phases of formal correspondence require adequate documentation. The intent of the Communication Protocol is to provide a flexible framework for the dissemination of information and for documenting consultation among the participants throughout the relicensing proceeding. The Communication Protocol will remain in effect until issuance of the Project's new license by the Commission.

3.4.1 Distribution of Relicensing Materials

Appalachian will distribute relicensing materials via email or by mailing notifications (to the established mailing list) of the availability of formal relicensing filings and documents online. If Appalachian has not been provided with a stakeholder's email address, Appalachian will mail notification of the availability of documents via regular mail. Documents filed with the Commission will be available on Appalachian's public relicensing website (http://www.aephydro.com/HydroPlant/Niagara), and from FERC's eLibrary at www.ferc.gov/docs-filing/elibrary.asp by searching under Docket P-2466.

Requests for hard copies of relicensing documents should be sent to Ms. Elizabeth Parcell using the contact information provided in Section 3.3 of this document and should clearly indicate the document name, publication date (if known), and FERC Project No. 2466. A reproduction charge and postage costs may be assessed for hard copies requested by the public. Federal, state, and tribal entities will not be subject to document processing or postage fees.

Certain documents are restricted from general distribution. These documents include: (1) those covered under the FERC's regulations protecting Critical Energy Infrastructure Information (CEII) (18 CFR §388.113); (2) archaeological survey reports or other information identifying the locations of historic properties; and (3) reports that contain information regarding the locations of RTE species.

3.4.2 FERC Communication

FERC has not yet designated a member of its staff to serve as the relicensing coordinator in support of this relicensing process. The role of the FERC relicensing coordinator will be in accordance with the rules and regulations for the ILP.

All communications to FERC regarding Project relicensing must reference the **Niagara Hydroelectric Project FERC No. P-2466 - Application for New License**.

FERC strongly encourages paperless electronic filing of comments and interventions through its eFiling or eComment systems. Information and links to these systems can be found at the FERC webpage http://www.ferc.gov/docs-filing/ferconline.asp. In order to eFile comments and/or interventions, interested parties must have an eRegistration account. After preparing the comment or motion to intervene, the user should navigate to the website www.ferc.gov, select the eFiling link, select the new user option, and follow the prompts. Users are required to validate their account by accessing the site through a hyperlink sent to the registered email account.

An additional method to eFile comments is through the "Quick Comment" system available via a hyperlink on the FERC homepage. "Quick Comments" do not require the users to have a subscription; the comments are limited to 6,000 characters and all information must be public. Users are required to enter their names and email addresses and will then receive an email with detailed instructions on how to submit "Quick Comments."

Stakeholders without internet access may submit comments to FERC at the address below via hard copy, but should be aware that documents sent to FERC by regular mail can be subject to docket-posting delays:

Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, D.C. 20426

Section 4
Project Location, Facilities, and Operations

4.1 Authorized Agent

The exact name, business address, telephone number, and email address of each person authorized to act as an agent for Appalachian is listed below.

Mr. Robert A. Gallimore,
Plant Manager Hydro
c/o Ms. Elizabeth Parcell
Process Supervisor
c/o Appalachian Power Company
40 Franklin Road SW
Roanoke, VA 24011
(540) 985-2441
ebparcell@aep.com

4.2 Project Location

The Project is located at approximate river mile 355 on the Roanoke River, approximately 6 miles southeast of the City of Roanoke, Roanoke County, Virginia. The reservoir formed by the Project is approximately 2 miles long and converges with Tinker Creek. Figure 4.2-1 provides an overview of the Project location and setting. Figure 4.2-2 provides an overview of the Project facilities described further in Section 4.3.

The upper portion of the Project boundary and reservoir, including the mainstem of the Roanoke River as well as Tinker Creek immediately above its confluence with the Roanoke River, occupies a developed area within the Town of Vinton and along the outer limit of the City of Roanoke. Land use in this area and immediately upstream is predominantly residential and industrial. The Project's powerhouse and lower portion of the reservoir are located in a predominantly undeveloped, forested area. Farther south and downstream of the Project, land use is predominantly agricultural and rural residential, with the remainder undeveloped forestland or reservoir.

Figure 4.2-1
Project Location Map

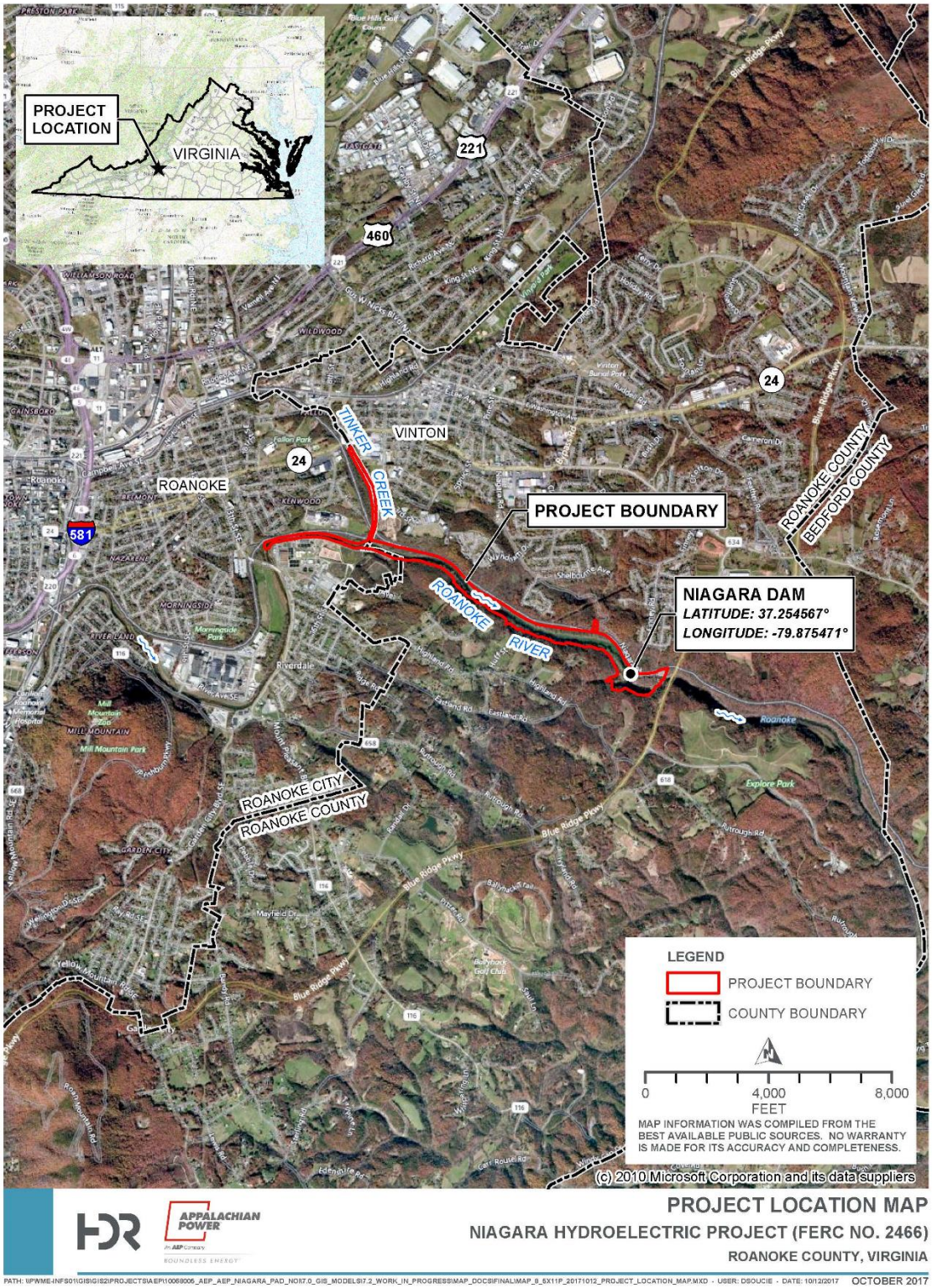


Figure 4.2-2
Aerial View of Project Facilities

4.3 Project Facilities

The Project was constructed in 1906 and was operated by the Roanoke Railroad and Electric Company until Appalachian took ownership of the Project in 1924.

The licensed Project works consist of: (1) a 52-foot-high, 452-foot-long concrete dam creating a 62-acre reservoir; (2) an 11-foot-diameter, 500-foot-long, corrugated metal pipe penstock with associated entrance and discharge structures; (3) a 92-foot-long by 58-foot-wide by 42-foot-high concrete powerhouse on the north end of the dam containing two generating units with a total installed capacity of 2.4 MW; (4) transmission facilities consisting of the 2.4-kilovolt (kV) generator leads and a 3-phase, 2.4/12-kV, 2500-kilovolt ampere (kVA) step-up transformer; and (5) appurtenant facilities.

The principal structures at the Project consist of a free-overflow, ogee-type concrete spillway; an intake structure integrated into the dam; an overflow auxiliary spillway on the left[1] side of the main spillway; a non-overflow section that forms the right abutment; a penstock; and the powerhouse. As further described in the subsections that follow, under the term of the existing license, the Project has undergone and continues to undergo extensive rehabilitation to ensure the continued safety and reliability of Project structures and power generation.

The facilities and structures listed above are detailed below and are also depicted in the project drawings included in Appendix C, which is filed as CEII in accordance with 18 CFR §388.112. Between 2010 through 2014, the annual production for the Project ranged from 5,693 to 10,549 megawatt hours (MWh).

4.3.1 Reservoir

The reservoir formed by the Project is approximately 2 miles long and covers a surface area of 62 acres. The gross storage capacity is approximately 425 acre-feet.

[1] For usages of “left” and “right” throughout this document, the reference point is as viewed looking downstream.

Table 4.3-1
Reservoir Data

Drainage area	511 square miles
Shoreline length	7.1 miles
Typical surface area	62 acres
Maximum Depth	10 feet (estimated)
Permanent crest of dam elevation	885 feet*
Typical normal surface water elevation	884.4 feet
Operations	Run-of-river
Storage capacity	425 acre-feet

*All elevations herein are referenced to National Geodetic Vertical Datum of 1929 (NGVD).

4.3.2 Main Dam/Spillway

The dam/spillway has a total length of approximately 585 feet, inclusive of the right non-overflow abutment (70 feet), main spillway (392 feet), gate structure (33 feet), and intake structure (90 feet).

The spillway has a maximum height of approximately 52 feet and is constructed of cyclopean concrete. In 1998, the dam/spillway was modified with the addition of a roller-compacted concrete buttress on the downstream side of the spillway to strengthen the structure to meet FERC stability criteria (DTA 2005). The non-overflow right abutment was also strengthened in 1998, including placement of a concrete cap along the crest of the structure.

4.3.3 Low-Level Outlets

The left end of the spillway includes an 8.25-foot-high by 6-foot-wide trash sluice controlled by a bottom-hinged, leaf-type gate. There are also three 3-foot by 4-foot sluice openings approximately 15 feet below the crest of the dam, which are operated by wooden gates. Each of the three sluice openings have been sealed with a steel plate equipped with three valves. These low-level outlets are not routinely operated. These structures discharge to the river channel.

4.3.4 Auxiliary Spillway

A 103.5-foot-long auxiliary spillway with a crest elevation of 886 feet is located downstream of the upstream intake. This structure was originally a side channel spillway for the power canal. The original 1906 construction was cyclopean concrete. A two-foot-thick, reinforced-concrete wall was added in 1998 to the upstream face (DTA 2005).

4.3.5 Forebay and Intake

An intake structure (also referred to as the “upper intake”) is integrated into the left non-overflow section of the main dam. Flow to the penstock is controlled by five inlets equipped with steel head gates, each 6-feet, 5-inches wide by 8-feet, 3-inches high. Steel trashracks with 3-5/8-inch clear bar spacing are inclined upstream of the headgates. An automated trash rake system (known as a “drag rake”) is utilized to clean the trashracks and prevent sediment and debris buildup in front of the intake (DTA 2005).

Water passes through the intake to the 40-foot-wide by 80-foot-long upper penstock reservoir that terminates at the penstock entrance structure, a cantilevered concrete headwall.

A logboom consisting of interconnected floating platforms is utilized to direct larger floating objects away from the intake screens. The logboom is anchored to the north bank of the river, approximately 90 feet upstream of the upper intake structure and extends for approximately 135 feet to the south side of the intake structure.

4.3.6 Penstock

The 11-foot-diameter, corrugated metal pipe penstock water conveyance for the Project leads from the penstock entrance structure to the penstock discharge structure just upstream of the powerhouse over a length of approximately 500 feet. The penstock is supported by wood cradles resting on rock foundation and replaced the original power canal that breached in 1987. The penstock discharge structure (also known as the lower intake structure) is essentially an open tank (also known as the lower penstock reservoir) with the downstream wall constructed of cyclopean concrete and the other three walls are reinforced-concrete cantilevers. The cyclopean concrete is part of the original 1906 construction, and the concrete walls were constructed in 1987 in conjunction with the installation of the corrugated metal penstock.

Three 6-foot, 7.5-inch-diameter penstocks and one 5-foot, 4.5-inch-diameter buried steel turbine intake penstocks carry the flow from the penstock discharge structure to the powerhouse, where they merge into two 9-foot, 3-inch-diameter steel penstocks leading to the spiral case of the turbines. Flow into the four penstocks is controlled through four ballasted steel gates operated by a moveable hoist crane.

Appalachian replaced the steel turbine intake penstocks between the head gates and the convergent section with spun cast geopolymer in 2017. The original steel pipes provided a form for a one-inch-thick layer of geopolymer that provides structural and hydraulic replacement of the steel pipe.

4.3.7 Bypass Reach

The Project includes an approximately 1,500-foot-long bypass reach (Figure 4.3-1). A continuous minimum flow of 8 cubic feet per second (cfs) is provided to the bypass reach when Project inflows are less than or equal to the powerhouse capacity.

Figure 4.3-1
Aerial View of Project Structures and Bypass Reach

4.3.8 Powerhouse

The Project powerhouse has two levels. The upper level, which is of concrete construction, is approximately 91-feet, 7-inches by 58 feet, 6-inches by 41-feet, 6-inches high and consists of a single room covered by fiberglass shingles on a plywood roof supported by wood decking on steel trusses. The upper level of the powerhouse houses the unit generators, as well as switching equipment, bus structure, governors, pumps, and miscellaneous accessory equipment required for Project operation.

The lower level of the powerhouse contains two turbine wheel pits which are constructed of steel cylinders set on concrete flooring. The cylinders are approximately 12 feet in diameter and 11 feet high. The lower level of the powerhouse also houses portions of the steel turbine penstocks which feed water to the turbines.

4.3.9 Turbines and Generators

The Project includes two vertical shaft Francis units. The Unit 1 turbine was installed in 1954 when the powerhouse was refurbished. Unit 2 sustained irreparable damage in 1990 and was replaced in late 1991. The Project has a total installed capacity of 2.4 MW.

Table 4.3-2
Turbine and Generator Data

Turbines	
Number of Units	2
Type	Vertical shaft Francis unit
Design Head	Unit 1: 60 feet Unit 2: 57 feet
Rated Capacity	1,200 kilowatt (kW) (each)
Minimum Discharge	Approximately 100 cfs (per unit)
Maximum Discharge	Unit 1: 379 cfs Unit 2: 305 cfs
Operating Speed	Unit 1: 277 rotations per minute (rpm) Unit 2: 277 rpm

Generators	
Type	AC generators manufactured by the Elliott Company
Rated Capacity	1,500 kVA / 1,200 kW each (Power Factor = 0.8)
Phase	3-phase
Voltage	2,400 volts
Frequency	60 Hertz
Synchronous Speed	277 rpm

4.3.10 Transmission

There are no transmission lines associated with the Project. Transmission facilities at the Project consist of the 2.4-kV generator leads, approximately 50 feet in length, and a 3-phase, 2.4/12-kV, 2500 kVA step-up transformer and appurtenant facilities (Photo 4.3-1).

Photo 4.3-1 Switchyard at Powerhouse

The Project's single-line electrical diagram is included in Appendix D (CEII).

4.4 Project Operations

4.4.1 Current and Proposed Operations

The Project operates in a run-of-river mode under all flow conditions, with outflows from the Project approximating inflows to the Project. There is no appreciable storage available, and inflows are either used for generation or spilled. In accordance with Article 401, the Project is operated to maintain the reservoir at or near elevation 884.4 feet, which is 0.6 feet below the crest of the spillway. During extreme flow conditions, such as rapidly changing inflows, Appalachian is authorized to operate the Project with a minimum reservoir elevation of 883.4 feet. Run-of river operation may be temporarily modified, if required, by operating emergencies beyond the control of Appalachian and for short periods upon mutual agreement among Appalachian, USFWS, and the Virginia Department of Game and Inland Fisheries (VDGIF).

The Project is automated and can be operated from AEP's 24-hour control center located in Columbus, Ohio. However, at this time the units can only be started or stopped manually. In the event of an emergency, the Columbus control center does have the ability to trip the units. To perform maintenance and inspection activities and to start and stop the turbine-generator units as needed, Project operators are typically on site daily (Monday through Thursday) and on a call-out basis, 24-hours per day, 365 days per year.

During periods of high flow, all flows in excess of that utilized for maximum generation at the powerhouse are passed over and through the main spillway. When the reservoir elevation reaches 886.0 feet, water begins to spill over the auxiliary spillway. When the tailwater elevation at the powerhouse reaches 832.0 feet, the generating units are shut down.

The Project is also required to release minimum flows in the tailrace and bypass reach. Article 402 requires Appalachian to provide a minimum of 50 cfs (or inflow to the project reservoir, whichever is less) below the Project, as measured at the U.S. Geological Survey (USGS) gage located approximately 200 feet downstream of the powerhouse (USGS 2056000 Roanoke River at Niagara, VA). Article 403 requires Appalachian to provide a total minimum flow of 8 cfs into the bypass reach as measured by the gage immediately downstream of the Project's dam, which is operated and maintained by USGS with funding provided by Appalachian. The minimum bypass flow may be provided through the sluice gate or flow over the spillway.

Appalachian does not propose any changes in Project operation at this time and does not expect to propose any changes in Project operation in the license application that will be filed in 2022.

4.4.2 Generation and Outflow Records

The Project operates in a run-of-river mode, and inflows to the Project are controlled by upstream flows. Table 4.4-1 provides a summary of monthly and annual Project generation in gross MWh for the years 2010 to 2014, and Table 4.4-2 provides a summary of monthly and annual average flows through the Project in cfs for the years 2010 to 2015. This period is considered to be representative of normal Project operations. For the purposes of this document, flows at the Project were estimated from USGS gage 02056000, which is immediately downstream of the Project. Due to a variety of recently completed rehabilitation projects, the powerhouse did not operate from 2015 until early 2018. Average annual generation at the Project for the representative period provided is 8,853 MWh.

Table 4.4-1
Monthly and Annual Generation (MWh)
(2010-2014)

Period	Year 2010	Year 2011	Year 2012	Year 2013	Year 2014	Average Monthly
January	1,322	492	635	233	1,062	749
February	1,597	466	1,088	742	752	929
March	1,524	1,040	464	1,543	1,079	1,130
April	1,187	1,357	1,177	1,444	848	1,203
May	992	1,594	1,085	1,452	785	1,182
June	684	641	597	990	654	713
July	467	491	295	682	496	486
August	607	250	108	764	495	445
September	416	558	170	491	494	426
October	588	666	74	470	594	478
November	550	922	0	476	408	471
December	615	1,272	0	978	340	641
Gross Annual Generated	**10,549**	**9,749**	**5,693**	**10,265**	**8,005**	**8,853**

Source: Appalachian 2017, personal communication.

Table 4.4-2
Monthly and Annual Average Project Outflows (cfs)
(2010-2015)

Period	Year 2010	Year 2011	Year 2012	Year 2013	Year 2014	Year 2015	Monthly Average
January	1515	223	452	1,010	584	356	525
February	950	261	507	591	1,261	303	584
March	1560	1,084	889	667	707	1,283	926
April	650	1,092	544	823	800	1,180	888
May	424	852	428	1,296	700	493	754
June	277	296	263	810	282	360	402
July	215	239	187	2,017	234	284	592
August	282	147	190	340	374	191	248
September	276	378	186	229	230	829	370
October	257	244	151	248	364	978	397
November	233	499	144	269	336	931	436
December	399	932	173	691	478	1,257	706
Annual Average	772	456	444	690	527	538	569

Source: Appalachian 2017, personal communication.

4.4.3 Dependable Capacity

The estimated winter season dependable capacity for the Project is 2 MW, while the estimated summer season dependable capacity for the Project is 1 MW. These estimates are based on the monthly Project flow duration curves for the months of January (winter season) and August (summer season) and estimates of projected generation during these months. Flow duration curves for January and August were selected because the peak demands for energy on the AEP system typically occur during these months.

4.5 Current License Requirements and Compliance History

4.5.1 Current License Requirements

The Project's current license was issued by FERC on March 25, 1994. The license is subject to the articles set forth in Form L-3 (October 1975), entitled "Terms and Conditions of License for Constructed Major Project Affecting Navigable Waters of the United States," and the following additional articles summarized below:

- Article 401: Operate project in a run-of-river mode. (See Article 405 below.)
- Article 402: Provide flow of 50 cfs or inflow at USGS gage 02056000 during specified periods. (See Article 405 below.)
- Article 403: Maintain 8 cfs in bypass, flow to include leakage. (See Article 404 below.)
- Article 404: File a plan to monitor and record flow required under Article 403. Order Approving Flow Monitoring Plan in the Bypassed Reach of the Roanoke River issued by FERC on December 6, 1994 (69 FERC ¶62,191); Order Approving Modification to Flow Monitoring Plan issued by FERC on October 20, 2000 (93 FERC ¶62,049).
- Article 405: File a plan to monitor and record compliance with flow and water level requirements of license Articles 401 and 402. Order Approving Plan to Monitor Run-of-River Operation, Reservoir Levels, and Minimum Flows issued by FERC on December 6, 1994 (69 FERC ¶62,192).
- Article 406: File a plan for releasing the flows required under Articles 402 and 403. Order Approving Plan to Monitor Run-of-River Operation, Reservoir Levels, and Minimum Flows issued by FERC on December 6, 1994 (69 FERC ¶62,192).
- Article 407: Implement the Management Plan for Riparian Forest Wildlife Habitat (Wildlife Management Plan) filed on February 25, 1993. The most recent Wildlife Management Plan report was filed by Appalachian on November 5, 2015.
- Article 408: File a plan to protect state-listed pirate bush, to include surveys of canoe portage areas. Orders Approving Protection Plans for Piratebush issued by FERC April 17, 1995 (71 FERC ¶62,039) and November 18, 2008 (125 FERC ¶62,159).
- Article 409: Consult with State Historic Preservation Office (SHPO) and prepare plan if archaeological sites found during project operation.
- Article 410: Implement the visual resources enhancement plan filed on November 19, 1992, including painting of penstock and concrete surfaces.
- Article 411: Implement the canoe portage plan filed on November 19, 1992, including a take-out upstream of the existing boat barrier, a portage pathway, and a put-in beneath Blue Ridge Parkway bridge.

- Article 412: File plan to install interpretive sign at an existing Blue Ridge Parkway overlook. Order Approving Interpretive Sign issued by FERC on October 19, 1994 (69 FERC ¶62,040).

4.5.2 Compliance History

To the best of Appalachian's knowledge and based on a review of historical records, Appalachian has been and continues to be in compliance with the applicable terms and conditions of the FERC license, and there have been no license violations or recurring situations of non-compliance over the license term.

The most recent FERC Environmental Inspection occurred in June 2004 in which it was noted that bypass minimum flows were being released through a gate and monitored using reservoir elevation, rather than the methods approved in FERC's October 20, 2000 order. The issue was addressed in an inspection follow-up letter dated July 6, 2004, and is considered to be resolved.

4.6 Current Net Investment

The current net investment in the Project (through 2017) is approximately $4.3 million. This value should not be interpreted as the fair market value of the Project.

4.7 Potential for New Project Facilities

While Appalachian does not presently propose any new Project facilities or upgrades, Appalachian continually evaluates the potential for such improvements. If Appalachian intends to propose any new Project facilities or upgrades in the final license application that would affect the scope of relicensing studies, Appalachian will inform the FERC and licensing participants of this proposal at a time early enough in the pre-filing consultation process to ensure that the effects of any new facilities or upgrades are appropriately evaluated as part of the relicensing process.

4.8 PURPA Benefits

Appalachian will not be seeking benefits under Section 210 of the Public Utility Regulatory Policies Act (PURPA) of 1978 for qualifying hydroelectric small power production facilities in §292.203 of this chapter.

Section 5
Description of Existing Environment and Resource Impacts

5.1 Description of the River Basin

The Roanoke River basin, which is located in the southern part of Virginia and northern part of North Carolina, is approximately 220 miles long, from 10 to 100 miles wide, and covers a total drainage area of approximately 9,580 square miles. The basin is bound by the James River basin on the north, to the east by the Chowan River basin, and to the west by the New River basin.

As further described in Section 5.2, the Roanoke River watershed lies within four physiographic provinces: the Valley and Ridge province, the Blue Ridge province, the Piedmont Plateau, and the Atlantic Coastal Plain. Drainage above the Niagara Project emanates from the Valley and Ridge province and the Blue Ridge province.

The upper portions of the Project drainage basin consist of mountainous terrain, narrow valleys, and fast-running streams. Surrounding the Project reservoir, the drainage is urban in nature with slopes less steep than in the upper portions of the drainage basin.

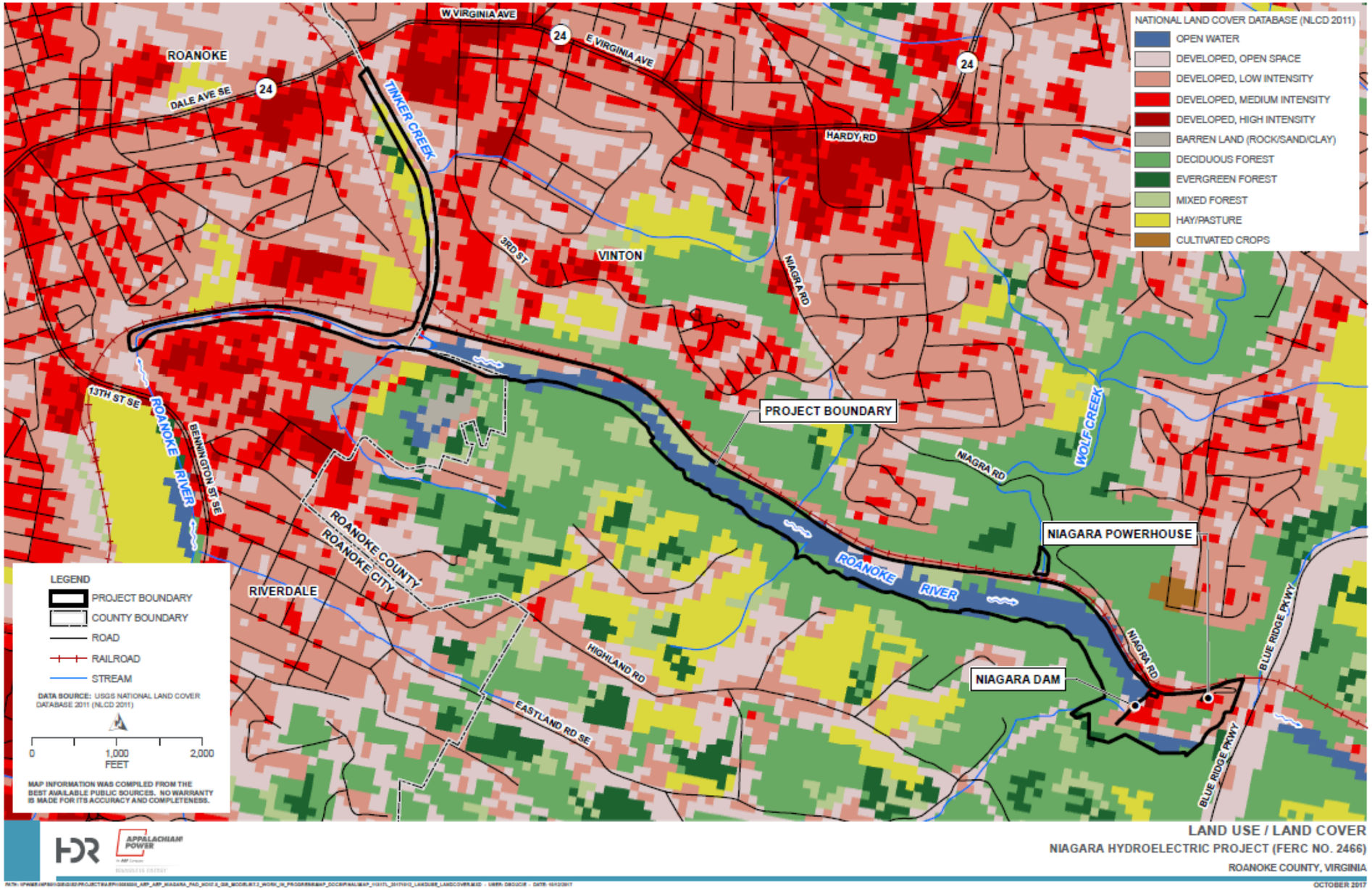
5.1.1 Stream Description

The Roanoke River is 410 miles long from its origins on the eastern slope of the Appalachian Mountains to its mouth at the Atlantic Ocean at Albemarle Sound. The headwaters begin in the mountainous terrain of eastern Montgomery County, Virginia, where the North Fork and South Fork of the river merge. It then flows southeasterly to the Virginia/North Carolina state line (VDEQ 2017a). The Roanoke River is divided into seven USGS hydrologic units represented by hydrologic unit codes (HUC). The Project is located in HUC 03010101 – Upper Roanoke (VDEQ 2015).

5.1.2 Major Land and Water Uses

In the vicinity of the Project, in addition to hydroelectric power, the Roanoke River is used for municipal and industrial water supply, wastewater disposal, and recreation. Over 62 percent of the Roanoke River basin is forested, about 25 percent is cropland and pasture, and 10 percent is urban (VDEQ 2015). Within the general project area, land use along the river is primarily deciduous forest, with low-intensity development along the left descending bank (Figure 5.1-1). The land use of the western portion of the Project boundary is primarily low- and medium-intensity development. Areas of hay and pasture land uses are located in the general area, but are typically outside of the Project boundary with the exception of areas along Tinker Creek.

Figure 5.1-1
Land Use and Cover Map



5.1.3 Dams and Diversion Structures within the Basin

The Project is the farthest project upstream on the mainstem Roanoke River. Downstream from the Project, there are five storage reservoirs along the mainstem of the river, impounding about 140 of the approximately 300 miles of river channel between the Project and the tidewater of Albemarle Sound. The largest of these, the multipurpose U.S. Army Corps of Engineers' (USACE) John H. Kerr reservoir, which was constructed in the early 1950s for flood control and hydroelectric generation, has a useable storage of 2,808,000 acre-feet. The other four mainstem Roanoke River reservoirs, all of which are projects under FERC jurisdiction, are as follows, from upstream to downstream: Smith Mountain (182,000 acre-feet usable storage) (FERC Project No. 2210), Leesville (110,000 acre-feet usable storage) (FERC Project No. 2210), Gaston Dam (435,000 acre-feet usable storage) (FERC Project No. 2009), and Roanoke Rapids (77,500 acre-feet usable storage) (FERC Project No. 2009). Smith Mountain and Leesville Dams are also owned and operated by Appalachian.

5.1.4 Tributary Rivers and Streams

Major tributaries in the northern section of the Roanoke basin are the Little Otter, Big Otter, Blackwater, and Pigg rivers. Major tributaries in the southern portion include the Dan River, Smith River, and Banister River (VDEQ 2015). The lower portion of Tinker Creek, a smaller stream tributary to the Roanoke River, is included in the Project boundary. No other tributaries were identified within the Project boundary.

5.2 Geology

5.2.1 Physiography and Topography

Roanoke County includes two distinct physiographic provinces including the Valley and Ridge province to the west and the Blue Ridge on the east (Woodward 1932). The Valley and Ridge province is northwest of the Blue Ridge and its foothills. It has developed on parallel beds of weak limestone and shale alternating with beds of resistant sandstone. The eastern portion of this province is a lowland, which is widely known as the Great Valley and is known locally as the Valley of Virginia. The western part of the Valley and Ridge province consists primarily of prominent, narrow, linear mountains and elongate, narrow intermontane valleys (Woodward 1932).

The Blue Ridge is a narrow, mountainous belt on resistant, complex rocks (Woodward 1932). The drainage is dendritic, except in some of the narrow valleys between the main ridge and the foothills. The topography is coarse with broad interstream areas. The Blue Ridge has been eroded primarily by streams, which have developed the relief mainly by lowering the beds of weaker rocks. The Roanoke River is the only stream in Roanoke County that crosses the Blue Ridge, which divides it into two parts,

including: (1) a northern narrow ridge section underlain mainly by crystalline rocks, and (2) a broad southern plateau and foothill section containing crystalline rocks in the main part and sandstones in two belts of the western foothills (Woodward 1932).

5.2.2 Bedrock Geology

The central and northwestern parts of Roanoke County consist primarily of sandstone, limestone, and shale of Paleozoic age; whereas the southeastern part consists of crystalline rocks of pre-Cambrian age. Along the western edge of the Blue Ridge province, the resistant pre-Cambrian rocks have been over thrust from the south and east with less resistant Paleozoic rocks (Woodward 1932).

5.2.3 Surficial Geology

Alluvial deposits of the Roanoke River are indicated on either side of the dam. The local alluvial deposits are underlain by mylonite gneiss, which is typically described as a dark-greenish-gray, well foliated, coarse-grained mylonite (augen) gneiss containing feldspar porphyroblasts. This mylonite was derived locally from the porphyroblastic granulite gneisses during Paleozoic deformation. Closely associated with the mylonite gneiss and mapped near the southwest dam abutment is a porphyroblastic granulite gneiss. This gneiss is commonly described as dark-grayish-green to dark-green, coarse-grained quartzo-feldspathic gneiss. Common characteristics of this gneiss are pegmatic greenish-white feldspar and garnet porphyroblasts. The texture is dominantly xenomorphic granular with poorly developed segregation layering (DTA 2005).

5.2.4 Mineral Resources

Many of the rocks in Roanoke County contain minerals that are of economic value. Materials that have been harvested include clay, stone for building, and crushed rock, limestone, nelsonite, and slight amounts of iron. Coal, iron, manganese, glass sand, barite, and cement can also be found in this area. No oil, gas, or mineral resources were identified to occur within the Project's boundary (Woodward 1932).

5.2.5 Topography

The topography of the Roanoke River basin ranges from steep slopes and valleys in the Valley and Ridge Province to gently sloping terrain east of the mountains in the Piedmont Province (VDEQ 2015).

5.2.6 Project Area Soils

Soil types in the vicinity of the Project are variable and reflect the diversity of parent materials, the local topography, and the physiographic position of landforms (Woodward 1932). Soils along the reservoir shoreline are discussed in further detail in Section 5.2.7.

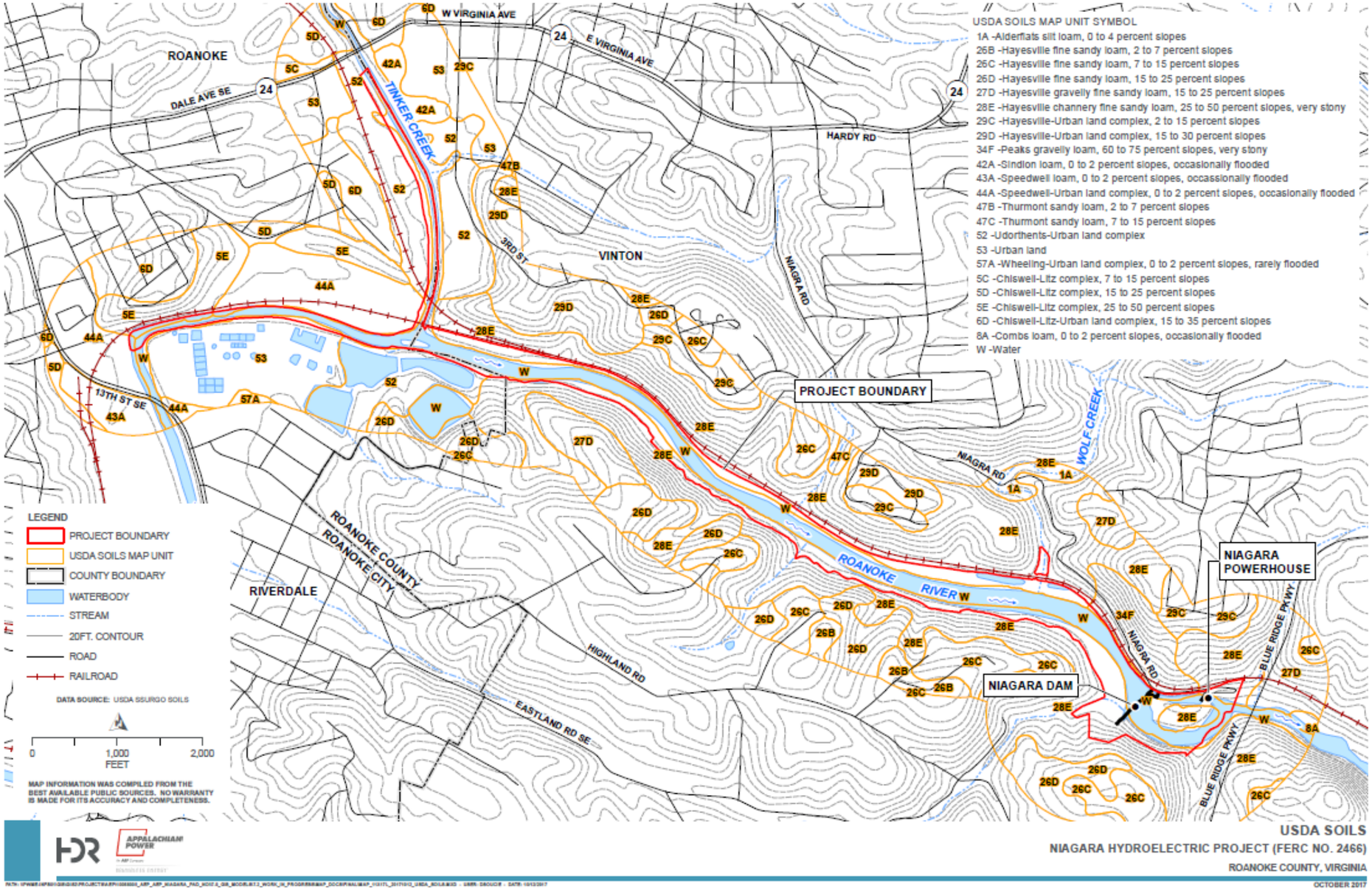
5.2.7 Reservoir Shoreline and Stream Banks

The soils in the Project boundary downstream from the confluence of Tinker Creek, along the shoreline of the Roanoke River, are generally very stony Hayesville channery fine sandy loam with 25 to 50 percent slopes (Figure 5.2-1). The Hayesville series consists of very deep, well-drained soils on gently sloping to very steep ridges and side slopes of the Southern Appalachian Mountains. They most commonly formed in residuum weathered from igneous and high-grade metamorphic rocks such as granite, granodiorite, mica gneiss, and schist, but in some places formed from thickly-bedded metagraywacke and metasandstone (USDA 2017a).

The soils within the Project boundary upstream from Tinker Creek vary and primarily include occasionally flooded Speedwell-Urban land complex with 0 to 2 percent slopes, Chiswell-Litz complex with 25 to 50 percent slopes, urban land, and Udorthents-Urban land complex. The Speedwell series consists of very deep, well-drained, moderately permeable soils on floodplains. They formed in medium-textured alluvium. The Chiswell series consists of shallow, well-drained, moderately permeable soils on uplands. They formed in materials weathered from shale, siltstone, and fine-grained sandstone. The Litz series consists of moderately deep, well-drained soils formed in residuum from leached calcareous shale and with widely spaced thin layers of limestone (USDA 2017a).

The topography bordering the reservoir is relatively steep in areas, especially along the southern bank. The steeper slopes flatten out close to the shoreline resulting in an undulating topography.

Figure 5.2-1
Mapped Soils in the Vicinity of the Project



Canopy vegetation is present in the reservoir area, as well as groundcover layers of vegetation (shrubs, small trees, perennials) that thrive under tree canopies. Grasses and perennial species grow along the shoreline in various areas, and the vegetation located along the shoreline of the reservoir prevents shoreline erosion.

The shoreline downstream of the Project's dam and powerhouse is generally steep and graded in areas (especially near the powerhouse). The downstream shoreline typically consists of relatively steep slopes with forest canopy vegetation and underlain in areas by established shrub and herbaceous layers. Large boulders and exposed bedrock are the prevalent substrates along the downstream shoreline.

There is no known evidence of erosion, slumping, or slope instability around the reservoir shoreline or bypass reach.

5.2.8 Seismicity

The geologic map of Virginia indicates that faulting is present within approximately 300 feet southeast of the Project dam. Two rock types come together along a shallow dipping fault known as the Rockfish Valley Fault, which is known to cross the Roanoke River Valley nearly perpendicular to river flow at a point about halfway between the dam and the powerhouse. This faulting defines a zone of ductile deformation, which formed in Middle Paleozoic time. Relatively lower metamorphic-grade granulite gneisses of the Lovingston massif were thrust upward over somewhat higher grade granulite gneiss of the Pedlar massif. This fault system separates the Lovingston and Pedlar massifs. In addition to the Rockfish Valley Fault, the Blue Ridge Fault passes approximately two miles northwest of the Project. The faults near the Project are not known to be seismically active. Based on a review of the USGS database, no significant seismic events have been recorded within 100 miles of the Project since 1974. The largest earthquake in recorded time was a magnitude VIII event (Modified Mercalli Intensity Scale), which occurred in Giles County, Virginia in May of 1897. It was felt in the Project area with chimneys shaken down in Roanoke (DTA 2005).

5.3 Water Resources

5.3.1 Drainage Area

The Roanoke River basin covers a total drainage area of approximately 9,580 square miles. The drainage area for the Project is 511 square miles, which represents approximately 5 percent of the total drainage basin for the Roanoke River.

5.3.2 Flows

Roanoke River stream flow characteristics are typical of the Virginia area: the summer and fall are usually dry and the winter and spring are usually wet. For the purposes of this document, flows at the Project were estimated from USGS gage 02056000, which is immediately downstream of the Project. The estimated daily flows (Table 5.3-1) are considered to be representative of discharge from run-of-river operation of the Project.

The median stream flow of the Roanoke River is approximately 308 cfs. Monthly daily average flows for the Project for the period of record range from 271 cfs to 901 cfs (Table 5.3-1). Significant historic floods for which stream flow data is available occurred in August 1940 (35,000 cfs), April 1978 (29,300 cfs), and November 1985 (52,300 cfs) (DTA 2005).

Table 5.3-1
Daily Flow Data
(Dates)

Period	Minimum (cfs)	90% Exceedance (cfs)	Average (cfs)	10% Exceedance (cfs)	Maximum (cfs)
January	100	182	652	1,122	14,200
February	115	193	761	1,523	12,400
March	110	232	901	1,701	12,800
April	190	266	833	1,311	18,500
May	161	234	619	1,311	6,360
June	109	162	514	865	13,500
July	91	149	378	606	18,800
August	80	128	271	423	4,580
September	81	129	388	564	16,800
October	87	123	301	491	6,130
November	99	138	379	674	11,000
December	102	148	528	1,030	7,940
Annual	**80**	**146**	**542**	**1,020**	**18,800**

5.3.3 Flow Duration Curves

Annual and monthly flow duration curves have been developed for the Project using flow data from the downstream USGS gage 02056000. These flow duration curves can be found in Appendix E.

5.3.4 Existing and Proposed Uses of Project Waters

Existing uses of Project waters include municipal and industrial water supply, wastewater disposal, recreation, and hydroelectric generation. The City of Roanoke and several industries draw water from the river upstream of the Niagara reservoir, and the regional wastewater treatment plant discharges to the river 2.5 miles above the dam (FERC 1994).

The VDEQ issues Virginia Pollutant Discharge Elimination System (VPDES) for all point source discharges to surface waters, to dischargers of stormwater from Municipal Separate Storm Sewer Systems, and to dischargers of stormwater from industrial activities.

5.3.5 Existing Instream Flow Uses

Existing instream flow uses of waters of the Roanoke River within the Project boundary include various recreational activities (e.g. fishing and boating) and hydroelectric generation.

5.3.6 Federally Approved Water Quality Standards

The VDEQ is responsible for carrying out the mandates of the State Water Control Law as well as meeting federal obligations under the Clean Water Act (CWA) (VDEQ 2017b). All state waters are designated for recreational uses; the propagation and growth of a balanced, indigenous population of aquatic life, including game fish, which might reasonably be expected to inhabit them; wildlife; and the production of edible and marketable natural resources (9 Virginia Administrative Code [VAC] 25-260-10). All state waters shall be free from substances attributable to sewage, industrial waste, or other waste in concentrations, amounts, or combinations which contravene established standards or interfere directly or indirectly with designate uses of such water or which are inimical or harmful to human, animal, plant, or aquatic life.

Waters in the Roanoke River Basin are classified in 9VAC25-260-450. Project waters, including Tinker Creek[2], are designated as Class IV (Mountainous Zone) waters (Table 5.3-2). Numerical criteria for

[2] No specific water quality class designation exists for the portion of Tinker Creek within the Project boundary; therefore, the classification and standards of the portion of the Roanoke River it is tributary to apply per 9VAC25-260-300.

dissolved oxygen (DO), pH, and water temperature for Class IV waters are identified in 9VAC25-260-50 and are summarized in Table 5.3-3.

Tinker Creek is also classified as VDGIF Class vii waters, which are not suitable for wild trout but are adequate for year-round, hold-over stocked trout. The VDGIF further identify Class vii waters as a stream that "does not contain a significant number of trout nor a significant population of warmwater gamefish. Water quality and temperature are adequate for trout survival but productivity is marginal as are structural characteristics. Streams in this class could be included in a stocking program but they would be considered marginal and generally would not be recommended for stocking."

Table 5.3-2
Classification of Project Area Waters

Section	Class	Special Standards	Section Description
6i	IV	PWS, NEW-1	Roanoke River from Smith Mountain Dam (Gap of Smith Mountain) upstream to a point (at latitude 37°15'53"; longitude 79°54'00" and its tributaries to points 5 miles above the 795.0 foot contour (normal pool elevation) of Smith Mountain Lake.
-	vii	ee	Tinker Creek from its confluence with the Roanoke River north to Routes 11 and 220.

Special Standards:
PWS – public water supply.
NEW – nutrient enriched waters; only includes Smith Mountain Lake and all tributaries of the reservoir upstream to their headwaters as per 9VAC25-260-350.
ee – reserved.

Table 5.3-3
Numeric Water Quality Criteria for Class IV Waters

Parameter	Standard
Minimum DO	4.0 milligram per liter (mg/l)
Daily Average DO	5.0 mg/l
pH	6.0 – 9.0
Maximum water temperature	31 degrees Celsius (ºC)

5.3.7 Existing Water Quality Data

Water quality data has been collected in close proximity to the Project by the USGS and the VDEQ. Daily mean water temperature and specific conductance data is available from 2007 to 2009 just downstream of the Project powerhouse at USGS gage 02056000. Daily mean water temperatures ranged from 1.9°C to 26.9°C (Figure 5.3-1) and were below the maximum water temperature criterion. Daily mean specific conductance ranged from 183 micro-Siemens per centimeter (µS/cm) to 697 µS/cm (Figure 5.3-2). The annual mean flows for these three years (447 cfs in 2007; 228 cfs in 2008; 381 cfs in 2009) are all below the 90-year mean annual flow, 522 cfs, at this gage. The annual mean flow for only one year, 2007, is in the middle quartile while the other two years, 2008 and 2009, are in the lower quartile for the 90-year period of record.

The VDEQ collects water quality data along the mainstem of the Roanoke River. Water temperature, DO concentration, pH, and specific conductance data were collected at two sites in close proximity to the Project: Site 4AROA199.20 and Site 4AROA202.20. Data were collected from both sites at a depth of approximately 0.3 meters. Site 4AROA199.20 is located approximately 480 feet downstream of the Project powerhouse. Data are available from 2005 to 2015. Water temperatures ranged from 5.4°C to 27.0°C and were below the maximum water temperature criterion (Figure 5.3-3). DO concentration ranged from 7.6 mg/l to 14.4 mg/l and were well above the state criterion of 4.0 mg/l (Figure 5.3-4). All measured pH values were within the acceptable range (Figure 5.3-5) and specific conductance ranged from 210 µS/cm to 516 µS/cm (Figure 5.3-6). Based on review of data from USGS gage 02056000, compared to the 90-year period of record for this gage, this period (2005 through 2015) included two wet years, 2010 and 2013, which are in the upper quartile for the 90-year period of record, as well as six drier years, for which the mean annual flows are in the lower quartile for the period of record, including one year (2008) for which the mean annual flow was the third lowest in the 90-year period of record.

Site 4AROA202.20 was located approximately 2.6 miles upstream of the Project's dam. Data collected from 1976 to 2015 were compiled. Water temperatures ranged up to 28.7°C and were below the maximum water temperature criterion (Figure 5.3-7). With the exception of a few data points, DO concentration typically ranged from 5.4 mg/l to 15.6 mg/l and were well above the state criterion of 4.0 mg/l (Figure 5.3-8). Typically pH values were within the acceptable range (Figure 5.3-9) and specific conductance ranged from 70 µS/cm to 514 µS/cm (Figure 5.3-10).

Figure 5.3-1
Downstream Daily Mean Water Temperature Data Collected at USGS Gage 2056000 from 2007 - 2009

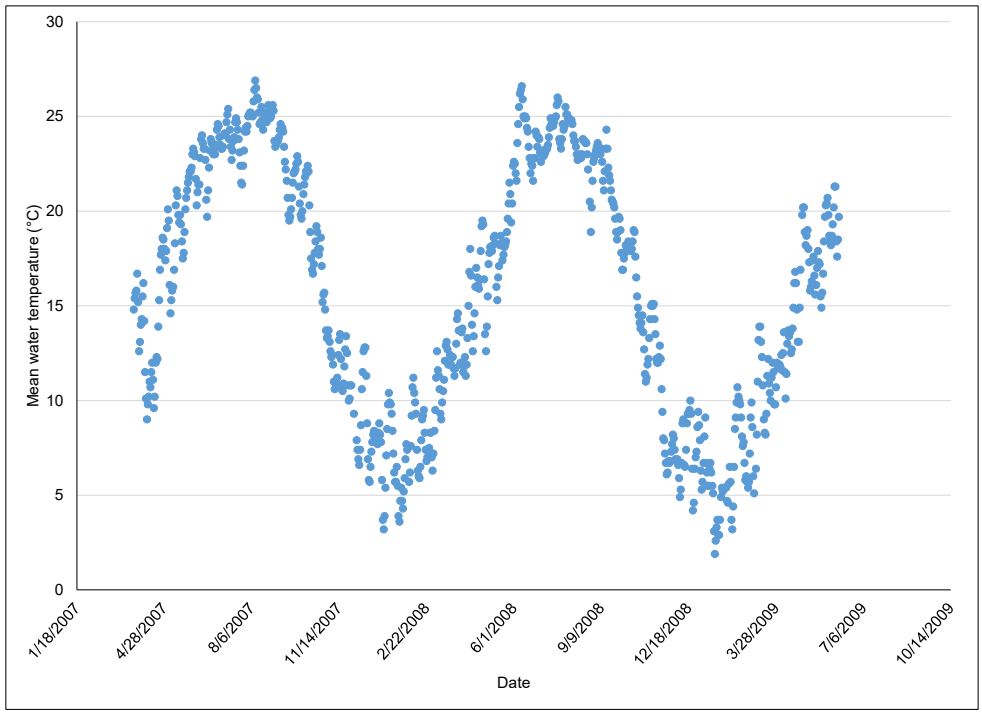


Figure 5.3-2
Downstream Daily Mean Specific Conductance Data Collected at USGS Gage 2056000 from 2007 - 2009

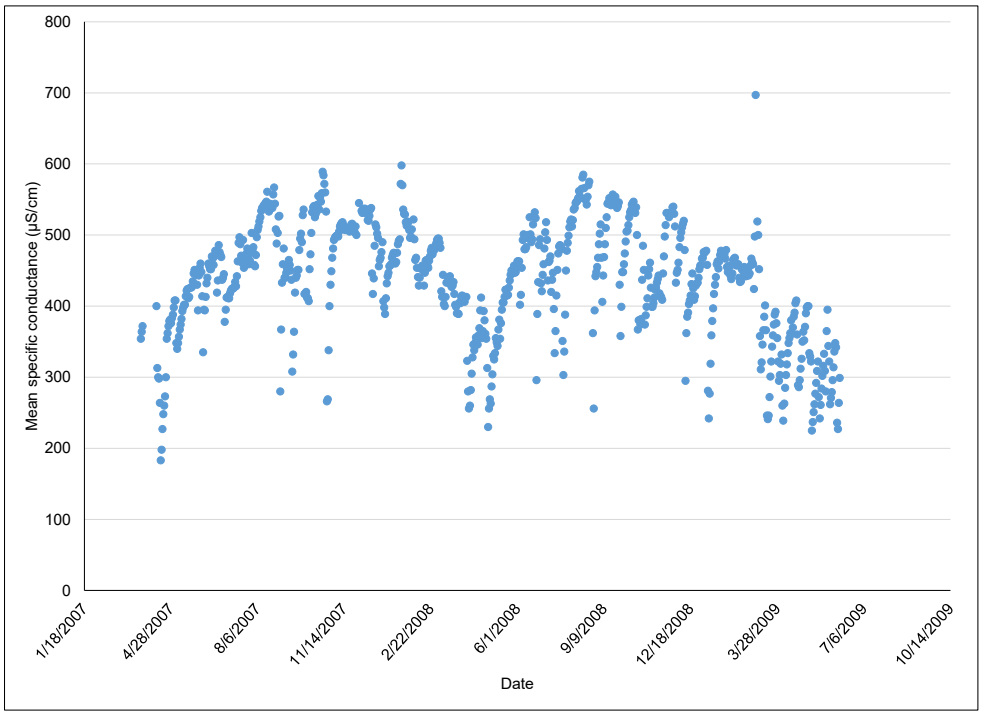


Figure 5.3-3
Downstream Water Temperature Data Collected at VDEQ Site 4AROA199.20 from 2005 – 2015

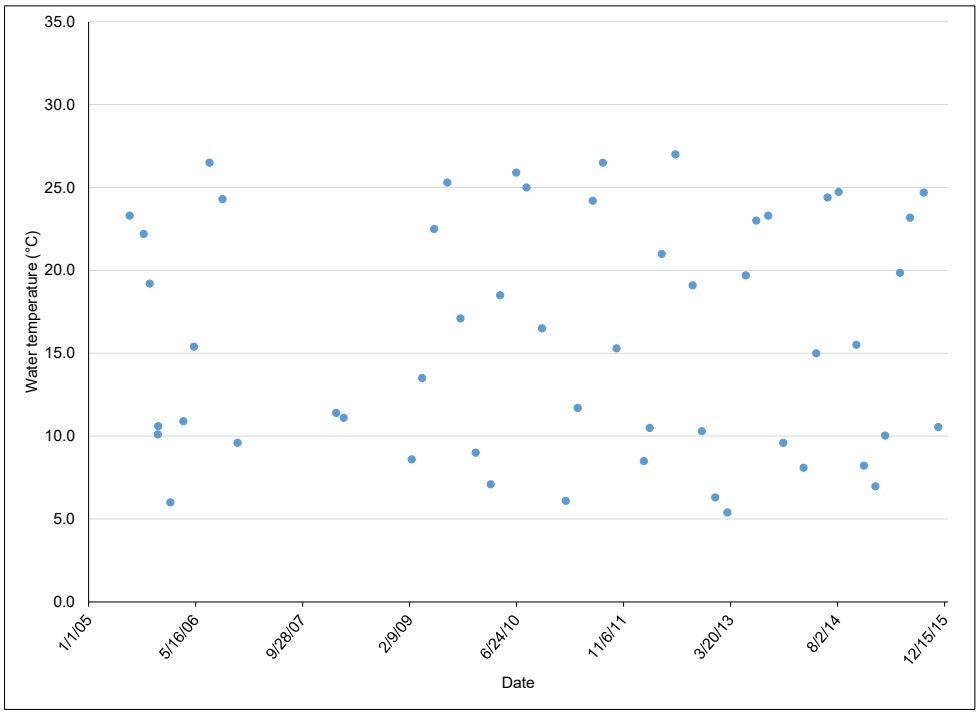


Figure 5.3-4
Downstream Dissolved Oxygen Data Collected at VDEQ Site 4AROA199.20 from 2005 – 2015

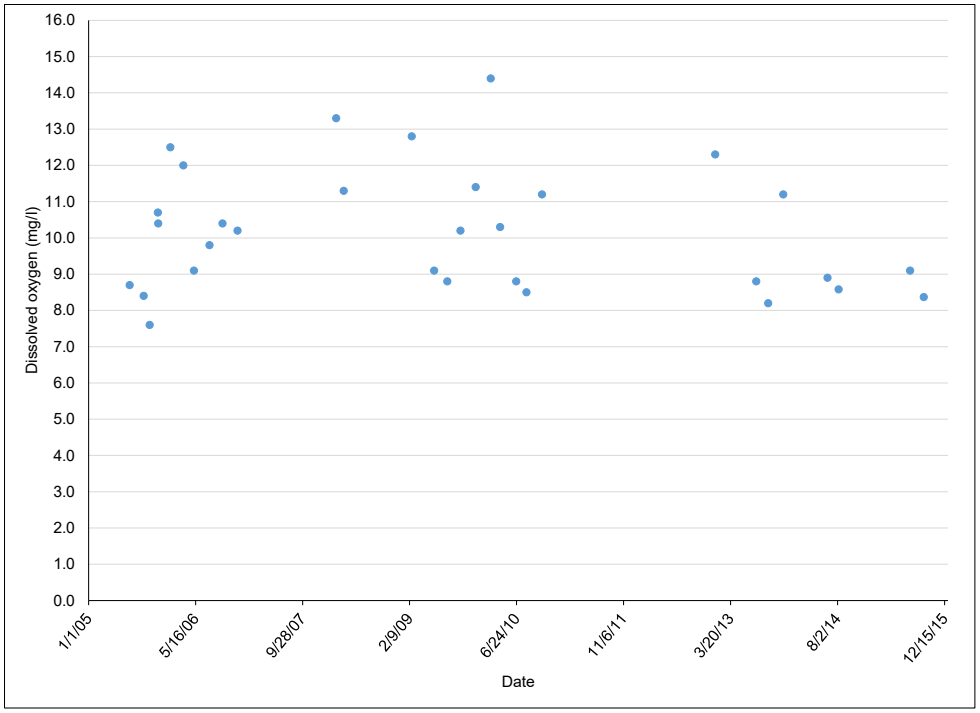


Figure 5.3-5
Downstream pH Data Collected at VDEQ Site 4AROA199.20 from 2005 – 2015

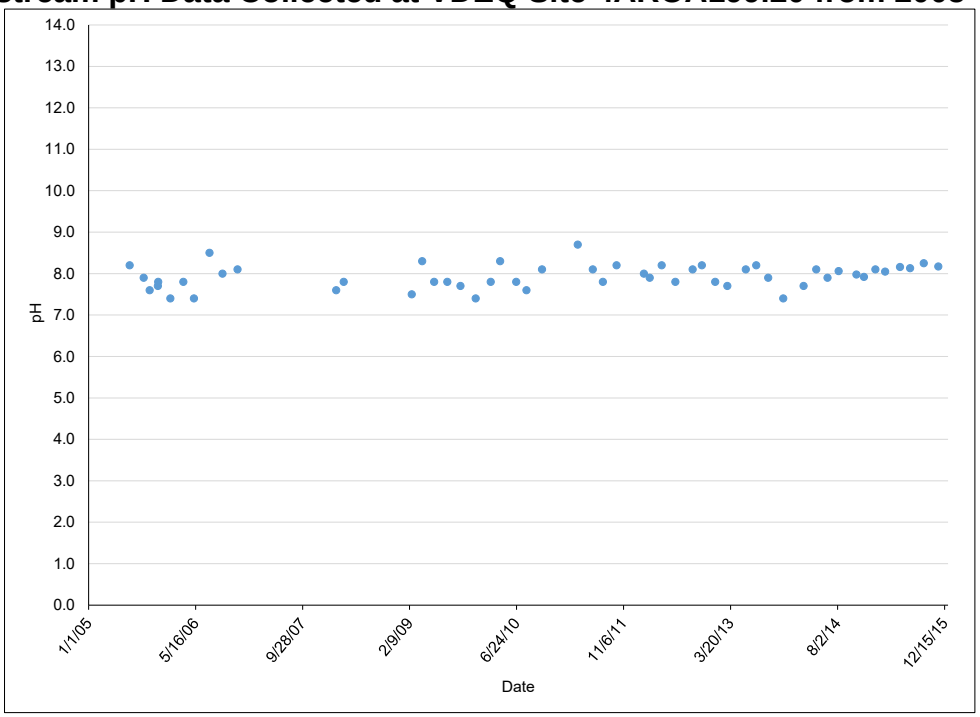


Figure 5.3-6
Downstream Specific Conductance Data Collected at VDEQ Site 4AROA199.20 from 2005 – 2015

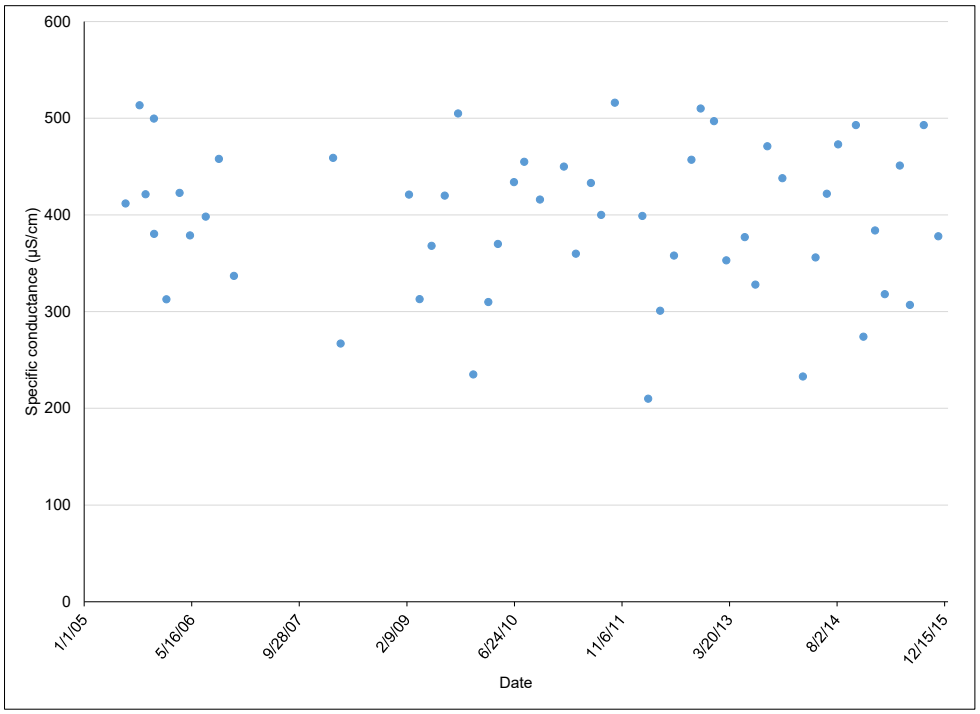


Figure 5.3-7
Upstream Water Temperature Data Collected at VDEQ Site 4AROA202.20 from 1976 – 2015

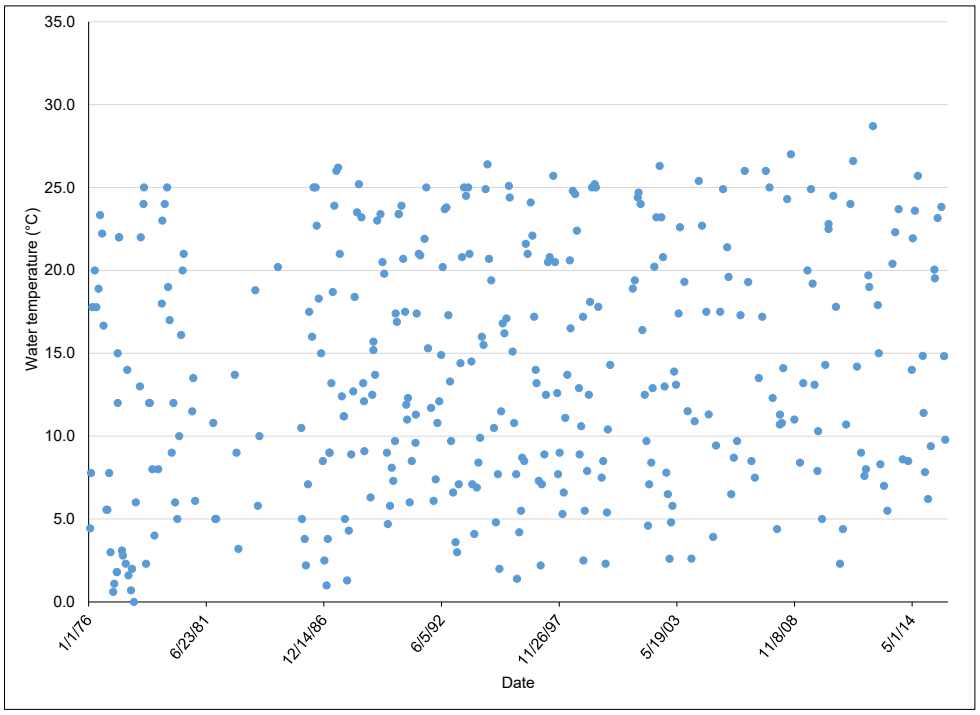


Figure 5.3-8
Upstream Dissolved Oxygen Data Collected at VDEQ Site 4AROA202.20 from 1976 – 2015

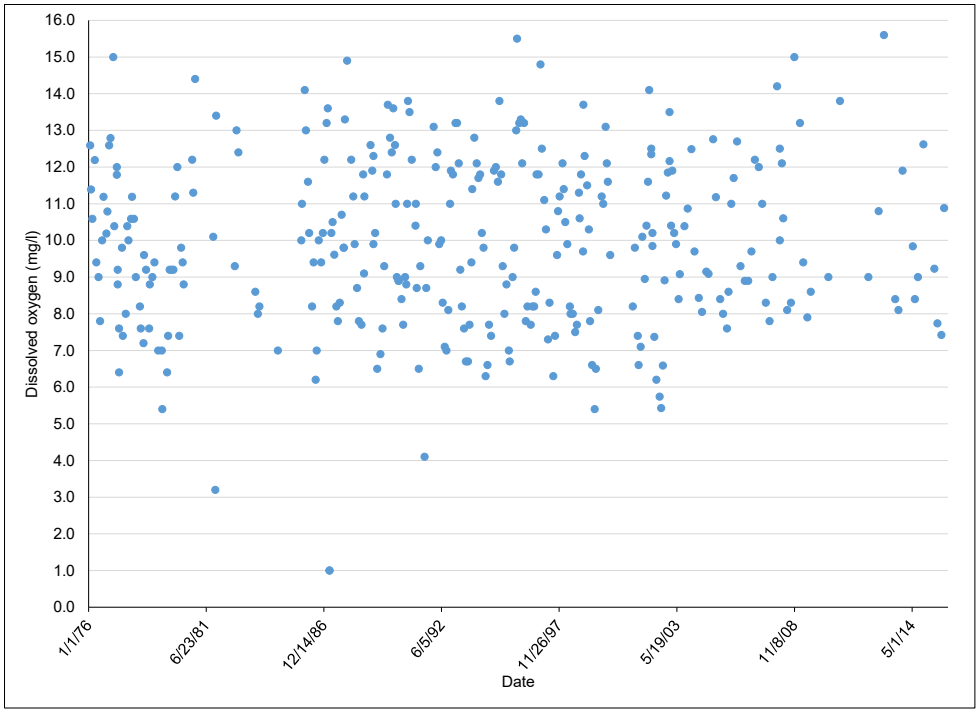


Figure 5.3-9
Upstream pH Data Collected at VDEQ Site 4AROA202.20 from 1976 – 2015

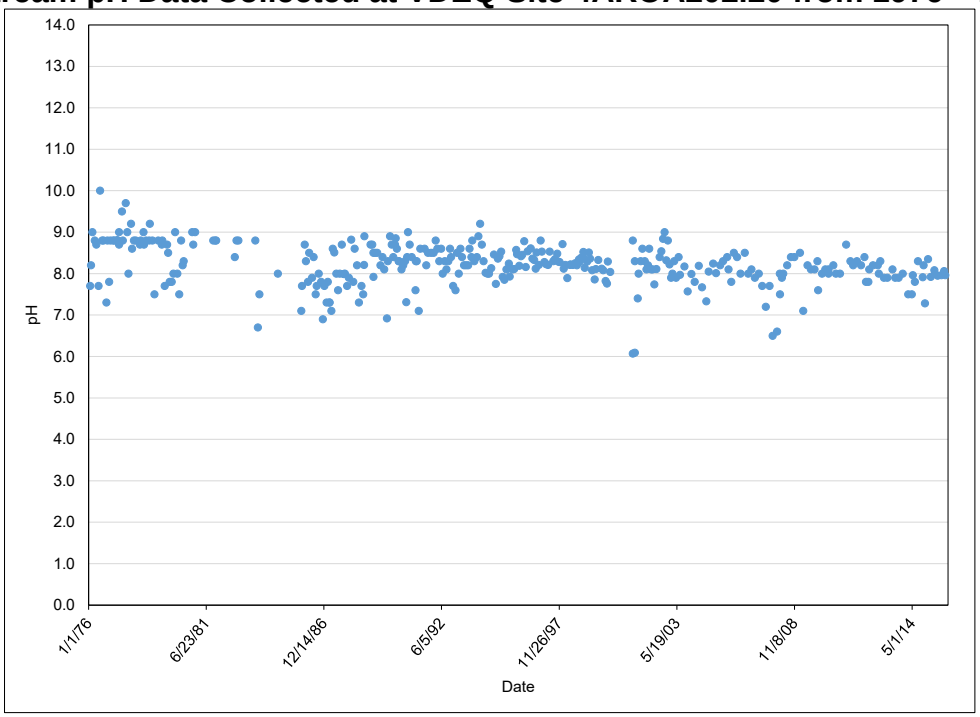
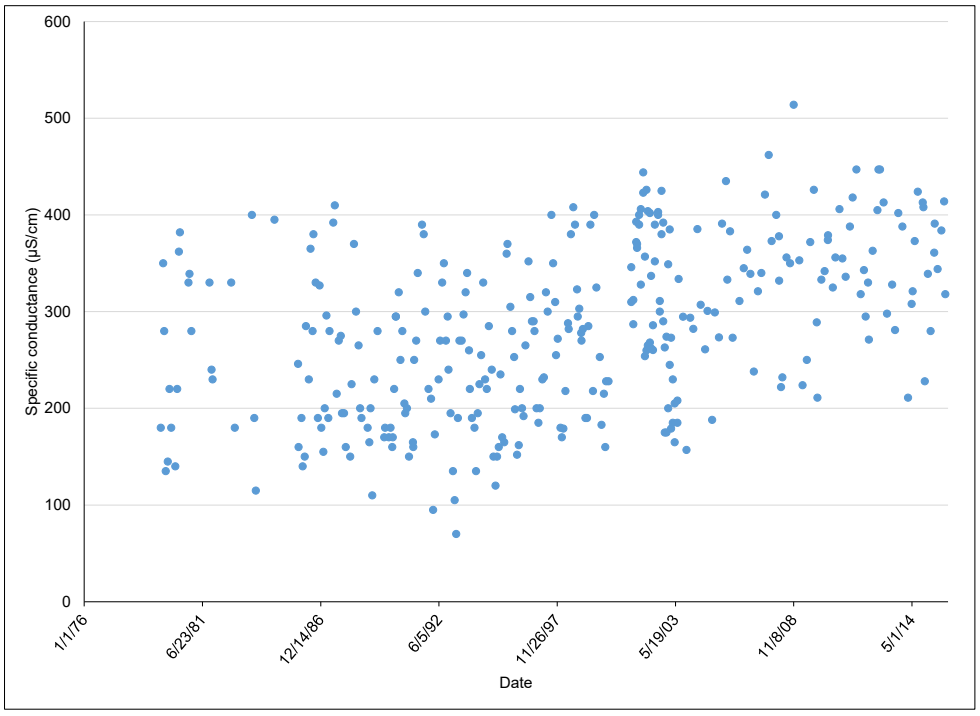


Figure 5.3-10
Upstream Specific Conductance Data Collected at VDEQ Site 4AROA202.20 from 1976 – 2015



The data summarized above suggest that inflows to and outflows from the Project meet numeric water quality standards. No water quality data are available specifically for the Project reservoir or bypass reach.

Due to non-Project factors such as those discussed in Section 5.3.7, the reservoir has collected a substantial amount of sediment since its formation in 1906. The original storage volume of the Project at spillway crest elevation 885 ft has been estimated as 1,425 acre-feet, reduced to 442 acre-feet by 1972 according to a study by the State of Virginia Water Control Board (Appalachian Power Company 1991). According to Appalachian (1991), this referenced study concluded that accumulated sediments should remain in the reservoir and that additional accumulation of sediments would be minor since the resulting decrease in storage volume subsequently decreased the available detention time. As concluded in the 1972 study, the Niagara reservoir could be expected to be less than 1.5 percent efficient in removing sediments that enter the reservoir. Appalachian (1991) further noted that this conclusion was substantiated by a field survey of the Project reservoir in 1990 that indicated the remaining storage volume had decreased to 425 acre-feet, or less than 4 percent over the 18-year period since the original study. Rates of sediment accumulation over the existing license term can be expected to have proceeded at a further reduced rate.

Impairment Listing

The VDEQ develops and maintains a listing, referred to as a Section 303(d) List, of all impaired waters in the state that details the pollutant causing each impairment and the potential sources of each pollutant per requirements of the CWA and the Virginia Water Quality Monitoring, Information, and Restoration Act. Additionally, the VDEQ is required to develop and implement a Total Maximum Daily Load (TMDL) for waters listed on the Section 303(d) list. A TMDL is used to determine the total amount of a pollutant that a waterbody can handle without resulting in the impaired status of that waterbody (VDEQ 2017c).

Due to a range of factors not related to Project operations, multiple reaches within the Project boundary were listed as impaired in the 2016 303(d) Water Quality Assessment Integrated Report include (VDEQ 2017a):

- Assessment Unit ID: VAW-L05R_TKR01A00 – a 5.4 mile reach of the mainstem of Tinker Creek from its confluence with the Roanoke River upstream to the mouth of Carvin Creek.
- Assessment Unit ID: VAW-L04R_ROA06A00 – a 4.3 mile reach of the mainstem of the Roanoke River from the Murray Run mouth downstream to the Western Virginia Water Authority Roanoke Regional Water Control Plant.
- Assessment Unit ID: VAW-L04R_ROA05A00 – a 0.4-mile reach on the mainstem of the Roanoke River from the Western Virginia Water Authority Roanoke Regional Water Control Plant downstream to the Tinker Creek confluence.

- Assessment Unit ID: VAW-L04R_ROA04A00 – a 0.2-mile reach of the Roanoke River from near the backwaters of the Niagara Impoundment to the Tinker Creek confluence.
- Assessment Unit I: VAW-L04R_ROA03A00 – a 0.9-mile reach of the Roanoke River mainstem from near the backwaters of the Niagara Impoundment upstream to the end of the WQS designated public water supply.
- Assessment Unit ID: VAW-L04R_ROA02A00 – a 0.8-mile reach of the Roanoke River impounded by the Niagara Dam.

The 3.2-mile reach of the Roanoke River from Niagara Dam downstream to the mouth of Back Creek is also listed as impaired (Assessment Unit ID: VAW-L04R_ROA01A00). Table 5.3-4 provides additional information on the designated use assessments and cause of impairments for these reaches. Potential sources impairing water quality included discharges from municipal separate storm sewer systems, industrial point source discharge, landfills, municipal areas, on-site treatment systems, sanitary sewer outflows, and wildlife (VDEQ 2017d), all of which are notably not attributed to Project operations.

TMDLs for aquatic life (benthic) use, polychlorinated biphenyls (PCB), and bacteria have been developed for the Roanoke River (The Louis Berger Group, Inc. 2006; Tetra Tech, Inc. 2009; George Mason University and The Louis Berger Group, Inc. 2006). According to the benthic TMDL prepared for the upper Roanoke River (The Louis Berger Group, Inc. 2006), sediment has been identified as the most probable stressor impacting benthic macroinvertebrates in the biologically impaired segments of the Roanoke River. Excessive sediment loading can negatively impact benthic macroinvertebrates by silting over invertebrate habitat, choking invertebrates with suspended sediment particles, and bringing invertebrates into contact with other pollutants that enter surface water via adhesion to sediment particles. Potential sources of sediment loading in the watershed include urban stormwater runoff, streambank erosion, and sediment loss from habitat degradation associated with urbanization.

There is an existing fish consumption advisory for portions of the Roanoke River, including Project waters (Table 5.3-5).

Approximately 165 gallons of Termix 5301, a type of surfactant that is added to herbicide and pesticide products before application, was spilled into Tinker Creek in late July 2017. The spill occurred in Cloverdale, Virginia, and resulted in a fish kill that was estimated to kill tens of thousands of fish in Tinker Creek. The fish kill occurred outside of the Project boundary, and no effects have been identified in the mainstem of the Roanoke River. The VDEQ continues to work with USFWS and VDGIF on monitoring the recovery of Tinker Creek (VDEQ 2017e).

Table 5.3-4
Designated Use Assessment and Causes of Impairment for Stream Reaches within the Project Boundary

Reach ID	Miles Impaired	Category[1]	Designated Use Assessment[2]					Cause of Impairment[3]					
			Aquatic Life	Fish Consumption	PWS	Recreation	Wildlife	Benthic-macroinvertebrate bioassessment	*E. coli*	Water Temperature	Mercury in Fish Tissue	PCB in Fish Tissue	PCB in Water Column
VAW-L05R_TKR01A00	5.4	5D	NS	NS	NA	NS	FS	X	X	X	-	X	
VAW-L04R_ROA06A00	4.3	5D	NS	NS	NA	NS	NS	X	X	-	X	X	X
VAW-L04R_ROA05A00	0.4	5D	NS	NS	NA	NS	NS	X	X	-	X	X	X
VAW-L04R_ROA04A00	0.2	4A	NS	NS	NA	NS	NS	X	X	-	-	X	X
VAW-L04R_ROA03A00	0.9	4A	NS	NS	NS	NS	NS	X	X	-	-	X	X
VAW-L04R_ROA02A00	0.8	4A	II	NS	NS	NS	NS	-	X	-	-	X	X
VAW-L04R_ROA01A00	3.2	5D	NS	NS	NS	NS	NS	X	X	-	-	X	X

[1]Category:
4A - water is impaired or threatened for one or more designated uses but does not require a TMDL because the TMDL for specific pollutant(s) is complete and USEPA approved.
5D - a water quality standard is not attained where TMDLs for a pollutant(s) have been developed, but one or more pollutants are still causing impairment requiring additional TMDL development.
[2]Designated Use Assessment: NS - not supporting, NA - not applicable, FS - fully supporting, II - insufficient information.
[3]'X indicates cause of impairment, "-" indicates not identified as cause.
Source: VDEQ 2017d.

Table 5.3-5
Fish Consumption Advisory for Project Waters

Common Name	Scientific Name	Upper section of the Roanoke River to Niagara Dam	Roanoke River below the Niagara Dam to Smith Mountain Dam
Bluehead chub	*Nocomis leptocephalus*	X	-
Common carp	*Cyprinus carpio*	X	X
Channel catfish	*Ictalurus punctatus*	-	X
Flathead catfish (<32 inches)	*Pylodictis olivaris*	-	X
Flathead catfish (≥32 inches)	*Pylodictis olivaris*	-	X*
Gizzard shad	*Dorosoma cepedianum*	-	X
Largemouth bass	*Micropterus salmoides*	X	X
Redbreast sunfish	*Lepomis auritus*	X	-
Redhorse sucker	*Moxostoma carinatum*	X	X
Rock bass	*Ambloplites rupestris*	X	-
Smallmouth bass	*Micropterus dolomieu*	X	-
Striped bass	*Morone saxatilis*	-	X

X indicates advisory is not to consume more than two meals/month.
X* indicates advisory is not to consume any fish.
"-" indicates no advisory for fish species.
Source: Virginia Department of Health (VDH) 2017.

5.3.8 Gradient for Downstream Reaches

The topography of the Roanoke River basin ranges from steep slopes and valleys to gently sloping terrain. Below the Niagara Dam, the bypass reach extends approximately 1,500 feet to the powerhouse, with the riverbed sloping at an average rate of approximately 78 feet per mile. For the reach 1 mile below the powerhouse, the river bed slopes at an average rate of approximately 15 feet per mile.

5.4 Fish and Aquatic Resources

5.4.1 Aquatic Habitat

5.4.1.1 Reservoir

Both sides of the Niagara reservoir are covered primarily by a fairly dense forest for a distance of between 400 and 4,500 feet, and there are few natural wetland areas due to the relatively high

topographic relief. Aquatic vegetation in the Project waters has historically been noted to be limited to a few algal and rooted plant species tolerant of urban contamination from upstream (Appalachian Power Company 1991).

A desktop analysis of spawning habitat availability in the Niagara reservoir was conducted during the previous relicensing in 1990 (Appalachian Power Company 1991). This analysis indicated that less than 1 to 17 percent of available habitat is potentially exposed under natural riverine conditions, compared to 9 to 57 percent potentially exposed by Project-related fluctuations prior to the limits imposed by the existing license. The highest percentage of spawning habitat exposed was for the cyprinid/sunfish group due to their preference for very shallow spawning sites (Appalachian Power Company 1991).

5.4.1.2 Bypass Reach

As previously described, the Project includes a 1,500-foot-long bypass reach. Under the existing license, a continuous minimum flow of 8 cfs must be provided to the bypass reach below the spillway. Natural inflow exceeds Project capacity approximately 17 percent of the time. Based on review of available aerial photography, the bypass reach is composed primarily of bedrock and large cobble/coarse gravel substrate, with coarse gravel/fine substrate likely present in some pools.

During evaluation of the minimum bypass flow for the previous relicensing, VDGIF indicated that (at that time) their goals for the bypass reach were not to establish a permanent fishery habitat but to provide enough flow to aid fish that have travelled into the bypass reach during spills over the dam in their return to the downstream channel, and to provide fresh flow through the pools that do develop in the bypass reach under low flow conditions (Appalachian Power Company 1990). The 8 cfs provided under the existing license was determined to meet these goals.

5.4.1.3 Tailrace (Below Powerhouse)

Potential effects of Project operations on tailwater habitat (Photo 5.4-1) were evaluated with respect to erosional and depositional considerations, spring spawning habitat, and low-flow summer habitat during the previous relicensing in 1990. Erosion and deposition impacts were considered negligible due to the steep, rocky, and relatively straight river channel. The study found that the fish likely to spawn in the tailwater would likely do so in the spring when water levels would naturally be elevated, and because the channels below these facilities are steep-sided, little spawning surface would be exposed; therefore, impacts to spring spawning habitat would be minimal. Based on field observations during various flows, a flow of 28 cfs was determined to be adequate for fish habitat (Appalachian Power Company 1991).

Photo 5.4-1 Upstream View of Project Tailrace

5.4.2 Existing Fish and Aquatic Resources

Based on studies conducted for the previous licensing, the Project area supports a variety of warmwater game and forage species, and there is little difference between fish species above and below the dam.

In 1990, a fish survey was conducted in the project area as part of the previous relicensing of the Project (Appalachian Power Company 1991). Adult and juvenile fish were sampled in the Niagara reservoir by electrofishing, hoop netting, and gill netting techniques. Upper, middle, and lower portions of the reservoir were sampled. In addition, riffle/run habitat was sampled upstream and downstream of the Project by electrofishing. Each station was sampled six times, twice in June and September and once in July and October (Appalachian Power Company 1991).

A total of 1,936 fish representing 36 species were collected during this study (Table 5.4-1). Redbreast sunfish (*Lepomis auritus*) and silver redhorse (*Moxostoma anisurum*) were the dominant fish collected, but common carp (*Cyprinus carpio*), white sucker (*Catostomus commersoni*), spotttail shiner (*Notropis hudsonius*), and golden redhorse (*Moxostoma erythrurum*) were also abundant. Common carp and silver redhorse (*Moxostoma anisurum*) comprised the majority of the sample biomass. White sucker, golden redhorse, redbreast sunfish, and channel catfish (*Ictalurus punctatus*) also comprised a substantial portion of the sample biomass (Appalachian Power Company 1991). Four Roanoke logperch (*Percina rex*), which is a federally and state listed endangered species, were collected during this survey in an upstream riffle/run electrofishing site.

Catch rates of most species within reservoir sites were statistically equivalent or greater than catch rates at the upstream riffle/run site. Gizzard shad (*Dorosoma cepedianum*), satinfin shiner (*Notropis analostanus*), northern hogsucker (*Hypentelium nigricans*), shorthead redhorse (*Moxostoma macrolepidotum*), v-lip redhorse (*Moxostoma pappillosum*), bluegill (*Lepomis macrochirus*), and largemouth bass (*Micropterus salmoides*) catch rates at the site downstream of the Niagara Project were the highest among all sites. The length frequency distributions of the dominant fish species at the riffle/run sites were very similar. Species richness and diversity were fairly similar among all pool and riffle/run sites except for the downstream riffle/run site, which exhibited higher species richness and diversity (Appalachian Power Company 1991).

Table 5.4-1
Fish Collected in Niagara Reservoir in 1990

Common name	Scientific name	Number	Percent
Black bullhead	*Ameiurus melas*	6	0.3
Black crappie	*Pomoxis nigromaculatus*	16	0.8
Bluegill	*Lepomis macrochirus*	58	3.0
Bluehead chub	*nocomis leptocephalus*	1	0.1
Bluntnose minnow	*Pimephales notatus*	21	1.1
Brown bullhead	*Ictalurus nebulosus*	12	0.6
Bull chub	*Nocomis raneyi*	2	0.1
Channel catfish	*Ictalurus punctatus*	18	0.9
Common carp	*Cyprinus carpio*	186	9.6
Flathead catfish	*Pylodictis olivaris*	1	0.1
Gizzard shad	*Dorosoma cepedianum*	36	1.9
Golden redhorse	*Moxostoma erythrurum*	106	5.5
Goldfish	*Carassius auratus*	1	0.1
Grass carp	*Ctenopharyngodon idella*	1	0.1
Hybrid sunfish	*Lepomis* sp.	1	0.1
Largemouth bass	*Micropterus salmoides*	28	1.4
Mimic shiner	*Notropis volucellus*	3	0.2
Northern hogsucker	*Hypentelium nigricans*	2	0.1
Pumpkinseed	*Lepomis gibbosus*	48	2.5
Redbreast sunfish	*Lepomis auritus*	555	28.7
Roanoke logperch[1]	*Percina rex*	4	0.2
Rock bass	*Ambloplites rupestris*	26	1.3
Rosefin shiner	*Lythrurus ardens*	1	0.1

Common name	Scientific name	Number	Percent
Satinfin shiner	*Cyprinella analostana*	8	0.4
Shiner	*Notropis* sp.	2	0.1
Shorthead redhorse	*Moxostoma macrolepidotum*	7	0.4
Silver redhorse	*Moxostoma anisurum*	343	17.7
Smallmouth bass	*Micropterus dolomieu*	51	2.6
Spottail shiner	*Notropis hudsonius*	143	7.4
Torrent sucker	*Thoburnia rhothoeca*	1	0.1
V-lip Redhorse	*Moxostoma pappillosum*	3	0.2
White bass	*Morone chrysops*	4	0.2
White catfish	*Ameiurus catus*	15	0.8
White shiner	*Notropis albeolus*	31	1.6
White sucker	*Catostomus commersonii*	175	9.0
Yellow bullhead	*Ameiurus natalis*	20	1.0
	TOTAL	1,936	100.0
	NUMBER OF SPECIES	36	-

[1]Federally and state endangered.

In 1991, additional sampling was conducted in a 0.25-mile riffle/run habitat reach of the Roanoke River located 0.5 miles downstream of the Project that had not been sampled during the 1990 survey. Three Roanoke logperch, each measuring approximately 110 millimeters (mm) in length, were collected (Appalachian Power Company 1991). Additional information on the Roanoke logperch can be found in Section 5.7.

To the best of Appalachian's knowledge, there are presently no stocking programs or locations in the Project area. In 2014, approximately 300,000, 1.25-inch-long, Roanoke strain striped bass were stocked in Smith Mountain Lake (VDGIF 2017d), the nearest known fish stocking location. Historically, walleye (*Sander vitreus*), muskellunge (*Esox masquinongy*), and tiger musky (*Esox masquinongy X Esox lucius*) have been stocked in Smith Mountain Lake (Appalachian Power Company 2004). No data was found regarding these stocking efforts. However, 2014 stocking records indicated that, aside from striped bass, no other fish were stocked in Smith Mountain Lake or the Project area in 2014 (VDGIF 2017d).

No specific information was available on diadromous fish in the Project area. Fish passage facilities are not available at downstream facilities and diadromous fish are not present at the Smith Mountain Project (Appalachian Power Company 2008); therefore, it is unlikely diadromous fish are present at the Project. The striped bass are a landlocked population and are maintained through stocking.

The Roanoke River Diadromous Fish Restoration Plan outlines the mechanisms for restoring historic fish migration reaches on the Roanoke River (Appalachian Power Company 2008). The plan indicates that the greatest gains in mainstem river habitat would be obtained by passing fish above Kerr Dam, the next project downstream of the Smith Mountain Project (Appalachian Power Company 2008).

5.4.2.1 Entrainment

A desktop entrainment study was conducted for the Niagara Project during the previous relicensing (Appalachian Power Company 1991). Electric Power Research Institute data, project characteristics, as well as the behavioral and life history characteristics of the resident fish were used to assess entrainment potential. AEP notes that the intake (including trashracks) and generating equipment at the Project have not significantly changed since the time this study was conducted.

Based on behavioral characteristics, habitat preferences, and life-history characteristics of resident species, the likelihood of substantial numbers of fish occurring in the forebay was determined to be minimal. The eggs of most species were determined to be adhesive and demersal or were known to be deposited into nests, sheltered vegetation, or other substrate. Similarly, the study determined the larvae of most species would remain on the nest or in sheltered slackwater areas until they become free-swimming. It was therefore determined that only larvae of some of the cyprinids and gizzard shad would be expected to enter the current in large numbers and would be more susceptible to entrainment (Appalachian Power Company 1991).

The study indicated that adult and juvenile fish species would differ in their susceptibility to entrainment because of differences in movement behaviors. Species such as suckers, flathead catfish, and centrarchids were determined to be very unlikely to enter the forebay areas in substantial numbers because of their preference for sheltered areas with cover as opposed to deep, open-water habitat. Additionally, the study indicated that these fish display sedentary behavior, with the exception of spawning migrations. Gizzard shad, common carp, shiners, white catfish, channel catfish, bullheads, and black crappie were determined to be more likely to be found in the forebay areas because of their greater mobility (Appalachian Power Company 1991).

The calculated intake velocities at upper and lower normal forebay operating elevations at the Project ranged from 0.9 to 1.2 feet/sec, which is very similar to the current velocity of the free-flowing portion of the Roanoke River. Therefore, the intake velocities would be easily avoided by most fish (Appalachian Power Company 1991).

In the event a fish enters the turbine, turbine passage effects were determined to be primarily restricted to contact with runner blades. The probability of contact was estimated to be less than 10 percent for

young individuals of fish species, which are more likely entrained, and estimated mortality would be much lower than this. Pressure change, cavitation, turbulence, and shear were determined not to be a likely cause of substantial harm to fish at the Project. Due to low head and slow runner speed, blade contact was estimated to be minimal and would not exceed 10 percent. The study concluded impacts from turbine entrainment on fish populations in the vicinity of the Niagara Project were negligible (Appalachian Power Company 1991).

5.4.3 Essential Fish Habitat

Based on a review of the National Marine Fisheries Service (NMFS) online database, no essential fish habitat under the Magnuson-Stevens Fishery Conservation and Management Act or established by the NMFS has been identified in the vicinity of the Project.

5.4.4 Temporal and Spatial Distribution of Fish Communities

As discussed in Section 5.4.2, a fish survey was conducted in the project area as part of the previous relicensing (Appalachian Power Company 1991). Catch rates of most species within reservoir sites were statistically equivalent or greater than catch rates at the upstream riffle/run site. Gizzard shad, satinfin shiner, northern hogsucker, shorthead redhorse, v-lip redhorse, bluegill, and largemouth bass catch rates at the site downstream of the Niagara Project were the highest among all sites. The length frequency distributions of the dominant fish species at the riffle/run sites were very similar. Species richness and diversity were fairly similar among all pool and riffle/run sites except for the downstream riffle/run site, which exhibited higher species richness and diversity (Appalachian Power Company 1991). Recent comprehensive temporal or spatial distribution data is not readily available for the fish communities within the vicinity of the Project. Existing data focuses more on fish community composition, which is summarized in Section 5.4.2.

5.4.5 Spawning Run Timing and Extent and Location of Spawning, Rearing, Feeding, and Wintering Habitats

The Upper Roanoke River provides excellent fishing opportunities for a variety of species. There are variations in the spawning seasons and location of spawning, rearing, feeding, and wintering habitats. Smallmouth bass, largemouth bass, redeye (*Ambloplites cavifrons*), bluegill, and channel catfish are some of the popular game species that are found within the Project area (VDGIF 2017a). Additionally, Roanoke strain striped bass were stocked downstream of the Project at Smith Mountain Lake in 2014. Therefore, the life-history characteristics of these species are described below. Threatened or endangered fish or aquatic species are discussed in Section 5.7.

5.4.5.1 Smallmouth Bass

Smallmouth bass are native to Virginia (VDGIF 2017c) and they are now abundant in most large rivers and lakes throughout the State. Smallmouth bass prefer slow-to-moderate current and select areas of rocky shorelines. They are most active in 19°C to 22°C water and are intolerant of silty, warm, polluted water (VDGIF 2017c).

Spawning usually occurs from late April to early June as temperatures exceed 16°C. Spawning usually occurs in water depths of 2 to 4 feet. Males build a nest in sand, gravel, or rubble where they will guard the nest and fry (VDGIF 2017b). Eggs hatch between 7 and 21 days after fertilization, depending on the water temperature (Smith 1985).

5.4.5.2 Largemouth Bass

Largemouth bass are native to southeastern Virginia, but have been introduced statewide. They inhabit warm, shallow lakes, ponds, and slow-moving streams with abundant submerged vegetation, brush, stumps, and logs, usually in depths of less than 20 feet. Largemouth bass prefer water temperatures ranging from 20°C to 26°C. They are often found in drop-offs, ledges, underwater islands, and near sunken timber, boat houses, docks, and bridges (VDGIF 2017b).

Largemouth bass spawn from late April to early June when water temperatures are between 17°C and 26°C. Males fan out a nest in gravel, sand, or mud along the protected shoreline area. The males guard eggs and fry after spawning (VDGIF 2017b).

5.4.5.3 Redeye (Rock Bass)

Redeye have a limited distribution in Virginia. They are often found in swift, deep water runs around rocks and gravel or at the heads of pools in large creeks, streams, and small rivers. Redeye prefer clean, but sometimes turbid water, and are sensitive to pollution and siltation. Little is known about its spawning habits, but it appears to nest in fairly fast currents by constructing circular nests in gravel or clay in mid-June. Males guard the eggs and larval young (VDGIF 2017b).

5.4.5.4 Bluegill

Bluegills inhabit drop-off areas and can be found near weed beds, sunken islands, piers, swimming rafts, or shaded shorelines. Adult fish move to deeper, cooler waters during hot weather. Bluegill spawn in late spring and early summer as water temperatures reach 21°C to 24°C. Males sweep out nests and actively defend the nest. After spawning they will remain in shallow waters for a period of time to feed (VDGIF 2017b).

5.4.5.5 Channel Catfish

Channel catfish are found in lakes and larger rivers with relatively clean sand, gravel, or stone substrate, over mud flats, and seldom in dense weedy areas. They live in deep, slow pools of swift, clear-running streams. They are often found below dams in large reservoirs (VDGIF 2017b).

Spawning occurs from late May through July when water temperatures reach the mid-70s. Channel catfish often deposit their eggs on rocky ledges, undercut banks, hollow logs, and other underwater structures. Males guard the nest and the eggs hatch in 7 to 10 days. The fry travel in schools, which are often herded and guarded by the male (VDGIF 2017b).

5.4.5.6 Striped Bass

Landlocked striped bass migrate up tributary rivers of larger reservoirs to spawn, often just below dams or upstream of obstructions. When water temperatures range from 13°C to 16°C, the females deposit their semi-buoyant eggs in the current. The eggs are fertilized as they are released and they stay afloat until the fry hatch (VDGIF 2017b).

5.4.6 Benthic Macroinvertebrates Habitat and Life-History Information

Macroinvertebrate sampling has been conducted by the VDEQ along the mainstem of the Roanoke River downstream of the Project. As indicated in Section 5.3.7, the benthic community is impaired along a 3.2-mile reach of the Roanoke River from Niagara Dam downstream to the mouth of Back Creek (Assessment Unit ID: VAW-L04R_ROA01A00). The community was dominated by net-spinning caddisfly larvae and midges. There was low taxa richness and diversity as well as a low number of pollution-sensitive taxa (i.e. mayflies and stoneflies). Although instream habitat, riparian zone vegetation, and bank stability were considered optimal and provide conditions favorable for a healthy benthic community, filamentous algae and periphyton growth was thick on stream substrate indicating that nutrients may be excessive in this reach of the river (VDEQ 2017a). No additional macroinvertebrate community data were available.

5.4.7 Freshwater Mussels

Based on a geographic search on the VDGIF's Fish and Wildlife Information Service, seven mussel species have been known to occur within a 3-mile radius of the Project (VDGIF 2017c) (Table 5.4-2). No additional mussel data is available for the Project area. Sensitive species are identified in Section 5.7.1.

Table 5.4-2
Mussel Species Known to Occur within Three Miles of the Project

Common Name	Scientific Name
Atlantic pigtoe[1]	*Fusconaia masoni*
Carolina slabshell mussel	*Elliptio congaraea*
Creeper	*Strophitus undulatus*
Eastern elliptio	*Elliptio complanata*
Notched rainbow	*Villosa constricta*
Triangle floater mussel	*Alasmidonta undulata*
Yellow lance	*Elliptio lanceolata*

[1]State threatened.

5.4.8 Invasive Aquatic Species

Invasive aquatic species known to occur in the Roanoke River include the Asiatic clam (*Corbicula fluminea*), although there is no indication that it is found in the Project area. The Asiatic clam is a small bivalve, which can be found at the sediment surface or slightly buried. It is a filter feeder and removes particles from the water column. It reproduces rapidly and is intolerant to cold temperatures, which can produce fluctuations in annual population sizes. The invasive clam substantially alters benthic substrate and competes with native species for limited resources. There have also been problems associated with biofouling on power plant and industrial water systems (USGS 2017). Invasive aquatic plants are discussed in Section 5.6.1.

5.5 Wildlife and Botanical Resources

5.5.1 Botanical Resources

Around the Project reservoir, the valley walls are covered with a mixture of deciduous hardwoods and conifers, thus reducing erosion potential (Photo 5.5-1). Forest cover is of the oak-chestnut type, though there are many bare rock exposures in the rugged terrain. There is also a noteworthy percentage of pine and other types of cover, such as maple, hickory, hemlock, locust, dogwood, and basswood (Appalachian Power Company 1991).

Photo 5.5-1 Reservoir Shoreline

5.5.2 Wildlife

The Project area supports a number of small mammals, avifauna, reptiles, and amphibians. Over 623 species were identified as potentially occurring within a three-mile radius of the Project per a geographic search on the VDGIF's Fish and Wildlife Information Service (VDGIF 2017c).

5.5.2.1 Mammals

Mammals such as white-tailed deer (*Odocileus virginianus*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), and gray fox (*Urocyon cinereoargenteus*) are known to occur within the Project area (VDGIF 2017c). Other smaller species such as the eastern chipmunk (*Tamias striatus*), red squirrel (*Tamiasciurus hudsonicus*), eastern gray squirrel (*Sciurus carolinensis*), and longtail weasel (*Mustela frenata*), common mink (*Neovison vison*), American beaver (*Castor canadensis*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), woodchuck (*Marmota monax*), muskrat (*Ondatra zibethicus*), meadow vole (*Microtus pennsylvanicus*), deer mouse (*Peromyscus maniculatus*), northern white-footed mouse (*Peromyscus leucopus*), and northern shorttail shrew (*Blarina brevicauda*) are also known to occur in the general vicinity of the Project (VDGIF 2017c).

5.5.2.2 Avifauna

As of July 2017, 472 bird species have been documented in Virginia (Virginia Society of Ornithology 2017). Birds such as the northern cardinal (*Cardinalis cardinalis*), American crow (*Corvus brachyrhynchos*), mourning dove (*Zenaida macroura*), pileated woodpecker (*Dryocopus pileatus*), and

wood duck (*Aix sponsa*) are some of those known to occur in the Project area (Virginia Society of Ornithology 2017).

5.5.2.3 Reptiles and Amphibians

A variety of reptiles and amphibians has been known to occur in the general project vicinity. Common species may include the snapping turtle (*Chelydra serpentine*), painted turtle (*Chrysemys picta*), eastern garter snake (*Thamnophis sirtalis*), red-spotted newt (*Notophthalmus viridescens*), American toad (*Anaxyrus americanus*), spring peeper (*Pseudacris crucifer)*, gray tree frog (*Hyla versicolor*), green frog (*Lithobates clamitans*), American bullfrog (*Lithobates catesbeianus*), pickerel frog (*Lithobates palustris*), and wood frog (*Lithobates sylvaticus*) (VDGIF 2017c).

5.5.2.4 Invasive Terrestrial Species

The VDCR maintains a list of invasive plant species found within the State (VDCR 2017a). The list includes those species that pose a threat to Virginia's forests, marshes, wetlands, and waterways. They are ranked based on the level of threat they present to natural communities and species. There are close to 100 invasive plant species in Virginia (VDCR 2017a) (Appendix F).

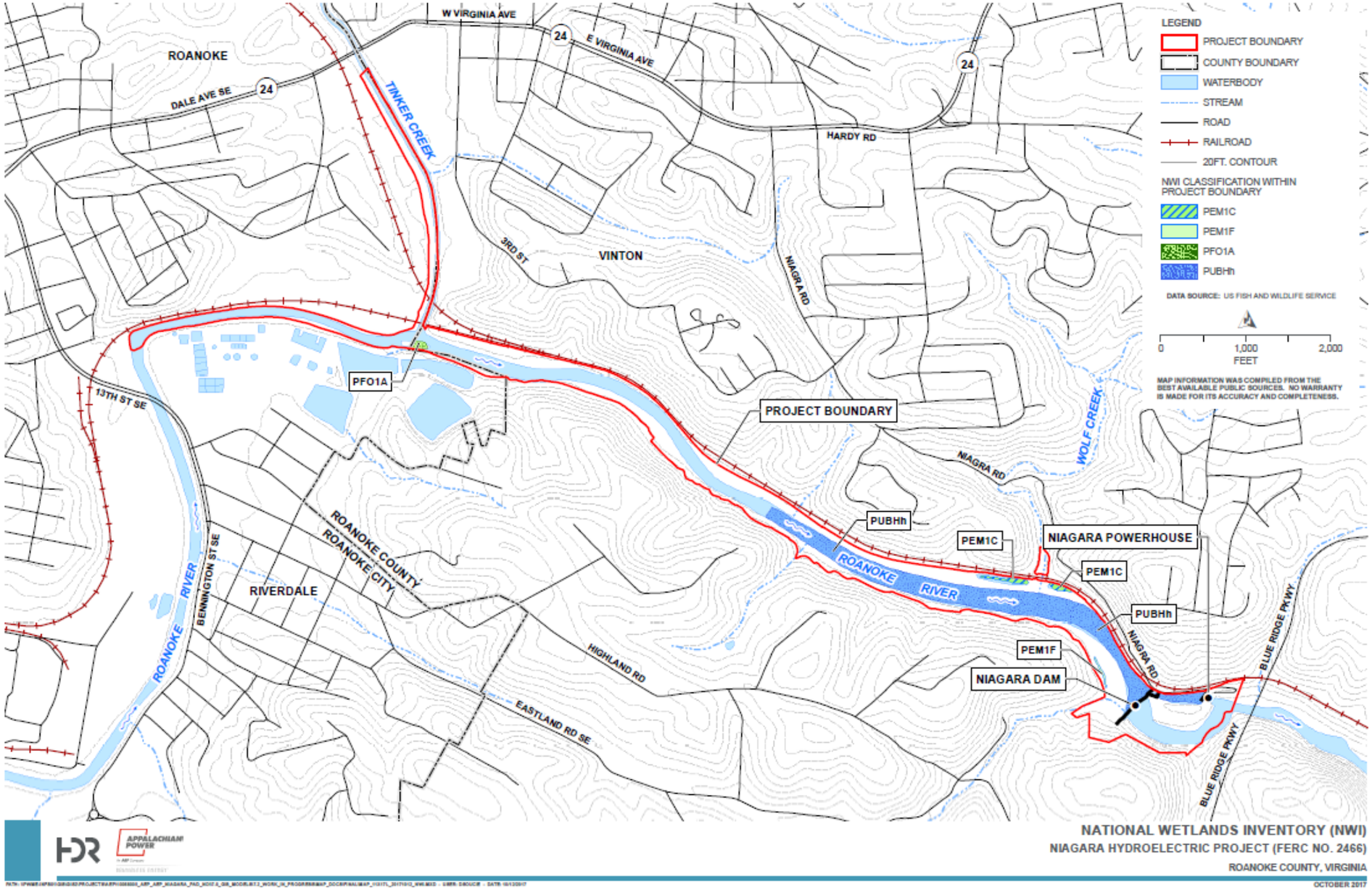
5.6 Wetlands, Riparian, and Littoral Habitat

Wetlands are generally defined as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support vegetation typically adapted for life in saturated soil conditions. The USACE and / or VDEQ have jurisdiction over wetlands in Virginia.

Due to the relatively steep terrain along much of the Project's shorelines of the Roanoke River and Tinker Creek, there are limited wetlands associated with the Project. Two wetland types are currently mapped by the National Wetland Inventory (NWI) within the Project boundary: palustrine and riverine (waterbody) wetlands as defined by Cowardin et al. (1979) (Figure 5.6-1). According to the NWI, the Roanoke River near the Niagara Dam is considered a palustrine wetland with an unconsolidated bottom (Figure 5.6-1). Other palustrine wetlands occurring within the Project boundary are associated with the main channel of the Roanoke River and a slightly extended floodplain. Palustrine wetlands are non-tidal wetlands dominated by trees, shrubs, and/or persistent plants/mosses, generally representing marsh, swamp, and small ponds (Cowardin et al. 1979).

There are no other NWI-mapped wetlands associated with the Project. The wetlands located upstream (excluding the area upstream of the Niagara Dam mapped as PUBHh) and downstream of the Project are considered riverine wetlands. Riverine wetlands include all wetlands and deepwater habitats contained in natural or artificial channels periodically or continuously containing flowing water or which forms a connecting link between the two bodies of standing water. Upland islands or palustrine wetlands may occur in the channel, but they are not part of the Riverine System (Cowardin et al. 1979).

Figure 5.6-1
NWI Wetlands in the Vicinity of the Project



5.6.1 Wetland and Riparian Vegetation

The shoreline and lands surrounding the Project reservoir are mostly forested and undeveloped, except for the CSX Railroad tracks and right-of-way along the north shore. As noted in Section 5.8.5, under Article 407, Appalachian implements a Wildlife Management Plan to, in part, protect riparian forest habitat at the Project.

A survey of the Project water and riparian vegetation was performed in 1990 for the previous relicensing. This survey indicated the presence of several low, forested areas, which, based on their location several feet above the reservoir level on well-drained soil, appeared to be bottomland or riparian forest rather than forested wetland. These riparian forests were found to cover a total of approximately 20 acres (Appalachian Power Company 1991).

According to the USFWS (1998), riparian areas are plant communities contiguous to and affected by surface and sub-surface hydrologic features of perennial or intermittent lotic and lentic water bodies (rivers, streams, lakes, or drainage ways). Riparian areas have one or both of the following characteristics: (1) distinctively different vegetative species than adjacent areas; and (2) species similar to adjacent areas but exhibiting more vigorous or robust growth forms. Riparian areas are usually transitional between wetlands and upland. The extent of the riparian zone is influenced by stream gradient, bank height, valley form, and other floodplain characteristics. These seasonally flooded forests encompass most river floodplain habitats of the northern and western Piedmont and major mountain valleys, except those that are cleared (VDCR 2017e). In the Project area, discernible riparian vegetation is located along the Roanoke River and Tinker Creek. These areas typically support forests dominated by silver maple (*Acer saccharinum*), sycamore (*Platanus occidentalis*), black walnut (*Juglans nigra*), hackberry (*Celtis occidentalis*), American elm (*Ulmus americana*), and boxelder (*Acer negundo var. negundo*). Herb layers in mixed floodplains/riparian areas are usually very lush with nutrient-demanding, early-season species such as Virginia bluebells (*Mertensia virginica*), Canada waterleaf (*Hydrophyllum canadense*), wild ginger (*Asarum canadense var. canadense*), yellow trout-lily (*Erythronium americanum ssp. americanum*), large solomon's-seal (*Polygonatum biflorum var. commutatum*),and many others (VDCR 2017e).

Photos representative of the riparian forest shoreline taken in support of the 2016 riparian forest wildlife habitat plan follow (Photo 5.6-1 to Photo 5.6-3).

Photo 5.6-1 Reservoir and Riparian Forest Shoreline

Photo 5.6-2 Riparian Forest Shoreline

Photo 5.6-3 Reservoir and Riparian Forest Shoreline

Aquatic vegetation in the Project waters has historically been noted to be limited to a few algal and rooted plant species tolerant of urban contamination from upstream (Appalachian Power Company 1991).

5.6.1.1 Invasive Plants

Invasive plant species known to occur in the Roanoke River or immediately along the banks of the Roanoke River include Japanese stilt grass (*Microstegium vimineum*) and parrot feather (*Myriophyllum aquaticum*). Brittled naiad (*Najas minor*), curly-leaf pondweed (*Potomogeton crispus*), Brazilian waterweed (*Elgeria densa*), and hydrilla (*Hydrilla verticillata*) have been documented downstream of the Project in Smith Mountain Lake (Appalachian Power Company 2008). Appalachian is not aware of the presence of these species at the Niagara Project and notes that these species have not been observed in association with Project maintenance activities.

Japanese stilt grass is an invasive plant that forms dense mats. It prefers moist soils that are shaded from full sun. Japanese stilt grass can be found in a variety of areas including marshes, ditches, floodplains, woodland borders, and streamside. It can spread rapidly following a disturbance such as

flooding or mowing. Within three to five years it can form dense stands, which can crowd out native herbaceous vegetation. It is well adapted to low light levels (VDCR 2017b).

Parrot feather is an herbaceous aquatic perennial member of the water-milfoil family. It prefers warmer, milder climates and spreads quickly via plant fragments through waterways and drainage systems. The shade from infestations alters aquatic ecosystems and the thick growth can clog irrigation and drainage canals (VDCR 2017c).

Brittled naiad is an annual submersed rooted or floating plant. It prefers stagnant or slow-moving waters such as ponds, lakes, reservoirs, and canals. It can grow in depths of up to four meters and is tolerant of turbidity and eutrophic conditions. It reproduces by fragmentation and by one-seeded fruits. It starts growing early in the season and blocks sunlight from native species, thereby inhibiting their growth. It can also form dense underwater meshes, which can produce unfavorable conditions for aquatic organisms (National Oceanic and Atmospheric Administration [NOAA] 2017).

Curly-leaf pondweed grows entirely as a submersed aquatic plant with no floating leaves. It can survive and grow at very low light levels and low water temperatures (USGS 2016a). As a result, it often thrives in polluted waters with low light penetration. It can survive under the ice throughout the winter and exhibit rapid growth in the spring when water temperatures rise above 10°C. It can outcompete native species for light and space early in the growing season, which can reduce plant diversity and alter predator/prey relationships. Large infestations can impede water flow and cause stagnant water conditions (USGS 2016a).

Brazilian waterweed is a submersed perennial plant that inhabits mild to warm freshwater environments (USGS 2016b). This species requires low amounts of light and can thrive in turbid environments. It is usually rooted in the mud, but can be found as a free-floating mat or as fragments with stems near the surface of water. Flowers float above the water surface and are pollinated by insects (USGS 2016b).

Hydrilla is a perennial herb that is found in a variety of aquatic environments. It spreads through dispersal of plant fragments. It grows aggressively and spreads through shallower areas forming thick mats in surface waters, which block sunlight to native plants below. This species has been shown to displace native vegetation and significantly alters the physical and chemical characteristics of waterbodies. In Virginia, it was first reported in 1982 in the Potomac River and is now present in waters throughout the state (USGS 2015).

5.6.2 Wetland and Riparian Wildlife

Information on specific wildlife known to occur in wetland and riparian habitats in the Project vicinity is not available. However, many species likely to occur within the Project vicinity typically use wetland or riparian habitats at some point in their lives. Many of the species mentioned in Section 5.5 may utilize riverine and lacustrine habitat within the Project boundary for permanent, temporary, or transient uses.

5.6.3 Wetland, Riparian Zone, and Littoral Maps

A map of wetland habitats existing in the Project vicinity is presented in Figure 5.6-1. Table 5.6-1 defines the NWI classification system associated with the wetlands maps (USFWS NWI Undated) and provides the available acreage of each classification of wetlands within the Project vicinity.

Table 5.6-1
National Wetlands Inventory Classification System and Estimated Acreage

Wetlands Code	System	Class	Subclass	Regime	Special Modifier	Estimated Acres
PEM1C	Palustrine	Emergent	Persistent	Seasonally flooded	-	0.76
PEM1F	Palustrine	Emergent	Persistent	Semi-permanently Flooded	-	0.17
PFO1A	Palustrine	Forested	Persistent	Temporarily Flooded	-	0.33
PUBHh	Palustrine	Unconsolidated bottom	-	Permanently flooded	Diked/ Impounded	25.99

5.6.4 Estimates of Wetland, Riparian Zone, and Littoral Acreage

5.6.4.1 Wetland Acreage

The NWI wetlands in the vicinity of the Niagara Project, excluding wetlands mapped as PUBHh reservoir, encompass approximately 1.26 acres.

5.6.4.2 Littoral and Riparian Zone Acreage

The littoral zone, in the context of a large river system, is the habitat between about a half-meter of depth and the depth of light penetration (Wetzel 1975). The littoral width varies based on the geomorphology and rate of sedimentation of the stretch of river (Wetzel 1983). Based on the NWI maps, limited site visits to the Project area, and review of aerial photography of the Project area, some potential littoral habitats for wildlife were identified in two locations: the upstream extent of the Project

boundary where the Roanoke River decreases in depth at the last meander within the Project boundary and near the confluence of the Roanoke River and Tinker Creek.

For the purposes of this section, the term “riparian” shall be used to refer to anything connected or immediately adjacent to the shoreline or bank of the Roanoke River or Tinker Creek. Although the term “riparian buffer” generally refers to the naturally vegetated shoreline, floodplain, or upland forest adjacent to a surface water body, the quantification of riparian habitat requires the calculation of a buffer size from which to base the amount of riparian habitat located within a specified area. The Virginia Department of Conservation and Recreation Riparian Buffers Modification and Mitigation Guidance Manual (VDCR 2006) suggests a 100-foot buffer in order to effectively retard runoff, prevent erosion, and to filter non-point source pollution from runoff. The riparian zone serves as the primary interface between riverine and upland habitats, influencing both the primary productivity and food resources within the river. The majority of riparian habitat within the Project boundary is located within the Deciduous Forest, Mixed Forest, and Developed, Low Intensity cover types. Table 5.6-2 lists the estimated land use acreage within the Project boundary.

Table 5.6-2
Estimated Land Use Acreage within the Project Boundary

Land Use	Estimated Acres
Deciduous Forest	23
High-Intensity Development	0.22
Low-Intensity Development	24
Medium-Intensity Development	5.4
Developed Open Space	12
Evergreen Forest	0.5
Hay/Pasture	3
Mixed Forest	7.5
Open Water	51

5.7 Rare, Threatened, and Endangered Species

As part of the information-gathering process conducted to support the development of this PAD, Appalachian requested information from the USFWS and VDCR regarding federally and state-listed rare, threatened, and endangered species, critical habitat, sensitive natural communities, and species of concern within the Project vicinity.

5.7.1 Federally Listed Threatened, Endangered, and Candidate Species

By letter dated August 14, 2017, the USFWS indicated that the federally endangered Indiana bat (*Myotis sodalist*) and Roanoke logperch, as well as the federally threatened northern long-eared bat (*Myotis septentrionalis*), may occur within the Project's vicinity.

When a species is proposed for listing as endangered or threatened under the Endangered Species Act (ESA), the USFWS must consider whether there are areas of habitat believed to be essential to the species' conservation. Those areas may be proposed for designation as critical habitat. Critical habitat is a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. Through consultation with the USFWS, no critical habitat has been designated under the ESA for species in the Project vicinity.

5.7.1.1 Indiana Bat

Indiana bats are found over most of the eastern half of the United States (USFWS 2016). The Indiana bat is a relatively small, dark-brown bat. Although they only weigh around one-quarter of an ounce, they have a wingspan of 9 to 11 inches (USFWS 2016).

Indiana bats hibernate during winter in caves or occasionally in abandoned mines. They hibernate in cool, humid caves with stable temperatures under 10°C, but above freezing. Very few caves are known to have these characteristics. The vast majority of these sites are caves located in karst areas of the east-central U.S.; however, Indiana bats also hibernate in other cave-like locations, including abandoned mines. No critical habitat is designated within the Project boundary. Critical habitat for this species designated by USFWS includes 11 caves and 2 abandoned mines in Illinois, Indiana, Kentucky, Missouri, Tennessee, and West Virginia.

After hibernation, Indiana bats migrate, often long distances, to their summer habitat in wooded areas where they roost under loose tree bark on dead or dying trees. They forage in or along the edges of forested areas (USFWS 2016). Migratory females may migrate up to 357 miles to form (summer) maternity colonies to bear and raise their young, with each giving birth to just a single pup (USFWS 2016). In summer, most reproductive Indiana bat females occupy roost sites under the exfoliating bark of dead trees that retain large, thick slabs of peeling bark. Primary roosts usually receive direct sunlight for more than half the day. Roost trees are typically within canopy gaps in a forest, in a fence line, or along a wooded edge. Habitats in which maternity roosts occur include riparian zones, bottomland and floodplain habitats, wooded wetlands, and upland communities. Indiana bats typically forage in semi-open to closed (open understory) forested habitats, forest edges, and riparian areas (USFWS 2007). Both males and females return to hibernacula in late summer or early fall. Indiana bats mate during

the fall before they enter hibernation, but fertilization is delayed until the spring after they emerge from the caves (USFWS 2007).

In the summer of 2017, the Virginia Department of Transportation conducted an acoustic bat survey along the eastern segment of the Roanoke River Greenway to determine if Indiana bats are present along the proposed corridor (VDOT 2017). The survey included areas in the Project vicinity. Overall 5,616 calls were recorded and classified to species over 20 detector nights at 9 survey locations. No Indiana bats were detected (VDOT 2017).

Multiple biological opinions have been developed for the Indiana bat (USFWS 2017a). A draft recovery plan was issued for the Indiana bat in April 2007 (USFWS 2007). No official status reports exist for the Indiana bat; however, the general status of this species, the associated listing, fact sheets, range maps, and other important information are available on the USFWS website.

5.7.1.2 Northern Long-eared Bat

The northern long-eared bat is found across much of eastern and north-central United States and all Canadian provinces from the Atlantic Ocean west to the southern Yukon Territory and British Columbia (USFWS 2013). It is a medium-sized bat, measuring 3.0 to 3.7 inches, with a wingspan of 9 or 10 inches. The color of its fur can be medium to dark brown on the back and tawny to pale-brown on the underside. The bat is distinguished by its long ears relative to other bats in the genus *Myotis* (USFWS 2013).

The northern long-eared bat spends winters hibernating in caves and mines and prefers hibernacula with very high humidity. During the summer months, the northern long-eared bat prefers to roost singly or in colonies underneath bark, in cavities, or in the crevices of live or dead trees (USFWS 2013). Breeding begins in late summer or early fall when males swarm near hibernacula. After a delayed fertilization, pregnant females migrate to summer colonies where they roost and give birth to a single pup. Young bats start flying 18 to 21 days after birth, and adult northern long-eared bats can live up to 19 years (USFWS 2013).

Northern long-eared bats emerge at dusk and fly through the understory of forested hillsides feeding on moths, flies, leafhoppers, caddisflies, and beetles. They also feed by gleaning motionless insects from vegetation and water (USFWS 2013).

The most severe and immediate threat to the northern long-eared bat is white-nose syndrome. As a result of this disease, numbers have declined by 99 percent in the northeast. Other significant sources of mortality include impacts to hibernacula from human disturbance. Loss or degradation of summer

habitat due to highway or commercial development, timber management, surface mining, and wind facility construction and operation also contribute to mortality (USFWS 2015).

The spatial distribution for the northern long-eared bat extends from Montana and Wyoming in the west, south to eastern Texas, across the northern portions of Mississippi, Alabama, Georgia, and North Carolina, north to Maine, and across the Great Lakes. As this species overwinters in local or regional hibernacula, it does not migrate extensive distances and, therefore, does not have significant temporal distribution (USFWS 2013). No critical habitat has yet been determined or designated by USFWS for this species.

Multiple biological opinions have been developed for the northern long-eared bat (USFWS 2017b). No official status reports exist for the northern long-eared bat; however, the general status of this species, the associated listing, fact sheets, range maps, and other important information are available on the USFWS website. A recovery plan has not yet been developed for the northern long-eared bat.

5.7.1.3 Roanoke Logperch

The Roanoke logperch is endemic to the Roanoke River basin within North Carolina and Virginia and the Chowan River basin in Virginia. The distribution in the upper Roanoke system extends roughly 1.8 miles downstream of the Niagara Dam upstream into the North Fork Roanoke River and to the South Fork Roanoke River (USFWS 1992). The species predominantly occurs in those portions of the drainage within the Piedmont and Ridge and Valley physiographic provinces. Populations are vulnerable due to limited range and low densities. The Roanoke logperch is not typically found in reservoirs or other lentic environments, although two specimens were collected in a cove of Leesville Reservoir in 1989. These specimens were believed to have been swept into the reservoir from the Pigg River during high flow conditions.

The Roanoke logperch is a large darter, which reaches lengths of about 6 inches. According to USFWS (1992), during the different phases of its life history and season, the majority of the riverine habitat types are used. During the reproductive period, males are primarily associated with shallow riffles, while spawning females are common in deep runs over gravel and small cobble. Young and juveniles usually occur in slow runs and pools with clean bottoms. Winter habitat of all phases is believed to be under boulders in deep pools (USFWS 1992). Logperch in the Roanoke River have been found primarily in runs, select deep, fast habitats with exposed, silt-free gravel substrate, occasionally in riffles, and rarely in pools. Logperch have been found at a variety of depths and velocities, but quite consistently in silt-free, loosely embedded substrate (Rosenberger 2002; as cited in DTA 2007).

Logperch actively feed during the warmer months by flipping over stones with their snout and feeding on the exposed bottom-dwelling organisms. Spawning occurs in April or May in deep runs over gravel and small cobble substrate. They typically bury their eggs and do not provide parental care (USFWS 2017a). The Roanoke logperch does not migrate and does not have significant temporal distribution.

As discussed in Section 5.4.2, this species has been collected within the Project area. Four Roanoke logperch (*Percina rex*) were collected upstream of the Project in riffle/run habitat during a fish survey conducted for relicensing of the Project in 1990 (Appalachian Power Company 1991). In 1991, another three Roanoke logperch were collected in riffle/run habitat 0.5 miles downstream of the Project (Appalachian Power Company 1991). Roanoke logperch have also been found in select tributaries downstream from the Project (DTA 2007). In the Upper Roanoke River, Roanoke logperch were found primarily in runs, occasionally in riffles, and rarely in pools. Typically, they selected deep, high-velocity habitats with exposed, silt-free gravel substrate (DTA 2007).

No biological opinions were found for the Roanoke logperch, however, the general status of this species, the associated listing, fact sheets, range maps, and other important information are available on the USFWS website. A draft recovery plan was issued for the Roanoke logperch in 1992 (USFWS 1992).

In the Roanoke Logperch Recovery Plan (USFWS 1992), turbidity and siltation, chemical spills and organic pollution, channelization, reservoirs, and cold-water releases are cited as the biggest threats to the known logperch populations. In the Upper Roanoke River, home to the largest population of logperch, human stress, non-point source pollution, spills, and siltation have been accredited for possible population decline. In 2007, the Roanoke Logperch Recovery Plan was updated to include more recent information available on this species and provide monitoring recommendations.

5.7.2 State-listed Threatened, Endangered, and Candidate Species

By letter dated September 20, 2017, the VDCR identified three species of concern within the Project vicinity including the orangefin madtom (*Noturus gilberti*), Roanoke logperch, and spatulate snowfly (*Allocapnia simmonsi*). The VDCR also specified that the Roanoke River, Glade Creek, and Tinker Creek have been designated by the VDGIF as “Threatened and Endangered Species Waters.” The designation for the Roanoke River is due to the presence of orangefin madtom and the Roanoke logperch within two miles of the Project. The designation for Glad Creek and Tinker Creek is due to the presence of the Roanoke logperch within two miles of the Project.

The orangefin madtom is classified as a species of concern by the USFWS and as threatened by the VDGIF. The orangefin madtom is native to the Roanoke River system, which inhabits moderate to strong riffles and runs having little or no silt in moderate-gradient, intermontane and upper Piedmont

streams. It is an intersticine dweller and is found in or near cavities formed by rubble and boulders. No orangefin madtoms were collected in the fish surveys discussed in Section 5.4.2.

The Roanoke logperch is endemic to the Roanoke drainage in Virginia and is classified as endangered by the USFWS and the VDGIF. As discussed in Section 5.4.2 and Section 5.7.1.3, this species has been collected within the Project area.

Spatulate snowfly is a stonefly recorded in only two locations in Virginia. Stoneflies are insects that are found under stones in streams and are very sensitive to water quality or habitat degradation. The reservoir does not likely have suitable habitat for this species and, due to the multiple existing water quality impairments for the Roanoke River, it is unlikely this species is located within the vicinity of the Project.

Table 5.7-1 lists rare species and historical records at or within the Project vicinity. In the summer of 2017, the Virginia Department of Transportation conducted an acoustic bat survey along the eastern segment of the Roanoke River Greenway to determine if protected bats were present along the proposed corridor (VDOT 2017). Activity of the state endangered little brown bat was confirmed during the survey (VDOT 2017). As opposed to roosting in trees, this species typically roost in caves, buildings, bridges, and other structures (VDGIF 2018; as cited in VDOT 2017). A search using the Virginia Department of Game and Inland Fisheries Little Brown Bat and Tri-colored Bat Winter Habitat and Roosts Application displayed that the Niagara project boundary is outside the 5.5-mile buffer zone of the closest known little brown bat or tri-colored bat hibernaculum site (VDGIF 2018).

Table 5.7-1
Rare Species with Historical Records at or within the Project Vicinity

Common Name	Scientific Name	Status*	Tier**
Amphibians			
Blue Ridge dusky salamander	*Desmognathus orestes*		IVc
eastern mud salamander	*Pseudotriton montanus montanus*		IVa
eastern spadefoot	*Scaphiopus holbrookii*		IVc
Jefferson salamander	*Ambystoma jeffersonianum*		IVa
Peaks of Otter salamander	*Plethodon hubrichti*		Ic
Arachnids			
wolf spider	*Lycosa lenta*		IVc
Birds			
American black duck	*Anas rubripes*		IIa
American woodcock	*Scolopax minor*		IIa
bank swallow	*Riparia riparia*		IIIc
barn owl	*Tyto alba pratincola*		IIIa
belted kingfisher	*Ceryle alcyon*		IIIb

Common Name	Scientific Name	Status*	Tier**
black-and-white warbler	*Mniotilta varia*		IVa
black-billed cuckoo	*Coccyzus erythropthalmus*		IIb
black-crowned night-heron	*Nycticorax nycticorax hoactii*		IIIa
brown thrasher	*Toxostoma rufum*		IVa
Canada warbler	*Cardellina canadensis*		IVb
cerulean warbler	*Setophaga cerulea*		IIa
chimney swift	*Chaetura pelagica*		IVb
common tern	*Sterna hirundo*		IIa
eastern wood pewee	*Contopus virens*		IVb
eastern kingbird	*Tyrannus tyrannus*		IVa
eastern meadowlark	*Sturnella magna*		IVa
eastern towhee	*Pipilo erythrophthalmus*		IVa
eastern whip-poor-will	*Antrostomus vociferus*		IIIa
field sparrow	*Spizella pusilla*		IVa
glossy ibis	*Plegadis falcinellus*		Ia
golden eagle	*Aquila chrysaetos*		Ia
golden-winged warbler	*Vermivora chrysoptera*		Ia
grasshopper sparrow	*Ammodramus savannarum pratensis*		IVa
gray catbird	*Dumetella carolinensis*		IVa
greater scaup	*Aythya marila*		IVa
green heron	*Butorides virescens*		IVb
Henslow's sparrow	*Ammodramus henslowii*	ST	Ia
Kentucky warbler	*Geothlypis formosa*		IIIa
king rail	*Rallus elegans*		IIb
laughing gull	*Leucophaeus atricilla*		IVa
least bittern	*Ixobrychus exilis exilis*		IIIa
loggerhead shrike	*Lanius ludovicianus*	ST	Ia
marsh wren	*Cistothorus palustris*		IVa
migrant loggerhead shrike	*Lanius ludovicianus migrans*	ST	
northern rough-winged swallow	*Stelgidopteryx serripennis*		IVc
northern saw-whet owl	*Aegolius acadicus*		Ic
northern bobwhite	*Colinus virginianus*		IIIa
northern flicker	*Colaptes auratus*		IVb
northern harrier	*Circus cyaneus*		IIIa
peregrine falcon	*Falco peregrinus*	ST	Ia
red crossbill	*Loxia curvirostra*		IIIc
ruffed grouse	*Bonasa umbellus*		IIIa
rusty blackbird	*Euphagus carolinus*		IVb
short-billed dowitcher	*Limnodromus griseus*		IVa
Swainson's warbler	*Limnothlypis swainsonii*		IIc
wood thrush	*Hylocichla mustelina*		IVb
yellow-billed cuckoo	*Coccyzus americanus*		IIIa

Common Name	Scientific Name	Status*	Tier**
yellow-breasted chat	*Icteria virens virens*		IVa
yellow-crowned night-heron	*Nyctanassa violacea violacea*		IIa
Fish			
alewife	*Alosa pseudoharengus*		IVa
American eel	*Anguilla rostrata*		IIIa
American shad	*Alosa sapidissima*		IVa
Appalachia darter	*Percina gymnocephala*		IVc
Ashy darter	*Etheostoma cinereum*		Ib
bigeye jumprock	*Moxostoma ariommum*		IIIc
black sculpin	*Cottus baileyi*		IVc
blotchside logperch	*Percina burtoni*		IIa
blueback herring	*Alosa aestivalis*		IVa
bridle shiner	*Notropis bifrenatus*		Ia
brook trout	*Salvelinus fontinalis*		IVa
highfin shiner	*Notropis altipinnis*		IVc
longear sunfish	*Lepomis megalotis*		IVb
notchlip redhorse	*Moxostoma collapsum*		IVc
orangefin madtom	*Noturus gilberti*	ST	IIb
Roanoke bass	*Ambloplites cavifrons*		Ia
Roanoke hog sucker	*Hypentelium roanokense*		IVc
Roanoke logperch	*Percina rex*	FESE	IIa
rustyside sucker	*Thoburnia hamiltoni*		IIIc
silver redhorse	*Moxostoma anisurum*		IIIc
Insects			
Appalachian grizzled skipper	*Pyrgus wyandot*	ST	Ia
Diana fritillary	*Speyeria diana*		IVc
early hairstreak butterfly	*Erora laeta*		IVc
frosted elfin butterfly	*Callophrys irus*		IVc
hoary elfin butterfly	*Callophrys polius*		IVc
long dash butterfly	*Polites mystic*		IVc
monarch butterfly	*Danaus plexippus*		IIIa
mottled duskywing butterfly	*Erynnis martialis*		IIIc
northern metalmark butterfly	*Calephelis borealis*		IVc
Persius duskywing butterfly	*Erynnis persius persius*		IIc
regal fritillary	*Speyeria idalia idalia*		Ia
tawny crescent	*Phyciodes batesii batesii*		IIc
Mammals			
Allegheny woodrat	*Neotoma magister*		IVa
Appalachian cottontail	*Sylvilagus obscurus*		IVa
eastern red bat	*Lasiurus borealis borealis*		IVa
eastern small-footed myotis	*Myotis leibii*		Ia
eastern spotted skunk	*Spilogale putorius putorius*		IVc
hoary bat	*Lasiurus cinereus cinereus*		IVa

Common Name	Scientific Name	Status*	Tier**
little brown bat	*Myotis lucifugus lucifugus*	SE	Ia
long-tailed shrew	*Sorex dispar dispar*		IVc
northern long-eared bat	*Myotis septentrionalis*	FTST	Ia
silver-haired bat	*Lasionycteris noctivagans*		IVa
tri-colored bat	*Perimyotis subflavus*	SE	Ia
Mussels			
Atlantic pigtoe	*Fusconaia masoni*	ST	Ia
Carolina slabshell mussel	*Elliptio congaraea*		IVa
Creeper	*Strophitus undulatus*		IVa
Notched rainbow	*Villosa constricta*		IIIa
triangle floater mussel	*Alasmidonta undulata*		IVa
yellow lance	*Elliptio lanceolata*		IIa
Reptiles			
bog turtle	*Clemmys muhlenbergii*	FTSE	Ia
common ribbonsnake	*Thamnophis sauritus sauritus*		IVa
eastern hog-nosed snake	*Heterodon platirhinos*		IVc
queen snake	*Regina septemvittata*		IVa
scarlet kingsnake	*Lampropeltis elapsoides*		IIIc
smooth greensnake	*Opheodrys vernalis*		IIIa
snapping turtle	*Chelydra serpentina*		IVb
southeastern crowned snake	*Tantilla coronata*		IVc
timber rattlesnake	*Crotalus horridus*	CC	IVa
woodland box turtle	*Terrapene carolina carolina*		IIIa

*****FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern.

******I=VA Wildlife Action Plan - Tier I – Critical Conservation Need; II=VA Wildlife Action Plan – Tier II – Very High Conservation Need; III=VA Wildlife Action Plan – Tier III – High Conservation Need; IV=VA Wildlife Action Plan – Tier IV – Moderate Conservation Need.

Virginia Wildlife Action Plan Conservation Opportunity Ranking:

a – On-the-ground management strategies/actions exist and can be feasibly implemented.

b – On-the-ground actions or research needs have been identified but cannot feasibly be implemented at this time.

c – No-on-the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

5.8 Recreation and Land Use

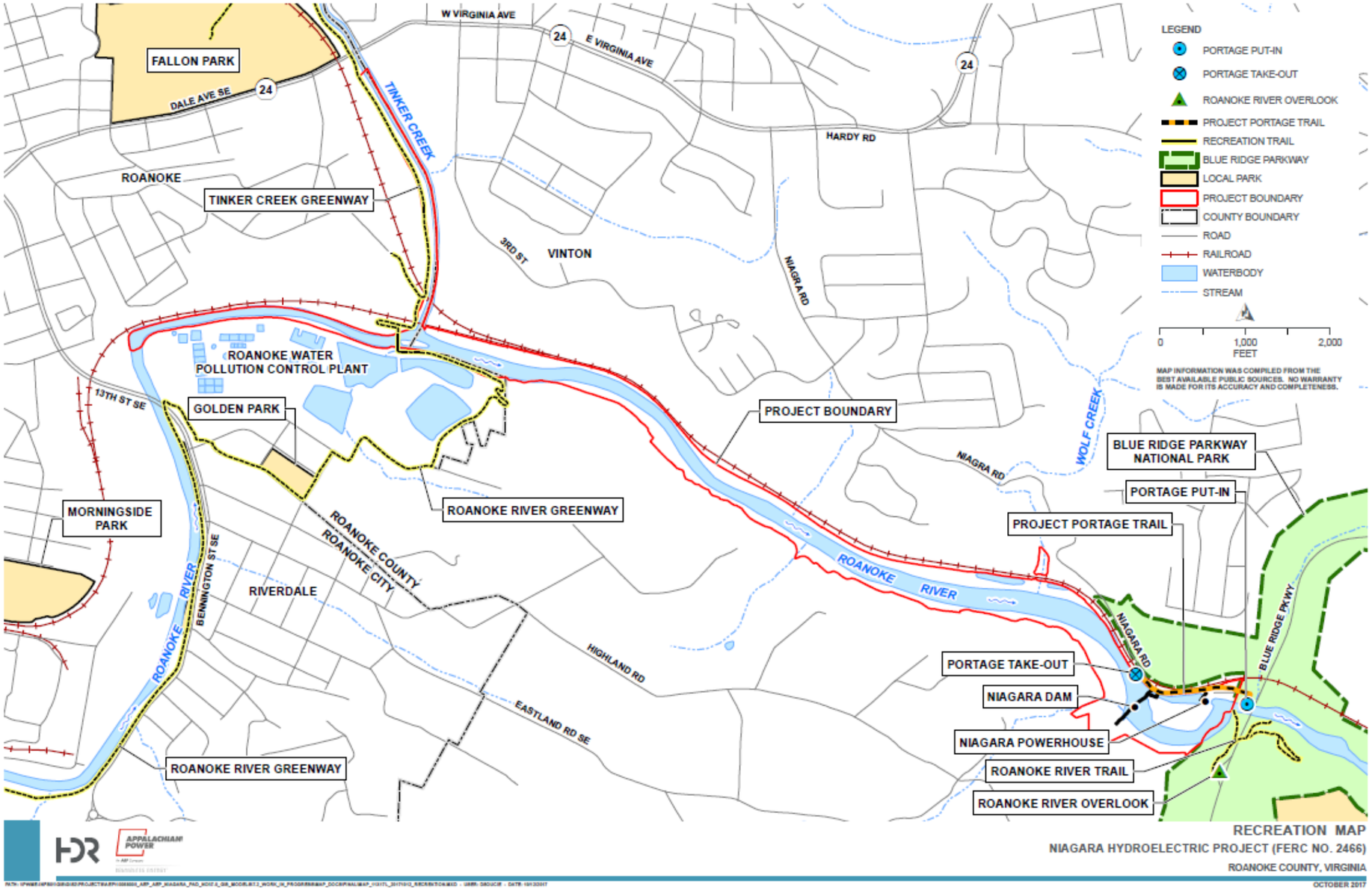
5.8.1 Existing Recreation Facilities and Opportunities

The Roanoke River is a significant recreation and amenity resource. Of significant note is the Roanoke River Blueway. The Roanoke River Blueway Committee was established in 2013 by the Roanoke Valley-Alleghany Regional Commission to facilitate the planning, development, and marketing of the Roanoke River Blueway. The Roanoke River Blueway offers a unique combination of urban, front country, and back country recreation opportunities in the upper Roanoke River watershed. The

Roanoke River lends itself to canoeing, kayaking, fishing, tubing, wading, wildlife viewing, and watershed education. Trip planning, as well as maps, water level, and rental information is available online on the Roanoke River Blueway website (Roanoke River Blueway undated).

Roanoke County also offers a variety of river-based programs including canoe trips, stand-up paddleboarding, and fishing. In addition to river-based programs, there is a variety of terrestrial activities available alongside the Roanoke River including biking, hiking, and walking. Roanoke County offers over 30 parks within the County and several recreation centers. While the Project only contains one formal/licensed recreational facility (the Project canoe portage trail), there are federal, state, and local recreational opportunities available nearby. Federal, state and local recreational opportunities are summarized below in Section 5.8.7, and Figure 5.8-1 depicts federal, local, and project recreation facilities in the immediate vicinity of the Project.

Figure 5.8-1
Niagara Project Area Recreation Site Map



Recreational opportunities are limited at the Project due to limited land ownership by Appalachian, steep terrain, and the CSX Railroad tracks traversing the north shore (Photo 5.8-1). The major recreational activities at the Project are boating, fishing, and sightseeing.

Photo 5.8-1 Railroad Tracks along North Shore, as Viewed Looking Upstream from Near the Take-Out for the Portage Trail

The Project contains one FERC-approved Project recreation area, a canoe portage trail. The canoe portage trail was constructed at the Project in 1996 by the VDGIF as part of the Partners in River Access program, a cooperative effort among VDGIF, the VDCR, and Appalachian to develop various recreation sites on the Roanoke, New, and James Rivers in the vicinity of hydroelectric projects. The trail provides safe passage around the dam for those wishing to paddle the short reach downstream into Smith Mountain Lake. American Whitewater lists the stretch below the Project as class I and II rapids under normal flows (American Whitewater 2017).

The 1,600-foot canoe portage trail consists of a take-out point upstream of the boat barrier with steps up the shoreline, connected by a crushed stone surface and graveled maintenance road to a put-in point near the Blue Ridge Parkway Bridge. A portage sign is located at the take-out and at the beginning of the pathway leading to the downstream put-in point. The canoe portage is maintained by Appalachian. Photo 5.8-2 through Photo 5.8-4 depict the canoe portage take-out point, trail, and put-in point.

Photo 5.8-2 View of Niagara Project Canoe Portage Trail Take-Out Point

Photo 5.8-3 View of Niagara Project Canoe Portage Trail Signage

Photo 5.8-4 View of Niagara Project Canoe Portage Put-In Point

Recreational opportunities in the Project vicinity are further discussed in Section 5.8.7.

5.8.2 Current Project Recreation Use Levels and Restrictions

Due to limited potential recreational use within the Project boundary for the reasons cited above, the Licensee was exempted from filing Form 80 recreation reports until further notice on December 3, 1997. Project personnel observations indicate low usage of the Project canoe portage.

As described below in Section 5.8.7, the National Park Service (NPS)-maintained Roanoke River outlook and Roanoke River trail, located outside of the Project boundary, are more popular. Additionally, local trails such as the Roanoke River Greenway are also popular.

5.8.3 Existing Shoreline Buffer Zones

The majority of the Project reservoir consists of undeveloped river banks with steep slopes and tree cover with limited land within the Project boundary. Appalachian currently implements the Wildlife Management Plan, which requires monitoring of the riparian forest areas within the Project. The Wildlife Management Plan is discussed further in Section 5.8.5.

5.8.4 Recreation Needs Identified in Management Plans

The VDCR's Virginia Outdoors Demand Survey is conducted every five years in preparation for the development of the Virginia Outdoors Plan. The main purposes of the survey are to assess Virginians' attitudes about outdoor recreation resources, estimate participation in and demand for a wide variety of recreational activities, and provide a channel of citizen input into the Virginia Outdoors Plan.

The latest Outdoors Demand Survey was administered in 2017 and was mailed to nearly 14,000 households and 3,375 responded. Overall, the Virginia Outdoors Demand Survey found high regard for the importance of outdoor recreation opportunities, open spaces, and a strong commitment to the protection of natural areas and conservation lands among the general public. The four most frequently mentioned activities in which respondents had participated in the last 12 months were visiting natural areas (up 50% since the 2011 survey), driving for pleasure, walking for pleasure, and visiting parks (local, state, national) (up 51% since the 2011 survey). Table 5.8-1 lists the top ten activities in which survey respondents participated in the last 12 months (University of Virginia 2017).

Table 5.8-1
Percent of Respondents Participating in Activities [2017]

Activity	Percent
Visiting Natural Areas	71%
Driving for Pleasure	67%
Walking for Pleasure	67%
Visiting parks (local, state, national)	56%
Swimming/ outdoor pool	48%
Sunbathing/relaxing on a beach	47%
Viewing the Water	38%
Swimming/beach/lake river (open water)	37%
Visiting historic areas	35%
Fresh water fishing	34%

Source: University of Virginia 2012.

Respondents identified the need for better access to natural areas (53.8%); more public access to parks, hiking and walking trails (49.2%); more water access (42.9%); historic areas (38.8%); scenic drives (28.6%); and playing fields, or sports and golf facilities (22.2%) (University of Virginia 2012).

The Project currently provides access to waters, and other top-identified, in-demand activities are available within the Project vicinity as described further in Section 5.8.7.

5.8.5 Licensee's Shoreline Permitting Policies

The majority of the Project reservoir consists of undeveloped river banks with steep slopes and tree cover. Additionally, there are no private docks in the Project reservoir. Appalachian currently implements the Management Plan for Riparian Forest Wildlife Habitat (Wildlife Management Plan). Under this plan, Appalachian consults with VDGIF and the USFWS every five years regarding the Wildlife Management Plan and then files a report with FERC. The Wildlife Management Plan provides for the following measures:

- Conducting an annual visual inspection for evidence of increased human disturbance and, in the event of such disturbance, consulting with the VDGIF;
- Consulting with VDGIF about any planned activity that may affect the riparian forest areas;
- Monitoring the riparian forest areas for evidence of increased bank erosion and, in the event of increased erosion, consulting with VDGIF; and

- Notifying VDGIF if unanticipated impacts occur to the riparian forest areas.

The most recent Wildlife Management Plan report was filed on November 5, 2015, documenting inspection reports for years 2010 through 2014. The reports document that little change has occurred to the wildlife habitat for the Project since the last report was filed.

5.8.6 Specially Designated Recreation Areas

5.8.6.1 Wild, Scenic, and Recreational Rivers

No portion of the Project has been designated under the National Wild and Scenic Rivers System. VDCR stated in consultation that the Roanoke River is a potential scenic river; however, to date, Appalachian has been unable to document this potential designation.

5.8.6.2 Nationwide Rivers Inventory

No portion of the Project has been designated under the National Rivers Inventory System.

5.8.6.3 Scenic Byways

The Blue Ridge Parkway crosses directly below the Project's boundary, below the tailrace. The Blue Ridge Parkway is a 469-mile-long roadway connecting the Great Smoky Mountains National Park in North Carolina to the Shenandoah National Park in Virginia and is discussed in greater detail below in Section 5.8.7.

5.8.6.4 National Trails System and Wilderness Areas

No portion of the Project has been designated as wilderness area, recommended for such designation, or designated as a wilderness study area under the Federal Wilderness Act.

5.8.7 Regionally or Nationally Significant Recreation Areas and Recreational Attractions in the Vicinity of the Project

There are a variety of federal, state, and local recreational attractions in the vicinity of the Project providing a wide array of recreational opportunities, as further discussed below.

5.8.7.1 Federal Recreation Sites in the Project Vicinity

<u>Blue Ridge Parkway and Roanoke River Overlook</u>

The Blue Ridge Parkway is a 469-mile-long roadway connecting the Great Smoky Mountains National Park in North Carolina to the Shenandoah National Park in Virginia. Nicknamed "America's Favorite

Drive," the Blue Ridge Parkway offers stunning views, abundant hiking trails, picnic areas, scenic overlooks, campsites, and interpretive exhibits (City of Roanoke 2017).

The NPS maintains two Blue Ridge Parkway and Roanoke River overlooks on the south side of the river, one on each side of the Parkway about 1,000 feet downstream of the Project powerhouse. From these overlooks, people walk out onto the bridge to view the Project and the river. The NPS maintains a footpath, the Roanoke River Trail, from the pull-off on the Project side of the Parkway. The Roanoke River Trail is a 0.5-mile gravel hiking loop along rocky cliffs above the river gorge. This trail and overlook is maintained by the NPS. The trail provides views of the Roanoke River from a pedestrian overlook and continues down into the gorge, providing river and fishing access (National Park Planner 2017). Photo 5.8-5 and Photo 5.8-6 depict the Roanoke River Trail from the Project.

Photo 5.8-5 Roanoke River Trail and Blue Ridge Parkway from Project

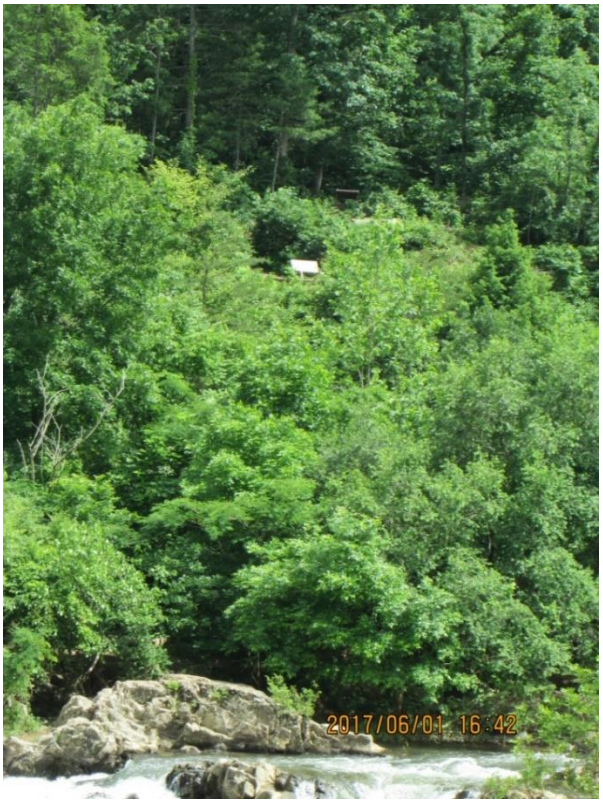


Photo 5.8-6 Roanoke River Trail from Parkway

Booker T. Washington National Monument

The Booker T. Washington National Monument is located approximately 15 miles northeast of the Project. This National Monument, located in Hardy, Virginia, includes two trails (Plantation Trail and Jack-O-Lantern Branch Heritage Trail), a picnic area, farm area, and garden area (NPS undated).

Jefferson National Forest (Cave Mountain Lake Recreation Area)

Jefferson National Forest is one of two U.S. National Forests combined to form one of the largest areas of public land in the Eastern United States. Cave Mountain Lake Area is located within Jefferson National Forest and is approximately 40 miles northeast of the Project. Cave Mountain Lake Area offers activities such as beaches, camping, hiking, picnicking, and water activities, including swimming (USDA 2017b).

5.8.7.2 State Recreation Sites in the Project Vicinity

Smith Mountain Lake State Park

Smith Mountain Lake State Park is approximately 40 miles southeast of the Project. Smith Mountain Lake State Park offers numerous water activities including swimming, boat rentals, a boat ramp, and

an accessible fish pier. Other amenities include a picnic area, visitor center, amphitheater, special programs, camping, trails, cabins, and boat docks (VDCR 2017d).

5.8.7.3 Local Recreation Sites in the Project Vicinity

Roanoke Valley Greenways

The Roanoke Valley Greenway Commission was established with the signing of an intergovernmental agreement among the four participating governments (City of Roanoke, Roanoke County, City of Salem, and Town of Vinton). The Commission establishes and periodically revises a greenway plan for the Roanoke Valley and advises and assists participating governments on all issues related to establishing and protecting greenways. The 2013 Annual Report states the Roanoke Valley Greenway Commission maintained a total of 270.9 miles of trails in the area, including paved trails, cinder surfaced trails, and natural surfaced trails (Roanoke Valley Greenway Commission 2014). Below is a description of the greenway trails within the general vicinity of the Project.

- The Roanoke River Greenway Trail is a 9.5-mile-long paved loop with a portion of the trail located along the upper end of the Project reservoir shoreline. The trail offers a variety of activities including biking, walking, running, and informal fishing access along the Roanoke River. An expansion of the Roanoke River Greenway Trail is currently in the planning stages.

- Tinker Creek Greenway Trail is a 2.5-mile-long natural surface trail stretching from Plantation Road to Carvins Cove's Fisherman's Trail. A portion of the trail is located along the Tinker Creek portion of the Project reservoir. The trail connects recreationists to more than 40 miles of trail located in Carvins Cove Natural Reserve. The trail is used primarily for biking, walking, and running.

- The Mill Mountain Greenway is a 3.2–mile-long paved trail extending from Roanoke's Downtown Market to the Discovery Center in Mill Mountain Park. The trail is approximately 1.5 miles west of the Project and primarily used for biking, walking, and running.

Local Parks

There are numerous local parks within the vicinity of the Project. These parks are briefly summarized below with select parks depicted in Figure 5.8-2.

- Fallon Park is adjacent to the upper extent of the Tinker Creek portion of the Project reservoir. Fallon Park amenities include an Olympic-sized outdoor pool, all-season cyclocross course, picnic shelter, picnic tables, grill, baseball fields, basketball court, restrooms, and access to Tinker Creek Greenway.

- Golden Park is approximately 0.3 miles south of the upper portion of the Project reservoir. Golden Park amenities include a playground, picnic shelter, basketball court, tennis courts, and restrooms.

- Morningside Park is approximately 0.7 miles southeast of the upper portion of the Project reservoir. Morningside Park is a large park featuring rolling hills and a playground.

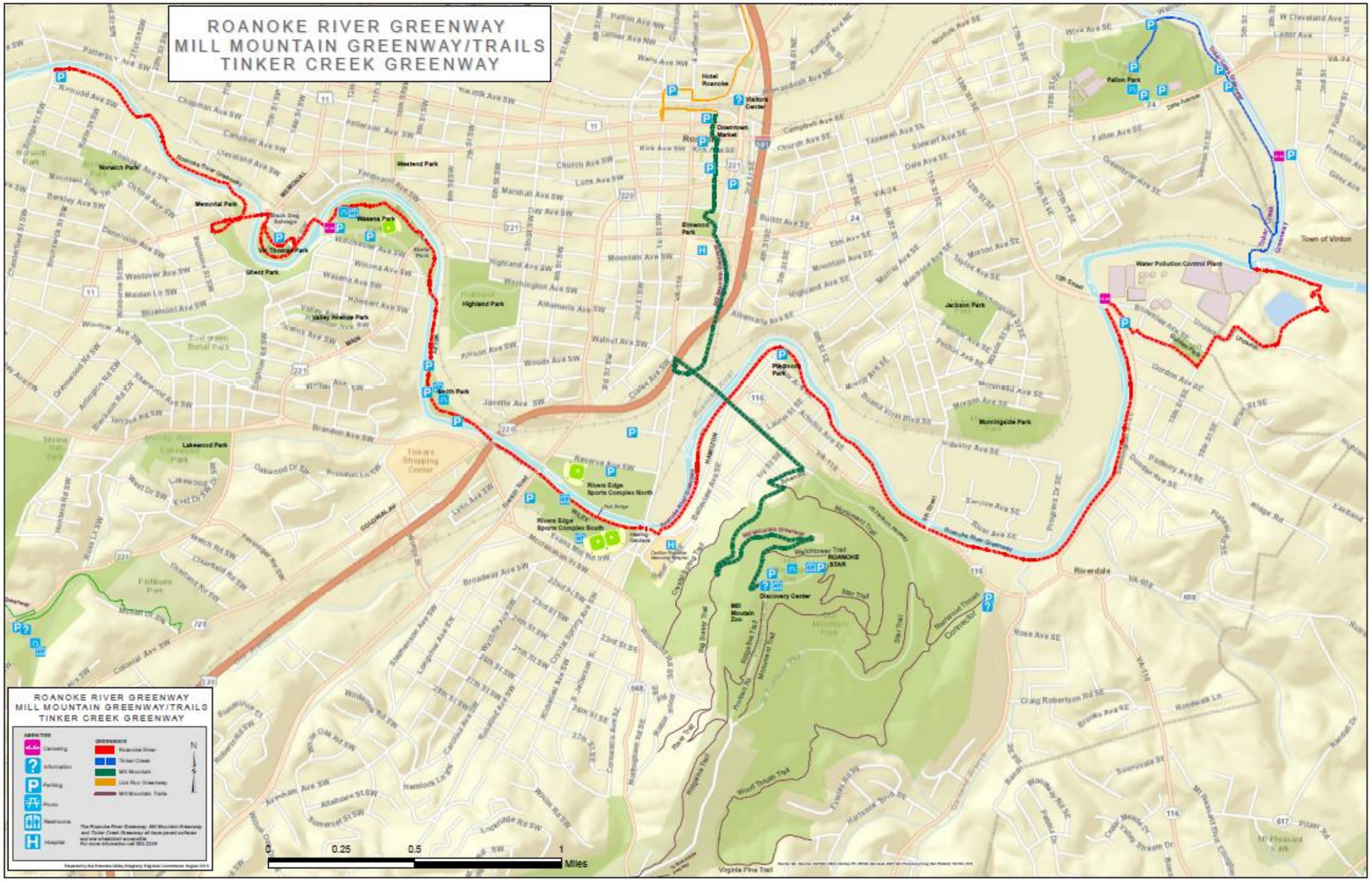
- Jackson Park is approximately 0.5 miles west of the upper portion of the Project reservoir. Jackson Park amenities include a basketball court, playground, baseball field, restrooms, picnic shelter, picnic tables, and grills. There is also a greenway-like trail looping through the top half of the park that is ideal for walking and running.

- Mill Mountain Park is approximately 1.2 miles southwest of the upper portion of the Project reservoir. Mill Mountain Park amenities include a picnic shelter, picnic tables, grills, mountain overlooks, 10 miles of multi-use trails, a wildflower garden, outdoor classroom, playground, restrooms, Discovery Center, Mill Mountain Zoo, the iconic Roanoke Star, and greenway access.

5.8.8 Non-Recreational Land Use and Management

Appalachian owns minimal land associated with the Project or lands located within the Project boundary. Appalachian manages Project lands under its control, including Project facilities, for the purpose of Project operations.

Figure 5.8-2
Roanoke Valley Greenway



5.9 Aesthetic Resources

The Project is located on the Roanoke River, approximately 6 miles southeast of the City of Roanoke, Roanoke County, Virginia. The powerhouse and spillway for the Niagara Hydroelectric Project are visible from the bridge located approximately 600 feet downstream, which carries traffic along the Blue Ridge Parkway over the Roanoke River. Photo 5.9-1 is the view of the Project powerhouse looking upstream from the Blue Ridge Parkway. The bridge is elevated approximately 150 feet above the river bottom and provides limited opportunity to view the entire project facilities from the southbound lane since no pull-offs are located on the bridge. Traffic along the Blue Ridge Parkway emanates from numerous locations beyond the local environs being that the parkway itself is a tourist attraction (Appalachian Power Company 1991). The Roanoke River provides tourists with scenic views and wildlife viewing opportunities and is one of the most popular attractions in the national parks system (City of Roanoke 2017).

The rugged appearance of the spillway structure, constructed of cyclopean concrete, along with the appearance of the concrete powerhouse fits in well with aesthetic characteristics of the area. Both the spillway and powerhouse along with the surrounding and additional Project facilities are kept in good repair (Appalachian Power Company 1991). In addition, Appalachian painted the existing penstock a natural brown color, and the concrete construction of the powerhouse was exposed so that it would weather naturally and blend in existing project features with the surrounding landscape. This additional work was completed in 1997, in accordance with license article 410 (Appalachian Power Company 1997).

Source: National Park Planner 2017.

Photo 5.9-1 View of Niagara Project Powerhouse Looking Upstream from Blue Ridge Parkway

5.10 Cultural Resources

In considering a new license for the Project, FERC has the lead responsibility for compliance with applicable federal laws, regulations, and policies pertaining to historic properties, including the National Historic Preservation Act of 1966 (NHPA), as amended.[3] Section 106 of the NHPA (Section 106)[4] requires federal agencies to take into account the effects of their undertakings on historic properties and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment.

The Section 106 process (defined at 36 CFR Part 800) is intended to accommodate historic preservation concerns with the needs of federal undertakings through a process of consultation with agency officials, the SHPO, federally recognized Indian Tribes, and other parties with a potential interest in an undertaking's effects on historic properties. The goals of the Section 106 process are to:

[3] 54 USC §300101 et seq.
[4] 54 USC §306108

- Identify historic properties that may be affected (directly and/or indirectly) by an undertaking;
- Assess the effects of an undertaking on historic properties; and
- Seek ways to avoid, minimize, or mitigate adverse effects on historic properties through consultation.

Historic properties are defined in 36 CFR Part 800 as any pre-contact or historic period district, site, building, structure, or individual object listed in or eligible for inclusion in the National Register of Historic Places (NRHP). This term includes artifacts, records, and remains that are related to and located within historic properties, as well as properties of traditional religious and cultural importance (often referred to as “traditional cultural properties” or “TCPs”) that meet the NRHP criteria.

The Secretary of the Interior has established the criteria for evaluating properties for inclusion in the National Register (36 CFR Part 60). In accordance with the criteria, properties are eligible if they are significant in American history, architecture, archaeology, engineering, or culture. The quality of significance present in historic properties that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- Are associated with events that have made a significant contribution to the broad patterns of our history; or
- Are associated with the lives of persons significant in our history; or
- Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant or distinguishable entity whose components may lack individual distinction; or
- Have yielded or may be likely to yield information important in prehistory or history.

5.10.1 Area of Potential Effect

An area of potential effect (APE) is defined as the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking. The Commission has not yet defined an APE for the Project. In the context of the relicensing process, FERC generally defines the APE as follows: “The APE includes all lands within the Project boundary. The APE also includes any lands outside the Project boundary where cultural resources may be affected by Project-related activities that are conducted in accordance with the FERC license.”

Because the Project boundary encompasses all lands that are necessary for Project purposes, all Project-related operations, potential enhancement measures, and routine maintenance activities associated with the implementation of a license issued by the Commission are expected to take place within the Project boundary. The proposed APE is consistent with the potential scope of Project effects and the manner in which the Commission has defined the APEs for similar hydroelectric relicensing projects in the region.

5.10.2 Archaeological Resources

In the early 1990s, Appalachian initiated an archaeological study at the Project. Research largely consisted of an examination of archaeological site files at the Virginia Department of Historic Resources in Richmond, Virginia. Attempts were made to determine previously recorded sites and studied areas within the Project area. Local and regional histories were studied at the Virginia State Library and Virginia State Archives (Appalachian Power Company 1991).

Louis Berger and Associated conducted a Phase IA Archaeological Investigation for Appalachian in association with the previous relicensing. The archaeological investigation concluded that there were no historic or prehistoric archaeological sites recorded for the Project site, but that a number of sites were recorded in the vicinity of the Project (Appalachian Power Company 1991).

Cultural resource studies previously carried out in the general vicinity of the Project reveal a high potential for prehistoric sites along the Roanoke River. However, urban and industrial development have resulted in repeated disturbance to the floodplain area, thereby greatly diminishing the potential for sites containing undisturbed deposits. It is noteworthy that the majority of sites identified along the Roanoke River in the general vicinity of the Project are surface sites. Archaeological potential for prehistoric resources at the Project is limited. Construction of the facility, as well as the railroad which traverses the plant's northern borders, has caused severe disturbance and has eliminated the potential for prehistoric archaeological resources on the northern banks of the river. Repair and maintenance activities at the facility have created further disturbance on both banks of the river (Appalachian Power Company 1991).

5.10.3 Historic Architectural Resources

The Project was previously evaluated for inclusion in the NRHP (also by Louis Berger and Associates, Inc., for the previous relicensing), and it was concluded that the Project does not meet National Register Criteria for Evaluation (36 CFR 60.4) because it lacked requisite integrity of design and workmanship as a result of modern alterations, as described below. Within the context of hydroelectric power development in Virginia, the Project dates from the first significant period of hydroelectric plant construction in the state (ca. 1895-1920) and, based on available information, appears to have been

one of very few "medium-head" projects built during that time, as it was reported to have been built to operate at a head of about 60 feet (Appalachian Power Company 1991). The powerhouse was originally equipped with Victor turbine wheels, four 750-kW generators, and one 350-kW generator (Appalachian Power Company 1991). These elements appear to have been replaced, possibly prior to 1924, with four horizontal S. Morgan Smith turbines in steel pressure casings that were direct-connected to four generators. The potential importance of the Niagara powerhouse, however, is significantly diminished by alterations that have occurred since the 1950s. The major alterations are the 1954 reconstruction of the powerhouse floor for the two existing vertical generating units, whose type and placement have greatly changed the original character of the facility, and the installation, in 1988, of the steel penstock, with its associated intake and discharge structures, in the former headrace canal. While the modification of powerhouses for new generating equipment has historical precedent, the remodeling of the Niagara facility has occurred within the past 40 years and has largely obliterated structural evidence of the kind of equipment it was originally designed to contain. The Niagara Project thus does not possess the integrity of design and workmanship that would permit its physical remains to clearly represent its type or its association with the early years of the hydroelectric industry in the state (Appalachian Power Company 1991).

5.10.4 Existing Discovery Measures

Article 409 of the existing license for the Project includes measures to protect and manage historic properties:

> Article 409. If archeological or historic sites are discovered during project operation, the licensee shall: (1) consult with the Virginia State Historic Preservation Officer (SHPO); (2) prepare a cultural resources management plan and a schedule to evaluate the significance of the sites and to avoid or mitigate any impacts to any sites found eligible for inclusion in the National Register of Historic Places; (3) base the plan on the recommendations of the SHPO and the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation; (4) file the plan for Commission approval, together with the written comments of the SHPO on the plan; and (5) take the necessary steps to protect the discovered sites from further impact until notified by the Commission that all of these requirements have been satisfied. The Commission may require cultural resources survey and changes to the cultural resources management plan based on the filings. The licensee shall not implement a cultural resources management plan or begin any land-clearing or land-disturbing activities in the vicinity of any discovered sites until informed by the Commission that the requirements of this article have been fulfilled.

As discussed above, Appalachian conducted a Phase IA Archaeological Investigation of the Roanoke Project in 1991. The investigation determined that there were no historic or prehistoric archaeological sites in the Project area.

In FERC's EA for the previous relicensing, FERC determined that the Project had no effect on any archaeological or historic sites listed or eligible for inclusion in the NRHP; the Virginia SHPO concurred with FERC's assessment.

5.10.5 Identification of Indian Tribes and Traditional Cultural Properties

In a letter dated April 25, 2018, FERC initiated consultation for the relicensing with the Catawba Indian Nation, Delaware Nation, and the Monacan Indian Nation.

- On August 3, 2018, the Monacan Indian Nation indicated they are not opposed to the relicensing, but do not intend to initiate formal consultation at this time.
- On September 4, 2018, the Delaware Nation concurred with the proceeding and indicated they would like to be consulted with regarding the Project.
- FERC reached out to the Catawba Indian Nation in July, August, and September of 2018 and has received no response to date.

5.11 Socioeconomic Resources

The Project is located in Roanoke County, which is one of the 55 counties in Virginia (U.S. Census Bureau [USCB] 2017). The 2010 census reported that approximately 92,376 people reside in Roanoke County, which encompasses approximately 251 square miles with a population density of 369 persons per square mile. In 2015, the population was 94,031, which is a 1.8 percent increase over the six-year period. The cities of Roanoke and Salem are located within the boundaries of Roanoke County, but are not a part of the county. The town of Vinton is the only incorporated municipality within the county. In 2010, the City of Roanoke and Salem had a population of 97,032 and 24,802, respectively. Vinton had a population of 8,098 in 2010 (USCB 2017).

In 2015, the median household income for Roanoke County was $60,519, which compares to the statewide median household income of $65,015 for the same period (USCB 2017). In 2015, the unemployment rate for Roanoke County was 5.1 percent, compared to 6.5 percent in Virginia, and a national unemployment rate of 8.3 percent (USCB 2017).

There are close to 2,000 business establishments in Roanoke County, which employ nearly 30,000 people (USCB 2017). Health care and social assistance, professional, scientific, and technical services, retail trade, and construction businesses are the most abundant establishments. The health care and social assistance industry employ the greatest number of people, followed by the finance and insurance industry, retail trade, and manufacturing (USCB 2017).

Section 6
Preliminary Issues, Project Effects, and Potential Studies List

6.1 Consultation to Date

To date, Appalachian has performed the following consultation activities:

- PAD information questionnaires were distributed to 61 potential Project stakeholders.
- VDEQ was consulted regarding the applicability of the State's Coastal Zone Policy to the Project.
- VDCR and USFWS were contacted regarding federal- or state-listed threatened or endangered species, critical habitat, sensitive natural communities, and species of special concern within the Project's vicinity.

Documentation associated with the consultation conducted by Appalachian in support of the PAD is provided in Appendix B.

6.2 Preliminary Issues and Studies Needed

6.2.1 Geology and Soils

6.2.1.1 Potential Issues

The continued operation and maintenance of the run-of-river Project associated with power generation is not anticipated to have additional cumulative impacts to the geologic or soil resources. No potential issues related to geology have been raised; however, the Tri-County Lakes Administrative Commission raised the issue of sedimentation behind the dam.

As summarized in Section 5.3.7, sedimentation due to sources such as urban stormwater runoff, streambank erosion, and sediment loss from habitat degradation associated with urbanization has previously been identified as a stressor impacting benthic macroinvertebrates in the upper Roanoke River, ending at the backwaters of the Niagara reservoir (The Louis Berger Group, Inc. 2006). Future actions such as construction and land development within the watershed could potentially increase watershed sedimentation. The Niagara Dam is known to impound sediment. Historically, sediment accumulation has not affected operation of the Project, the reservoir is not regularly drawn down for maintenance purposes, and sediment is not regularly mechanically removed from the reservoir. Coordination of any necessary future dredging in areas around Project facilities would be done by

Appalachian in consultation with USACE and VDEQ pursuant to standard license article 12 and additional permits and approvals issued by these agencies.

Shoreline erosion is a common concern at hydroelectric project impoundments. Appalachian believes that the existing run-of-river mode of the Project, in combination with the vegetated nature of the shorelines in the Project boundary, provide protection against bank erosion.

6.2.1.2 Proposed Studies

While the run-of-river mode of Project operation and existing protections of the Project license provide protection against and a means to monitor for shoreline erosion, to provide updated information about existing Project conditions, as well as to evaluate the need for any additional erosion control measures at specific areas of concern, Appalachian proposes to conduct a Shoreline Stability Assessment for the Project. Appalachian anticipates that this assessment will consist of a survey of the Project reservoir to locate any sites of erosion or shoreline instability. Appalachian proposes to inventory, map, and photograph any such areas, using a scoring or ranking system (e.g., Bank Erosion Hazard Index) to try to identify areas that have the potential to erode at unnaturally high rates and to prioritize any areas where remedial action may be needed.

Appalachian does not propose to conduct a sedimentation study for this relicensing. Based on the existing benthic TMDL and sediment levels upstream of the Project, Appalachian does not expect there is a need or management objective of any stakeholders to transport sediment below the dam. Appalachian also does not propose any mechanical sediment removal or impoundment drawdown activities under the terms of a new license. Additionally, no operations or functions of the run-of-river Project are impacted by the sediment accumulation.

6.2.2 Water Resources

6.2.2.1 Potential Issues

Existing uses of Project waters include municipal and industrial water supply, wastewater disposal, recreation, and hydroelectric generation. The City of Roanoke and several industries draw water from the river upstream of the Project impoundment, and the regional wastewater treatment plant discharges to the river 2.5 miles above the dam. There are multiple sections of Project waters listed as impaired in the 2016 303(d) Water Quality Assessment Integrated Report. Water quality impacts were attributed to benthic macroinvertebrate bioassessments, *Escherichia coli*, water temperature, mercury, and PCBs in fish tissue, as well as PCBs in the water column. Potential sources impairing water quality included discharges from municipal separate storm sewer systems, industrial point

source discharge, landfills, municipal areas, on-site treatment systems, sanitary sewer outflows, and wildlife (VDEQ 2017d), all of which are notably not attributed to Project operations.

Due to the existing and proposed run-of-river operations, and the short retention time of the reservoir, the Project has little to no effect on water quality in the upper Roanoke River. Project operation has the potential to locally alter water quality in the short bypass reach during periods of minimum flow and high ambient air temperatures.

6.2.2.2 Proposed Studies

Appalachian will coordinate with the VDEQ to obtain a §401 Water Quality Certification in support of relicensing. At this time, Appalachian proposes to conduct a seasonal temperature and DO study at the Project to confirm compliance with water quality standards and designated uses. Locations of monitoring equipment will be established through further consultation with VDEQ and other stakeholders. The scope of this study would be limited to the FERC-approved Project boundary.

6.2.3 Fish and Aquatic Resources (Including Related RTE Resources)

6.2.3.1 Potential Issues

Aquatic resources (freshwater fish, mussels, and macroinvertebrates) within the Project area are potentially affected by Project operations and maintenance. Potential fishery resource concerns at the Project primarily deal with minimum flows, entrainment and impingement, and angling opportunities. No concerns over mussels or macroinvertebrates were expressed during the previous relicensing.

Fish passage facilities are not available at downstream facilities and diadromous fish are not present at the Smith Mountain Project (Appalachian Power Company 2008); therefore, it is unlikely diadromous fish are present at the Project. Gizzard shad, satinfin shiner, northern hogsucker, shorthead redhorse, v-lip redhorse, bluegill, and largemouth bass are the most common species found at the Project.

The federally endangered Roanoke logperch has previously been collected within the Project area. In the Upper Roanoke River, Roanoke logperch were found primarily in runs, occasionally in riffles, and rarely in pools. Typically, they selected deep, high-velocity habitats with exposed, silt-free gravel substrate (DTA 2007). The state-threatened orangefin madtom is native to the Roanoke River and has been previously collected in Tinker Creek. The orangefin madtom inhabits moderate to strong riffles and runs having little or no silt in moderate-gradient, intermontane and upper Piedmont streams. It is expected that continued operation of the Project will have very little to no adverse effects on current distributions of RTE aquatic species.

6.2.3.2 Proposed Studies

Because there is little existing information on potential aquatic habitat in the bypass reach, Appalachian proposes to determine the amount of available habitat under the minimum flow of 8 cfs. This may include review of all work performed to date, and determination of appropriate methodologies used in conjunction with fisheries surveys conducted to update the species composition. Various species may need to be analyzed. This study will aid in the analyses included in FERC's EA and minimum flow recommendations of Appalachian, resource agencies and FERC.

Based on the detailed entrainment study conducted for the previous relicensing, and no significant changes in Project equipment or operations since that time, at this time Appalachian does not propose to conduct a desktop entrainment study.

6.2.4 Wildlife and Botanical Resources (Including Related RTE Resources)

6.2.4.1 Potential Issues

There is limited terrestrial land within the Project boundary and no potential issues related to wildlife and botanical resources have been identified. The Project has been in operation for over 100 years, and the existing terrestrial environment has developed in response to the current and proposed Project operations. There are no anticipated significant cumulative impacts to wildlife or botanical resources associated with the Project. The continued operation and maintenance of the Project associated with power generation, including current and possible future recreational sites is not anticipated to have significant cumulative impacts to terrestrial wildlife or botanical resources. Short-term minimal effects from normal maintenance, temporary construction (i.e. future recreational sites) and ongoing operations may temporarily impact some generalist terrestrial wildlife species, however these species will likely move to adjacent habitat, returning once the activities are complete.

Federally endangered Indiana bat and the federally threatened northern long-eared bat may occur within the Project's vicinity. These species could potentially use the Project area for foraging corridors adjacent to the Roanoke River during the non-hibernating period. No impacts to foraging bats are anticipated from continued Project operation.

6.2.4.2 Proposed Studies

Because botanical and wildlife species are likely well-established under the current and proposed operations of the Project facilities, the existing Wildlife Management Plan has provided a means for monitoring habitat over the term of the existing license, and Appalachian does not currently propose any activities at or changes to the Project that would impact habitat, no formal study is being proposed

for wildlife and botanical resources. In place of this study, Appalachian proposes to develop a high-level base map, in GIS, displaying general vegetation cover type information of lands within the Project boundary, including forested areas that have potential to include roosting habitat for listed bat species, for inclusion in Exhibit E of the license application. This cover type map would be verified in the field during any required habitat assessments for sensitive plant species, were such assessments to be required.

Appalachian does not propose to conduct surveys for protected or rare wildlife or botanical species at this time. There are no plans for improvements or activities at the Project that would require the clearing of potentially suitable roosting habitat or trees that may support maternity colonies for protected bat species (Indiana bat and northern long-eared bat). In the event such activities were proposed to be undertaken in the future, Appalachian would consult or coordinate with USFWS in advance of the proposed activities.

6.2.5 Wetlands and Riparian Habitat

6.2.5.1 Potential Issues

The Project does not regulate river flows. It is not anticipated that wetland or riparian habitats, beyond those already impacted as a result of the original Project construction, will be affected by the Project's continued operation and maintenance.

6.2.5.2 Proposed Studies

Appalachian does not expect any Project effects to the existing wetland habitat as no modifications to the Project's current operations are presently proposed. Appalachian does, however, appreciate the significance of any wetland habitat that occurs at the Project. Appalachian proposes to conduct a Wetland and Riparian Habitat Survey of the Project boundary. This survey will consist of field surveys to confirm, classify, and characterize wetland habitats and communities within the Project boundary. Wetlands mapped will be classified using the USFWS's wetland classification system (Cowardin et al. 1979), unless otherwise recommended by resource agencies. During the wetland survey, investigators will identify the dominant plants present within a wetland habitat to the species level. During the field habitat surveys, investigators will examine the soil matrix down to approximately 18 inches if possible, and analyze soil characteristics in the field for hydric soil indicators. Principal wetland functions and values will also be determined. This study will also include characterization of riparian habitat resources within the Project boundary.

6.2.6 Recreation and Land Use

6.2.6.1 Potential Issues

Recreational opportunities are limited at the Project due to such factors as limited Project lands, steep terrain, and the CSX Railroad tracks traversing the north shore of the Project boundary. The Project contains one FERC-approved Project recreation area, a canoe portage trail. The trail provides safe passage around the dam for those wishing to paddle the short reach downstream into Smith Mountain Lake. Although there are limited recreational opportunities within the Project boundary, there are various recreational opportunities adjacent to the Project and within the Project vicinity.

The VDCR, the Roanoke Valley Greenway Commission, and the Friends of Rivers of Virginia submitted initial comments concerning improvements related to the current canoe portage trail at the Project. The Roanoke Valley Greenway Commission also stated interest in extending the current Roanoke Valley Greenway along the impoundment of the Project.

6.2.6.2 Proposed Studies

Appalachian plans to conduct a recreational assessment of the Project to assess existing recreational opportunities and potential improvements to facilities. The scope of this study would be limited to within the FERC-approved Project boundary. Appalachian does not propose to conduct additional recreational use monitoring for this relicensing, but will incorporate any existing monitoring information into the study report and recommendations.

6.2.7 Aesthetic Resources

6.2.7.1 Potential Issues

No issues have been identified relevant to aesthetic resources.

6.2.7.2 Proposed Studies

No studies are being proposed.

6.2.8 Cultural and Tribal Resources

6.2.8.1 Potential Issues

The Project will undergo cultural resources consultation under the Section 106 process. The Section 106 process (defined at 36 CFR Part 800) is intended to accommodate historic preservation concerns with the needs of federal undertakings through a process of consultation with agency officials, the

SHPO, federally recognized Indian Tribes, and other parties with a potential interest in an undertaking's effects on historic properties.

The Licensee believes that the potential for continued operation of Project to impact historic and cultural properties is limited, particularly given the previous finding that the Project is not National Register eligible. However, if present, archaeological resources may be impacted as a result of ground-disturbing associated with maintenance activities over the term of the license.

6.2.8.2 Proposed Studies

Appalachian will assess the potential for Project effects (if any) on identified historic and archeological resources, and the need for any additional archaeological site file search and/or additional Phase I investigation of the Project's APE, through consultation with the VA SHPO.

6.2.9 Socioeconomic Resources

6.2.9.1 Potential Issues

No issues have been identified relevant to socioeconomic resources.

6.2.9.2 Proposed Studies

No studies are being proposed. Appalachian expects that the detailed information to be included in the license application exhibits will provide sufficient data for FERC's analysis of any socioeconomic impacts of relicensing the Project.

6.3 Potential Studies or Information Needs List

Based on the information provided in Section 6.2 and throughout this PAD, Appalachian will potentially undertake the following list of studies or surveys to supply additional information regarding specific resources of the Project area. It is understood that some of these studies and information-gathering activities may not be necessary depending on the successful negotiation of PM&E measures. Appalachian will further refine these studies based on comments received on this PAD, from the FERC scoping meeting, and filed study requests of the stakeholders. Appalachian will present these refined studies in the Proposed Study Plan (PSP):

- Shoreline Stability Assessment
- Water Quality Study
- Bypass Reach Aquatic Habitat Study

- Wetland and Riparian Habitat Survey
- Recreational Needs Assessment

Appalachian respectfully requests that resource agencies, Indian Tribes, and other licensing parties that may request a study consider FERC's study request criteria set forth in 18 CFR §5.9(b) and outlined below:

- Describe the goals and objectives of each study proposal and the information to be obtained;
- If applicable, explain the relevant resource management goals of the agencies or Indian Tribes with jurisdiction over the resource to be studied;
- If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study;
- Describe existing information concerning the subject of the study proposal and the need for additional information;
- Explain any nexus between Project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied and how the study results would inform the development of license requirements;
- Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge; and
- Describe considerations of the level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.

Section 7
Comprehensive Plans

In accordance with 18 CFR §5.6(d)(4)(III and IV), HDR, on behalf of AEP, has reviewed the July 2017 FERC List of Comprehensive Plans applicable to Virginia and adopted by FERC under Section 10(a)(2)(A) of the FPA, 16 USC §803(a)(2)(A). Of the 44 comprehensive plans relevant to Virginia, four are being considered applicable to the Project.

- U.S. Fish and Wildlife Service. Canadian Wildlife Service. 1986. North American waterfowl management plan. Department of the Interior. Environment Canada. May 1986.
- U.S. Fish and Wildlife Service. n.d. Fisheries USA: the recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, D.C.
- Virginia Department of Conservation and Recreation. The 2007 Virginia outdoors plan (SCORP). Richmond, Virginia.
- Virginia State Water Control Board. 1986. Minimum instream flow study – final report. Annadale, Virginia. February 1986.

Based on a review of the four comprehensive plans, HDR, on behalf of AEP, believes that the Project, as currently operated, is consistent with each of these plans. AEP anticipates additional consultation with the relicensing parties to confirm consistency.

Section 8
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APPENDIX A

PAD QUESTIONNAIRE AND DISTRIBUTION LIST

August 15, 2017

Subject: Niagara Hydroelectric Project (FERC No. 2466)
Relicensing Pre-Application Document Questionnaire

To the Attached Distribution List:

Appalachian Power Company (Appalachian) is the Licensee and operator of the Niagara Hydroelectric Project (FERC No. 2466) (Project) located on the Roanoke River in Roanoke County, Virginia. The Project is licensed by the Federal Energy Regulatory Commission (FERC).

The existing FERC license for the Project expires on February 29, 2024. Appalachian intends to pursue a new license for the Project and is preparing the Pre-Application Document (PAD) required by FERC's relicensing process. Appalachian has retained HDR, Inc. (HDR) for assistance with the relicensing process, including development of the PAD.

The PAD provides FERC and other entities with existing, relevant, and reasonably available information pertaining to the Project. This information is intended to help identify items of interest and related information needs, develop study requests and study plans, and prepare documents related to analyzing the relicensing application to be prepared by Appalachian. To prepare the PAD, Appalachian will use information in its possession and information obtained from others. On behalf of Appalachian, HDR is currently gathering information to support preparation of the PAD. Consistent with this effort, the purpose of this letter is to:

1) Notify interested governmental agencies, local governments, non-governmental organizations, Indian tribes, and individuals of the upcoming relicensing proceeding, and

2) Request your help in identifying existing, relevant, and reasonably available information related to the existing Project environment or known impacts or benefits of the Project.

Appalachian's goal is to produce a final comprehensive PAD by the end of 2017 and to file the PAD with the FERC in 2018. We are asking for your help to identify additional information of which you may be aware. To facilitate the information search, we have prepared the attached Pre-Application Document Information Questionnaire (PAD Questionnaire).

hdrinc.com

440 S Church Street, Suites 900 & 1000, Charlotte, NC 28202-2075
(704) 338-6700

Appalachian is requesting that you provide any relevant information for the PAD. Relevant information would include site-or-region specific studies, data, reports, or management plans on any of the following resource areas:

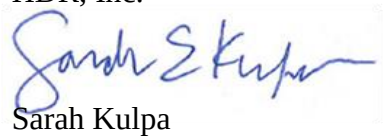
- Geology and soils
- Recreation and land use
- Water resources
- Aesthetic resources
- Fish and aquatic resources
- Cultural resources
- Wildlife and botanical resources
- Socioeconomic resources
- Wetlands, riparian, and littoral habitat
- Tribal resources
- Rare, threatened, and endangered species

To help ensure that your relevant information and resources are available for inclusion in the PAD, please fill out the attached PAD Questionnaire and return to Sarah Kulpa (of HDR) via email at sarah.kulpa@hdrinc.com or in the enclosed self-addressed, stamped envelope.

HDR intends to include relevant information in the PAD. Therefore, we respectfully request a response within 30 days of receipt of this letter. This will allow time for follow-up contacts that may be necessary. If we do not receive a response from you within 30 days, this will indicate you are not aware of any existing, relevant, and reasonably available information that describes the Project environment or known potential impacts of the Project, and that, unless you are representative of an Indian tribe or federal or state agency, you do not wish to remain on the distribution list for this relicensing process.

We want to thank you in advance for helping identify information that meets the criteria for inclusion in the PAD. We appreciate your assistance and look forward to working with you during the relicensing process. If you have any questions regarding this request or would like additional information, please contact me at sarah.kulpa@hdrinc.com or via phone at (704) 248-3620 or Elizabeth Parcell who represents Appalachian at ebparcell@aep.com or via phone at (540) 985-2441.

Sincerely,
HDR, Inc.



Sarah Kulpa
Project Manager

Attachment
cc: Elizabeth Parcell, on behalf of Appalachian

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US Senate
703 Hart Senate Office Building
Washington, DC 20510

Michael Reynolds
US National Park Service
1849 C Street, NW
Washington, DC 20240

Catherine Turton
US National Park Service
US Custom House, 3rd Floor
200 Chestnut Street
Philadelphia , PA 19106

Blue Ridge Parkway
199 Hemphill Knob Road
Asheville, NC 28803-8686

Blue Ridge National Heritage Area
195 Hemphill Knob Road
Asheville, NC 28803

George Washington and Jefferson National Forest
5162 Valleypointe Parkway
Roanoke, VA 24019

Chris Sullivan
Virginia Department of Forestry
900 Natural Resources Drive
Charlottesville, VA 22903

Jess Jones
Freshwater Mollusk Conservation Center Virginia Tech
1B Plantation Road
Blacksburg, VA 24061

Matthew Link
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218

Andrew Hammond
Virginia Department of Environmental Quality
629 East Main Street
Richmond, VA 23218

Tony Cario
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218

Scott Kudlas
Virginia Department of Environmental Quality
PO Box 1105
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Tim Pace
Virginia Roanoke River Basin Advisory Committee
PO Box 1105
Richmond, VA 23218

Virginia Department of Environmental Quality
3019 Peters Creek Road
Roanoke, VA 24019

Scott Smith
Virginia Department of Game and Inland Fisheries
1132 Thomas Jefferson Road
Forest, VA 24551

Robbie Ruhr
Virginia Department of Conservation and Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219

Rene Hypes
Virginia Department of Conservation and Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219

Craig Seaver
Virginia Department of Conservation and Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219

Julie Langan
Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221

Elizabeth Moore
Archaeological Society of Virginia
PO Box 70395
Richmond, VA 23255

Kelly Thomasson
Virginia Council on Indians
PO Box 2454
Richmond, VA 23218

Terry McAuliffe
Office of the Governor
PO Box 1475
Richmond, VA 23218

Blue Ridge Soil and Water Conservation District
1297 State Street
Rocky Mount, VA 24151

Paul Angermeier, VA Cooperative Fish and Wildlife Research Unit
Dept of Fisheries and Wildlife Conservation - Virginia Tech
106 Cheatham Hall
Blacksburg, VA 24061

Roanoke County
PO Box 29800
Roanoke, VA 24018-0798

Sherman P. Lea, Sr.
City of Roanoke
Noel C. Taylor Municipal Building
215 Church Avenue
Roanoke, VA 24011

Paula Shoffner
Tri-County Lakes Administrative Commission
400 Scruggs Road #200
Moneta, VA 24121

Western Virginia Water Authority
601 South Jefferson Street
Roanoke, VA 24011

Robert Gray
Pamunkey Indian Tribe
1059 Pocahontas Trail
King William, VA 23086

John Seebach
American Rivers
1104 14th St NW, Suite 1400
Washington, DC 20005

Kevin Richard Colburn
American Whitewater
PO Box 1540
Cullowhee, NC 28779

Steve Moyer
Trout Unlimited
1777 N. Kent Street, Suite 100
Arlington, VA 22209

American Canoe Association
503 Sophia Street, Suite 100
Fredericksburg, VA 22401

Appalachian Trail Conservancy
5162 Valleypointe Parkway
Roanoke, VA 24019

Bill Tanger
Friends of the Roanoke
257 Dancing Tree Lane
Hollins, VA 24019

Juanita Callis
Friends of the Roanoke
PO Box 1750
Roanoke, VA 24008-1750

Nature Conservancy
490 Westfield Road
Charlottesville, VA 22901-1633

Mike Pucci
Roanoke River Basin Association
150 Slayton Avenue
Danville, VA 24540

Upper Roanoke River Roundtable
PO Box 8221
Roanoke, VA 24014

Roanoke River Blueway
313 Luck Avenue SW
Roanoke, VA 24016

Liz Belcher
Roanoke Valley Greenway
1206 Kessler Mill Road
Salem, VA 24153

Blue Ridge Land Conservancy
722 1st Street SW, Suite L
Roanoke, VA 24016

Friends of the Blue Ridge Parkway
PO Box 20986
Roanoke, VA 24018

Blue Ridge Parkway Foundation
717 South Marshall Street, Suite 105 B
Winston-Salem, NC 27101

APPENDIX B

CONSULTATION CORRESPONDENCE AND PAD QUESTIONNAIRE RESPONSES

Niagara Relicensing (P-2466)
Correspondence Log

DATE	TYPE (FERC accession number, if applicable)	FROM	TO	SUBJECT
August 15, 2017	Letter	HDR (Sarah Kulpa)	Project Stakeholders[1]	Pre-Application Document Questionnaire
August 15, 2017	Letter	HDR (Sarah Kulpa)	VADEQ	Coastal Zone Consistency Determination
August 15, 2017	Letter	HDR (Sarah Kulpa)	USFWS	Request for Threatened and Endangered Species Information
August 15, 2017	Letter	HDR (Sarah Kulpa)	VDCR	Request for Threatened and Endangered Species Information
August 16, 2017	Letter	USFWS (Richard McCorkle)	HDR (Sarah Kulpa)	Niagara Questionnaire Response
August 16, 2017	Letter	Friends of the Rivers of VA (Bill Tanger)	HDR (Sarah Kulpa)	Niagara Questionnaire Response
August 16, 2017	Letter	Bureau of Indian Affairs (Harold Peterson)	HDR (Sarah Kulpa)	Niagara Questionnaire Response
August 16, 2017	Letter	VDEQ (Drew Hammond)	HDR (Sarah Kulpa)	Niagara Questionnaire Response
August 23, 2017	Email	VDCR (Robbie Rhur)	HDR (Sarah Kulpa)	Contacts for Recreation and Scenic Resources and Response to Threatened and Endangered Species
September 1, 2017	Letter	VDEQ (Bettina Sullivan)	HDR (Sarah Kulpa)	Response to Coastal Zone Consistency Determination

[1] Project Stakeholders refers to include representatives from the Federal Energy Regulatory Commission (FERC), U.S. Fish and Wildlife Service (USFWS), U.S. Department of Agricultural, U.S. Forest Service (USFS), U.S. National Park Service (NPS), NOAA Fisheries Service, U.S. Department of Interior, FEMA, U.S. Environmental Protection Agency, U.S. Geological Survey, U.S. House of Representatives, George Washington and Jefferson National Forest, Virginia Department of Environmental Quality (VADEQ), Virginia Department of Game and Inland Fisheries (VDGIF), Advisory Council on Historic Preservation, Freshwater Mollusk Conservation, Virginia Department of Forestry, Virginia Department of Conservation and Recreation (VDCR), Archeological Society of Virginia, Virginia Council on Indians, Virginia Department of Historic Resources, and local and state governmental agencies and NGO's.

DATE	TYPE (FERC accession number, if applicable)	FROM	TO	SUBJECT
September 14, 2017	Letter	Tri-County Lakes Administrative Commission (Paula Shoffner)	HDR (Sarah Kulpa)	Niagara Questionnaire Response
September 15, 2017	Letter	Roanoke Valley Greenway Coordination (Liz Belcher)	HDR (Sarah Kulpa)	Niagara Questionnaire Response
September 20, 2017	Letter	VADCR	HDR (Sarah Kulpa)	Review of Biotics Data System for occurrences of natural heritage resources.
September 21, 2017	Email	VA Department of Fish and Wildlife Conservation	HDR (Sarah Kulpa)	Niagara Questionnaire Response
October 24, 2017	Letter	Blue Ridge Soil & Water Conservation District	HDR (Sarah Kulpa)	Niagara Questionnaire Response
April 25, 2018	Letter (20180425-3026)	FERC	Tribal Leaders (Chief Bill Harris, Deborah Dotson, Chief Dean Branham)	Invitation to participation in the relicensing process
September 10, 2018	Letter (20180910-3002)	FERC (Allyson Conner)	Public Files	Update on initiating consultation with tribes

August 15, 2017

Subject: **Niagara Hydroelectric Project (FERC No. 2466)**
Relicensing Pre-Application Document Questionnaire

To the Attached Distribution List:

Appalachian Power Company (Appalachian) is the Licensee and operator of the Niagara Hydroelectric Project (FERC No. 2466) (Project) located on the Roanoke River in Roanoke County, Virginia. The Project is licensed by the Federal Energy Regulatory Commission (FERC).

The existing FERC license for the Project expires on February 29, 2024. Appalachian intends to pursue a new license for the Project and is preparing the Pre-Application Document (PAD) required by FERC's relicensing process. Appalachian has retained HDR, Inc. (HDR) for assistance with the relicensing process, including development of the PAD.

The PAD provides FERC and other entities with existing, relevant, and reasonably available information pertaining to the Project. This information is intended to help identify items of interest and related information needs, develop study requests and study plans, and prepare documents related to analyzing the relicensing application to be prepared by Appalachian. To prepare the PAD, Appalachian will use information in its possession and information obtained from others. On behalf of Appalachian, HDR is currently gathering information to support preparation of the PAD. Consistent with this effort, the purpose of this letter is to:

1) Notify interested governmental agencies, local governments, non-governmental organizations, Indian tribes, and individuals of the upcoming relicensing proceeding, and

2) Request your help in identifying existing, relevant, and reasonably available information related to the existing Project environment or known impacts or benefits of the Project.

Appalachian's goal is to produce a final comprehensive PAD by the end of 2017 and to file the PAD with the FERC in 2018. We are asking for your help to identify additional information of which you may be aware. To facilitate the information search, we have prepared the attached Pre-Application Document Information Questionnaire (PAD Questionnaire).

hdrinc.com

440 S Church Street, Suites 900 & 1000, Charlotte, NC 28202-2075
(704) 338-6700

Appalachian is requesting that you provide any relevant information for the PAD. Relevant information would include site-or-region specific studies, data, reports, or management plans on any of the following resource areas:

- Geology and soils
- Recreation and land use
- Water resources
- Aesthetic resources
- Fish and aquatic resources
- Cultural resources
- Wildlife and botanical resources
- Socioeconomic resources
- Wetlands, riparian, and littoral habitat
- Tribal resources
- Rare, threatened, and endangered species

To help ensure that your relevant information and resources are available for inclusion in the PAD, please fill out the attached PAD Questionnaire and return to Sarah Kulpa (of HDR) via email at sarah.kulpa@hdrinc.com or in the enclosed self-addressed, stamped envelope.

HDR intends to include relevant information in the PAD. Therefore, we respectfully request a response within 30 days of receipt of this letter. This will allow time for follow-up contacts that may be necessary. If we do not receive a response from you within 30 days, this will indicate you are not aware of any existing, relevant, and reasonably available information that describes the Project environment or known potential impacts of the Project, and that, unless you are representative of an Indian tribe or federal or state agency, you do not wish to remain on the distribution list for this relicensing process.

We want to thank you in advance for helping identify information that meets the criteria for inclusion in the PAD. We appreciate your assistance and look forward to working with you during the relicensing process. If you have any questions regarding this request or would like additional information, please contact me at sarah.kulpa@hdrinc.com or via phone at (704) 248-3620 or Elizabeth Parcell who represents Appalachian at ebparcell@aep.com or via phone at (540) 985-2441.

Sincerely,
HDR, Inc.

Sarah Kulpa
Project Manager

Attachment
cc: Elizabeth Parcell, on behalf of Appalachian

DISTRIBUTION LIST
Niagara Hydroelectric Project (FERC No. 2466)

Charlene Dwin Vaughn
Advisory Council on Historic Preservation
401 F Street NW, Suite 308
Washington, DC 20001-2637

Kimberly Bose
Federal Energy Regulatory Commission
888 1st St NE
Washington, DC 20426

FEMA Region 3
615 Chestnut Street
One Independence Mall, Sixth Floor
Philadelphia , PA 19106-4404

John Bullard
NOAA Fisheries Service
Greater Atlantic Reg'l Fisheries Office
55 Great Republic Drive
Gloucester, MA 01930-2276

John A. Bricker
US Department of Agriculture
Natural Resources Conservation Service
1606 Santa Rosa Road, Suite 209
Richmond, VA 23229-5014

Harold Peterson
US Department of the Interior
545 Marriott Dr, Suite 700
Nashville, TN 37214

US Department of the Interior
1849 C Street, NW
Washington, DC 20240

Lindy Nelson, US Department of the Interior, Philadelphia Region
Custom House, Room 244
200 Chestnut Street
Philadelphia , PA 19106

Barbara Rudnick
US Environmental Protection Agency
1650 Arch Street
Philadelphia , PA 19103-2029

Martin Miller
US Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035

Cindy Schulz
US Fish and Wildlife Service
6669 Short Lane
Gloucester, VA 23061

Richard C. McCorkle
US Fish and Wildlife Service
110 Radnor Road, Suite 101
State College, PA 16801

Elizabeth Merz
US Forest Service
3714 Highway 16
Marion, VA 24354

US Forest Service
1400 Independence Avenue NW
Washington, DC 20230

US Geological Survey
John W. Powell Building
12201 Sunrise Valley Drive
Reston, VA 20192

Bob Goodlatte
US House of Representatives
10 Franklin Road SE, Suite 540
Roanoke, VA 24011

Tim Kaine
US Senate
231 Russell Senate Office Building
Washington, DC 20510

Mark Warner
US Senate
703 Hart Senate Office Building
Washington, DC 20510

Michael Reynolds
US National Park Service
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Washington, DC 20240

Catherine Turton
US National Park Service
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Scott Kudlas
Virginia Department of Environmental Quality
PO Box 1105
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Tim Pace
Virginia Roanoke River Basin Advisory Committee
PO Box 1105
Richmond, VA 23218

DISTRIBUTION LIST
Niagara Hydroelectric Project (FERC No. 2466)

Virginia Department of Environmental Quality
3019 Peters Creek Road
Roanoke, VA 24019

Scott Smith
Virginia Department of Game and Inland Fisheries
1132 Thomas Jefferson Road
Forest, VA 24551

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Virginia Department of Conservation and Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219

Rene Hypes
Virginia Department of Conservation and Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219

Craig Seaver
Virginia Department of Conservation and Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219

Julie Langan
Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221

Elizabeth Moore
Archaeological Society of Virginia
PO Box 70395
Richmond, VA 23255

Kelly Thomasson
Virginia Council on Indians
PO Box 2454
Richmond, VA 23218

Terry McAuliffe
Office of the Governor
PO Box 1475
Richmond, VA 23218

Blue Ridge Soil and Water Conservation District
1297 State Street
Rocky Mount, VA 24151

Paul Angermeier, VA Cooperative Fish and Wildlife Research Unit
Dept of Fisheries and Wildlife Conservation - Virginia Tech
106 Cheatham Hall
Blacksburg, VA 24061

Roanoke County
PO Box 29800
Roanoke, VA 24018-0798

Sherman P. Lea, Sr.
City of Roanoke
Noel C. Taylor Municipal Building
215 Church Avenue
Roanoke, VA 24011

Paula Shoffner
Tri-County Lakes Administrative Commission
400 Scruggs Road #200
Moneta, VA 24121

Western Virginia Water Authority
601 South Jefferson Street
Roanoke, VA 24011

Robert Gray
Pamunkey Indian Tribe
1059 Pocahontas Trail
King William, VA 23086

John Seebach
American Rivers
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Kevin Richard Colburn
American Whitewater
PO Box 1540
Cullowhee, NC 28779

Steve Moyer
Trout Unlimited
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Arlington, VA 22209

American Canoe Association
503 Sophia Street, Suite 100
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Friends of the Roanoke
257 Dancing Tree Lane
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Juanita Callis
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PO Box 1750
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490 Westfield Road
Charlottesville, VA 22901-1633

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Roanoke River Basin Association
150 Slayton Avenue
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PO Box 8221
Roanoke, VA 24014

Roanoke River Blueway
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Roanoke, VA 24016

Liz Belcher
Roanoke Valley Greenway
1206 Kessler Mill Road
Salem, VA 24153

Blue Ridge Land Conservancy
722 1st Street SW, Suite L
Roanoke, VA 24016

Friends of the Blue Ridge Parkway
PO Box 20986
Roanoke, VA 24018

DISTRIBUTION LIST
Niagara Hydroelectric Project (FERC No. 2466)

Blue Ridge Parkway Foundation
717 South Marshall Street, Suite 105 B
Winston-Salem, NC 27101

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

Appalachian Power Company (Appalachian) is the Licensee and operator of the Niagara Hydroelectric Project (FERC No. 2466) (Project), located along the Roanoke River in Roanoke County, Virginia (see attached map). Appalachian, with assistance from HDR, Inc. (HDR), is beginning the Federal Energy Regulatory Commission (FERC) relicensing process for the Project. Accordingly, Appalachian is preparing a Pre-Application Document (PAD). The PAD provides FERC and other entities with existing, relevant, and reasonably available information pertaining to the Project.

This information is intended to help identify items of interest and related information needs, develop study requests and study plans, and prepare documents related to analyzing the relicensing application to be prepared by Appalachian. To prepare the PAD, Appalachian will use information in its possession and information obtained from others. This PAD Questionnaire will be used by Appalachian to help identify sources of existing, relevant, and reasonably available information that is not currently in Appalachian's possession. Comments and/or questions regarding this request may be sent to Sarah Kulpa with HDR via email at sarah.kulpa@hdrinc.com or via phone at (704) 248-3620, or to Elizabeth Parcell who represents Appalachian at ebparcell@aep.com or via phone at (540) 985-2441.

Please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.

Appalachian and HDR respectfully request the following information:

1. Information about person completing the questionnaire:

Name & Title	
Organization	
Address	
Phone	
Email Address	

2. Do you or your organization know of existing, relevant and reasonably available information that describes the existing Niagara Hydroelectric Project's environment (i.e., information regarding the Roanoke River in or close to the Niagara Hydroelectric Project)?

___ Yes (*If yes, please complete 2a through 2e)* __ No (*If no, go to 3*)

a. If yes, please circle the specific resource area(s) that the information relates to:

- ■ Geology and soils
- ■ Water resources
- ■ Fish and aquatic resources
- ■ Wildlife and botanical resources
- ■ Wetlands, riparian, and littoral habitat
- ■ Rare, threatened & endangered species
- ■ Recreation and land use
- ■ Aesthetic resources
- ■ Cultural resources
- ■ Socio-economic resources
- ■ Tribal resources
- ■ Other resource information

b. Please briefly describe the information referenced above or list available documents *(additional information may be provided on page 4 of this questionnaire).*

c. Where can Appalachian obtain this information?

d. Please indicate whether there is a specific representative you wish to designate for a potential follow-up contact by Appalachian's or HDR's representative for the resource area(s) checked above *(additional information may be provided on page 4 of this questionnaire).*

Representative Contact Information

Name	
Address	
Phone	
Email Address	

Name	
Address	
Phone	
Email Address	

e. Based on the specific resources listed in 2a, are you aware of any specific issues or improvements pertaining to the identified resource area(s)? *(Additional information may be provided on page 4 of this questionnaire.)*

___ Yes *(please list specific issues below)* ___ No

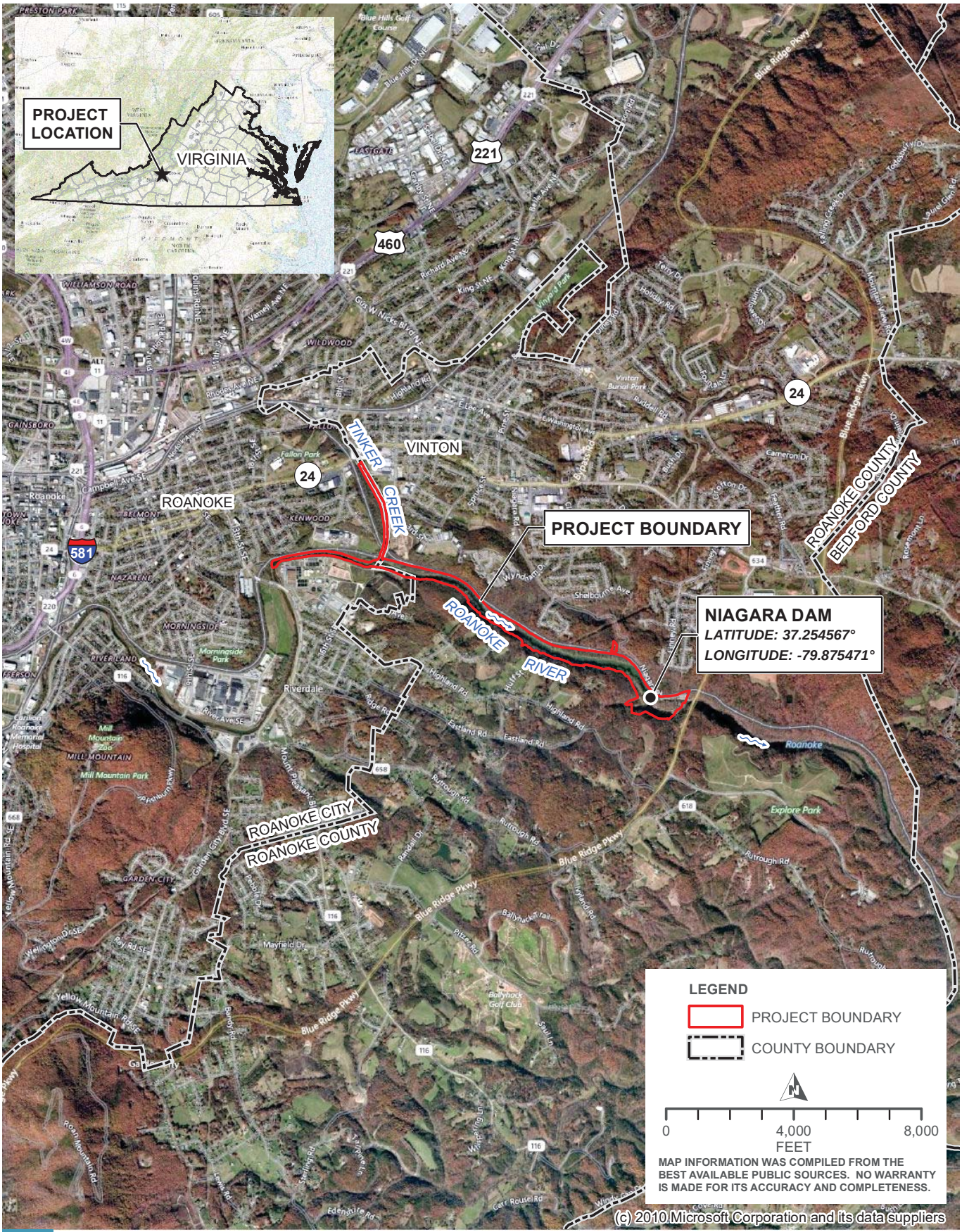
Resource Area	Specific Issue

3. Do you or your organization plan to participate in the Niagara Hydroelectric Project relicensing proceeding? ___ Yes ___ No

4. We are interested in your comments. If you have comments and/or questions regarding the Niagara Hydroelectric Project or the relicensing process, please provide below. In addition, this questionnaire has been sent to the people/organizations shown on the attached distribution list; please let us know if there is anyone else you believe should receive this questionnaire that is not included on the attached distribution list.

(Comments and/or questions may be sent via email to: sarah.kulpa@hdrinc.com or ebparcell@aep.com)

As noted above, please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.



PROJECT LOCATION MAP

NIAGARA HYDROELECTRIC PROJECT (FERC NO. 2466)

ROANOKE COUNTY, VIRGINIA

PATH: N:\GIS2\PROJECTS\AEP\10068005_AEP_AEP_NIAGARA_PAD_NOI\7.0_GIS_MODELS\7.2_WORK_IN_PROGRESS\MAP_DOCS\FINAL\MAP_8_5X11P_20170814_PROJECT_LOCATION_MAP.MXD - USER: DSOUCIE - DATE: 8/14/2017

AUGUST 2017

August 15, 2017

Bettina Sullivan, Manager
Virginia Department of Environmental Quality
Federal Consistency Office
PO Box 1105
Richmond, VA 23218

Subject: Niagara Hydroelectric Project (FERC No. 2466)
Coastal Zone Consistency Determination

Dear Ms. Sullivan,

On behalf of Appalachian Power Company (Appalachian), HDR, Inc. (HDR) is gathering information in support of the Pre-Application Document (PAD) for the upcoming Federal Energy Regulatory Commission (FERC) relicensing of the Niagara Hydroelectric Project (FERC No. 2466) (Project).

Consistent with this effort, HDR is requesting a determination from your office regarding the applicability of the State's Coastal Zone Policies to the Project, which is located on the Roanoke River in Roanoke County, Virginia. Based on a review of applicable information, we do not believe that the Project is located within the State's Coastal Zone and are requesting confirmation of this determination from your office. In support of this confirmation, we have included a map indicating the location of this facility.

It is our intent to include the results of the determination in the PAD. Therefore, we respectfully request a response to this determination within 30 days of the date of this letter. If you have any questions or need additional information regarding this Project or its location, please feel free to contact me at (704) 248-3620 or sarah.kulpa@hdrinc.com.

Thank you for your assistance with this request.

Sincerely,
HDR, Inc.

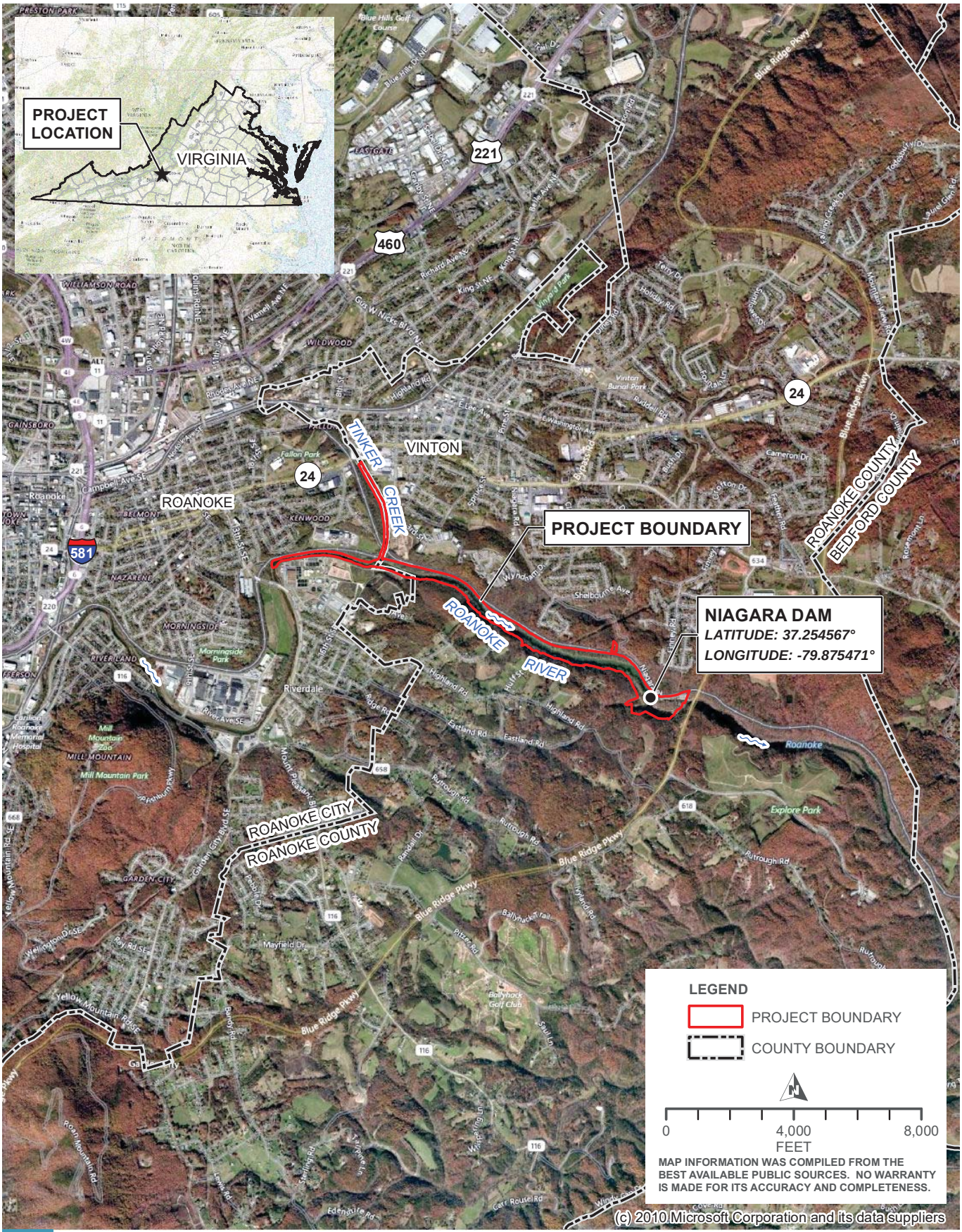
Sarah Kulpa
Project Manager

hdrinc.com

440 S Church Street, Suites 900 & 1000, Charlotte, NC 28202-2075
(704) 338-6700

Attachment

cc: Elizabeth Parcell, on behalf of Appalachian



PROJECT LOCATION MAP

NIAGARA HYDROELECTRIC PROJECT (FERC NO. 2466)

ROANOKE COUNTY, VIRGINIA

PATH: N:\GIS2\PROJECTS\AEP\10068005_AEP_AEP_NIAGARA_PAD_NOI\7.0_GIS_MODELS\7.2_WORK_IN_PROGRESS\MAP_DOCS\FINAL\MAP_8_5X11P_20170814_PROJECT_LOCATION_MAP.MXD - USER: DSOUCIE - DATE: 8/14/2017

AUGUST 2017

August 15, 2017

Martin Miller, Chief
United States Fish and Wildlife Service
Northeast Region 5
300 Westgate Center Drive
Hadley, MA 01035

Subject: **Niagara Hydroelectric Project (FERC No. 2466)**
Request for Threatened and Endangered Species Information

Dear Mr. Miller,

On behalf of Appalachian Power Company (Appalachian), HDR, Inc. (HDR) is gathering information in support of the Pre-Application Document (PAD) for the upcoming Federal Energy Regulatory Commission (FERC) relicensing of the Niagara Hydroelectric Project (FERC No. 2466) (Project). In support of this process, HDR has requested an official species list regarding any threatened or endangered species and any critical habitat within the Project area using the United States Fish and Wildlife Service's (USFWS) IPaC system online.

The Niagara Hydroelectric Project is located on the Roanoke River in Roanoke County, Virginia. The attached report was generated from the USFWS' IPaC system and includes a map that shows the area of interest for which the information was requested and the general location of the facility.

It is our intent to include these results in the PAD. Therefore, we respectfully request your concurrence that this information is accurate within 30 days of the date of this letter. If you have any questions or need additional information regarding this Project or its location, please feel free to contact me at (704) 248-3620 or sarah.kulpa@hdrinc.com.

Thank you for your assistance with this request.

Sincerely,
HDR, Inc.

Sarah Kulpa
Project Manager

hdrinc.com

440 S Church Street, Suites 900 & 1000, Charlotte, NC 28202-2075
(704) 338-6700

Attachment

cc: Elizabeth Parcell, on behalf of Appalachian

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032
http://www.fws.gov/northeast/virginiafield/

In Reply Refer To:
Consultation Code: 05E2VA00-2017-SLI-4484
Event Code: 05E2VA00-2017-E-09984
Project Name: Niagara Hydroelectric Project

August 14, 2017

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to

utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
(804) 693-6694

Project Summary

Consultation Code: 05E2VA00-2017-SLI-4484

Event Code: 05E2VA00-2017-E-09984

Project Name: Niagara Hydroelectric Project

Project Type: DAM

Project Description: Appalachian Power Company (Appalachian) is the Licensee and operator of the 2.4 megawatt Niagara Hydroelectric Project (FERC No. 2466) (Project) located on the Roanoke River in Roanoke County, Virginia. The Project is licensed by the Federal Energy Regulatory Commission (FERC).

The existing FERC license for the Project expires on February 29, 2024. Appalachian intends to pursue a new license for the Project and is preparing the Pre-Application Document (PAD) required by FERC's relicensing process. Appalachian has retained HDR, Inc. (HDR) for assistance with the relicensing process, including development of the PAD. As part of the data collection for the PAD, Appalachian is requesting information regarding rare, threatened and endangered species and critical habitat within the Project area.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/37.26401130112308N79.89572250791355W

Counties: Roanoke, VA | Roanoke, VA

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

Mammals

NAME	STATUS
Indiana Bat *Myotis sodalis* There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Fishes

NAME	STATUS
Roanoke Logperch *Percina rex* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1134	Endangered

Critical habitats

There are no critical habitats within your project area under this office's jurisdiction.

USFWS National Wildlife Refuges And Fish Hatcheries

Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuges or fish hatcheries within your project area.

August 15, 2017

Faye McKinney
Virginia Department of Conservation and Recreation
Natural Heritage Program
600 East Main Street, 24th Floor
Richmond, VA 23219

Subject: Niagara Hydroelectric Project (FERC No. 2466)
Request for Threatened and Endangered Species Information

Dear Ms. McKinney,

On behalf of Appalachian Power Company (Appalachian), HDR, Inc. (HDR) is gathering information in support of the Pre-Application Document (PAD) for the upcoming Federal Energy Regulatory Commission (FERC) relicensing of the Niagara Hydroelectric Project (FERC No. 2466) (Project). In support of this process, HDR is requesting information regarding the following within the Project area:

- State-listed threatened or endangered species;
- Species proposed for listing as threatened or endangered, or species of concern;
- Designated or proposed critical habitat; and
- Candidate species.

The Niagara Hydroelectric Project is located on the Roanoke River in Roanoke County, Virginia. The attached map shows the area of interest for which the information is being requested and the general location of the facility.

It is our intent to include the results of this information request in the PAD. Therefore, we respectfully request a response to this request within 30 days of the date of this letter. If you have any questions or need additional information regarding this Project or its location, please feel free to contact me at (704) 248-3620 or sarah.kulpa@hdrinc.com.

Thank you for your assistance with this request.

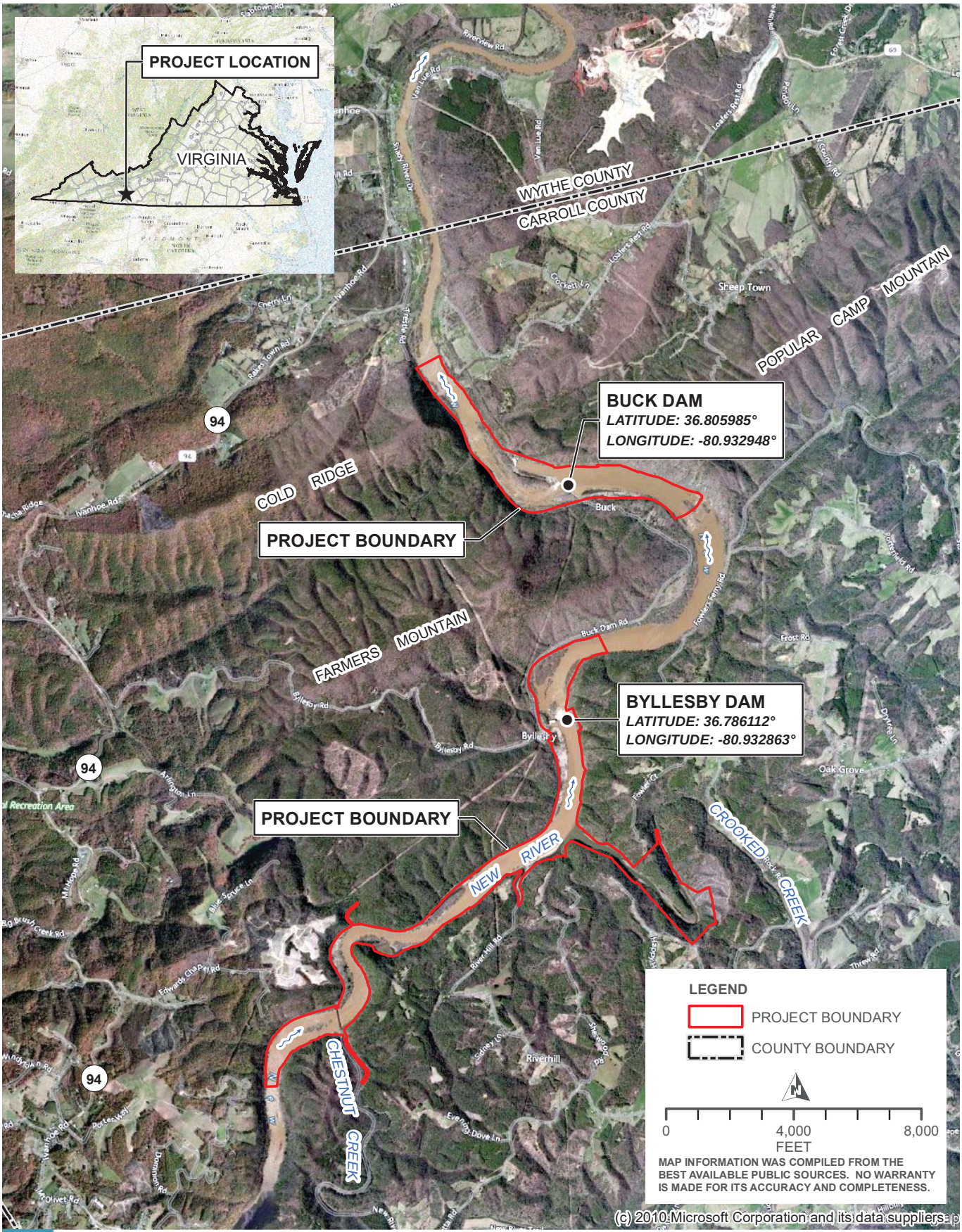
Sincerely,
HDR, Inc.

Sarah Kulpa
Project Manager

hdrinc.com

440 S Church Street, Suites 900 & 1000, Charlotte, NC 28202-2075
(704) 338-6700

Attachment
cc: Elizabeth Parcell, on behalf of Appalachian



PROJECT LOCATION MAP

BYLLESBY & BUCK HYDROELECTRIC PROJECT (FERC NO. 2514)

CARROLL COUNTY, VIRGINIA

PATH: \\PWME-INFS01\GIS\GIS2\PROJECTS\AEP\10067919_AEP_BYLLESBY_BUCK_PAD_NOI\7.0_GIS_MODELS\7.2_WORK_IN_PROGRESS\MAP_DOCS\FINAL\MAP_8_5X11P_20171106_PROJECT_LOCATION_MAP.MXD - USER: DSOUCIE - DATE: 11/6/2017 NOVEMBER 2017

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

Appalachian Power Company (Appalachian) is the Licensee and operator of the Niagara Hydroelectric Project (FERC No. 2466) (Project), located along the Roanoke River in Roanoke County, Virginia (see attached map). Appalachian, with assistance from HDR, Inc. (HDR), is beginning the Federal Energy Regulatory Commission (FERC) relicensing process for the Project. Accordingly, Appalachian is preparing a Pre-Application Document (PAD). The PAD provides FERC and other entities with existing, relevant, and reasonably available information pertaining to the Project.

This information is intended to help identify items of interest and related information needs, develop study requests and study plans, and prepare documents related to analyzing the relicensing application to be prepared by Appalachian. To prepare the PAD, Appalachian will use information in its possession and information obtained from others. This PAD Questionnaire will be used by Appalachian to help identify sources of existing, relevant, and reasonably available information that is not currently in Appalachian's possession. Comments and/or questions regarding this request may be sent to Sarah Kulpa with HDR via email at sarah.kulpa@hdrinc.com or via phone at (704) 248-3620, or to Elizabeth Parcell who represents Appalachian at ebparcell@aep.com or via phone at (540) 985-2441.

Please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.

Appalachian and HDR respectfully request the following information:

1. Information about person completing the questionnaire:

Name & Title	Mr. Richard McCorkle Fish and Wildlife Biologist
Organization	U.S. Fish & Wildlife Service
Address	110 Radnor Rd., Suite 101 State College, PA 16801
Phone	814-206-7470
Email Address	richard_mccorkle@fws.gov

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

2. **Do you or your organization know of existing, relevant and reasonably available information that describes the existing Niagara Hydroelectric Project's environment (i.e., information regarding the Roanoke River in or close to the Niagara Hydroelectric Project)?**

__ Yes (*If yes, please complete 2a through 2e)* __ No (*If no, go to 3*)

a. **If yes, please circle the specific resource area(s) that the information relates to:**

- ■ Geology and soils
- ■ Water resources
- ■ Fish and aquatic resources
- ■ Wildlife and botanical resources
- ■ Wetlands, riparian, and littoral habitat
- ■ Rare, threatened & endangered species
- ■ Recreation and land use
- ■ Aesthetic resources
- ■ Cultural resources
- ■ Socio-economic resources
- ■ Tribal resources
- ■ Other resource information

b. **Please briefly describe the information referenced above or list available documents *(additional information may be provided on page 4 of this questionnaire).***

We maintain a GIS database* of federally listed threatened and endangered species locations. Also included are candidate species. Roanoke logperch occurs in the project area. My agency also maintains National Wetland Inventory data which should be available on-line.

*Not publicly available

c. **Where can Appalachian obtain this information?**

https://www.fws.gov/wetlands/ – for NWI data

d. **Please indicate whether there is a specific representative you wish to designate for a potential follow-up contact by Appalachian's or HDR's representative for the resource area(s) checked above** ***(additional information may be provided on page 4 of this questionnaire).***

Representative Contact Information

Name	Richard McCorkle
Address	
Phone	
Email Address	

Name	
Address	
Phone	
Email Address	

e. **Based on the specific resources listed in 2a, are you aware of any specific issues or improvements pertaining to the identified resource area(s)?** ***(Additional information may be provided on page 4 of this questionnaire.)***

___ **Yes** ***(please list specific issues below)*** ___ **No**

Resource Area	Specific Issue
RTE species	Roanoke logperch entrainment or other effects are possible concern

3. **Do you or your organization plan to participate in the Niagara Hydroelectric Project relicensing proceeding?** ✓ **Yes** ___ **No**

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

Appalachian Power Company (Appalachian) is the Licensee and operator of the Niagara Hydroelectric Project (FERC No. 2466) (Project), located along the Roanoke River in Roanoke County, Virginia (see attached map). Appalachian, with assistance from HDR, Inc. (HDR), is beginning the Federal Energy Regulatory Commission (FERC) relicensing process for the Project. Accordingly, Appalachian is preparing a Pre-Application Document (PAD). The PAD provides FERC and other entities with existing, relevant, and reasonably available information pertaining to the Project.

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Please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.

Appalachian and HDR respectfully request the following information:

1. Information about person completing the questionnaire:

Name & Title	Bill Tanger, Chair, FORVA Bill Tanger, Co-chair Ro Riv Blueway Comm
Organizations	Friends of the Rivers of VA Roanoke River Blueway Committee
Address	257 Dancing Tree Lane Hollins VA 24019
Phone Cell	540.266.0237
Email Address	bill.tanger@verizon.net

2. Do you or your organization know of existing, relevant and reasonably available information that describes the existing Niagara Hydroelectric Project's environment (i.e., information regarding the Roanoke River in or close to the Niagara Hydroelectric Project)?

   ✓ Yes (*If yes, please complete 2a through 2e)* __ No (*If no, go to 3*)

   a. If yes, please circle the specific resource area(s) that the information relates to:

- ■ Geology and soils
- ■ Water resources
- ■ Fish and aquatic resources
- ■ Wildlife and botanical resources
- ■ Wetlands, riparian, and littoral habitat
- ■ Rare, threatened & endangered species
- ■ Recreation and land use
- ■ Aesthetic resources
- ■ Cultural resources
- ■ Socio-economic resources
- ■ Tribal resources
- ■ Other resource information

   b. Please briefly describe the information referenced above or list available documents *(additional information may be provided on page 4 of this questionnaire).*

Roanoke River Blueway Committee has much information on river recreation, including:
- website
- map
- brochure (under development)
- access issue information

   c. Where can Appalachian obtain this information?

Roanoke River Blueway Committee
FORVA

d. Please indicate whether there is a specific representative you wish to designate for a potential follow-up contact by Appalachian's or HDR's representative for the resource area(s) checked above *(additional information may be provided on page 4 of this questionnaire).*

Representative Contact Information

Name Bill Tanger	Bill Tanger
Address	257 Dancing Tree Lane Hollins VA 24019
Phone	540-266-0237
Email Address	Bill-Tanger@verizon.net

Name	
Address	
Phone	
Email Address	

e. Based on the specific resources listed in 2a, are you aware of any specific issues or improvements pertaining to the identified resource area(s)? *(Additional information may be provided on page 4 of this questionnaire.)*

✓ Yes *(please list specific issues below)* ___ No

Resource Area	Specific Issue
Niagara pond	Portage around dam needs review and better solution Access at dam needs better plan

3. Do you or your organization plan to participate in the Niagara Hydroelectric Project relicensing proceeding? ✓ Yes ___ No

4. We are interested in your comments. If you have comments and/or questions regarding the Niagara Hydroelectric Project or the relicensing process, please provide below. In addition, this questionnaire has been sent to the people/organizations shown on the attached distribution list; please let us know if there is anyone else you believe should receive this questionnaire that is not included on the attached distribution list.

Dist list:
Susan Mills is no longer the contact for Friends of the BR Parkway

(Comments and/or questions may be sent via email to: sarah.kulpa@hdrinc.com or ebparcell@aep.com)

As noted above, please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

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Appalachian and HDR respectfully request the following information:

1. Information about person completing the questionnaire:

Name & Title	Harold Peterson, Natural Resources Officer
Organization	Bureau of Indian Affairs, Eastern Region Office
Address	545 Marriott Dr Ste 700 Nashville, TN 37214
Phone	615-564-6838
Email Address	harold.peterson@bia.gov

2. Do you or your organization know of existing, relevant and reasonably available information that describes the existing Niagara Hydroelectric Project's environment (i.e., information regarding the Roanoke River in or close to the Niagara Hydroelectric Project)?

   _J_ Yes (*If yes, please complete 2a through 2e)* __ No (*If no, go to 3*)

   a. If yes, please circle the specific resource area(s) that the information relates to:

- ■ Geology and soils
- ■ Water resources
- ■ Fish and aquatic resources
- ■ Wildlife and botanical resources
- ■ Wetlands, riparian, and littoral habitat
- ■ Rare, threatened & endangered species
- ■ Recreation and land use
- ■ Aesthetic resources
- ■ Cultural resources
- ■ Socio-economic resources
- ■ Tribal resources
- ■ Other resource information

   b. Please briefly describe the information referenced above or list available documents *(additional information may be provided on page 4 of this questionnaire).*

The Pamunkey Indian Tribe has an interest in all projects in Virginia.

   c. Where can Appalachian obtain this information?

The Tribe has a new mailing address:

1054 Pocahontas Trail
King William, VA 23086

d. Please indicate whether there is a specific representative you wish to designate for a potential follow-up contact by Appalachian's or HDR's representative for the resource area(s) checked above *(additional information may be provided on page 4 of this questionnaire).*

Representative Contact Information

Name	
Address	
Phone	
Email Address	

Name	
Address	
Phone	
Email Address	

e. Based on the specific resources listed in 2a, are you aware of any specific issues or improvements pertaining to the identified resource area(s)? *(Additional information may be provided on page 4 of this questionnaire.)*

___ Yes *(please list specific issues below)* _X_ No

Resource Area	Specific Issue

3. Do you or your organization plan to participate in the Niagara Hydroelectric Project relicensing proceeding? _X_ Yes ___ No

4. We are interested in your comments. If you have comments and/or questions regarding the Niagara Hydroelectric Project or the relicensing process, please provide below. In addition, this questionnaire has been sent to the people/organizations shown on the attached distribution list; please let us know if there is anyone else you believe should receive this questionnaire that is not included on the attached distribution list.

(Comments and/or questions may be sent via email to: sarah.kulpa@hdrinc.com or ebparcell@aep.com)

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Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

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This information is intended to help identify items of interest and related information needs, develop study requests and study plans, and prepare documents related to analyzing the relicensing application to be prepared by Appalachian. To prepare the PAD, Appalachian will use information in its possession and information obtained from others. This PAD Questionnaire will be used by Appalachian to help identify sources of existing, relevant, and reasonably available information that is not currently in Appalachian's possession. Comments and/or questions regarding this request may be sent to Sarah Kulpa with HDR via email at sarah.kulpa@hdrinc.com or via phone at (704) 248-3620, or to Elizabeth Parcell who represents Appalachian at ebparcell@aep.com or via phone at (540) 985-2441.

Please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.

Appalachian and HDR respectfully request the following information:

1. Information about person completing the questionnaire:

Name & Title	Liz Belcher Roanoke Valley Greenway Coordinator
Organization	Roanoke Valley Greenway Commission
Address	1206 Kessler Mill Road Salem, VA 24153
Phone	540-777-6330 (office) 540-392-0526 (cell)
Email Address	Liz.belcher@greenways.org

2. Do you or your organization know of existing, relevant and reasonably available information that describes the existing Niagara Hydroelectric Project's environment (i.e., information regarding the Roanoke River in or close to the Niagara Hydroelectric Project)?

   _✓__ Yes (*If yes, please complete 2a through 2e)* __ No (*If no, go to 3*)

   a. If yes, please circle the specific resource area(s) that the information relates to:

✓_Geology and soils
✓_Water resources
✓_Fish and aquatic resources
✓_Wildlife and botanical resources
✓_Wetlands, riparian, and littoral habitat
✓_Rare, threatened & endangered species
✓_Recreation and land use
✓_Aesthetic resources
✓_Cultural resources
■ Socio-economic resources
■ Tribal resources
■ Other resource information

b. Please briefly describe the information referenced above or list available documents *(additional information may be provided on page 4 of this questionnaire).*

- Categorical Exclusion draft for Roanoke River Greenway East, WWTP to Blue Ridge Parkway, available through Roanoke County Parks & Rec or VDOT, Salem District
- Roanoke Valley/ Blue Ridge Parkway Trail Plan Environmental Assessment, available through Blue Ridge Parkway
- Roanoke River Blueway website, http://www.roanokeriverblueway.org/
- 2007 Update to the Roanoke Valley Conceptual Greenway Plan, http://greenways.org/
- 2017 update to the Greenway Plan is in progress, expected spring 2018
- Explore Park Adventure Plan, available from Roanoke County Parks & Rec

c. Where can Appalachian obtain this information?

Sources are listed above. I am source for update to the Greenway Plan

d. Please indicate whether there is a specific representative you wish to designate for a potential follow-up contact by Appalachian's or HDR's representative for the resource area(s) checked above *(additional information may be provided on page 4 of this questionnaire).*

Representative Contact Information

Name Liz Belcher	
Address	
Phone	
Email Address	

Name	
Address	
Phone	
Email Address	

e. Based on the specific resources listed in 2a, are you aware of any specific issues or improvements pertaining to the identified resource area(s)? *(Additional information may be provided on page 4 of this questionnaire.)*

__✓_ Yes *(please list specific issues below)* ___ No

Resource Area	Specific Issue
Recreation and land use	Roanoke River Greenway construction
Recreation and land use	Roanoke River Blueway and Niagara portage
Endangered species	Roanoke logperch
Water resources	DEQ TMDL study for Roanoke River

3. Do you or your organization plan to participate in the Niagara Hydroelectric Project relicensing proceeding? _✓__ Yes ___ No

4. We are interested in your comments. If you have comments and/or questions regarding the Niagara Hydroelectric Project or the relicensing process, please provide below. In addition, this questionnaire has been sent to the people/organizations shown on the attached distribution list; please let us know if there is anyone else you believe should receive this questionnaire that is not included on the attached distribution list.

Others who should receive this questionnaire:

- George Washington and Jefferson National Forest, 5162 Valleypointe Parkway Roanoke, VA 24019
- Western Virginia Water Authority, 601 South Jefferson St., Roanoke, VA 24011
- Appalachian Trail Conservancy, 5162 Valleypointe Parkway, Roanoke, VA 24019 (you list them in Blacksburg, which is an old address)

Comments

We have been working with local AEP staff for over 15 years on the Roanoke River Greenway project. This bicycle/pedestrian trail is 100% designed and environmental compliance is almost complete, through Roanoke County and VDOT, with an IPAC submitted to USFWS. Considerable environmental work, including surveys, geotech, wetland inventories, and bat counts, has been done. A portion of this greenway will be on AEP land and will constitute a new recreational feature that needs to be recognized in the re-licensing.

Since the last re-licensing, the Roanoke River Blueway has been established. This river trail has made the portage at Niagara very important. This portage needs improvements.

(Comments and/or questions may be sent via email to: sarah.kulpa@hdrinc.com or ebparcell@aep.com)

As noted above, please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.

Pre-Application Document Information Questionnaire for FERC Licensing

1. Contact Information for person completing the questionnaire:

Name & Title:	**Drew Hammond, Water Withdrawal Permitting & Compliance Manager**
Organization:	**Virginia Department of Environmental Quality**
	Office of Water Supply
Address:	**629 East Main St, Richmond VA 23218**
Phone:	**804-698-4101**
Email Address:	**Andrew.Hammond@deq.virginia.gov**

2. Do you know of any reasonably available materials or information related to the Project or the Project's environment?

✓ Yes (If yes, please complete 2.a. thru 2.e.) ❑ No (If no, please go to 3.)

a. Please indicate the specific resource area(s) for which you have information:

- ✓ Geology and soils
- ✓ Water resources
- ✓ Fish and aquatic resources
- ❑ Wildlife and botanical resources
- ❑ Wetlands, riparian, and littoral habitat
- ❑ Rare, threatened & endangered species
- ❑ Recreation and land use
- ❑ Aesthetic resources
- ❑ Cultural resources
- ❑ Socio-economic resources
- ❑ Tribal resources
- ✓ Other resource information WQ

b. Please briefly describe the information or list available documents: (Additional information may be provided on a separate page.)

- **Roanoke River flow data**
- **Upstream and downstream water users and associated water withdrawals in the Roanoke River and its watershed**
- **Roanoke River water quality data**

c. Where and how can Appalachian obtain this information?

DEQ Office of Water Supply has information on flow data and upstream and downstream water uses. Flow data can also be obtained through the USGS website. Water quality data for the Roanoke River can be obtained from the DEQ website or from the DEQ Water Quality Monitoring Program.

d. Please provide the names of other persons in your organization whom you wish to designate for a potential follow-up contact for the resource area(s) checked above. If you know of others who are not part of your organization but who may have relevant information, please provide their name(s) and contact information as well. **(Additional contacts may be provided on a separate page.)**

Representative Contact Information

Name & Title: **Tony Cario, Water Withdrawal Permit Writer**
Organization: **Virginia Department of Environmental Quality**
Office of Water Supply
Address: **P.O. Box 1105, Richmond VA 23218**
Phone: **804-698-4089**
Email Address: **Anthony.Cario@deq.virginia.gov**

Other Contact Information

Name & Title: Scott Kudlas, Director Office of Water Supply
Organization: Virginia Department of Environmental Quality
Address: P.O. Box 1105, Richmond VA 23218
Phone: (804) 698-4456
Email Address: Scott.Kudlas@deq.virginia.gov

e. Based on the resources listed in 2.a., are you aware of any specific issues pertaining to the identified resource area(s) such as water quality, wildlife habitat, endangered species or cultural resources that may be affected by the Project operations? **(Additional information may be provided on a separate page.)**

✓ Yes (Please list specific issues below) ❑ No

Resource Area	Specific issue
Water quality – May be affected by the alteration of flow affecting water temperature, dissolved oxygen levels or other water quality aspects in the Roanoke River.	
Downstream water uses – Downstream water withdrawals for public water supplies or other beneficial uses may be affected by the alterations of flow from a hydroelectric facility and would need to be assessed in any permit review.	

3. Do you or your organization plan to participate in the Niagara Hydroelectric Project relicensing process?

✓ Yes (Please list specific issues below) ❑ No

4. We are interested in your comments. If you have comments and/or questions regarding the Niagara Hydroelectric Project, or the relicensing process please provide below:

A Virginia Water Protection Permit (VWP permit) issued by the DEQ Office of Water Supply will be required for any construction activities in the Roanoke River as well as for the alterations of flow related to the operation of a hydroelectric plant on the river. The VWP

permit serves as the Clean Water Act § 401 state certification for the FERC license. Please contact the DEQ Office of Water Supply about the VWP Permitting process.

The following links provide information about the VWP permitting process and flow in the Roanoke River that would be useful to permitting a hydroelectric facility.

http://www.deq.virginia.gov/Programs/Water/WaterSupplyWaterQuantity.aspx

http://www.deq.virginia.gov/Programs/Water/WaterSupplyWaterQuantity/WaterWithdrawalPermittingandCompliance/SurfaceWaterWithdrawalPermittingandFees.aspx

https://va.water.usgs.gov/

MacVane, Kelly

From: Kulpa, Sarah
Sent: Wednesday, August 23, 2017 11:21 AM
To: Hanson, Danielle
Subject: FW: Niagra Hydroelectric Project & Byllesby-Buck Hydroelectric Project

Sarah Kulpa
D 704.248.3620 **M** 315.415.8703

ONEHDRED
1917-2017

hdrinc.com/follow-us

From: nhreview (DCR) [mailto:nhreview@dcr.virginia.gov]
Sent: Wednesday, August 23, 2017 11:03 AM
To: Kulpa, Sarah
Subject: Niagra Hydroelectric Project & Byllesby-Buck Hydroelectric Project

Ms. Kulpa,

We received your request for a project review for the above mentioned project. However, before we can begin the review process we need a completed copy of our information services order form, which is available at the following link: http://www.dcr.virginia.gov/natural-heritage/nhserviceform/

The form will be automatically emailed to us once you hit the "submit" button at the bottom of the page. Once we have received the form, we will begin our review process. You will need to submit as information services order form for each project but there is no need to attach a map of the project sites since we already have them.

Also, please note that Faye McKinney is no longer working at DCR. The correct contact person is Rene' Hypes but the address is still the same.

If you have any questions, please feel free to contact me.

Thank you,

Barbara Gregory
Senior Project Review Assistant
DCR-Division of Natural Heritage
600 East Main Street, 24th Floor
Richmond, VA 23219
804-225-2821

http://www.dcr.virginia.gov/natural_heritage/index.shtml

From: Rhur, Robbie (DCR) [mailto:Robbie.Rhur@dcr.virginia.gov]
Sent: Wednesday, August 23, 2017 2:00 PM
To: Kulpa, Sarah
Subject: project submittal with DCR

Good Afternoon Sarah:

My earlier email bounced back, so I thought I would try again.
Two letters, addressed to Beth Reed, were received requesting information regarding potential impacts due to relicensing of the Niagara Dam (FERC # 2466) and Byllesby-Buck Dam (FERC # 2514). While I am happy to provide information regarding recreation and scenic resources you must make a request to DCR's Division of Natural Heritage for our threatened and endangered species information. Please contact Information Services at http://www.dcr.virginia.gov/natural-heritage/infoservices to make your request or Rene Hypes at rene.hypes@dcr.virginia.gov.

Thank you

Robbie Rhur
Environmental Review Coordinator/DCR
600 E Main Street 17th Floor
Richmond VA 23219
804-371-2594

Robbie Rhur
Environmental Review Coordinator/DCR
600 E Main Street 17th Floor
Richmond VA 23219
804-371-2594

MacVane, Kelly

From: Kulpa, Sarah
Sent: Friday, August 25, 2017 9:39 AM
To: Hanson, Danielle
Cc: MacVane, Kelly
Subject: FW: project submittal with DCR

Sarah Kulpa
D 704.248.3620 **M** 315.415.8703

ONEHDRED
1917-2017

hdrinc.com/follow-us

From: Rhur, Robbie (DCR) [mailto:Robbie.Rhur@dcr.virginia.gov]
Sent: Wednesday, August 23, 2017 2:30 PM
To: Kulpa, Sarah
Subject: RE: project submittal with DCR

Hi Sarah;

I am your contact for recreation and scenic resources. Information Services is the section Rene manages. Craig Sever is our Park Director, so if a dam is near a park, he needs it too. In other words all three of us could potentially need copies. I prefer an electronic copy and Rene want projects submitted through the website. Craig would likely prefer electronic too cause he will forward it to the Park manager.

Have a great week
Robbie

From: Kulpa, Sarah [mailto:Sarah.Kulpa@hdrinc.com]
Sent: Wednesday, August 23, 2017 2:18 PM
To: Rhur, Robbie (DCR)
Cc: ebparcell@aep.com
Subject: RE: project submittal with DCR

Hi Robbie,

Sorry about that; looked like we were having intermittent email trouble this morning. I received your voicemail – thanks very much for the explanation and directions. We'll resubmit as you've directed.

We would certainly welcome any relevant information regarding recreation and scenic resources. By separate mailings (also addressed to Beth Reed, as well as Craig Seaver and Rene Hypes) we also sent a "PAD Questionnaire" for each of these projects requesting information about a variety of resources, if you are able to respond to those and advise as to any designated DCR contacts for these mailing lists moving forward.

Thank you again for your time and feedback.

Sarah Kulpa
D 704.248.3620 **M** 315.415.8703

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 1105, Richmond, Virginia 23218
www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

September 1, 2017

Sarah Kulpa
HDR, Inc.
440 S. Church Street, Suites 900 & 1000
Charlotte, North Carolina 28202-2075
Via email: sarah.kulpa@hdrinc.com

RE: Niagara Hydroelectric Project (FERC No. 2466), Roanoke County, Virginia

Dear Ms. Kulpa:

This letter is in response to the scoping request for the above-referenced project.

As you may know, the Department of Environmental Quality, through its Office of Environmental Impact Review (DEQ-OEIR), is responsible for coordinating Virginia's review of federal consistency documents prepared pursuant to the Coastal Zone Management Act which applies to all federal activities which are reasonably likely to affect any land or water use or natural resources of Virginia's designated coastal resources management area must be consistent with the enforceable policies Virginia Coastal Zone Management (CZM) Program. Virginia's coastal management area includes most of Tidewater Virginia, as defined by the Code of Virginia § 28.2-100. Roanoke County is not located within Virginia's coastal management area and it appears to be unlikely that this project would affect any land or water use or natural resources of Virginia's designated coastal resources management area. Therefore, a federal consistency certification is not required for this project.

In addition to coordinating federal consistency reviews, DEQ-OEIR is responsible for coordinating Virginia's review of federal environmental documents prepared pursuant to the National Environmental Policy Act (NEPA) and responding to appropriate federal officials on behalf of the Commonwealth. The information below may assist you in the preparation of any NEPA document.

DOCUMENT SUBMISSIONS

In order to ensure an effective coordinated review of the NEPA document, notification of the NEPA document should be sent directly to OEIR. We request that you submit one electronic to eir@deq.virginia.gov (10 MB maximum) or make the documents available for download at a website or a file transfer protocol (ftp) site.

The NEPA document should include U.S. Geological Survey topographic maps as part of the information. We strongly encourage you to issue shape files with the NEPA document. In addition, project details should be adequately described for the benefit of the reviewers.

DATA BASE ASSISTANCE

Below is a list of databases that may assist you in the preparation of a NEPA document:

- DEQ Online Database: Virginia Environmental Geographic Information Systems

  Information on Permitted Solid Waste Management Facilities, Impaired Waters, Petroleum Releases, Registered Petroleum Facilities, Permitted Discharge (Virginia Pollution Discharge Elimination System Permits) Facilities, Resource Conservation and Recovery Act (RCRA) Sites, Water Monitoring Stations, National Wetlands Inventory:
  - www.deq.virginia.gov/ConnectWithDEQ/VEGIS.aspx

- DEQ Virginia Coastal Geospatial and Educational Mapping System (GEMS)

  Virginia's coastal resource data and maps; coastal laws and policies; facts on coastal resource values; and direct links to collaborating agencies responsible for current data:
  - http://128.172.160.131/gems2/

- MARCO Mid-Atlantic Ocean Data Portal

  The Mid-Atlantic Ocean Data Portal is a publicly available online toolkit and resource center that consolidates available data and enables users to visualize and analyze ocean resources and human use information such as fishing grounds, recreational areas, shipping lanes, habitat areas, and energy sites, among others.

  http://portal.midatlanticocean.org/visualize/#x=-73.24&y=38.93&z=7&logo=true&controls=true&basemap=Ocean&tab=data&legends=false&layers=true

- DHR Data Sharing System.

  Survey records in the DHR inventory:

  - www.dhr.virginia.gov/archives/data_sharing_sys.htm

- DCR Natural Heritage Search

  Produces lists of resources that occur in specific counties, watersheds or physiographic regions:
  - www.dcr.virginia.gov/natural_heritage/dbsearchtool.shtml

- DGIF Fish and Wildlife Information Service

  Information about Virginia's Wildlife resources:
  - http://vafwis.org/fwis/

- Environmental Protection Agency (EPA) Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Database: Superfund Information Systems

  Information on hazardous waste sites, potentially hazardous waste sites and remedial activities across the nation, including sites that are on the National Priorities List (NPL) or being considered for the NPL:
  - www.epa.gov/superfund/sites/cursites/index.htm

- EPA RCRAInfo Search

  Information on hazardous waste facilities:
  - www.epa.gov/enviro/facts/rcrainfo/search.html

- EPA Envirofacts Database

  EPA Environmental Information, including EPA-Regulated Facilities and Toxics Release Inventory Reports:
  - www.epa.gov/enviro/index.html

- EPA NEPAssist Database

  Facilitates the environmental review process and project planning:
  http://nepaassisttool.epa.gov/nepaassist/entry.aspx

If you have questions about the environmental review process and/or the federal consistency review process, please feel free to contact me (telephone (804) 698-4204 or e-mail bettina.sullivan@deq.virginia.gov).

I hope this information is helpful to you.

Sincerely,

Bettina Sullivan

Bettina Sullivan, Program Manager
Environmental Impact Review and
Long-Range Priorities

Molly Joseph Ward
Secretary of Natural Resources

Clyde E. Cristman
Director

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

Rochelle Altholz
Deputy Director of Administration and Finance

David C. Dowling
Deputy Director of Soil and Water Conservation and Dam Safety

Thomas L. Smith
Deputy Director of Operations

MEMORANDUM

DATE**:** September 13, 2017

TO: Sarah Kulpa, HDR

FROM: Roberta Rhur, Environmental Impact Review Coordinator

SUBJECT: DCR 17-022, Niagara Dam relicensing FERC # 2466

Division of Planning and Recreation Resources

The Department of Conservation and Recreation (DCR), Division of Planning and Recreation Resources (PRR), develops the *Virginia Outdoors Plan* and coordinates a broad range of recreational and environmental programs throughout Virginia. These include the Virginia Scenic Rivers program; Trails, Greenways, and Blueways; Virginia State Park Master Planning and State Park Design and Construction.
The remaining DCR divisions have no comments regarding the scope of this project. Thank you for the opportunity to comment.

The Niagara Dam Dams impounds the Roanoke River, which is an established water trail and is a potential scenic river. Because this river is used extensively by recreation boaters DCR recommends serious consideration for safe portage around the dam for the and that any and all safety measures are put into place to allow a safe boating experience.

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

Appalachian Power Company (Appalachian) is the Licensee and operator of the Niagara Hydroelectric Project (FERC No. 2466) (Project), located along the Roanoke River in Roanoke County, Virginia (see attached map). Appalachian, with assistance from HDR, Inc. (HDR), is beginning the Federal Energy Regulatory Commission (FERC) relicensing process for the Project. Accordingly, Appalachian is preparing a Pre-Application Document (PAD). The PAD provides FERC and other entities with existing, relevant, and reasonably available information pertaining to the Project.

This information is intended to help identify items of interest and related information needs, develop study requests and study plans, and prepare documents related to analyzing the relicensing application to be prepared by Appalachian. To prepare the PAD, Appalachian will use information in its possession and information obtained from others. This PAD Questionnaire will be used by Appalachian to help identify sources of existing, relevant, and reasonably available information that is not currently in Appalachian's possession. Comments and/or questions regarding this request may be sent to Sarah Kulpa with HDR via email at sarah.kulpa@hdrinc.com or via phone at (704) 248-3620, or to Elizabeth Parcell who represents Appalachian at ebparcell@aep.com or via phone at (540) 985-2441.

Please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.

Appalachian and HDR respectfully request the following information:

1. Information about person completing the questionnaire:

Name & Title	Paula Shoffner, Executive Director
Organization	Tri-County Lakes Administrative Commission
Address	400 Scruggs Rd, Suite 200 Moneta, VA 24121
Phone	540-721-4400
Email Address	paulas@sml.us.com

2. Do you or your organization know of existing, relevant and reasonably available information that describes the existing Niagara Hydroelectric Project's environment (i.e., information regarding the Roanoke River in or close to the Niagara Hydroelectric Project)?

   X Yes (*If yes, please complete 2a through 2e)* __ No (*If no, go to 3*)

   a. If yes, please circle the specific resource area(s) that the information relates to:

- ■ Geology and soils
- ■ Water resources
- ■ Fish and aquatic resources
- ■ Wildlife and botanical resources
- ■ Wetlands, riparian, and littoral habitat
- ■ Rare, threatened & endangered species
- ■ Recreation and land use
- ■ Aesthetic resources
- ■ Cultural resources
- ■ Socio-economic resources
- ■ Tribal resources
- ■ Other resource information

   b. Please briefly describe the information referenced above or list available documents *(additional information may be provided on page 4 of this questionnaire).*

1. **Debris**
2. **Sedimentation Build-up**

   c. Where can Appalachian obtain this information?

1. **Debris** — **AEP's Annual Debris Report Summary** (see debris reports from Roanoke River area)
2. **Sedimentation** — **Virginia Dept of Conservation and Recreation**; **Virginia Dept of Environmental Quality**

d. Please indicate whether there is a specific representative you wish to designate for a potential follow-up contact by Appalachian's or HDR's representative for the resource area(s) checked above *(additional information may be provided on page 4 of this questionnaire).*

Representative Contact Information

Name	Paula Shoffner, Executive Director Tri-County Lakes Administrative Commission
Address	400 Scruggs Rd, Suite 200 Moneta, VA 24121
Phone	540-721-4400
Email Address	paulas@sml.us.com

Name	
Address	
Phone	
Email Address	

e. Based on the specific resources listed in 2a, are you aware of any specific issues or improvements pertaining to the identified resource area(s)? *(Additional information may be provided on page 4 of this questionnaire.)*

X Yes *(please list specific issues below)* ___ No

Resource Area	Specific Issue
Other:	
Debris	Aggregates and holds debris until a High Flow Event occurs
Sedimentation	Builds up behind dam

3. Do you or your organization plan to participate in the Niagara Hydroelectric Project relicensing proceeding? **X** Yes ___ No

4. We are interested in your comments. If you have comments and/or questions regarding the Niagara Hydroelectric Project or the relicensing process, please provide below. In addition, this questionnaire has been sent to the people/organizations shown on the attached distribution list; please let us know if there is anyone else you believe should receive this questionnaire that is not included on the attached distribution list.

(Comments and/or questions may be sent via email to: sarah.kulpa@hdrinc.com or ebparcell@aep.com)

As noted above, please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

Appalachian Power Company (Appalachian) is the Licensee and operator of the Niagara Hydroelectric Project (FERC No. 2466) (Project), located along the Roanoke River in Roanoke County, Virginia (see attached map). Appalachian, with assistance from HDR, Inc. (HDR), is beginning the Federal Energy Regulatory Commission (FERC) relicensing process for the Project. Accordingly, Appalachian is preparing a Pre-Application Document (PAD). The PAD provides FERC and other entities with existing, relevant, and reasonably available information pertaining to the Project.

This information is intended to help identify items of interest and related information needs, develop study requests and study plans, and prepare documents related to analyzing the relicensing application to be prepared by Appalachian. To prepare the PAD, Appalachian will use information in its possession and information obtained from others. This PAD Questionnaire will be used by Appalachian to help identify sources of existing, relevant, and reasonably available information that is not currently in Appalachian's possession. Comments and/or questions regarding this request may be sent to Sarah Kulpa with HDR via email at sarah.kulpa@hdrinc.com or via phone at (704) 248-3620, or to Elizabeth Parcell who represents Appalachian at ebparcell@aep.com or via phone at (540) 985-2441.

Please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.

Appalachian and HDR respectfully request the following information:

1. Information about person completing the questionnaire:

Name & Title	Liz Belcher Roanoke Valley Greenway Coordinator
Organization	Roanoke Valley Greenway Commission
Address	1206 Kessler Mill Road Salem, VA 24153
Phone	540-777-6330 (office) 540-392-0526 (cell)
Email Address	Liz.belcher@greenways.org

2. Do you or your organization know of existing, relevant and reasonably available information that describes the existing Niagara Hydroelectric Project's environment (i.e., information regarding the Roanoke River in or close to the Niagara Hydroelectric Project)?

   _✓__ Yes (*If yes, please complete 2a through 2e)* __ No (*If no, go to 3*)

   a. If yes, please circle the specific resource area(s) that the information relates to:

✓_Geology and soils
✓_Water resources
✓_Fish and aquatic resources
✓_Wildlife and botanical resources
✓_Wetlands, riparian, and littoral habitat
✓_Rare, threatened & endangered species
✓_Recreation and land use
✓_Aesthetic resources
✓_Cultural resources
■ Socio-economic resources
■ Tribal resources
■ Other resource information

b. Please briefly describe the information referenced above or list available documents *(additional information may be provided on page 4 of this questionnaire).*

- Categorical Exclusion draft for Roanoke River Greenway East, WWTP to Blue Ridge Parkway, available through Roanoke County Parks & Rec or VDOT, Salem District
- Roanoke Valley/ Blue Ridge Parkway Trail Plan Environmental Assessment, available through Blue Ridge Parkway
- Roanoke River Blueway website, http://www.roanokeriverblueway.org/
- 2007 Update to the Roanoke Valley Conceptual Greenway Plan, http://greenways.org/
- 2017 update to the Greenway Plan is in progress, expected spring 2018
- Explore Park Adventure Plan, available from Roanoke County Parks & Rec

c. Where can Appalachian obtain this information?

Sources are listed above. I am source for update to the Greenway Plan

d. Please indicate whether there is a specific representative you wish to designate for a potential follow-up contact by Appalachian's or HDR's representative for the resource area(s) checked above *(additional information may be provided on page 4 of this questionnaire).*

Representative Contact Information

Name Liz Belcher	
Address	
Phone	
Email Address	

Name	
Address	
Phone	
Email Address	

e. Based on the specific resources listed in 2a, are you aware of any specific issues or improvements pertaining to the identified resource area(s)? *(Additional information may be provided on page 4 of this questionnaire.)*

__✓_ Yes *(please list specific issues below)* ___ No

Resource Area	Specific Issue
Recreation and land use	Roanoke River Greenway construction
Recreation and land use	Roanoke River Blueway and Niagara portage
Endangered species	Roanoke logperch
Water resources	DEQ TMDL study for Roanoke River

3. Do you or your organization plan to participate in the Niagara Hydroelectric Project relicensing proceeding? _✓__ Yes ___ No

4. We are interested in your comments. If you have comments and/or questions regarding the Niagara Hydroelectric Project or the relicensing process, please provide below. In addition, this questionnaire has been sent to the people/organizations shown on the attached distribution list; please let us know if there is anyone else you believe should receive this questionnaire that is not included on the attached distribution list.

Others who should receive this questionnaire:

- George Washington and Jefferson National Forest, 5162 Valleypointe Parkway Roanoke, VA 24019
- Western Virginia Water Authority, 601 South Jefferson St., Roanoke, VA 24011
- Appalachian Trail Conservancy, 5162 Valleypointe Parkway, Roanoke, VA 24019 (you list them in Blacksburg, which is an old address)

Comments

We have been working with local AEP staff for over 15 years on the Roanoke River Greenway project. This bicycle/pedestrian trail is 100% designed and environmental compliance is almost complete, through Roanoke County and VDOT, with an IPAC submitted to USFWS. Considerable environmental work, including surveys, geotech, wetland inventories, and bat counts, has been done. A portion of this greenway will be on AEP land and will constitute a new recreational feature that needs to be recognized in the re-licensing.

Since the last re-licensing, the Roanoke River Blueway has been established. This river trail has made the portage at Niagara very important. This portage needs improvements.

(Comments and/or questions may be sent via email to: sarah.kulpa@hdrinc.com or ebparcell@aep.com)

As noted above, please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.

Molly Joseph Ward
Secretary of Natural Resources

Clyde E. Cristman
Director

Rochelle Altholz
Deputy Director of Administration and Finance

David C. Dowling
Deputy Director of Soil and Water Conservation and Dam Safety

Thomas L. Smith
Deputy Director of Operations

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

September 20, 2017

Sarah Kulpa
HDR Engineering, Inc.
440 S Church Street, Suites 900 & 1000
Charlotte, NC 28202

Re: FERC 2466, Niagara Hydroelectric Project

Dear Ms. Kulpa:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, the Roanoke River – North and South Forks Stream Conservation Unit (SCU) is located within the project site. SCUs identify stream reaches that contain aquatic natural heritage resources, including 2 miles upstream and 1 mile downstream of documented occurrences, and all tributaries within this reach. SCUs are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. The Roanoke River – North and South Forks SCU has been given a biodiversity significance ranking of B1, which represents a site of outstanding significance. The natural heritage resources of concern associated with this SCU are:

Noturus gilberti	Orangefin madtom	G2/S2/SOC/LT
Percina rex	Roanoke logperch	G1G2/S1S2/LE/LE
Allocapnia simmonsi	Spatulate snowfly	G3/S1S2/NL/NL

The Orangefin madtom is native to the Roanoke and James River systems of North Carolina and Virginia (NatureServe, 2009). The Orangefin madtom inhabits moderate to strong riffles and runs having little or no silt in moderate-gradient, intermontane and upper Piedmont streams. This species is an intersticine dweller, found in or near cavities formed by rubble and boulders (Jenkins and Burkhead, 1993). Please note that this species is currently classified as a species of concern (not a legal designation) by the United States Fish and Wildlife Service (USFWS) and as threatened by the Virginia Department of Game and Inland Fisheries (VDGIF). Threats to the Orangefin madtom include channelization, siltation, various forms of chronic pollution, catastrophic chemical spills, impoundment, dewatering, and bait-seining (NatureServe, 2009). Its low reproductive rate and short life span (Simonson 1997, Simonson and Neves 1992, Simonson 1987) exacerbate these threats (Burkhead and Jenkins 1991).

The Roanoke logperch is endemic to the Roanoke and Chowan River drainages in Virginia (Burkhead and Jenkins, 1991) and inhabits medium and large, warm and usually clear rivers with sandy to boulder spotted bottoms (NatureServe, 2009). Please note that this species is currently classified as endangered by the USFWS

and the VDGIF. The Roanoke logperch is threatened by channelization, siltation, impoundment, pollution, and de-watering activities (Burkhead & Jenkins, 1991).

Spatulate snowfly is a stonefly documented in only two locations in Virginia. Stoneflies are generally medium-sized to small, somewhat flattened, soft-bodied, rather drab-colored insects found near streams or rocky lake shores (Borror, 1981). They are poor fliers and are seldom found far from water. Stonefly nymphs are often found under stones in streams but may occasionally be found anywhere in a stream where food is available (Borror, 1981). Stoneflies are highly sensitive to any practices that degrade the quality of its aquatic habitat.

In addition, the Roanoke River, Glade Creek and Tinker Creek have been designated by the VDGIF as "Threatened and Endangered Species Waters". The species within two miles of the project site associated with the Roanoke River T & E Water are the Orangefin madtom and the Roanoke logperch, and the species within two miles of the project site associated with Glade Creek and Tinker Creek is the Roanoke logperch.

To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations. Due to the legal status of the Roanoke logperch and Orangefin madtom, DCR also recommends coordination with the USFWS and the VDGIF to ensure compliance with protected species legislation.

The Virginia DCR karst staff screened this project against the Virginia Speleological Survey (VSS) database and the Virginia DMME sinkhole coverage for documented sensitive karst features and caves. DCR does not anticipate adverse impact to karst from the relicensing of the Niagara Hydroelectric Project in the City of Roanoke.

If karst features such as sinkholes, caves, disappearing streams, and large springs are encountered during the project, please coordinate with Wil Orndorff (540-230-5960, Wil.Orndorff@dcr.virginia.gov) to document and minimize adverse impacts. Discharge of runoff to sinkholes or sinking streams, filling of sinkholes, and alteration of cave entrances can lead to surface collapse, flooding, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources. If the project involves filling or "improvement" of sinkholes or cave openings, DCR would like detailed location information and copies of the design specifications. In cases where sinkhole improvement is for storm water discharge, copies of VDOT Form EQ-120 will suffice.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please re-submit a completed order form and project map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

A fee of $125.00 has been assessed for the service of providing this information. Please find enclosed an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, Department of Conservation and Recreation, Division of Natural Heritage, 600 East Main Street, 24th Floor, Richmond, VA 23219. Payment is due within thirty days of the invoice date. Please note late payment may result in the suspension of project review service for future projects.

The VDGIF maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dgif.virginia.gov.

Should you have any questions or concerns, feel free to contact me at 804-371-2708. Thank you for the opportunity to comment on this project.

Sincerely,

S. René Hypes
Project Review Coordinator

CC: Ernie Aschenbach, VDGIF
Troy Andersen, USFWS
Wil Orndorff, DCR-Karst

Literature Cited

Borror, D.J., D. M. De Long, and C. A. Triplehorn. 1981. An Introduction to the Study of Insects. Saunders College Publishing, Philadelphia.

Burkhead, N.M. and R.E. Jenkins. 1991. Roanoke logperch. In Virginia's Endangered Species: Proceedings of a Symposium. K. Terwilliger ed. The McDonald and Woodward Publishing Company, Blacksburg, Virginia. p. 395-397.

Jenkins, R. E., and N. M. Burkhead. 1993. Freshwater fishes of Virginia. American Fisheries Society, Bethesda, Maryland.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: June 21, 2010).

Simonson, T. D. 1987. Distribution, ecology, and reproductive biology of the orangefin madtom (Noturus gilberti). M.S. Thesis, Virginia Polytechnic Institute & State University, Blacksburg.

Simonson, T. D. 1997. Orangefin madtom. Pages 15-16 in E. F. Menhinick and A. L. Braswell, editors. Endangered, threatened, and rare fauna of North Carolina. Part IV. A reevaluation of the freshwater fishes. Occasional Papers of the North Carolina Museum of Natural Sciences and the North Carolina Biological Survey No. 11.

Simonson, T. D., and R. J. Neves. 1992. Habitat suitability and reproductive traits of the orangefin madtom NOTURUS GILBERTI (Pisces: Ictaluridae). American Midland Naturalist 127:115-24.

COMMONWEALTH OF VIRGINIA
Department of Conservation and Recreation

DCR – Natural Heritage
600 East Main Street, 24th Floor
Richmond, VA 23219

Make checks payable to: ***TREASURER OF VIRGINIA***
Send payment to the address at the left
Payment is due 30 days after receipt of invoice

Fed I.D. # 54-6004497
DUNS # 8097 44444

Accounts Payable

Sarah Kulpa HDR Engineering, Inc. 440 S Church Street, Suites 900 & 1000 Charlotte, NC 28202	Invoice Number: **H-12662** Invoice Date: September 20, 2017

TAXPAYER ID: 47-0680568
CONTACT Liz Dean, Business Manager, Division of Natural Heritage
CONTACT Number (804) 371-2671
FAX Number (804) 371-2674

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL AMOUNT
Impact Review	1	EA	90.00	90.00
Element Occurrences	1-5	AT	35.00	35.00
Site Reference				
FERC 2466, Niagara Hydroelectric Project				
			Amount Due:	**125.00**

BUSINESS UNIT	COST CENTER	ACCOUNT	FUND	PROGRAM	DEPT	AMOUNT	PROJECT	AGENCY USE 1	FY
19900	304	4002199	02199	503017	19900	125.00	0000109675	732320000	18

AGENCY REFERENCE	DESCRIPTION

MacVane, Kelly

From: Kulpa, Sarah
Sent: Thursday, September 21, 2017 2:48 PM
To: Angermeier, Paul
Cc: ebparcell@aep.com; MacVane, Kelly
Subject: RE: PAD for Niagara Hydroelectric Project

Thanks for the info and reply, Paul. We'll keep you in mind, and as a heads up this relicensing will formally get started next year.

Sarah Kulpa
D 704.248.3620 **M** 315.415.8703

ONEHDRED
1917-2017

hdrinc.com/follow-us

From: Angermeier, Paul [mailto:biota@vt.edu]
Sent: Thursday, September 21, 2017 12:08 PM
To: Kulpa, Sarah
Subject: PAD for Niagara Hydroelectric Project

Dear Sarah
I dont have any specific info to provide regarding the referenced project but I do want you to know that I have extensive experience studying Roanoke Logperch, an endangered fish that occurs above and below the project. Much of my work has been in Roanoke River above the project. I'm very interested in providing input on potential impacts of the project, as well as participating in study requests and study designs.
Let me know if I can be of help.
Sincerely, Paul

Paul L. Angermeier
Virginia Cooperative Fish and Wildlife Research Unit
Dept. of Fish and Wildlife Conservation
Virginia Tech
Blacksburg, VA 24061-0321
Phone: 540-231-4501; Fax: 540-231-7580

Blue Ridge
Soil & Water Conservation District
1297 State Street
Rocky Mount, Virginia 24151

VIRGINIA SOIL & WATER
CONSERVATION

October 24, 2017

Sarah Kulpa
HDR
440 S. Church Street, Suite 900
Charlotte, NC 28202-2075

Dear Sarah:

The Blue Ridge Soil & Water Conservation District has worked with AEP on several water quality projects around Smith Mountain Lake in Franklin County. We believe that your company has demonstrated in the past that it is committed to preserving good water quality in Smith Mountain Lake and its tributaries.

The BRSWCD requests that AEP keep the Niagara dam in place and continue to operate it if possible. Any breach of this dam whether intended or accidental would send large amounts of impounded sediment downstream that would adversely affect the water quality of lakes and streams in Franklin County and other downstream localities.

Since our organization has a significant interest in our regions' water quality, we would appreciate being kept in the loop in regards to any plans for Niagara Dam going forward.

Sincerely,

Daphne W. Jamison

Daphne W. Jamison
Chairman

cc: Elizabeth Parcell

APPENDIX C

EXISTING PROJECT BOUNDARY (EXHIBIT G)

NOTES AND RESERVATIONS

1- Wherever, as an element of the Project Boundary, there appear the words "Approximate Location of Contour 885", the meaning is that it is the surface level of a pond having an elevation of 885 feet at the dam which is intended, or is believed to be intended, to be controlling.

2- The elevations shown hereon are based upon a bench mark, being a chiseled square □ in concrete floor at doorway on north side of power house, which bench mark has an elevation of 852.87 feet and was based upon United States Geological Survey Bench Mark Elevation 336.68 feet as it existed in 1928 on the southwest abutment of Norfolk and Western Railway Company's Bridge No. 1807 over Roanoke River near South Jefferson Street in the City of Roanoke, Virginia; said U.S.G.S. Bench Mark having undergone general adjustment in 1929 and became an aluminum tablet stamped "337" having an elevation of 337.080 feet. The last mentioned bench mark was reset by said Norfolk and Western Railway Company on November 17, 1943 on top of new masonry on the west end of the south backwall of the southwest abutment of said Bridge No. 1807 and is marked by bronze tablet stamped "RESET 1343" and has an elevation of 338.520 feet.

3- In the cases of all parcels owned in fee by Appalachian Power Company, adjoining the project boundary and not to become part of the project area, there are reserved in favor of Appalachian Power Company, its successors and assigns, the right of access across any part of the adjoining portions of the project area to the waters of the reservoir and/or of Roanoke River and the right to use said waters for domestic purposes, including the watering of livestock.

4- The project area is also subject to public utility easements and such other uses as are now being made or exist therein, if any.

5- All statements and interpretations as to ownership of lands and nature and extent of ownership of rights indicated on this exhibit are correct in the opinion of Appalachian Power Company but are not warranted.

6- Out of the project area and in favor of Appalachian Power Company, its successors and assigns, there are reserved the perpetual rights of way and easements for all power lines, whether for transmission or distribution and whether or not now existing, and the following equipment:

(a) The step-up transformer station beginning at the low-voltage transformer bushings but including the 3 phase step-up transformer, the high-voltage oil circuit breaker, the lightning arresters, the oil circuit breaker control transformer, the two-pole supporting structure, the switches, bus supports, insulators, control and power cables and all appurtenant equipment, located outside and adjacent to the hydro plant building;

(b) All or any portion of the switchboard and switchgear units with all related relay and control equipment and control cables, located in the hydro plant building and used for the control and operation of the non-project step-up station facilities; and

(c) All power lines and related equipment whether for transmission or distribution and whether or not now existing;

(d) The 150 KVA, 2400/240/120 V. Station Service Thats former-Bank and associated support structure, power cables, conduits, etc.

(e) The 50KVA, 4800/240/120 V. Back-up Station Service Thats former and associated power cables, conduit, etc.

(e) Cont.
which are necessary, useful or convenient for or in the business of said company, its successors or assigns, or may become so from time to time in the future. None of such power lines or equipment are or are to become part of the project works. The approximate locations of those of such power lines as now exist are shown on this exhibit.
The rights of way and easements so reserved comprise all rights, privileges and appurtenances in or to the project area, or any part thereof, requisite for the continuing full enjoyment of said rights of way and easements, including, but not restricted to, the continuing right to construct, reconstruct, relocate, augment, repair, maintain, patrol, inspect or otherwise operate the said power lines and equipment and the facilities comprising the same, including any poles, towers, wires and cables and any other fixtures or portions of said power lines or equipment or facilities, and including appurtenant communication lines; also the continuing right to cut and remove any trees, overhanging branches or other obstructions which may endanger the safety of or interfere with said power lines or equipment or any part thereof, in the course of construction or after the completion thereof; also the continuing right and privilege of removing, at any time, any or all of the said power lines or equipment or the facilities comprising part of any of said power lines or equipment.
PROVIDED that if any of the said power lines or equipment or appurtenances thereto not now existing should substantially interfere with the operation of any of said project works, the said company covenants and agrees, for itself, its successors and assigns, forthwith to remove or relocate the same or to take such other steps as may be necessary to eliminate such interference.

7- The project is the beneficiary of those certain rights and privileges specifically reserved in, by and to Appalachian Power Company, its successors or assigns, in that certain deed from said company to the Commonwealth of Virginia, dated July 8, 1957, including the following (the specified elevations being in terms of U.S. Geological survey datum):
(a) Riparian rights in and to Roanoke River within the limits of the lands described in said deed and conveyed by said company to the Commonwealth, including the right to vary the flow in said river necessary in the operation of the company's Niagara Hydro Power Station, whether as at present constructed and operated or in any modified form of such construction or operation;
(b) The right to lower the tailwater of the company's Niagara Power Station by means of deepening by excavation the bed of said river within the limits of the aforesaid lands conveyed to the Commonwealth, provided that such deepening shall not be such as will lower the minimum operating tailwater at said station by more than eight (8) feet below elevation 823.0 feet; and
(c) Unlimited right of entry and access to, from and across such part of the aforesaid lands conveyed to the Commonwealth as was then below elevation 850.0 feet by the personnel and vehicles or other equipment of the company and its agents for any purpose in connection with the construction, maintenance or operation relating to the company's said Niagara Hydro development; also the right to deposit on such part of the aforesaid lands conveyed to the Commonwealth any materials which the company may excavate from the bed of said river pursuant to its right under the preceding paragraph numbered (b).

8- Parcel No. 5 - It is believed that rights to overflow the one-half undivided fee interest now or formerly owned by Benjamin Hogan accrued to the project owner by prescription.

9- Parcel No. 6 - The project is the beneficiary of and subject to the reservations set forth in that certain deed from Benjamin J. Settle, et al, to Noah P. Foard, dated March 27, 1894, including:
(a) Reservation of timber by grantors;
(b) Right of grantee, his successors and assigns to cut down any timber if found necessary; and
(c) Rights of grantors and grantee to free passage over roads established or to be established over their respective lands.

10- Parcel No. 9, Tract No. 2, and Parcel Nos. 13, 14, 15, 16, 17, 18, 19, 20, 21 and 22 - It is believed that rights to overflow these lands accrued to project owner by prescription.

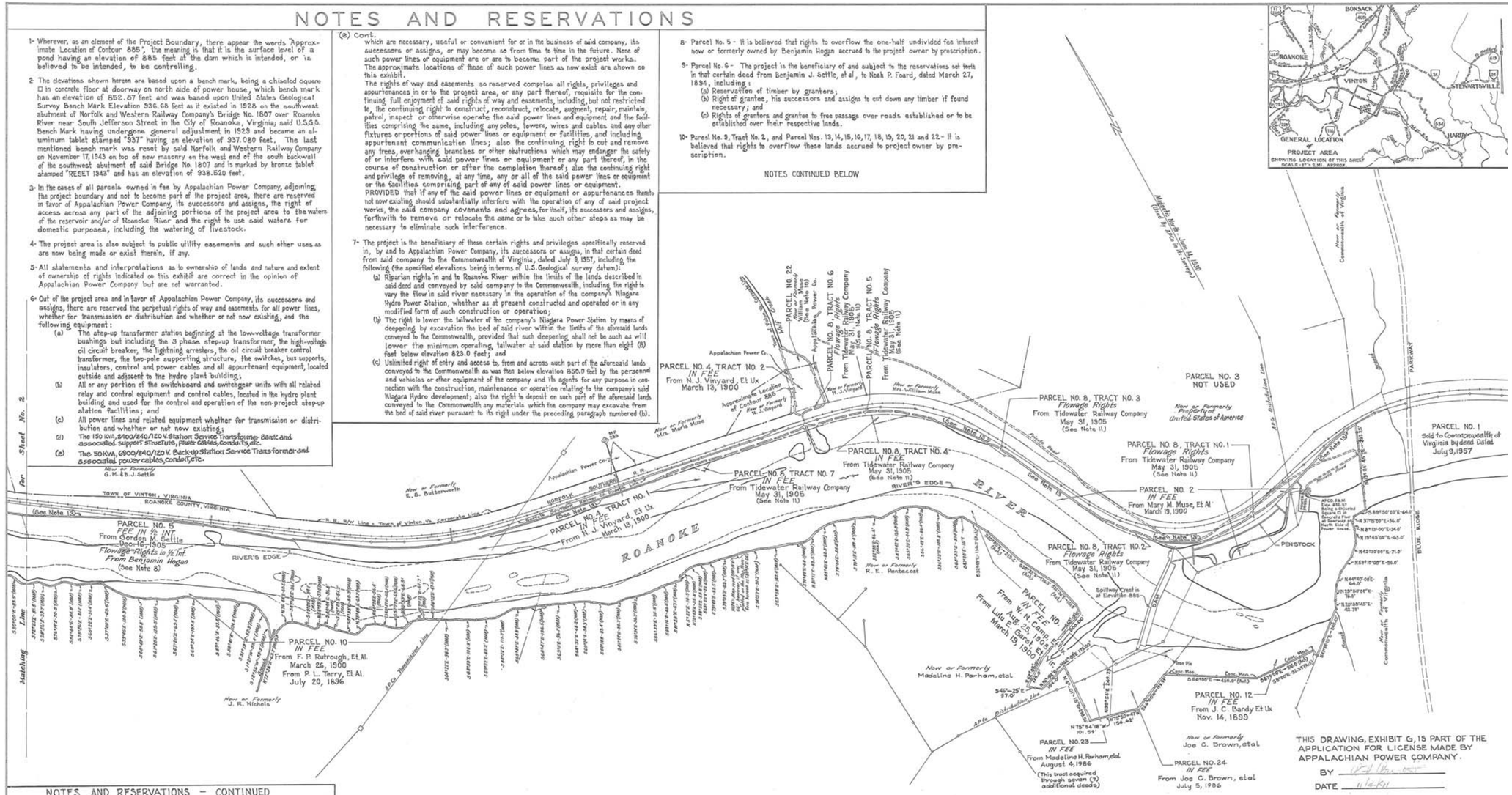
NOTES CONTINUED BELOW

NOTES AND RESERVATIONS - CONTINUED

11- Parcel No. 8 - The project is the beneficiary of and subject to obligations and conditions set forth in that certain deed between Tidewater Railway Company and Roanoke Water Power Company dated May 31, 1905, including:
(a) Freedom from encroachment upon or within 20 feet of or damage or injury to the dam, bulkhead, canal or power house as then located;
(b) Provision for and maintenance of two suitable crossings for wagon roadways;
(c) Right of way for poles and wires; and
(d) Release of any claim for future damages which may accrue by reason of backwater from the dam than being erected, said dam not to exceed in height 45 feet above low water.
If, as a result of the dam being raised to 47 feet, any additional land of the railway was flooded, it is believed that flowage rights accrued to the project owner by prescription.

12- The lines and bearings and distances used on this exhibit to delineate the project boundary were taken from earlier drawings in the possession of the project owner and were used, in some instances, even though there is some uncertainty as to whether the lines shown on those drawings were above or below Contour 885. In the event such lines are actually below Contour 885, it is believed that rights to overflow the lands above such lines accrue to project owner by prescription and such rights are hereby made a part of the project. In the event such lines are actually above Contour 885, and project owner does not have rights up to the higher elevation, project owner hereby excepts from the project such rights as it does not own and are not required for the project.

13- Railroad Right of Way Line: As described in deed dated May 31, 1905 between Tidewater Railway Company and Roanoke Water Power Company.



LEGEND

	PROJECT BOUNDARY, INCLUDING THE APPROXIMATION OF ANY CONTOUR WHICH CONSTITUTES SUCH BOUNDARY.
	PROJECT BOUNDARY, BEING AN APPROXIMATION OF CONTOUR 885, CROSSING FEE LANDS OF APPALACHIAN POWER COMPANY.
	PROJECT BOUNDARY BEING AN APPROXIMATION OF CONTOUR 885, LIMITING SAME BUT NOT ALL PROJECT RIGHTS.
	PROJECT BOUNDARY, BEING AN APPROXIMATION OF CONTOUR 885, CROSSING LANDS OVER WHICH FLOWAGE RIGHTS ACCRUED BY VIRTUE OF PRESCRIPTION.
	ELECTRIC POWER LINES OF APCO.
	PARCEL LINES
	CONCRETE MONUMENT OR IRON PIN
APCO. P.B.M.	APCO. PERMANENT BENCH MARK
	PRIVATE ROAD
	SEWER INTERCEPTOR LINE

THIS MAP WAS PREPARED FROM:
(a) Old Property Map of Roanoke Water Power Company and Roanoke Hydraulic Company, the date and maker of which are unknown;
(b) The Virginian Railway Company's Station Map of Land, Tracks and Structures, Nos. V-2-5-63-A, V-2-5-63-B, V-2-5-63-C, and V-2-5-63-D, dated 4-1-24, 12-6-26, 1-17-23, and 1-21-29, respectively;
(c) City of Roanoke's Appraisal Maps, Sheets 432 and 433, dated 1-1-49; and
(d) Surveys made by APCo's engineers in 1930 and 1938 and mapping prepared in Feb., 1990

BEARINGS AND DISTANCES:
(a) The bearings and distances shown hereon thusly: N 76°45' W-136' (Act) were surveyed by APCo Engineers in 1930 and 1938.
(b) The bearings and distances shown hereon thusly: N 76°45' W-136' (MAP) were taken from old property map of R.W.P.Co. and R.H.Co. mentioned above.
(c) The bearings and distances shown hereon thusly: N 76°45' W-136' were taken from Sheets 18 and 19 of Map of Lands Acquired for the Blue Ridge Parkway, prepared by Virginia Department of Highways, dated 7-30-48 and 1-28-49, respectively.

MERIDIANS:
(a) APCos survey of part of Parcels Nos. 11 and 12 shown hereon was based on Magnetic North as of June 14, 1930.
(b) APCo is unable to determine the difference between Magnetic North used on its surveys mentioned above, and the meridian used in the survey of land shown on old property map of R.W.P.Co. and R.H. Co., and the meridian used in the survey of land shown on the Va. Dept. of Hwys. Maps mentioned above.

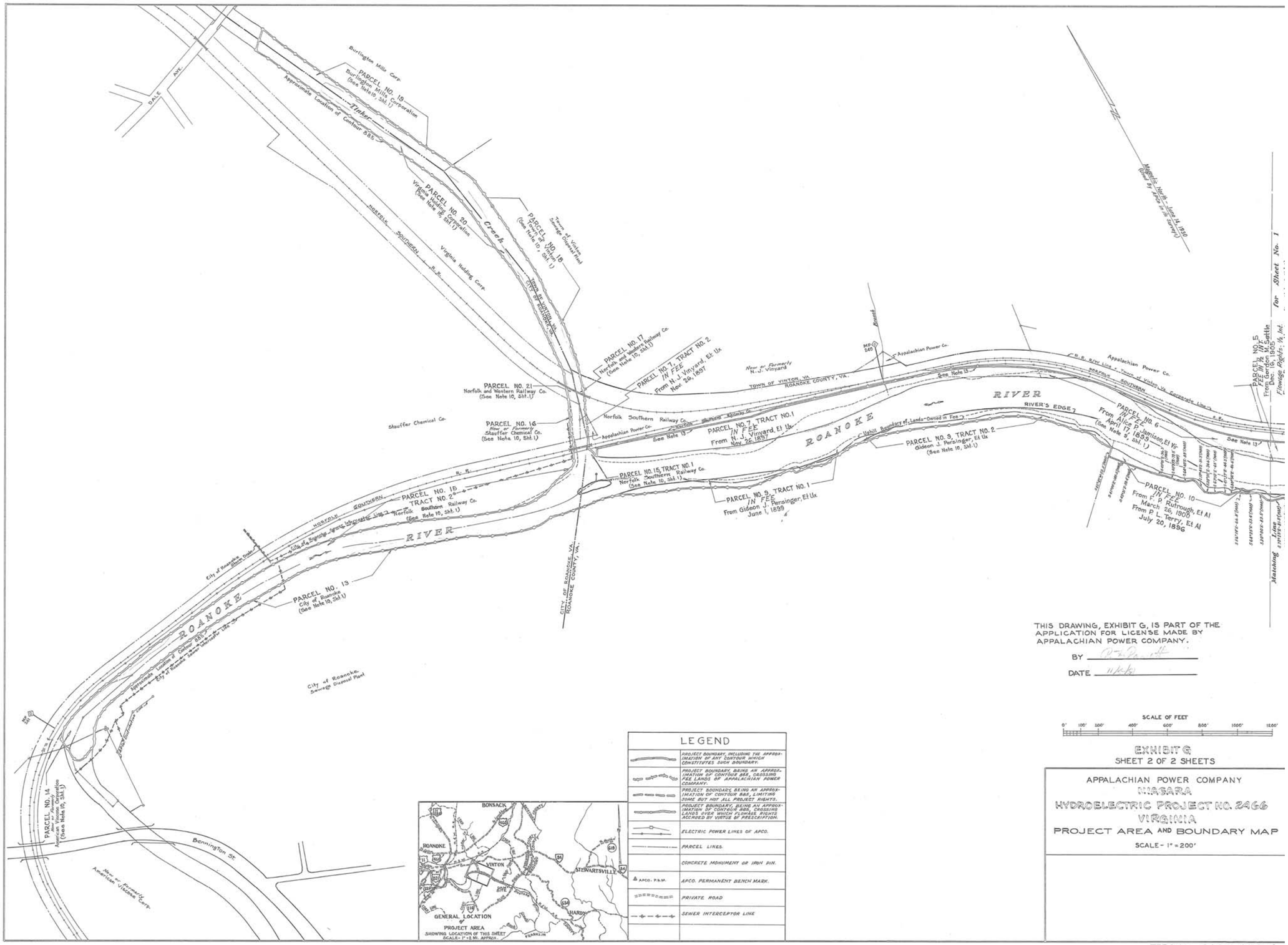
SCALE OF FEET
0' 100' 200' 400' 600' 800' 1000' 1200'

THIS DRAWING, EXHIBIT G, IS PART OF THE APPLICATION FOR LICENSE MADE BY APPALACHIAN POWER COMPANY.
BY _____
DATE 11-14-91

EXHIBIT G
SHEET 1 OF 2 SHEETS

APPALACHIAN POWER COMPANY
NIAGARA
HYDROELECTRIC PROJECT NO. 2466
VIRGINIA
PROJECT AREA AND BOUNDARY MAP
SCALE - 1" = 200'

FERC No. 2466-002-3

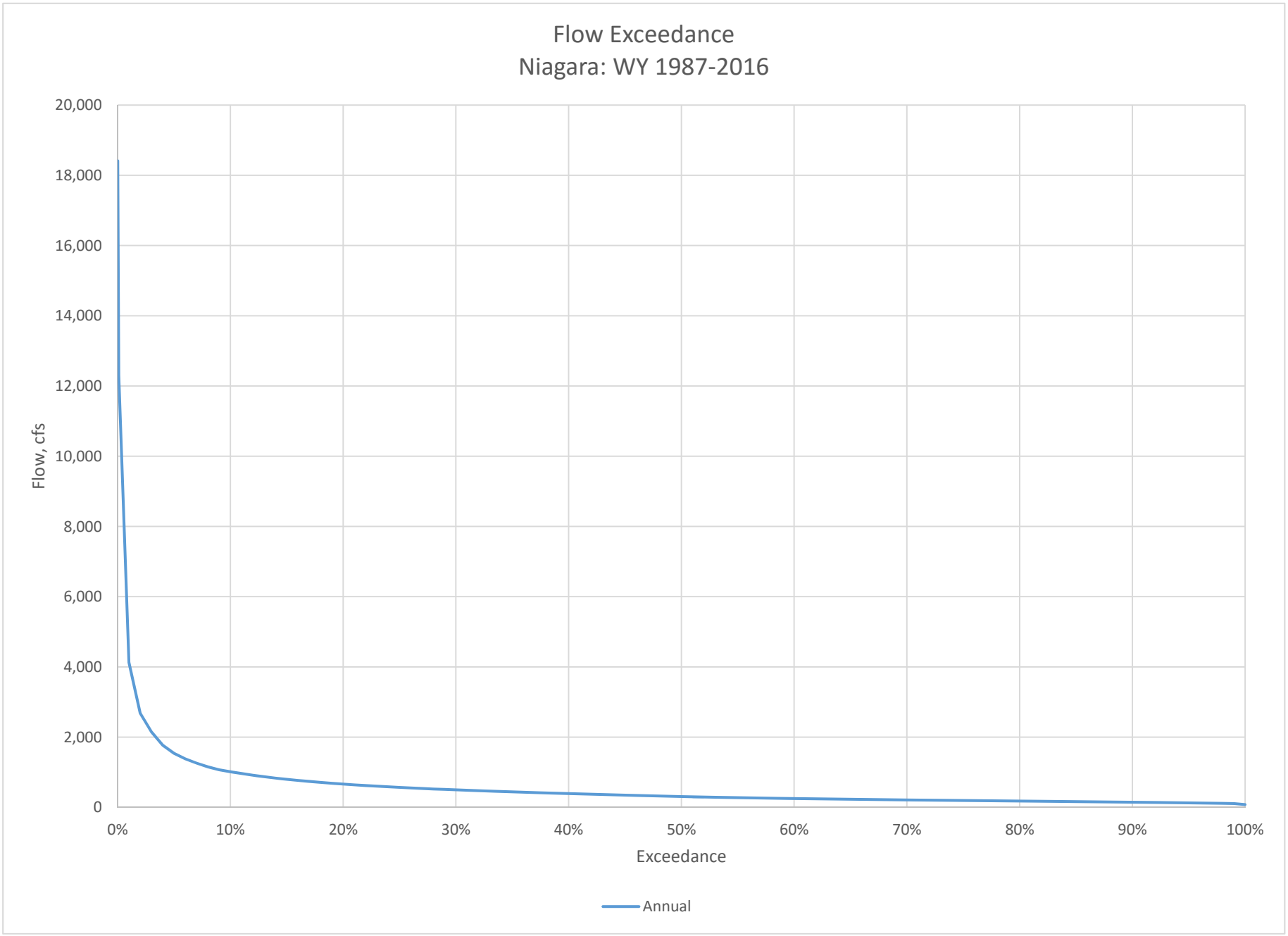

Burlington Mills Corp.
PARCEL NO. 19
Burlington Mills Corporation
(See Note 10, Sht. 1)
Approximate Location of Contour 885
Timber
DALE AVE.
PARCEL NO. 20
Virginia Holding Corporation
(See Note 9, Sht. 1)
Virginia Holding Corp.
Norfolk Southern R.R.
Creek
PARCEL NO. 18
Town of Vinton
Sewage Disposal Plant
(See Note 10, Sht. 1)
Town of Vinton, Va.
City of Roanoke, Va.
PARCEL NO. 17
Norfolk and Western Railway Co.
(See Note 10, Sht. 1)
PARCEL NO. 7 TRACT NO. 2
IN FEE
From N. J. Vinyard, Et Ux
Nov. 26, 1857
PARCEL NO. 21
Norfolk and Western Railway Co.
(See Note 10, Sht. 1)
Stauffer Chemical Co.
PARCEL NO. 16
Now or Formerly
Stauffer Chemical Co.
(See Note 10, Sht. 1)
Norfolk Southern Railway Co.
Appalachian Power Co.
See Note 13
PARCEL NO. 7 TRACT NO. 1
IN FEE
From N. J. Vinyard, Et Ux
Nov. 26, 1857
Now or Formerly
N. J. Vinyard
TOWN OF VINTON, VA.
ROANOKE COUNTY, VA.
MP 240
Boundary
Appalachian Power Co.
R. R. R/W Line
Norfolk Southern
Town of Vinton, Va. Corporate Line
See Note 13
RIVER'S EDGE
Natural Boundary of Lands Owned in Fee
PARCEL NO. 9 TRACT NO. 2
Gideon J. Persinger, Et Ux
(See Note 10, Sht. 1)
PARCEL NO. 6
IN FEE
From Alice P. Jamison, Et Vir
April 17, 1899
(See Note 9, Sht. 1)
PARCEL NO. 15 TRACT NO. 1
Norfolk Southern Railway Co.
(See Note 10, Sht. 1)
PARCEL NO. 9 TRACT NO. 1
IN FEE
From Gideon J. Persinger, Et Ux
June 1, 1899
PARCEL NO. 10
IN FEE
From C. P. P. Ruthrough, Et Al
March 26, 1908
From P. L. Terry, Et Al
July 20, 1896
PARCEL NO. 5
FEE IN ½ INT.
From W. E. Settle
Dec. 16, 1905
Flowage Rights: ½ Int.
Magnetic North - June M. 1930
(Surveyed by Price and Stanley)
Norfolk Southern R.R.
City of Roanoke
Sewage Disposal Plant
PARCEL NO. 14
American Viscose Corporation
(See Note 10, Sht. 1)
Now or Formerly
American Viscose Corp.
Bennington St.
Approximate Location of Contour 885
City of Roanoke Sewer Interceptor Line
City of Roanoke Storm Drain
City of Roanoke, Va.
Roanoke County, Va.
PARCEL NO. 15 TRACT NO. 2
Norfolk Southern Railway Co.
(See Note 10, Sht. 1)
PARCEL NO. 13
City of Roanoke
(See Note 10, Sht. 1)
RIVER
ROANOKE
BORSACK
ROANOKE
VINTON
STEWARTSVILLE
HARDY
GENERAL LOCATION
of
PROJECT AREA
SHOWING LOCATION OF THIS SHEET
SCALE- 1" = 2 MI. APPROX.
LEGEND
PROJECT BOUNDARY, INCLUDING THE APPROXIMATION OF ANY CONTOUR WHICH CONSTITUTES SUCH BOUNDARY.
PROJECT BOUNDARY, BEING AN APPROXIMATION OF CONTOUR 885, CROSSING FEE LANDS OF APPALACHIAN POWER COMPANY.
PROJECT BOUNDARY, BEING AN APPROXIMATION OF CONTOUR 885, LIMITING SOME BUT NOT ALL PROJECT RIGHTS.
PROJECT BOUNDARY, BEING AN APPROXIMATION OF CONTOUR 885, CROSSING LANDS OVER WHICH FLOWAGE RIGHTS ACCRUED BY VIRTUE OF PRESCRIPTION.
ELECTRIC POWER LINES OF APCO.
PARCEL LINES.
CONCRETE MONUMENT OR IRON PIN.
APCO. PERMANENT BENCH MARK.
PRIVATE ROAD
SEWER INTERCEPTOR LINE
Line of Masking
For Sheet No. 1
THIS DRAWING, EXHIBIT G, IS PART OF THE APPLICATION FOR LICENSE MADE BY APPALACHIAN POWER COMPANY.
BY
DATE
SCALE OF FEET
0' 100' 200' 400' 600' 800' 1000' 1200'
EXHIBIT G
SHEET 2 OF 2 SHEETS
APPALACHIAN POWER COMPANY
NIAGARA
HYDROELECTRIC PROJECT NO. 2466
VIRGINIA
PROJECT AREA AND BOUNDARY MAP
SCALE - 1" = 200'
FERC No. 2466-002-4

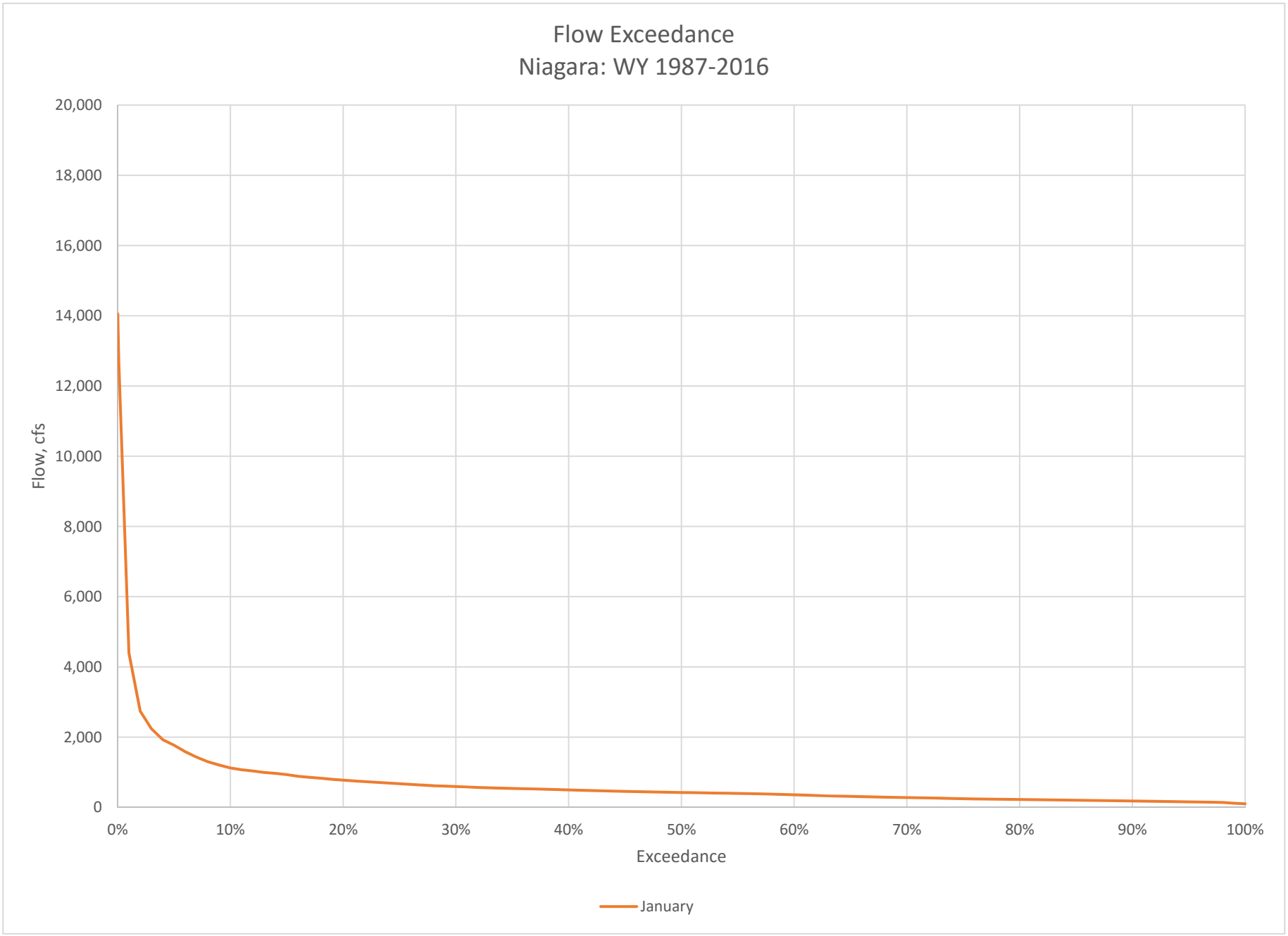
APPENDIX D

SINGLE-LINE ELECTRICAL DIAGRAM AND EXISTING EXHIBIT F PROJECT DRAWINGS (CEII)

APPENDIX E

FLOW DURATION CURVES


Flow Exceedance
Niagara: WY 1987-2016
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Flow, cfs
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Exceedance
Annual


Flow Exceedance
Niagara: WY 1987-2016
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Flow, cfs
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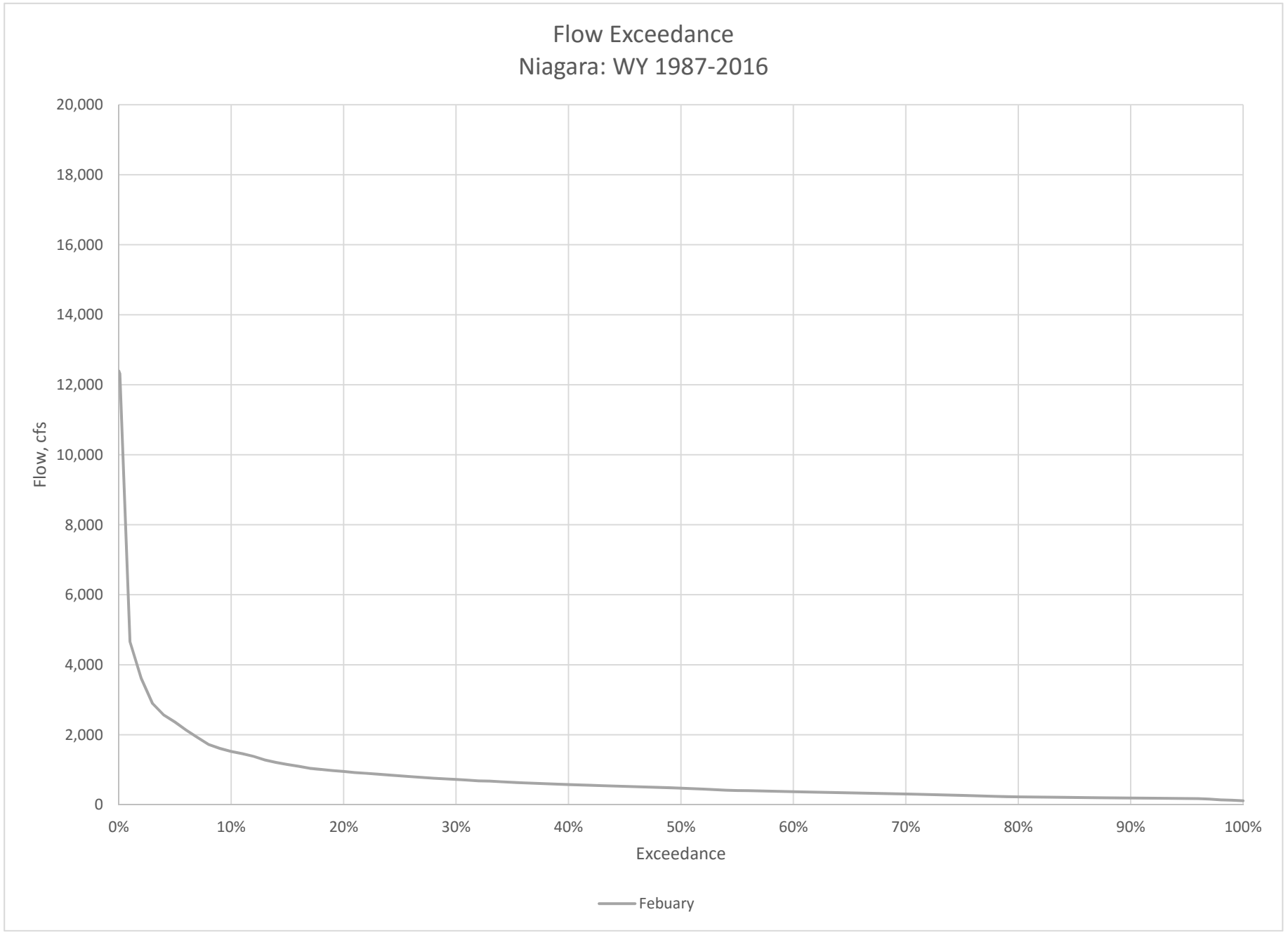
100%
Exceedance
January


Flow Exceedance
Niagara: WY 1987-2016
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70%
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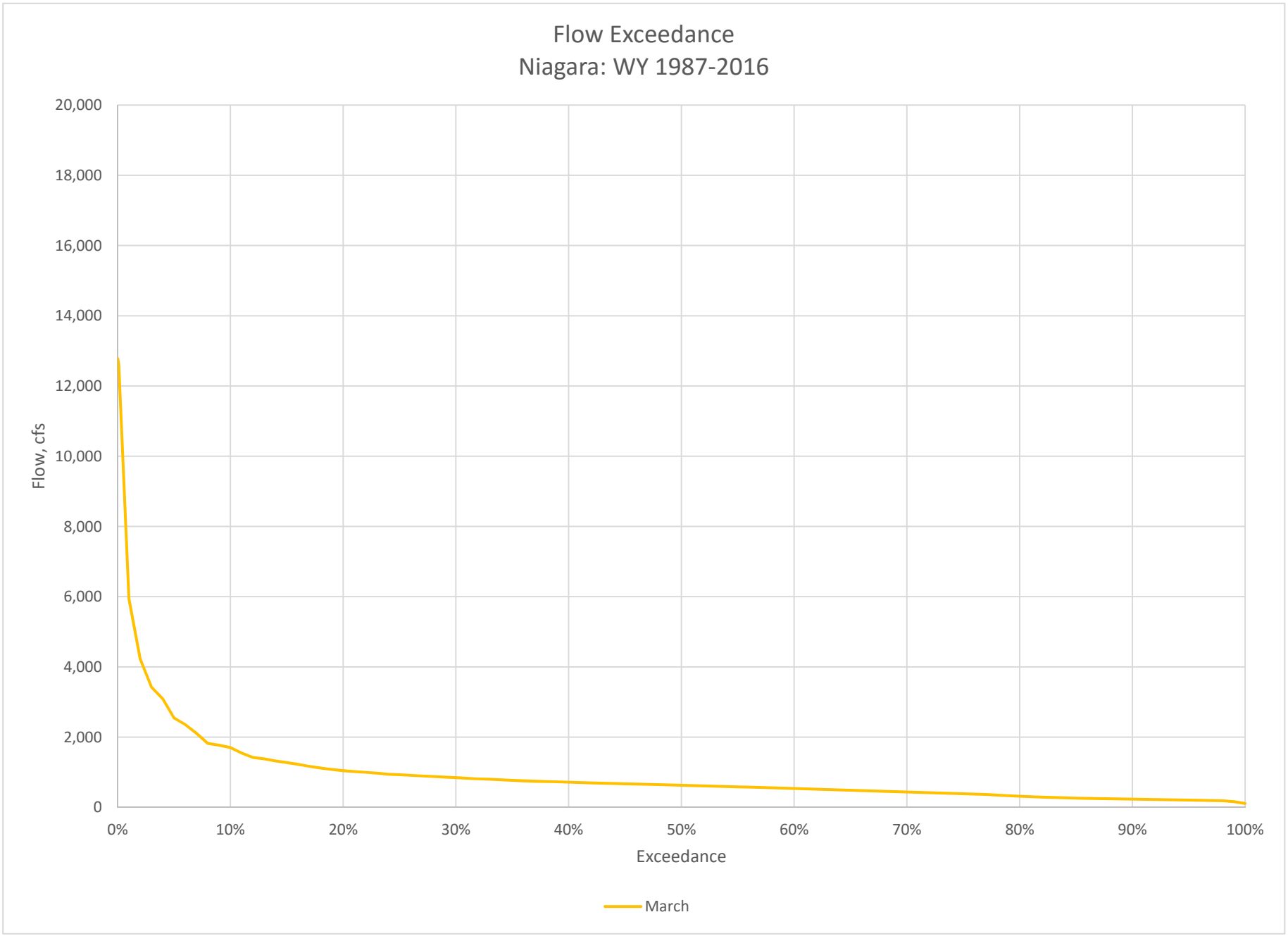
90%
100%
Exceedance
Febuary


Flow Exceedance
Niagara: WY 1987-2016
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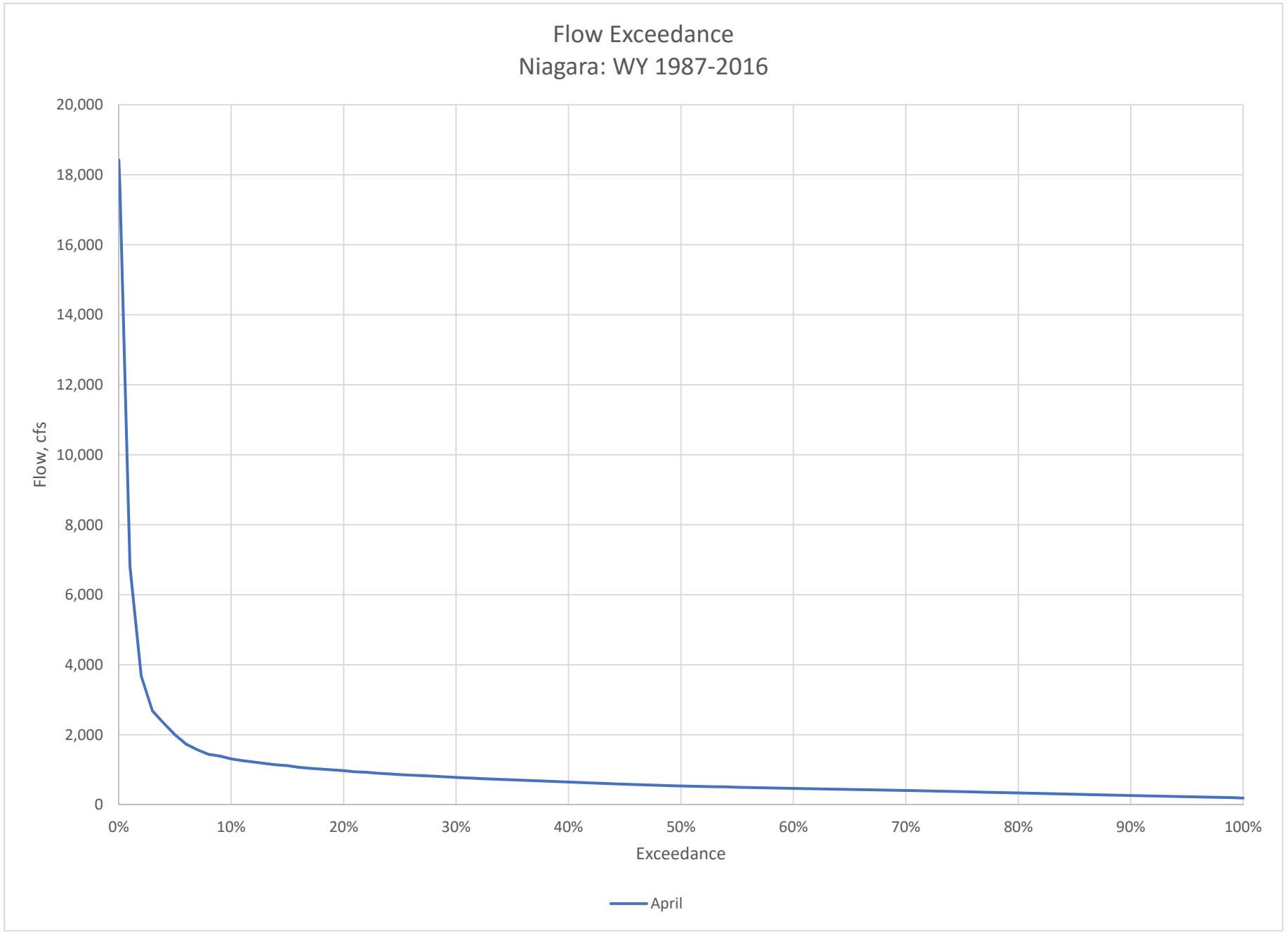
70%
80%
90%
100%
Exceedance
March


Flow Exceedance
Niagara: WY 1987-2016
20,000
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6,000
4,000
2,000
0
Flow, cfs
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20%
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40%
50%
60%
70%
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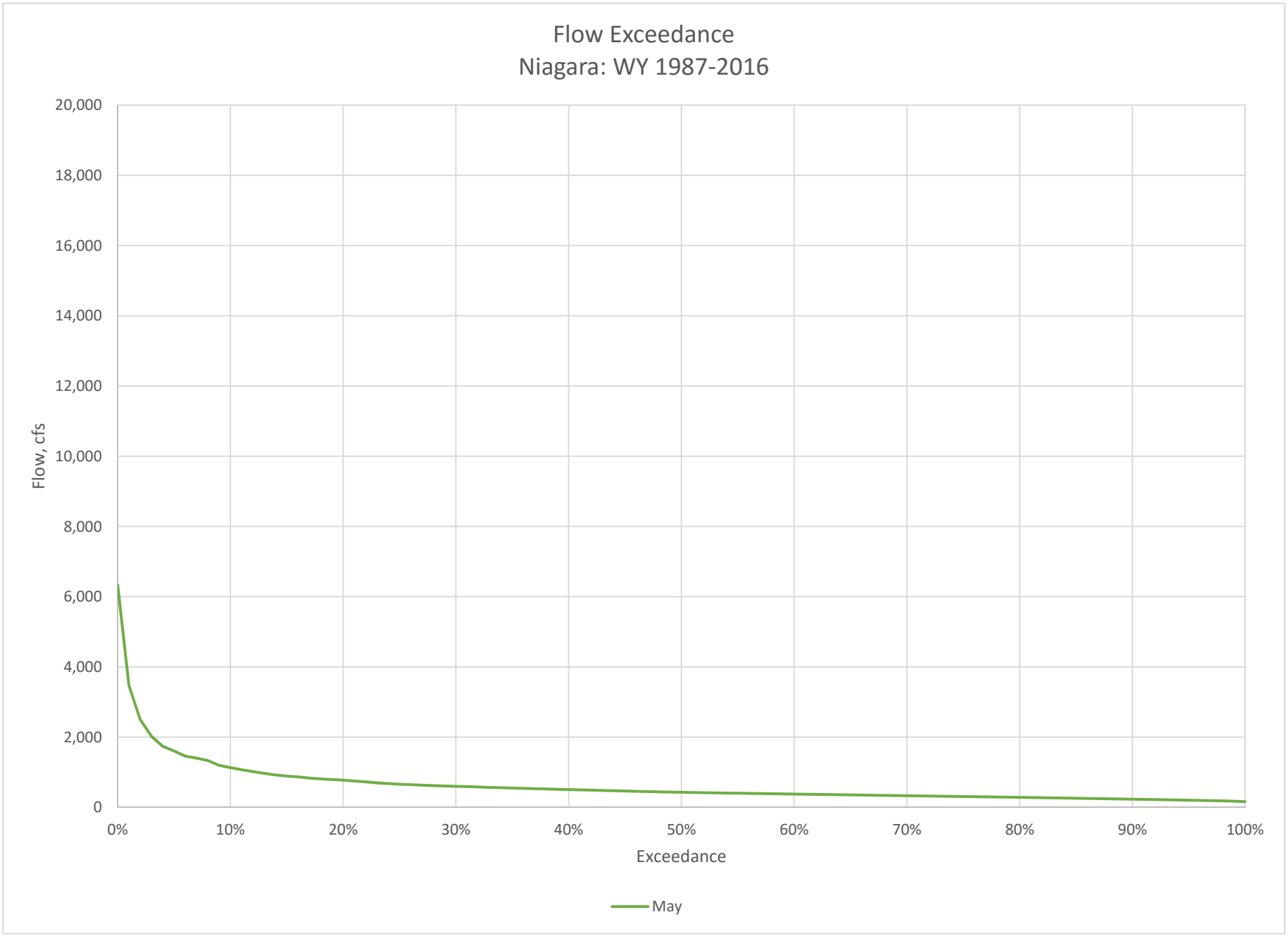
90%
100%
Exceedance
April


Flow Exceedance
Niagara: WY 1987-2016
20,000
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Flow, cfs
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60%
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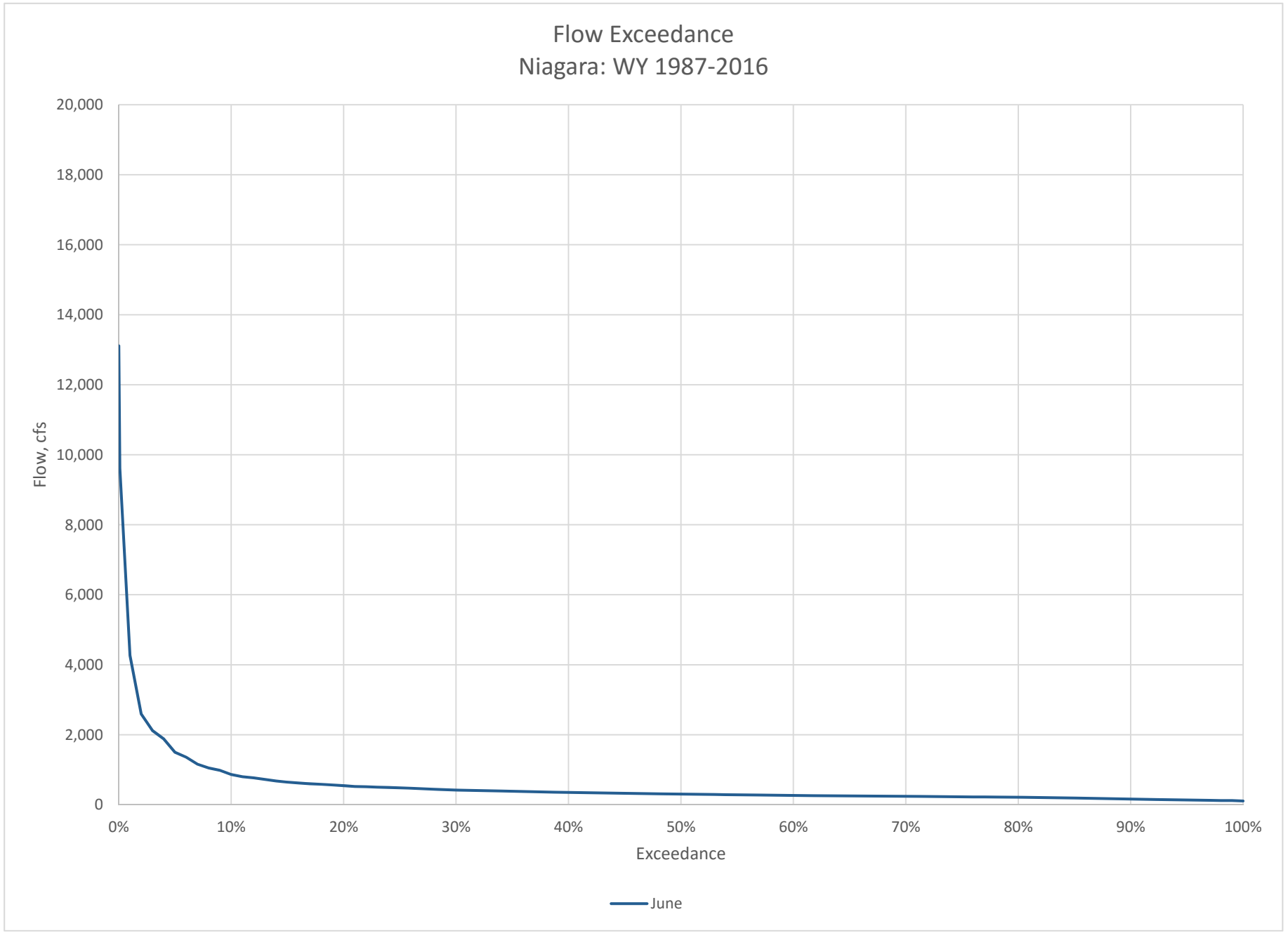
100%
Exceedance
May


Flow Exceedance
Niagara: WY 1987-2016
20,000
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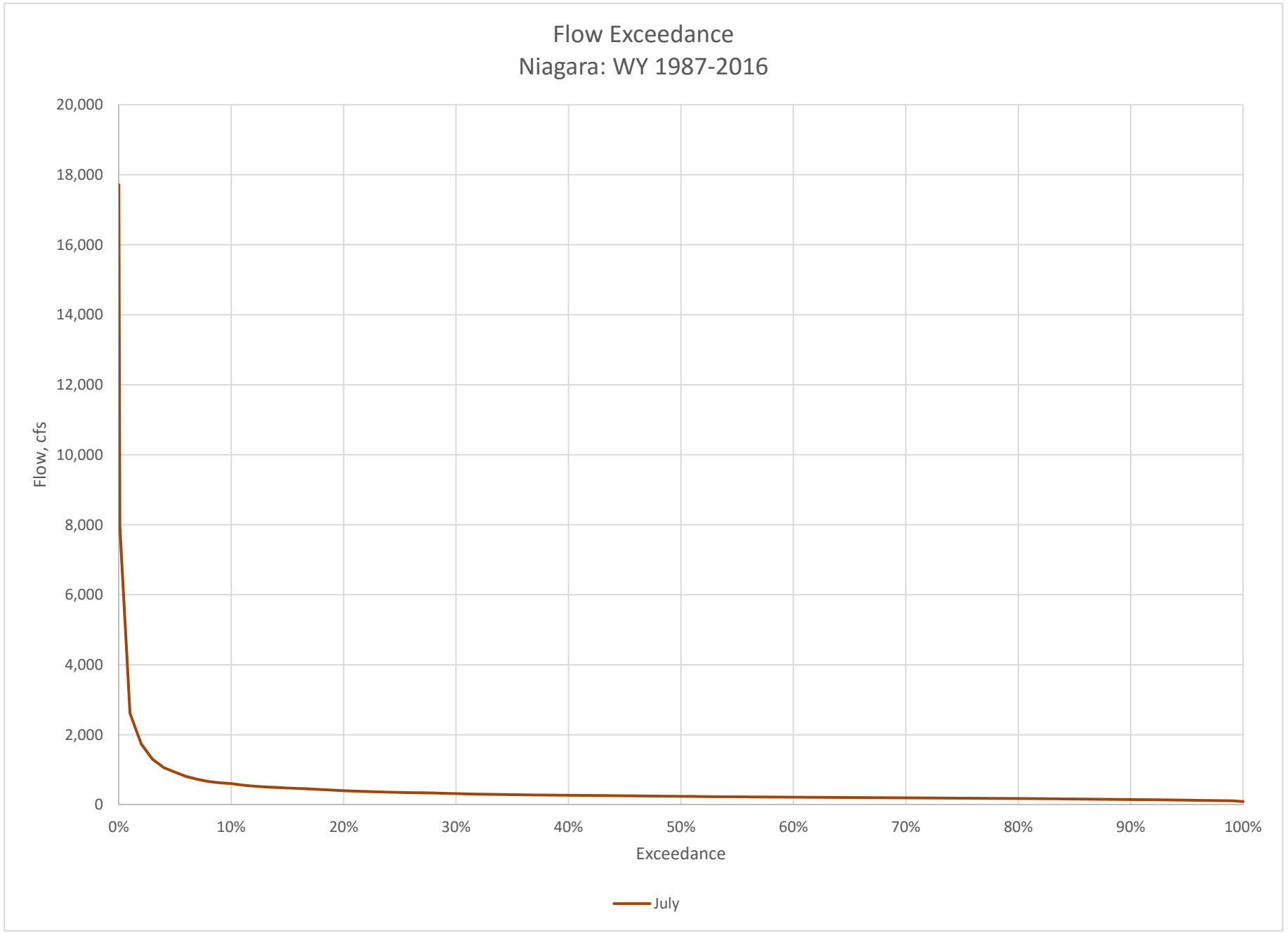
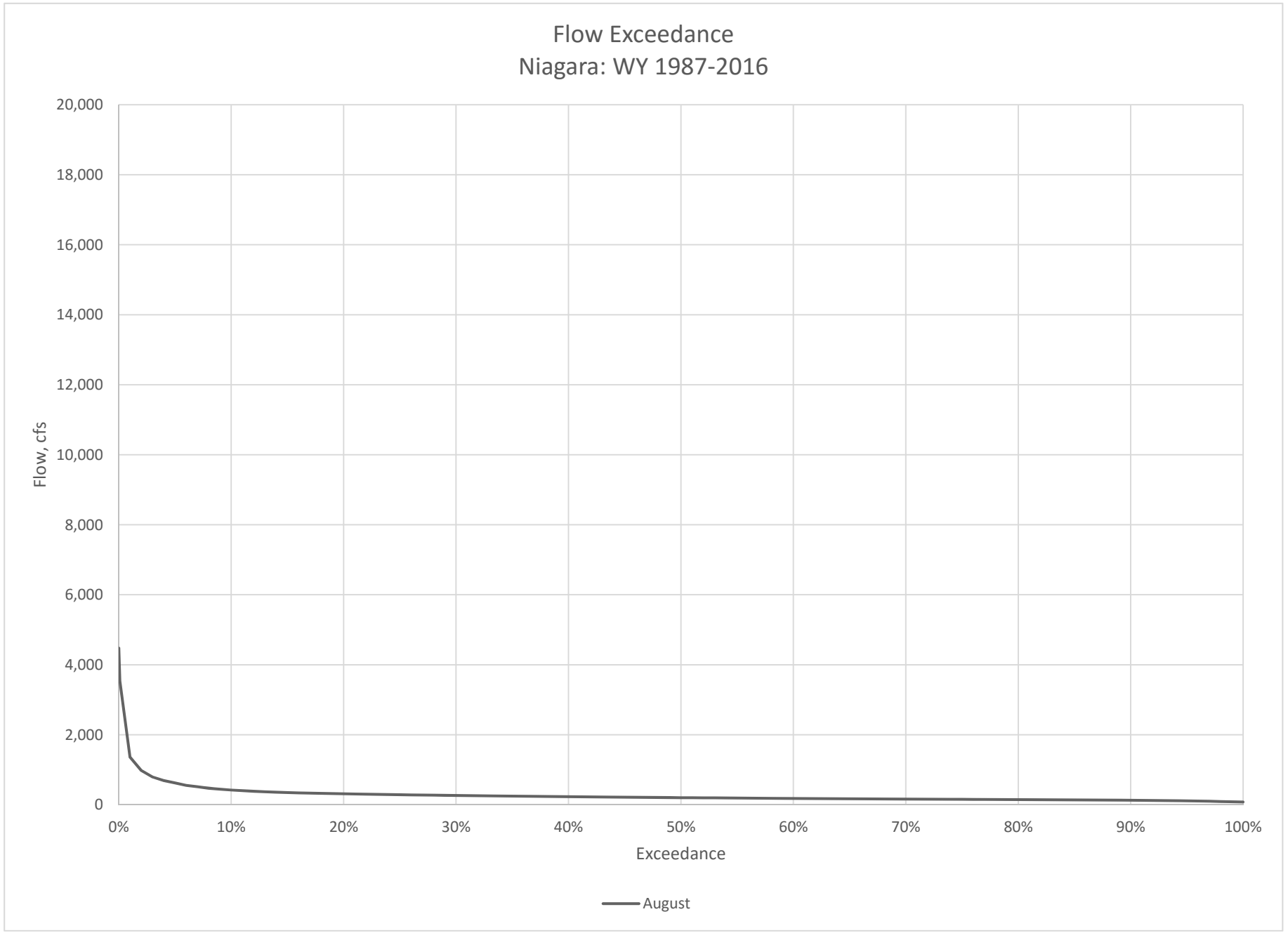
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Flow, cfs
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Exceedance
June


Flow Exceedance
Niagara: WY 1987-2016
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Flow, cfs
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Exceedance
July


Flow Exceedance
Niagara: WY 1987-2016
20,000
18,000
16,000
14,000
12,000
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8,000
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2,000
0
Flow, cfs
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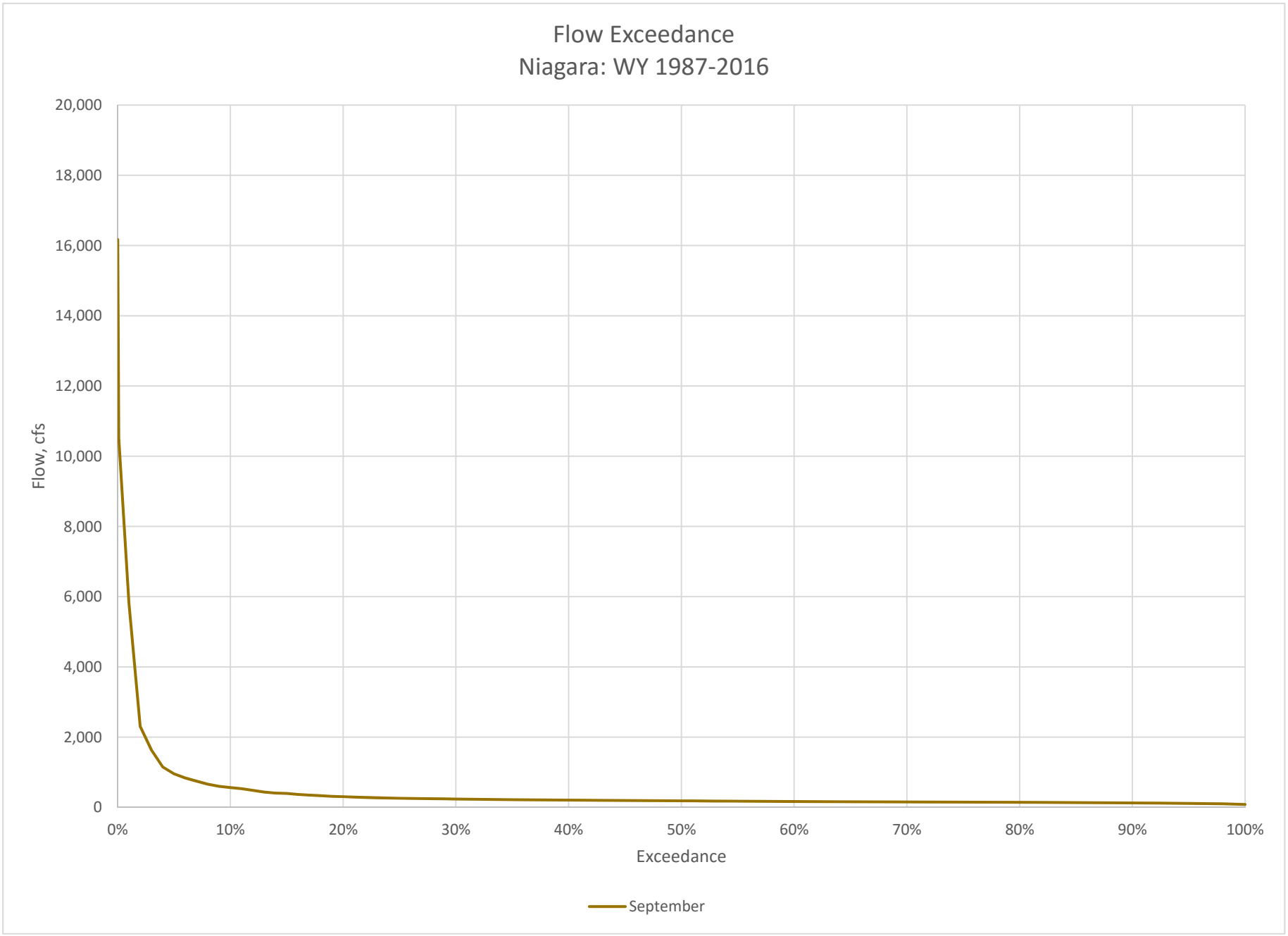
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Exceedance
August


Flow Exceedance
Niagara: WY 1987-2016
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
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Flow, cfs
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20%
30%
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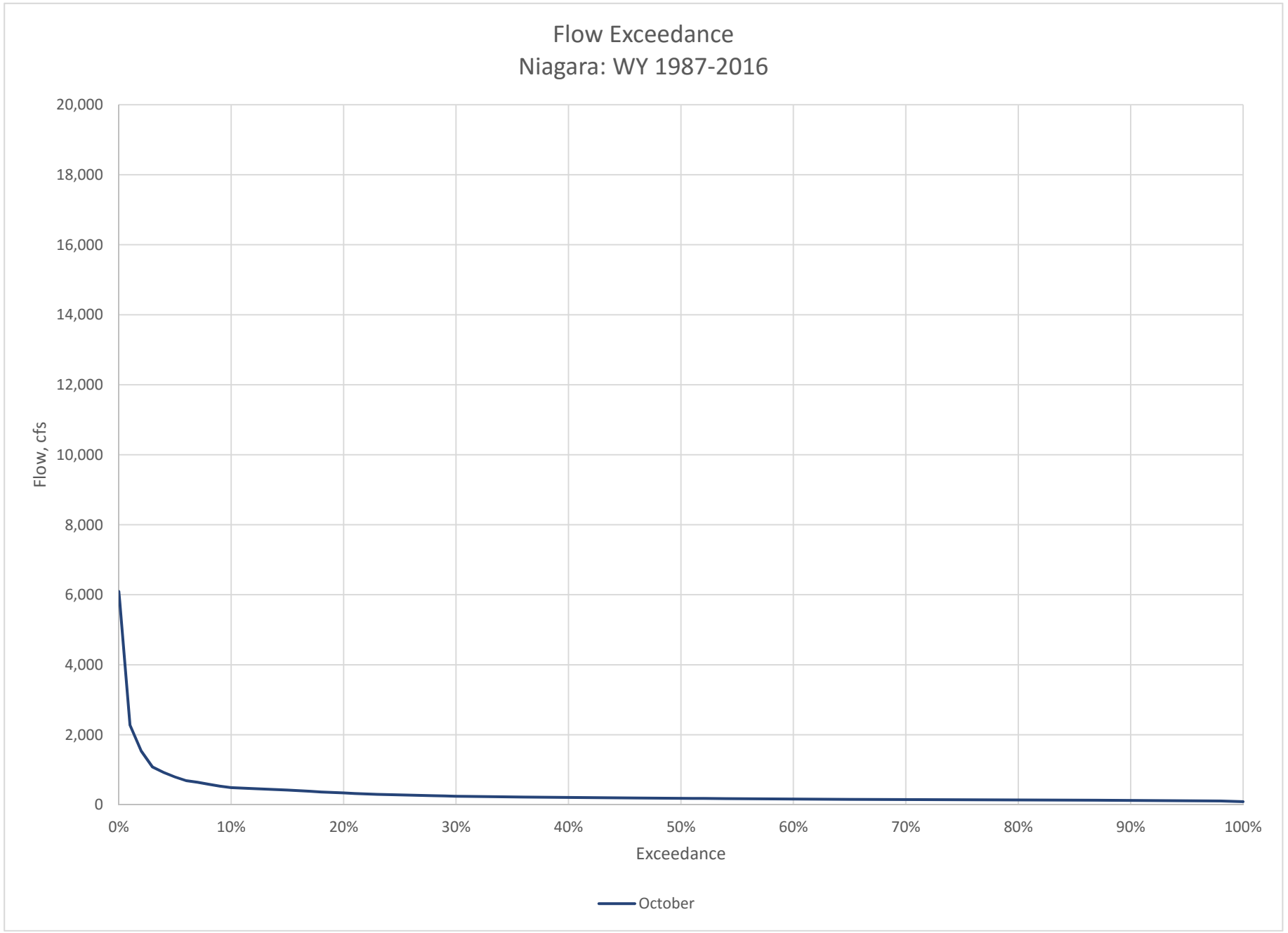
80%
90%
100%
Exceedance
September


Flow Exceedance
Niagara: WY 1987-2016
20,000
18,000
16,000
14,000
12,000
10,000
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0
Flow, cfs
0%
10%
20%
30%
40%
50%
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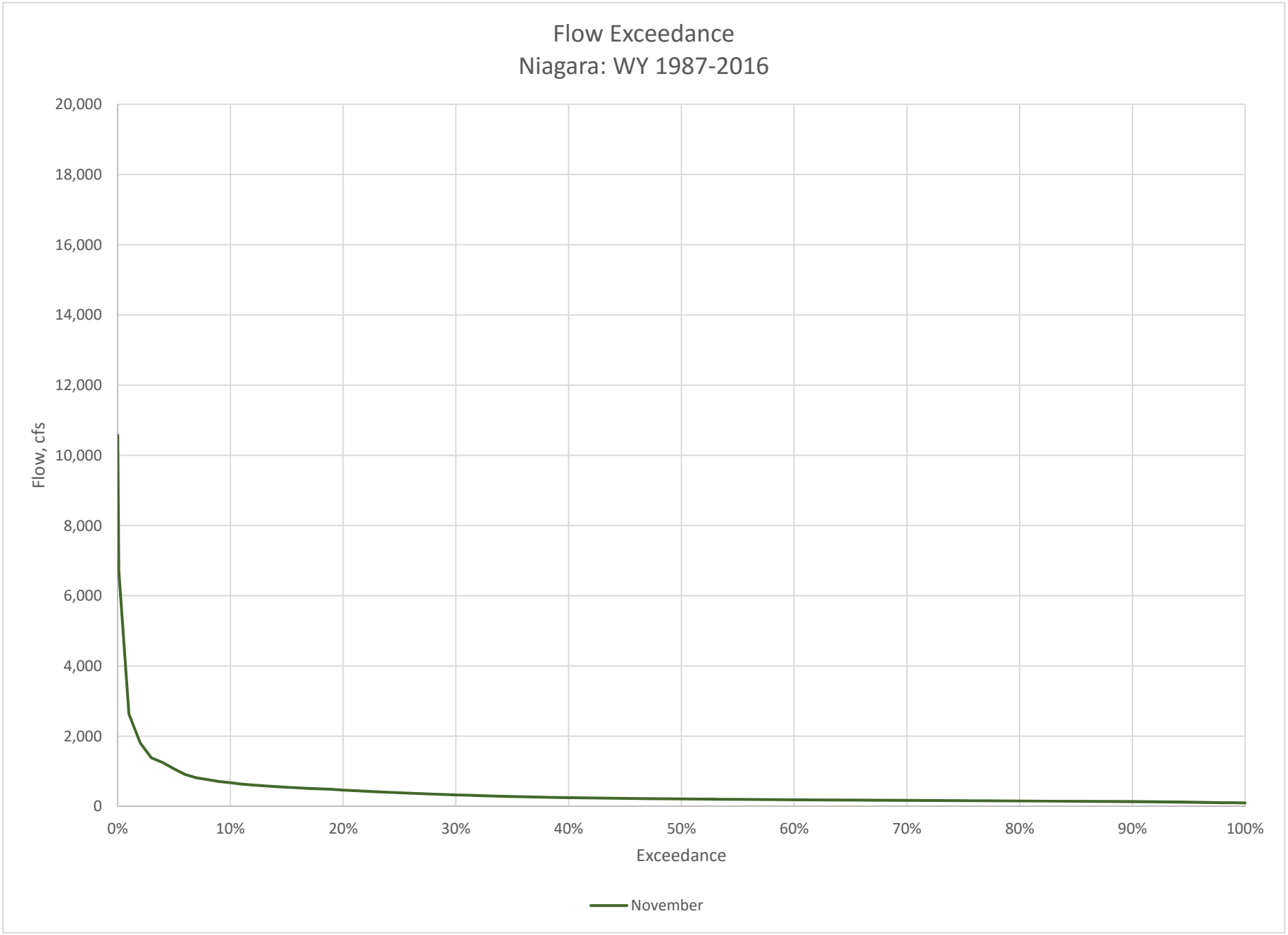
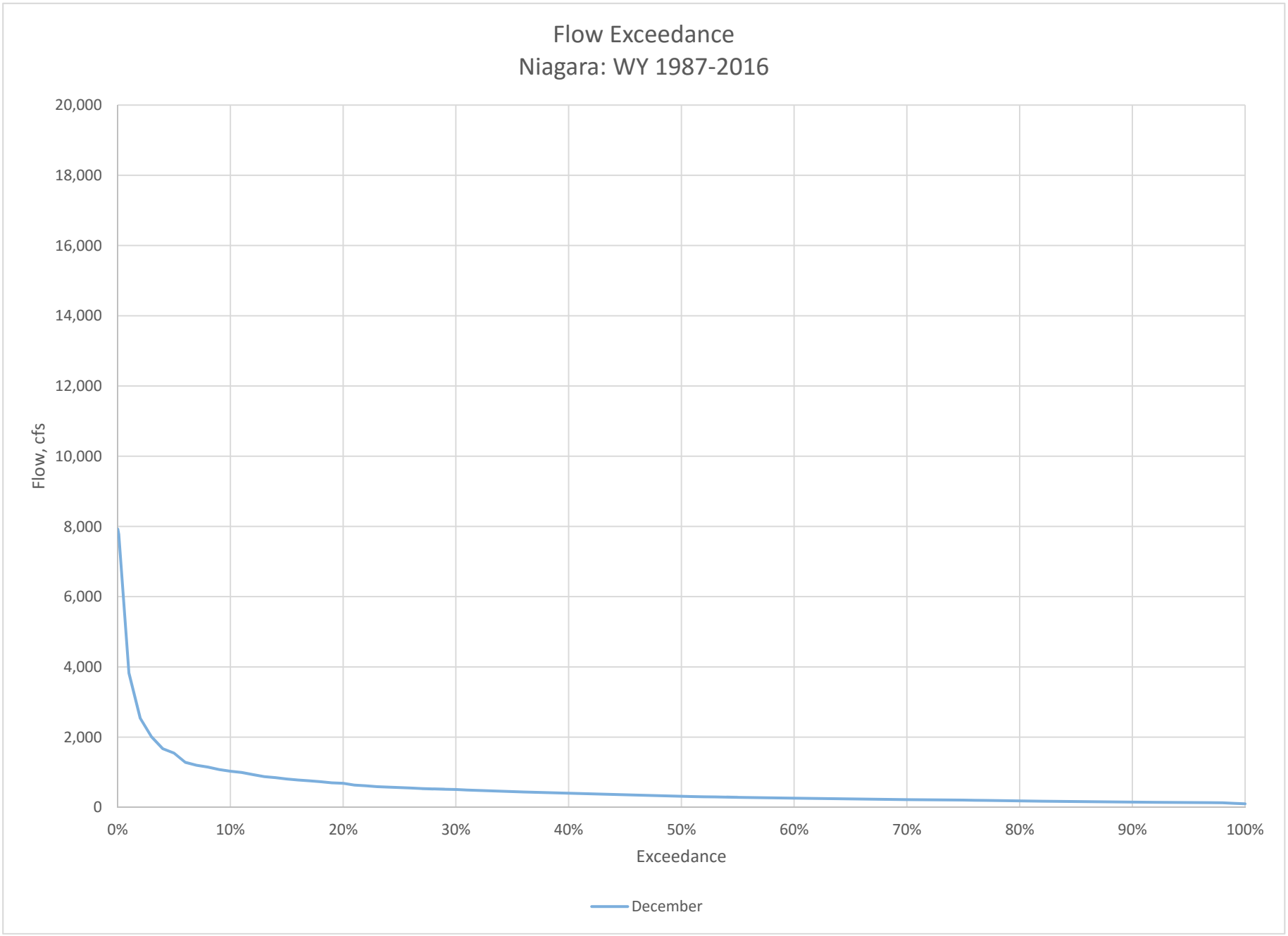
80%
90%
100%
Exceedance
October


Flow Exceedance
Niagara: WY 1987-2016
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Flow, cfs
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Exceedance
November


Flow Exceedance
Niagara: WY 1987-2016
20,000
18,000
16,000
14,000
12,000
10,000
8,000
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4,000
2,000
0
Flow, cfs
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100%
Exceedance
December

APPENDIX F

VIRGINIA INVASIVE PLANT SPECIES LIST

Virginia Invasive Plant Species List


Tree-of-heaven


Phragmites


Wavyleaf Grass

The Virginia Invasive Plant Species List comprises species that are established — or may become established — in Virginia, cause economic and ecological harm, and present ongoing management issues.

The list is for educational purposes only and has no regulatory authority.

To be included on the list, there must be demonstrable evidence that a species poses a threat to Virginia's forests, native grasslands, wetlands or waterways.

The Virginia Department of Conservation and Recreation's Invasive Species Assessment Protocol, approved by the Virginia Invasive Species Working Group, May 2015, was used to conduct a risk assessment for each listed species. Species were ranked as exhibiting **high**, **medium** or **low** levels of invasiveness based on their threat to natural communities and native species.

www.dcr.virginia.gov/natural_heritage/invspinfo.shtml

Scientific Name	Common Name	Virginia Invasiveness Rank	REGION		
			Mountain	Piedmont	Coastal
Ailanthus altissima	**Tree-of-heaven**	High	•	•	•
Alliaria petiolata	**Garlic Mustard**	High	•	•	•
Alternanthera philoxeroides	**Alligator-weed**	High			•
Ampelopsis brevipedunculata	**Porcelain-berry**	High		•	•
Carex kobomugi	**Japanese Sand Sedge**	High			•
Celastrus orbiculatus	**Oriental Bittersweet**	High	•	•	•
Centaurea stoebe ssp. micranthos	**Spotted Knapweed**	High	•	•	•
Cirsium arvense	**Canada Thistle**	High	•	•	•
Dioscorea polystachya	**Cinnamon Vine**	High	•	•	•
Elaeagnus umbellata	**Autumn Olive**	High	•	•	•
Euonymus alatus	**Winged Euonymus**	High	•	•	
Ficaria verna	**Lesser Celandine**	High		•	•
Hydrilla verticillata	**Hydrilla**	High	•	•	•
Iris pseudacorus	**Yellow Flag**	High	•	•	•
Lespedeza cuneata	**Chinese Lespedeza**	High	•	•	•
Ligustrum sinense	**Chinese Privet**	High	•	•	•
Lonicera japonica	**Japanese Honeysuckle**	High	•	•	•
Lonicera maackii	**Amur Honeysuckle**	High	•	•	•
Lonicera morrowii	**Morrow's Honeysuckle**	High	•	•	
Lythrum salicaria	**Purple Loosestrife**	High	•	•	•
Microstegium vimineum	**Japanese Stiltgrass**	High	•	•	•
Murdannia keisak	**Marsh Dewflower**	High	•	•	•
Myriophyllum aquaticum	**Parrot Feather**	High	•	•	•
Myriophyllum spicatum	**Eurasian Water-milfoil**	High	•	•	•
Persicaria perfoliata	**Mile-a-minute**	High	•	•	•
Phragmites australis ssp. australis	**Common Reed**	High	•	•	•
Pueraria montana var. lobata	**Kudzu**	High	•	•	•
Reynoutria japonica	**Japanese Knotweed**	High	•	•	•
Rosa multiflora	**Multiflora Rose**	High	•	•	•
Rubus phoenicolasius	**Wineberry**	High	•	•	•
Sorghum halepense	**Johnson Grass**	High	•	•	•
Urtica dioica	**European Stinging Nettle**	High	•	•	•
Acer platanoides	**Norway Maple**	Medium	•	•	•
Agrostis capillaris	**Colonial Bent-grass**	Medium	•	•	•
Akebia quinata	**Five-leaf Akebia**	Medium		•	•
Albizia julibrissin	**Mimosa**	Medium	•	•	•
Arthraxon hispidus var. hispidus	**Joint Head Grass**	Medium	•	•	•
Berberis thunbergii	**Japanese Barberry**	Medium	•	•	•
Cirsium vulgare	**Bull Thistle**	Medium	•	•	•
Dipsacus fullonum	**Wild Teasel**	Medium	•	•	•
Egeria densa	**Brazilian Waterweed**	Medium	•	•	•
Euonymus fortunei	**Winter Creeper**	Medium	•	•	•
Glechoma hederacea	**Gill-over-the-ground**	Medium	•	•	•
Hedera helix	**English Ivy**	Medium		•	•

continued

Invasiveness rank is higher for species that:

- Alter ecosystem processes, such as succession, hydrology or fire regime.
- Are capable of invading undisturbed natural communities.
- Cause substantial impacts on rare or vulnerable species or natural communities or high-quality examples of more common communities.
- Are found widely distributed and generally abundant where present.
- Disperse readily to new areas.
- Are difficult to control.

Early detection species

The list includes a subcategory of invasive plants that are considered early detection species. These are species not yet established or, if established, are not yet widespread in Virginia but known to be highly invasive in habitats similar to those found here. If discovered in Virginia, these species need to be quickly mapped, photographed and reported to DCR. The management goal for early detection species is eradication, as preventing the establishment and spread of newly arrived species will save valuable natural and economic resources.

INFORMATION

For more information, or to report early detection species, contact Stewardship Biologist Kevin Heffernan with the Virginia Department of Conservation and Recreation at 804-786-9112 or kevin.heffernan@dcr.virginia.gov

Photo credits:
Tree-of-heaven, Chuck Bargeron, University of Georgia, Bugwood.org. Phragmites, Jil M. Swearingen, USDI National Park Service, Bugwood.org. Wavyleaf grass, Kerrie L. Kyde, Maryland Department of Natural Resources, Bugwood.org.

Citation:
Heffernan, K., E. Engle, C. Richardson. 2014. Virginia Invasive Plant Species List. Virginia Department of Conservation and Recreation, Division of Natural Heritage. Natural Heritage Technical Document 14-11. Richmond.

DCR
Virginia Department of Conservation & Recreation

www.dcr.virginia.gov/natural_heritage/invspinfo.shtml

Scientific Name	Common Name	Virginia Invasiveness Rank	REGION		
			Mountain	Piedmont	Coastal
Holcus lanatus	**Common Velvet Grass**	Medium	•	•	•
Humulus japonicus	**Japanese Hops**	Medium	•	•	•
Ligustrum obtusifolium var. obtusifolium	**Border Privet**	Medium	•	•	•
Lonicera tatarica	**Tartarian Honeysuckle**	Medium	•	•	
Lysimachia nummularia	**Moneywort**	Medium	•	•	•
Miscanthus sinensis	**Chinese Silvergrass**	Medium	•	•	•
Najas minor	**Brittle Naiad**	Medium	•	•	•
Paulownia tomentosa	**Royal Paulowina**	Medium	•	•	•
Persicaria longiseta	**Long-bristled Smartweed**	Medium	•	•	•
Phyllostachys aurea	**Golden Bamboo**	Medium	•	•	•
Poa compressa	**Flat-stemmed Bluegrass**	Medium	•	•	•
Poa trivialis	**Rough Bluegrass**	Medium	•	•	•
Pyrus calleryana	**Callery Pear**	Medium	•	•	•
Rhodotypos scandens	**Jetbead**	Medium	•	•	•
Rumex acetosella	**Sheep sorrel**	Medium	•	•	•
Spiraea japonica	**Japanese Spiraea**	Medium	•	•	
Stellaria media	**Common Chickweed**	Medium	•	•	•
Veronica hederifolia	**Ivy-leaved Speedwell**	Medium	•	•	•
Viburnum dilatatum	**Linden arrow-wood**	Medium		•	
Wisteria sinensis	**Chinese Wisteria**	Medium	•	•	•
Commelina communis	**Asiatic Dayflower**	Low	•	•	•
Elaeagnus pungens	**Thorny Olive**	Low	•	•	•
Lespedeza bicolor	**Shrubby Bushclover**	Low	•	•	•
Lonicera fragrantissima	**Winter Honeysuckle**	Low	•	•	•
Melia azedarach	**Chinaberry**	Low		•	•
Morus alba	**White Mulberry**	Low	•	•	•
Perilla frutescens	**Beefsteak Plant**	Low	•	•	•
Phleum pratense	**Timothy**	Low	•	•	•
Populus alba	**Silver Poplar**	Low	•	•	•
Rumex crispus ssp. crispus	**Curly Dock**	Low	•	•	•
Securigera varia	**Crown-vetch**	Low	•	•	•
Trapa natans	**European Water Chestnut**	Low			•
Ulmus pumila	**Siberian Elm**	Low	•	•	
Vinca major	**Greater Periwinkle**	Low	•	•	•
Vinca minor	**Periwinkle**	Low	•	•	•
Wisteria floribunda	**Japanese Wisteria**	Low		•	•
EARLY DETECTION SPECIES - not yet widely established in Virginia					
Aldrovanda vesiculosa	**Waterwheel**	High			•
Eichhornia crassipes	**Water Hyacinth**	High			•
Imperata cylindrica	**Cogon Grass**	High			•
Ludwigia grandiflora ssp. hexapetala	**Large Flower Primrose Willow**	High	•	•	•
Oplismenus hirtellus ssp. undulatifolius	**Wavyleaf Grass**	High	•	•	
Vitex rotundifolia	**Beach Vitex**	High			•
Heracleum mantegazzianum	**Giant Hogweed**	Medium	•	•	
Ipomoea aquatica	**Water Spinach**	Medium	•	•	•
Salvinia molesta	**Giant Salvinia**	Medium	•	•	•
Solanum viarum	**Tropical Soda Apple**	Medium		•	•